



DFID NATURAL RESOURCES SYSTEMS PROGRAMME

# Livelihoods Synthesis Study

## *Key determinants of poor people's livelihood strategies and natural resources-related management opportunities*

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# Introduction and background

## Aims, objectives and research questions

The aim of this synthesis study is to assist the Natural Resources Systems Programme (NRSP) with the further development of its research agenda. This cross-cutting study embraces a selection of NRSP's completed and on-going research projects that focus on the livelihoods of poor people, covering a range of poverty circumstances. The purpose of NRSP is to deliver new knowledge to improve the livelihoods of poor people who are largely dependent on the natural resource (NR) base. The **specific objectives** of the synthesis study are to provide the NRSP programme with information that identifies:

- the key determinants influencing livelihood strategies of the poor who are largely NR-based;
- NR-related management opportunities that could benefit the poor.

These have been achieved by reviewing and analysing the final outputs from a number of completed and on-going NRSP projects that include a 'livelihoods component'. Projects were selected from each of the six production systems that NRSP covers (see page 2). Research findings from these selected projects were compared (both between production systems and within production systems) to draw conclusions which answer the following research questions:

- What are the important determinants that affect the security and choice of livelihood strategies of the poor?
- How do these determinants impact on livelihood opportunities under changing circumstances?
- What is the contribution of NR to these determinants?
- What opportunities exist to enhance livelihood options?

The terms of reference for this synthesis study are included as **Annex 3**.

## Synthesis approach and analytical framework

The activities undertaken as part of the synthesis study include:

- A desk-based review of outputs (Final Technical Reports, research data in the form of databases, supplementary project documents) from the 18 NRSP research projects selected for the study;
- Email exchanges and personal contact with some of the project leaders, participation in the NRSP Common Property Resource workshop (Oct 2001), and additional discussions with members of the NRSP management team and with the DFID Sustainable Livelihoods Support Office (SLSO);
- A field trip to Kenya provided contextual information concerning project R7962 that had just begun its NRSP project cycle;
- Review of relevant livelihoods and related literature.

An initial familiarisation period using material from a subset of the selected projects resulted in the development of a conceptual diagram (Figure 2, page 11). This diagram was used as an aid in the next stage of synthesis and analysis using a second tranche of project material.

An accepted premise is that there is considerable biophysical, social, economic, environmental and political diversity in the project contents. Diversity also exists in the objectives, scope, quality, quantity, form and robustness of project data reviewed. In executing the synthesis study the approach to dealing with such diversity was to search for empirical regularity and common conclusions. Analysis of difference can often yield

more incisive research insights. However, there is very little ‘rich material’ of the kind that comes from detailed qualitative and ethnographic research from which to explore the dynamics of diversity and draw comparative conclusions.

Notwithstanding the limitations imposed by using such a variety of datasets, it has been possible to draw some conclusions about general trends and patterns within each production system. These do provide some insights into the important determinants affecting livelihoods of different people.

It is important to recognise that the identification of opportunities for NR-based livelihoods in particular situations will continue to require a detailed and contextual analysis of local social and natural resource based situations – there is no escaping the need to deal with the social and environmental diversity particular to specific contexts. Consequently, this study limits the identification of opportunities in support of NR-based livelihoods to a very broad set of themes. Practical application of these broad themes requires elaboration by project managers on the ground.

## Production systems and project selection

The Renewable Natural Resources Research Strategy (RNRRS) of the UK Department for International Development (DFID) defines six production systems for the total scope of its natural resources research and NRSP addresses all these, namely:

- Forest agriculture interface (FAI)
- High potential production systems (HP)
- Hillside production systems (HS)
- Land water interface (LWI)
- Peri-urban interface (PUI)
- Semi-arid production systems (SA)

In its original design, from two to six countries were targeted for NRSP for each production system (PS) but as from April 1999, in line with a directive from DFID, NRSP limited project commissioning to a maximum of three countries per production system. The target countries are variously located in three target regions (sub-Saharan Africa, the Indian sub-continent, and Latin America and the Caribbean).

Details of the target countries and the production systems that NRSP’s research addresses in these countries are shown in [Table 1](#). In conformity with the RNRRS, for the purpose of defining geographical coverage of the LW the term ‘target country’ is applied to the Caribbean region.

### Forest agriculture interface

The forest agriculture interface targets areas that are in transition between primary forest on the one hand and settled agricultural land use on the other. Two land use dynamics are identified, the first involving initial forest conversion and the second involving the development of subsequent patterns of land use. Features of the FAI vary between target geographic regions (*i.e.*, between West Africa, Amazonia in Latin America and the hill zone of Nepal). However, a common feature in terms of people’s livelihoods is that interdependency between crops and forests or tree-based systems is integral to all three, possibly with livestock as an additional common feature. Current and planned projects concern the assessment and further development of: participatory approaches to common pool resources (CPR) management; improved land use patterns; and strategies to improve the integration of livelihood perspectives into NR management policies.

**Table 1: Selected projects and NRSP target countries by Production System**

Region	Countries	Production Systems					
		FAI	HP	HS	LWI	PUI	SA
Sub-Saharan Africa	Ghana	✓(2)				✓(1)	
	Kenya		✓(1)				
	Tanzania						✓(3)
	Uganda			✓	TBD		
	Zimbabwe						✓(2)
Indian Sub-Continent	Bangladesh		✓(1)		✓(4)		
	India		✓			✓(1)	✓(1)
	Nepal	✓		✓(1)			
Latin America and Caribbean	Bolivia			✓			
	Brazil	✓					
	Caribbean				✓(1)		

✓ Target country for projects as of June 2000.      TBD To be decided after reviewing the output of a programme development study.  
 (n) Number of projects selected for inclusion in this synthesis study.

### High potential production systems

High potential production systems are found in regions characterised by a favourable climate, relatively fertile soils and considerable ground water resources in some instances. These systems also have high population densities commonly associated with small land holdings and circumstances that intensify the use of land for arable cropping. Recent and current projects concern irrigated production systems in Bangladesh and the lower Indo-Gangetic Plains in India, and rainfed upland systems in south western Kenya and eastern India. For varying reasons, in spite of the high potential of the NR base, the rural populations in the areas targeted by NRSP are distinctly poor and disadvantaged, presenting a considerable challenge to the ways by which NR management research could assist livelihood improvement. On-going and planned projects emphasise integrated participatory approaches to raising awareness of options for farming-based enterprises and the management of farm land and water resources, and link these with the identification and testing of forms of rural service provision that are relevant to and can reach poor people.

### Hillsides production systems

Hillsides production systems are characterised by farming activities (crops and livestock) on steep slopes where difficult terrain results in poor accessibility, limited infrastructure and markedly impoverished communities. Use of these marginal lands has led to their degradation with soil erosion, declining soil fertility and deforestation all contributing to low productivity. In addressing these land management problems, NRSP adopts a holistic strategy towards the development and promotion of improved farming strategies that meet the needs of marginal farmers. Current projects are in Bolivia, Nepal and Uganda. All projects, in varying ways, emphasise the factors that limit the adoption of available technologies.

### Land water interface

The land water interface is located in regions where both aquatic and terrestrial resource systems co-exist in space and time. The interface targets two ecosystems – coastal zones and floodplains. The Caribbean is targeted for the coastal zone, with priority given to the aquatic environment, emphasising coral reefs and lagoons, mangroves and sea-grass beds. In addition, in order to address impacts on that environment, the research takes a wider approach to production constraints and considers land use practices and zoning in coastal ecosystems. In this way, the research aims to establish appropriate management actions to address all



factors that may impact on the target habitats. Bangladesh is the target country for floodplains research. A similar conceptual approach as that for coastal zones applies for this inland aquatic system. A broad approach is taken to production and management constraints in order to consider all possible influences on the LWI. To date the portfolio has concerned livelihood strategies in the LWI and new approaches to integrated NR management that can benefit the poor. The future portfolio will include more projects relating to institutional arrangements for sustained uptake of improved management strategies. Given available funding<sup>1</sup>, the lake shores of the Lake Kyoga inland wetland system in Uganda may be added (for the floodplains ecosystem), dependent on the outcome of a Programme Development assignment, which is currently under way.

### **Peri-urban interface**

The peri-urban interface is created by urban development. As urban activities grow and spread, links or impacts upon rural activities in the countryside are created. These cause changes to existing production systems and create new ones that can affect the poor in both urban and rural areas. Opportunities arise from easier access to urban markets, services and jobs, and the re-use of urban wastes. Problems arise from the conversion of land, urban pollutants, farm labour shortages and the loss of natural resource based means of livelihood. During the first phase of NRSP, projects generated substantial new knowledge of peri-urban natural resource use in livelihood strategies near to Kumasi in Ghana and the twin towns of Hubli and Dharwad in India. New projects are underway to test the validity and utility of the new knowledge in bringing about pro-poor changes in natural resource management through the creation – using participatory processes – of action plans that will be implemented in pilot projects.

### **Semi-arid production systems**

Semi-arid production systems characteristically occur where agricultural activities and livelihood strategies are constrained by poor natural resources (principally low and erratic rainfall and infertile, poorly structured soils). Although past projects were conducted in Kenya, Nigeria, Tanzania and Zimbabwe, the current target countries are India, Tanzania and Zimbabwe<sup>2</sup>. Recently completed projects in Tanzania and India have centred on the understanding of livelihoods of the poor, in respect of coping strategies, dependence on CPRs, and NR management strategies. Based on this understanding, research for the final years of the programme term will focus on the development and promotion of improved strategies for NR management under varying land and water tenure regimes.

### **Project selection**

Eighteen projects were selected for inclusion in this synthesis study. As shown in **Table 1 (page 3)** and listed in **Table 2 (page 14)** they encompass 8 countries and are spread over all the 3 regions and all 6 production systems. However, it was subsequently determined that the data collected in project R7412 are not appropriate for the analytical purposes of this study, and regrettably R7412 is the only project within Hillsides Production System. The analyses presented therefore relate to just five production systems (FAI, HP, LWI, PUI and SA), although for some purposes there are six subdivisions when LWI is reported on separately for **LWI coastal** and **LWI floodplain**.

<sup>1</sup> Although the Programme Development study had favourable findings with respect to NRSP-LW in Uganda, budget restrictions prevented the intended follow up.

<sup>2</sup> Zimbabwe was phased out as a target country in early 2001, after this Study was completed.

## Concepts and study definitions

The burgeoning ‘livelihoods’ literature encompasses a host of concepts and terminology, which are subject to different interpretations and definitions depending on the perspectives of different researchers. This was certainly evident when consolidating information from the range of projects included in this study. Each project had used these ideas and words in their own ways to suit their specific research objectives.

It is not within the remit of this report to discuss conceptual and definitional issues. Useful reviews of the literature dealing with some of these terms and concepts are included in Final Technical Reports (FTRs) for projects R7545 and R7805. The following sections define the terminology as used in this document.

### Principal determinants of livelihoods

The principal determinants of livelihoods are taken to be the *capabilities*, *processes* and *disturbances* that affect or structure peoples’ livelihood strategies.

In his exposition of the Sustainable Livelihood Framework (SLF), Scoones (1998:6) understands Sen’s definition of capabilities as ‘what people can do or be with their entitlements’, in other words the ability to act and actively use combinations of resources contained in the ‘assets pentagon’ (*i.e.*, natural, physical, financial, human and social capitals) to secure livelihood outcomes. What is being signalled by the concept of entitlement is not asset ownership *per se*, but the benefits (products and services) derived from those assets or endowments. The conceptual distinction between entitlements and capabilities is that whilst entitlements are what you actually obtain from what you own or from the resources to which you have access, capabilities refer to what you are able to do with what you obtain – that is, the capacity to use the benefits from resources in a particular way for a particular purpose. Leach *et al* (1997) demonstrate the distinctions with a neat example, where a cow is the asset or endowment, and the cash income, food (milk, meat, blood), and social value are the entitlements, with the capabilities being nutrition for the household, social status, and the ability to satisfy other household needs through the market. In practice the boundaries between endowments, entitlements and capabilities can become blurred. So, though not strictly correct, for reasons outlined in the following subsection the terms entitlements and capabilities are often used synonymously within this document.

Processes which affect livelihoods are encapsulated within the SLF Processes, Institutions and Policies (PIPs). They are the actions and transactions between individuals, between groups of people, and between people and the environment. Processes relate to the way things happen and the way things can change. Processes operate at different scales from the micro to the macro level. At each of these scales institutional and policy influences will be transacted in different degrees and forms, and mediate the transformation of asset endowments into entitlements and of entitlements into capabilities in different ways. ‘Processes’ as a term used in this report subsumes ‘institutions’ and ‘policies’, which are clearly involved in the structuring of action.

Livelihood disturbances are the shocks, trends and cycles of change present in dynamic social, political and natural systems, which operate at different spatial and temporal scales and impact asset endowments, entitlements, capabilities and PIPs.

### The ‘household’ and livelihood strategies

Livelihoods are the ways in which people generally make a living. Arguably the term mirrors the concept of a household reproduction strategy. Livelihoods involve a series of economic and non-economic activities, combinations of entitlements and assets, which together are aimed at ensuring the survival and wellbeing of household members. As Singh and Gilman suggest (1999: 540) this is achieved by employing different types of complementary or reinforcing strategies, such that;

*“livelihood systems consist of a complex and diverse set of economic, social, and physical strategies”.*

Livelihood strategies have been characterised and categorised in a number of different ways. Most of the projects reviewed chose to maintain a distinction between livelihood strategies more generally, and coping strategies as a particular livelihood ‘type’. Whilst the generic description of a livelihood strategy given above is allied to longer term decision perspectives and the broader aims and goals of household members, a ‘survival or coping strategy’ on the other hand, has been characterised by some as a short-term response to shock and stress, and is implemented in order to cope with the expected and unexpected hardships of everyday life.

The definition provided by Davies (1996: 35) is the most often quoted; she understands coping strategies as:

*“a short-term response to an immediate and habitual decline in access to food<sup>3</sup>”,*

therefore,

*“coping strategies are the bundle of producer responses to declining food availability and entitlements in abnormal seasons or years”.*

Davies (*op cit*) goes on to identify a further type of strategy, that of adaptation. To her this means:

*“a permanent change in the mix of ways in which food and other resources are acquired irrespective of the year in question”*

The distinction between coping and adapting is not always clear-cut, either theoretically or in practice. Both processes involve changing the mix of entitlements and assets used by the household in response to exogenous conditions, and both are concerned with risk mitigation and dealing with contingencies.

We might also say that a coping strategy may on the one hand allow people to tread water and ride through a difficult period, but for other people may induce structural livelihood changes which push them on and out of poverty. Adaptation may be intended as a manipulation of entitlement as means for households and individuals either to cope better or to move along a more positive livelihood trajectory. But for some the consequences of their adaptive choices may be unsuccessful and push them instead into poverty.

The projects reviewed distinguish between ‘coping strategies’ and ‘adaptation strategies’, although definitions vary. For some projects ‘poor’ is synonymous with ‘coping’ and only two projects identify ‘adaptation’ strategies applied by poor people. Conversely, for the projects reviewed ‘not being poor’ is taken as synonymous to ‘adaptation’. The assumption is that if households are classed as ‘better off’ they are doing more than ‘just coping’ and must therefore be ‘adapting’. The terminology used in this study distinguishes between decision pathways applied in response to:

- shorter term, immediate, or unexpected shocks and stress (*e.g.*, drought, or flood) in the case of ‘coping strategies’ – which might also be understood as *ex-post* risk management, and;
- longer term trends and cyclic stresses (*e.g.*, macro-economic trends, seasonality within normal ranges) in the case of ‘adaptation strategies’ – which might be understood as *ex-ante* risk mitigation.

Recognising that in making these distinctions we are entering into another theoretical *mêlée*, the stated formulation accords with Devereux (1999: 8) who argues that broadly speaking there are two ends to a continuum of livelihood strategies where:

*“accumulation and adaptation strategies are generally proactive and positive, while coping and survival strategies are reactive and defensive”.*

However, by introducing the idea of a continuum of livelihood strategies, Devereux also makes the important

<sup>3</sup> Davies’ focus on food security should not imply that it is only a decline in the access to food which prompts a change. Other factors may also be responsible.



point that coping, accumulating and adapting are not strategies necessarily carried out independently of one another:

*“Households everywhere survive by pursuing a mix of livelihood strategies that seek to increase their income flows and stocks of assets (‘accumulation strategies’), to spread risk through livelihood adjustments or income diversification (‘adaptive strategies’), to minimise the impacts of livelihood shocks (‘coping strategies’) and, in extremis, to prevent destitution and death (‘survival strategies’).”*

These are important points that are revisited later in this document. The difficulty exposed here is that whilst it might be difficult to maintain the distinctions between ‘coping’ and ‘adaptation’ strategies, the concepts are incorporated into the analytical framework used in the synthesis study because they structure the data and information contained within the project material provided. As the research teams had sought to answer questions about coping and accumulation (if not adaptation), it is hard for this study to manipulate or use the data in other ways.

A further difficulty in defining livelihoods, is the interconnected issue of understanding ‘the household’. Alongside occupational or livelihood groupings, the ‘household’ remained the basic unit of data collection and analysis in the majority of the projects reviewed. However, this unit remains a kind of ‘black box’, and the intra-household determinants of livelihood strategies have remained largely uncovered. The important point here is that whilst households are treated as a distinct unit, it is the individuals within the household who follow particular strategies, and it is the individuals who reach particular livelihood outcomes. Livelihood determinants may well be different for individual household members, and relationships between impacts and outcomes may vary according to individuals’ different goals and entitlements. What may also be forgotten is that the ‘black-box’ has a multilayered set of porous boundaries, individual household members maintain relationships with other individuals across the community, between communities, and between social groups, so that the livelihood dimensions of inter-household relationships may also need to be added to the analysis.

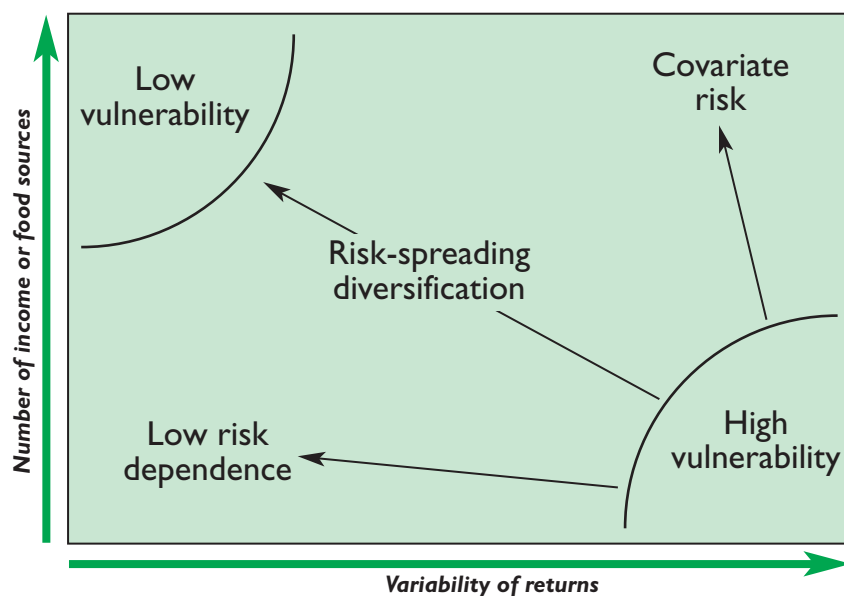
Knitting together these ideas about what constitutes differing livelihood strategies and the notion of household, it emerges that increasing understanding about decision making and risk management choices of individuals is likely to provide the most substantive evidence about the significant determinants of livelihoods for different people.

### **Livelihood security**

Livelihood security is understood as a household’s vulnerability to shocks and stresses. A useful review of vulnerability is included by Zimbabwe-based project [R7545](#) (Shepherd 2000), where a vulnerable livelihood is defined as one that is easily affected by shocks or stresses, and pushed to reducing its asset base to a position from which it becomes more difficult to accumulate again. Shepherd and the team also distinguish two dimensions of vulnerability: sensitivity, *i.e.*, the intensity with which a shock or stress is experienced; and resilience (adaptability or flexibility) which is explained as the ability to bounce back to a previous state or adapt to the changes. As Moser (1998), says;

*“Vulnerability is therefore closely linked to asset ownership . . . The means of resistance are the assets and entitlements that individuals, households, or communities can mobilise and manage in the face of hardship . . . The more assets people have, the less vulnerable they are, and the greater the erosion of people’s assets, the greater their insecurity”*

Diversity, variability and uncertainty or unpredictability are dimensions of vulnerability that households are trying to manage in their livelihood strategies. Devereux (1999) uses the diagram in [Figure 1](#) to illustrate how different strategies are associated with a change in vulnerability; whilst at one extreme, a single source of income and food with reliable and predictable returns (‘low risk dependence’) might exhibit the least risk and lowest degree of vulnerability; these options are rarely open to the poor. He says that the best option for



Source:  
Devereux (1999: 10)

**Figure 1: Livelihood vulnerability and risk diversification**

households is to move towards less vulnerable livelihoods using the path of ‘risk spreading diversification’ by diversifying into several non-correlated sources of income or food. However, if we return to the point about assets, poor households by definition have a low asset base, and if asset endowments are linked to the adaptability of a livelihood strategy, the poor are constrained in the degree of flexibility they have to spread risk and adjust their strategies in the face of changing circumstances.

It is also important to acknowledge that the same vulnerability factors will have differential impacts on different categories of people and different households. As Devereux observes (1999: 9):

*“Vulnerability is . . . determined partly by risk factors that are generic to groups of individuals or households who are linked either geographically or by some shared characteristic (joint ‘exposure’), and partly by risk factors that are specific to each individual or household”*

Although most of the projects covered by the study refer to household vulnerability, the sensitivity and resilience distinctions are generally not maintained. Livelihood security is expressed as food security or income security, and the implicit assumption is that to be vulnerable is to be poor (and vice versa since definitions of poverty are predicated on vulnerability). As most of the datasets are cross-sectional rather than longitudinal, the effects of livelihood shocks and the interplay with vulnerability factors are hard to discern.

### **Livelihood choices and opportunities**

By applying the word ‘strategy’ to the livelihoods terminology, there is an added sense that people are actively making choices about the form of their livelihoods, and that they are trying to follow particular decision pathways which might take households along one or another development direction. As soon as choices are considered as part of the livelihoods equation, a central focus of livelihoods research must be household/individual decision making as already concluded above. These decisions will be structured by aims and goals of household members, and will affect the way in which asset endowments and entitlements are manipulated. It is this question of choice that underscores the difference between entitlements and capabilities. Whilst entitlements are a function of endowments, capabilities encompass peoples aims and goals, their ‘objectives’ and the livelihood priorities they wish to realise.

Herein too lies a conundrum. Leach *et al* (1997: 17) are careful to point out that there is:

*“nothing inherent in a particular . . . good or service that makes it a priori either an endowment or an entitlement . . . the distinction between them depends on the empirical context and on time”.*

To follow through their previous example, the cow is the endowment and different sets of utilities are the entitlement – but the cow might itself be part of the entitlement set if access to the village commons is considered the endowment of interest. Coming back to the notion of capability and entitlement, one might argue that a similar blurring between the two concepts appears in practice. Even though theoretically the two terms describe different sides of the same coin, *i.e.*, ways in which livelihoods have the potential to satisfy household wellbeing, the fact that capabilities are so clearly linked to choice, and that the choices of some people are severely constrained by the social and natural environment they find themselves in, (because of their vulnerability resulting from lower asset and entitlement status, they are less flexible), what benefits they can effectively command from their entitlements becomes an expression of capability. Simply put – whilst *de jure* capability equates with potential, *de facto* capability equates to entitlement. This does not contradict, but reinforces, Sen’s (1999) original notion that people’s capabilities are often more than their entitlements (whether normative or positive) allow them. In short the point that is being pressed here is that from an empirical standpoint it is not easy to distinguish between capability and entitlement, and in some senses, not least with the passage of time, what is viewed from one perspective today as a capability may be tomorrow’s entitlement from another viewpoint, and vice versa.

The reason for labouring this point is simple; the identification of NR related management interventions to support the livelihoods of poor people is surely predicated on finding ways to increase opportunity and allow people to use their capabilities. This requires research effort and understanding that goes beyond quantitative descriptive pictures of what people are doing. It places a distinct emphasis on uncovering the influence of stochastic environmental systems and PIPs over situated actors. Whilst this may well be part of the ‘mission’ of the SLF and the sustainable livelihoods approach (SLA), the early experience of using these research approaches within the material considered by this synthesis study, demonstrates that there is still a gap to be overcome.

It is probably worth adding an additional perspective on the matter of choice and ‘strategy’. Richards (1993) puts forward a view that managing a farm and achieving good return for agricultural effort is less a set of determined choices tied to achieving a specific rationalised objective, than a set of sequential adjustments to unpredictable and changing circumstances – a set of reactive decisions. Agricultural production he suggests does not reflect farmer design (a pre-planned sequence of objectives and action). Rather it is a performance – the layout of crops in the field a completed performance – and “what has transpired in this performance, and why, can only be interpreted by reconstructing the sequence of events in time” (*ibid* 1993: 67). With Richards’ less deterministic model we can interpret choice as ‘performance’, an intimate and continuous mix of changes to environmental conditions and human responses to those changes, which combine with a continuously renegotiated social contract.

For the purposes of this report the following definitions apply:

- **Opportunities** are understood as the myriad ways in which people can adapt their livelihoods to improve livelihood outcomes. Opportunities are provided by the nature of the social, economic and environmental milieu in which households and individuals are located.
- **Choice** is understood as the decisions people make about what they want to do, and about the opportunities they wish to integrate into their livelihood strategies. However, the ability to realise these opportunities is constrained by the flexibility of livelihood strategies – a reflection of endowment and entitlement sets – but is also related to individual capabilities which may have just as much to do with individual creativity and

opportunistic acumen as with available labour markets or traditional sectoral activities (see Kunfaa 1999 for some remarks about the effects of personality and attitude as factors in poverty outcomes).

Using these definitions of opportunity and choice, the action of some poorer households in the peri-urban interface in India reported by **Project R7867** might be given a more nuanced interpretation than suggesting that they are forced (*i.e.*, constrained and without choice) into lower paid agricultural labouring jobs. In this dynamic social, economic and environmental system, many opportunities exist for building livelihood strategies. However, the nature of poor people's vulnerability means they are making choices based on trading-off the opportunity for higher wages in less secure labour markets (urban construction, for example) for lower paid but more reliable income streams (in agricultural labouring). Even if the degrees of freedom to action are constrained, people and households are still making choices about which opportunities to realise based on assessment of risk (and personal lifestyle preferences).

### **Analytical framework and conceptual diagram**

These different livelihoods dimensions and concepts are linked and organised through the development of a conceptual diagram, constructed after a preliminary analysis of selected project outputs. This diagram, shown in **Figure 2**, is designed specifically to maintain focus in answering the following research questions:

- What are the principal determinants that affect the security and choice of livelihood strategies of specific poor people?
- How do these determinants impact on livelihood opportunities under changing circumstances?

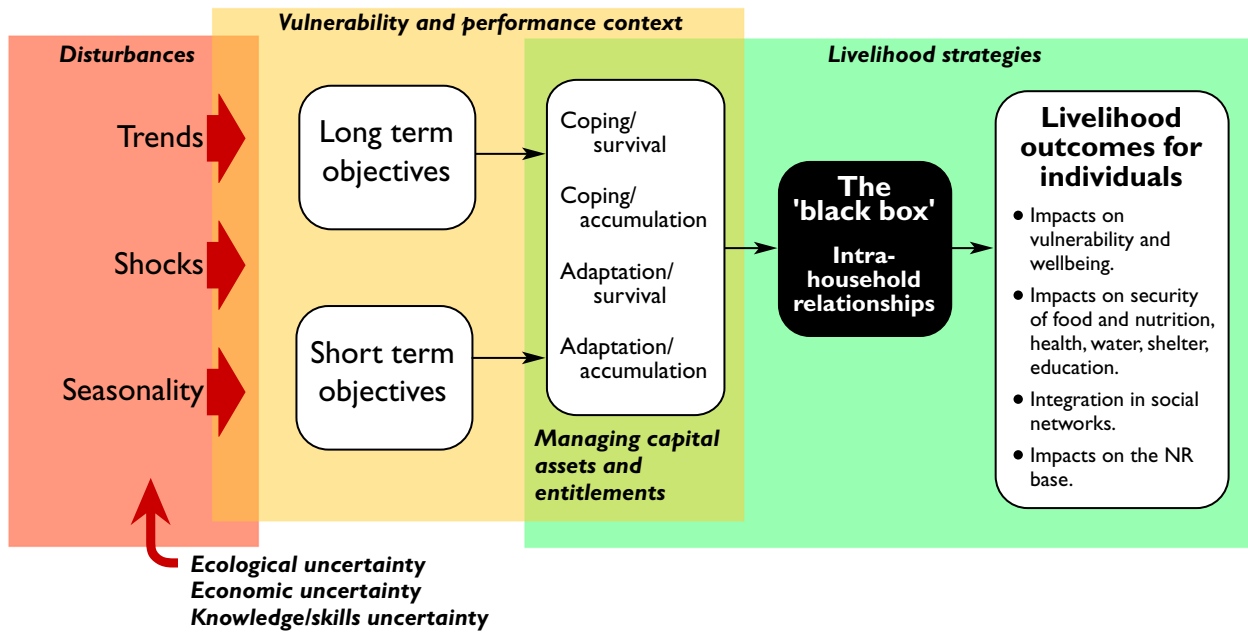
The diagram is essentially a reformulation of the DFID SLF, but is tailored to, and built around the definitions for the various livelihoods elements outlined in the previous subsections. The diagram is constructed using information and data from the reviewed material and is used as a tool to aid analysis of the large and varied set of project data. There are problems with this framework; some elements of the diagram are difficult to sustain. The diagram is not therefore intended as a conclusive output from the study. It is presented and explained here in the interests of reporting the synthesis study method (the boundaries and limitations), and for clearly showing the way in which conclusions presented in this report are arrived at.

To explain **Figure 2**, the left hand side of the diagram illustrates the nature of shocks and disturbances affecting households. Household responses to these are structured both by long term and short term goals, and the flow of decision making reacting to changes brought by disturbances and uncertainties. Uncertainties include ecological, economic and knowledge or skills uncertainties (see Mehta *et al.* 1999, for a definition).

Choices made by households and individuals as a consequence of these factors, are expressed in the way capital asset endowments and entitlements are managed. These may either mix or trade-off the short term and long term goals and aspirations of different household members.

The result is a notional set of livelihood strategies, which fall into four broad types:

- **Coping/survival** – households or individuals ‘tread water’ but there is no positive change in the trajectory of the household;
- **Coping/accumulation** – there is no fundamental qualitative change in what households or individuals do to ‘make a living’, but they do manage to accumulate assets and/or entitlements;
- **Adaptation/accumulation** – a fundamental qualitative change in what households do leads to the accumulation of assets.
- **Adaptation/survival** – there is a fundamental change in what households or individuals do, but there is no positive change in the trajectory of the household and they manage only to ‘tread water’.



**Figure 2: Conceptualising the key process-based determinants of poor people's livelihoods.**

The strategy response to changing circumstances is achieved by following one of four overall action and decision pathways:

- **Diversification** – which might be livelihood diversification (*e.g.* engaging in more than one kind of occupation) or agricultural diversification (*e.g.* changes in cropping patterns or farming systems);
- **Intensification** – intensifying agricultural and other NR-based activities, through capitalisation or through increased labour input;
- **Extensification** – accumulating land and turning it over to less intensive agricultural production such as using it as grazing for livestock;
- **Livelihood specialisation** – concentrating on one particular set of skills, occupation or use of assets and entitlements;

In constructing the numbered strategy 'couplets' above, survival and accumulation are NOT being treated as synonymous equivalents to coping and adaptation. The couplets are trying to acknowledge that both longer term and shorter term decisions involve changes to what households do to make a living, but according to whether these are ex-ante or ex-post risk management there is a qualitative difference in the nature of those adjustments. Drawing on Devereux (1999) once again:

*“while the distinction between categories implies a shift from one set of behaviours to [another] . . . often it implies an intensification of ‘normal’ behaviours”.*

What the couplets are also trying to convey is the sense that coping, the intensification of 'normal' behaviours, may, because of the variability, diversity and unpredictability of social and ecological systems result in a positive adaptive outcome. To cope does not preclude 'success'. Coping is not being treated as a decision set that is any less rational than those associated with adaptation. Whilst coping strategies may be more reactive, *i.e.*, less 'planned' strategies, we could agree with Richards' (1993) ideas that coping and adaptive behaviours will both involve a skilled and 'expert' manipulation of the social and environmental entitlements open to individuals and households. As he says:



*“outsiders may undervalue the capacity to keep going under difficulties, and to treat coping strategies as ‘muddling through’, not skilled achievements. But in truth . . . even to reproduce the status quo is oftentimes a brilliantly innovative achievement.” (op cit. 1993: 72).*

Going back to **Figure 2**, the right hand box indicates the livelihood outcomes resulting from the different livelihood strategies followed in response to the disturbances, uncertainties and management of assets and entitlements included in the ‘vulnerability context’ box. The livelihood outcomes apply to individuals rather than the household *per se*, and are understood as impacts across a range of livelihood attributes. The impacts may in themselves be either positive or negative, depending on the degree of vulnerability to which the household is exposed. Mediation of differential impacts takes place within the ‘black box’ of the household, which acts as a kind of ‘impact filter’. Most important here are intra-household relationships, but inter-household relationships may also have some effect.

The diagram is used to maintain a consistent focus in the qualitative analysis of research materials, and deal with the form and scope of the outputs under review. Difficulties with the framework have been instructive in drawing out issues concerning the critical application of the **SLF, points which are covered in Annex 2** of this Report.

Attention is given to finding information and evidence within the reviewed project material that provide insights into the dynamics which link the middle box (managing assets and entitlements), both to livelihood uncertainties (trends shocks and seasonality) in the left hand box, and to the livelihood outcomes shown in the right hand box. The assumption is that factors acting on the middle box and the nexus of decision making processes taking place at the overlap between the middle box and the ‘black box’ of the household, are the key to understanding livelihood choices which reflect the determinants acting on household and individual livelihood strategies.

## Data handling and analytical methods

Having outlined the basic concepts employed in this study and shown the way in which these are combined as an analytical tool, this section discusses the study method.

This section also aims to outline the limitations and bias inherent in the material reviewed. This is certainly not meant as a direct criticism of any of the projects. What is intended is to expose the reliability of the conclusions drawn by the synthesis, as well as provide a rationale to the way in which the analysis has been conducted.

### Comparability of data: validity and robustness of conclusions

**Table 2** provides a list of the 18 projects included in the synthesis study. The projects selected for inclusion from NRSP’s portfolio are those that undertook livelihood studies either as the central focus of a project or to establish a context for other research on natural resources management. Projects of these types are available in varying numbers for each of the production systems that NRSP covers. Although five projects (R6744, R6755, R6756, R7180 and R7304) were commissioned before DFID’s policy explicitly focused on poverty and the sustainable livelihoods approach, four contain detailed livelihoods studies and one contains some relevant information. The remaining projects were commissioned from April 1999 onwards when NRSP’s overall objective, in line with DFID’s policy, focused on the generation of new knowledge relevant to the improvement of livelihoods of the poor. However, the extent of explicit focus on description and analysis of livelihoods is variable. Column 4 of **Table 2** provides an assessment of this variability.

The task of drawing generic conclusions from the different research projects is fraught with methodological problems. First, the synthesis study covers materials from projects working in a heterogeneous set of countries, ranging from small island economies to densely populated nations such as India. Secondly, individual

projects employ different analytical approaches and research methodologies, cover different time-periods, and produced datasets of varying quality.

For example, some of the projects provide a clearly articulated theoretical framework based on literature reviews in which to set their data collection and analysis, whereas others are more applied and practical in their approach. Some apply a livelihoods focus based on the SLF (or the evolution of the SLF) and others do not. There are significant differences in the way the poor are identified and characterised and how these categorisations are applied in the interrogation of data and subsequent analyses. Most data collection periods produce datasets which are cross-sectional rather than longitudinal, and this does not allow for research that tracked responses to shocks. And finally, there is very little acknowledgement of the household dynamics structuring livelihood outcomes, which result in broad impressions of community level patterns of occupational groups, income sources and expenditure patterns, at the expense of understanding the decision making processes driving these outcomes.

Searching for empirical regularity amongst this diversity is not only concerned with interpreting the narrative of projects' texts, it also necessitates the identification of types of data and information common to sets of projects, both within a production system and across production systems. In addition, it is important to find information and data that can be interrogated against the conceptual analytical diagram, most particularly in a way that can shed light on why households accumulate (*i.e.*, find ways out of poverty) and why others are 'surviving' (*i.e.*, caught in poverty). It is felt that this kind of information will be most useful in identifying ways in which NR-based livelihoods of poor people can be supported.

Therefore, common sets of data and the features of information which became the particular focus of the synthesis study are:

- Households as the unit of analysis used to uncover community patterns;
- Wealth ranks as the means of disaggregating differences between different people;
- Lists or descriptions of activities and income sources as a measure of livelihood diversity and risk management;
- The importance of agriculture, fishing and CPR utilisation to different people, as a measure of who is relying most on NR-based livelihoods;
- Descriptions of coping mechanisms as the means to illustrate livelihood impacts of severe shocks and disturbances;
- Problems and constraints data as a proxy for the livelihood effects of PIPs and market frictions.

The way in which these data are handled and the problems encountered are outlined in the following sections.

Household decision making processes are not an explicit research topic for the majority of projects<sup>4</sup>, which means that the linkages between the boxes included in [Figure 2](#) and between elements described in the list above, are not necessarily explicitly articulated. In short, the determinants and factors structuring exactly how and why households are doing what they are doing, the relative importance of the NR component of livelihoods, and the effects of what they are doing on livelihood security and accumulation strategies, is not easy to discern. During the course of discussions with research teams, some project researchers were subsequently able to expand on these questions, but others were only able to acknowledge that there are gaps in understanding.

Treating the substantial body of project material in this way, has naturally led to sacrificing context specific detail for a broader outlook. Drawing conclusions from locally specific datasets up to the generic level is always fraught with difficulties. This report accepts the limitations of presenting livelihood patterns at the very coarse scale employed.

Table 2: Selected projects

No.	Title	Project Status	Explicit livelihood focus?	Beneficiary focus
<b>Forest/agriculture interface</b>				
R7446	Shortened bush fallow rotations – Ghana	ongoing	*	Small-scale farmers
R7516	Bridging knowledge gaps between soils research and dissemination, Ghana	Ended July '01	**	Food insecure rural people
<b>High potential production system</b>				
R7180	Options for the use of power tillers and draught animals in Bangladesh	Ended May '01	***	Unclear
R7962	Linking soil fertility and improved cropping strategies to development interventions, Kenya	ongoing	*	Small-scale poorer farmers
<b>Hillsides production system</b>				
R7412	Incorporation of local knowledge into soil and water management interventions minimising nutrient losses in the Middle Hills, Nepal	ongoing		Unclear
<b>Land water interface</b>				
R6744	Methodological research into the incorporation of indigenous knowledge into natural resources research on Bangladesh floodplain production systems	Ended Nov '99	*	'The poor', planners, regional groups
R6755	Sustainable local water resource management in Bangladesh - Meeting needs and resolving conflicts	Ended Jan '00	*****	Small-scale fishers and farmers on the floodplain
R6756	Investigation of Livelihood Strategies and Resource Use Patterns in Floodplain Production Systems in Bangladesh	Ended Nov '99	*****	Small-scale marginal and landless farmers and fishers
R7797	Opportunities and constraints for coastal livelihoods in the Caribbean	Ended July '01	**	Planners, regional groups and coastal communities
R7868	Maximisation of joint benefits from multiple resource use in Bangladeshi floodplains	ongoing	****	Small-scale marginal and landless farmers and fishers
<b>Peri-urban production system</b>				
R7867	Filling gaps in knowledge about the peri-urban interface around Hubli–Dharwad	Ended Mar' 02	*****	'the poor', planners, regional groups
R7854	Further knowledge of livelihoods affected by urban transition, Kumasi, Ghana	Ended Oct '01	*****	'the poor', planners, regional groups
<b>Semi-arid production system</b>				
R7304	Micro-catchment management and common property resources in Zimbabwe	Ended Nov '01	***	Small-scale and marginal farmers
R7545	Coping strategies of poor households in semi-arid Zimbabwe	Ended Oct '01	***	Small-scale and marginal farmers
R7558	Understanding household coping strategies in semi-Arid India	Ended May '01	**	Small-scale marginal and landless farmers
R7805	Understanding household coping strategies in semi-arid Tanzania	Ended Oct '01	**	Not defined
R7806	Human and social capital's role in NR management in Tanzania	Ended Sep '01		Not defined
R7857	Review of common pool resource management in Tanzania	Ended July '01		Not defined

### **Households as units of analysis: individual and gendered livelihood outcomes**

All of the projects use households as the basic unit of analysis. However, only one project defines what a household is, and indicates how the data collected represents the household as a group of individuals. If, as has been argued, livelihood outcomes apply to individuals rather than households, the most important implication of this is that vital livelihood determinants for some subsets of the poor are not being exposed.

