

Working Paper 225

**Hidden Livelihoods?
Natural Resource-Dependent Livelihoods and Urban
Development Policy**

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Acronyms and Abbreviations

CBNRM	Community-Based Natural Resource Management
CPR	Common Property Resources
DRA	Demand-Responsive Approaches
NCC	Nairobi City Council
NGO	Non-Governmental Organisation
NR	Natural Resources
NRM	Natural Resource Management
O&M	Operation and Maintenance
REDS	Ragpickers Education and Development Scheme
RNFE	Rural Non-Farm Economy
SLAs	Sustainable Livelihoods Approaches
UA	Urban Agriculture

Summary

Natural resources (NRs) and their contribution to livelihoods have been widely explored within the rural context yet have received relatively little attention within the urban context. NRs can, however, contribute significantly, if modestly, to urban livelihoods in a number of often ‘hidden’ ways. This report explores these ‘hidden’ livelihoods drawing on frameworks from urban and rural studies to enhance our understanding of the dynamics of urban-based natural resource-related livelihoods.

The aim of the paper is to provide:

- an increased appreciation of the ways in which urban natural resources are used to support urban livelihoods;
- an enhanced understanding of both the systems that govern access or tenure over these resources and the analytical or conceptual frameworks that can be used to understand them; and
- creative and innovative thinking about urban livelihoods and options for urban development policy.

The paper begins by examining assumptions about what constitutes a ‘natural resource’ and argues that, in urban contexts, there is a need to incorporate a broader view of natural resources. The paper then reviews the different analytical frameworks that are used in rural and urban development respectively and suggests that there is scope for drawing on rural frameworks to better understand urban livelihoods. The paper develops a conceptual framework focusing on a typology of primary, secondary and tertiary uses of NRs and then explores questions about NR-based activities drawing on examples from cultivation, forestry, water, waste, mining and quarrying, and urban spaces. The key questions that the case materials are used to answer are:

- How do urban natural resources, and their uses, contribute to livelihoods, especially of the very poor?
- What are the dynamics of urban NR-dependent livelihoods?
- How important are Common Property Resource (CPR) systems to urban NR-dependent livelihoods and in what ways are CPR systems supported within the urban context?
- How useful are lessons from Community-based Natural Resource Management (CBNRM) approaches for understanding urban livelihoods portfolios?

Next, a set of broader theoretical questions are raised about the incremental contributions of NR-dependent activities to livelihood portfolios, the ways in which the concept of institutional bricolage can help understand institutional configurations for NR-dependent livelihoods, the roles of individual and collective action, and issues of equity and social justice. The paper concludes that a focus on natural resources in urban areas produces important insights into urban livelihoods. There are examples of both positive and negative impacts for poor people of policy interventions in NR-based urban livelihoods. The development of effective policies to support urban NR-use depends upon facilitating pro-poor private management of NRs, regulating to prevent anti-poor management and on understanding where it is appropriate to intervene in NR-based activities.

1 Introduction

Natural resources (NRs), and their contribution to livelihoods have been widely explored within the rural context (e.g. issues of access, use and control of NRs, often within the context of contributions to livelihoods), yet have received relatively little attention within the urban context. They can however contribute significantly, if modestly, to urban livelihoods in a number of often ‘hidden’ ways. This report explores these ‘hidden’ livelihoods, drawing on frameworks from urban and rural studies to enhance our understanding of the dynamics of urban-based natural resource-related livelihoods. Through this we aim to provide, (i) increased understanding of the ways in which urban ‘natural’ resources are used to support urban livelihoods; (ii) enhanced understanding of the systems that govern access or tenure over these resources and the analytical or conceptual framework through which we can understand them; and, (iii) creative and innovative thinking about urban livelihoods and livelihood strategies that can feed into new policy debates within urban development. This will facilitate pro-poor urban policy but also regulate and prevent undesirable outcomes from policy for the poor. Overall, by exploring the conceptual and empirical foundations of our understandings of urban NR-dependent livelihoods, we aim to better inform policy intervention in urban areas, be it supported by state, private sector or donor agency.

This report begins by examining the key assumptions behind ‘hidden’ livelihoods and what constitutes an urban natural resource. We then identify a set of frameworks that are used either as tools to guide intervention, or as sets of concepts or analytical constructs through which to guide our understandings of livelihoods, natural resources and urban development policy. Drawing on these frameworks the report then works through a series of questions through which we aim to explore the dynamics of urban NR-dependent livelihoods. Drawing on a series of case studies (expanded upon in the appendices) this section highlights the importance of NR-dependent livelihoods to the urban poor, as well as drawing attention to some of the conceptual difficulties this analysis produced. The final section of the report takes some of these more theoretical issues and explores them in greater depth to inform theoretical and policy developments within this field. The report concludes by illustrating key areas where creative and innovative thinking around urban NR-dependent livelihoods can inform urban development policy making it more pro-poor and sensitive to the needs of people living within dynamic and changing urban environments.

The geographical focus of this paper is principally Southern Africa. The case for this focus is based on the research expertise of the two lead authors in Botswana, Lesotho, Mozambique, Namibia, South Africa, Zambia and Zimbabwe. However, through the process of producing this document it became clear that this focus was too restrictive. First, there was very little published material to draw upon for some of the case studies and thus we needed to move further afield to draw in relevant experience from urban areas in other parts of Africa and elsewhere. Second, this broader reading of ‘hidden’ livelihoods, illustrated that the urban context of Southern Africa (and the contexts and constructions of ‘hidden’ livelihoods therein) could be construed as very different from other parts of Africa as well as for Asia and South America. For example, in the case of urban tree resources, there is much to be learned from West Africa, South East Asia and parts of Latin America. In the case of waste products, there is very little literature on Southern Africa, but much to be learnt from Asia and Latin America. It is not clear what the reasons are for the lack of research into waste and trees in urban Southern Africa but it may stem in part from the different historical processes of urbanisation in Asia, Africa and America that have brought about different patterns of urban livelihoods. Drawing on a wider remit of case study material allowed us to investigate these differences and therefore provide a stronger basis to our arguments.

2 'Hidden' Livelihoods: Recognising Urban NR-dependent Livelihoods

Currently 66% of the world's urban population live in developing countries, and by 2025 it is predicted that this proportion will have risen to 77% (Drakakis-Smith, 2000). By 2025 Africa's percentage of the world's urban population will have risen from 10% to 17 % making it one of the most rapidly urbanising continents in the world (Drakakis-Smith, 2000). Thus better understanding how people make a living in urban areas, especially the poor, is a key development priority (DFID, 1997, 2000). Livelihoods in urban areas have conventionally been classified as formal (e.g. waged work) and informal (e.g. unstructured petty trading) and until recently the informal sector was given little attention except as either a social problem and a transitional phenomenon that would eventually be absorbed into the formal sector of the city, or as home-grown strategy for overcoming the social ills of the city (UNDP, 1990). Debates have now moved on to recognise that the distinctions between informal and formal working practices are blurred (e.g. 'factory' home-working), and that alternative activities, such as urban agriculture, can play an important role in subsistence contributions to households, income generation and more widely food security within urban areas (Beall, 1997c). However, missing from many of the debates about urban livelihoods is any genuine recognition of the diversity and importance of other natural resource-based livelihoods.