A household is a complex set of relationships involving different economic, social, cultural and political networks and entitlements, accessed by different family or household members. The way in which these are employed to generate household 'well-being' or to secure household reproduction, depends on how resources are used and shared amongst household members. Unitary models of the household which consider an equitable division of function and resources surrounding 'altruistic' individuals working for the greater good of the household unit, should be replaced by more nuanced models which see the household as a set of relationships based on conflict and collective bargaining. In a recent review, Whitehead and Kabeer (2001), point out these more conflictual models have been developed in response to empirical evidence that household income, food and capabilities are not shared on the basis of need, and that there are demonstrable intra-household differences in well being and poverty. The way in which poverty, vulnerability and the formulation of coping strategies may apply differentially to individuals in the household often has a strong gender dimension.

PUI project R7867 in India, for example, collected data that suggests a number of upper middle income households overextended themselves in the form of a significant debt burden because of investment in agricultural ventures, or as a result of maintaining their social standing in the community. The outcome is that these households have become just as vulnerable as poorer members of society, but because social norms for higher status households dictate that women stay within the compound, female members of the household are unable to go out and work and earn income, and as a result are suffering poverty within the confines of the family home (K. Hillyer, *pers. comm.* 2001).

Whitehead and Kabeer (2001), go on to assert that applying a livelihoods focus to intra-household relationships, demands an understanding of household dynamics based not only on conflictual bargaining, but also on joint decision making such that "*the household emerges for both men and women as a complex and shifting arena of separations and interdependencies*" (*op cit* p.10); what emerges is a more dynamic and complex decision making arena than is suggested by other models. They go on to demonstrate that these separations and interdependencies exist across household boundaries so that collections of households may be operating together as a single unit, perhaps within a compound or an extended kinship system. Attention is drawn to this because it has important implications when trying to identify the determinants of livelihood strategies. In some contexts, these are unlikely to be uncovered unless inter-household relationships are given adequate consideration.

None of the projects included in the synthesis presented disaggregate household data, apart from the Ghana soils research (R7516) which characterises land use patterns for women, but did not collect detailed contextual information about intra-household dynamics. The Ghana PUI project (R7854) interrogates and presents data by gender and age, but this is not tied to income or wealth or other categorisations of households, so results are presented on a fairly coarse scale; Project R6756 (Bangladesh) acknowledges near the end of the project cycle that women have a role in the fisheries and NR sectors that had not been fully realised at the start of the research. The project includes women as groups of stakeholders in workshops and problem census exercises, but it did not collect detailed contextual information about intra-household dynamics, a limitation that is acknowledged (Barr and Haylor 2001).

<sup>4</sup> Three projects did ask research subjects about household livelihood objectives, and a number produced matrices of livelihood constraints during participatory rural appraisal (PRA) exercises or as part of problem analyses.

Partly a function of the cross-sectional nature of the data, the concept of the ‘household development cycle’ is rarely referred to within the projects. Households pass through a cycle of transition from an early stage when the household is poor in resources, and typically has a high dependency ratio (the number of members consuming resources relative to those producing them), through to an established household that has accumulated assets and has a more dynamic dependency ratio.

One way of transforming household data to take some account of these issues, and to compare different kinds of households from the same base, is to analyse differences in household welfare by applying an economic equivalence scale or coefficient, such as ‘adult equivalent units’ in the case of adjustments based on income measures. Two projects employ this approach, namely R7545 (Zimbabwe) and R7304 (Zimbabwe).

How these changes over time and by household type are dealt with has implications for this study, because different stages through the household cycle may mask how coping and adaptation strategies are being played out. Evidence from project R6755 in Bangladesh, for example, suggests that some poorer households appear outwardly to be only coping and surviving, but using measures sensitive to cyclic differences are actually accumulating resources and adopting adaptation strategies.

There are resonances here too, with ideas of chronic and transitory poverty; households may not necessarily be poor throughout their life cycles. The dimensions of poverty are dynamic and main determinants may be at work at different points through the household cycle.

### Characterising and defining different people

Particular attention has been given to the ways in which poor people are characterised and defined. Projects use two approaches to disaggregate communities. The first is wealth ranking, and the second is classification by occupation.

Wealth ranking methods employed by projects fall into the following categories:

- Categorisations based on **community or informant perceptions** and criteria, e.g., R7962 (Kenya) employ wealth ranking on mixed asset, status and land management categories, and R7854 (Ghana) uses farmer-based perceptions which mix occupation, social status, asset and landholding variables (see Jeffries *et al.* no date);
- Categorisations using **other researcher applied criteria** e.g., R7797 apply a wealth score derived from inventories of household assets, and R6756 uses categories based on landholding size and land ownership;
- **Ex-post quintile/quartile methods** e.g., R7805 divides by wealth quartiles based on household assets; R7304 uses quintiles based on income levels;
- **No formal classification** where assumptions are made based on other household characteristics e.g., R7516/7446 which uses age, gender and ethnicity as proxy indicators of wealth.

The problem in using income for *ex-ante* and *ex-post* characterisations of wealth or wellbeing, is that other wider aspects of wealth and poverty are missed. In addition, if income is given a narrow definition to include only cash earnings, then entitlements derived from subsistence activities are missed (e.g., household consumption from subsistence farming or collection of goods from CPRs).

Furthermore, with regard to wealth classifications based on occupation, it cannot be assumed that all members of a wealth grouping are following the same livelihood strategies. Whilst there may be group exposure to changing circumstances, responses to change will be individual. Consequently within groupings there are still likely to be differentials in wealth and wellbeing levels, and differences in the strategies being followed.

Projects R7304 in Zimbabwe, and R6756 in Bangladesh use co-variant analysis based on wealth category and occupational grouping values, to produce interesting and robust insights into livelihood determinants.



For the purposes of this study different sets of people have been classified very broadly as **rich**, **middle income** and **poor** using a subjective assessment derived from a broad interpretation of the projects' own classifications. This broad grouping takes no account of the differences between the circumstances of the poor in a particular setting and/or location. No attempt has been made to reconcile and develop a robust characterisation of groups of people which takes into account the details of all the different ranking and grouping systems employed by the projects. The wealth groupings used in this study can be considered as mainly asset-based (income as well as physical capital and household assets), since other dimensions of poverty are not included by the projects considered.

Although the terms of reference for this study require a consideration of the livelihoods of the poor, the three broad classifications are considered in turn because:

- as indicated above, the boundaries between poor and middle income people are hard to discern – either within project data or between project datasets. Thus, it can be that middle income people are sometimes 'the poor' or 'the transitory poor'. Accordingly, it is considered important to include analysis of middle income people in case this captures some sense of poor people's livelihoods too;
- livelihood strategies of middle income people frequently stand as the models that poor people aspire to apply. Thus middle income strategies provide interesting insights into adaptations that determine pathways out of poverty;
- in reviewing the NRSP project data it became clear that there are strong relationships between different people such that you cannot consider the poor in isolation from either the rich or middle income people. This degree of interdependency is important in determining NR management strategies and livelihood outcomes.

### **Indicators of security and choice of livelihood: diversity, activity and income**

The concept of diversification is employed by all the projects considered, bar one; however, a clear exposition of the theoretical and analytical aspects of the term is not always present. This leads to some confusion when unravelling differences between livelihood diversification – looking at strategies that include a broad activity portfolio across sectors (a number of 'new' or varied economic activities) and agricultural diversification which refers to changes in cropping patterns, farming systems, or enterprises *e.g.*, cattle for dairy as well as draught.

Assets, activities and income are complementary measures of diversification behaviours (Barrett, Reardon and Webb 2001), where:

- **Activity lists** – what people are doing;
- **Income segmentation** – illustrates the benefits secured from those activities;
- **Assets** – the choice made over what to do with those benefits, to which there may be some strategic element.

In general, this set of values accords with the endowments, entitlements and capabilities scheme where activities are a function of endowments, income (defined in the widest sense) becomes entitlement, and assets become a hybrid entitlements/capabilities set that structure the nature of the endowments on which activities are built.

Most of the projects present data about diversification of activities. A smaller number of projects include information and data about income segmentation.

Activity data is generally presented as lists of the different kinds of things a household does, disaggregated by wealth class. Measures applied to the lists vary from 'counts of the number of times mentioned' to sample

percentages engaged in particular activities, to counts of the number of secondary or additional ‘jobs’ households had in addition to primary occupations. However, activity lists still mask the different strategies employed by different people; the activity profile for a wealth category may not show co-occurrence with that for household occupation/stakeholder type (see for example project [R7304](#) in Zimbabwe, and [R6756](#) in Bangladesh). Without a temporal component it is difficult to untangle whether livelihoods have always been diverse, or whether they are becoming more or less diverse in response to changing circumstances. The dynamics of livelihood change and directions of causality are not clear. In addition activity lists give little indication of the relative contribution or importance of the NR base to livelihoods. Producing charts that show how many people within a community engage in specific economic activities, or what a diversity index score might be for a wealth category does little to indicate how reliant households are on particular sets of resources. It is dangerous to suggest that a higher diversity score *ipso facto* points to the fact that households are following adaptive strategies with accumulative and positive livelihood outcomes.

Better information about the degree of reliance on, and the importance of, the NR base, comes from more detailed quantitative studies of household income flows, as undertaken by projects [R7304](#), [R7545](#) (both in Zimbabwe), to some degree by [R7805](#), [R7806](#) (both in Tanzania), and set within the database and background work structuring [R7180](#) (Bangladesh). The data showing the relative proportion of household income derived from different activities is also disaggregated by either wealth class or occupational grouping. The display of income portfolios, *i.e.*, the composition of total income from various sources, provides a clearer picture of the importance of various income sources to sections of the community. But neither mean values nor variations about a mean help to infer either the strategies being followed, or the variations needed for analysing differences between coarse groupings. As mentioned above, concentrating research analysis on examining sources of cash income may miss wider entitlements, such as the value of subsistence or own production or of collected commons goods and services captured by households. This gives an incomplete picture of the vulnerability and risk factors affecting household decision making.

Whilst income and household budget data goes some way in answering questions about the important determinants of livelihoods, it does not provide the qualitative and nuanced information required to unpick the mechanisms, to provide reasons for behavioural patterns, or to show how these determinants impact on livelihood opportunities under changing circumstances.

Such questions require a temporal dimension to be incorporated into data collection methods and analytical frameworks (a factor already mentioned above as being important to understanding ‘diversity’ data). Notwithstanding the difficulty of collecting time series or time sensitive data in research projects that have short time horizons and limited resources, time and temporal variation over spatial axes are fundamental to an understanding of vulnerability, choice, diversity and livelihood impacts. It is also essential when considering ‘best bet’ activities to enhance NR-related management opportunities in support of poor people’s livelihoods. For example, it was by observing environmental change in response to climatic shock over the lifetime of the project, that Project [R6755](#) in Bangladesh, was able to better understand the vulnerability surrounding poor people and make some critical modifications to the form and function of interventions it had identified. In Kenya, Project [R7962](#) is situated in an area where more farmers are producing higher value crops such as bananas, tomatoes and vegetables. Farmers there are already aware of the temporal dimension of livelihood security if marketing patterns for these products do not change to accommodate increased product supply. Farmers are calling for project interventions designed to meet present needs as well as to accommodate future trends.

Another definitional difficulty is the meaning project teams give to the terms ‘on-farm’ and ‘off-farm’. This is an important issue since non-farm activities might be NR-based, might involve agricultural activities carried out on another person’s farm, or might include non-agricultural and non-NR based activities such as commercial labouring.

The research questions set within the terms of reference for this study require an appreciation of how the NR base is important to livelihoods. So within this study three broad bands of activity type are used to reorganise activity and income data, in an effort to uncover the relative importance of the NR base to different people. These activity bands are also useful in tracking patterns of relationships and interdependencies between the different people.

The groupings are:

- **Agricultural:** includes livestock and pastoralist enterprises, and both on-farm and off-farm agricultural activities.
- **Non-agricultural NR-based:** includes the collection of products or income streams derived from activities with a clear NR component *e.g.*, use of CPRs for grazing or the collection of wildfoods, brick making, sand winning and stone quarrying, and artisanal activities such as clay pot turning.
- **Non-NR based:** includes all other activities conducted on- or off-farm such as knitting, remittances, petty trading, and waged income that was not based on agricultural activity *e.g.*, construction labouring.

In the case of the LWI the agricultural category became agricultural and/or fisheries.

### **What is an NR-based livelihood? The relative importance of NR and Non-NR components**

Projects undertaken as part of the NRSP programme naturally focus on understanding the NR-based components of livelihoods. However, application of the SLF encourages a broader examination of other factors, and other types of capital. These might normally be considered outside the remit of a natural resource programme. Project **R7962** in Kenya is a good example. In this project links are made between the provision of micro-credit and soil fertility improvements.

An NR-based sectoral and disciplinary perspective tends to colour the way in which research is designed and interpreted, such that projects may find what they seek when ‘discovering’ the contribution of NR to livelihood strategies. It might be that the determinants of livelihoods fundamental to supporting the management of resources by poor people are beyond the natural resource sector (*e.g.*, human health). These variables may neither be exposed nor accepted as pivotal to livelihoods in any production system, unless livelihoods analysis is applied with some rigour.

The SLF begs the question ‘What is an NR-based livelihood?’, when the framework so clearly suggests that a livelihood is composed of many sorts of capital asset and endowments. Amongst the diverse asset and activity or income portfolios the SLF helps us to construct, we need to focus on determining which part of that portfolio is doing what to mediate vulnerability and determine livelihood choices, and at what particular points. Unless there is a way to do this, it is not possible to understand the relative importance of NR livelihood components as opposed to non-NR based components, or to judge what interventions can be made in support of NR-based livelihoods.

Within the project material it has proved very difficult to judge the relative importance of different livelihoods determinants, either within or across households, or within or across different groups of the poor. Partly a function of the definitional issues discussed in the previous section, this is an issue not well addressed within the research material.

The implication of this is best illustrated by an example. If datasets record that the majority of ‘the poor’ engage in the sale of their labour, and at the same time the majority are shown to have limited access to land, it would be tempting to assume that it is the labour income component of their livelihood activities (access to labour markets) which is the principal livelihood determinant. However, it may be that this limited access to land and the production of subsistence food for the household actually has the greatest impact on buffering stress and shocks and maintaining livelihood resilience; and it may be this access to land which determines livelihood pathways into coping\surviving or coping\accumulating strategies far more than the income from

labour. Even though at the outset the poor in this notional example, might be thought to be following ‘income-based’ non-NR based livelihoods, it could be argued that their livelihoods are NR-based since access to land acts as the bedrock and fundamentally important determining factor of livelihood outcomes. This links to some of the methodological and definitional issues mentioned above concerning what activity lists and income measures actually show us, and how they provide useful new knowledge.

### *Division by production system: boundaries and PIPs*

There are problems in maintaining the boundaries between production systems, and overlaps between systems are common. For example, the FAI projects R7446 and R7516 (both in Ghana) include some of the same research areas and participants included in the PUI projects in Kumasi. There is also an imperfect division between the SA and the PUI: data from project R7545 in Zimbabwe, and R7806 in Tanzania researched communities located close to urban centres. There are system overlaps too between the LWI and HP areas in Bangladesh, whilst the FAI areas in Ghana might have also been characterised as HP zones and be expected to share characteristics with the HP areas of Kenya.

Household livelihood strategies may cross system boundaries. Household members may work and contribute from a base in one system to household members based in another. It is hard to categorise a household that maintains a significant presence in a peri-urban area in pursuit of cash income, as well as an agricultural base in a rural area, as being part of either the PUI or as part of say the FAI as was the case in the Ghana projects. This is precisely the kind of research outcome inherent in using the SLF, which pushes researchers to consider livelihood dynamics outside of system boundaries, and reveals the temporal and spatial relationships between different sectors and locales. Production systems need to be understood within such a wider environmental and economic context.

An approach to the study considered as a way of overcoming the imperfections of system boundaries, was to examine livelihood determinants from a country perspective. However, there are limitations in adopting this approach too, not least the loss of a specific environmental or NR dynamic to the analysis. There is considerable value in looking for differences across countries within the same production systems, because it is the analysis of difference that gives strong clues to the real determinants of livelihoods. This necessitates a clear understanding and analytical application of the PIPs that structure livelihoods within different countries, and this is one area of research that is not always clearly articulated. Even though projects may provide a cameo description of the policy and institutional context, the impacts on livelihoods and the application of this knowledge to the micro-level clearly present difficulties.

In the PUI for example, similar processes of change acting on livelihoods are evident between Ghana and India, but livelihood outcomes are quite different. Understanding these differences requires further application of PIPs perspectives to untangle the dynamics at work. In the SA there is far greater coincidence in the general PIPs context between African examples, although very different livelihood strategies are being followed. The evidence from India reported by R7558 gives the clearest indication of the effect of PIPs at the local level where there is evidence to suggest that pro-poor policies are having a significant impact on livelihood strategies and outcomes.

With regard to the robustness of the conclusions drawn about each production system within this study, it is also important to note the uneven distribution of projects. The number of representatives in the PUI, HP, FAI, and HS is particularly low. Whilst only three projects are included in the PUI, the Hubli-Dharwad and Kumasi projects rest on a significant body of previous NRSP/DFID project research, stretching back a number of years. Likewise, the HP may only have two projects, but the project in Kenya has been developed in response to a significant dataset and research findings from previous internationally funded projects.

## SECTION TWO

# Livelihood determinants in different production systems

A detailed examination of the livelihood determinants of poor people in each of NRSP's production systems is given in [Annex 1](#). This section presents a summary of that material and draws generic conclusions in answer to the following questions.

- What are the principal determinants of livelihoods?
- How do these determinants affect livelihood opportunities under changing circumstances?
- What is the relative contribution of NR to these determinants?

The project data does not provide ready answers to these questions. As explained in Section 1, most of the reviewed project research is [cross-sectional rather than longitudinal](#), so that the 'snapshots' provided by project datasets restrict analysis of change and of responses to change. This is perhaps most significant in the [PUI projects](#), where change and speed of change are noticeable features of the system. There are also significant problems in assessing the relative contribution of NR to livelihood determinants. The lack of categorisation, quantification and assessment of impact of the various components of livelihood strategies makes it impossible to evaluate how far the NR component of people's livelihood strategies either structures the capacity of the poor to act and respond to change or contributes to livelihood outcomes.

### Constructing a generic production system picture

Diversity between and within the production systems considered for the study, as well as the diversity between and within countries and regions, exposes a diverse and complex range of factors structuring the strategies and opportunities which impact poor people's livelihoods. These factors include both process- and capital-based components. In synthesising the project material a number of NR-related processes and capitals emerge that are of vital importance to various poor people regardless of which production system they are situated in. These are the re-occurring themes and issues captured within project data. Although the detail concerning how poor people access and manipulate these processes and capitals remains specific to locale, and the degree of impact (*i.e.*, the relative contribution and importance) the various components have on the poor varies, by and large the significant determinants have been identified.

It is important to recognise that the determinants outlined here, while they may be important to structuring the livelihoods of poor people at the moment, are not necessarily those that may continue into the future. The conclusions drawn here reflect the situation as it is, not the situation as it may be. This is probably most particularly true in the case of the [PUI](#) where a number of the NR management considerations will almost certainly not be sustained in the future if processes associated with urbanisation continue to spread peri-urban locations. It may well be that for NR managers looking at improved strategies, there is a need to consider manipulation of determinants through the process of transition in ways which facilitate shifts to livelihood dependence contingent on non-NR based strategies.

In each of the production systems the following capital-based components of livelihoods appear to structure the livelihood strategies of poor people.

#### Natural capital

- Access and management of CPRs, both bounded (*e.g.*, forest land or grazing areas) and non-bounded (*e.g.*, water or migrating animals such as fish).
- Access to (rather than just ownership of) land and the capacity to manage that land productively.



### Financial capital

- Access to credit and loans in the right form at an appropriate time and at the right interest rate.

### Human capital

- The ability to accumulate, hold onto and use stores of value (which might be tangible assets such as land or cash, as well as intangible assets such as knowledge and skills).
- The capability to take advantage of opportunities to labour<sup>5</sup> in non-agricultural work.
- The capacity to undertake agricultural labour.

Figure 3 illustrates the important NR-related livelihoods determinants to have emerged from the findings of this synthesis study, in the form of a stylised diagram.

These capital assets can exist in a number of different forms at different times. They might be productive investments, liquid stores (endowments), or intangible claims (entitlements). The form in which they exist or are used will have a determining influence on, as well as be influenced by, the livelihood strategy of poor individuals and households. The importance of each asset component and asset form in determining livelihood strategies and outcomes will depend on context specific conditions and on the relationships between the different assets. Access to and use of one type of asset and asset form may determine access to and the capacity to use another kind of asset.

As Figure 3 indicates there are strong relationships and interdependencies between natural capital assets, stores of value and access to credit. Stores of value often exist as natural capital, *i.e.*, land and resources that have multiple functions and multiple benefit streams but are also held as a form of ‘savings’ that can be transformed into financial and economic goods at a later date (it is interesting to note that this includes soil fertility and education/knowledge as well as the more tangible assets). There is a relationship between stores of value and access to credit and loans, because access to credit is often reliant on title to land as well as to the social networks based around resource use and family land holding.

The interaction between stores of value and access to credit in times of livelihood stress and during the construction of adaptive responses acts as the buffer to livelihood shocks and prevents asset drawdown. The minimisation of asset drawdown has subsequent impacts on mediating livelihood sensitivity and resilience.

Also emerging as a common crucial determinant is the sale and supply of labour. This may either be on-farm labour, or off-farm non-agricultural labour which may or may not be NR-based and includes activities such as trading *e.g.*, hawking or marketing, the provision of services *e.g.*, prostitution or water carrying, and casual labour *e.g.*, in construction or food processing or brick making. On-farm labour mediates access to land and may also provide contingent access to CPRs (*e.g.*, grazing stover on private land). Non-agricultural labour may be employed in realising CPR related entitlements such as the labour used, for example, in gleaning, or collecting artisanal/craft materials. There are relationships between the two types of labouring as individuals and households make decisions about time allocation between them. The financial capital flows accruing from labour will depend on the way households tradeoff the levels of return from particular activities against the reliability and regularity of those income sources. Also relevant will be other social and human aspects, *e.g.*, social status, drudgery, health effects, and the compatibility and synergy between activities and household/individual demands on labour.

<sup>5</sup> The term labour rather than employment is used in this report. For the purposes of this report, employment is regarded as the sale of labour for cash income, and the more general productive use of time – labour – may accrue income, goods and services and may also be used for its own production/benefit as well as being sold or lent to help others secure benefits.

Different kinds of labouring activities may be undertaken to provide investment capital used to build enterprises reliant on the NR base. In India and in land-based livelihood activities in Bangladesh households are diversifying into lower value labouring activities with fewer entry constraints, but the income is used as investment capital needed to overcome barriers to high value enterprises such as dairying, land purchase or leasing, or capitalising agricultural production (e.g., for the poorest people this often meant the purchase of fertiliser or agricultural implements).

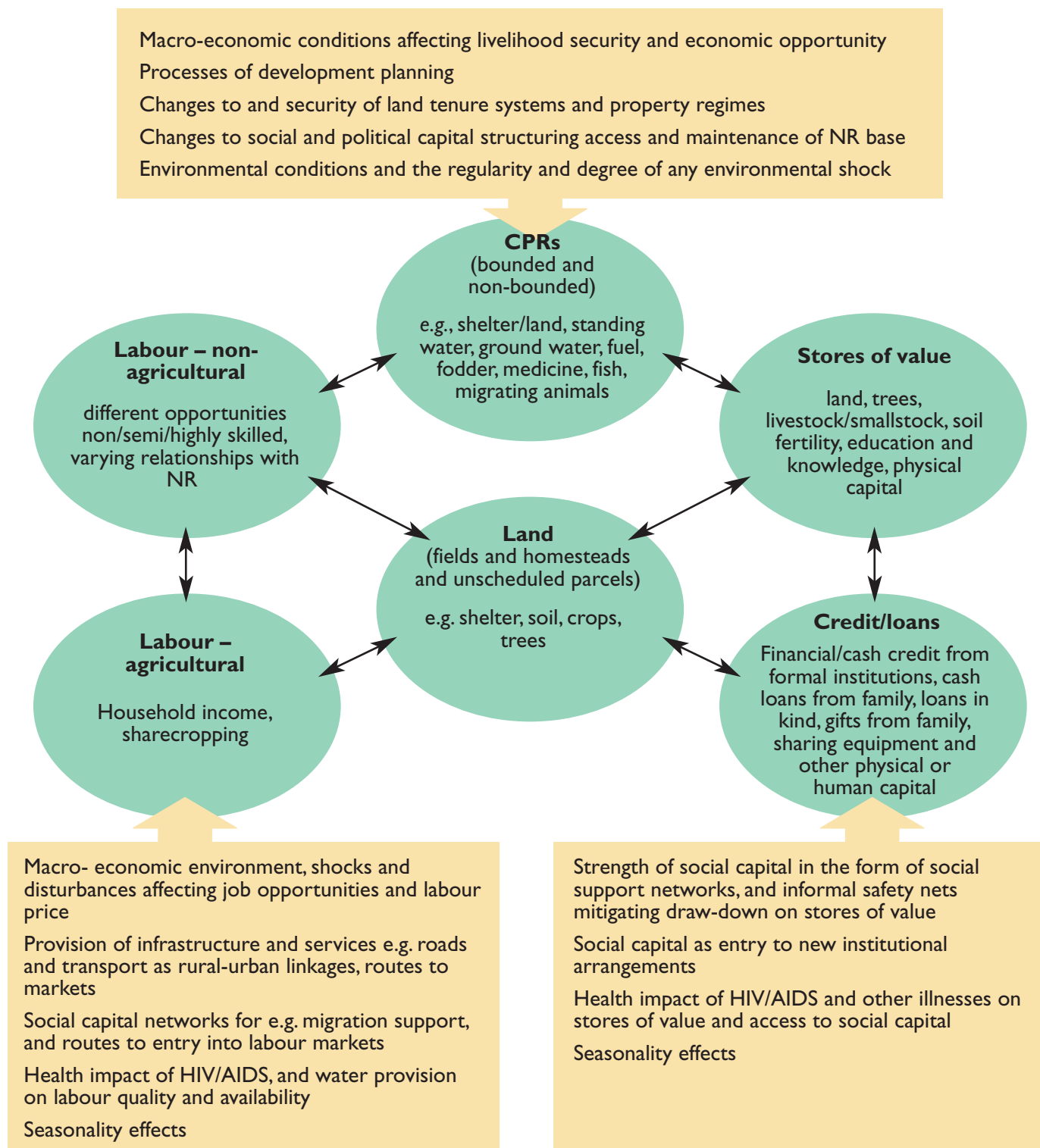


Figure 3. Conceptualising principal NR-based capital and process determinants of livelihood strategies

Another common thread through the projects is the determining influence of the ability to labour (or the need to sell labour) for income immediately after any livelihood shock. The provision of an income stream, rather than relying on loans or gifts as a way of coping, is shown to be more likely to prevent asset drawdown and to bolster livelihood resilience.

The importance of the different capital-based components of livelihoods varies with the production system under consideration. Table 3 summarises the way in which these are important over the 5 production systems considered.

**Table 3. Summary of NR-related capital-based determinants of poor and middle livelihoods across 5 production systems**

<b>Non-agricultural labour</b>	
<b>FAI</b>	Rural to urban migration particularly by younger men otherwise opportunities limited.
<b>HP</b>	Opportunities exist close to towns, some middle income people engaging in processing, some in agricultural product trading.
<b>LWI coastal</b>	Few opportunities in tourism, marginalisation of ancillary jobs in Jamaica. Rural to urban migration.
<b>LWI floodplain</b>	Strong seasonal effects for all – wet season opportunities constrained by competing interests between income groups, and structured by knowledge and capital asset base.
<b>PUI</b>	Important opportunities exist for poor people who generally engage in low wage labour, middle income people in better paid work. Non-ag. labour competes with agricultural labour. Ability to capture opportunities structured by knowledge and capital asset base.
<b>SA</b>	Few opportunities reported, barriers to poor and middle income people through rural power structures. Migration undertaken for longer periods – cash remittances important for all but declining with changing macro-economic conditions Some poor engaging in artisanal activities using NR resources
<b>Agricultural labour</b>	
<b>FAI</b>	Supply issue for middle income and richer people leading to household productivity issue for poor as labour diverted from own farms.
<b>HP</b>	Supply issue for middle income and richer people leading to household productivity issue for poor as labour diverted from own farms.
<b>LWI coastal</b>	No data in selected projects.
<b>LWI floodplain</b>	Strong seasonal effects for all – wet season opportunities constrained and subject to competing interests between income groups opportunities structured by social capital.
<b>PUI</b>	Supply issue for middle income and richer people. Seasonality issue for poor – competes with non-ag labour for regularity and price.
<b>SA</b>	Supply issue for middle income and richer people leading to household productivity issue for poor as labour diverted from own farms. Seasonality issue for poor – competes with non-ag labour for regularity and price if close to urban centre.

*Continued on next page*

## Access to CPRs

<b>FAI</b>	No data in selected projects.
<b>HP</b>	Fodder and grazing issue for poor and middle income people. Management and availability of ground and surface water also important for health and diversification of farming patterns.
<b>LWI coastal</b>	Strong seasonal effects for all – unregulated access to fisheries causes conflict, landing conflicts with tourism impacting on household income security.
<b>LWI floodplain</b>	Strong seasonal effects for all – dry season access to water for fishing or crop production constrained by competing interests leading to conflict between stakeholders, access for fish important to poor people, dry season water to middle and poor.
<b>PUI</b>	Fodder and grazing issue for poor and middle income people. Strong links to soil fertility. Also important to artisans as a means to acquire materials, structured by development planning as well as access to social and political capital networks.
<b>SA</b>	Wide range of livelihood goods supplied to poorer people continues as an important buffer for poor people to livelihood shock. Middle income and richer people commercialising operations and CPRs.

## Health impacts on human capital

<b>FAI</b>	Nutrition (HH subsistence crops), and HIV/AIDS related impacts.
<b>HP</b>	Nutrition (HH subsistence crops), water quality and HIV/AIDS related* impacts.
<b>LWI coastal</b>	Not mentioned as specific issue in data of selected projects.
<b>LWI floodplain</b>	Not mentioned as specific issue in data, although access to water and water quality becoming a problem with changes in control over resources*.
<b>PUI</b>	Occupational health, nutrition (HH subsistence crops and available cash), water quality and HIV/AIDS related* impacts.
<b>SA</b>	Qualitative and quantitative aspects of nutrition (HH subsistence crops), water availability and quality and HIV/AIDS related impacts reported.

\* Suspect under-reporting of health impacts in these cases, projects in LWI and PUI documented information about availability and quality of potable and other domestic water sources which confirm likelihood of significant impacts on Human capital.

## Access to land

<b>FAI</b>	Increasing move to land renting, leasing, and sharecropping, middle income people seem to be coping or accumulating. As a result, poorer people supply labour which may have negative impacts on their own farming activity, or may provide them with a route to land ownership, richer people finding land in other areas.
<b>HP</b>	Increasing move to land renting, leasing, and sharecropping, middle income people seem to be coping or accumulating. As a result, poorer people supply labour which may have negative impacts on their own farming activity, or may provide them with a route to accumulate.
<b>LWI coastal</b>	No data in selected projects.
<b>LWI floodplain</b>	Increasing move to land renting and leasing, new institutional relationships, sharecropping increasing in importance, middle income people rely on the poor for labour, and the rich on middle income people to organise labour.
<b>PUI</b>	Land markets extremely dynamic, increasing move to land renting and leasing, new institutional relationships, sharecropping increasing in importance, middle income people rely on poor labour, and the rich on middle income people to organise labour, access to land constrained by urban influenced development and development speculation.
<b>SA</b>	Increasing move to land renting and leasing, new institutional relationships, richer extensifying or finding land elsewhere in satellite households, poorer may rent out their land, middle income people seem to be coping or accumulating as a result.

*Continued on next page*

### Stores of value as natural capital

<b>FAI</b>	Land often in other areas important to rich and some middle income people, support from group membership and social networks important for poor and middle income people.
<b>HP</b>	Often as cattle, although a move to land and using banks by middle and rich people; support from group membership important for poor and middle income people.
<b>LWI coastal</b>	Rich able to own land and resorts, poor people investing in work related physical capital, middle both physical capital and use of banks
<b>LWI floodplain</b>	Livestock still important for poor people as are social networks for loans and gifts, middle and rich investing in land and agriculture or business related physical capital.
<b>PUI</b>	Livestock still important for poor people as are social networks for loans and gifts, middle and rich investing in land and agriculture or business related physical capital
<b>SA</b>	Poor changing from storage of food crops and livestock into land, shelter and jewellery, has impacts on poor people vulnerability status, social networks still important for loans and gifts, rich still accumulating livestock in some areas

### Access to credit/loans using natural capital

<b>FAI</b>	No data in selected projects.
<b>HP</b>	High reliance on social networks, may tie poor people to exploitative relationships, entry to sharecropping may rely on collateral such as livestock or land, other credit delivery may be in the form of share of harvest
<b>LWI coastal</b>	No data in selected projects.
<b>LWI floodplain</b>	High reliance on social networks, may tie poor people to exploitative relationships, entry to sharecropping may rely on collateral such as livestock or land.
<b>PUI</b>	High reliance on social networks, may tie poor people to exploitative relationships, entry to sharecropping may rely on collateral such as livestock or land, other credit delivery may be in the form of share of harvest.
<b>SA</b>	High reliance on social networks, may tie poor people to exploitative relationships.

The capabilities and capacities of poor people to manipulate these capital assets in support of robust livelihood strategies, depends also on the policies, institutions and processes surrounding each of the component asset types. The most significant of these include:

- macro-economic conditions affecting the level of economic opportunity and degree of livelihood disturbance or shock;
- nature of social and political capital networks as means to build entitlement as well as to mediate vulnerability;
- regularity and degree of environmental shocks and disturbances including seasonality effects;
- presence of infrastructure such as roads and transport networks and rural to urban linkages;
- policy impacts of development planning to enable the taking advantage of new opportunities around significant NR resources.
- public health planning and service provision, with special reference to HIV/AIDS.

The most significant of these and the capital-based components of livelihoods over which they have greatest influence are indicated by the shaded boxes and their position in **Figure 3** (page 23).

It is interesting to note the degree to which knowledge has an influence on the livelihoods of poor people. Evidence from NRSP project material points to knowledge uncertainty being important for both men and



women. Knowledge uncertainty presents itself in three different forms; economic, ecological, and technical or skills based. These have varying degree of impact on the ability of households to manage risk and NR-based opportunities in a way that promotes positive livelihood outcomes.

Economic uncertainty is linked to understanding market prices, fluctuations in those prices and quality demands of different buyers and sellers. Technical knowledge uncertainty is associated with agricultural practice and management in changing rather than static circumstances and decision support tools to help farmers deal with risk and variability. Ecological uncertainty, identified as being particularly significant, is related to policy impacts on the access and availability of important NRs and to the effects of group/aggregate patterns of resource use or production outputs on the quality and availability of NRs. To a lesser extent, it relates to the ability to monitor and evaluate changes to the natural environment and NR base.

Knowledge uncertainties are also interlinked, and different types of uncertainty are important at different times. In one example from Kenya, information provided for farmers on a local radio station about the weather is of less interest than information about market prices. Households are more interested in the controllable factors of production than in the less controllable climate. However, in Zimbabwe, knowledge about market prices set alongside an informal system tracking changes to water availability, proved to be a significant decision support tool for farmers hoping to secure income from higher value vegetable production.

There is, of course, an interplay between these process-based factors as well as between the processes and capital-based components. The interplay between them has different degrees of influence over poor people's livelihoods, again depending on the production system.

A summary of the most important features of adaptive and coping livelihood strategies and the importance of these to the poor within each of the production systems considered is given in [Table 4](#).

The synthesis of project material shows how middle income people are most able to respond to change and make the most of any livelihood opportunities presented to them. Their coping and adaptive strategies are based on livelihood strategies which maintain a mixed asset base of NR as well as non-NR components. Maintaining the means to be flexible is the core of these strategies. The relationships between the component assets making up any livelihood are dynamic and reflect the risk management and vulnerability aspects of livelihood strategies. Resilient livelihoods are able to transform assets between one form and another and back again in response to changing social, physical and PIPs contexts. From the relationships outlined in [Figure 3](#) it is clear that asset endowments and entitlements change in form and function depending on circumstance – livestock for example are a form of savings, provide an income stream, and at other times can be used as the means to gain access to land through sharecropping arrangements. The multiple roles and functions of livestock (as opposed to the multiple products provided) is one more clear example of a natural capital endowment which shares characteristics of financial and physical capital assets at other times.

The provision of credit and finance also plays multiple roles. Existing in three broad forms; investment capital, working capital, and safety net capital manage different aspects of livelihood sensitivity and resilience. A common thread through project findings is that poor people work to accumulate investment capital. However, it is often working capital or the need for post shock income rather than capital aid which prevents the drawdown of assets that are intended for, or could be used as the investment capital which starts households along more positive development trajectories.

The form and function of other NR-based assets and the way they are transformed from one type of functional asset to another during the stream of action and decision making tied to coping and adaptation strategies, is not so clear and merits further attention.

**Table 4. Summary of principal determinants affecting livelihood coping and accumulation strategies across six production systems**

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## Access to land

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### Access depends on which forms of capital?

Financial (flows and stocks), and social.

### How is entitlement gained?

Maintaining ownership of land. Share cropping, leasing and renting land. Finding unallocated parcels of land (roadside, riverside).

### What are the structuring PIPS (societal, private, communal and state)?

Institutional environment affecting security of tenure (synergies and conflicts between *de jure* and *de facto* systems). Institutional arrangements based on finance or other contracts. Familial and kinship structures. Changes in structural social relationships.

### Which people in which production systems are most affected?

Marked impacts on poor people in all PSs. Middle income and rich people investing in land as stores of value.

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## Ensuring yields match market needs (quantity and quality)

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### Access depends on which forms of capital?

Natural, financial, human and social.

### How is entitlement gained?

Cropping patterns. Access to institutionally appropriate technologies. Linkages with traders and middlemen. Availability of private or communal inputs *e.g.*, manure input from gazing livestock.

### What are the structuring PIPS (societal, private, communal and state)?

Intra-household relations. Market information and flows of knowledge. Effective capacity to respond to market signals. Collective action and non-market transactions or relations. Supporting structures mediating risk aversion.

### Which people in which production systems are most affected?

Poor and middle income people in all PSs. But most marked in middle income people in PUI, HP and LWI. Some in SA.

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## Ensuring yields match household needs (quantity and quality)

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### Access depends on which forms of capital?

Financial, natural and human.

### How is entitlement gained?

Adjusting cropping patterns and timeliness of operations. Access to institutionally appropriate technologies. Negotiating and deciding between competing labour demands.

### What are the structuring PIPS (societal, private, communal and state)?

Intra-household relations. Labour availability. Household dependency ratios. Investment decisions for farming – risk aversion strategies.

### Which people in which production systems are most affected?

Poor people in all PS.

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*Continued on next page*

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## Access to livestock

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### Access depends on which forms of capital?

Financial, natural and social.

### How is entitlement gained?

Maintaining ownership of livestock. Sharing or leasing stock. Maintaining access to animal products (manure and milk) by collective or private arrangement. Availability of smallstock.

### What are the structuring PIPS (societal, private, communal and state)?

Institutional environment affecting security of land tenure. Institutional arrangements based on finance or other contracts. Collective action and non-market transactions or relations. Investment decisions for farming – risk aversion strategies.

### Which people in which production systems are most affected?

Poor and middle income people in all PSs, most marked in PUI and SA; some in LWI and HP.

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## Maintaining health of livestock; avoiding theft

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### Access depends on which forms of capital?

Financial, human and social.

### How is entitlement gained?

Availability of service agents or traders. Knowledge of disease and appropriate response. Traditional security systems.

### What are the structuring PIPS (societal, private, communal and state)?

Institutional environment affecting service delivery and extension. Flows of knowledge and communication. Investment decisions for farming – risk aversion strategies. Changes in structural social relationships.

### Which people in which production systems are most affected?

All, although poor and middle income people are more vulnerable.

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## Access to markets

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### Access depends on which forms of capital?

Financial, human, physical and social.

### How is entitlement gained?

Infrastructure or transport. Market knowledge by group membership. Arrangements with traders and middlemen.

### What are the structuring PIPS (societal, private, communal and state)?

Macro-economic policy and globalisation processes. Transaction costs including reciprocal arrangements and informal safety nets.

### Which people in which production systems are most affected?

Very marked for poor and middle income people in HP, PUI and some in SA.

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## Access to production inputs

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### Access depends on which forms of capital?

Financial and social.

### How is entitlement gained?

Infrastructure or transport. Arrangements with traders and middlemen.

### What are the structuring PIPS (societal, private, communal and state)?

Institutional environment affecting service delivery and extension. Investment decisions for farming – risk aversion strategies. Changes in structural social relationships.

### Which people in which production systems are most affected?

All people in all PSs, although maybe greater impact on poor in HP.

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*Continued on next page*

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## Facilities for working credit

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### Access depends on which forms of capital?

Physical and social.

### How is entitlement gained?

Kin and patronage – little opportunity otherwise because social standing affected.

### What are the structuring PIPS (societal, private, communal and state)?

Seasonal or timely availability.

### Which people in which production systems are most affected?

An important coping mechanism for all people in all PS.

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## Maintaining stores of value (money, goods) – across seasons and during severe ecological shocks, e.g., drought, flood

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### Access depends on which forms of capital?

Financial (stocks), natural and social.

### How is entitlement gained?

Access to credit. Kith and kin. Spatial .

### What are the structuring PIPS (societal, private, communal and state)?

Timeliness in the provision of credit/finance to overcome need to drawdown natural and physical assets. Availability of state relief. Market prices. The ‘bounce back cycle’ interval most important to the poor.

### Which people in which production systems are most affected?

All people in all PS, although flood in LWI may be perceived to have positive livelihood impacts. For poor and middle people stores have changed form out of crop stores and into land, cash in banks, livestock and jewellery.

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## Access to Common Property resources

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### Access depends on which forms of capital?

Physical and social.

### How is entitlement gained?

Maintaining access to products by collective arrangements, group membership and by private arrangements. Maintaining social standing within community.

### What are the structuring PIPS (societal, private, communal and state)?

Institutional environment affecting security of resource tenure. Institutional arrangements based on finance or other contracts. Collective action and non-market transactions or relations.

### Which people in which production systems are most affected?

Very marked for poor and middle income people in the LWI (open water fisheries) and SA (grazing and woodland) and grazing in PUI.

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## Access to water resources

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### Access depends on which forms of capital?

Financial, physical and social.

### Which people in which production systems are most affected?

All people in all systems. Although important to poor and middle income people for intensification of production and diversification into high value crops such as vegetables.

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## Livelihood determinants and patterns for poor people

### Identifying and clarifying the link between poor people and the NR base.

Providing insightful conclusions relating to the relative contributions of NR-based determinants, proved problematic. Central questions considered in the preparation of the production system summaries include:

- What are the links between people of differing incomes and the NR base?
- Who is relying on the NR base?
- Is there a move out of NR-based livelihoods by poor people?

However, the data reviewed shows that many of the mediators of entitlements *e.g.*, land tenure systems or transaction costs, and the multiple rules and functions of assets are not fully described or understood. In addition, problems with measurement make it difficult to discern the relative degree of importance of different components to livelihood strategies; and finally the people-centred approach of the SLF somehow diverts attention from the links and transactions made between the social and the natural environment.

### What are the links between people and the NR base?

Livelihood strategies involve a complex nexus of relationships and inter-relationships between the natural and social environments; the interplay between these is not easy to discern. The chaotic variability of social and natural systems over time, and the multiple degrees of freedom associated with each of the possible and multiple variables structuring livelihood activities and strategies presents research with an almost impossible challenge. Decision making – the way people choose to follow their livelihoods is a constant stream of action and reaction as changes to the physical environment prompt changes to market conditions. Terms of access to natural resources and the entitlements that can be secured from natural resources – the livelihood outcomes – feed into the next cycle of action, which in themselves have an effect on the set of factors and conditions.

For example, in each of the production systems considered (apart from LWI coastal) the upper poor or lower to middle income people are reported as investing either in non-farm physical capital (*e.g.*, bicycles, rickshaws, artisanal equipment) or natural capital/NR-related physical assets (*e.g.*, fishing gear, smallstock, dairy cows and equipment) as a means to secure either income diversity or increased income from improved productivity. However, in so doing they open themselves to wider degrees of risk, because in many reported cases, investments are made on the back of loans (which may be formal or informal) that either tie individuals into debt repayment systems or present a significant opportunity cost as labour is diverted from other activities. Livelihoods then become more vulnerable to shocks. If there is a bad agricultural year because of inclement weather or reduced demand for the goods and services provided by a business – perhaps because of the number of other people who also choose to follow the same strategy as in the **Kumasi PUI** where there are too many entrants into hairdressing (Brook and Nunan 2001; [R7854]) or in the case of the **LWI in Bangladesh** a glut in those turning to wet season rickshaw driving (Barr, Dixon and Rose 2000; [R6756]) – returns to the investments made will be lower than expected. The need to repay debts can then lead to asset drawdown which will change the base from which livelihoods are structured during the next round of decision making. By the same token the nature of access to the NR base and of transaction costs will also change in response to the macro/aggregate social and environmental changes. The significance of the NR base and the contribution to livelihoods will also change; it is not predictable. Households and individuals constantly juggle livelihood sensitivity with livelihood resilience and there is never any certainty concerning the direction and nature of livelihood vulnerability. There is temporal diversity as well as spatial diversity in environmental, economic and social conditions such that even calculated risks (as opposed to incorrect assumptions of risk) have unexpected outcomes. It is often stochastic external conditions which determine the final outcome of the investment decision rather than individual skill, capability or risk assessment.



The picture is further complicated by looking at the indirect linkages to the NR base taking a wider and longer view. Current debates within DFID and the academic community concerning the links between the NR farming sector and the non-NR non-farming sector, in which a number of the poor are engaged, indicate that:

*“the rural non-farm economy tends to be most dynamic and productive in areas where farming thrives. Where farming does poorly, non-farm jobs may be important but they are often jobs of last resort offering poverty wages. The association between the farm and non-farm rural economy may be direct, as when prosperous farming allows investment in the non-farm economy. Or it may be indirect, through the effects of demands of nearby cities.”* (Thirtle et al. 2001:14)

This underscores the importance of livelihood determinants, the interplay of social and environmental factors which exist at scale levels past the household.

### **Deagrarianisation and diversification: who is relying on the NR base?**

There is evidence within the NRSP project material to support the view proffered by Whitehead and Kabeer (2001: 11) who observe that whilst to some:

*“diversification represents a survival strategy, a response to crisis, and . . . [t]he other sees it as an accumulation strategy, a response to opportunity . . .”* the reason for these differing views is geographical *“in areas on a downward spiral, diversification ‘does not contribute to the achievement of sustainable livelihoods but to a cycle of impoverishment’ (Hussien and Neilson 1998). On the other hand, commentators who see diversification feeding into a process of accumulation tend to draw on studies located in countries where there is some evidence of agricultural take-off . . .”*

It seems that it is middle income people that are the most risk bearing and dynamic. Apart perhaps from the profiles presented for the PUI, middle income people consistently score higher diversity measures than poor people. Evidence showing that either middle income or poor people are diversifying out of activities and livelihoods based on NR is less clear. From the material examined it is hard to confirm a widespread pattern of deagrarianisation. However, there is evidence to indicate increasing inequality in the distribution of major assets such as land, or access entitlement such as to water where the resource is being privatised.

Regardless of the patterns of diversification the NR base maintains an important livelihood role, since a significant set of activities remain predicated on access to land *per se*, or on access to land for other benefits such as CPRs. The project evidence highlights the importance of maintaining access to unscheduled land parcels as much as owned land, of agricultural labour, and as Thirtle *et al* emphasise (Thirtle et al. 2001: 15):

*“even for the poorer groups in rural areas who lack access to land, in most cases at least 40% of their livelihoods will be linked closely to farming. No other activity consistently offers the same degree of importance to the rural poor as does agriculture”* so that *“it would be perverse to set aside the importance of farming in most rural areas.”*

Thirtle *et al* (*ibid*) berate the absence of studies which have unpacked the non-farm and farm-based income components of rural households. Data from the projects reviewed in this study, whilst not always providing clear distinctions between non-farm/non-agricultural based incomes, does show that the NR-based component of income – or of livelihood activities – for poor people is even higher than the 40% that Thirtle *et al* quote. The contribution to poor people’s livelihoods within NRSP projects ranges from 40% in PUI, 60% in LWI, to as much as 60-100% in SA.

### ***The importance of inter-household relationships, local economies and business to livelihood outcomes.***

Some relationships between people of different wealth have positive beneficial outcomes. The tendency in the data is to focus on the negative, *e.g.*, the costs to poor as richer people commercialise CPR resources such as fuelwood in SA, and to gloss over the positive. However, the richer parts of the community are often responsible for carrying the transaction costs associated with maintaining the NR base, *e.g.*, in SA the costs associated with managing CPR resources or in PUI and LWI costs associated with the maintenance of infrastructure contributing to the collection and distribution of irrigation water. Sharecropping arrangements could be exploitative but there is evidence to suggest that for many poorer people sharecropping can be advantageous since it may be used as a route to access more land and therefore act as the basis of accumulation strategies.

This study identifies important, and often synergistic, relationships between households and kinship groups and between different wealth groupings that have direct impacts on livelihood strategies and outcomes. Whilst the relationships between middle income or richer people with the poor can be construed as negative or extractive, for some poor people patron/client relationships may be perceived as positive contributions to the management of livelihood vulnerability. Some of the examples in the synthesis show that these relationships may be economically efficient and provide poor people with livelihood benefits, and in other instances provide informal safety nets in times of livelihood stress, or guaranteed markets for products over higher prices in more risky open markets. The more dynamic middle income section of the community, for example, often act as brokers between the rich and the poor in the provision of labour in sharecropping arrangements. In many reported cases this entrepreneurship by middle income people increases poor people's access to land and agriculture rather than limits it. Of fundamental importance is an understanding of path dependency and power critical to institutional change and the costs of non-market transactions in this context.

This suggests that there is merit not only in the identification of management options which are poverty focused (*i.e.*, aimed specifically and exclusively at poor people), but also in building broader based pro-poor strategies (*i.e.*, options which benefit the poor but may be taken up by other people or even be reliant on the participation of other people). Middle income people may for example, take up management options which increase the labouring and NR access opportunities for poor people. As Barr and Haylor (Barr and Haylor 2001; [R6756]) point out:

*“to hit the twin goals of poverty elimination and environmental sustainability, development must accept principles of substitutability; accepting that building natural capital will not guarantee preferential benefit to the poorest of the poor, and looking to assist them through building other forms of capital”*

Building social capital and physical capital through relationships between groups, between businesses, and through a wider local economy is likely to bring livelihood opportunities for the poor. The nature of non-market transactions and relationships of trust between households and between different groups of people is fundamental to answering these questions.

Although some of these issues might be interpreted as a reformulation of the ideas of ‘trickle down’ that have been discredited by sections of the development community, there is evidence within NRSP project data as reported which gives some credence to the view that interactions between groups and the strength of local economies has positive benefits for the livelihoods of poor people where they seek to accumulate – particularly in PUI, HP and SA.

### Concluding statements concerning the livelihoods of poor people

The synthesis indicates the following:

- It seems that for many poor people in PUI, FAI and HP adaptive strategies are predicated on the gains in livelihood resilience to be made from moving out of NR-based livelihood activities:
  - In PUI direct reliance on the NR base is generally declining, although for some of the poor – including poor women – strong links still remain through engagement in agricultural and NR-based labouring opportunities.
  - In rural FAI and HP this is less true for those with established agricultural enterprises, but youth disaffected with NR-based livelihoods are finding non-NR based livelihood alternatives – often based on agricultural trading and service-based enterprises.
- Adaptive strategies for poor of people in HP, LWI and SA and to some extent in PUI rely on the ability of individuals to enter into new institutional arrangements based on emerging forms of political and social capital. These institutions may structure either NR or non-NR components of livelihoods, and access may be predicated on the ability of individuals to carry a range of novel transaction costs.
  - In HP, LWI and PUI new institutional arrangements and the strength and variety of social networks enable poor people to access opportunities to labour. In HP and LWI these may have a direct link to NR management issues *e.g.*, new forms of sharecropping and leasing are increasing poor people's access to land and the potential to farm, whilst also changing traditional agricultural patterns and subsequent livelihood sensitivity. In LWI such emerging institutions are important for strategies looking to secure access to different parcels of land (*e.g.*, of different soil type, or of a different elevation, or linked to irrigation infrastructure) which provide the opportunity to farm across both the dry and wet seasons. In PUI, new institutions may have a less direct link to NR management where novel types of trading network and patterns of organising labour and labour markets provide opportunities to increase household income and livelihood resilience by providing them the means to be price setters rather than prices takers.
  - In LWI, SA and PUI access to emerging political capital networks mediating access to CPRs and the decision making fora responsible for their management are fundamental to the empowerment of poor people and their ability to decrease their vulnerability. In SA, access to CPRs, most particularly water, grazing and forest resources, continue to provide important 'buffers' against livelihood shocks. In LWI access to fisheries and the management of dry season water resources significantly reduces seasonal livelihood sensitivity, and in PUI access to grazing, clean groundwater and water standing in 'tanks' emerges as most important in maintaining livelihood resilience.
- Both coping and accumulation strategies in SA, LWI, HP and PUI rely on asset flexibility and the ability of poor people to manage the form of their capital assets in response to particular livelihood disturbances. It is important for poor people to have assets that act as a store of value as the means by which to raise financial and other forms of loan.
  - Coping strategies in SA, HP and PUI avoid asset drawdown by converting one form of capital asset to another. In the HP in Kenya and PUI in Ghana and India macro-economic changes *e.g.*, significant decreases in product prices, can have significant impacts on poor people. Successful coping strategies are based on the maintenance of an income stream, so that social capital is converted to the ability to labour for cash or goods in kind. In HP areas of Kenya for example, poor households cope with food insecurity by transforming social capital patronage and acceptance of wealthier people built through social interaction and labouring, to gifts and loans of food.

- In PUI and LWI accumulation strategies are often based on access to credit used as starter capital for new enterprises, many of which are service and non-NR based. However, in both **PUI in Ghana** and **LWI in Bangladesh** the success of the investment is determined as much by the structure of local economies and the numbers of other similar businesses, as by the business skills and human capital assets of the poor used as part of their adaptive strategies.
- The interplay between the effects of seasonality and macro-economic conditions have the greatest impact on the livelihoods of the poor in **LWI**, **SA** and **FAI**. Successful coping strategies negotiate strong seasonal conflicts over resource use (*e.g.*, during the dry season in LWI and SA) and seasonal competition for entry into labour markets (*e.g.*, during the wet season in LWI) as well as seasonal market fluctuations in prices for NR-based livelihood goods (*e.g.*, for vegetables and artisanal products in FAI and SA).
- The ability to manage periods of transition between disturbances and between adaptive and coping responses to change, is fundamental to the success of poor people's strategies in all production systems. Although successful negotiation of transition periods is heavily reliant on stores of value that can be converted into the goods or cash required to sustain households and individuals, the knowledge economy also acts as a significant determinant. Knowledge uncertainty, and the skills component of human capital significantly affect the ability of households and individuals to take up opportunities and manage both NR and non-NR resources for positive livelihood outcomes. In PUI in India and Ghana, in LWI in Bangladesh, and in the HP areas of Kenya, strategies shifting to either non-NR based income sources or new cropping systems as adaptive responses to changing economic conditions and profitability of farming, are highly dependent on the knowledge economy.
  - Knowledge of the feasibility, costs and benefits of new micro-enterprises, new markets, marketing and prices, and basic business skills, are the fundamental elements of adaptive strategies in **PUI** and **LWI** to avoid income insecurity and the over extension of debt burdens (which increase livelihood vulnerability through transition periods).
  - In **HP** and **FAI**, access to knowledge concerning new crops and their management, the management of soil fertility, plus knowledge of market prices and marketing increase income security and household productivity.
  - Coping and adaptive strategies in **SA** benefit from knowledge of market prices, animal welfare and soil fertility management, as well as monitoring systems and low input technologies for improved water management.
- The ability of the poor to maintain a positive health status is crucial to the success of any livelihood strategy. Health impacts on household productivity and NR management issues are particularly important for poor people in **HP** and **PUI**, although there are also likely to be important effects in **SA**.

### **Livelihood determinants and patterns for middle income people**

Middle income households in each of the production systems appear to be risk bearing and are characterised by flexibility and dynamism in seeking and responding to livelihood opportunities (which are often NR based). For middle income households that are diversifying into non-NR based opportunities, reliance on the NR base, particularly as land, continues as a buffer supporting livelihood security. Where reliance on the NR base is declining, it is the transformation of natural capital assets which often provides the investment collateral to move into more remunerative non-farm livelihood activities.

Many middle income households are able to find opportunities in changing social relationships which often allows them to increase the NR-based component of their livelihood strategies and leads them into land-based

sharecropping and leasing enterprises, dairying, artisanal occupations and commodity trading. These types of enterprises are usually reliant on labour and other capital resources provided by poorer people.

Access to social capital networks which provide knowledge, credit and labour are the fundamental elements of adaptive risk mitigation strategies.

***Livelihood determinants and patterns for richer people***

The focus, both of the various research projects and of this synthesis study, is on the poorer people in the various communities. Accordingly, relatively little data relating to richer people has been collected or analysed. That said, each of the production system sections of Annex 1 ends with brief observations regarding livelihood characteristics of the richer people within that production system.



# Opportunities for NR-related management interventions

This section of the report moves from synthesising information about livelihood determinants and considers where the possible NRSP-supported NR-based management interventions might be.

Whilst NRSP strives to produce knowledge that will improve poor people's livelihoods by improving their capacity to manage the natural resources within certain production systems, it is worth noting that in some contexts, such as PUI, it may be wider environmental resource management that has the greatest beneficial impacts on the lives of poor people. This wider management may or may not have links to management interventions that can be implemented by individuals and households within a community, and may instead be predicated on higher order institutional and policy level changes.

Possible NR-related interventions need to:

- clearly show benefits for the poor;
- enhance environmentally sustainable resource use and benefit streams;
- be institutionally sustainable;
- reduce social conflict either between groups or within groups of resource users around a suite of the same resources.

It was anticipated that specific options relating to the poverty circumstances found in particular production systems would be identified. In the event, the diversity and complexity inherent to each of the production systems and the areas associated with the different research projects is such that the identification of such specific opportunities has not been realised. Furthermore, the material presented in this report suggests that management options are to do with 'process'; but the problematic nature of honing down precisely which processes structure the relationships of different groups to the biophysical aspects of production systems also limits the ability of the synthesis to identify more focused options. Therefore, the opportunities presented here are given as generic 'principles' or themes which might suggest how the future form of NRSP research and development in support of NR-based livelihoods should be moulded.

The broad themes emerging from the synthesis study were discussed at a meeting of the leaders of the selected projects, and also some team members. During this meeting it was noted that the themes that the study has identified closely reflect NRSP's research themes, these being:

- Enriching livelihood knowledge in relation to NR management.
- Efficacy of participation in decision making for reaching the poor.
- Gaps between development and adoption of NR technologies.
- Better information for pro-poor service delivery.
- Livelihoods knowledge for pro-poor policy dialogues.
- Links between households, communities and policy makers.
- Institutional constraints and options.
- Piloting new strategies for NR management.
- Strategies for scaling-up research findings.

The themes identified as providing opportunities to enhance the livelihood options of poor people related to the NR-base are described below and summarised in [Table 5](#). They represent a refinement of those presented to the April 2002 stakeholder meeting.

## Building and protecting poor people's assets

There is a need for fuller understanding of the form and function of livelihood assets of poor people. Four main areas of possible research and intervention have been identified.

### Identifying ways for the poor to build assets and avoid asset drawdown

Asset drawdown increases the vulnerability of poor people's livelihoods by impacting on livelihood sensitivity and resilience. Assets may take the form of natural capital endowments. If natural capital assets are eroded, not only are there impacts on the daily management of natural resources and the relative contribution these may provide to livelihood strategies, there are also impacts in terms of the investment backing to NR management in the medium and longer term.

This requires research which focuses attention on:

- improved understanding of the problems associated with building a secure asset base and identifying ways to tackle these;
- the transaction costs of asset management and asset substitution over the short and longer term;
- understanding and improving the role of credit and loan provision as a means to avoid asset drawdown and promote investment in better NR management.

### Supporting the emergence of 'new' forms of social capital for the benefit of poor people

Evidence from the projects indicates that whilst social capital components are important determinants of NR-based livelihoods, the form in which supportive social and political networks exist is changing. New institutional relationships are emerging which may either benefit or have negative impacts on the livelihoods of poorer people by either increasing or limiting access to the NR base. In cases where access is increased, poor people may be provided with the means to increase either income flows or financial stores of value, but

*Table 5. Possible NR-related interventions of importance to different production systems*

NR-related intervention	Production system				
	FAI	HP	LWI	PUI	SA
<b>Building and protecting poor people's asset base</b>					
Identifying ways to avoid asset drawdown				✓	✓
Supporting new forms of social capital			✓	✓	✓
Consider land tenure and property regime impacts on endowments	✓	✓	✓		
Including health as a key livelihood asset		✓		✓	
<b>Supporting communication and knowledge flows between groups of people</b>					
Exploring ways knowledge can build assets	✓		✓	✓	
Adaptation of available technical knowledge	✓	✓			✓
Build sustainable knowledge flows	✓	✓	✓	✓	✓
Consider the implications of private sector provision of knowledge	✓	✓		✓	
<b>Supporting groups of people through periods of transitional vulnerability</b>					
Finding ways to support a switch from one NR based strategy to another		✓			✓
Finding ways to support a switch from NR to non-NR based strategies			✓	✓	
Finding ways to link knowledge of vulnerability to NR policy formulation	✓	✓	✓	✓	✓

management of the NR base may be more intensive and require the application of new knowledge if it is to remain sustainable and act as a resilient ‘store of value’ into the future. Where access is being limited the potential exists for the livelihoods of poor people to become more vulnerable, and the management of NR resources to become more ‘diffuse’ and less sustainable.

Research is required that:

- provides a better understanding of the impact of processes of ‘empowerment’ on both livelihood outcomes and the condition of the NR base under these changing conditions;
- can identify the institutional structures able to provide poor people with a degree of ‘leverage’ over the social capital determinants of livelihood strategies that have a bearing on NR-based management options.

### Consider land tenure and property regime impacts on endowments

Access to land and the value of land to different livelihood strategies of the poor, is an issue that cuts across production systems and countries. Land can constitute a contentious asset. In PUI maintaining access to land may not be a sustainable NR intervention, but in HP, SA and FAI as well as LWI there is clear evidence to suggest that middle income and richer people are increasing and consolidating land ownership as their own strategy of mediating livelihood insecurity. The implications for poor people are significant, as are the implications for NR management.

Although land tenure and property regime research and intervention can be emotive issues, NRSP should consider:

- encouraging research projects to include studies of land tenure and property regimes as they pertain to the asset status and capabilities of poor people; this is likely to involve a consideration of political capital.

### Understanding the interactions between NR management and health

Health, as a component of human capital assets, also emerges as a cross-sectoral cross-cutting issue. NR management links to health have not been a traditional area of enquiry. However, there are contingent and reinforcing relationships between health and NR management which are important to consider. For example, the health status of poor people affects their capacity to build assets as well as the degree to which they draw them down to, *e.g.*, pay for healthcare and ride through periods of illness. Impacts on their asset base have consequent implications for the way in which they continue to manage the NR resources to which they have access. Health status also plays a part in structuring initial and continuing access to assets and the ability of the poor to labour or realise a range of asset-based entitlements which meet a number of livelihood functions. There are also natural resources (*e.g.*, water) which are often not under the control of individual households. Where little attention is given to the tangible role and the benefits these provide poor people, the livelihood impacts of, for example, contaminated water, remain unchallenged – but will undoubtedly reinforce the patterns of asset drawdown, declines in household productivity and the ability to labour, plus having possible negative impacts on NR management.

A strong case can be made for including a health component in NRSP ‘livelihoods research’. Research is required which seeks to:

- uncover the impact of health on the access to and management of the NR base important to the livelihoods of poor people;
- consider the impacts of demographic changes, morbidity, mortality and the emergence of high depend-

ency households on the asset status and subsequent NR management options open to poor people affected by HIV/AIDS ;

- consider the impact of wider resource management, most specifically access and entitlement to water, on human health and the productivity of NR-based livelihoods.

## Supporting communication and knowledge flows between people

Knowledge uncertainty emerges as a further basic and cross-cutting issue. This is closely linked to social, physical and financial capital livelihood determinants. There are three axes along which opportunities to improve communication and knowledge flows exist:

- between people of different wealth within local communities;
- between poor people and service agents;
- between poor people and the private sector.

Four possible research and intervention options taking these issues into account have been identified.

## Exploring the ways in which knowledge can be used to build assets

Knowledge is a fundamental part of the human capital component of livelihood strategies. However, as with health, detailed information about the links between knowledge and skills provision and the asset base of poor people is lacking. In some production systems, most notably PUI, HP and FAI, the capacity of poor people to manipulate and manage their NR-based endowments is limited by their lack of knowledge concerning their legal rights and entitlements, the most secure ways in which to convert assets from one form to another, and strategies enabling them to maintain their entitlements over certain natural resources.

Research is required which:

- explores the way that the provision of knowledge can serve as an indirect means of building livelihood assets.

## Finding appropriate tools to adapt and communicate available technical knowledge

Although technical knowledge concerning best practice management of the NR base in some production systems is missing (SA is perhaps a case in point), in other systems a body of technical knowledge does already exist. This technical knowledge covers both productivity issues and matters concerning the socio-economic implications of changing management practices. In SA, project data indicates that poor people are poorly provided with information concerning crop diversification and soil fertility management; in LWI and PUI, women in particular complain about lack of knowledge concerning basic and improved management of live-stock; in HP farmers seek information about new agricultural practices linked to improved soil fertility management and growing crops which they know have potential but they lack experience with them. What is required is the development and adaptation of knowledge products and delivery systems in a way that is better suited to the livelihood circumstances and endowments of poor people.

Research is required which:

- develops implementable methods and tools that can organise information about livelihoods and link this to the research and dissemination systems of institutions at the *meso* and *macro* scale;
- develops tools able to identify the form of knowledge and information best suited to the livelihood circumstances of poor people.

### Supporting the development of sustainable knowledge flows within the community

Transacting the adaptation and flow of knowledge between different people may not necessarily rely on existing institutions. There is a case to be made for building new means to circulate knowledge, particularly in a climate of globalisation, improved communications technology and the retrenchment of government services dealing with knowledge provision.

Research is required:

- to uncover the ways in which knowledge is circulated amongst local communities;
- which identifies ways in which these flows of knowledge can be better linked to the institutions and services charged with knowledge provision.

### Consider the implications of private sector provision of knowledge

Global changes to the institutional context in which NR management, particularly agriculture, is situated as well as continuing advances in the development of agricultural and other NR-based technologies, have far reaching implications for the environment and for the livelihoods of poor people. Whilst some governments and agencies maintain that these structural changes are likely to have positive impacts on the poor, others argue the opposite case. There is a strong case to be made for NRSP to take into consideration these important and novel changes to the specific features of production systems.

Research is required that:

- provides greater understanding of the implications and impacts of the private provision of knowledge and technology, including new technologies such as genetically modified organisms (GMOs), on the livelihoods of poor people;
- investigates ways in which the private sector provision of knowledge and technology can be made more pro-poor and less open to capture by middle income and richer people.

### Supporting poor people through periods of transitional vulnerability

The synthesis of project findings has revealed that there are two aspects to adaptive livelihood strategies. The first is the issue of identifying opportunities, while the second is the capacity to act and manage the transition from one livelihood strategy or set of livelihood activities to another. The identification of opportunities is directly related to knowledge and the exposure to new ideas and new skills and perspectives. The capacity to act is linked not only to knowledge but to stocks and flows of livelihood assets which can bridge the vulnerability gaps that livelihoods are exposed to during changes in circumstances.

### Mediating livelihood vulnerability during NR management changes

By way of an example, Kenyan farmers in the research area of project R7962 who diversified production, did so after they were exposed to the farming systems of Ugandan farmers during exchange visits. Supported by technical assistance from extension agents they were then able to make the transition to new cropping patterns, but a principal factor was their ability to manage the income and food supply gap during the transfer from a maize/bean system to a plantain/vegetable system.



Research is required which:

- identifies mechanisms to support poor people through periods of transitional vulnerability experienced when changing from one NR-based strategy to another.

### Supporting livelihood transitions out of NR management

In some production systems there may be a case for NR managers to find ways of supporting poor people to move their livelihood dependencies away from NR-based activities. For example, building on project R7867, project R7959 in PUI in India shows that artisans reliant on the production of NR-based goods *e.g.*, clay pots, leaf plates, woven baskets, are suffering from serious declines in income. There are two reasons for this. The process of urbanisation to which they are exposed includes changes in tastes and expectations. There is a declining market for artisanal products (*e.g.*, leaf plate) over industrial goods (*e.g.*, factory made ceramic plate) signifying increasing status and wealth. In addition, a peculiar peri-urban effect is that the production of these artisanal goods is becoming increasingly expensive. It takes artisans longer to collect their materials as the resource base declines, and it costs them more to purchase raw materials from the city markets. The overall effect is one where the final product price increases. However, whilst the costs of production for these goods in PUI rises, markets are importing similar products from alternative rural areas where prices are lower and in some cases decreasing. Artisans are consequently caught in a cleft stick. Seeking alternative livelihood strategies which are not predicated on the NR base may be a more positive strategy for poor people in such production systems, in areas of other production systems which lie close to urban centres. Supporting poor people through a transition from relying on one set of economic activities to another requires the provision of knowledge, and the building of a strong asset base and social capital networks.

Research is required which:

- identifies mechanisms to support poor people through periods of transitional vulnerability experienced when changing from NR to non-NR based strategies.

### Linking knowledge with policy makers

Significant gaps exist in understanding the flows of knowledge and information from the *micro* to the *macro* level and in understanding the impacts of *macro*- to *micro*-level policy implementation. There is less of a challenge concerning the flows of knowledge from research projects into the international domain. The challenge remains in linking the community/project level research and development outputs up through to target institutions and into the policy process. Both programme development and research project actions are needed to overcome these gaps.

Action and research is required which:

- aims to build flows of knowledge that can push forward evidence driven policy formulation that includes a consideration of the diversity of system and process;
- identifies mechanisms to build participation in policy formulation as it affects the NR base important to poorer people;
- enables partner institutions to take forward results of programme and project research.

## Review of NRSP

### *livelihoods-focused project data*

#### Introduction

This Annex contains syntheses of information generated by projects covering NRSP's six production systems. Extensive use is made of tables and figures to illustrate the text. These illustrations are either taken directly from project reports and papers, or are tables and datasets taken from original project material which have been transformed and summarised for ease of analysis.

The purpose of displaying so much project data is three fold:

- to maintain an evidence driven analysis rather than a suppositional or deductive one;
- to identify empirical regularities which produce robust conclusions;
- to clearly expose the nature of the being data used.

The synthesis for each production system uses **Figure 1** presented in Section 1 of the main report as a reference point for analysis, and presents a summary of data limited to the areas of commonality between projects as described under 'Analytical framework and conceptual diagram' in Section 1 and illustrated in **Figure 2** (page 11).

The subsection reporting on each production system follows the same format:

- Summary characteristics of the projects including a map and a table of key project features;
- System patterns and trends reported – a section which outlines the important PIPs and disturbances as reported by the projects;
- Livelihoods of the poor – discusses patterns that have been observed and identifies the determinants of those patterns. There are some overlaps in the patterns and determinants between poor and middle income people. This sub-section is the larger of the three dealing with livelihood determinants since the focus of this analysis is the livelihoods of poor people;
- Livelihoods of middle income people – as above, but for middle income people;
- Livelihoods of richer people – as above but limited to a few key points.

A number of the reviewed projects produced substantial descriptive and quantitative datasets. As with many research projects that amass a substantial dataset, it would be possible to execute extensive analyses. This has not been attempted for this study, and the synthesis confines analysis to the project data as presented in textual project documentation.

## Livelihoods in the forest agriculture interface

*Table 6. Summary characteristics of projects included in the FAI synthesis*

<b>R7516</b>	Bridging Knowledge Gaps between Soils Research and Dissemination in Ghana.
<b>Geographical location</b>	Kumasi PUI, Wassa Amenfi, Atwima, Tano and Wenchi – all in Ghana.
<b>Data collection method/s</b>	General livelihoods data from PRA and FGD.
<b>Sample size</b>	60 individuals in 5 villages.
<b>Characterisation of Poor</b>	Poorer people not characterised or identified, however, differential land access and land use patterns recognised by gender, age, indigene/stranger assumptions
<b>SLF?</b>	No
<b>R7446</b>	Shortened bush fallow rotations – Ghana.
<b>Geographical location</b>	Not clear.
<b>Data collection method/s</b>	Mixed FGD.
<b>Sample size</b>	3 villages.
<b>Characterisation of Poor</b>	As R7516 above
<b>SLF?</b>	No

The FAI projects reviewed were not primarily concerned with collecting detailed quantitative data about the nature of household livelihoods, or in identifying and refining a methodology for characterising broad livelihood types as a prerequisite to finding ways of tailoring extension interventions for particular types of farmers. The focus was on uncovering farming system patterns and the constraints to agriculture, as a means to indicate appropriate points of intervention in support of small-scale farmers. There is considerable overlap between the two projects in terms of the villages and participants included in research, and the dataset used in analysis.

To fill some of the knowledge gaps, this section uses some supporting information taken from Richards (2002; [R7957]) who conducted an economic analysis of land use allied to work undertaken by project R7957.

The research perspective and approach taken by the two projects is qualitatively different to others included in this study. It has not been possible to disaggregate livelihood patterns by wealth, and there are limitations relating to a coarse level of characterisation and an assumed homogeneity of the farmers included in the research. There is little questioning, for example, of the broad assumption that indigenes are wealthier and well endowed with land, whilst settlers are poor and suffer from insecure land tenure. In addition older women are necessarily considered to be wealthier than younger women, and both are considered less wealthy than men. Richards (2002; [R7957]) warns against assuming a social and economic cleavage between indigenes and migrants, and presents empirical evidence from a study by Sakyi-Dawson which demonstrates a direct relationship between farm size and poverty, but not between poverty and tenure regime. He concludes that not all settlers are poor, and that gender may be a more important determinant of poverty than ethnicity.

### FAI system trends and patterns reported

Livelihoods in the FAI are dominated by strategies based on agricultural activity. Richards (2002; [R7957]) points to figures which illustrate that the poorest 40% of the population derive almost 75% of their income from farming. The ways in which poor households react to and manage change are necessarily predicated on the NR base. There appear to be few opportunities for employment outside of the agricultural sector.

### Land scarcity and effects on agricultural activities

There is contradictory evidence concerning land availability. In some parts of the FAI, population increase and pressures from additional in-migration are reported to result in new land being brought into production –

which pushes forward the agricultural frontier. In other areas similar population pressures are said to result in land shortage. Project R7446, for example, reports that there are no longer any parcels of unclaimed forest in the research area. This has reduced fallowing times and forced households to move into adaptive livelihood strategies based on intensification of production. Richards too refers to the results of Sakyi-Dawson's study, which demonstrate that there is a positive correlation between wealth status and fallow length, although to what degree this is attributable as a function of landholding size is not clear.

### ***Economic trends and effects on agricultural activities***

Economic reform and liberalisation policies in Ghana have changed the macro-economic environment towards one which is less supportive of small-scale farmers. Domestic policies have purposely suppressed urban food prices. Set against a difficult macro-economic background, such declining terms of trade combined with trends to lower yields have prompted sharp declines in farm profitability and caused food production to become a marginal livelihood activity. Richards (2002; [R7957]) contends that the only viable farming system for migrant and poorer indigene farmers are maize based, yam based, or plantain based bush-fallow systems. However, there are technology constraints to intensification of these systems, partly because of above and below ground woody biomass and partly the nature of the crops grown which changes their taste and storage characteristics in response to fertiliser application. Changing economic incentives and squeezes on research and extension have resulted in a withdrawal of support to these systems. At the same time, commodity cash crops such as cocoa and coffee have suffered from declining terms of trade and poor vertical market linkages.

### ***Access to markets***

Both the projects suggest that macro-economic trends have not supported the improvement of infrastructure provision throughout the FAI. They suggest that this continues to limit rural households' access to markets. In many areas trading is conducted at the farm gate and middlemen travel to collect and transport agricultural produce from farmers to major markets. There are seasonal fluctuations in the production of staple and higher value crops such as vegetables, resulting in significant price fluctuations for important farm products. However, new markets are emerging, particularly closer to peri-urban areas, where there is a ready demand for snacks *e.g.*, sugar cane, taro and fresh green maize.

### ***Increasing exploitation of CPRs***

There is little mention of the use of CPR in the documents consulted. However, villagers taking part in causal diagramming exercises for project R7446 identified charcoal production as contributing to agricultural production constraints. As farming has become a more marginal activity, the incentives for farmers to take-up charcoal production as a coping response have increased. The trees harvested are usually CPRs located either in forest or on private farms, and are often under the control of village chiefs who maintain rights to decide who has a legitimate claim. Village chiefs also hold the rights to fallow products on land leased to settlers. This dual set of interests means the *de facto* system of concession rights can lead to community conflict around the felling of trees on agricultural land.

## Livelihoods of the poor in the FAI

### *The importance of agriculture and non-NR based activities*

**Figure 4** shows very clearly that reliance on the NR base by poor people in this production system is significant, most particularly so for women who are almost exclusively involved in agriculture. Agriculture provides both food and cash for household reproduction. The diagrams in **Figure 5 and Figure 6**, illustrate the principal components of agriculture-based livelihood strategies in FAI, indicating the linkages between elements of the agricultural system, as well as pointing to inputs or additional livelihood activities and resources supporting a household's agricultural enterprise.