NRs do make small but potentially important contributions to urban livelihoods. However, they are often missing from understandings of how poor people make a living in the city. Researchers, practitioners and policy makers often make assumptions about NRs and their utilisation being principally confined to rural areas. Thus we refer to these livelihoods as 'hidden' not because they are illegal, illicit or unconventional. The term 'hidden' is used simply to highlight how many of these NR-dependent activities are not recognised, or are overlooked, in assessments of urban livelihoods. This may be because their contribution to household income is seen as so small that it is not worth documenting, or it may be that they are overlooked as they are not recognised as occurring within the urban context. What is clear from much of the literature (whether urban or rural focused) however is that our understanding of how NRs contribute to livelihoods, especially of the urban poor, is extremely limited. Furthermore, where certain key activities have been investigated, such as urban agriculture, the analyses of these livelihoods have been partial, with a tendency to focus on their contribution to the cash economy of urban life, rather than the diverse ways in which agricultural activities in urban areas can contribute to a broad range of livelihoods issues for different people.

Thus the focus on this piece of research is to uncover these 'hidden' livelihoods, to expose and recognise them and to understand their contributions to people's livelihood portfolios. Only by fully recognising the complexity of urban livelihoods is it possible to provide appropriate and just intervention through urban development policy. This may be directly, for example, through supporting a community's claims to graze livestock on certain 'wasteland' areas, or indirectly through ensuring government or NGO support in one sector, or to one group, does not jeopardise the NR-dependent activities of another group, or set of individuals. Overall we need to identify what pro-poor intervention to support NR-dependent livelihoods might look like, recognise where interventions are inappropriate or damaging to the NR-dependent livelihoods of the very poor and set out ways in which these might be achieved.

3 Urban Natural Resources

Urban NRs have largely been regarded as *land* for agriculture, *water* for service provision (irrigation, sanitation), and more recently *trees* for amenity provision in parks or homesteads. However, if we think of natural resources as the components of natural capital, as defined in the assets framework of the sustainable livelihoods approach, then we have the scope to broaden our understandings of NRs within urban areas, and to explore their contribution to urban livelihoods. Ellis (2000) defines natural capital as the land, water and biological resources that are utilised by people to generate a means of survival. Both Ellis (2000: 32) and Carney (1998: 7) state that natural capital is sometimes referred to as ‘environmental resources’, with the components thought of as jointly comprising ‘the environment’. Both emphasise that natural capital is not static, and that it can comprise both renewable and non-renewable resources.

In looking at NR-dependent livelihoods in an urban context, we first need to understand what constitutes ‘urban natural resources’. Does it make sense to think about certain resources in urban areas in the same way as we might in rural areas, or do we need to conceptualise urban NRs in a different way to that of rural NRs? This may be in terms of the resources themselves i.e. what is ‘natural’ in an urban context, as well as the ways in which we categorise both the NRs and their different contributions to livelihoods, for example, in terms of livelihoods derived from NRs directly (such as quarrying for rocks), those that use NRs for production purposes (e.g. growing crops or trading livestock), and for example the different rights people might have over these resources

The case studies on waste, urban agriculture, urban spaces, water, mining and quarrying, and urban trees raise interesting and important questions about how we define natural resources within urban contexts. For example, pastoralists in Cape Town, South Africa, graze their cattle on grass verges on the N2 highway and allow their goats to browse piles of rubbish in streets in the townships. In Indonesia, cattle grazing on rubbish dumps in cities thrive in comparison to cattle grazed on grass in adjacent urban wasteland areas. So, what does this mean for how we define natural resources in urban areas? Is the rubbish on which cows graze different from grasses and trees on which they browse? In a material sense these two ‘resources’ are quite distinct, but in terms of the way in which they contribute to urban livelihoods, through feeding the cattle as a ‘grazing resource’, they are the same. Grass grows, but then so does the rubbish dump, albeit in a different way.

Given the problem of defining what constitutes a ‘natural’ resource it might be more useful to think about the resources that occur in the urban ‘environment’ and that people draw on in their NR-dependent livelihoods. Thus while we still keep the label ‘natural resource’ or NR, we recognise that, in addition, urban NRs may be synthetic (produced or grown) within the urban environment. Tying this in with the assets pentagon in the sustainable livelihoods approach, it might be useful to expand our understanding of natural capital. If we focus on the different types of urban natural capital that can be harnessed to support livelihoods, and recognise that the urban, peri-urban and rural environments are different (and within these categories contain a high level of diversity), this helps to reconcile this conceptual problem. In this way, rubbish and grass are ‘resources’ that occur in ‘the urban environment’ and so constitute the urban natural capital. Within this report we use the terms natural resources and within our definition we include land, water, biological resources and the productive capacity and services that they provide. In addition we include waste as a form of urban ‘natural’ resource.

4 Frameworks for Understandings Urban NR-dependent Livelihoods

4.1 Livelihoods approaches

Since the 1990s, there has been a shift in development studies and development policy towards more holistic views of the activities and capital assets that households draw on to make a living (Scoones, 1998; Ellis, 2000; Carney, 1998). The focus of most sustainable livelihoods approaches is on a pentagon of five types of assets comprising natural, physical, human, financial and social capital, and on a set of principles. Whilst sustainable livelihoods approaches (SLAs) were conceptualised originally to understand and support livelihoods in rural areas, they are increasingly being applied in urban Areas. Farrington et al., (2002) argue that there are some substantial differences between livelihoods in rural and urban contexts, including differences in use of and access to capital assets, the vulnerability context, patterns of policy and institutions and levels of heterogeneity of livelihood portfolios.

Whilst in rural areas, people often depend on a combination of subsistence and income earning activity, whereas urban dwellers tend to be much more heavily dependent on the cash economy. The need to generate an income is at the heart of people's attempts to survive in urban areas but, because the urban poor own fewer productive assets themselves, they often rely on selling their own labour power. Research into urban development reflects this reliance on the cash economy and labour power and is biased towards understanding the processes by which people's financial and human (labour power) capital assets interact (Drakakis-Smith, 2000). Similarly, policies concentrate on supporting job creation and income generation. For example, World Bank Urban Development Policy focuses on a set of policy issues including labour markets and employment through which it stresses the importance of increasing access to job opportunities and supporting home-based income generating opportunities (World Bank, 2003).

In other urban development frameworks and research there is an emphasis on the physical capital that people draw on to support their livelihoods (Drakakis-Smith 2000). Whilst people often do not have access to the assets of production in urban areas in the same way as in rural areas e.g. land, they do depend on physical capital such as housing, roads and other infrastructure. Interventions on the parts of governments and donors therefore also stress the need for the development of physical capital through spatial development plans, housing programmes, road building schemes, electrification and the like. Drawing again on an example from the World Bank's Urban Development Policy, there is an emphasis on housing finance and service provision as important policy tools in the reduction of urban poverty (World Bank, 2003).

More recently, there has been increasing interest in the relationships between urban governance and poverty (Devas et al., 2001; Beall, 1997c; Beall et al., 2002). Here the emphasis is on the capacity of formal and informal institutions to deliver pro-poor development programmes in urban areas, the role of civil society in urban development and the extent to which poor people are able to influence development policy. Whilst the other examples of urban development research above stress financial and physical capital and the labour aspects of human capital, research into urban governance emphasises human and social (and political) capital.

Overall, there is a strong body of research on urban development that has strengthened pro-poor development policy in urban areas. However, since, of the five types of capital assets identified in the livelihoods framework, natural resources tend to be excluded from these analyses, it is difficult when drawing on existing frameworks to recognise the contributions that natural resources can make to urban livelihoods. The hidden nature of natural resource based urban livelihoods in

research therefore means that they are ignored in policy-making processes that aim to support the livelihoods of the urban poor.