The project material makes it clear that there is a strong temporal dimension to agricultural activities, and this must be a major determinant of the way livelihoods are structured. The mix of crops is dependent upon manipulating and maintaining access to different parcels of land fulfilling different economic and ecological functions. The mix of crops is influenced by, and influences, the maintenance of food and income flows over time. In other words the management of the financial (income) and human capital (labour) elements of seasonality, may have the greatest impact on livelihood outcomes. For some poor households maintaining a plantain/food crop system provides livelihood security in the form of continuous flows of food and cash. In others, planting crops such as groundnuts realises the objective of filling an end of season income gap.

On-farm labour availability (household or hired) has always been recognised as a determinant of farming-based livelihoods in Africa, and labour availability a significant constraint for women. Labour represents the major on-farm cost for the majority of households in the project research areas. It is the basic constraint to how much land can be cultivated and, just as importantly, to the extent of weeding activity. It is interesting that many young men are reported as increasing production of cassava, a crop which requires less labour, so that they can pursue other income generating activities. This does increase livelihood vulnerability, since agricultural produce traders are less interested in collecting bulky products such as cassava, and markets for sale are not guaranteed. Poor households may sell their labour to other households, but this comes at a cost to their own productive strategies, as there is a trade-off between withdrawing labour from the farm and their own on-farm productivity. Project R7446 reports that for both men and women, agricultural labouring opportunities are limited to demand within the village so that the opportunity to earn cash income is limited and dependent on strong social networks.

Poor households point to low incomes from farming as the main contributor to livelihood insecurity. Opinions from farmer consultations link low income to low yields, which they attribute to poor soil fertility, poor pest management due in part to lack of knowledge, and lack of inward investment capital.

Richards (2002; [R7957]) shows how shifting from high risk poor return agricultural activities, to lower risk immediate cash generating charcoal production and trading presents some households with an attractive coping strategy that helps to deal with seasonal fluctuations in income streams. Peak demand and highest prices for charcoal coincide with the period when farmers have few other crops to sell. In addition, demand is such that traders will provide cash payments on delivery, rather than staggering payment over a period of weeks at other times of the year. Chiefs are said to grant concessions most frequently over settler land, which incurs a cost to the indigenous farmer in the form of crop damage done during felling and extraction. The lack of compensation from concessionaires, means that some indigenous farmers would rather destroy valuable trees on their land than suffer impacts to their food security. This represents an increase to the vulnerability of poorer households, as trees are a form of natural capital savings which can be used to support household livelihoods in times of stress.

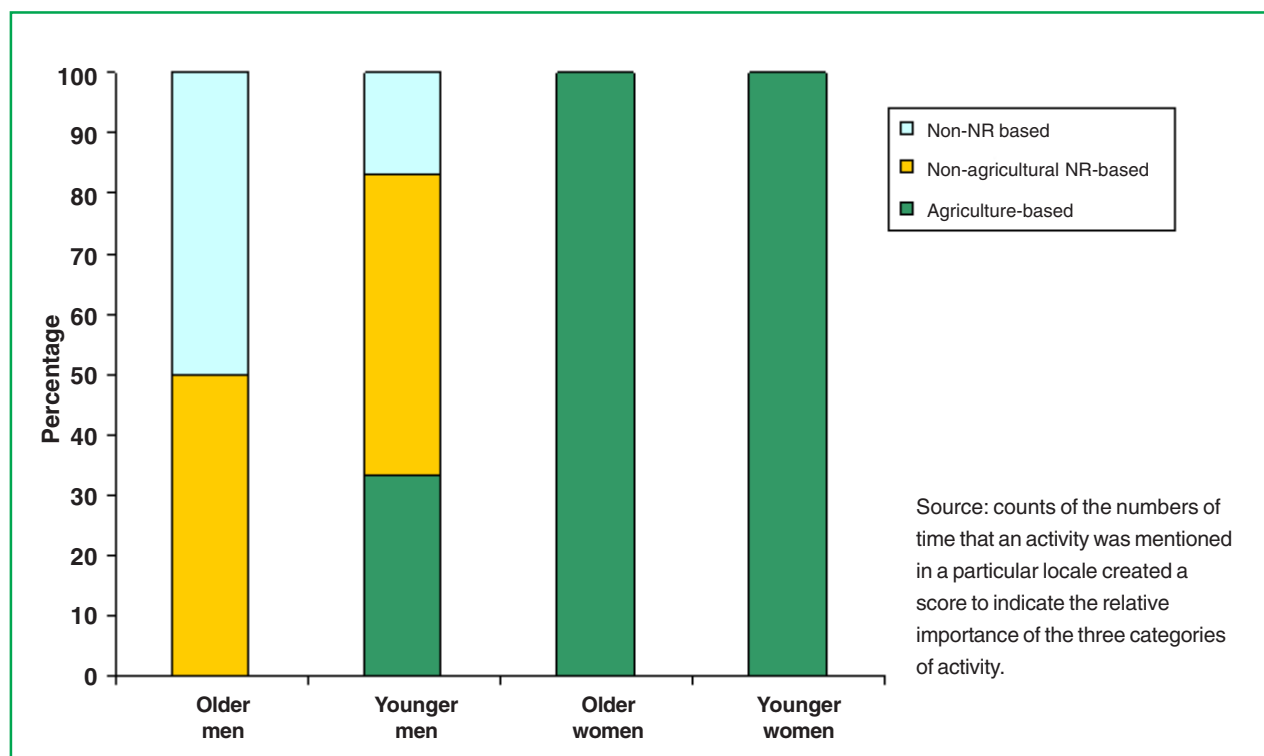


Figure 4. Reliance on NR base for different people in FAI, Ghana

Table 7. Indicative livelihood activities for different people in FAI, Ghana

	Older Men	Younger Men	Older women	Younger women
<b>Agriculture based</b>				
Agricultural production	✓	✓	✓	✓
Agricultural labour		✓		✓
Livestock enterprise	✓			
Small livestock			✓	
Auxiliary agricultural enterprise (agro-processing)			✓	✓
Trading agricultural produce			✓	✓
<b>Non-agricultural NR based</b>				
Artisan		✓		
Sand winning		✓		
Surface gold mining		✓		
Fuelwood and charcoal production and trading	✓			
<b>Non-NR based</b>				
Business		✓		
Government service job	✓			

Source: activities as mentioned and culled from various R7446 and R7516 project reports.



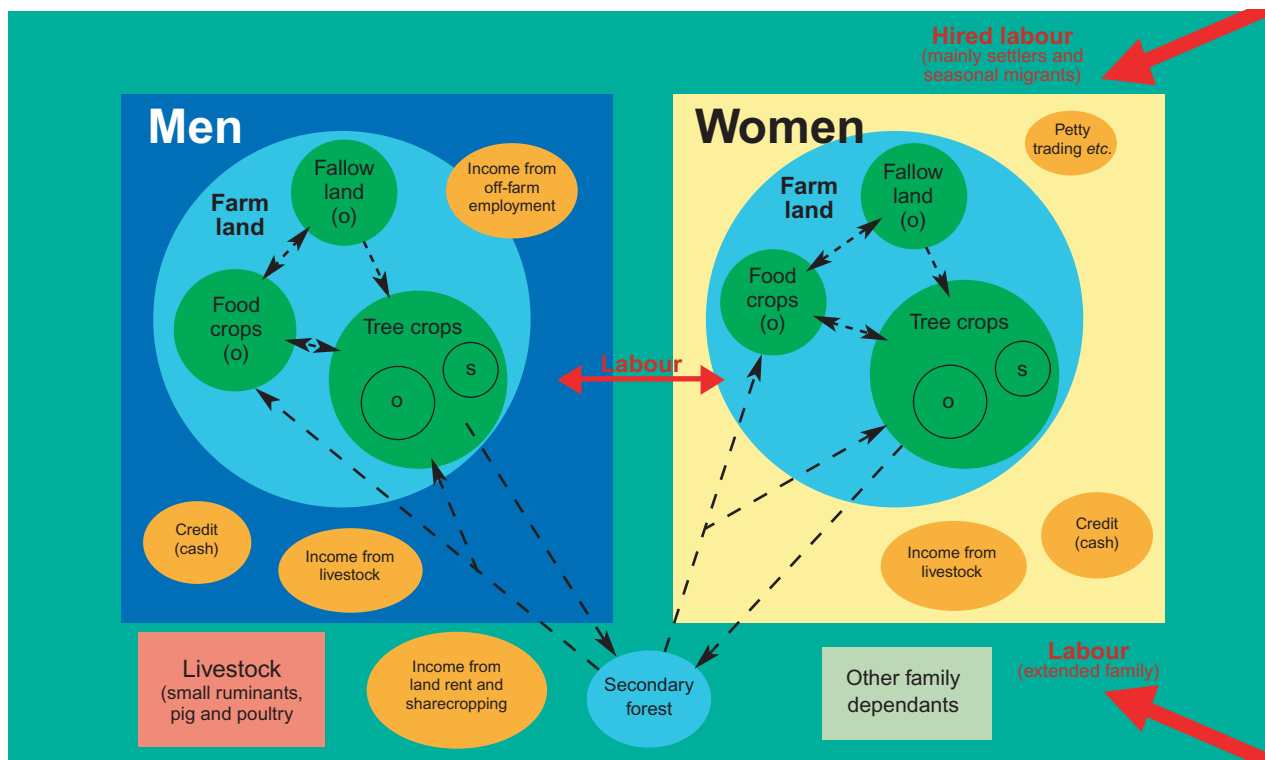


Figure 5. Schematic representation of principal livelihood components and land use patterns for indigenous households in FAI, Ghana

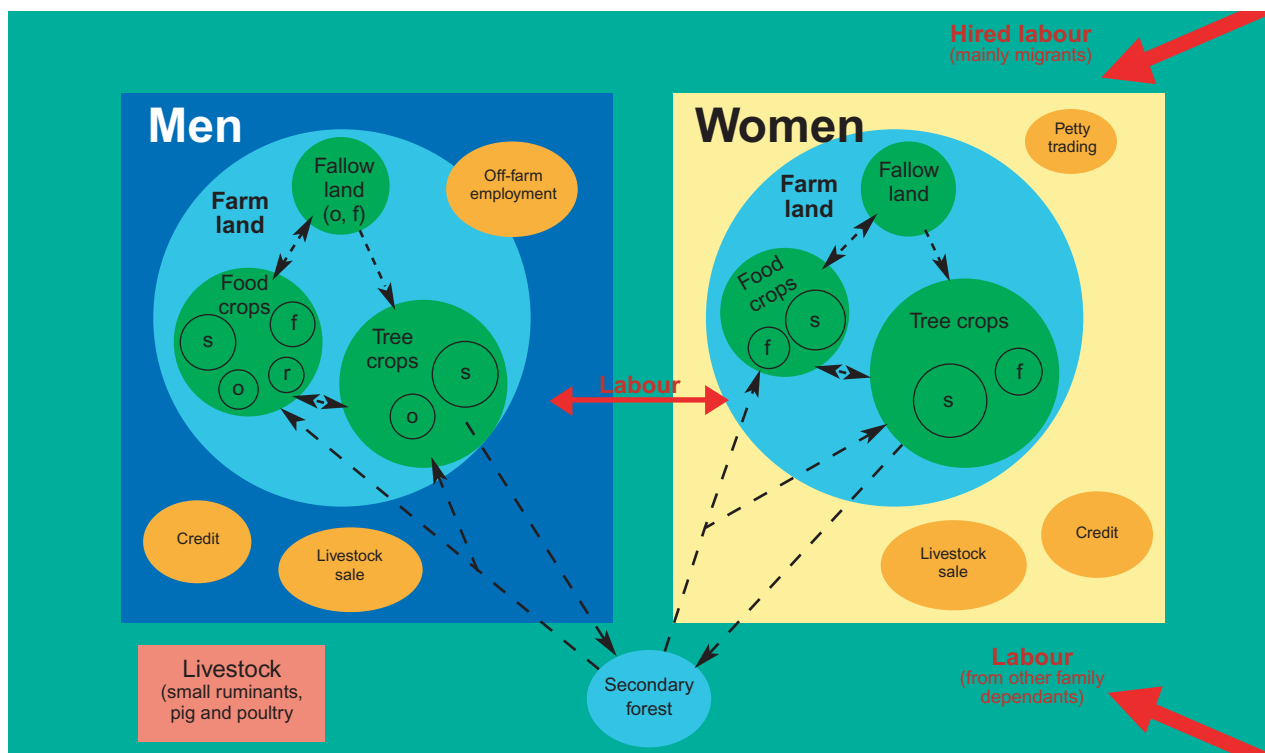


Figure 6. Schematic representation of principal livelihood components and land use patterns for settler households in FAI, Ghana

Figures 5 and 6: land acquisition codes, Atwima

- o land that is owned or traditional household usufruct rights
- f land that is cropped at no charge to the tenant through a friendly relationship with a landlord or relative

- s Sharecropping
- r rented land

### ***Livelihood diversification***

It is hard to discern the responses of poor households to economic disturbances and changing environmental circumstances. There is no data to illustrate the livelihood outcomes of any coping or adaptive strategies. Within FAI the opportunities for adaptive livelihood strategies are constrained. Opportunities for alternative income earnings are few, and both agricultural diversification and intensification are constrained by the ‘technical’ features of the system as well as the low resource base from which poor households work. Intensification strategies for example, are reliant on increased labour input and are not well suited to the minimum tillage systems preferred by poorer farmers.

Farming is reported as being unattractive to youth, not only because they have changing aspirations and expectations, but also because they are unable to find suitable land for cocoa production. It is cocoa production that is traditionally seen as the route to asset accumulation, and the model to which many indigenous men and women continue to aspire. Indigenous young men are moving into vegetable production, and it is hinted that this may rely on social capital linkages built amongst older men able to provide financial support during the change in production strategies.

A general pattern of livelihood diversification could be claimed amongst younger men, as shown in Table 7 and Figure 4. It is not clear whether some of these activities are undertaken as part of a seasonal or other cycle of migration, but the projects suggest such migration is playing a significant part in the return of remittances to poorer households. Neither is it clear whether migration has increased in response to declining macro-economic conditions, and if migration represents part of either a coping or an adaptive livelihood strategy.

Some of the younger households involved in project research, indicated that there is an increasing level of shared decision making as traditional agricultural roles change towards shared responsibility in farming. One reason put forward to account for these changes is that the increasing livelihood diversity of poorer people requires more strategic manipulation of household asset endowments and entitlements. Households are therefore adapting decision making strategies to changing economic circumstances.

### ***The importance of access to land***

Access to land is a vital determinant of livelihood strategies so firmly based on agricultural activity. Poorer farmers are reported to rely on inherited and family land, and women’s access to land is mediated through social institutions particularly marriage. Despite women’s responsibilities for household production, the projects report that their farms are often smaller and located on poorer quality soils. Sharecropping is carried out by younger indigenous men and settlers, although for poor people barriers to entry exist in the form of initial capital payments and social capital networks from which ‘strangers’ and poorer people are often excluded. Traditional sharecropping arrangements involve a portion of the land coming under the ownership of the tenant after a particular time period has elapsed. However, there is an insinuation that with increasing land shortage sharecropping may not guarantee this system of longer term access to land, and changes towards more monetised land leasing and renting arrangements may constrain the access to land of poorer people even further.

### ***Financial and physical assets***

Access to financial capital is a significant livelihood determinant. Project R7446 reports how some farmers use credit to finance a switch to higher value maize and yam production. The same project also shows that, apart from being tied to land ownership, the provision of credit is dependent on social capital in the form of relationships with traders providing small loans to poor people on the strength of future production. Credit terms negotiated by such traders often increase the food insecurity of poorer households. The same project also reports that as a consequence of debt, poorer female farmers often have to resort to selling their produce at harvest time, when prices are depressed and returns minimal. Essentially, it is not access to markets that

determines the components of livelihood strategies so much as the timing of entry into the market. Market knowledge and market access is therefore important, since lower prices mediate against both diversification and the intensification of production.

### **The principal determinants of livelihoods identified**

The complex and dynamic relationships between the availability of credit, farm productivity, market prices and access to crop storage facilities that can affect seasonal price fluctuations, together have a synergistic impact on livelihood vulnerability and act as the determinants of livelihoods in FAI. To summarise, the principal determinants of livelihoods for poorer people in FAI appear to be:

- access to land and human capital aspects of agricultural management and practice;
- sufficient social and political capital to secure access to CPR such as woodland and pasture;
- sufficient social and political capital to secure access to water which is directly linked to health and the capacity to labour, as well as for agricultural irrigation or livestock enterprises;
- the strength of labour markets and the availability of different labouring opportunities;
- market access and proximity to urban centres;
- the strength of the macro-economy and enabling institutional environments;
- social capital and informal safety nets.

### **Livelihoods of middle income people in FAI**

The impression given by material in the project documents is that middle income people are diversifying agricultural activities both to cope and to accumulate. For a proportion of households this involves identifying and opening new parcels of land in other provinces to increase the land put into cash cropping, including cocoa. For other households increased investment in small stock (goats, poultry), is used to secure cash income. There is some suggestion that middle income people are negotiating new institutional arrangements for land leasing and sharecropping *e.g.*, purchasing leases of indefinite length as a means of building natural capital (tenure over land) as well as financial capital (credit from formal institutions or landlords using tenure as security). Social capital clearly has a direct link to mediating these new livelihood strategies, and may also play a part in the way middle income people appear to be more sensitive to seasonal fluctuations in market conditions and are able to respond more positively than poorer people.

There is the suggestion that circular migration is providing financial capital needed to invest in diversified land and farming based strategies; but there is no indication of whether this capital is being used to diversify livelihood activity portfolios into other NR or non-NR based enterprises.

### **Livelihoods of richer people in the FAI**

Wealthier farmers are reportedly investing in new land and diversifying production. They are attributed with both the interest and resources to carry the risks of innovation. Richer people also seem to be following extensification strategies, moving into tree crops, and expanding cocoa holdings, at the same time as intensifying cash cropping, and renting out land. Sharecropping arrangements continue to be favoured because they may provide cash as well as goods in kind. Much of the change is funded by returnees from the city with salaried incomes and pensions, and is often reliant on land acquired in Ghana's western region.

## Livelihoods in high potential production systems

*Table 8. Summary characteristics of projects included in the High Potential synthesis*

<b>R7962</b>	Linking soil fertility and improved cropping strategies to development interventions.
<b>Geographical location</b>	Siaya, Kakamega, Vihiga and Kisii Districts, Kenya.
<b>Data collection method/s</b>	Hierarchical cross sectional and panel data from household surveys, with PRA, KI and FGD.
<b>Sample size</b>	1568 households in 17 villages.
<b>Characterisation of Poor</b>	Farmer based wealth categories 4 categories, used with 3 farmer perceived household land management categories.
<b>SLF?</b>	Yes
<b>R7180</b>	Options for the use of power tillers and draught animals.
<b>Geographical location</b>	Tangail and Mymensingh Districts, Bangladesh.
<b>Data collection method/s</b>	FGD, KI and household survey.
<b>Sample size</b>	198 households in 6 villages.
<b>Characterisation of Poor</b>	Researcher formulated farmer types – 5 categories based on size of landholdings.
<b>SLF?</b>	No

Project R7180 collected data which concentrates on demonstrating the economic and yield effects of using power tillers compared with the outputs of draught animals. The project does not specifically focus on livelihoods. Consequently, there is no information on the source of household income or livelihood activities that different people are involved in, neither are poor people defined. The project material provides some broad brush stroke impressions. Therefore, where helpful, reference has been made to an IDS study conducted in a similar HP area of Bangladesh (see Toufique 2000).

In its inception and design, Project R7969 used a detailed dataset generated by ICRAF as part of an earlier pilot project co-funded by the European Union, KIT, and the Rockefeller Foundation. The primary focus of that earlier research was improved understanding of the factors affecting farmer uptake of agroforestry technologies. The dataset was supplemented with additional information about general patterns of land and resource use. Although livelihoods were not the main focus of the pilot project, NRSP Project R7969 was able to make good use of data concerning household income sources and time budgets as well as information about social capital and knowledge flows contained in the dataset. R7969 used this information to select farmers for inclusion in the NRSP project which focused on improving a major cause of livelihood vulnerability for poor people in the research area, namely food insecurity.

### HP system trends and patterns reported

#### *Macro-economic changes*

Both the NRSP High Potential projects report trends and transforming processes as important livelihoods determinants in the HP system. In Bangladesh macro-economic policies such as liberalisation of the agricultural sector in response to South Asia Program conditionalities has brought some tangible benefits to farming. However in Kenya, economic recession, retrenchment of government services and civil service salaries and declining terms of trade for agricultural commodities have created a difficult macro-economic climate for agricultural ‘takeoff’. Adjustment policies and declining government revenues are precipitating a trend of ‘privatising’ many previously free government services such as the provision of basic health care and hospital services, the supply of potable drinking water, and agricultural and nutritional knowledge provision through extension services. This is happening at a time when

representatives of both public services and aid agencies recognise that public health and the productivity of agricultural labour are vital issues in a context where the increasing prevalence of HIV/AIDS has seen the emergence of significant numbers of child-headed and aged households.

### **Trends in agriculture**

Population densities within the Kenyan and Bangladeshi HP zones are high and increasing. Agriculture continues as the main occupation for 80% of the rural population in both countries. These pressures on agriculture have intensified and diversified production, and in Bangladesh have pushed towards increasing mechanisation. They have also prompted the increased fragmentation of landholding, a general reduction in the average size of farm plots, reduced fallow periods and decreasing soil fertility. In both countries overall livestock numbers within the HP areas are reported as declining, although there is some evidence in Bangladesh of an increase in the numbers of cattle and small dairying enterprises. In both countries, areas put down to high value horticultural crops such as tomatoes and vegetables are also increasing in response to a growing demand from urban and peri-urban markets, and in the case of Kenya from global markets.

### **Access to common property resources**

In Kenya there is evidence of increasing food and fuel wood insecurity. Historic land ownership patterns and a comprehensive titling process in Kenya, means that access to CPR resources such as fuel wood, wild foods or communal grazing is rare. Partitioning of forest land into reserves and buffer zones has generated a practice of 'landgrab' whereby the area of CPR land is reduced and the quality of the remaining resource is also impacted (see for example Haugeraud, 1995). Another emerging trend is the reduction in access to common water resources. Water sources such as springs are subject to *de jure* permissions aimed at maintaining community access, but many are being privatised after development by private land owners, even in some cases where the work has been funded with aid money invested on behalf of the local community. In Bangladesh, CPR issues of most importance seem to be centred on the declining availability of communal grazing land.

## **Livelihood determinants of the poor in HP areas**

### **Livelihood diversification**

Livelihood strategies of poor people identified in both the HP projects are adaptation by intensification and diversification of agricultural production, and diversification of livelihood activities as an accumulation and a coping strategy. Poor people are diversifying livelihoods using human and social capital resources, most particularly the sale of agricultural labour, and of labour in urban areas through short and longer term migration.

The relative contribution of different sources of income to people of different wealth is shown in **Figure 7**, which highlights the importance of casual labour to the poorest people. However, this strategy of livelihood diversification through sales of labour may increase the vulnerability of poorer households. Worsening economic conditions and an increasingly competitive skills market in Kenya mean that the level of remittances and the security of income flow to poorer families in HP have declined significantly. For poorer people remittance monies are becoming a less significant proportion of household income. For many migrant household members, higher room rents and costs of urban living mean that the flows of remittances can sometimes be reversed, coming from the HP countryside into the city. Rather than withdrawing support, households take a longer term strategic view to the search for waged employment and continue to support household members in towns for as long as they are able.

For poorer people this change in the value and significance of remittances has a major impact. Maintaining flows of cash income over time are a fundamental way of managing food deficits for the two or three lean months between harvesting seasons. In the Maseno area of Kenya, it is reported that young men in the upper poor/lower middle income bracket are beginning to withdraw from migrant labouring and diversify into trad-

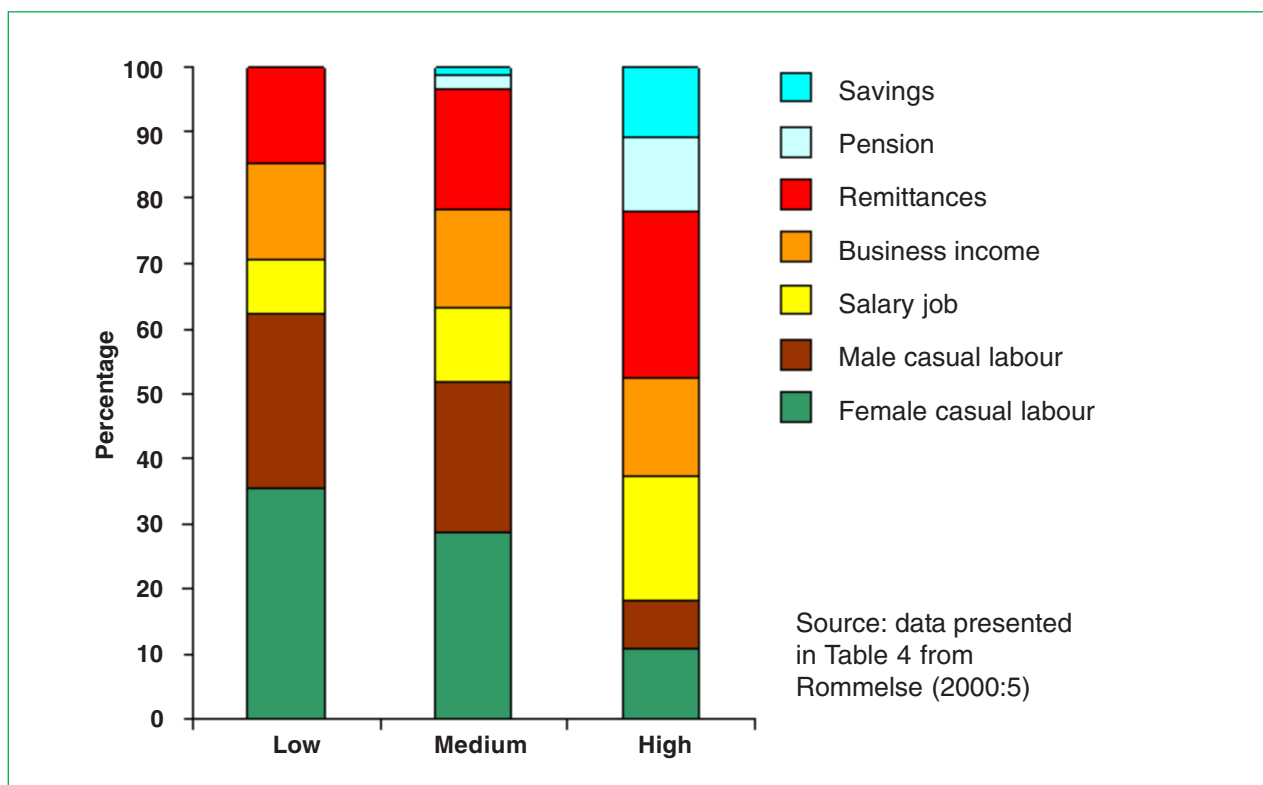


Figure 7. Sources of household income for different wealth groups, in an HP area Kenya

ing agricultural commodities, particularly vegetables, developing local market linkages to urban areas of the country.

In Kenya diversification into illegal activities is a significant trend, and includes theft as a business for migrants into peri-urban and urban areas, and the illicit brewing of beer and distilled corn liquor in rural homesteads. The evolution of new livelihood strategies has been noted by Project R7962, one of these being increasingly common ‘bride-price’ strategies (particularly amongst households from the Luo ethnic group) where young women will actively pursue potentially wealthy husbands in urban centres, and seek flows of income in cash and kind during courtship. The project also collected anecdotal evidence that women are using human capital in new ways, using sexual favours to contract farm labour and guarantee sales of farm goods to middlemen traders.

**Access to land: the importance of livestock and labour as flexible assets**

Access to land has a major impact on the lives of poorer people. In Bangladesh the project records an increasing amount of land being diverted to sharecropping. Although primarily in the best economic interest of large-scale farmers as a way of managing fluctuating labour prices and labour availability which might otherwise increase their production costs, there are benefits for poorer people who can increase their access to larger areas of land in this way. However, there are significant transaction costs. The most important of these may be the collateral needed in order to effect the sharecropping arrangement. In the Bangladeshi research area, it is livestock/cattle, rather than other forms of physical or financial capital which are preferred. Landlords perceive the soil fertility benefits derived from cattle manure as the best way to maintain the value of their own natural capital stocks. Results from a participatory rural appraisal (PRA) ranking exercise show that for poor people, draught power on their own farms is not necessarily the most important function of cattle. The income stream from renting out their animals and using them as assets to broker access to other resources is an important contribution to the suite of livelihood benefits such as the supply of manure and milk for subsistence and cash sale and their traditional function as a store of value (Adam, 2001:15).



Cattle continue to be important for poor people in Kenya where tradition involves keeping livestock as a form of wealth and utilising meat, manure and milk for subsistence and cash sale – all of which are important to livelihood resilience (see Figure 8). However, anecdotal evidence suggests that cash income is developing a new significance, not necessarily for the purchase of food, but as a means for poor people to rent land rather than sharecrop land from richer people. The pursuit of cash income therefore remains an important determinant of poor people's livelihoods.

In Bangladesh, whilst mechanisation is reported to reduce the availability of permanent jobs and daily wage rates for labour – increased farm sizes and more intense cropping built on the back of mechanisation increases the demand for casual labour for harvesting and transplanting particularly in irrigated systems. Those households capitalising production seek additional hired labour rather than the use of family labour, opening up new labour markets. Toufique (2000) draws on data from a study by Ershadul Haque (2000) to show similar trends to hired labour in an HP area of Madhupur. The study also found that in this area it is the existence of functioning labour markets before trends to mechanisation that has an effect on the price for labour; in one set of villages where the sale of labour is new prices are lower than at a second study site where labour markets are long established.

There appear to be similar land access and labour patterns developing in Kenya, where the 68% poorest farmers in Project R7964's research area derive cash income from the 32% wealthier farmers (Nyasimi and Niang 2001). However, trade-offs are made between the productivity of household plots and potential food security against improvements to broader livelihood security that can be secured from cash income, which as Table 9 shows, is used mainly to purchase food. In the Kenyan research area poor farmers are making adjustments by reducing fallow lengths and cropping index values, and invest less income back into farming (see Table 9). Reducing their own on-farm human capital investments, impacts the timeliness of farming operations, such that delays to weeding by poor households may decrease productivity by 40% (Ndufa Kamiri James, *pers comm.* 2001). Local farmers also report the increasing use of unscheduled, wetland areas, or riparian strips for food crop and vegetable production. For some poor people, access to a variety of plot types and access to sufficient quantity of land provides the opportunity to diversify cropping patterns away from

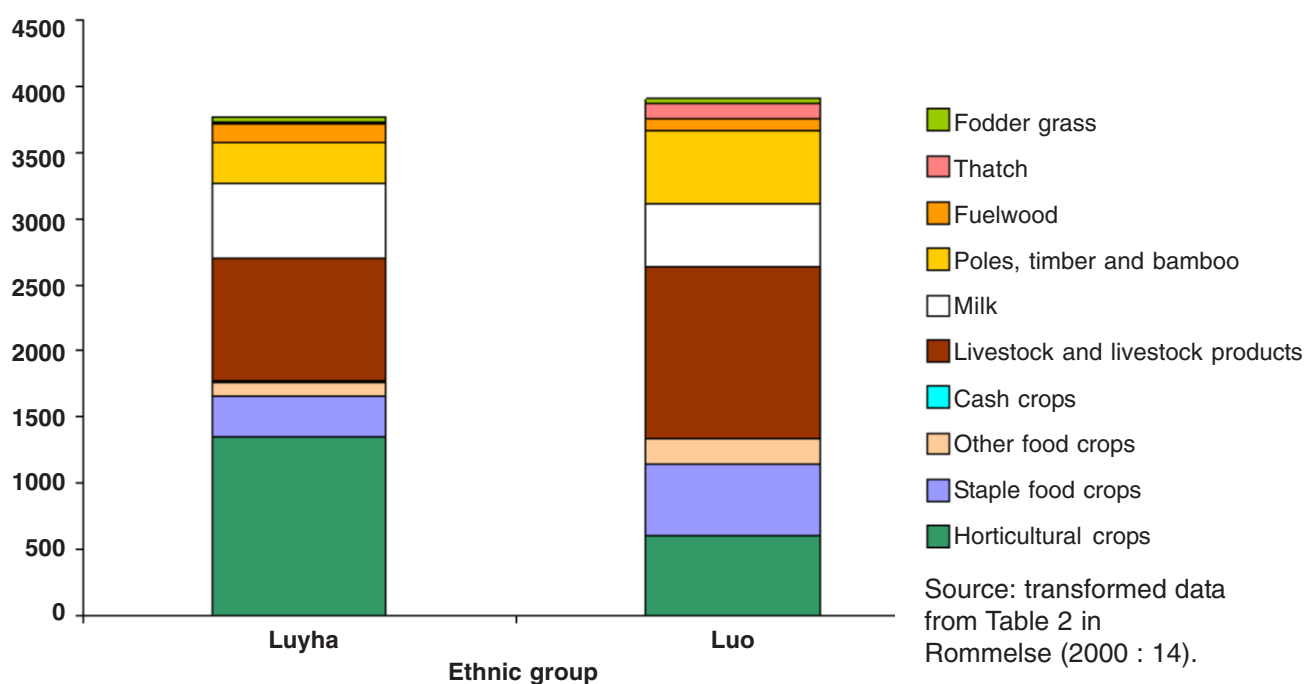


Figure 8. Average household income earned from farm products in an HP area of Kenya

**Table 9. Household expenditures by income group in HP, Kenya**

	Income groups		
	Low	Medium	High
<b>Total number of households</b>	22	63	58
	%	%	%
Food	74	63	47
Various household expenditures	11	14	15
School	5	8	11
Farm inputs	3	4	11
Others	6	10	16

Source: Rommelse (2000:4)

traditional maize/bean systems. This can increase livelihood security in two ways; increased productivity comes from ‘new’ crops with differing soil fertility demands and pest tolerances which can increase the supply of food for household consumption, and secondly the switch into higher value products such as vegetables, bananas and plantains can increase household income from farm sales.

#### **The role of market knowledge and prices**

There are significant differences in the wealth status of the two ethnic groups in the Kenyan research area. The Luhya, who are generally poorer, rely on the sale of higher value horticultural crops as a significant element of household income sources (see [Figure 8](#)). However, poorer and middle income people who diversify into higher value crops open themselves to livelihood disturbance from volatile seasonal markets for crops which are prone to cycles of glut and scarcity. It is knowledge uncertainty and the ability to mediate market conditions which becomes a determinant of livelihoods here.

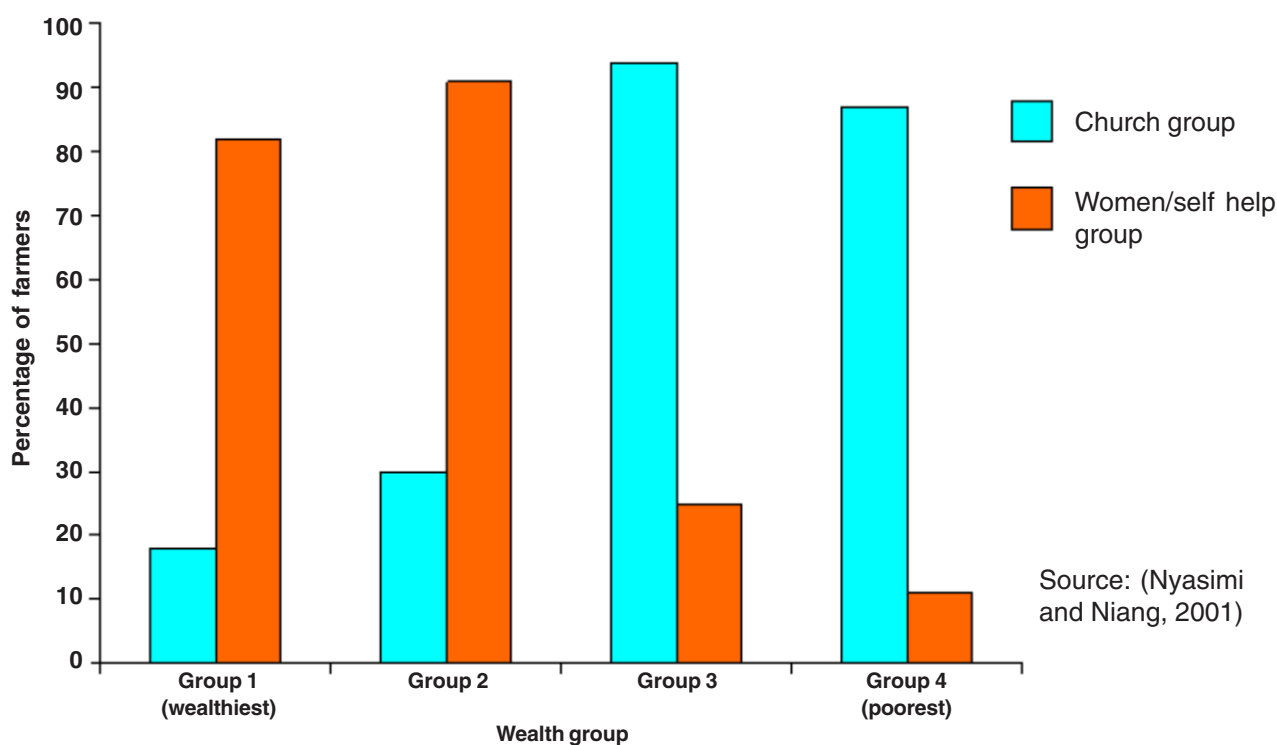
One group of farmers in the research area support each other through an informal arrangement. Working together they share the use of a bicycle which allows them to rush to and from markets on market days monitoring prices; when middlemen traders arrive to buy goods from their farms they are better placed to negotiate a higher price for their crops. Working as a cartel they are price setters rather than price takers and maintain the option of selling direct in the market themselves if this can provide a better return.

#### **The importance of social capital**

This example also indicates the role of social capital as an important determinant of livelihoods. Project R7962 identified access to social capital through group membership as providing a conduit for flows of knowledge and information. Such information is not only linked to marketing, it also includes advice and information in support of changes to cropping systems. Project data indicates that incentives and motivations to change fertility measures and cropping patterns are attributed to the supply of research and extension information passing through groups of farmers (60%), rather than information gleaned from relatives and friends (10%).

Group membership can have additional benefits; groups of farmers in the Kenyan research area managed to secure deliveries of fertiliser and seed packaged in smaller quantities and at lower unit cost from a large company that normally only deals in bulk. But group membership in itself is not enough; the type of group is important. Those to which poorer people in the Kenyan research area belong tend to be church groups rather than self-help groups, as shown in [Figure 9](#).

This has implications for the level of ‘empowerment’ and leverage people have over the social and economic conditions they find themselves in. Group membership in Kenya is associated with guarding against fines or rent seeking behaviour associated with illicit activities. As well as the type of group, the ‘strength’ of social



**Figure 9. Social capital (group membership) of different wealth group in an HP area Kenya**

capital, the way in which information flows, and the range of possible benefits, depends in part on the numbers of different groups serving livelihood interests to which a household may belong, as well as the degree of overlap between groups, and between different types of groups. The poorer ethnic groups in the project area (the Luhya) are shown to belong to fewer formal groups (average <2), and they have less extended and varied forms of social capital linkages compared to middle income and richer people (where average formal group membership > 6) as illustrated in [Figure 10](#) and [Figure 11](#).

Social capital is also crucial to managing seasonal shock and food insecurity. Informal safety nets provide food to households at times of stress. Middle income and richer farmers harvest a greater percentage of their crops early and more frequently than do poorer farmers; much of this production is loaned or gifted to poorer households. Poorer people are also shown to rely on social networks to provide financial credit to deal with daily and seasonal contingencies.

### **The importance of credit**

An important constraint to poorer Kenyan farmers diversifying out of less productive lower value crops into higher value novel crops, is survival during the transition period. The gap between final harvest of the old crop and the start of an income stream as the newer system becomes productive presents an acute livelihood shock and increases livelihood vulnerability. In the absence of credit, particularly credit that can be used for daily needs, many turn to social capital as a way of accessing alternative flows of cash income and food needed to carry them through this period.

Project R7962 recognises the importance of different forms of credit, and identifies the supply of ‘consumption credit’ as a major issue. Credit provision in the Kenyan research area is not tailored to the livelihood circumstances of poor farmers unlikely to invest in agriculture until basic livelihood needs are fulfilled. Consumption credit can take the place of social capital in mediating seasonal vulnerability and periods of transition during diversification strategies.

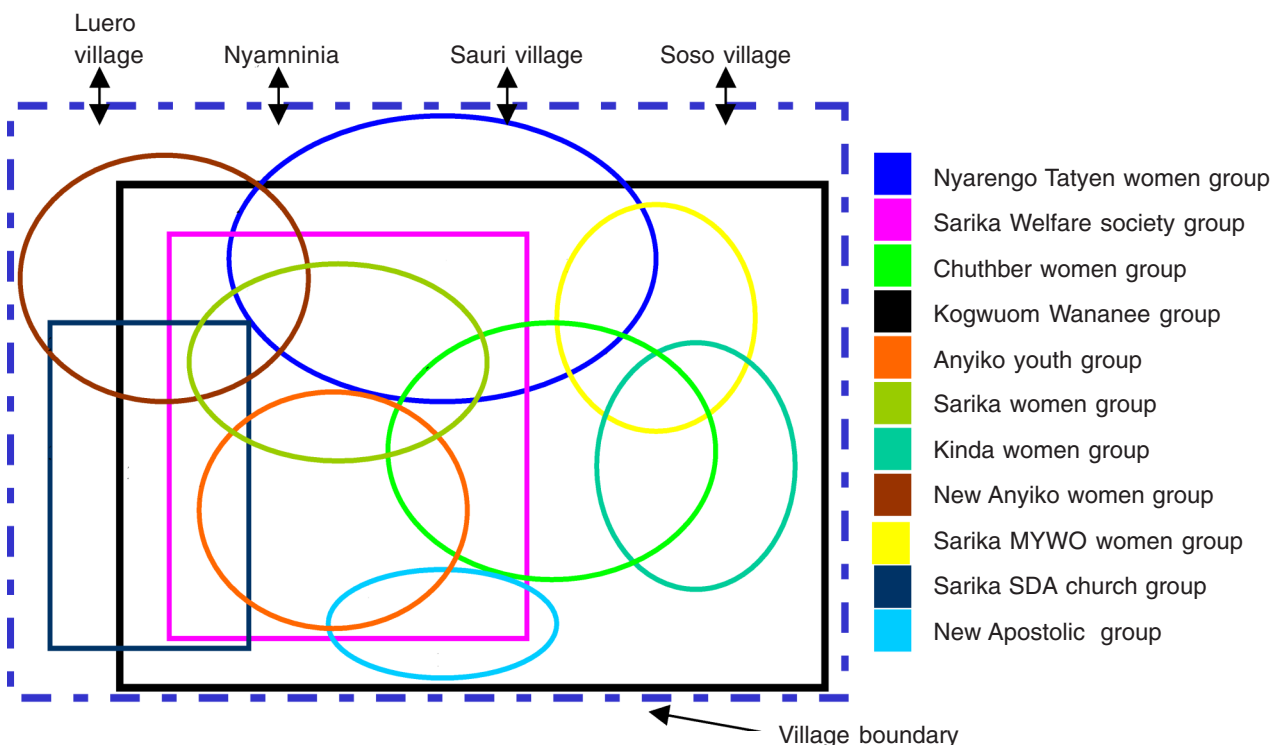


Figure 10. Luo social capital: organizational linkages and numbers of farmers within them in Sarika village, HP area of Kenya

Source: (Nyasimi and Niang 2001)

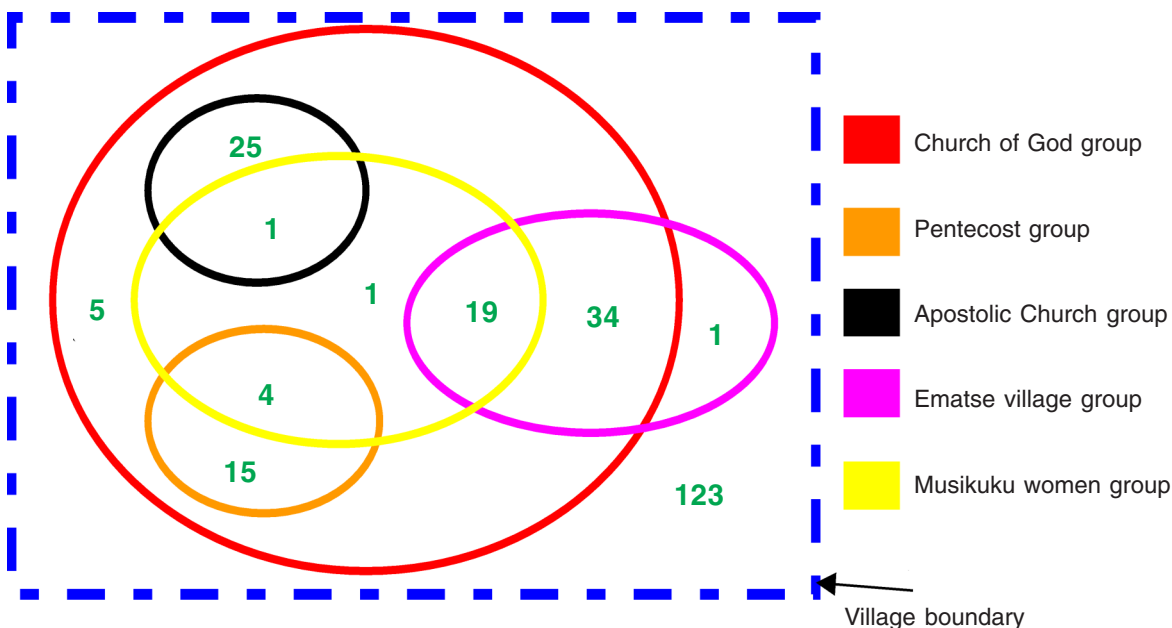


Figure 11. Luhya social capital: organizational linkages and numbers of farmers within them in Musikuku village, HP area of Kenya

Source: (Nyasimi and Niang 2001)

Project R7180 was conducted in an area with an active NGO sector. The Grameen Bank is active in some of the project villages (*e.g.*, Kumargata) providing support for a system of self help networks, and increasing women's access to micro-credit that can be used as working capital rather than for the purchase of capital items. The reported impact is an increase in literacy and in household food security (Khogali, 2002; Ud Dowla, 1998).

### ***Intrahousehold relationships***

Differential impacts on the livelihood strategies and outcomes for household members is not a focus of study in either of the projects considered. However, the importance of intra-household dynamics in determining livelihood strategies is hinted at in the data from Kenya. R7962 reports that the greatest change in farming practice is amongst women who have diversified into vegetable production, but as the higher value crops they plant in homestead gardens begin to provide a secure income stream, male members expand the homestead area that is given over to horticultural crops and take over some of the traditionally female-based activities such as marketing. It is these higher value crops that are becoming the focus of younger household members. Youths are increasing their trading in local urban markets where the demand for local vegetables is increasing in importance, not least because of the common perception that leafy vegetables help maintain the health of people with HIV/AIDS.

### ***Relationships between people of different wealth***

The relationships in a community between people having different wealth have a significant impact on the form and sensitivity of livelihood strategies to changing circumstances. Relationships between the rich and poor in the provision of access to land for rent or for sharecropping, the informal supply of credit and loans in either cash or kind, of 'food aid' during lean periods, and of labouring and income earning opportunities is shown to be important in both Kenya and Bangladesh. These synergistic effects between people rely on building political and social capital, and on the general strength of local economies.

### ***Key livelihood determinants identified***

Under the impacts of economic liberalisation on cropping patterns, rural incomes and livelihood security, access to credit, cattle ownership and labour supply all appear to have a major impact on output and productivity increases. For poor people in the HP area livelihoods are dependant on:

- access to seasonal labouring opportunities and functioning labour markets to maintain household income streams across the year;
- household labour availability;
- access to land;
- access to extension services and new knowledge to enable livelihood and agricultural diversification
- access to and flow of market information enabling income maximisation as well as responsive crop diversification strategies;
- the availability of loans and credit that can be used as 'consumption credit' and avoid asset draw down;
- social capital and informal safety nets to buffer food security and cash flow shocks and to prevent asset drawdown.

### ***Livelihood determinants of middle income people in HP areas***

Livelihood strategies of middle income people are adaptive and often accumulative, based on the intensification and diversification of agricultural production, particularly into cash crops and vegetables. Those households managing risks associated with climate, market fluctuations, and labour demands, are accumulating

assets as physical capital (*e.g.*, farm machinery and equipment, bicycles) and natural capital savings (cattle and land). There is some evidence to suggest that there is a gradual shift in the form of savings out of livestock and into cash held in banks and by savings groups, or into the provision of credit to other households.

Although investment in physical and natural capital stocks may increase vulnerability by over-extending debt obligations, they may also have additional advantages in increasing access to institutional arrangements such as those structuring access to land and trading relationships. The evolution of new institutional arrangements structuring access to land as well as access to fluid and dynamic land markets provides many middle income people with a way of accumulating assets based on land leasing and sharecropping strategies, which provide more secure income streams if access to labour and labour markets is not constrained.

Some middle income households are turning to middleman trading of agricultural commodities, and may use circular migration (cycles of migration in and out of urban areas) as a route to asset accumulation used as the capital investment to establishing these new businesses.

Knowledge of market conditions and access to services (extension, credit, input supplies) are needed for successful accumulation and adaptation, and it is clear that the NGO-CBO-research linkages to credit provision and agricultural extension are making positive impacts against knowledge and economic uncertainty as well as helping to build social capital.

### **Livelihood determinants of richer people in HP areas**

Richer people are adapting to lower remittances from urban areas, intensifying agricultural production, and investing in land and land leasing strategies. Project R7180 presumed that wealthier people have declining numbers of animals because of access to financial capital providing the means to invest in power tillers, and because the reduction in common property resources reduced access to grazing and fodder. In Kenya wealthy people continue to invest in livestock and land as a form of capital savings and a source of income.



## Livelihoods in the land water interface

*Table 10. Summary characteristics of projects included in the LWI synthesis*

<b>R6744</b>	Methodological research into the incorporation of indigenous knowledge into natural resources research on Bangladesh floodplain production systems
<b>Geographical location</b>	Tangail District, Bangladesh
<b>Data collection method/s</b>	FGD's, KIs, PRA
<b>Sample size</b>	unclear
<b>Characterisation of Poor SLF?</b>	Occupational and livelihoods groups
<b>R6755*</b>	Sustainable local water resource management in Bangladesh – meeting needs and resolving conflicts
<b>Geographical location</b>	Tangail District, Bangladesh
<b>Data collection method/s</b>	HH survey, case studies, FGD's, KIs, PRA, GIS.
<b>Sample size</b>	1807 HH over 8 settlements. 34 focus groups (only 8 women).
<b>Characterisation of Poor SLF?</b>	11 livelihood groups, and 5 PRA wealth groups. Yes
<b>R6756</b>	Investigation of livelihood strategies and resource use patterns in floodplain production systems in Bangladesh
<b>Geographical location</b>	Tangail and Rajshahi Districts, Bangladesh
<b>Data collection method/s</b>	Quantitative HH, land, and hydro-logical surveys, qualitative case studies, PRA, KIs, problem census and stakeholder workshops, GIS.
<b>Sample size</b>	210 HH in each of 7 settlements.
<b>Characterisation of Poor SLF?</b>	Livelihood and occupational groups and land ownership. Yes
<b>R7797</b>	Opportunities and constraints for coastal livelihoods in the Caribbean
<b>Geographical location</b>	Jamaica and Tobago
<b>Data collection method/s</b>	Questionnaire based survey including problem and constraint census.
<b>Sample size</b>	2 islands, 48 + 32 individuals across 11 settlements.
<b>Characterisation of Poor SLF?</b>	Wealth score based on asset ownership; occupational groups. No
<b>R7868</b>	Maximisation of joint benefits from multiple resource use in Bangladeshi floodplains
<b>Geographical location</b>	Tangail District, Bangladesh
<b>Data collection method/s</b>	
<b>Sample size</b>	Unclear.
<b>Characterisation of Poor SLF?</b>	Building on R6756. Yes

\* As of April 1999, this project was in the NRSP-HP portfolio. However, in scope, it was very similar to R6756 and so in this study it is considered with LWI projects

The projects included within this production system naturally divide into those concerned with livelihoods on the floodplain and those of the coastal zone. Each is therefore considered separately. Livelihoods in the floodplain systems in Bangladesh involve intimate sets of relationships between fishing and agricultural activities. Projects in the coastal zone have not reported similar links to land-based production systems, concentrating instead on investigating open water based systems.

## Livelihood determinants in the Coastal Zone

The synthesis relies on the outputs of project R7797 which consolidated information about secondary data sources concerned with green and blue environmental issues in the Caribbean. The project found that research knowledge of the interactions between island populations and the natural resource base is often inadequate, and that improved understanding using a coastal livelihoods approach is required to broaden and strengthen the knowledge base.

A significant observation from project researchers is that NR-based determinants of livelihoods may not be found at the micro level. They are instead linked to historic trends and macro-level policy surrounding land tenure systems. Tenureship patterns developed from colonial plantation-based economies are often linked to the pattern of contemporary tourism developments and to the generation of wealth. Open water stands in contrast to this and has traditionally provided a means for poorer people to secure livelihoods. The project conducted a survey to contrast the livelihoods of coastal communities in Tobago and those in Jamaica. The dataset is small, and there is no detailed information about tenureship systems for either land or water resources, nor is there data relating to household economies. Consequently the ability to draw robust conclusions concerning the main livelihood determinants in this system is limited.

### Coastal LWI system patterns and trends reported

#### *Differences between the islands*

The main differences between the two islands that the project identifies are general levels of wealth (Tobago richer, Jamaica poorer), levels of educational attainment and economic policies. In Tobago there is an upward trend in terms of household income improvement which includes improvements for some poor people, whereas in Jamaica trends are downward seemingly having greatest impact on the poor.

#### *Trends in agriculture and fisheries*

Agriculture and fisheries provide important employment and livelihood opportunities for different people in the Caribbean region. The agricultural production of small farmers is threatened by the loss of preferential trade agreements within international markets. The institutional context within which fisheries operate is complex and vulnerable to failure. The seeming absence of clearly defined property rights and policy-level tradeoffs between national and local needs affect fisheries' contributions to national development as well as the livelihoods of poor people. In both islands, the monetisation, capitalisation, commercialisation and mechanisation of fishing is reported with consequent impacts on the livelihoods of the poor.

These trends appear to be strongest in Tobago where fisheries export revenues have been used as a vehicle for economic development. However, conflict has emerged between industrial and artisanal fishing fleets as changing institutional relationships and reductions to fish stocks have increased the number and type of restrictions governing fisheries access. This has limited the ability of community users to turn endowments into entitlements. Further spatial conflicts have arisen around landing rights; in the case of Tobago these are centred on frictions between fishers and tourist developments.

#### *The policy context*

In Tobago national policy which links tourism to development and provides economic incentives for small businesses supports middle income and richer people seeking to diversify livelihoods out of fishing, or to commercialise their fishing enterprises. In Jamaica, small scale weekend tourism, a declining economic base and a less supportive policy context has not promoted beneficial impacts on small-scale fishing.

## Livelihood determinants of the poor in coastal LWI

### Asset ownership

Significant differences exist in household asset ownership between the two countries. In Tobago asset ownership is higher and more evenly spread, with overall asset scores in Jamaica less than half those of households in Tobago. Consequently the factors affecting livelihood strategies in each country are likely to be different.

### Livelihood opportunities

Survey respondents in Jamaica perceive livelihood opportunities as being very constrained, and livelihood security threatened by corruption and general levels of poverty. There is some evidence to suggest that the poor engage in a range of different activities opportunistically as a coping strategy which keeps them going (J. Hancock, *pers comm.* 2001). In Tobago, households share a greater sense of optimism, and perceive livelihood security as being tied to the tourism industry, despite the acknowledged conflicts of interests between developers and NR users. Problem census data indicates that poor households in Jamaica are concerned with livelihood security issues centred on basic needs, whereas concerns in Tobago are qualitatively different and focused on broader welfare issues such as environmental quality impacts on household wellbeing.

### Livelihood activities and diversification

Within the data presented it is difficult to discern whether poor people engaged in fishing are seeking to diversify livelihoods or not. It is also hard to discern whether accumulative adaptive or coping and survivalist strategies are being pursued regardless of island location. [Table 11 and Table 12](#) summarise the livelihood activities associated with different people over the two islands.

The tables indicate the average wealth score for people by their primary occupation, and give a livelihood diversity score based on the average number of additional activities households engaged in alongside the primary activity. In Jamaica fishers and fish ancillary workers are poor, whereas in Tobago they are richer. The project attributes this to the larger scale of operation in Tobago, and the fact that fishers in Jamaica are less likely to be boat owners than members of the crew. In Jamaica livelihood diversity increases with wealth, whereas in Tobago the relationship is weaker. The determinants behind these patterns are not clear. However, the relative ease of obtaining credit raised on a more secure asset base may partly explain how fishing households in Tobago are expanding their businesses whilst in Jamaica fishers are increasing their fishing effort. This is illustrated by the credit scores shown in the bottom rows of [Table 11 and Table 12](#); the poorest group in Tobago has twice as high a credit score as the richest group in Jamaica.

In Jamaica access to labour markets and the ability to undertake casual labour is reported as increasingly important to the livelihood portfolios of poorer people. Approximately 50% of the households interviewed said they relied on remittances as an important source of cash income and livelihood security. Whether poorer households are following strategies which increase livelihood security by alternating between both urban-based casual labour, and fisheries-based labour (ancillary workers or crewing) in seasonal or cyclical patterns is not clear. However, changes to the nature of ancillary fishing activities and constrained access to labour markets are reported as having negative impacts on poor people's livelihoods.

Evidence from interviews suggested that young males are pulling out of fishing and other NR-based activities, and migrating into urban areas in search of alternative income earning opportunities. In Tobago remittances generally came from pensions and financial capital savings, reflecting again the higher asset endowments of the surveyed households as well as better access to financial services and capital markets.

### Credit provision and social capital

In Jamaica social capital is important to filling the missing credit market. More than 50% of surveyed households declare involvement in rotating savings and credit associations (rosca's). The effect of rosca member-

**Table 11. Primary livelihood activities, diversity and credit scores for different people in coastal LWI, Jamaica**

	Poorest	Upper poor	Middle income
<b>Fisheries based</b>			
Fishers		3.82	
Fish processors		3	
Fisher - ancillary		3	
<b>Non fisheries NR related</b>			
Tourboat operator			6
Beach/bar operators	2.33		
Farmer		3.5	
<b>Non NR based</b>			
Shopkeeper	1.33		
Transport			5.33
Housewife		3	
Teacher			6
Coalburner	0		
Unemployed		3.5	
<b>Mixed categories</b>			
Vendor		3.6	
Formal employment		3	
<b>Livelihood diversity index</b>	<b>1.22</b>	<b>3.31</b>	<b>5.78</b>
<b>Credit score</b>	<b>0</b>	<b>0.06</b>	<b>0.23</b>

Figures in cells (Tables 11 and 12) relate to average wealth score for that occupation.

Source: transformed data from project R7797 Tables 6.2, 6.3 and 6.4 in Willoughby *et al* (2001)

**Table 12. Primary livelihood activities, diversity and credit scores for different people in coastal LWI, Tobago**

	Upper poor	Middle income	Rich
<b>Fisheries based</b>			
Fishers		5.36	
Fish processors			10
<b>Non fisheries NR related</b>			
Tourboat operator		6.66	
Resort owner			11
Guesthouse owner		8	
Beach/bar operators		7	
Farmer		7.75	
<b>Non NR based</b>			
Shopkeeper	4		
Unemployed	3.5		
<b>Mixed categories</b>			
Vendor		6	
<b>Livelihood diversity index</b>	<b>0.5</b>	<b>0.85</b>	<b>0.50</b>
<b>Credit score</b>	<b>0.5</b>	<b>0.66</b>	<b>2.0</b>

Figures in cells (Tables 11 and 12) relate to average wealth score for that occupation.

Source: transformed data from project R7797 Tables 6.2, 6.3 and 6.4 in Willoughby *et al* (2001)

ship on overall livelihood security in financial terms must be questioned since the lower contribution requirements and greater group size of rosca's suited to the poor, limits the size and frequency of the eventual 'payouts'. Other potential benefits contributing to livelihoods and wellbeing are not reported. In Tobago the provision of training (*e.g.*, in book keeping, accountancy, and business management) linked with credit provision, is cited as an important determinant supporting livelihood diversification for some of the poorer/middle income people.

In Jamaica social capital networks not only provide routes into roscas, but also structure access to fish traders who provide credit for poorer households on the promise of future catches. In Tobago, poor households tend to be members of trading associations. These associations are believed to have some impact on mediating market relationships and the influential institutions affecting fisheries. This contrasts with perceptions in Jamaica, where poor people believe improvements to their livelihoods will come from their own individual efforts and luck rather than through pressure to change the institutional context.

### **Reliance on the NR base**

Overall, the degree to which poor people at the coastal LWI depend on natural resources appears greater in Jamaica than Tobago. In Tobago, it is the presence or potential presence of tourist developments which constrain household access to the NR base, particularly land and fresh water. This implies the importance to poor people of maintaining small farming plots and kitchen gardens as an adjunct to fishing- and tourist-based activities.

### **Important livelihood determinants identified**

The principal livelihood determinants for poor people appear to be:

- labour markets and labouring opportunities in ancillary fishing activities and other urban-based activities;
- availability of cheap credit;
- access to land for farming or gardening;
- membership of social capital networks and informal safety nets;
- the institutional environment and macro-economic conditions.

### **Livelihood determinants of middle income and richer people in coastal LWI**

In contrast to the situation in Jamaica, the data suggests that in Tobago it is the richer and middle income people that have livelihood strategies most closely linked to the NR base. This reliance is based on ownership of intensified and capitalised fisheries businesses or the wider environmental resources which attract tourists. Middle income people are perceived to be consolidating their assets in one livelihood activity, with the wealthier then diversifying into new or emerging activities (J. Hancock, *pers comm.* 2001). The main determinants that promote positive livelihood outcomes for these people appear to be access to urban areas which provide markets for fish and fish products as well as artisanal goods, links to tourists, and services such as banks and cheap labour markets. Vitally important to upper middle income people is the provision of business information and training, and the availability of both investment and working capital.

## Livelihood determinants in Floodplain systems

This section is based on the outputs of three projects working in Bangladesh, with projects R6755 and R6756 contributing the most substantive information.

Project R6755 initially looked at the provision of water to different people, but developed to examining livelihoods in greater detail. The project conducted household livelihood studies in two areas, one within a flood relief scheme (Jungini *beel* catchment) and one outside the scheme (Bartta *beel* catchment). Data were collected during a normal monsoon season as well as during a period of severe flooding. The research team was able to observe the actions of different kinds of households as they managed in response to this environmental shock.

Project R6756 was considered a ‘livelihood’ project from inception, although the DFID SLF had not yet developed into its current form. The research area covers two sites with seasonally expanding standing water bodies, one research site with a larger *beel* and the second with a smaller *beel*. The hydrological regimes, soil type and opportunity for fishing and waged labour differentiates the two sites. The research produced an enormous dataset including household, soil, water, and cropping studies which were manipulated using GIS. Part of the project is concerned with looking at the complementarity and conflict between different peoples’ resource use strategies, thereby making explicit the potential trade-offs between various resource use options. Conceptually the project subscribes to a landscape level analysis of the inter-relationships between farming and fishing, moving away from a ‘bi-polar’ model of resource use that sees households as either farming or fishing, seeing water as “a commodity to apply to rice”.

Both projects made use of previous research undertaken in the same areas. Both projects also recognised the limitations of their data with regard to understanding intra-household dynamics, and acknowledged difficulties involving women as significant stakeholder/resource use people in the project process.

### Floodplain LWI system patterns and trends reported

Across Bangladesh there has been a measured decrease in rural poverty since 1992 but an increase in per capita inequality of consumption, which is manifest *inter alia* as growing landlessness. For the poorest of the poor a livelihood directly related to NR is no longer the general rule.

Seasonality is the main livelihoods disturbance on the floodplain. In both project areas this is expressed as competing interests for access to fish and access to water for irrigation in the dry season, and competition for labouring and wage earning opportunities during the wet season.

### Trends in agriculture and agricultural water management

Bangladesh has been subject to two main development trends, the first is a massive growth in small-scale irrigation provision, which has facilitated a shift from wet season rice cropping to irrigated dry season crops. This has improved crop production overall and spread labour demands more evenly across the seasons, bringing positive impacts for some households coping with the traditional lean season during January to May. The projects report increased monetisation, capitalisation, commercialisation and intensification of farming systems.

Project R6755 reports that the shift from surface water irrigation to increased abstraction and utilisation of groundwater, has changed soil fertility cycles and exacerbated water pollution problems. There are measurable effects in the quality of water available for household use. Microbial contamination, increased salinity and iron content of water as well as increased load of pesticides and other agrichemical residues, has an impact on human capital contributions to livelihood strategies. The privatisation of groundwater and surface water is increasingly common, and has caused some of the rural elites to be classed as ‘water barons’.



### **Trends in access to water and water management**

The second trend has been the flood action plan infrastructure approach to floodplain modification, which, whilst it may have aided crop productivity, has almost invariably damaged inland open water capture fisheries and led to acute social conflicts between farmers and fishers because of changing fish migration routes, reduced numbers of fingerlings entering standing water, and increased levels of over fishing in some areas. Increasing stress on common property resources in the form of standing water and open water fisheries results in either stock reductions or access restrictions. The effects of these changes is particularly significant for landless households, as the extent of common property wetland resources that poorer people have traditionally relied upon for fishing and the collection of wild resources such as water snails, is now reduced.

Water resources planning has become increasingly fragmented across departments, and the lease of open water bodies in Bangladesh has been in a state of flux for a number of years. By and large the *de jure* position is that some types of open flowing water have been made ‘open access’, whereas in the case of other closed standing water bodies, NGO’s and donor governments are pressing for long term leases for *bone fide* fishers groups to institute a more managed approach to resource use. The *de facto* position is more complicated, but there is no doubt that changing access conditions and the structure of institutions managing the CPRs is having significant impact on some people.

In addition, water based activities other than fishing are subject to increasing conflict. Reduced water flow in perennial and open water bodies, has, for example, caused a decline in the number of places jute can be processed (retting down), and there is also increasing conflict around watering and washing sites for livestock. In other cases there is significant conflict over access and use of water resources where richer farmers try to lay claim to water for agriculture, standing against the interests of poorer fishermen wanting to maintain water levels and institute management that supports fish stocks.

### **Impacts of wider trends on livelihoods**

Consultations with poor people identified some of the cumulative consequences of these changes as major livelihood constraints. The most important of those identified are the reduction in the availability of water because of changes to the extent and nature of flooding patterns, draw down of the water table and the overall decline in fish stocks.

## **Livelihood determinants of the poor in floodplain LWI**

### **Understanding land ownership as a determinant of wealth**

Project R6756 categorises households as being either accumulative or survivalist. Building on Ullah’s (1996) definitions, accumulative households are those increasing or maintaining their land holdings, whereas survivalist households are characterised by declining and minimal landholdings. Project R6755 also adopted landholding as a proxy indicator of wealth, where poorer households have only small land holdings or are landless. In applying this differentiation to the dataset both projects signalled that access to land is a significant determinant of livelihood strategies, and that poor people are less well endowed with NR by definition.

### **Livelihood activity portfolios, diversification and the balance of NR and non-NR based strategies**

Both projects demonstrate that regardless of wealth category, only a small portion of households solely farmed or solely fished (only 3.3% of households in an area where 74% are classified as landless). Most livelihood strategies include diverse activity portfolios integrating land- and water-based activities where the mix of activities varies according to the season. The general pattern for poor households is to switch between share-cropping or labouring in the dry season, and to participate in fishing or alternative labouring or cash earning activities in the wet season.

Although the degree of livelihood diversification associated with different degrees of wealth was not analysed, Figure 12 illustrates the range of livelihood activities of households associated with the poorer and richer locations. Reporting on project R6756 Barr *et al* (2000), state that:

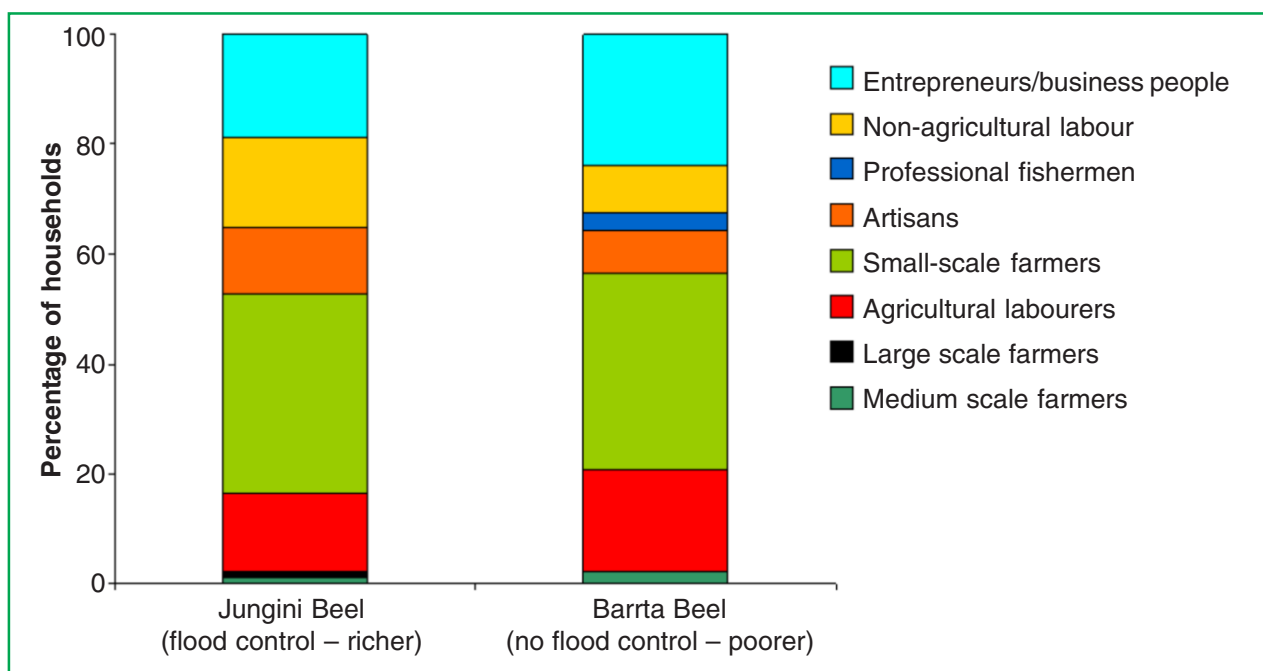
*“Though rural Bangladesh has traditionally been considered an agrarian society, increasing numbers of its poorer members are diversifying their livelihoods to include employment outside agriculture and fisheries. This ‘deagrarianisation’ (Bryceson, 1996) and livelihood diversification means that stocks of, and access to, natural capital may be of declining livelihood importance, particularly to the landless poor, who, since they are not tied to their own land, are moving towards opportunities in other non-farm sectors.”*

The projects report that the rural poor stand to make large gains by moving into the non-farm sector, activities such as rickshaw pulling, small business, petty trading. Artisanal activities such as weaving, basketry, and *bidi* making are increasingly important livelihood activities which may help to structure more secure livelihoods.

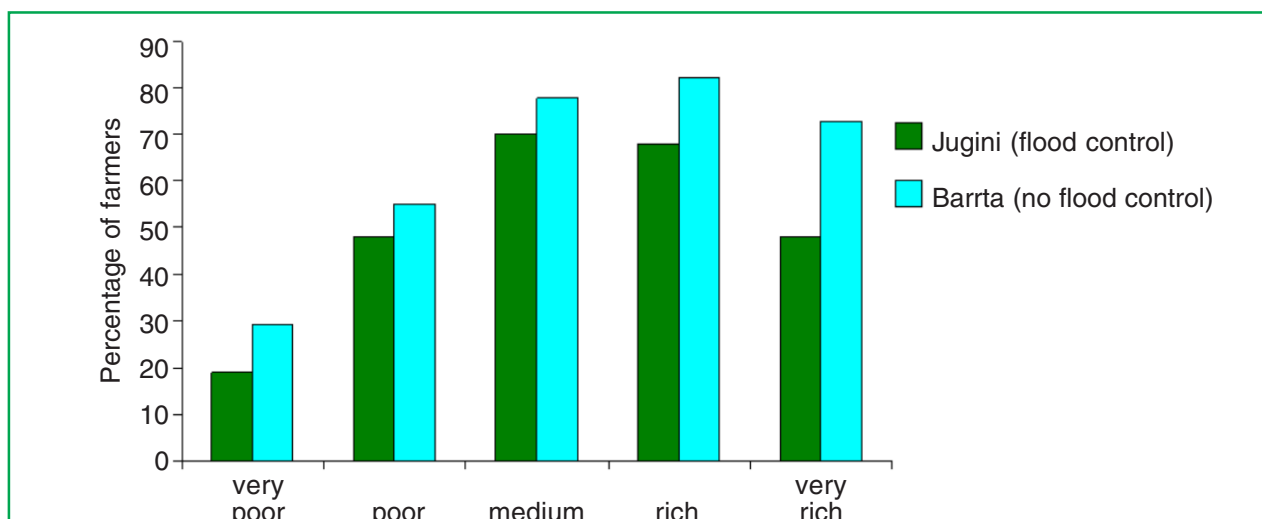
The relative importance of these activities to the livelihood strategies of poor people is determined by their capacity to meet the associated transaction costs. The costs associated with sharecropping, such as the demands of landlords that sharecroppers supply fertiliser for use on the land, may present insurmountable barriers to entry for the poorest people. Project evidence suggests that operating with a lower social or financial capital asset base means that poorer households are less able to broker access into agriculture or to irrigated farm plots and are proportionately more dependent on different kinds of fishing (Figures 13 and 14).

This is reflected in the typology of fishing households which includes significant numbers of the poor fishing for seasonal income when agriculture provides neither income nor subsistence, those fishing opportunistically for income and food as a coping strategy, and those fishing opportunistically for food as survivalist strategies.

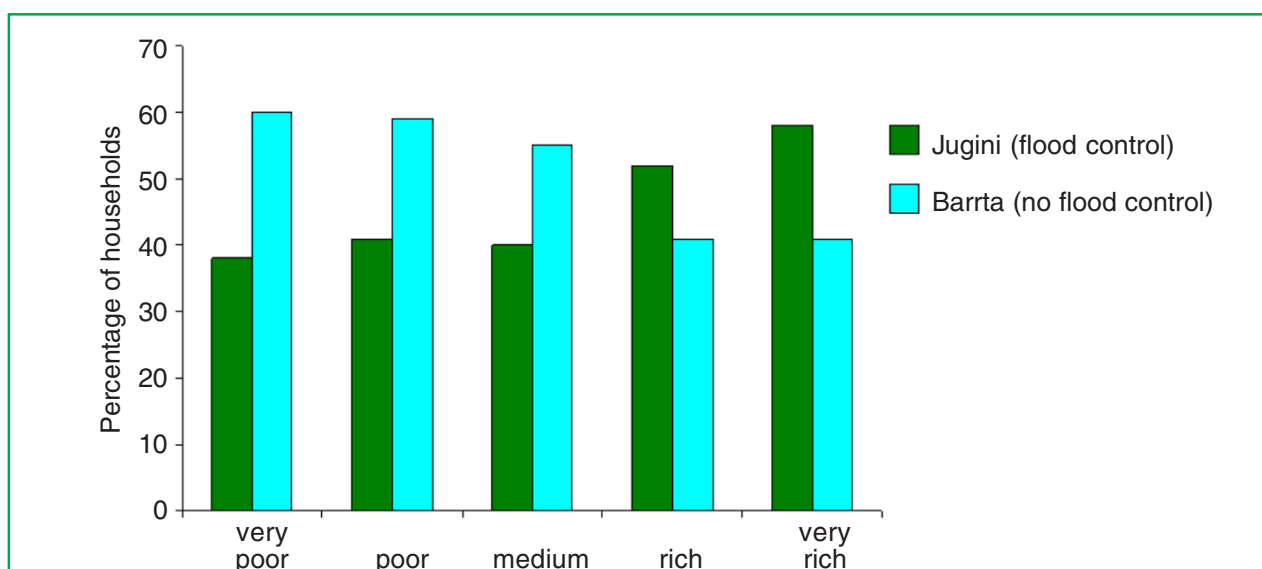
As project R6756 illustrates, the structuring policy trends and institutional processes governing access to fishing incur their own transaction costs. For those households who rely on fishing to mediate livelihood vulnerability it is these costs, rather than the condition of the natural resource, which are perceived to be the main livelihood determinants (Table 13).



**Figure 12. Diversity in livelihood activities for households in two different communities in LWI, Bangladesh**



**Figure 13. Households using groundwater irrigated farming, LWI, Bangladesh**



**Figure 14. Households from different wealth groups fishing, LWI, Bangladesh**

Privatisation of standing water and the issue of fishing permits mean that access to fisheries has become dependent upon social, political and financial capital components to entry. Project R6755 demonstrates that wealthier people in Jugini are more often engaged in fishing activity than poorer people, since they are better able to bear the costs associated with securing leases to fish over permanent standing water. In Barra, access to open water outside of the flood control system remains an important source of livelihood for poorer people able to negotiate the costs of entitlement to use common property or open access resources (see Figure 14). Where the costs of entry to fishing too great, or where dry season conflict over access to water and fish has intensified, R6755 reports that some poorer people have switched their main livelihood activity from fishing into fish trading.

#### **Social capital as a major livelihood determinant**

Social capital emerges as a determining cross cutting factor influencing households' ability to negotiate change. In the dry season it is social and human capital which determines the terrestrial component of livelihoods, mediating access to sharecropping and labouring opportunities, as well as access to supplies of capital assets such as fertiliser. Similarly, access to irrigation water or fisheries in closed standing water relies on the

**Table 13. Categorisation of transformed livelihood problem census data for stakeholder groups in Bangladesh**

Stakeholder	Vulnerability			Assets (deficiency)					Structures		Processes			Σ
	Trends	Shocks	Seasons	N	S	P	H	F	Public	Private	Intra-household	Local insts and culture	Governance	
Landless	2		23	15	6	5	3	4	8	5		32		100
Sharecropper	10	1	8	11			10	12	15	23		10		100
Medium/large landowners	9	2	4	6		26	7	8	13	15		6	4	100
Seasonal fishermen	41		6					20				13	20	100
Traditional fishermen	44				7			16				33		100
Poor women	1	8	19	33		2	1	14	1	8	1	10	5	100
Wealthy women		8	6	13	5	3	14	9	14	12	6	22		100

Source: Table 4 in R6756 FTR Barr (2000)

social solidarities and relationships between farmers and fishers with competing interests over the water resource. In the wet season, competition for casual labouring opportunities determines the degree of livelihood stress of poor people. In a situation where poor and better off alike strive to capture a portion of a limited market for service and productive goods, advantage is conferred upon those with strong social ties to those operating small businesses and leasing out boats, rickshaws and other capital equipment, and to those using social networks to build a strong customer base.

The insights into the determinants of livelihoods on the floodplain and the cross-cutting importance of social capital needed to turn endowments into entitlements, lead Barr and Haylor (2001: 17; [R6756]) to suggest that:

*“Key development entry points may well include building social capital, leading to micro-credit availability, collective bargaining associated with more reliable input provision and price stabilisation.”*

### **Land based determinants of livelihoods**

Patterns of livelihood activities are closely allied to the natural seasonal rhythms of the LWI. R6756 highlights other seasonal determinants of livelihoods linked to household NR assets. Land owned by poorer households is more likely to be lower lying and prone to deeper more prolonged seasonal flooding. Consequently these parcels of land are less able to support diverse cropping systems. For the poor this has significant impacts on food security and livelihood resilience.