4.2 Common Property Resources (CPRs)

There has been much interest in developing theory and policy in community level institutions for the management of natural resources (Cleaver, 2000). This has most clearly been articulated in the field of collective action and common property resource management. In rural areas the decentralisation of resource control and management has promised more efficient, equitable and sustainable resource use, though there are debates on what types of institutional arrangements are most appropriate (Hobley and Shah, 1996). CPR theory and practice is based on the premise that 'management' requires the establishment of organisational structures in the form of 'user committees, associations and groups' (Cleaver, 2000: 361). Such organisations are thought to both draw on and create social capital in pursuance of optimal resource management within common tenure regimes. The emphasis on collective action within these management regimes is deliberate and founded on the notion that individual behaviour can be regulated and controlled to the benefit of the collective user group (Ostrom, 1990). Central to CPR theory has been the work of Ostrom, (1990; 1994) who argues that institutions can be 'crafted' by resource users and policy makers (1992:3) with social capital as a central focus. Thus while CPR theory can provide insight into how urban common property NRs might be utilised, controlled and managed, it fails to address the question of how access to and use of privately owned NRs are negotiated, or how institutional arrangements for collective action may be more complex than CPR theory recognises (Cleaver, 2000). A view of organic / informal institutional arrangements for control of hidden resources in urban areas may inform debates in rural areas. Furthermore, Hobley and Shah (1996:1) argue that the 'usual dichotomy between public and private resource management is crude: more realistic is the concept of a continuum of different organisational and property rights relationships according to the nature of the resource to be managed'. Given the patchwork of property rights and resource appropriation in urban areas, there is scope for a focus on urban experiences informing this debate.

4.3 Community-based Natural Resource Management (CBNRM) – beyond common, to community

Community-Based Natural Resource Management (CBNRM) has gained the status of an established and mainstream approach to rural development and conservation throughout Southern Africa, as it has in many parts of the world. CBNRM programmes have been based on the premise that local populations have a greater interest in the sustainable use of natural resources around them than do more centralised government or private management institutions (Brosius et al., 1998). Local communities are assumed to have a deeper understanding of their local environment than outsiders, and CBNRM credits them with the ability to manage natural resources effectively through local or 'traditional' practices (Tsing et al., 1999) or in partnership with other institutions (Barrow and Murphree, 2001).

However, there is now increasing recognition that these assumptions require critical reflection, and that effective resource management must be linked with issues of equitable access to natural resources, the promotion of sustainable livelihoods and the alleviation of poverty, especially given the propensity of effective community-based resource management to break down as pressure increases on the resource (DFID, 1997, Carney, 1998). Furthermore, recent research suggests that generalised models of CBNRM inserted into specific contexts without attention to history, power relationships, the politics of implementation, or the environment are problematic (e.g. Brosius et al., 1998; Twyman 1998; Agrawal and Gibson 1999; Sullivan 1999).

CBNRM approaches have traditionally focused on rural areas since, a) it is in these areas that people's dependence on NRs is acutely 'visible', and b) the focus on wildlife and tourism and/or forestry presupposes 'rural' and 'wild' landscapes. However, CBNRM in its broadest sense should aim to provide a flexible framework for understanding and linking livelihood activities (with a focus on NR use, management and control), with policy interventions, across the rural-urban divide. Thus the CBNRM approach has the scope to provide an innovative way in which to explore urban livelihoods. With its ability to incorporate livelihood dynamics, policy interventions and an understanding of process and practice, the CBNRM approach lends itself to such an application. Whilst there is an implicit assumption within CBNRM approaches of collective land tenure, in fact the principles of CBNRM could just as well be applied on private land. Urban areas might be an appropriate place to test such a hypothesis, for example, with the community-based management structures for individually-owned gardens on private land.

4.4 Deconstructing urban, peri-urban and rural

A large body of development theory and much of the development policy that results from it differentiates between rural and urban areas to such an extent that rural and urban are seen as dichotomous or as polar opposites. According to this view, people in rural areas are principally involved in NR-dependent activities whilst in cities people are employed in non-NR-dependent activities such as industry and manufacturing. More recently, the sharp distinction between rural and urban has been questioned, both through a recognition of the importance of linkages between rural and urban in supporting livelihoods (Tacoli, 1998), and with increasing recognition of the role of the rural non-farm economy (RNFE) in rural areas (Reardon 1997, Bryceson 1996 and Barrett et al., 2001). A more appropriate view is of a continuum between rural and urban areas that recognises the economic, social and cultural links between rural and urban areas and the ways in which household livelihoods straddle both the rural and the urban. A documentation of the hidden, overlooked and unrecognised ways in which people derive urban livelihoods could add further weight to progress in conceptualising livelihoods across the rural-urban divide. Stark distinctions between rural and urban provoke a dangerous assumption that people in rural areas base their livelihoods on natural resources whilst people in urban areas depend not on natural capital assets but on human, social and financial capital. We already know from work on the rural non-farm economy that rural livelihoods are dependent on non-agricultural activities, but in the case of urban areas there has been little serious treatment of use of, access to, and management of natural resources.

Just as we need to break down essentialist views of the nature of rural and urban areas, so we need to recognise the diversity within urban areas themselves. All urban areas are not the same: they develop for different reasons in different places. For example, in North Africa, oasis towns developed as trading centres for agricultural and other products. In Latin America small towns and settlements have often been established around mines on hillslopes. So for some urban areas, the importance of natural resources has always been paramount. Within a single urban area there is also great diversity. Urban areas present many contrasts: wealth, health and affluence are juxtaposed with poverty, disease and hunger. Some urban areas are formalised and have effective sanitation, water and electricity supplies, whilst others are informal, such as squatter camps. Understanding the various ways in which NRs contribute to urban livelihoods and the forms of access and use rights that poor people have to resources throughout the city involves, therefore, focusing on a broad range of resources in different urban contexts. A key issue is peri-urban areas: the swathes of land around cities where the sharp distinctions between rural and urban physical environments become blurred and where rural and urban livelihoods systems overlap. Understanding what happens at the peri-urban interface helps us to see how and where rural livelihoods might emerge in urban areas and vice versa.

4.5 Linking livelihoods, natural resources and policy

Whilst conceptual developments towards breaking down the rural-urban dichotomy continue apace, breaking down this division in policy is much more difficult. This is because the institutional frameworks and government structures through which policy is made and implemented are established either along sectoral lines (agricultural policy makers focus on rural areas whilst industrial development experts are preoccupied with urban areas) or along spatial lines (municipalities are responsible for everything in urban areas whilst other local government bodies that report to national or provincial government are responsible for everywhere else). With these institutional arrangements in place, it is difficult to make policy that is appropriate for people who straddle the rural-urban divide. A good example might be of migrant labourers in India who risk losing their rights to subsidies under the Public Welfare Assistance Programme if they leave their villages to work in towns for part of the year.