The bulk of household subsistence requirements must be met by the wet season boro crop, which requires high levels of inputs, particularly labour. The opportunity cost of labour in the wet season is high. Different people on the floodplain compete for the same income earning opportunities at a time when flows of cash income and the availability of subsistence crops is otherwise limited.

Reliance on the boro crop also increases livelihood sensitivity to economic and ecological shocks, by tying crop sales to a period when commodity prices for rice are at their lowest.

For the poorest people who are not able to diversify out of boro rice cropping, the traditional lean season still exists. In contrast, those poorer households operating on slightly higher ground or working from a better asset

**Table 14. The importance of different effects of flooding on livelihoods in LWI Bangladesh**

Flood induced livelihood impacts	Jungini (n=96)		Bartta (n=95)		Rank of all
	Percentage of sample	Assigned rank	Percentage of sample	Assigned rank	
Field crops destroyed or damaged	16	3	26	1	1
Lack of paid labour	20	1	12	4	2
Lack of food supplies	19	2	16	3	2
Homestead trees destroyed or damaged	10	6	22	2	4
Lack of fuel to cook	15	4	10	5	5
Difficulty of moving stored crops	1	9	0		5
Land lost to erosion	0		1	9	5
Damage of business goods	0		1	9	5
Homestead crops destroyed	11	5	4	7	9
Others	4	7	5	6	10
Homestead destroyed or damaged	1	9	4	7	11
Loss of livestock	3	8	1	9	12
<b>Total</b>	<b>100</b>		<b>100</b>		

Source: Table 3.6a Clemett (2000: 28) from R6755 FTR Vol.III, with last column an addition based on average rank

base, have turned to planting an oil seed crop on fallowed dry season rice land. This provides a window of opportunity to crop the oil seeds and get immediate post harvest cash to fund inputs for the boro crop, reducing asset drawdown and spreading the capital costs of production.

### **Access to credit**

The availability of credit emerged as an important determinant of household coping strategies and the resilience of livelihoods. Project data indicates that for poorer people, access to credit from banks is constrained by their lack of surety (land holdings). Consequently poorer people are often drawn into high interest credit relationships with fish traders and others operating in the informal credit sector. Cycles of indebtedness and vulnerability ensue as poor people are unable to meet debt repayments and use a greater percentage of their catch to repay loans rather than secure household income.

The importance of the form and timing of credit is emphasised by data from Project R6755 collected during a period of flooding. The significance of various flood induced impacts on the livelihoods of poor people is shown in Table 14. Concerns of greatest importance varied by wealth category. In the case of poorer people, apart from highlighting food security issues, loans appeared crucial to livelihood resilience. There is significant variation in the interest rates attached to loans according to origin. Loans from family, friends and other forms of social capital are generally interest free, but from other formal sources are subject to excessively high interest rates. The rate of interest, rapidity of credit disbursement, the size of the loan and associated conditionalities together determines the impact on livelihood outcomes.

Smaller, short term and rapidly disbursed loans, help to reduce asset draw-down and reduce livelihood vulnerability when used as working capital to re-establish the household's primary cash earning activity *e.g.*, weaving or basketry. Poor people also discussed the need for larger longer term loans that they could use to secure future livelihood assets, *e.g.*, new planting stock and capital items, and to manage livelihood shocks such as the payment of dowries and managing chronic illness which would otherwise require the sale of livelihood assets such as livestock.

Access to credit may provide opportunities for poor people to diversify their livelihood activities particularly as a strategy to overcome seasonal stresses. Poor people reported using credit to invest in physical capital stocks such as better fishing gear, rickshaws, bicycles, and artisanal equipment to establish small businesses which might provide more secure income streams during the monsoon period. However, the wet season competition for similar terrestrial- and water-based income opportunities introduces a significant element of risk. Market demand is not guaranteed. The success of the investment is determined as much by the structure of local economies and the numbers of other similar businesses, as by the business skills and human capital assets of the poor.

### **Gendered determinants of livelihoods**

Some project evidence sheds light on the gender dimensions of livelihood strategies. Women in Charan *beel* (Project R6756) discussed household capital constraints in a way that emphasises their individual (versus the household) reliance on NR. Poor women highlight wet season stress as most important in determining their livelihood outcomes. The women point to the lack of fodder and fuelwood as significant constraints which effectively draw down other assets and increase labour demands, which in turn reduces their capacity to secure other income earning opportunities.

It is interesting that women also pointed to knowledge uncertainty as significant. They identify the importance of livestock in providing cash and subsistence goods. Women note that the failure of extension services and other public institutions to provide appropriate knowledge and advice on improving their livestock husbandry practices, are preventing them from realising the potential productivity of their cattle.

### **Important livelihood determinants identified**

The principal livelihood determinants for poor people appear to be:

- number and type of wet season opportunities for either income earning or a means to secure returns from agriculture;
- sufficient social and financial capital to secure access to land and inputs for agriculture;
- knowledge of markets (including labour markets) and agricultural practice;
- availability of and access to cheap credit as working as well as investment credit and as ‘micro-loans’;
- sufficient social capital to secure access to open water and standing water CPRs for fishing and collecting opportunities, and for agricultural irrigation in the dry season;
- presence of social capital and informal safety nets deployed at times of livelihood stress and to avoid asset draw-down.

### **Livelihood determinants of middle income people in the floodplain LWI**

In common with many of the other production systems reviewed in this report it is the middle income farmers in the LWI who appear to be the most dynamic and risk bearing sections of the community. Project R6755 in particular showed that sharecropping is an important strategy for households with up to 2.5 acres of land to increase their participation in agriculture, although they also rely on fishing heavily during the wet season.

Livelihood diversification comes in the form of contracting services to wealthier farmers and extending the amount of their sharecropped land, and engaging in diverse cropping strategies. Project R6756 identifies an entrepreneurial set of small farmers who own their own land, and sharecrop the land of others, by buying in labour from land-poor households and poorer people in the community. They are then able to react rapidly to changing market conditions by, for example, switching crops grown according to increases in market prices for certain commodities, and offering different rates of pay for labour so that fixed costs are minimised and



control over variable costs is maintained. In one case study example, a number of middle income people following this type of livelihood strategy are also providing their own labour to richer people maintaining and operating irrigation equipment and pumping services.

Observations by the R6755 research team during the period of flooding shows that for the middle income people, livelihood concerns about food supply are less important than those to do with crop damage, and the loss to floodwater of natural and physical capital assets (*e.g.*, homestead trees, agricultural implements).

Loans and credit are also important for middle income people, who indicate that although credit is provided to them as a form of relief during the flood, it is not available before the flood when it is required to enter into or expand their small scale business ventures.

Problem census results for these middle income people indicate that poor soil fertility, access to fodder and animal manure represent their major constraints to production. It is the failure of private structures in the provision of farming inputs that has an impact on livelihood accumulation strategies, and the effect of markets – the seasonality of prices and the knowledge uncertainty associated with this – which are more important than seasonality of access to land and water resources.

### **Livelihood determinants of richer people in floodplain LWI**

The livelihoods of richer people in LWI in Bangladesh, depend variously on relatively intensive irrigated agriculture, the provision of NR related services such as irrigation infrastructure *e.g.*, pumps, cultivation inputs in the form of draught, ploughs and powered rice cultivators, and services such as mechanised threshing and milling, as well as on salaried employment and remittances.

Livelihood security is based on the accumulation of physical capital as well as traditional natural capital land holdings. Access to either surface water or groundwater has become a determinant of many richer people's livelihoods, and as such provides an incentive for elites to privatise water supplies. For people with medium or large land holdings, the position of land in the landscape and the quality of that land *e.g.*, drainage capacity or fertility status, has become a more nuanced determinant of livelihoods than access to land *per se*. For the richest in the community, a mix of land types (quality and position) provides the best route to maintaining access to water, soil fertility, and diversity in land cropping capability that maintains an even flow of income and resilience against economic and ecological shocks and stresses.

During the dry season when there is a greater degree of synergy of activity amongst the population, the wealthy rely on labour for sharecropping or contract agricultural tasks, which is supplied by small-scale farmers. During this period it is social capital and the presence of labour markets that has influence on their livelihoods.

One cause of vulnerability for richer people reported by the projects is that social norms dictate that members of wealthy households are unable to take paid employment.

## Livelihoods in the peri-urban interface

*Table 15. Summary characteristics of projects included in the PUI synthesis*

<b>R7867</b>	Filling gaps in knowledge about the peri-urban interface around Hubli–Dharwad
<b>Geographical location</b>	Hubli–Dharwad, Karnataka, India
<b>Data collection method/s</b>	Water, livestock, market, agriculture and sewage irrigation surveys and HH survey, FGDs and KIs
<b>Sample size</b>	Livelihood survey involved case studies of 64 households in 8 villages
<b>Characterisation of Poor</b>	Hybrid. Farmer based (land and income) characterisations, into researcher based number of categories
<b>SLF?</b>	Yes
<b>R7854</b>	Further knowledge of livelihoods affected by urban transition, Kumasi, Ghana
<b>Geographical location</b>	Kumasi, Ghana
<b>Data collection method/s</b>	PRA village profiles, HH survey, FGDs and KI's, use of 60 case study interviews in previous project.
<b>Sample size</b>	Various data sources 1995-2001 plus 23 focus group discussions, and case studies in 4 villages
<b>Characterisation of Poor</b>	Farmer based characterisations into researcher based number of categories
<b>SLF?</b>	Yes

Identifying livelihoods determinants in the peri-urban interface presents certain challenges. The PUI is a system where rural and urban features of society and resource use co-exist, and where livelihoods need to respond to the system's characteristic dynamism and complexity. Rather than being spatially delineated, the PUI is described as a set of interactions composed of flows of people, natural resources, capital, commodities and pollution between rural and urban communities (Brook and Davila 2000) and is an area of dynamic socio-economic, institutional and environmental change. Specific features of this dynamism include the people and places affected by processes of urbanisation that are constantly changing. There are institutional gaps and overlaps between, for example, important development and planning agencies. New livelihoods opportunities appear and change as social and economic conditions arise in response to urban and rural development.

Both of the projects reviewed have an explicit poverty focus and aim to characterise the livelihood systems of poorer people within the wider context of environmental resource and land use changes. The project in Kumasi also attempts to identify the factors which push people into poverty, as well as the strategies which can extract them from it.

### PUI system patterns and trends reported

The most important characteristics of PUI which affect livelihoods are the dynamism, unpredictability, speed and degree of change concerning access to livelihood resources and the social institutions associated with them. These changes, combined with their spatial and temporal unevenness, have major impacts on the vulnerability of all the population. Natural capital is probably the most contested asset in PUI, largely as a consequence of urban spread and resulting land and resource privatisation.

#### *Changing land use and access to land*

Project R7854 in Kumasi reports a clear pattern of decreasing land availability with increasing proximity to the city. Local communities perceive significant losses to productive systems important to maintaining the livelihoods of many poor people as illustrated in [Table 16](#). The patterns around Hubli–Dharwad in India appear to be more complex. Factors such as easy access to competitive transport services, local variations in soil type,

and the general level of affluence in particular parts of the city region play a part in moulding the pattern of land availability and the development of urban frontiers.

Brook and Davila (2000: 12) consider that

*“the issue of secure access to land and its relation to investment in more remunerative enterprises .... may be the critical constraint to improving both production and livelihoods”.*

It is the loss of access to land as well as the actual loss of land, brought about changing land use such as housing developments and speculative land marketing, which has a significant impact on the livelihoods of poor and middle income households alike.

**Table 16. Villager perceptions of land use change and declining access to natural resources in and around Kumasi, Ghana**

	Rural		Peri-urban		Urban	
	1	2	1	2	1	2
Residential area	<25%	+89%	<25%	+93%	>75%	+91%
Farm area	>75%	-83%	>75%	-90%	<25%	-100%
Forest reserves	<25%	-11%	<25%	-8%	None	n/a
Factory/ commercial areas	<25%	+11%	<25%	+16%	~50%	+55%
Sand winning sites	~50%	+44%	~50%	+58%	<10%	None

**Key:** 1 Percentage of villages that have witnessed land use change since 1983  
 2 Of the percentage of villages identified in (1)  
 + indicates percentage of villages that have witnessed increase since 1983  
 – indicates percentage of villages that have witnessed decrease since 1983

Source: Table 15 using data from R6799, Annex G in Brook (2001: G11; [R7854])

### **Trends in agriculture and agricultural activity**

The percentage of the workforce involved in agricultural activity has declined overall in both countries; in peri-urban Kumasi from approximately 14% in 1981 to 12% in 1991 and by a total of approximately 23% between 1981 and 1991 in some parts of Hubli–Dharwad in India. Both the Ghana and the India projects report general trends of increasing monetisation, diversification, commercialisation and mechanisation of agriculture.

In common with trends reported in other peri-urban areas, the two projects document important changes to the agricultural sector including changes in cropping patterns, particularly into high value and sometimes non-traditional commercial horticulture (flowers, fruit and vegetables) and cash crops which find a ready market both in the urban centres as well as better developed regional and national markets. Expansion of the area under these crops has prompted changes to the physical location of cropping areas. In Hubli-Dharwad, the move has been from poor potential land, *e.g.*, wetter red soils, onto better black cotton soil areas, and in Kumasi the switch has been to intensive cropping of fertile valley bottoms.

A phenomenon around the PUI recorded in both India and Ghana is the partial cultivation of land, or land abandonment. The researchers attribute this to tenure insecurity. Increasing pressure on land has pushed people towards a variety of land rental, share cropping or other leasing arrangements, which may be based on either traditional or newly emerging systems of tenure.

Livestock production trends in the Indian example are away from common grazing towards stalled cut-and-carry systems. Brook and his team (Brook, 2000), report decreasing numbers of livestock overall, but in-

creases to the numbers of milch animals and associated peri-urban dairying activity. In Kumasi trends in the livestock sector are towards the establishment of intensive broiler units: An increase in smallstock is also indicated.

### **Trends in the pattern of water quality and access to water**

A general decrease in the quality and availability of water are recorded in both countries. Comparing datasets from 1988 and 2001, work in India maps out increased conductivity (bacterial contamination), salinity, alkalinity and hardness of groundwater and increased conductivity and chloride concentrations in standing surface water (Annex E in Brook, 2002). Around Hubli–Dharwad it is the more rural parts of the PUI which seem to suffer from worse water quality and availability problems than some of the more urban or suburban areas. There are increasing conflicts around the negotiation of access rights to CPR water sources, and a trend towards greater abstraction of water using deep tubewells and deeper aquifers. Anecdotal evidence and a cursory examination of hospital records, suggests that the impacts of declining water quality on human health (human capital) are significant and are exacerbated by sewage irrigation of vegetable and tree crops and the increasing privatisation of water sources (M. Hollingham *pers comm.* 2001). In peri-urban Kumasi too, impacts on human health and crop yield by water contaminated with sewage, industrial pollution and agrochemical residues is also noted.

### **Access to CPRs**

The PUI in both India and Ghana is witnessing a general decline in the quantity and quality of other CPR's such as: communal grazing land as land is lost to development; forest reserves through commercialisation and privatisation; rights to fish as the leasing of open water fishing becomes more restricted and monetised; declining fish stocks and physical access to open water caused by, and reinforced by, eutrophication and luxuriant growth of water weeds such as water hyacinth.

## **Livelihood determinants of the poor in the PUI**

### **The importance of NR and non-NR based livelihood activities**

**Figure 16** summarises the reliance on NR based activities for different people around Hubli–Dharwad, and indicates the smaller percentage of poor households engaged in agricultural and NR based livelihood activities. Two issues are highlighted: The significance of poorly paid urban based labouring to the poorest groups; the continuing importance of artisanal activity (*e.g.*, potting, leaf plate making, bidi making) and fuelwood trading based on maintaining access to land based CPR resources for other groups of the poor. However, evidence from a later project in the same Hubli–Dharwad area, Project R7959 (Action Planning in the PUI), suggests that tradition, caste, declining access to and quality of basic resources, and a reduction in market prices for artisanal goods reinforce the poverty dimensions of livelihood strategies based on CPR use. None the less data from R7959 also shows that poor groups are turning to livestock and dairying as an important source of income, although the structure of the data hides activities associated with dairy sales. It is not possible to say whether the poor own cattle or act as trading middle men, and if this is a function of traditional caste based systems or a result of either livelihood activity or diversification of production. In many cases dairying activities are predicated on maintaining access to CPR grazing either on commons, or around field margins.

Data for peri-urban Kumasi is not organised by household wealth category but **Figure 15** illustrates the importance to men and women of agricultural compared to non NR based activities. There is a clear differentiation in levels of NR based activity between old and young which is supported by additional project material suggesting that younger men in particular are following adaptive livelihood strategies less reliant on agriculture and the NR base. In contrast younger females continue to farm in numbers similar to those found in rural areas. Important for poorer women too is access to CPR for the collection of snails, mushrooms and fuelwood which can be sold at local markets.

Whilst only 30% of women in Ghana in 1992 are engaged in a second livelihood activity, compared to 53% for men, the nature of women's non-farm employment is identified as being far more restricted, revolving largely around the wholesale/ retail trade and manufacturing, whilst men's secondary activities spans trade, public administration, construction/transport *etc.*

Household case study interviews show that of those poorer households and those women who took up non-NR based income earning opportunities (*e.g.*, selling cooked food, casual and domestic labour, petty trading and services such as hair plaiting), many have found that this has increased their vulnerability. As increasing numbers of entrants to these activities have made markets more competitive, income security has declined. Continued access to land for farming or gardening provides an important buffer against such vulnerability.

It is also reported that as access to land and the size of land parcels reduces, the upper part of the poor category is seeking to intensify production. However, there is a suggestion that this occurs only where there is security of tenure, and where cash income or other livelihood assets (*e.g.*, livestock) can be used to increase soil fertility.

### **Livelihood diversification**

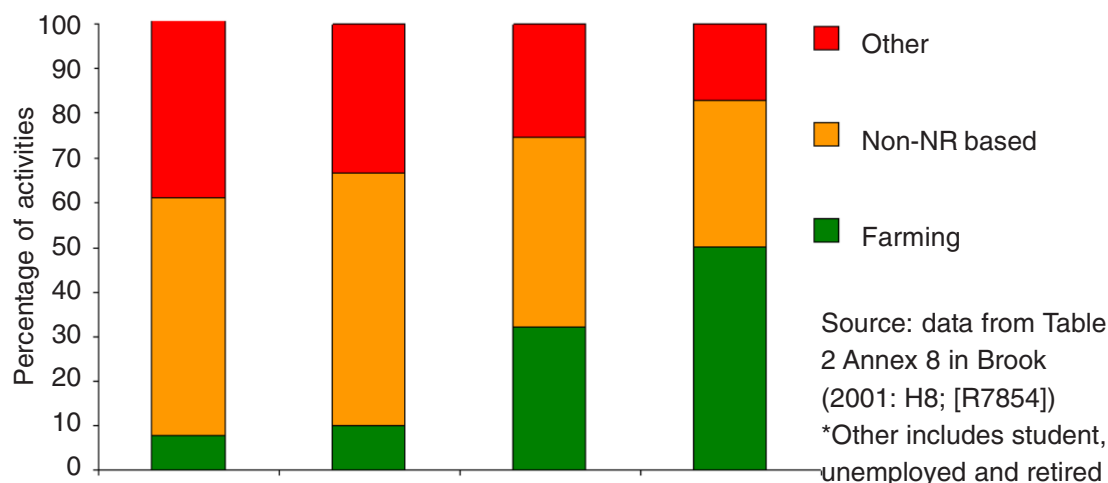
Employment opportunities within the PUI include seasonal labouring opportunities in agricultural, non-agricultural and non-NR based activities. There is evidence to suggest that the range of income earning opportunities in the PUI facilitates livelihood diversification based on the sale of labour as both coping and adaptation strategies. Project evidence also suggests that small farmers in India and Ghana are looking for labour saving agricultural arrangements that allow them to spread their portfolio of income earning activities away from the NR base.

Ghana wide statistics indicate that between 1988 and 1992 poverty rates fell slightly for those engaged in non-farm only activities, as opposed to those employing only farm or mixed farm/non-farm<sup>1</sup> strategies (Ashong 2001; [R7854]). Female-headed households are well represented in the non-farm only category, with participation in farming lowest amongst women with their self-employment income share highest and increasing over the period from 34% to 43% (Ashong 2001; [R7854]).

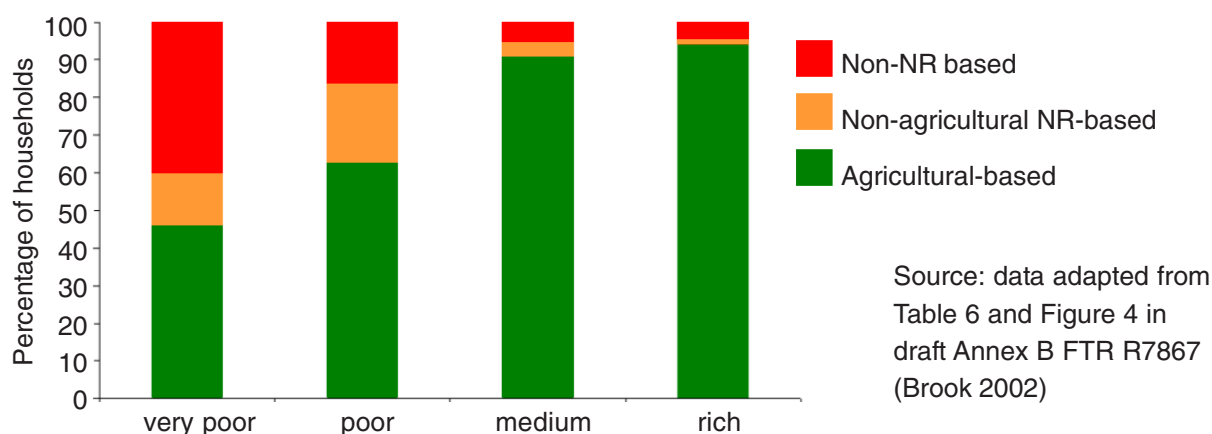
**Table 17. Livelihood activities for different people in PUI Kumasi, Ghana**

	Poorest	Poor	Mod. rich	Rich	V. rich
<b>Agriculture based</b>					
Agricultural Production	✓	✓			
Vegetable farmers			✓	✓	
Cocoa farmers				✓	
Casual labour	✓				
Auxiliary agricultural enterprise				✓	
Land sales and leasing					✓
<b>Non-agricultural NR based</b>					
Artisan		✓	✓		
Selling cooked food		✓			
<b>Non-NR based</b>					
Petty trading		✓			
Construction labour		✓			
Profession			✓		
Driving			✓		
Business			✓	✓	✓

Source: adapted from Table 6.2 in Brook (2000: 166; [R7854])



**Figure 15. Percentage of non-NR based activities compared with percentage of farming as a major occupation in 4 villages in the PUI, Ghana**



Livelihood activities	Very poor	Poor	Medium	Rich
Agricultural Production	0	17	60	72
Dairy	2	7	24	19
Agricultural labour	39	35	6	0
Small livestock	5	0	0	0
Auxiliary agricultural enterprise	0	0	0	3
Fruit or milk trading middlemen	0	3	0	1
<b>Agriculture based total</b>	<b>46</b>	<b>62</b>	<b>90</b>	<b>95</b>
Artisan	5	7	1	0
Ownership of brick kilns	0	0	1	2
Brick/Quarry labour	2	13	2	0
Fuel wood trading	7	1	0	0
<b>Non-agricultural NR based total</b>	<b>14</b>	<b>21</b>	<b>4</b>	<b>2</b>
Commercial labour	19	4	1	0
Construction labour	12	7	1	0
Profession	0	0	1	3
Driving	0	1	1	1
Business	2	1	1	0
Religious festivals or duty	2	3	0	0
Government service	5	0	0	0
<b>Non-NR based total</b>	<b>40</b>	<b>16</b>	<b>5</b>	<b>4</b>

Units are number of households mentioning that income source

**Figure 16. Livelihood activities for different people in the PUI Hubli-Dharwad, India**



Table 17 for Kumasi and Figure 16 for India summarise the range of livelihood activities followed by different people in the PUI. Table 18 shows differences in the Shannon Wiener index suggesting that the poor are adapting to changing circumstances in the PUI through diversification strategies. Some caution should be applied here as the project reported a significant overlap in the categorisations of poor and medium people, it might be the ‘upper poor’ to ‘mid medium’ people who are actually spreading their portfolios across the range of opportunities offered by proximity to urban centres.

**Table 18. Shannon Wiener index representing the degree of diversity amongst household livelihood activities in PUI Hubli–Dharwad, India**

Wealth category	Shannon Wiener Index value
Rich	0.93
Medium	1.25
Poor	2.02
Very poor	1.90

Source: draft Annex B in Brook (200; [R7867])

In India this diversification for the poorest people is focused on taking up employment that is more urban in its character and either less, or not at all, related to NR. In contrast the less poor are still strongly attached to NR-based forms of labouring.

The reasons the poorest people give for engaging in waged labour are related to tradition, the regularity and value of the work, and the opportunity for using different forms of waged labour to mediate the effects of seasonal changes in agricultural production and labour markets. Household interviews indicate that attaining food security (*i.e.*, by cash or own production) is preferred over maximising income, and to do this households are willing to diversify into a number of different lower value, more secure income sources rather than those giving the greatest immediate cash returns.

### **Livelihood vulnerability and the continuing importance of land**

Even though the off-farm non-agricultural component of household income is increasing, and sales of labour are important to the poorest people in the PUI, the activity lists hide the fact that adaptive and accumulating strategies continue to rely on access to land as a central component. Regardless of the risks and uncertainties inherent to agriculture, interviews with case study households in India indicate that the poor believe that agriculture and secure land tenure remain fundamental to livelihood accumulation strategies.

The results of consultations with the poor show that the perceived causes of poverty in and around Kumasi are clearly attributed to trends and shocks that negatively impact health status, access to land, and levels of cash income. These factors are also considered important in Hubli–Dharwad, India, although poor people in this area identify an additional significant livelihood stress and drain on household assets as a result of the cultural expectation and social pressures to provide elaborate weddings and dowries.

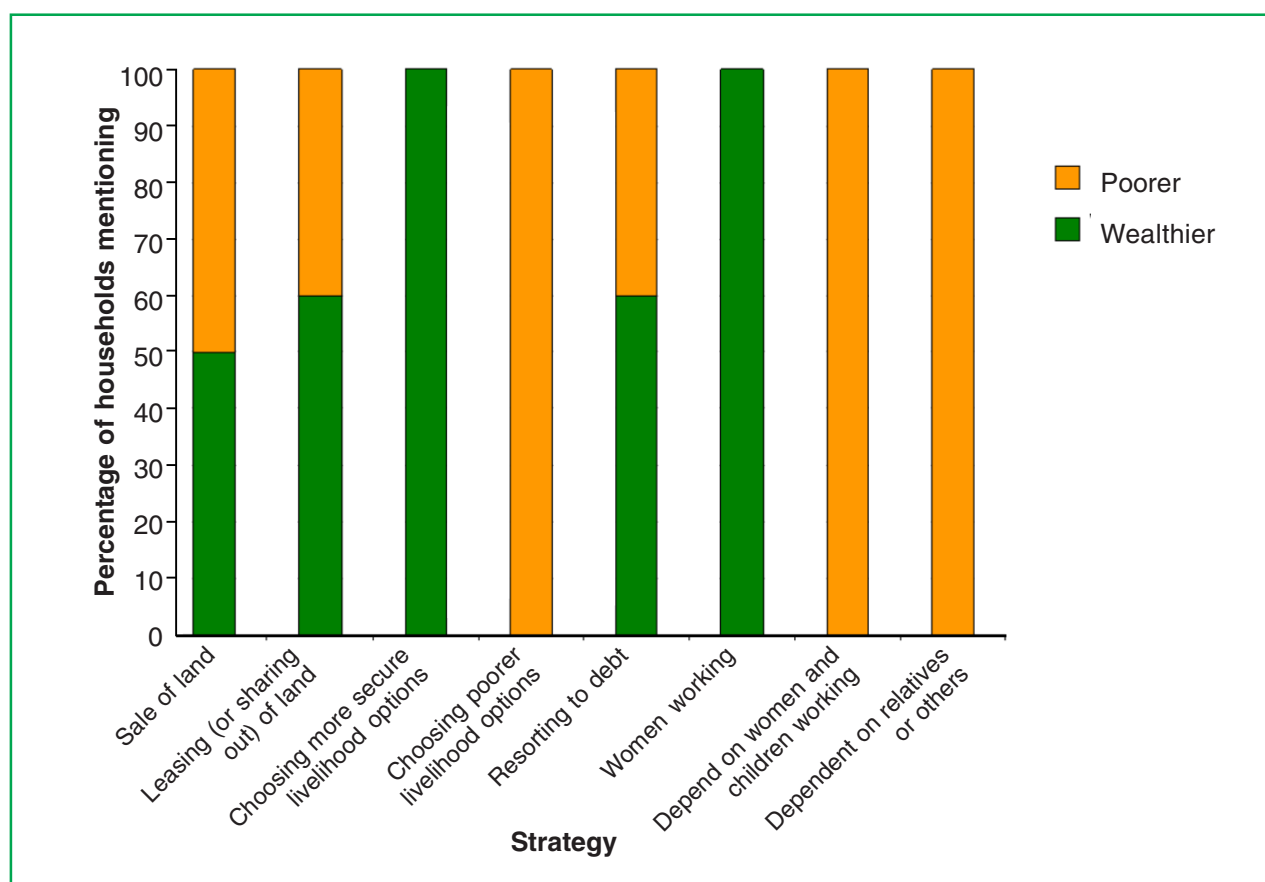
The coping strategies employed by poor people in response to such livelihood disturbances are similar in both countries as illustrated in Table 19 and Figure 17. The relative importance of the NR fraction of the coping responses to livelihood stress is not discernable despite the amount of data collected by the two PUI projects. This is particularly true of the Kumasi data where age and gender of individuals rather than household characteristics and measures of wealth structured the dataset. However, it is clear that ownership (as a store of value) and access to land (as sharecropping for a source of household income and subsistence goods) remains important and are perceived as significant livelihood determinants to the poor in both countries. Where the

<sup>1</sup> NB ‘farm’ and ‘non-farm’ categorisations were not defined.

**Table 19. Coping and adaptation mechanisms in response to the loss of land in the PUI, Kumasi**

Coping mechanisms	Percentage of sample		
	Women	Men	Total
<b>NR based</b>			
Acquisition of land or Sharecropping	13	7	11
<b>Human/social capital based (Totals)</b>	<b>10.5</b>	<b>31.5</b>	<b>42</b>
Job hunting	2	4	3
Training in skills or profession (of single people)	6. (80)	16. (50)	9. (63)
Out migration	0.5	0.5	1
Construction	2	11	5
<b>Financial Capital</b>			
Business/trading/petty trading	25	10	20
<b>Social Capital</b>			
Dependence on relatives	25	25	25

Source: Brook (2000: 184; [R7854])


**Figure 17. Coping mechanisms of the poor in response to a variety of livelihood shocks in the PUI Hubli-Dharwad**

poor and upper poor are able, sharecropping or leasing out their own land are adaptive strategies that can provide a measure of food security as well as freeing time to seek income from other endeavours. Where land is taken for peri-urban development, it is the form and level of any compensation payments that dictate the kind and likely success of adaptive strategies.

Access to land, as opposed to land ownership, is important for providing a households' subsistence needs in an environment where casual labour is not assured, wages low, and flows of remittances between the urban centre and peri-urban/rural based household members are not assured. In peri-urban Kumasi too, agriculture is perceived by poor people as a first step to asset accumulation, and households there make trade-offs between the increasing risk and uncertainty associated with agricultural enterprises and the transaction costs associated with other potentially lucrative activities that they would choose to follow.

### **Capital savings and access to credit**

Even though neither R7867 nor R7854 looked at the provision of credit in any detail, the availability of cheap credit, either for recurrent or capital expenditure is cited by respondents in both projects as a determining issue for the poor. They rarely possess the assets needed as security or assurance by commercial credit arrangements. For poorer women, access to credit may be limited even further.

The project in Ghana considers this to have serious constraints to on-farm productivity with consequent impacts on food and income security. The Action Planning project R7949 in India shows that poor people see credit as a fundamental determinant of their capacity to adapt to changing social and economic circumstances. What peri-urban residents say they required is seed or starter capital in the form of micro-loans which could enable them to take up some of the opportunities afforded by peri-urban markets and marketing systems. Such starter capital could be used to buffer livelihood risk during a process of either expanding economic activities they are already undertaking (*e.g.*, dairying) or allow them to enter into new micro-businesses. It is interesting to note that suggestions for new businesses other than dairying are linked for the most part to service industries rather than NR-based enterprises.

In common with other production systems, cattle continue to be used as stores of value used as security against loans or as a route of entry into sharecropping arrangements. The very poorest people report smallstock as being a more flexible form of livestock better suited to their capital endowments, whilst still providing some of the savings function of larger animals.

### **Rising costs**

The growth of non-farm employment close to urban centres in both countries has induced higher land prices, room rental and labour charges closer to the cities. Consequently the livelihood contributions and impact that those engaging in paid employment is likely to have on overall household livelihoods is dependent in part on the availability of affordable transport. Cheap and accessible transport allows poorer households either to commute rather than move into higher cost urban housing, or to travel into the urban centre to sell produce on a regular basis.

### **Gender**

Both projects consider poverty in the PUI to have a strong gender dimension, and there is clearly differential access to, and uptake of, opportunities according to gender. Uptake of the higher paid urban-based employment opportunities is most marked for men. In India, income earning labour opportunities for women have increased on farms closer to the city as they fill the on-farm labour gaps left by the men, and increasing numbers of women are engaging in off-farm non-agricultural labour in NR-related activities such as quarrying and brickmaking. However, these labouring jobs remain more poorly paid compared to the rates for work within the city. In Ghana, non-agricultural opportunities for women appear to be fewer and limited to petty trading and service provision.

### **The importance of social and political capital**

Access to social capital is indicated as an important way out of poverty at the same time as being cited as a constraint to finding routes out of poverty. There are important NR-based linkages here, because;

*“Whilst social capital itself is not an institution, without this asset, individuals are unable to relate effectively to institutions that govern resource access . . . the poor in peri-urban Kumasi were characterised as having weak social capital, lacking the family and/or friends required to receive needed support or enter discussion fora”*,

(Brook and Nunan 2001: F15; [R7854])

Drawing on the NRSP project work in Ghana, Rakodi (1999) considers that access to social capital decreases in the PUI, but this general comment requires some qualification. In Table 20 Project R7854 shows that the PUI around Kumasi is well endowed with social institutions. However, many of these present social entry barriers to poorer people *e.g.*, the status needed to sit on development committees, and financial entry barriers *e.g.*, subscription payments. Other institutions more directly able to support poor people (*e.g.*, communal working groups) may well be in decline.

**Table 20. Access to social capital networks in and around Kumasi Ghana**

	Percentage of villages with village-based organisations		
	Rural	Peri-urban	Urban
Unit Committee	28	21	9
Town Development Committee	67	71	82
Mobilisation and youth groups	17	34	27
Communal working groups	11	3	0
Trade and marketing associations / co-ops	28	34	9
Religious organisations	100	97	100
Other NGOs	22	29	18
Political parties	11	18	18
Locally-funded projects	94	76	36
Externally funded projects	61	71	73
<b>Mean</b>	<b>44%</b>	<b>45%</b>	<b>37%</b>

Source: Table 20, Annex G in Brook (2001; [R7854])

Social capital, whether expressed as more traditional forms based on kinship ties or emerging forms based on friendships and group membership (formal and informal), provides an essential determinant of livelihood strategies whether these are coping or adaptive.

The material support provided by social institutions may nurse poor households through times of stress and help to avoiding the draw-down of household assets ensuring households maintain a positive livelihood pattern rather than a survivalist one. In terms of adaptation strategies, social capital may provide the connections which provide routes to new or existing labouring and sharecropping opportunities, as well as to informal loans to provide financial capital needed to set up micro-enterprises and agricultural intensification strategies. Case study material indicates that self help groups are often a preferred form of social capital over family networks, because obligations to kin might draw down resources in the longer term.

### **Policy and political capital**

Project R7949 (Action Planning) in India also highlights the importance of political capital in determining access to the NR base, particularly CPRs of importance at the community level. Unsurprisingly, the poor do

not often have a strong political voice or the power to influence decision making processes. Neither the project in Ghana nor the project in India investigated the effects of mobility in the PUI on the form, function and strength of social institutions, but these factors are likely to have an effect on the access of the poor to the people and institutions of influence in their locale. Even in PUI villages in India where poor people experience greater empowerment through membership of strong self help groups or *sanghas*, the institutional and political dynamics surrounding, for example, the use and management of communal water resources are so fluid and politicised, that their influence is often minimised. In some cases a sense of empowerment and the capacity of poor people to articulate their opinions only leads to further conflicts and manoeuvred exclusion from decision making fora. Important social actors and institutions, themselves often in states of flux, vye for their own power abrogated responsibilities for NR management issues.

Policy processes also have an effect on livelihoods in the PUI. As villages are absorbed into the administrative boundaries of the city, the policy and administrative instruments applied to the villages changes, particularly with respect to charges for physical capital services (*e.g.*, costs of water and electricity), access to agricultural subsidies, and rural development support. The institutional vacuum some villages find themselves in, is shouldered disproportionately by poor people, who may find that these political and economic characteristics of vulnerability determine livelihood strategies far more keenly than access to environmental resources and services.

As poor people adapt their livelihood strategies and move out of NR-based activities, the political and social leverage they have over NR management and decision making processes remains an important determinant of livelihoods. The livelihoods impact comes from the management of public goods such as water, and specific peri-urban resource issues such as waste management. The ability to access clean potable water and to live in an environment free of vectors of disease and disability has impacts on the capacity of the poor to labour and make best use of household assets. The emphasis here is on the importance of political and social capital acting at a community level, with consequent benefits for individuals and households.

### **Important livelihood determinants identified**

A synthesis of project results suggests that the principal livelihood determinants for poor people in the PUI are:

- access to land for farming, grazing and gardening, as a buffer against livelihood vulnerability;
- access to CPR resources particularly grazing areas and supplies of water;
- the payment of compensation for land lost to development, preventing asset draw down;
- access to well developed labour markets to mediate seasonal fluctuations in livelihood opportunities;
- access to micro-credit to take advantage of livelihood opportunities afforded by the PUI;
- the availability and provision of knowledge supporting the capacity to adapt livelihood activities to suit new opportunities;
- inclusion in social and political capital networks as a route to influencing NR decision making processes

It is important to recognise that the first two determinants on the list above, while they may be important to structuring the livelihoods of poor people in the PUI villages under study at the moment, are NR management considerations that will not be able to be sustained in the future assuming that the processes associated with urbanisation continue to spread peri-urban effects. It may well be that NR managers looking at improved strategies will need to consider manipulation of determinants through the process of transition in ways which facilitate shifts to livelihood dependence on non-NR based strategies.

### Livelihood determinants of middle income people in the PUI

The general patterns of activity for middle income people are illustrated in the **Table 17** (page 76) and **Figure 15** (page 77) where it is shown that adaptive livelihood strategies are based on diversifying agricultural production particularly into high value vegetable and horticultural crops, leasing land and sharecropping. Sales of labour are uncommon but diverting income and capital into business (which may be NR or non-NR based) is more common. The accumulation of physical capital in the form of agricultural tools and machines, bicycles and other vehicles, and broiler units or more intensive dairying enterprises is also reported.

Middle income people appear to be diversifying and intensifying agricultural production using labour rather than more capital-based strategies. So an important determinant for medium- to large-scale middle income farmers, particularly in India, is the emergence of new labour arrangements which facilitate their command over the labour force. In Ghana there is some evidence to suggest that in some of the more 'rural' areas of the PUI, middle income households are turning to some degree of specialisation in agriculture.