However, within urban areas themselves, there is scope for a better understanding of the ways in which natural resources contribute to urban livelihoods, especially the livelihoods of the very poor, to inform more creative and effective policy making. The scope for intervention could be categorised conceptually into:-

- *Facilitating pro-poor private (whether individual or joint) management of natural resources.* An example might be support market structures for natural resource markets that might not at present function adequately, so that levels of resource utilisation are sub-optimal. This could require intervention in, for example, the provision of information, insurance, infrastructure and the reduction of transaction costs.
- *Regulating to prevent anti-poor management.* Examples of this could include regulating access to resources in ways that are pro-poor or the prevention of elite capture technologies which might be seen as an “advance” but in fact remove part of the livelihood basis of the poor. In the case of waste, privatising waste dumps could restrict access for waste pickers whilst mechanised compaction or formal recycling of garbage could increase competition.
- *Managing externalities.* Externalities are the usually unintended effects of one person’s action on another, over which the latter has no control. They may be positive (bringing benefits to the recipients) or negative (creating costs or other disadvantages for them), but most externalities have only local impacts. Whether externalities are derived from private individual, collective or open access resource management actions, policy needs to be able to build on positive externalities and reduce negative ones such that poor urban dwellers are not further marginalised or disadvantaged from other people’s actions. Public intervention of this sort may be in the form of regulating access to certain resources, pro-poor local livelihood development schemes or institutional capacity building to enhance community-based management systems within local urban areas.

5 Understanding ‘Hidden’ Livelihoods: NR Livelihoods in Urban Areas

In this section we explore NR livelihoods in urban areas through a series of related questions that emerged from our analysis of the frameworks outlined in Section 4. However, a useful starting point was to document the diverse types of NR-dependent livelihoods that occur in urban areas. Table 1 outlines the different types of NRs occurring in urban areas (following our discussion in section 2), and Table 2 provides an analytical framework for thinking about how different NRs link to livelihood activities.

Table 1 NRs: their uses and contributions to urban livelihoods

<p>Land e.g. public parks, private gardens and fields, wasteland etc.</p> <p>Water e.g. public/private supply through pipes/boreholes; rivers, streams, canals, coastal areas, wastewater, irrigation.</p> <p>Biological resources e.g. trees, plants, shrubs, grass clippings from public parks, waste, night-soil.</p> <p>Non biological resources e.g. rocks, minerals, sand, waste.</p> <p>NRs can be used for the production of:</p> <ul style="list-style-type: none"> Cereal crop cultivation Vegetable production High value fruit via hydroponics (e.g. strawberries) Mushroom production Cut flowers Ornamental flowers/plants/shrubs Cattle Smallstock – sheep, goats, pigs Smaller stock – rabbits, guinea pigs, chickens etc, <p>And in</p> <ul style="list-style-type: none"> Vermiculture, sericulture Aquaculture <p>NRs can be consumed</p> <ul style="list-style-type: none"> Food from rubbish bins can be eaten Wood from trees can be burnt Rocks can be used to built houses <p>NRs can be traded</p> <ul style="list-style-type: none"> Selling of land, rocks, sand Selling of products e.g. vegetables, flowers <p>NRs can create employment opportunities</p> <ul style="list-style-type: none"> Labouring for vegetable production Selling labour for extracting sand for building
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Table 2 shows a matrix of NRs against the relationship of the NR to the type of livelihood activity. These livelihood activities have been split into three categories: primary use, i.e. direct use of the NR to support the livelihoods (this can either be through consumption or sale); secondary use where the NRs form the basis of production such as livestock rearing or crop cultivation; and tertiary use where the NR provides the basis of service provision such as private vending of water, creation of employment opportunities (e.g. forestry work in parks). However certain activities can cut across these categories just as different NRs can contribute to the same livelihood activity. Pastoralism requires land, water and biological resources. Water is both a commodity that is bought and sold, an input for other activities and the basis of service activities. From Tables 1 and 2 we identified six

Table 2 Livelihoods matrix for urban natural resource dependent livelihoods

	Land	Water	Biological	Non-biological
Primary (direct) use	Commodity to sell/trade – peri-urban issues to do with agric land vs land for building	Basic need for households Water as commodity (payment for volume)	Consumption of food found in dustbins Fruit trees – sale or consumption Trees for shade Waste	Tyres, batteries, paper and glass as commodity to sell Waste Rocks from quarrying for house building
Secondary (productive) use	Cultivation Land for sowing Land for grazing	Wastewater for irrigating crops Water for animals	Tree fibres to make mats and ropes Collection of leaves, waste food, animal dung for fertiliser Leaves for foraging Wastes for fodder, guano for cultivation Waste	Mining and Quarrying Sand or rocks to improve drainage in agriculture Clay as input for Cottage pottery industry Selling labour to extract sand for construction Waste
Tertiary (service) use	Public parks and amenity sites	Private water delivery (payment for service)	Trees as source of jobs in parks Removal of latrine waste, lawn trimmings Waste	Removal of household plastic, glass and non-recyclable wastes

topics to follow up in more detail through analysis of case study material drawn from both the authors' experiences and from secondary sources. The six topics are highlighted in the matrix. Some of the topics focus on a single resource that has difference uses (water, land), some topics focus on an activity that requires a number of resources (cultivation) and some of the topics cover multiple resources and multiple activities (mining and quarrying, trees products). Table 3 outlines the key questions for the topic, each of which is discussed in a case study in the appendix.

Table 3: Case study topics or NRs and NR-dependent livelihood activities

Activities	Key issues
<p>1. Waste-picking and waste management</p> <p><i>a) Waste as a tradable commodity</i></p> <ul style="list-style-type: none"> • Compost for use in urban agriculture • Waste sifting at municipal dumps • Rubbish bin sifting and recycling <p><i>b) Waste services</i></p> <ul style="list-style-type: none"> • Disposal of human excreta • Community-based enterprise for the disposal of household waste 	<ul style="list-style-type: none"> • What contribution does waste-picking make to the livelihoods of the urban poor? • How do individuals negotiate access to pursue individual livelihoods drawing on communal resources? • What are the organisational and institutional dynamics of community-based waste management enterprises? • Can waste-picking and recycling make a positive contribution to environmental conservation and protection?
<p>2. Urban mining and quarrying</p> <ul style="list-style-type: none"> • Creation of small quarrying for extraction of building materials for local informal housing • Sand mining (commercial and petty / informal scale) for construction and informal housing. 	<ul style="list-style-type: none"> • What contribution does mining or quarrying make to the livelihoods of the urban poor, in terms of income and housing? • How do the urban poor get access to land on which they mine? • What are the conflicts between the urban poor and larger scale commercial over mining resources?
<p>3. Urban cultivation</p> <ul style="list-style-type: none"> • Individual back-yard vegetable and poultry production – usually for subsistence. • Community-based gardens supported by local NGOs • Cultivation on vacant land and roadside verges 	<ul style="list-style-type: none"> • What informal rules govern access to common grazing land in urban areas? • What conflicts arise between urban farmers, land owners and local authorities? • In what ways does community-based agriculture contribute to community development and the establishment of social networks?
<p>4. Urban trees</p> <ul style="list-style-type: none"> • Fuelwood • Non-timber forest products – fruit, sap, seeds • Non-tangible uses – shade, improving drainage etc. 	<ul style="list-style-type: none"> • What contribution does urban forestry make to the livelihoods of the poor? • What are the tacit rules governing use of forest resources on privately owned land? • How important are non-tangible uses to well-being?
<p>5. Water</p> <ul style="list-style-type: none"> • Domestic use – washing, cleaning, etc. • Agriculture – poultry, cultivation, pastoralism • Petty enterprise and industry 	<ul style="list-style-type: none"> • Does water usage differ significantly between rural and urban areas? • How do households and small enterprises negotiate and manage access to water? • How effective, just and appropriate are individual and community-based water supply systems?
<p>6. Urban spaces: reserves, parks and wasteland</p> <ul style="list-style-type: none"> • Use of 'urban spaces' e.g. wasteland, commons, verges, parks etc. • Conservation of urban space through parks. Inc natural resource conservation • Grazing of livestock on common land or open spaces 	<ul style="list-style-type: none"> • What NRs are important in urban spaces and need conservation? • What contribution does the conservation of 'urban spaces' make to the livelihoods of the urban poor? • How do the urban poor negotiate access to these urban spaces? • What are the conflicts between the urban poor and larger scale stakeholders in terms of access and use of these spaces?

The remainder of Section 5 addresses a series of questions to explore and understand the multiple dimension of NR-dependent livelihoods in urban areas, using the case study material to support the arguments. Through the questions we look more creatively at urban livelihoods, and move away from urban issues as ‘problems to be solved’. We expose ‘hidden’ livelihoods, and seek to understand the combinations and incremental contributions of NRs to livelihood portfolios, and to find a way of capturing this diversity which is so important for the poor and linking it to pro-poor urban development policy.

5.1 How do urban natural resources, and their uses, contribute to livelihoods, especially of the very poor?

Whilst the cash economy is at the centre of urban livelihoods, poor people use a broad range of natural resources in order to contribute to urban livelihoods, both as a direct source of livelihood and for fungibility (substitution for expenditure). Mineral materials, such as sand and rocks are collected to provide construction materials for dwellings. Various grades of rock are sold on roadsides by women in locations in Lusaka, Zambia. In Cape Town, South Africa, people collect and sometimes sell high-quality sand dug from the dunes of the Cape Flats. Where poor households can get access to these materials locally, the cost of house construction is significantly reduced. Urban spaces (land) are a key resource for many urban livelihoods, especially those based on natural resources. Competition for land is fierce and even so-called ‘vacant’ or ‘unused’ land is usually a key resource for some livelihood activity or another. Land is used for growing agricultural crops or trees from which various products are taken (for example, fruit, leaves, and wood for construction, furniture, fences and fire). Pastoralists graze cattle, goats and sheep on open land or roadside verges and their animals also browse on bushes and trees. Household use of water extends beyond domestic uses such as drinking, washing, cleaning clothes and cooking into other small-scale enterprises such as the brewing of beer, hair salons, soap production and leather tanning. This means a focus on the quantity and reliability of water supplies is needed rather than on water quality alone. Elsewhere people depend on watercourses within urban areas for fishing. Waste as a resource within urban livelihoods involves the collection, sorting and recycling of materials such as glass, metal and paper, scavenging for food, and the services associated with waste disposal and removal.

The example of waste demonstrates the broad range of ways in which people draw on natural resources. A useful analytical distinction, that builds on previous research on waste, and can be extended across other NRs, is between:

- activities that use resources as a commodity (for example petty enterprise where waste pickers sell recyclable materials to dealers, the extraction of rocks for sale locally) and are remunerated based on the value of the commodity;
- activities that use natural resources as inputs for other production activities (for example, urban agriculture or urban forestry activities that require land, fishing activities that require water) and are remunerated based on the value of the final product; and,
- activities that provide services based around those resources and are remunerated based on the number of yards of road swept or the number of latrines emptied or the number of days of water supply.

Access to resources differs between different types of activities and depends on the socio-economic group that is using the resource. In the case of commodity trading in waste in India, men often have advantageous access to resources, especially because they are geographically more mobile (allowing picking over of waste at unsociable hours) and they are less likely to have childcare responsibilities (Huysman, 1994). Similarly, amongst urban farmers in Zambia, men control and demarcate land further from the home and are better able to defend agricultural land from invasion

by other farmers or by urban authorities (Rakodi, 1988). In the case of other resources and activities we know less about the gender dynamics behind access. This is particularly true of urban trees and tree products, and of urban mining and quarrying. Research into water resources in urban areas shows there has been considerable interest in men's and women's access issues in Southern Africa, but, in the context of emerging small-scale private or collective supply systems, there are questions about gender issues that need to be explored further.

Though many households follow a range of different livelihood activities to make up their livelihood portfolios, some households focus on a single activity. For example, there are rubbish dumps in Asia where all the members of households, young and old, play their part in the collecting, sorting and trading of waste (Beall, 1997a). In contrast, in some of the activities identified, such as urban agriculture, we know that livelihoods based on natural resources may contribute only a small part of the total household livelihood as in South Africa (Slater, 2001a; Rogerson, 1993). However, where natural resources provide a crucial input or where there are cumulative linkages between different activities, some of these small-scale activities can have a much greater impact on livelihoods than is expected. An example of this is the use of water in beer-brewing and the subsequent use of by-products from beer-brewing as a fertiliser in urban agriculture throughout cities in Southern and Eastern Africa.

There are aspects of urban livelihoods based around natural resources that are starkly different from rural contexts and others that are similar. For example, in terms of access to fishing rights in urban areas (e.g. Cape Town), there may sometimes be more competition than in less populated rural areas, but we do not know how far this is offset by the positive impact of access to larger markets. Similarly, small-scale dairying in urban areas in Cape Town is constrained by land availability but the costs incurred in getting access to land can be outweighed by the reduced costs of transporting milk from the peri-urban fringe. Where rural areas are not electrified and lack functioning markets, urban areas also offer advantages for farmers and fisherman because food can be stored in fridges, leading to less wastage, and there are larger markets to tap into nearby.

5.2 What are the dynamics of urban NR-dependent livelihoods?

This question asks how different NRs are used by different people, all of whom have different identities, needs and histories, in different places and over different time scales. For example, do women and men make ad hoc, sporadic or seasonal use of certain NRs, and what use do children make of certain NRs that adults do not? Such sporadic and ad hoc uses of NRs, as well as more sustained and formal use, all have the potential to contribute to household income and food security in different but significant ways. Yet as stated above, many of these NR-dependent livelihoods are 'hidden' and their contribution to livelihood security or sustainability not known.

Some of the ways in which men and women get access to resources have already been explored above. Just as in rural areas, gender has a strong impact on both the division of labour in different activities in urban households, and on access to resources. However, there are many more questions related to class, caste, age, and the length of time that people have spent in urban areas that all influence the nature of people's use of natural resources in urban livelihoods

Drawing on lessons from India, caste influences the ways in which urban residents negotiate access to and use of natural resources. In parts of South Asia where caste occupations are ascribed to people by birth, only households belonging to groups at the bottom of the caste hierarchy (for example *untouchables*) will pick waste (Beall, 1997a). Those who pick waste are seen as being dirty and, sometimes, as thieves. This stigma can offer a space of opportunity for poor households who are excluded from other labour opportunities or can reduce competition between groups. However, people can just as easily become trapped in waste-picking even when they have the

capacity to carry out other work or transfer their skills into other activities. The challenge for development policy-makers and practitioners is to try to understand ways in which waste-picking can become an activity through which people can follow other livelihood opportunities, and to tackle the problem of household members working as waste pickers from one generation to the next.