Households in the mid and upper bands of the middle income can be characterised as the most dynamic and risk bearing households. In some cases, medium income smallholders have selected certain crops, diversified their crops and diversified out of agriculture. Even though community perceptions rank them as relatively well off, increasing involvement in land markets, the development of small business and the move into seasonal crops that suffer from price fluctuations may increase their vulnerability by over extending their debt obligations and reducing their ability to respond to environmental and economic shocks. Access to social capital is just as important to middle income people as it is to the poor, in mediating vulnerability outcomes and providing informal safety nets in times of stress. The issue of excessive debt and informal safety nets appears to be of particular significance in India.

Coping and accumulation strategies of middle income people are structured by access to fluid and dynamic land markets which include emerging institutional arrangements dependent on social capital, the availability of labour and the state of labour markets, and the availability of cheap credit. In Ghana, access to land is maintained by the purchase of land in locations outside of the PUI; the western region is reported as being a common area for the opening of new farms. Establishing these new farms is of course dependent on financial capital outlay (reported as being both the result of income accumulation and the drawing of loans) not only for the land but also to finance transportation to and from the new farm, as well as social capital networks important to identifying potential land parcels. Where households open these new farms the benefits extend beyond the provision of farm goods for consumption and sale; access to CPR resources particularly firewood, can provide additional livelihood benefits.

District level statistics in Hubli–Dharwad point to a trend of increasing mechanisation in farming and a reduction in the numbers of draught animals. Like poorer people, middle income people are investing in hybrid dairy breeds to take advantage of the growing high value market for milk and milk products. However, one implication of the resultant decreased availability of farmyard manure (FYM) appears to be variable yields affecting the stream of income crucial to livelihood security. A change to the structure of sharecropping arrangements may require that poorer leasees introduce FYM on their sharecropped areas to the benefit of their middle income partners.

Changes to the constitution of social capital, seem to be such that middle income people are able to extract themselves from traditional hierarchical rural power structures and status constraints, and use the proximity to urban centres and infrastructures to seek new livelihood activities and strategies that may have been closed to them in the past. In this way they report that they are able to choose more secure livelihood options, and more valuable ones. By the same token, the risks and vulnerabilities inherent in this dynamic interplay means that middle income people move in and out of livelihood strategies which allow them to cope with change or those which allow them to accumulate assets.



Case study material from Ghana illustrates the effect of household cycles on middle income livelihood strategies and resource endowments. One household for example, uses income from an oil palm plantation to diversify into mixed cropping strategies, as well as supporting a new and growing family. Over the years the area available as plantation has been reduced in response to development pressures, so that the amount of land owned by the household has decreased. However, the earlier reinvestment into diverse cropping, as well as the more positive dependency ratio, means that the relative level of wealth remains the same. Recognising that the land loss to urban/peri-urban development is likely to intensify, the problem now is how to find alternative strategies that will carry the household forward from NR-based strategies to those that can make better use of the opportunities afforded by the PUI.

### **Livelihood determinants of richer people in the PUI**

Livelihood strategies of the richer people in the PUI include intensification and capitalisation of agricultural production particularly to higher value less labour intensive crops, diversification into agricultural enterprises such as dairying in India or intensive poultry units in Ghana, investing in land in the PUI in India or in the western region in Ghana, and the increasing reliance on some part of the income portfolio coming from remittances from salaried employment. Agricultural investment is concentrated on increasing natural capital stocks and flows such as soil fertility, and physical capital *e.g.*, irrigation infrastructure, which increases the potential and actual productivity of the land, or *e.g.*, cattle and tractors which can be used to effect social contracts – such as transporting produce to market in exchange for a share of that produce or a cash fee (see Annex C in Brook 2002), or *e.g.*, storage facilities which can be used to build business around commodity trading. Changes to the availability of seasonal agricultural labour have conditioned a move to more extensive systems of tree crops *e.g.*, mango orchards in the case of Hubli–Dharwad, and in Ghana the planting of land located in other regions to cocoa production.

Other significant considerations for richer people include household dependency ratios, the ability of household members to enter into business or a profession and the effects of maintaining social status on the draw-down of household assets.

## Livelihoods in semi-arid production systems

*Table 21. Summary characteristics of projects included in the SAPS synthesis*

<b>R7304</b>	Micro-catchment management and common property resources in Zimbabwe.
<b>Project status</b>	Completed November 2001.
<b>Geographical location</b>	Romwe and Mutangi, Masvingo Province.
<b>Data collection method/s</b>	HH budget survey quantitative and qualitative, FGDs, KI interviews, PRA, livestock and water surveys.
<b>Sample size</b>	199 (245) HH over 28 settlements.
<b>Characterisation of Poor SLF?</b>	Income quintiles and quartiles. Yes
<b>R7545</b>	Coping strategies of poor households in semi-arid Zimbabwe.
<b>Project status</b>	Completed October 2001.
<b>Geographical location</b>	Chivi, Gutu, Matapo and Guruve Districts.
<b>Data collection method/s</b>	HH survey, FGDs, KI interviews, PRA, livestock and market surveys.
<b>Sample size</b>	800 HH in 4 Districts (semi-arid 600 HH, 3 Districts) plus KI interviews and FGDs.
<b>Characterisation of Poor SLF?</b>	Income quintiles. Yes
<b>R7558</b>	Understanding household coping strategies in semi-arid India.
<b>Project status</b>	Completed June 2001.
<b>Geographical location</b>	Anantapur, Andhra Pradesh and Udaipur, Rajasthan.
<b>Data collection method/s</b>	PRA exercises, FGDs, KI's, and review of secondary data.
<b>Sample size</b>	Participatory research in 12 villages in 6 blocks/mandals.
<b>Characterisation of Poor SLF?</b>	Wealth rank by landholding and occupation group, also 'livelihood system' based household types. Yes
<b>R7805</b>	Understanding household coping strategies in semi-arid Tanzania.
<b>Project status</b>	Completed October 2001.
<b>Geographical location</b>	Kwimba, Shinyanga, Kondoa, Dodoma, Iringa and Mtwari Districts.
<b>Data collection method/s</b>	Review of secondary data sources.
<b>Sample size</b>	7 case studies from literature.
<b>Characterisation of Poor SLF?</b>	Various. Income or consumption quartiles or terciles. Yes
<b>R7806</b>	Human and social capital's role in NR management in Tanzania
<b>Project status</b>	Completed September 2001.
<b>Geographical location</b>	Iringa, Dodoma and Singinda Districts.
<b>Data collection method/s</b>	Review of secondary data sources plus survey.
<b>Sample size</b>	308 HH surveys and PRA over 6 villages in two river catchments.
<b>Characterisation of Poor SLF?</b>	Various. Income or consumption quartiles or terciles. Yes
<b>R7857</b>	Review of common pool resource management in Tanzania
<b>Project status</b>	Completed July 2001.
<b>Geographical location</b>	Same, Monduli, Babati, Ngorongoro, Iringa, Kondoa, Districts.
<b>Data collection method/s</b>	PRA exercises with groups and KIs.
<b>Sample size</b>	12 settlements, 6 Districts.
<b>Characterisation of Poor SLF?</b>	Some farmer based wealth ranking. Not used in analysis. No

## System patterns and trends reported

### *Economic and policy trends*

Each of the projects reviewed reports unfavourable and declining macro-economic conditions, stating that these probably have the most significant impact on livelihood determinants and livelihood outcomes. Project R7545 (Zimbabwe), for example, maps out a picture of worsening external and domestic terms of trade, increasing rural poverty bolstered by declining flows of remittances and rising unemployment, increasing social, financial and environmental insecurity, and declining health and wellbeing particularly due to HIV/AIDS (see Shepherd, 2000). Although Zimbabwe might be considered an extreme case, similar patterns of a 'downward spiral' in comparable economic, social and environmental indicators are reported for SA in Tanzania and India.

Morris and his team working in Tanzania (2001a: 4; [R7805]) agrees with Bryceson (1999) when he suggests that economic liberalisation has encouraged a special concentration of production to those areas that afford higher yields because of favourable agro-climatic conditions or lower transport costs. Within these areas, better off farmers produce with economies of scale that then reinforce the relative environmental and economic disadvantages which condition the livelihoods of populations in SA. Examining coping strategies in semi-arid India, project R7558 reports that government intervention has tried to influence economic processes in favour of rural areas, but argues that elites have effectively captured these improvements at the expense of broader and more sustained growth in rural parts of the semi-arid zone.

### *Trends in the patterns and distribution of poverty*

The same project in India (R7558) also documents an interesting pattern in the distribution of poverty. It found a lower percentage of the rural poor population in drought-prone compared to non-drought prone states (24% of households compared to 44%). Setting this alongside statistics which show that a higher percentage of the urban population is poor (35%) compared to rural areas (28%), they suggest:

- that in areas of higher agricultural potential, poorer households continue to follow NR-based livelihoods because opportunities exist, whereas in drought-prone areas rural households are tending to move to urban areas in pursuit of livelihood opportunities;
- CPR forests in non-drought areas might be providing goods and services which continue to support NR-based livelihoods of poorer people acting as a buffer to shocks and disturbances;
- for many poorer households in semi-arid areas, migration to urban centres and other areas of the country present the only livelihood alternatives in response to poverty and environmental shocks such as drought.

### *Changes to society and social capital*

In common with the rest of the SA projects, Project R7805 (Tanzania) emphasises the importance of social and human capital as key livelihood determinants, and describes these as the backbone of livelihood strategies (Morris 2001b:9). However, marked processes of change to traditional social structures are increasing livelihood vulnerability for many poor people as new forms of social capital evolve. Reporting on the role of social capital in Zimbabwe, Campbell and his project team (2001; [R7304]) make much of the way in which traditional power structures act as a barrier to livelihood opportunities for poor people. They believe that changes in social processes serve to reinforce these barriers rather than create routes to new livelihood opportunities. In Tanzania, India and Zimbabwe these social capital disturbances are said to account for the strong trends towards more unequal distribution of land holding.

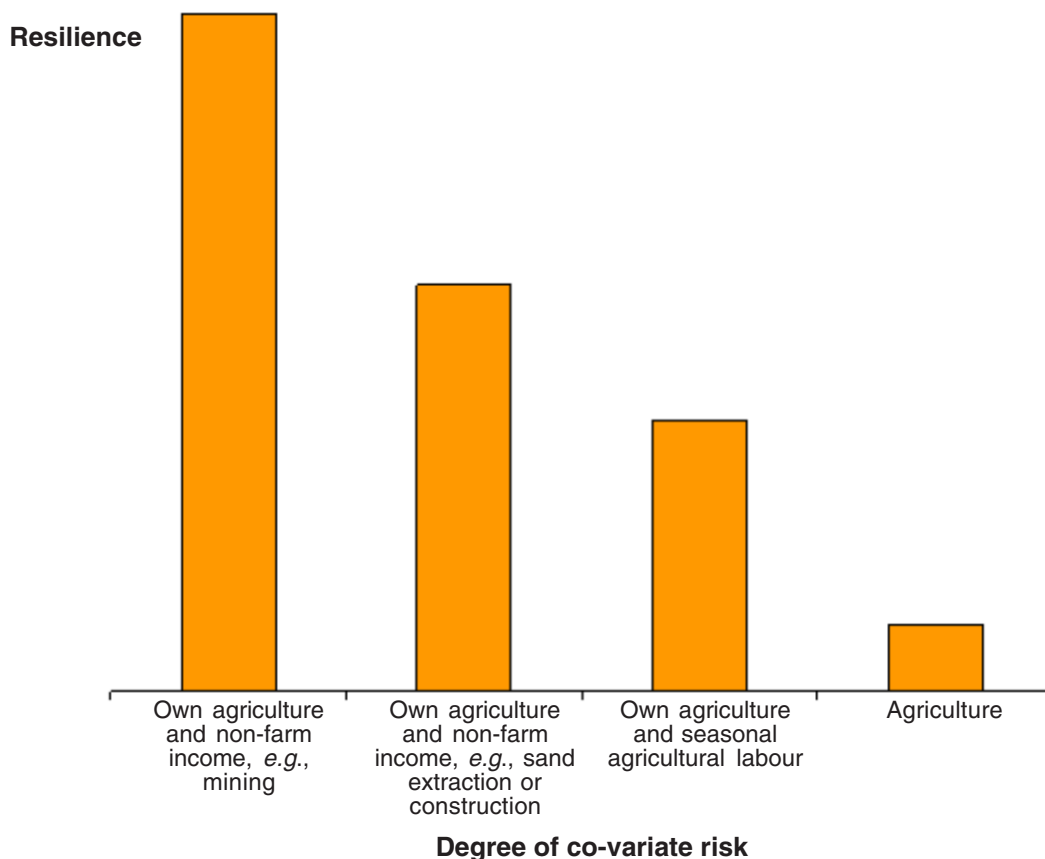
**Livelihood activities and the balance between NR and non-NR based strategies**

Although there are some differences in the patterns between countries, project data demonstrates that agriculture, either directly or indirectly, remains important to the wellbeing of all groups of people in semi-arid rural areas. For poorest and richest households alike, access to land, labour and livestock continue to be the most important determinants of livelihood strategies. However, as project R7805 (Zimbabwe) points out, it is hard to discover the reasons behind changing patterns and diversification of cropping, extensification of production, and the intensification of production where there is access to water. Some of these trends may be attributable to occupational adjustments within the agricultural sector, the emergence of new income generation strategies, the effects of spatial relocation, and changing social structures.

Livestock continue to play an important role in SA. Project R7545 (Zimbabwe) concurs with findings from the other projects, when it shows that livestock continue to act as an important form of savings and security. In the case of R7545 (Zimbabwe) livestock ownership is regarded as THE critical component of coping strategies during drought, the lynch pin of resilience and the only guarantor of widespread recovery or ‘bounce-back’ after such severe environmental shocks and disturbances. Only R7558 (India) reports that livestock ownership is decreasing for some people who now prefer to save cash with banks, self help groups and co-operatives.

**Livelihood diversification and co-variate risk**

The extremes of climate and the potential degree of environmental shock within SA, means that a basic issue concerning the effectiveness of diversification strategies is the concept of co-variate risk. Co-variate risk describes the degree to which discrete livelihood activities within a household’s portfolio are impacted by the same environmental shock, and the cumulative impact this has on the resilience of the livelihood strategy. This idea is illustrated in Figure 18.



**Figure 18. Livelihood resilience and covariate risk between activities exposed to drought**

Barrett *et al* (2001) discuss the way in which co-variate risk can be spread to reduce livelihood sensitivity to environmental, economic, and social shocks, if households engage in a portfolio of activities spread not only across economic sectors, but also across temporal and spatial axes. Whilst the projects included in this study make reference to these ideas and report trends of livelihood and income diversification across the production system, there is conflicting evidence about whether and how these changes mediate the degree of co-variate risk that households may be exposed to. Within the project data it is also unclear which people are following these diversification strategies, what determines a move to more diverse livelihood portfolios, or whether these represent paths out of poverty or responses to stress that do not necessarily promote positive livelihood outcomes.

### **Access to common property resources**

A finding common to each of the projects is that CPRs (forests and forest land, grazing land, and water sources), are generally declining in extent, quality and effective management regimes, and particularly in the case of water are increasingly coming under private ownership. This has important implications for poorer people who continue to rely on CPRs as an important source of a range of environmental entitlements.

### **Access to water**

Water receives little direct attention in the project documentation, although an important trend across the SA is a reported decline in water tables and the recharge of aquifers. In India particularly increased consumption of water and a switch to irrigated summer season crops, places significant stress on water resources aggravating conflicts surrounding access which is becoming more inequitable as the resource is privatised. Project R7304 in Zimbabwe conducted a sensitivity analysis on variables most strongly affecting livelihoods. Results show that the rainfall regime and wider macro-economic trends are far more significant factors than access to water *per se*. Project R7857 in Tanzania conducted a risk mapping exercise which demonstrates that whilst access to water is the most commonly reported problem, respondents perceive witchcraft, human and livestock disease, food security and pests as more severe livelihood risks (Lovett, 2001; [R7857]).

## **Livelihood determinants of the poor in the SA**

### **Asset accumulation and the importance of land and livestock**

In both the Indian and the African studies, household livelihood objectives of all the poorer people include asset accumulation as a route out of poverty (see [Table 22](#) for example). In India, Project R7558 shows that cash has gained in prominence against cattle and stored crops as traditional stores of wealth. However, it is those households with greater access to land who appear to be able to move past survivalist livelihood objectives. In both India and Tanzania, projects report that poor people are increasingly using land as a source of cash income through renting and leasing arrangements. Whilst it is certain that households are adopting this as coping or adaptive accumulative strategy, it is not clear from the data how significant this is and how many households are renting, leasing or selling land as either a coping or survival strategy.

From the field studies it seems that even if cattle are becoming less important as traditional stores of wealth for some people, livestock maintains its importance for a range of livelihood goods and services for the poor. There is a reported increase in holdings of smallstock and poultry, and where the opportunity exists, cattle or female buffalo for milk and dairying. Campbell *et al* (2001: 59; [R7304]) say that smallstock in Zimbabwe represent a natural or physical asset for poor households that acts as a 'bottom rung' on accumulation strategies, and show that livestock can provide substantial income as draft and transport, in excess of the value of meat.

### **The importance of agriculture and non-NR based activities.**

Trends in land use and land leasing or renting suggest that agricultural production may be taking on a different role in people's livelihood strategies. However, looking at the relative balance of farm and NR-based livelihood

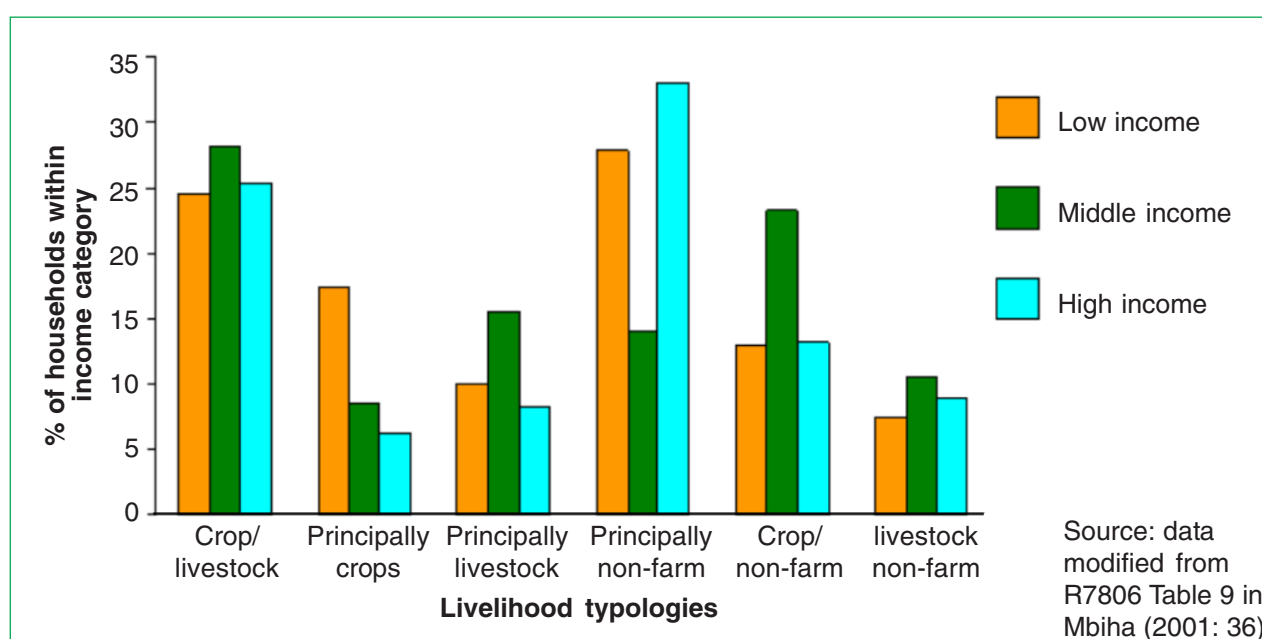
**Table 22. Livelihood objectives associated with different wealth groups in semi-arid India**

Wealth status	Medium/Poor	Medium	Medium	Wealthy
<b>Caste</b>	Tribal (meena)	Brahmin	Patel	Patel
<b>Landholding</b>	4 (bigha)	6 (bigha)	10 (bigha)	19 (bigha)
<b>Main activity</b>	Agriculture	Agriculture	Agriculture	Agriculture
<b>Wage labour</b>	Seasonal	Very rare	Never	Never
<b>Livelihood objectives</b>	Survival	Better food and house for children	Better life for son	More income
	Security against emergency needs	Security against emergency needs	Daughter married to well-off family	More implements as only 1 son
	Participating in social affairs	Acquiring more land and assets	To own better house and more assets	Education and better life for son
		Helping children to set-up business		Social status

Source: R7558 from Table E1 in Conroy (2001: 55)

and income compared to non-NR based by wealth, the picture varies across countries. [Figure 19](#) provides some indication of the relative importance of NR based livelihood activities to different people in Tanzania; and [Table 23](#) provides a measure of the degree of reliance on agriculture as a source of entitlement for people in Zimbabwe. The data here are contradictory, whilst in Zimbabwe (Table 23) non-farm entitlements increase with degree of wealth, in Tanzania ([Figure 19](#)) both richer and poorer people have a high degree of reliance on non-farm income sources.

The definition of ‘on-farm’ and ‘off-farm’ or ‘non-farm’ varies such that disaggregating the ‘non-farm’ income sources provides a clearer picture of the contribution of NRs to livelihoods. Using a dataset from project R7805 working in different Tanzanian villages, [Figure 20](#) clearly shows that non-farm income becomes a smaller percentage of overall income with increasing wealth. None the less, poor people are still heavily reliant on the NR base.


**Figure 19. Livelihood typologies according to wealth category in semi-arid Tanzania**



**Table 23. Median and mean farm, non-farm and total entitlement\*, for groups in semi-arid Zimbabwe**

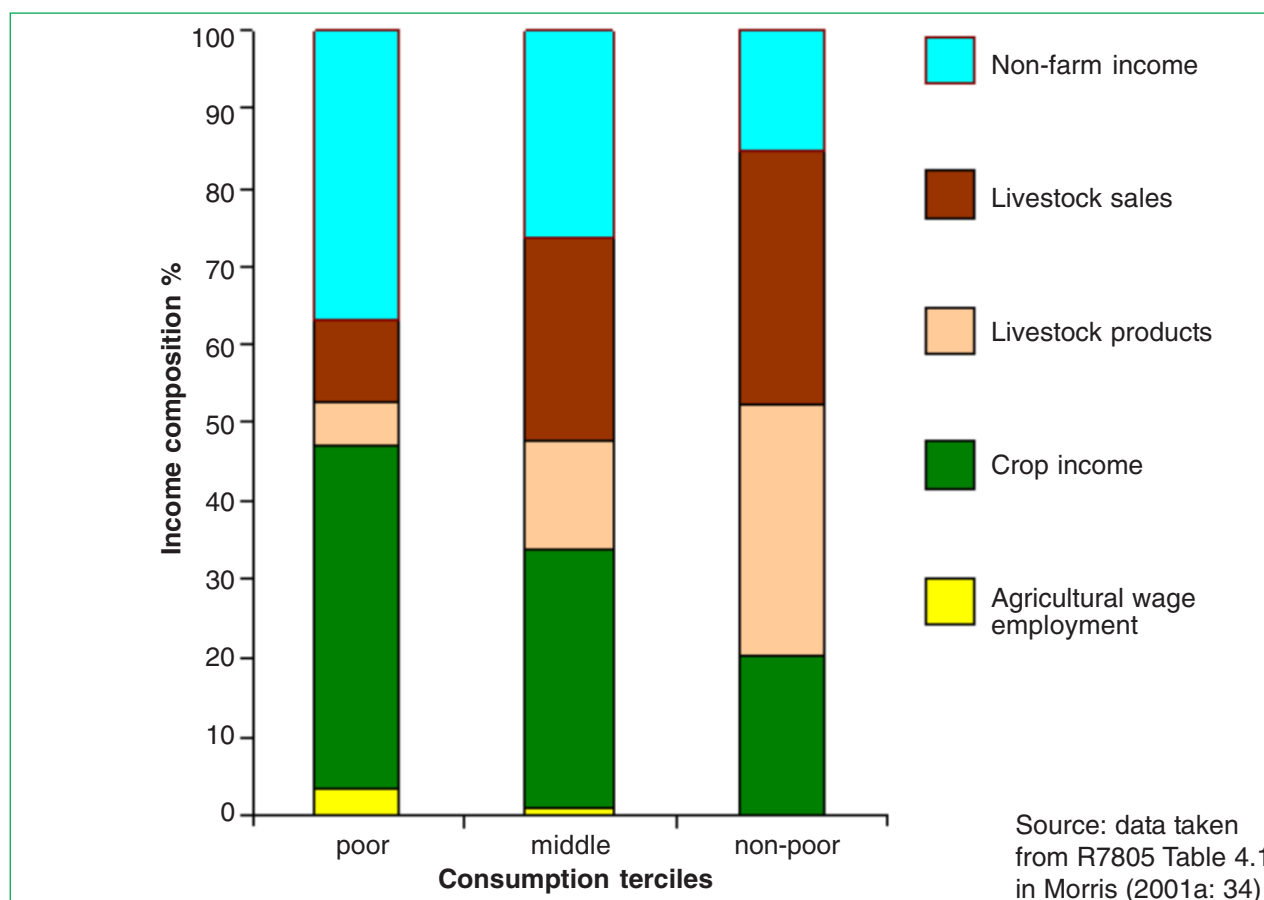
Income quintile	Total entitlement		Farm entitlement		Non-farm entitlement		Farm: non-farm
	median	(mean)	median	(mean)	median	(mean)	
Poor	1020	(1100)	700	(800)	0	(270)	100:0
Lower middle	2540	(2820)	1660	(1870)	730	(890)	70:30
Middle	4060	(4240)	2250	(2640)	1200	(1520)	65:35
Upper medium	6680	(6870)	2400	(3360)	3100	(3430)	45:55
Rich	14030	(19120)	3560	(5190)	9200	(13770)	30:70
All	3610	(6340)	1730	(2660)	1200	(3600)	60:40

Source: R7545 Shepherd (2000: 51).

\*Entitlement = Z\$ income per AEU (Adult Equivalent Unit) *p.a.* Non-farm entitlements include income from wage labour, artisanal activities, building work and remittances.

**Figure 21** disaggregates the dataset according to an alternative household typology, and shows that the majority of the non-farm income sources of the poor are derived from CPR and other NR sources, whereas it is the richer people who rely more heavily on rents and business income.

Taking a closer look at the sources of off-farm income for the same project R7545 research area in Zimbabwe, off-farm income accrued by poorer people originates from non-NR based sources, and it is in fact the richer people whose off-farm income is derived from the NR base (see **Figure 23**).



**Figure 20. Income portfolios for consumption terciles in semi-arid Shinyanga District, Tanzania**

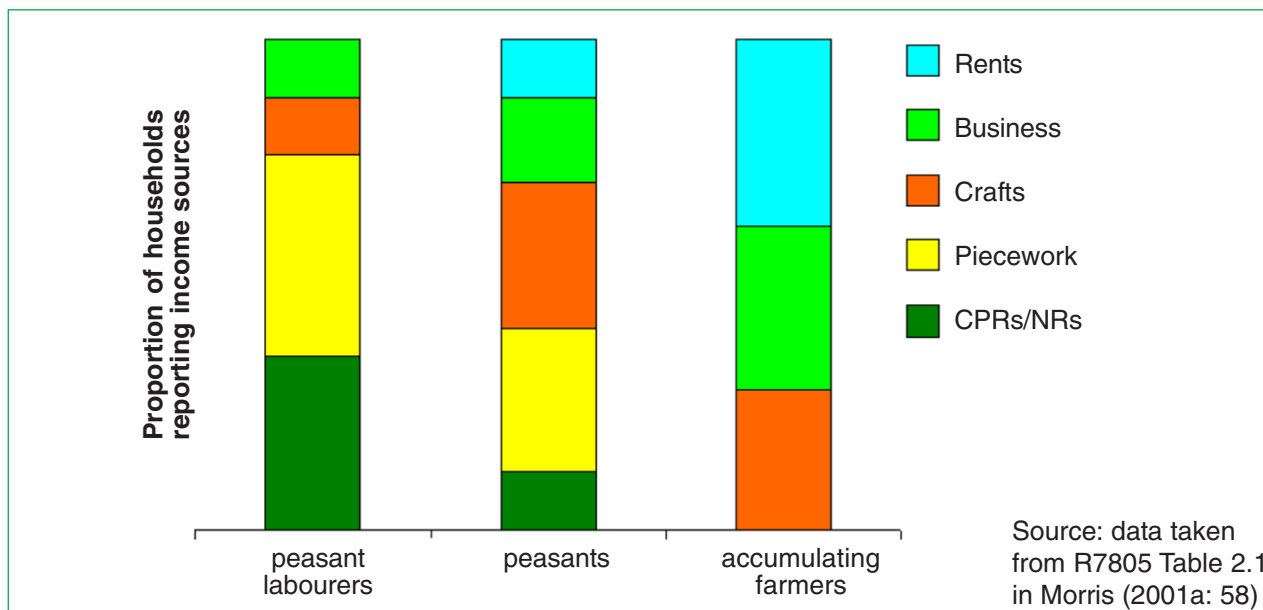


Figure 21. Non-farm income sources for different people in semi-arid Iringa District, Tanzania

It is instructive to look at the full-range of goods that compose a household budget (*i.e.*, cash income and subsistence goods) rather than concentrating on cash income as the key component of livelihood strategies. Project R7304, also from Zimbabwe, tracks and combines the value of both cash income and subsistence goods. The patterns illustrated in Figure 22 indicate that wage labour and remittances from non-NR based activities are of relatively similar importance to all categories of people. Whilst agriculture provides proportionally greater value to the richer people, it maintains its value to poor households. What is very clear is the degree to which poorer households rely on access to CPR resources as an integral part of their farming and livelihood systems.

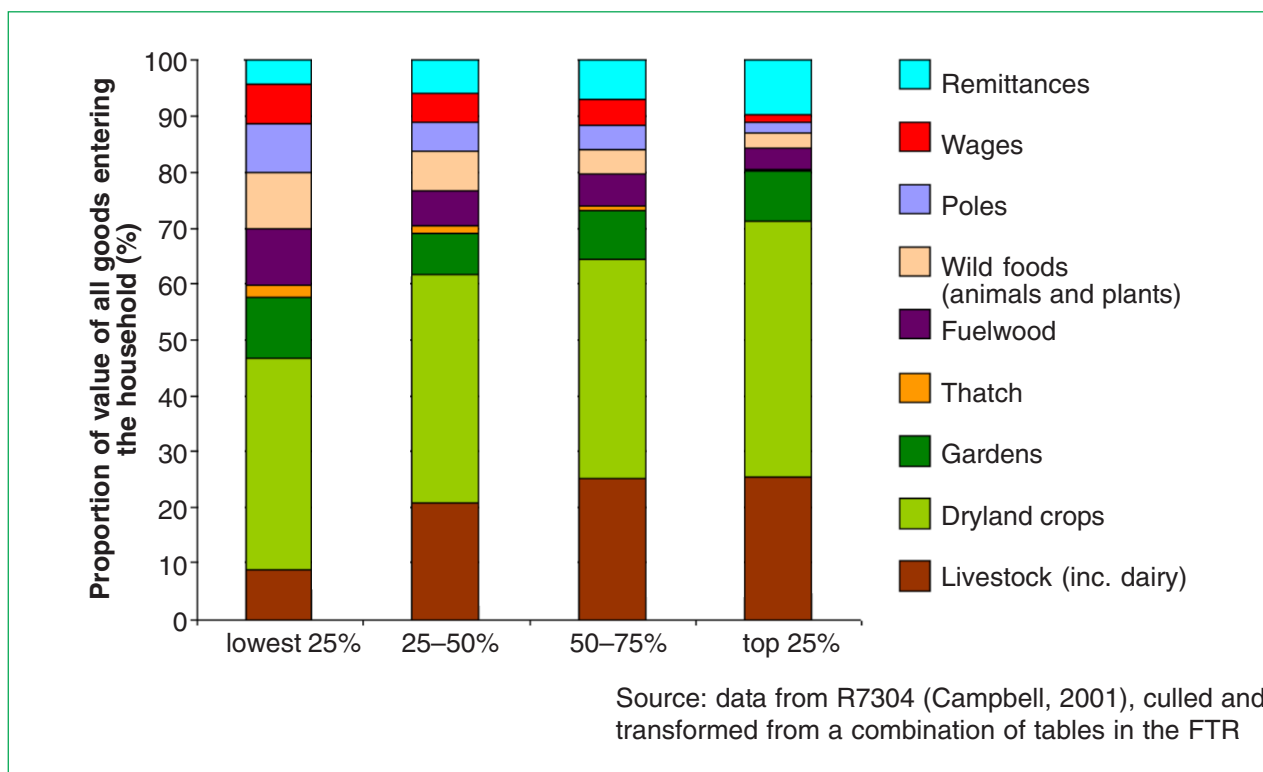
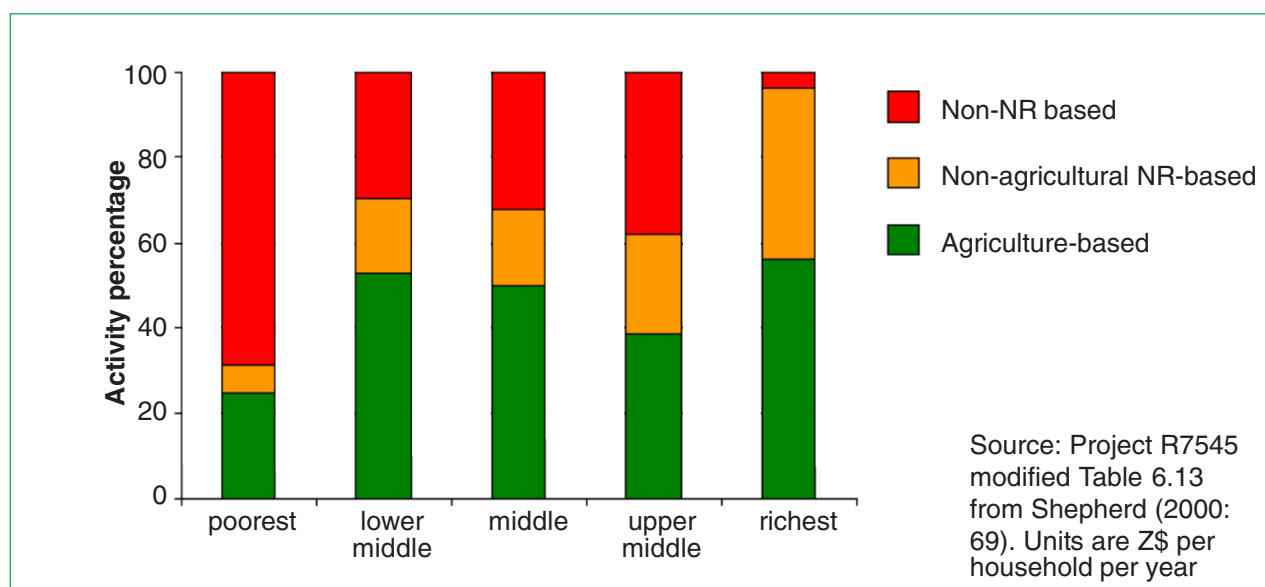


Figure 22. Value of cash and subsistence goods for different people in semi-arid Zimbabwe



Livelihood activities	Poorest	Lower middle	Middle	Upper middle	Richest
Casual labour	10	90	50	120	130
Poultry	0	60	90	180	380
Gardening	30	120	200	150	270
<b>Agriculture-based total</b>	<b>40</b>	<b>270</b>	<b>340</b>	<b>450</b>	<b>780</b>
Carving	0	0	20	60	0
Pottery	0	0	0	0	0
Trading	0	40	40	120	510
Beer brewing	10	50	60	90	10
<b>Non-agricultural NR-based total</b>	<b>10</b>	<b>90</b>	<b>120</b>	<b>270</b>	<b>520</b>
Building/brick making	40	80	120	180	0
Carpentry/welding	0	20	20	150	0
Sewing/knitting	70	50	80	110	50
<b>Non-NR based total</b>	<b>110</b>	<b>150</b>	<b>220</b>	<b>440</b>	<b>50</b>

**Figure 23. NR and non-NR based off-farm income sources for wealth groups in three semi-arid districts, Zimbabwe**

Data presented by Campbell *et al* (2001; [R7304]) in Zimbabwe show that CPR products represent approximately 30% of the value of household NR entitlements for poor people. This is supported by additional evidence from Project R7545 (also Zimbabwe) showing that CPR resources provide up to 40% of poorer people's livelihood entitlements. These natural resource assets mediate livelihood shocks and provide routes to livelihood accumulation for the bottom 3 income categories. Campbell and his colleagues on R7304 went on to discuss how the poor face significant barriers to commercialising CPR-based enterprises, not least the capability to provide labour and the physical capital assets such as donkey carts needed to take advantage of, and develop, these opportunities.

For many poor people, poor market access combined with knowledge uncertainty appears to lock households into cycles of production that are unable to respond to market conditions. Many of the poorer people are reported to be growing greater quantities of lower value crops rather than switching cropping patterns towards more lucrative products. Without capturing reasonable income streams from their crop production these people are unable to invest strategically in agriculture

Low returns to harvest as well as from waged work, poor access to farming inputs and poor market linkages frustrate accumulation strategies. For some poor people, the knowledge uncertainty relates not only to market

conditions but also to agricultural practice. In Tanzania, Project R7857 reports that poor people are investing in farm inputs which are then poorly applied. High rates of fertiliser (NOT manure) application, for example, does little to change low yields, whereas middle income farmers attained yields double those of the poor with little fertiliser application because of their better land husbandry and increased labour inputs.

Project R7545 reports increasing intensification of farming amongst poor people in Zimbabwe, where case study households have moved into home gardening and vegetable gardening. Campbell and his team on Project R7304 in Zimbabwe (Campbell *et al*, 2001) also believe that poor people are specialising in, and intensifying, farming as a coping strategy. In their research area, the poor are switching to intensive vegetable production, because even though the income stream is small, periodic and seasonal, harvests provide important and strategic cash injections. Being labour and water intensive, labour is often diverted out of vegetable production when either factor is in shortage, and preferentially invested in dryland crops. In the same project area, relatively small investments in labour-saving physical capital, *e.g.*, wheelbarrows, allow households to increase output by cultivating larger field sizes or engaging in more labour intensive high value cropping such as vegetable production. It is difficult to interpret the data from the Indian examples: poor people do seem to be intensifying production as an accumulation strategy, and the differences with the African examples may be the better access to peri-urban and urban markets enjoyed by some of the Indian research sites.

### **Livelihood diversification**

Even though for some people these patterns may indicate a continued or even increased reliance on agriculture as a basic component of livelihoods, in other places livelihood diversification strategies are being employed. Livelihood diversification may be either NR or non-NR dependent; again this varies by country. There is little empirical regularity amongst the project country evidence concerning the pattern of livelihood diversification and the factors driving this.

Migration and the pursuit of cash income as a way to reduce co-variate risk between different livelihood activities is not a new strategy in SA but may be becoming more important. The periods of migration may be becoming more prolonged, and migration destinations may be further away than in the past. For example, in Zimbabwe project data shows that there is increased migration to urban areas and commercial farms in South Africa. The projects report a general trend of increasing migration to urban areas, but it is unclear from the material how much of an impact this has on poorer households, as they are also reported as receiving low levels of remittances (see [Figure 22](#)).

By and large, trends seem to show that labour markets and income earning opportunities lie increasingly with non-farm labouring *e.g.*, quarrying, mining, or casual building labour where wage rates are low. The project data gave no indication of the way labour markets functioned although Campbell *et al* (2001; [R7304]) did not manage to find any significant difference in seasonal wages or opportunity costs of labour. However this contrasted with the Indian case studies, perhaps because the areas under study are located closer to urban centres.