Similarly, there are class dimensions to resource use in urban areas. Referring again to the case of waste-picking, in South Asia it is associated with class groups and there is a stigma associated with people from other classes becoming involved in the activity (Beall, 1997a; Vincentian Missionaries, 1998). The use of natural resources and associated livelihood activities is not something that only poor people are dependent on. In Southern and Eastern Africa in the 1980s and 1990s, urban cultivation has increasingly become an activity that takes place amongst the middle-classes. People who are employed as teachers, nurses, policemen and public servants have experienced stagnant salaries coupled with rising food prices. As they often have access to larger plots, they are able to grow maize and vegetables to avoid spending money on food (Drakakis-Smith, 1992). In contrast, there are other urban dwellers who view themselves as 'modern' or 'advanced' or part of an industrialised, urbanised class. For them, urban cultivation can reflect a failure to adapt to urban life (Slater, 2000). However, given that recent migrants to urban areas take time to establish access to the land required for urban agriculture, those involved in urban cultivation have usually been in the city for some time.

Children do work that uses natural resources both in tandem with their parents or independently. Orphaned waste-pickers in Maputo, Mozambique, and Dar es Salaam, Tanzania, are dependent on scavenging in rubbish bins to get food but can rarely defend waste-picking territories in order to get access to recyclable materials on a regular basis. Young boys are likely to be arrested by government authorities or the police on suspicion of being thieves whilst young girls are assumed to be prostitutes in Bangalore, India (Beall, 1997a). Some young boys in Bangalore were 'sold' to waste dealers by their parents to pay dowries (Beall, 1997a). Children also do casual work for other urban dwellers. In Maputo, boys are employed in the Vale de Infulene where they spend each day watering lettuce and rape crops that are grown for the urban market. Evidence from rural areas suggests that children derive a large proportion of their particular nutritional requirements from forest products (Falconer, 1990) and it may be the case that children benefit from 'snacking' on tree products in urban areas too.

Thinking about how people of different ages depend on natural resources in urban areas introduces an important temporal dimension into the discussion. Different temporal cycles are important here. First there are longer term cycles, for example life cycles and cycles of tree growth. We have seen how certain activities are important to people at different stage of their life cycle (for example young boys watering lettuces in Maputo) or household developmental cycle (women are constrained in certain waste-picking activities if they have young children). In India, 'sweeper' castes can find work in urban areas cleaning toilets. They can earn enough to send their children to school and, whilst the parents may continue living with stigma, their children, through education, may find an opportunity to break out of the occupation (Loughhead et al., 2001). Elsewhere informal waste-picking that does not allow parents to earn enough to send their children to school can leave households trapped in the same low paying activity from one generation to the next.

Seasonality is also important and, in urban areas, various types of resources are important at different times of the year. The vulnerability of urban dwellers to seasonal change is different from rural dwellers. Urban dwellers may be susceptible to floods or water restrictions and to some extent to fluctuations in the price of food stuffs, but they are less susceptible than their rural counterparts to seasonal variations in the availability of food. However, natural resources do support their livelihoods at certain times of the year. When trees bear fruit, whether on private or public land,

household income or food consumption can be supplemented. Urban dwellers can rear and slaughter animals at times that coincide with important festivals or rites of passage. Where households have links back to rural areas, they can produce food when supplies from rural areas are limited, and vice versa. This highlights the critical links between urban and rural households.

5.3 How important are CPR systems to urban NR-dependent livelihoods and in what ways are CPR systems supported within the urban context?

This question focuses on the opportunities for Common Property Resources (CPR) systems to enhance and contribute to NR-dependent urban livelihoods. In particular, we need to ask how policy can recognise and support such activities and management systems. Furthermore, in recognising these CPR systems, how can policy best protect different people's access, use and control of NRs so that they are not jeopardised as rules, regulations and norms are instituted across the NRM arena?

The focus here is on CPR systems that are based on natural resources, narrowly defined, and on CPR systems that are based on natural resources in urban areas i.e. that include waste. There are various examples of how CPR systems operate in urban areas in the developing world. Waste-picking at rubbish dumps is subject to a number of tacit rules about who can pick, where they can pick and at what times of the day they can pick. In many cases they are not strictly 'common property' as they are often owned by private companies or state institutions. However, despite this tenure regime, people are rarely excluded from using them and rubbish dumps are often, though not always, regarded as open-access resources. In some cases in India, there is little competition, particularly between poor women, over the dump and everyone has the right to collect rubbish (Huysman, 1994). In this situation the dump becomes an open-access common property resource for the class of waste pickers. Little, however, is known about what happens when people from other class groups invade this territory, or what right children have to CPR on waste dumps. Elsewhere in Pakistan, for example in Faisalabad, certain groups of people, especially private garbage dealers, control access for pickers. In the case of waste-picking from rubbish bins, rules of access are clearly but informally defined. Pickers know which bins are within their own territory and which 'belong' to someone else. These territories are defended fiercely, using violence if necessary. Similarly, in Cape Town, fights often break out when people are accused of taking rubbish from the territory of another picker.

In urban pastoralism in Cape Town there are also unwritten rules about access to grazing land within communities but these are highly contested. Some roadside verges are seen as common property, but there have been reported cases of traffic officers selling grazing rights to grass at the side of the N2 highway as it passes alongside the townships. In the townships themselves, disputes arise when cattle break into vegetable gardens – but these gardens are frequently cultivated by women who have little form of recourse against the men who own the cattle. Attitudes towards piles of garbage that lie uncollected in the street and are eaten by cattle, sheep and goats are varied. In Khayelitsha, a township to the south-east of Cape Town, some residents say that goats spread rubbish around, carry disease and cause vehicle accidents. Other residents are sympathetic to poor households that rear goats, even if they are an environmental nuisance. There are some richer households that rear goats and residents suggest that when the people who own the goats are powerful, then there is not much that can be done.

Much less is known about the CPR systems that govern the use of trees in urban areas. Trees used for less tangible or fungible purposes such as shade are seen as common property but, even where trees are on public land, products from trees can become private resources. In Delhi, for example, the municipal authorities auction harvesting rights for trees on public land (FAO, 1994). This example demonstrates clearly how CPR systems are complex in urban areas, especially where there

are broader ranges or forms of tenure (Payne, 1997). Tenure is complicated by the fact that ownership of land does not necessarily denote ownership of the resources on that land. For example, in parts of West Africa, ownership of land does not necessarily extend to ownership of the trees on that land (Fortmann and Nihra, 1992; Rocheleau and Edmunds, 1997). Where people do not have secure tenure, it is debatable whether they will invest in urban agriculture (which requires certainty of tenure for a growing season) or in the planting of urban trees (which might require certainty of tenure for a number of years before the trees begin to supply fruits, nuts, leaves, etc.) (FAO 1994). The temporal aspect here is strong. For example, whilst it might be easy to organise a group of people to plant trees under conditions of seemingly secure tenure, once the trees start to develop into a promising economic resource, members of the local elite are likely to muscle in and take control of the resource.

However, where urban residence has been characterised by lack of security of tenure, it may be possible that tenure is less important to people than in rural areas, simply because people have become more used to the risks associated with lack of secure tenure. If people are willing to construct houses on land in informal or squatter settlements, then they might also be willing to plant trees, depending on the cost of the investment. It is not clear, therefore, what the precise differences are between rural and urban areas with respect to tenure and the sustainability of livelihoods. These debates about tenure apply in the context of CPRs because of the complex links between different natural resources, for example, common land with private resources (e.g. mining, trees in parks with usufruct rights granted to individuals) or private land with common resources (e.g. rubbish dumps).

The nature of tenure or access also depends on the gains to be made from exploiting particular resources or carrying out certain activities. In Cape Town, sand dunes on the Cape Flats are used informally to provide building materials for the nearby townships. There is some very small-scale commercial exploitation whereby people are paid on a casual and periodic basis to go and collect sand. However, the nature and dimensions of conflicts that might arise if large-scale commercial operations or more intensive exploitation of the dunes took place are not known. This is a key area where policy to regulate and formalise access, use and control of the sand, may jeopardise some of the more 'hidden' uses of these resources and perhaps exclude poor households whilst securing access to resources for others.

Lessons related to CPRs and natural resources in urban areas can provide useful direction for policy-making. Some examples of this include the ways in which NGOs supporting urban agriculture have helped the establishment of social networks in townships in Cape Town and the *zonas verdes* in Maputo where land set aside for farming within the cities boundaries has increased food security in the city (Ayisi, 1995). Effective policy here depends heavily on clear demarcation of tenure, but there are cases (especially in pastoralism in Cape Town and in off-plot seasonal urban agriculture in Lusaka) where it is lack of clarity over tenure that provides an opportunity, albeit a risky and temporary one, to establish a livelihood. Some of the best evidence of both the positive benefits that policy can have and the difficulties that supporting people using CPRs in urban areas can face, are from attempts to improve working conditions for waste pickers. Establishing equitable and just CPR systems in relation to waste involves challenging the relationships between poor pickers and dealers and overcoming deeply ingrained social stigmas against pickers. There have been significant gains where waste pickers have been recognised by urban authorities for their positive role in urban waste management, and where NGOs have been involved in education, protection against disease and training (Peters, 1998; Huysman, 1994; Ali and Snel, 1999). However, challenging power relations has been much more difficult, particularly given the complex patronage relationships between dealers and pickers, especially young boys (Beall, 1997b).

5.4 How useful are lessons from CBNRM approaches for understanding urban livelihood portfolios?

CBNRM approaches encourage a cross sectoral view of communities and natural resource use and management and as such fit well with approaches that focus on sustainable livelihoods (Twyman, 2000). Given the emphasis on local level management and control of resources, CBNRM approaches have the potential to contribute to civil society, governance, formal and informal sector debates (currently dominant within urban livelihood debates), as well as vice versa.

CBNRM can be viewed very differently by different people and institutions. CBNRM may be a formal approach adopted by an NGO or government programme that focuses on creating a collective management institutions for NRs (not necessarily within a common property regime) within a certain context (e.g. conserving an area of landscape and developing a community-based tourism initiative around it). However CBNRM need not be regarded as so formal, and can indeed be a term to refer to activities and ways of organising and managing NRs aside from any external institutions or programmes. These ‘organic’ forms of CBNRM tend to evolve internally within communities, or within groups of people, rather than be driven by external intervention (see Twyman et al. (2002) for an example within the rural context).

In urban areas, we need to ask whether CBNRM develops ‘organically’, or is imposed through programmes from above. Research on the development of community-based water supply systems suggests forming CBNRM initiatives can be beneficial when large-scale private operators restrict their development of new water supplies in poor areas of cities or when municipal authorities lack the capacity to fulfil this role. However, it can also be argued that, where responsibility for community-based water supply management is vested in communities and is based around just and equitable access and payment, that it is in the interests of authorities to encourage communities to operate their own systems (Nicol, 1998). This offsets the costs of supply from the municipality to the community yet can be argued under the guise that it represents participation and the decentralisation of decision-making. This is an emerging trend in rural water supply systems in many African countries (Nicol, 1998; Twyman, 2002), suggesting that we need to be critical of how certain approaches are used and question whether the forms of management that characterise CBNRM are appropriate for urban NR-dependent livelihoods.

Furthermore, we know that higher population densities and the construction of buildings and infrastructure place limits on how far natural resources can support urban livelihoods (Farrington et al., 2002). However, a focus on the dimensions of natural resource use and the dynamics behind natural resource management in urban areas can provide useful evidence of how growing populations and increasing pressure on scarce resources might affect CBNRM (or CPRs) in rural areas. Under what circumstances does urban CBNRM start to breakdown, and what levels of population pressure or competition for resources prevent effective CBNRM?

6 Broader Theoretical and Conceptual Research Objectives

This report has so far explored the notion of ‘hidden’ livelihoods, drawing on frameworks from urban and rural studies to enhance our understanding of the dynamics of urban-based natural resource-related livelihoods. Through this we have shown that, first, the ways in which urban natural resources are used to support urban livelihoods are varied, complex and dynamic; and second, our understanding of the systems that govern access or tenure over these resources and the analytical or conceptual framework through which we can understand them are useful but require further exploration. This section therefore explores some of these emerging conceptual and theoretical issues and in doing so within an urban context enhances our understanding of some key assumptions within our understandings of NR-dependent livelihoods. Four themes are identified for further discussion: 1) the incremental contribution of NRs to urban livelihoods and the difficulty this presents to policy makers, 2) the notion of institutional ‘bricolage’ and possibilities these forms of analysis have for allowing us to think differently about institutions, communities and participation, 3) the role and relationship between individual and collective action, and, 4) the importance and complexity of equity and justice within these livelihoods.

6.1 Incremental contribution of ‘hidden livelihoods’ to livelihood portfolios

Understanding the **incremental contribution** to livelihoods that NR-related activities can make in the urban context is a critical issue that has received very little attention to date. It is already clear that the contribution of NR-related activities to household livelihoods varies widely in urban areas in Southern Africa. In Maputo and Lusaka, for example, many households are dependent entirely on urban agriculture, whilst in Cape Town, urban agriculture contributes only a very small proportion of household income. Uses of other NRs in urban areas are likely to be similarly variable, by season, location, class and gender.

However, it is also important to understand how a combination of many small-scale activities can, incrementally, enable households to construct a diversified and often more secure livelihood portfolio. Thus, while certain activities may not in themselves contribute much to household income (e.g. collection of grass clippings from public parks for use as compost), and may not be high profile enough to warrant government/donor intervention, nevertheless they should not be neglected. In particular, where spin offs from other interventions may jeopardise the viability of certain hidden livelihoods attention needs to be given to how best to offset the negative implications for ‘hidden’ livelihoods.

Diversification of livelihoods is regarded as a key component of sustainable livelihoods (Carney, 1998). Diversification can take on many forms and can be driven by a variety of factors. For example, diversification may be a deliberate household strategy, or an involuntary response to a crisis (Ellis, 2000). It may diminish as well as accentuate inequality and can act as both a safety net for the poor as well as a means of accumulation for the rich (Ellis, 2000). Thus while it does have many benefits, it should not be seen as a panacea for sustainable livelihoods. Much of the literature about sustainable livelihoods focuses on the necessity of livelihood diversification to achieve livelihood security (Carney, 1998). However this neglects the positive aspects of livelihood specialisation that can produce secure and sustainable livelihood options for the urban poor (Tomich et al., 1995). For example, diversification may occur at a household level, yet at the same time allow individual specialisation and skill development. Thus rather than focus on diversification alone, it is critical to think in terms of secure livelihoods at the same time. Given this we need to ask how secure livelihoods and activities ‘fit’ with the idea of incremental contributions to household livelihood portfolios. Furthermore, some NR-dependent activities lead to new livelihood options

(for example: waste-picking for tyres enables households to make and sell rubber shoes; collecting animal dung encourages the establishment of gardens; cutting wood may lead to carpentry or construction). The linkages between different NR activities need to be clearly understood in urban areas, allowing a much greater depth of understanding of both the different and diverse (or specialist) activities that people undertake, and the motivations behind partaking in these activities.