Where research reports diversifying livelihoods amongst the poor, this is attributed to forced coping and survival strategies rather than to strategies of adaptation and accumulation through choice. Project R7805 (Tanzania) for example, reports that as agricultural households are forced into non-specialist wage labour as a source of income, the time and resources available for use on the farm are constrained. Risk aversion strategies are adopted in response, which in turn increases poor people's vulnerability (Morris, 2001; [R7805]). This suggests that diversification away from on-farm activity and into labour markets presents a trade-off for poor households between livelihood security and sensitivity, against on-farm productivity and livelihood resilience.

Project R7545 in Zimbabwe presents a generalised model of poor people's livelihood strategies where households tend to grow drought resistant, low capital, low labour crops whilst exploiting CPR and supplementing income streams with cash from NR-based casual labour. As social, financial and physical assets are acquired from farm and non-farm activities, diversification of production into higher value, more risk prone crops (often earlier high yielding varieties), and diversification of livelihood into non-farm and non-NR based income activities follows out of choice. How poor households are able to accumulate assets and what mechanisms enable them to diversify their agricultural patterns and livelihood portfolios is not clear.

**Table 24. Coping mechanisms reported for lower and middle strata people in semi-arid Shinyanga District and Singida Region, Tanzania**

<b>Livelihood strategy</b>	<b>Seasonal coping or coping with transitory insecurity.</b>
<b>Asset adjustments</b>	Borrowing food from friends and kin middle strata able to borrow without interest, poor more restricted. Sale of productive and non-productive assets; beds, buckets, poultry for poor, bicycles, tin sheets and cattle for middle. Redistribution of livestock
<b>Strategies/activities</b>	Wage labour agricultural and non-agricultural NR-related. Out migration of individuals in search of labour opportunities.
<b>Consumption adjustments</b>	Reduced frequency and quality of meals. Substitution of sweet potatoes and sorghum for rice and maize. Increased use of wild foods. Sending children away to relatives.
<b>Livelihood strategy</b>	<b>Surviving in bad years</b>
<b>Asset adjustments</b>	Calling down formal claims (food aid).
<b>Strategies/activities</b>	Out migration of household.
<b>Consumption adjustments</b>	
<b>Livelihood strategy</b>	<b>Risk reduction strategies (ex-ante)</b>
<b>Asset adjustments</b>	
<b>Strategies/activities</b>	Planting of drought-resistant crops.
<b>Consumption adjustments</b>	Some may have carried over food stocks.
<b>Livelihood strategy</b>	<b>Risk mitigation (ex-ante)</b>
<b>Asset adjustments</b>	Gifts in form of food received
<b>Strategies/activities</b>	Planting of drought resistant crops. Entreated support of richer relatives and neighbours. Expanded agricultural labour. Gathered wild foods
<b>Consumption adjustments</b>	Reduce spending on all non-essentials
<b>Livelihood strategy</b>	<b>Risk coping strategies (ex-post)</b>
<b>Asset adjustments</b>	
<b>Strategies/activities</b>	Secure food aid. Gifts in form of food received. Gathered wild foods.
<b>Consumption adjustments</b>	Reduce spending on all non-essentials. Poor reduce spending on essentials

Source: data from R7805 Morris (2001a: 48 and 2001b:8)

### **The importance of social capital**

If we look at data detailing how households adjust to different kinds of external production and income disturbances, whilst migration and wage labour and the value of livestock holdings maintain pivotal roles, social capital transactions providing access to natural capital resources, physical capital such as draught power and opportunities for livelihood diversification into non-farm activities as well as informal safety nets are fundamental livelihood determinants (see Table 24).

However, Campbell and his project team (Campbell, 2002: 3) declare that:

*“a new era of social relations is apparent”, signalled by the “demise of community values and a rise of individualism and household-centred behaviour where community activities such as work parties are less frequent, and are replaced by paid labour. Changing social situations have also resulted in much switching of roles, between male and female, and young and old, and a different suite of relations between rich and poor”.*

Social change of itself becomes a determining livelihood factor as different people seek to manage the dynamic and fluctuating social rules and resources produced. Projects R7806 in Tanzania and R7304 in Zimbabwe both identify emerging rural power structures that perpetuate situations in which middle income and wealthier households are able to exploit the opportunities for off-farm and NR-based income opportunities at the expense of poorer people.

The case studies in R7558 hint that important social and political capital assets are built through group membership, and that the groups in turn mediate access to both land and water resources, and often to credit networks (Gordon et al. 2001: 13). The data are not disaggregated according to wealth, but anecdotal evidence suggested that there are social barriers to group membership for poorer households, and the groups to which they do belong are less capable of voicing their own livelihood priorities at a community level.

The changing emphasis towards cash and away from crops, and in some cases livestock, as stores of wealth has an impact on social relationships and the nature of social capital. Households may use a portion of their agricultural production as a means to pay for labour and livestock in kind, and as a way of building social capital by loaning, gifting and exchanging crop production with other familial or non-familial households.

**Table 25. Ranked coping strategies in response to drought reported in two river catchments in semi-arid Tanzania**

<b>Strategy</b>	<b>Bubu river catchment ranking</b>	<b>Rhaha river catchment ranking</b>	<b>Rank of all</b>
Water management	6	1	1
Change crops/land	1	2	2
Casual labour	2	4	3
Relief aid	2	6	4
Petty trade	3		5
Migrate out	4		6
Food purchases	7	3	7
Use own savings - sell cattle	5	5	7
Obtain loans from others	7	7	8
Change eating habits	7		9
Assistance from relatives and friends	8		10

Source: data from R7806 Table 34 in Mbiha (2001: 47)

Rank derived from the number of respondents citing that strategy.



The ability to call on those households for support during times of livelihood stress, represents a form of ‘social savings’ with a greater impact on livelihood security than the income otherwise derived from sales of crops and livestock. The Tanzanian projects highlight changes to social capital as being a basic feature of the SA system, and it seems that for the poorest people livelihood resilience is compromised by their more limited use of these informal transfers. Project R7806 showed the widely held perception that informal safety nets continue to support the poor and reduce the level of asset draw-down is misplaced, as reliance on food from the market and the search for cash income is more important than drawing on social capital as a means to cope in times of stress (see [Table 25](#)).

### ***Policy and process and links to social capital***

Project R7558 in India exposes some clear differences concerning the determining livelihood effects of social capital between study areas covered by the project. Anantapur has been active in the application of pro-poor policies and policy instruments which have altered the vulnerability of the poor. There have been policy changes leading to land redistribution programmes increasing access to land for poor people, and the provision of tubewells providing potable water which has had beneficial impacts on human health and subsequently the availability of labour.

Aside from this, processes of local ‘empowerment’ have been supported, resulting in the development of social capital networks, advocacy services, and micro-credit schemes. A consequent increase in the political and social awareness of poor people has led to changes in the balance of the political and social determinants of livelihoods. There have, for example, been changes to the district level governance system which has brought decision making closer to the poor, and favours initiatives focused on their livelihood priorities. The project contrasts this concern with the building of the social capital of the poor in Anantapur, with similar project villages in Rajasthan. No such enabling policies exist in this state and an erosion of social capital stemming from a policy environment without a poverty focus is having measurable negative impacts on poor people.

### ***Macro-economic conditions and the importance of markets***

Project R7304 and R7545 in Zimbabwe show that poor households necessarily rely on collective consumption and the strength of the wider local and regional economy as important determinants of livelihoods. A sensitivity test conducted by project R7304 suggests that, holding rainfall regimes and macro-economic conditions constant, access to markets, market prices, and labour availability are the most important determinants of livelihoods. The reviewed projects identify a range of policy and market failures that impact on livelihood strategies. In India and Africa, public infrastructure failures restrict access to markets, particularly to urban markets. Knowledge uncertainty is a function of the failure of research and extension services. Poor people report gaps in knowledge provision concerning crop characteristics such as marketability, profitability, capital intensity, as well as husbandry skills. Failures in the private and public provision of physical capital inputs for farming, and the complicated policy context, lack of supportive service agents and failure of public and private management institutions for CPRs, are also reported as producing negative livelihood impacts.

The impression generated from the data suggests that in SA the degree of interdependence between environmental and economic disturbances, and between micro- and macro-level processes, is perhaps greater than in some of the other production systems. Project R7545 demonstrates this with a time series analysis showing that for all categories of people in Zimbabwe, ‘bounce back’ from the southern Africa-wide droughts of 1991-92 had still not happened by 1997. Coping and accumulation strategies for recovery (diversification, investment in livestock, reliance on wage labour and government support) that would normally support livelihoods of the poor had not in this instance. Further climatic shock in a reinforcing cycle of drought and then flooding, low production from CPR ‘livelihood’ buffers, steep inflation of farm input prices and consumption goods, poorly functioning markets for labour, and a sharp decline in the available investment capital, mean that the transitory poor have become chronically poor, and others who have become destitute are simply forced to move out of rural areas.

### **The important determinants of livelihoods identified**

Such a tightly interlinked nexus of factors makes it difficult both to untangle and to clearly identify the significant determinants of livelihoods. It might be possible to conclude that it is the lack of diversity in farm-based income, combined with the lack of diversity in non-farm income sources that determines the livelihood strategies of the poor. The middle income models to which the poor aspire, show great diversity in income sources and stronger social capital. It is perhaps fair to say that within the SA more than within any other production system this diversity is crucial not only to spreading co-variate risk, but to providing the flexibility needed to manage in an environment subject to extreme natural and economic variation.

To summarise, the important determinants of livelihoods for poorer people in the SA appear to be:

- access to land and human capital aspects of agricultural management and practice;
- sufficient social and political capital to secure access to CPR such as woodland and pasture;
- sufficient social and political capital to secure access to water which is directly linked to health and the capacity to labour, as well as for agricultural irrigation or livestock enterprises;
- the strength of labour markets and the availability of different labouring opportunities;
- market access and proximity to urban centres;
- the strength of the macro-economy and enabling institutional environments;
- social capital and informal safety nets.

### **Livelihood determinants of middle income people**

The tables and figures presented in the previous section illustrate the degree to which middle income people are diversifying livelihoods both as a coping strategy and as an accumulation strategy. These people show greatest diversity in the bundle of activities making up their livelihood strategies (see [Figure 23](#) for example). Accumulation is reliant on strategies which include the commercialisation of CPR resources, moves to higher value artisanal and processing activities, and in some areas using financial and social capital to enter trade as middlemen for agricultural commodities. Within their own agricultural enterprises middle income households are more able to respond to markets, and use smallstock as paths to securing cattle. The key determinants of these accumulation strategies uncovered in Zimbabwe are access to labour supplies, household size and dependency ratios, as well as the capacity to use social and financial capital to secure and manage agricultural labour. In Tanzania, the role of human capital working in concert with labour is emphasised, and evidence shows middle income farmers attain yields double those of poor farmers even though they apply significantly less fertiliser because of better land husbandry techniques as well as increased labour inputs.

Important livelihood determinants for middle-income people are access and management of labour supply, accumulation of physical capital, access to CPR resources and the development of social capital networks.

### **Livelihood determinants of richer people**

Many different strategies are being followed by richer people, including diversification through livestock holdings – often supported by non-farm income – or changing cropping patterns, intensification of livestock enterprises into dairying, trading as middlemen suppliers, leasing land to sharecroppers rather than seeking waged agricultural labour, and collecting rents from land or CPR resources, particularly water. As shown by projects R7545 and R7304 in Zimbabwe richer people rely on CPR resources to a significant degree, using a greater proportion as grazing than others, but also through the collection and commercialised trading of firewood and

other important resources. The projects suggest that livestock and land holdings are more important than labour in securing resilient and accumulating livelihood strategies. By and large, the assumption that the rich move out of farming when they can, as reported in some of the project literature, does not hold true. Although the patterns are difficult to untangle from the methodological complexity of data collection procedures and variable definitions, the data presented above demonstrates that richer households still rely on the NR base and on agricultural activity to a greater degree than others. Project R7805 reports that wealthier farmers in Tanzania bought more land where it was still available, so extending the farming frontier and reducing fallows rather than moving out of farming altogether. In general it appears the wealthier people rely on migration and the flow of remittances from other areas to a greater extent than poorer households. In many cases wealthier households are shown to be setting up 'satellite households' in other districts and areas where land is still available, employing social capital to link household units across time and space.

## *Applying the SLA and SLF in NRSP research: notes and criticisms*

Although not included as a specific objective of the study, this Annex is derived from the problems encountered in fully realising the terms of reference (TORs) for this research. The comments made are drawn from the way in which the NRSP projects reviewed apply the sustainable livelihoods approach (SLA) and the sustainable livelihoods framework (SLF). Some of the issues arising have been discussed in Section 1 (concepts, definitions, analytical methods) and alluded to in Section 3 (generic conclusions), so there is necessarily some repetition of material.

This study reviewed material from projects that were conceived and implemented before the SLA and the SLF evolved to their current level of refinement. Table 26 indicates if and how the SLA and SLF are applied by the projects covered in this synthesis study.

*Table 26. Use of the SLA and SLF by projects included in PD105 synthesis*

PS	No.	Short title	SLA?	SLF?
FA	R7446	Shortened bush fallow rotations – Ghana	No	No
FA	R7516	Bridging knowledge gaps in soils research – Ghana	not explicitly	No
HP	R7180	Bangladesh farm mechanisation	No	No
HP	R7962	Soil fertility and development interventions – Kenya	Yes	project ongoing
HS	R7412	Soil and water management – Nepal	not explicitly	Project ongoing
LW	R6755	Water management Bangladesh	Yes	Incorporated into design as SLF evolved, used as a guide to analysis
LW	R6756	Flood plain management Bangladesh	Yes	Incorporated into design as SLF evolved, used as a guide to analysis
LW	R7797	Opportunities and constraints for coastal livelihoods in the Caribbean	No	Elements were used as a guide to analysis
PU	R7854	Knowledge about livelihoods – Kumasi	Yes	SLA/SLF structured the design and analysis
PU	R7867	Knowledge about livelihoods – Hubli–Dharwad, India	Yes	SLA/SLF structured the design and analysis
SA	R7304	Zimbabwe micro-catchment management	Yes	Some elements incorporated into design, used in analysis
SA	R7545	Coping strategies in semi-arid Zimbabwe	Yes	Some elements incorporated into design and analysis
SA	R7558	Household coping strategies in semi-arid India	not explicitly	Incorporated into design as SLF evolved, some elements used as a guide to analysis
SA	R7805	Coping strategies of poor households in semi-arid Tanzania	Yes	SLA/SLF structured the design and analysis
SA	R7806	Human and social capital's role in NR management Tanzania	Yes	SLA/SLF structured the design and analysis
SA	R7857	Review of CPR management Tanzania	not explicitly	Some elements incorporated into design, alternative CPR frameworks used in analysis

## Comments on the application of the SLA

According to DFID (1999) a sustainable livelihoods approach to research should be:

- **People-centred:** incorporating people's own research and development objectives or addressing their expressed research needs. People-centred also implies being able to identify categories of people within communities and regions, and overcome the notion that there is homogeneity at household or community level or within gender, age, ethnic or other social groupings.
- **Holistic and multi-levelled:** research should take a broad outlook on specific research questions, be non-sectoral, *i.e.*, interdisciplinary, recognise multiple influences on people, multiple actors (from the private sector to national level ministries, from community-based organisations to newly emerging decentralised government bodies), acknowledge multiple livelihood strategies, and seek to achieve multiple livelihood outcomes from the products of research which should be determined and negotiated by people themselves.
- **Macro- and micro-level links:** search for understanding of the macro- and micro-level linkages and impacts on livelihoods and use research outputs to inform actors:
- **Dynamic:** the research approach should be iterative and able to incorporate or respond to change through the project cycle.

The major lessons to emerge are summarised below.

### People centredness and identification of people within the community

By and large those projects that explicitly or implicitly apply the SLA approach are people-centred. Weaknesses exist where projects:

- do not include poverty as a focus during the selection of research partners;
- do not focus on poverty as the principal variable when selecting community representatives and constructing sample frames;
- continue to treat women as a homogenous group;
- neglect intra-household dynamics as an important determinant of decision making processes and the form of individual livelihood strategies.

### Dealing with multiple actors at multiple levels

The demands of applying the SLA are high. Most projects struggle with the issue of identifying who amongst the potentially large number of actors should be included within the research and project process. Particular problems emerge over the inclusion of private sector partners and actors. Projects also neglect analysis of private sector impacts on livelihoods. A number of the PIs interviewed are aware of these gaps but point to the already heavy demands of co-ordinating and managing interdisciplinary/multidisciplinary and multi-partnership teams as a significant limitation on their ability to include actors and analyses from less familiar sectors.

### Macro- and micro-level linkages

Although the linkages between macro- and micro-level processes are recognised as important by nearly all of the projects, capturing and applying understanding of the policy context as it impacts livelihoods presents a significant gap. The significance of policy in structuring change to livelihood strategies and the direction of that change is not elucidated. This has implications concerning the form and effectiveness of research outputs and recommendations.

There is a need for the development and application of appropriate research tools to overcome such gaps in understanding.

### Dynamism

Most of the projects were very responsive and able to incorporate changing priorities and knowledge as research progressed; excellent examples are R6755 and R6756. The idea that livelihoods focused research is process-oriented is acknowledged by the majority of projects, as is the need to respond to this in project management terms by treating the project logframe as a living document. However, during the course of interviewing project managers a couple of them (interestingly natural rather than social scientists) did express unease about the incorporation of process dynamism in this way. In the words of one manager, *“I’m fed up with this constant pressure to refine the logframe. I don’t want to change the logframe. It’s unreasonable. It’s changing the goalposts.”*

There is a need to emphasise change and responsiveness as a strength rather than a sign of weakness or project failure.

## Comments on the application of the SLF

### Research design and analysis: the need for rigour in approach

As [Table 26](#) indicates projects either use the SLF *ex-ante* to structure their research design, or they apply it *ex-post* at the stage of data analysis and interpretation. Within these two broad approaches the projects divide further into those which place emphasis on laying out the theoretical concepts and frameworks structuring their research and analysis, and those which do not.

This is a significant issue, and one which it will be important for NRSP and research teams to address in future. Quite obviously, projects should not be diverting time and resources into the production of heavy literature reviews’, **but**, social science in general and the arena of livelihoods research in particular are jargon and concept ridden. Since ‘livelihoods’ is a developing field, significant contests remain over the meaning and significance of ideas and terminology. Setting out a review of the relevant literature and a coherent framework proved critical to understanding the significance and meaning of research results.

Three critical issues emerge from the division of approach in applying the SLF and developing a robust analytical framework.

### Clarity from design to interpretation

Livelihoods are complicated, and applying the SLF and the SLA are complicated too. Projects that have not developed a conceptual and analytical framework are not effectively able to link together different elements of their research. Discrete research exercises and ‘sub-studies’ remain compartmentalised, and do not provide adroit analysis. The outcome is often a very large dataset and volume of project material that has little to ‘say’.

In those projects with larger international teams of collaborators the lack of an effective framework means that even within the same project, different groups of people within the team use terminology in different ways at different times. Contradictory statements about livelihoods are the result, and drawing robust conclusions from the research is compromised. A good example of a well worked through framework is presented by project R6756.

In a number of cases, ex-post application of the SLF highlights gaps in knowledge and the limitations of the dataset collected. Only certain sets of more quantitative data are then used for livelihoods analysis (a finding also reported by Barr and Haylor 2001).



### **Bounding research and identifying research priorities**

Unless a robust and clear framework (incorporating the laying out of concepts) is developed to meet clear research objectives, one of the inherent dangers of the SLF is spreading research effort too thinly. With a properly defined framework it is easier to pin down priority issues and areas for investigation. Too thin a research coverage can result, as seems to be the case in two of the projects, so that a little bit of information is gleaned about everything, providing a limited understanding of livelihood dynamics. The reverse is also true, lack of framework can lead to the collection of reams of data which are difficult to hang together and use effectively to push forward understanding, as appears to be the case in three of the projects.

### **Critical appraisal of terminology and concept**

A fundamental principle of research, and at the very least an expectation of competent research, is that projects define how key terms are being used, and which parts of the livelihoods framework are being examined or applied. There are weaknesses here, not only in the definition but also in the uncritical application of concepts. Some projects apply the SLF at a discursive level – using the language without unpicking what it means. Deductive reasoning blindly squeezes results into pre-determined theoretical constructs whether they fit or not. Empirically based inductive reasoning or analytical induction, which is often better suited to social research (whether quantitative or qualitative), was not much in evidence; this is a failing if NRSP hopes to gain a more robust understanding of livelihoods.

Terms and concepts that prove particularly open to misunderstanding were:

- ***Coping and adaptation***

Problems with these two concepts have been outlined in the introductory section of this report. Although these terms are used by all the projects, only four actually define what they mean by ‘coping’ or ‘coping strategy’. For the majority of projects ‘coping’ was simply assumed to be what you do if you are poor and adaptation is assumed to be what you do if you are not poor. In addition, for all but two projects, ‘adaptation’ is assumed to equal diversification. Coping and adaptation, or, to reflect the project data more accurately, coping and diversification are treated as two mutually exclusive categories, if you are not adapting you are coping and vice versa. We are reminded here that:

*“It is very important that preconceptions about what the poor do – what their livelihood strategies are – should be put aside. It has been common in the past to make untested assumptions about the poor, and as a consequence, to misdirect support”*

(DFID 1999: Section 2.5).

Understanding what coping and adapting might be and how these decision making pathways are played out, is fundamental to furthering knowledge and understanding about livelihoods and how people interact with the NR base. Uncritical application of these terms and concepts should not continue.

- ***Diversification***

Within the material examined there is what can only be described as an obsessive attachment to the concept of diversification, as if producing lists of activities and indices of diversity are the magic bullet to understanding livelihood strategies. These lists may present an impression of the diversity of activities undertaken by people at community level, but produce little information about livelihood strategies at an individual and household level. Within households, individuals may be following different livelihood strategies which may or may not be based on diversification. In other households individuals may be changing activities rather than diversifying *per se*. In other cases individuals may always have been involved in a suite of different livelihood activities as a means to manage seasonality for example; the fact that a researcher now records these different activities does not mean that they have suddenly ‘diversified’.

All but one project uses the concept of diversification although it is defined by only two. During the course of interviews with researchers one person expressed an opinion about the need for definition that might explain why; “*we don’t need to define it, everybody knows what it means, we are all agriculturalists aren’t we, so we have been dealing with diversification for years*”.

However, there are qualitative differences in types of diversification. Livelihood diversification is not necessarily the same as agricultural diversification. Even within agriculture there are different forms of diversification. Without a more rigorous exposition and application of the term which takes into account the different forms of diversification and risk management outlined, our understanding of the role of diversification and the types of livelihood outcomes it engenders will remain limited.

- ***‘On-farm’, ‘non-farm’ and ‘off-farm’***

A clear definition of these terms is essential to understanding cross-sectoral as well as urban-rural linkages, and to discovering the importance of NR to livelihoods. There is considerable overlap between the categories as used by the different projects. Researchers should clearly define which activities and products are being included within each category.

- ***Social capital***

It is noteworthy that although widely used by all of the projects included in this study, projects have the greatest difficulty in pinning this term down. Two projects are explicit in what they mean by it. In other projects the term is either related to a proxy measure such as the numbers of groups people belonged to, or the number of groups existing within a particular locale, or to the catch-all phrase ‘social and kinship systems’ without further explanation.

Formal group membership may well be one axis of social capital but there are qualitative differences in the types, form and function of different groups. The implications of this are only explored by R7962 and mentioned in passing by R7854 (although it must be said that the participatory approach of projects R6755 and R6756 place social capital at the centre of their research process).

Putting something down to ‘social and kinship systems’ indicates a need to explore what these are and how they work, so that their role and significance on livelihoods can be understood. Some projects illustrate the confusion and dangers inherent in not doing this – many of the FTR outputs describe informal safety nets and kinship systems as playing a key role in structuring livelihoods, **but**, re-examining the data and information generated during PRA, problem census and livelihood constraint diagramming exercises it is clear that this is not actually the case. Furthermore, where projects have picked this up, the fact that ‘social capital is changing’ is not enough to explain and understand what livelihood impacts there are and what changes in strategies are taking place as a consequence.

Since all projects refer to the importance of social capital, it is suggested that a deal more effort needs to be applied in deconstructing and decoding this term and what it means to particular projects in particular contexts.

- ***PIPs***

Processes, institutions and policies are the elements of the SLF dealt with least successfully. PIPs are not disaggregated into societal, private, communal and state, and unpicking the linkages between the macro- and micro-level linkages presents research teams with particular challenges. Even where project R7558 sets out to do this there is still a lack of ‘research fit’ between community level data and data concerning policy changes and macro-economic trends; Project R7867 recognises that in the PUI, PIPs are fundamental to understanding some of the social, economic and environmental trends but during the course of research the team ac-

knowledges that additional investment of time, the development of new ways of working and new research skills including a social science input are needed for the research to achieve a realistic understanding of the impact of PIPs. The experiences of R6756 (Barr and Haylor 2001) corroborate these views and also make the additional point that a more purposive approach to data capture is needed since it is by finding entry points in the PIPs that routes to improving the livelihoods of the poor are likely to be found.

### The need to value social science

It is not fair to say that the projects reviewed have not handled social research competently. However, where the support of social scientists (sociologists, anthropologists, economists) is less evident it is fair to say that social theory is dismissed as irrelevant and there is unease in how social parameters and qualitative data should be integrated with other 'harder' findings. In the worst cases there is a dumbing down of social science so that it is equated with PRA. One principal investigator said for example, *"I really resent the suggestion that we didn't do social research, we did, we did PRA, we know what the touchy feely bits are so it's just not fair to comment that we didn't do gender, people are always saying it's missed out, that really annoys me, you don't need to dress things up to know how things work."*

A social science perspective remains essential to unlocking precisely those parts of the SLF that are proving difficult to deal with, *i.e.*, policy, institutions and processes. As another researcher said *"look, to be honest, in my project if they had bothered to integrate economists viewpoints earlier we would have moved along a lot quicker and been at the stage that we are in our understanding now, some time ago. Its silly that we keep reinventing the wheel in this livelihoods research thing and ignoring swathes of theory that had something to say about these issues years ago"*.

The implication of these comments is that whilst it is important to recognise that by and large we are still feeling our way in applying and understanding the SLF, without social science input we may rest at the stage of descriptive analysis rather than strategic analysis. This will limit the 'power' of the SLF and of the NRSP research in this area to push forward and move to more applied research that may have greater impacts supporting the livelihoods of poor people.

### Data limitations – which parts of the SLF are missing?

The major limitation of the data and information examined is the cleavage between identifying and describing WHAT people did and what assets they had, and then exploring WHY this was so. This kind of strategic analysis is crucial to filling knowledge gaps and finding NR management interventions that can benefit the lives of poorer people: It is crucial to the understanding of diversity, variability and risk. It is interesting that not all project researchers think their projects are descriptive, and socio-environmental diversity is often cited as the greatest constraint to improved understanding.

Important elements of the SLF that are missing are outlined below.

#### Measuring component parts of the SLF

The DFID Key Sheets say *"... that at a generic level there is no suggestion that we can – or should – quantify assets, let alone develop some kind of common currency that allows direct comparison between assets"* (DFID, 1999: Section 2.3). However, whilst the danger of a concept of common currency is well appreciated, there is a case for some reconsideration of this view.

This study demonstrates the difficulty of identifying the linkages between poor people and the NR base and of understanding the contribution of NR to livelihood security and livelihood outcomes, if forms of measurement that provide a means to analyse the relative contribution of different livelihood assets and entitlements are not present. Without such comparative measures the SLF becomes inoperative as a tool to identify and prioritise

which management interventions might be supported and which sets of livelihoods constraints require particular attention. It also becomes difficult to evaluate whether changes to livelihoods are on balance promoting either positive or negative outcomes for people or for the NR base.

### **PIPs and macro- to micro-level linkages**

Unravelling the linkages that hold the different parts of the framework together is a major gap – there are links here to the challenges associated with understanding social capital. As Barr and Haylor (2001) suggest, it is hard to unravel the difference between social capital and PIPs, or how social capital structures processes and mediates the effects of policies and institutions. This is fundamental to understanding why households manipulate assets and entitlements in the way they do. Of particular significance are applied understanding of property regimes and land tenure systems, and of political capital which may be particularly apposite in certain countries *e.g.*, India.

### **Cross sectoral linkages**

Since many households are ‘multi-functional’, ‘multi-occupational’ and ‘multi-locational’ where non-farm earnings may be providing flows of capital towards NR-based activities, it is important for research to push for a better understanding of urban to rural linkages.

Other gaps are the cross sectoral linkages between NR and health as well as the effect of HIV/AIDS on human capital assets and in terms of understanding the NR implications of future morbidity and mortality trends on the labour supply, dependency ratios and social networks.

Also missing from the project material examined are links to physical capital, the role of transport, infrastructure, *etc.*, in driving changes to livelihood strategies and increasing opportunity.

### **Characterising and accounting for new kinds of capital asset**

In considering future trends the potential livelihood effects of new technologies such as GMOs, are not considered. In addition, rather than grouping assets around the five axes of the pentagon, gaps in understanding would have been filled if asset typologies had been developed, explaining the roles and functions they fill.

### **Looking at relationships between groups of people and the wider economy**

This emerged as an important issue. Even though in some projects there are some clear indications of inter-household or inter-group relationships, for many projects different types of people are treated as independent sub-units of society. What is missed in these cases is a consideration of the workings of private markets, the nature of market and non-market transaction costs, household decision making with regards to trust and risk, and also the development of new commodity chains in response to globalisation.

### **Temporality**

Accounting for dynamism and change over time is important if we are to identify the drivers and indicators of change. Although not all projects are able to include longitudinal studies, research teams should consider using alternative methods for investigating livelihood changes over time.

### **Methods and tools which support SLA/SLF approaches**

A number of methodological problems and criticisms emerged during the course of this study. Detailed assessment of the research methods projects use to understand livelihoods is really beyond the scope of this report, not least because research methods employed are tailored to project objectives, and of course there will be a significant difference in those applied where projects aim at more development oriented ‘learning and action’ approaches (*e.g.*, R6755, R6756, R7962) and those determined to be more extractive and gather knowledge (*e.g.*, R7867, R7854, R7516).

Many of the problems encountered are dealt with in the excellent series of very accessible guides and support documents produced by the SSC, Reading (<http://www.ssc.rdg.ac.uk/develop/dfid/dfid.html>). The guides dealing with the most important issues raised here are those dealing with social sampling, combining quantitative and qualitative research techniques and analysis, new approaches to survey methods, extending the value of PRA derived ranking and scoring data, adding value to causal diagramming, and dealing with case studies.

The most important points noted in relation to meeting the objectives set for this study are given below.

### Sampling and characterisation of the community

Social sampling was not always well executed. Many projects say their social sample is random and stratified, but actually the samples are not stratified in any statistical sense (this would have required and generated a huge sample set), rather they are purposive according to a range of criteria. These kinds of issues are a constant irritant, because it becomes hard to understand the nature of the data being presented and it prevents a full elucidation of the significance of patterns or the numbers and types of people affected by particular issues.

Perhaps this does not bear repeating, but on the basis of some of the data presented in some of the FTRs, there appears to be a gap in understanding that social science (meaning anything outside of the realm of economics) does not and should not mean sloppy science, and that social science does not equal PRA. Unless this gap is bridged there will continue to be issues around the relevance, and rigour of some of the livelihoods research.

### Answering ‘why’ questions: integrating robust quantitative and qualitative data

The ‘what’ descriptions found in projects rather than robust ‘why’ analyses, is partly a function of the broadly quantitative approaches taken. Unravelling the why questions requires rigorous application of qualitative approaches and methods. IFPRI’s recent experience shows that “*neither surveys nor qualitative data alone can cover the questions raised by the sustainable livelihoods framework*”, and in fact it is the combination of these two kinds of data which “*provides a richer base for analysis*” (Adato and Meinzen-Dick 2001).

The best characterisations and understanding of livelihoods came from those projects that:

- quantify the relative importance of different assets and entitlements to different sections of the community – quantification here means using measures such as income rather than ‘counts’, scores or ranks, collected at a household level to generate community wide patterns (*e.g.*, R7304, R7805, R6756)
- use clearly developed household characterisations which combine quantitatively derived wealth groupings with more qualitatively understood household or stakeholder groups as the basis for analyses. As Barr notes (2000: 8 Annex H) “*a wealth indicator, combined with stakeholder groupings based on major livelihood strategies is able to place most households from most parts of the floodplain into a functional category that is likely to operate in a certain, predictable way, face different livelihood constraints in a certain way and respond to development initiatives in a certain way.*” It is likely that in certain contexts combining wealth with social categories such as caste and ethnicity may also provide useful insights.
- undertake case studies as a way of researching livelihood strategies and report observed changes in a detailed and qualitative way.

None the less, even where qualitative data was collected alongside quantitative data, the different datasets have not always been used to best advantage in explaining the ‘why’s behind project descriptions of ‘what’. This may not be a fair comment where projects include research activities such as stakeholder workshops, but even the best examples of these, projects R6755, R6756 and R7304, acknowledge that more purposive case study type sampling would provide the detail needed to move towards the identification of robust NR-based management interventions.

There is a real need to shift away from endless lists and descriptions illuminating the ‘what’ to strategic analysis of the ‘why’. It is hard to see how this can be done without including qualitative detail.

### Applying appropriate research tools

Particular attention needs to be focused on finding and applying research methods and tools which can:

- aid contextual analysis and deal with diversity;
- account for time and variability over time, including historical experience;
- uncover power relationships within and between households and between the different people present in communities;
- deal with the livelihood impacts of policy and politics (*i.e.*, political capital);
- drive research efforts and research findings into the policy process at the interface between people and policy institutions, including ways to deal with and communicate system and process diversity.

In terms of uncovering the ‘why’ questions related to household manipulation of assets and entitlements, it is worth flagging the value of returning to the checklist developed by Scoones (1998) as an aid to unpicking patterns of causality and drivers of change acting on livelihood strategies:

- Sequencing – What is the starting point for successfully establishing a particular livelihood strategy? Is one type of livelihood resource essential and a precursor for gaining access to others?
- Substitution – Can one type of capital be substituted for others? Or are different capitals needed in combination for the pursuit of particular livelihood strategies?
- Clustering – If you have access to one type of capital, do you usually have access to others? Or is there a clustering of particular combinations of livelihood resources associated with particular groups of people or particular livelihood strategies?
- Trade-offs – In pursuing a particular portfolio of livelihood strategies, what are the trade-offs faced by different people with different access to different types of livelihood resource? Depending on who you are, differential access to different types of capital may have positive or negative implications in terms of the success or otherwise in the pursuit of a sustainable livelihood.





## PD105 Terms of Reference

### Natural Resources Systems Programme (NRSP) Synthesis assignment – livelihood strategies and NR-related management opportunities

#### Background

The overall aim of the Natural Resources Systems Programme is to deliver new knowledge that enables poor people that are largely dependent on the NR base to improve their livelihoods. NRSP's research aims to have generic applicability beyond the initial location of a piece of research. Therefore the results achieved should be replicable in areas other than the target countries in which the research is undertaken. They should also be of value to the international arena for R&D relating to the use and management of natural resources.

NRSP conducts research in six production systems:

- Forest Agriculture Interface
- High Potential Production Systems
- Hillside Production Systems
- Land Water Interface
- Peri-urban Interface
- Semi-arid Production Systems

As of April 1999, NRSP did not have a programme logframe. Thus, although the six PSs had individual logframes, linked by each having the same purpose, there were no objectives for the programme as a whole.

In March 2000 (after HTS Development Ltd had had one year's experience of managing NRSP), the Steering Group developed a programme logframe (refer Annex 1).

The overarching objectives of the programme are specified in the narratives of the five planned outputs. In broad terms these cover:

**Output 1.** Ensuring the quality of NR management research, as a means to optimise its usefulness to those engaged in development-oriented work (government organisations, non-governmental organisations and donors) and even to enable direct uptake by the target group of the research, *i.e.*, specific groups of the poor.

**Outputs 2 and 3.** Adding value to the research that is conducted within projects by synthesising common findings from groups of projects and using the findings of these syntheses to feedback into commissioning further projects.

The two main topics for synthesis, across all 6 production systems are:

- characterisation of livelihood strategies and the principal NR-based factors influencing livelihoods;
- identification and characterisation of worthwhile NR-related management opportunities.

These two syntheses should enable NRSP to have a better understanding of:

- the factors that influence livelihood strategies of the poor who are largely NR-based, and
- NR-related management opportunities that could benefit the poor.

### **The assignment**

The assignment concerns the two synthesis topics summarised above. The syntheses will:

- consolidate the knowledge available in NRSP's research projects on livelihood strategies, including their dynamics; and thereby
- assist the enrichment of NRSP's strategy for NR management research.

This will be achieved by analysing specific projects from NRSP's six production systems, comparing findings on livelihood strategies and opportunities and identifying and characterising their main common features and differences.

Specifically the principal investigator should:

- identify and describe important determinants that affect the security and choice of livelihood strategies of specific categories of the poor and identify gaps;
- elucidate how these determinants impact on livelihood opportunities under changing circumstances;
- specify the contribution of NR to these determinants;
- identify opportunities to enhance livelihood options.

### **Terms and conditions**

- The assignment will be undertaken by a contracted social scientist who will interact closely with the NRSP Steering Group members. The principal investigator will report regularly to the NRSP Programme Manager, Dr FM Quin.
- The duration of the assignment will be approximately 12 months part-time, starting May 2001.
- By end of May 2001, complete a preliminary familiarisation exercise with selected project documents and develop a draft appraisal matrix of livelihood determinants for specific categories of the poor.
- Latest by October 2001, report on the principal determinants affecting livelihood strategies, and the dynamics of these livelihoods, for specific categories of the poor in each production system submitted to NRSP-PM.
- By December 2001, an analysis report identifying NR-related opportunities to enhance livelihoods delivered to the NRSP-PM.
- By March 2002, a summary report of main findings and main recommendations should be submitted to the NRSP-PM
- During 2002-2003, the summary report would be developed to form part of a 'special edition' paper/booklet to submit to, for example, World Development.

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## Abbreviations and acronyms

AEU	Adult Equivalent Unit	M&E	Monitoring and Evaluation
AIDS	Acquired Immune Deficiency Syndrome	NGO	Non-Governmental Organisation
CBO	Community-Based Organization	NR	Natural Resources
CPR(s)	Common Pool Resource(s), also Common Property Regime	NRM	Natural Resources Management
DFID	Department for International Development	NRSP	Natural Resources Systems Programme.
FA	Forest Agriculture	PAC	Programme Advisory Committee
FAI	Forest Agriculture Interface	PD	Programme Development
FGD	Focus Group Discussion	PI	Principle Investigator
FYM	Farmyard Manure	PIP(s)	Processes, Institutions and Policies
FTR	Final Technical Report	PM	Programme Manager
GIS	Geographic Information System	PRA	Participatory Rural Appraisal
GMO	Genetically Modified Organism	PS	Production System
GO	Government Organisation	PU	Peri-urban
HH	Household	PUI	Peri-urban Interface
HIV	Human Immunodeficiency Virus	R&D	Research and Development
HP	High Potential	RNRRS	Renewable Natural Resources Research Strategy
HS	Hillsides	SA	Semi-arid
ICRAF	International Centre for Research in Agroforestry (Kenya)	SAPS	Semi-Arid Production System
IDS	Institute for Development Studies	SG	Steering Group (NRSP management team)
IFPRI	International Food Policy Research Institute	SHG	Self Help Group
KI	Key Indicator	SLA	Sustainable Livelihoods Approach
KIT	Knowledge-based Information Tutorial	SLF	Sustainable Livelihoods Framework
LANDNET	The Africa Land Tenure Network	SLSO	Sustainable Livelihoods Support Office
LWI	Land Water Interface	SSC	Statistical Services Centre (University of Reading)
		TOR(s)	Terms of Reference