6.2 Institutional bricolage

Institutional bricolage refers to the socially embedded nature of institutions for common property resource management and collective action. The concept of institutional bricolage and its application within the urban context provides an interesting point of departure in understanding how we can conceptualise natural resource management institutions. Within CBNRM, and indeed in the pursuit of urban livelihoods, people living within urban areas draw on social and cultural arrangements to shape institutions to support their livelihoods. Some people are able to shape local institutions more effectively than others, for whom institutions act as barriers to the pursuit of livelihoods. There is a need to explore the idea of institutional bricolage and its applicability in urban contexts, in order to help identify the opportunities to reshape local institutions to support NR-dependent livelihoods.

The ideas behind institutional bricolage challenge the ‘design principles’ common in resource management literature (Ostrom 1990, 1994). This approach suggests that people consciously and unconsciously draw on existing social and cultural arrangements to shape institutions in response to changing situations. Thus the resulting institutions are a mix of ‘modern’ and ‘traditional’, ‘formal’ and ‘informal’ (Cleaver 2001:26). The phrase ‘institutional bricolage’ is discussed by Cleaver (2000, 2001) in relation to water management in rural areas, and while this raises some interesting issues it fails to consider external stakeholders in institutional formation. Like much of the CPR literature it confines itself to the ‘neat’ context of common property rather than exploring the complexity of both private and common NRs. However the concept of institutional bricolage has the potential, within the urban context, to help us explore alternative institutional arrangements for NR management, especially when linked to debates surrounding the problematic conceptualisation of social capital, ‘community’, participation and intervention.

For example, research into the role of civil society and governance in urban areas leans heavily towards a focus on political and social capital assets. Here the emphasis is on understanding the institutional structures that affect people’s capacity to pursue certain livelihood opportunities, people’s inclusion or exclusion from decision and policy-making and their capacity to take transformative action to change their communities. There is little emphasis on natural and physical capital, except where transformative action is the result of negative physical and natural capital assets, such as dangerous buildings or unsafe water. By taking an approach which recognises the embedded nature of institutional formation, it may be possible to better target policy interventions to support NR-dependent livelihoods.

6.3 Individual and collective action

The role of **individual and collective action**, and the relationship between the two, is an important concept to understand within the context of urban natural resource management. Certainly within the rural context, there is a tacit assumption that collective action is more effective, just and appropriate than individual action (Berkes, 1989) and that individual actions can increase inequalities within communities (Evans and Ngau, 1991). This view is borne out strongly within the theories of Common Property Resources (Berkes, 1989; Ostrom, 1990; 2002). However these

assumptions need to be questioned as we do not yet fully understand the relationships between individual and collective action, or the motivations behind them.

Individual and collective action can take on many forms. Individual actions may include, for example, collecting tree products or grazing animals on wasteland; while collective action may involve, for example, participating in a joint gardening project, or grazing animals on an area demarcated for community grazing. However to more fully understand the relationship between the two we need to ask the following questions:

- How do individuals use urban NRs within more *formalised* common property systems?
- How do individuals use urban NRs within *informal institutions* with rules governing access/use/control?
- How do individuals use *private* urban NRs, and how do they negotiate with other private parties or institutions/organisations to gain access to these NRs?
- What are the *motivations* for individuals in urban areas to take part in collective actions/institutions? (What are the trade offs as well as the benefits and how are these weighed up? How do individuals and households negotiate this process?)
- Do *specific individuals* particularly influence collective action or communal management?

Investigating these issues within an urban context presents opportunities to understand the dynamics of these roles, in particular the motivations and incentives to act individually or collectively at different times. Furthermore, just as research into CBNRM or CPRs can contribute to our understanding of urban livelihoods, so can these questions inform our understanding of rural livelihoods, and debates on CBNRM and CPRs. The evidence from urban areas suggests that views about the superiority of collective action may be restrictive and uncritical. For example, in the context of the shift towards *demand-responsive approaches* with the water sector, it may be that small-scale, private water suppliers provide an alternative in informal, low-income settlements where neither large-scale private operators nor municipalities are supplying water. There are possibilities that the very poorest people cannot afford water, but it also may be the case that local individual suppliers may have more of a sense of serving their local community. We know very little about the motivations of individuals in these cases and how they view their relationship with the community.

Within urban agriculture in Cape Town, there were strong motivations for women to take part in collective gardening as this established and strengthened social networks through which the women were empowered. In one township the women's gardening groups then acted as the catalyst for the community action against rape and violence and as an institution through which to raise awareness about child abuse and HIV/AIDS. However, in other cases in Cape Town, women had to make trade offs, in terms of labour and time allocation to the collective tasks and this involved negotiation within the household as to how participation could benefit other household members. These forms of negotiation are not well understood and yet are vital to understanding how people make decisions to act both individually and collectively at different times and in different circumstances.

Understanding the roles of individual and collective action also raises questions about the way in which we conceptualise the role of social capital in urban and rural livelihoods. Some writers have conceptualised social capital as based on networks of relationships between individuals (Wall et al., 1998), knowledge within communities (Sharp and Smith, 2003) to the extent that some places have 'high levels' of social capital while others are 'lacking'. However this assumes a very linear relationship between levels of communication and interaction with a community/group and the amount of social capital they 'have'. By looking more closely at the relationships between individual and collective action, it is possible to contribute to a more nuanced conceptualisation of

social capital, one that recognises for example the complex (non-linear) relationships between solidarity, trust, hierarchy, motivation and action.

6.4 Equity and social justice

Through an urban lens, we need to understand the place of **equity and social justice** with the livelihood systems of the urban poor. By exploring equity and justice within these urban contexts, the sensitivity of our understandings can be enhanced and links between incentives, actions and institutions developed. This involves exploring rights-based approaches to NR use and management and the links to urban livelihoods. Rights-based notions of equity and justice (in terms of access to and control over urban NRs) can be problematic as trade-offs and benefits are balanced, and compromises and incentives are negotiated, by multiple stakeholders.

Rights-based approaches present some conceptual difficulties to urban NR-dependent livelihoods. For example, how do legally defined rights to natural resources become translated into effective command over those resources where property rights are undefined or 'hidden'? What are the limits to social change through legal reform when poor people are excluded from the negotiations in the first place? Furthermore, how can government policies and programmes ensure that 'rights in law' become 'rights in reality' (Cousins, 1997:60). These are complex issues as the latter, for example, will entail people making use of new legal frameworks to successfully press their claims to land and NRs on a daily basis within their livelihood systems. This is most often seen through processes of decentralisation of control, management and decision-making over NRs, and raises two problems. First, decentralisation assumes the new decision makers will make the 'appropriate' decision. For example CBNRM credits local people with having better knowledge about their local environment than state or private management institutions (Tsing et al., 1999). However, we know that 'elite capture' of institutions can be problematic and can lead to social exclusion of certain marginal groups who would otherwise be incorporated into a state or government programme. Second, we have seen several examples in the report where access and control over NRs has not necessarily been equally just or fair. Thus assumptions that 'community-based' is always equal and just need to be challenged.

Our understanding of equity and justice relates very closely to notions of rules and practices. Ostrom (1986) views rules as prescribing room for manoeuvre rather than determining behaviours, and Gore's (1993) analysis suggests 'unruly social practices' can often challenge legal rules of entitlement to resources. Thus these approaches suggest that, while rules and practices can be codified through rights, these rights in themselves often exist alongside ambiguities, inconsistencies, gaps and conflicts (Cousins 1997). Therefore we need a more sophisticated understanding of the structure of rights that can address the question of whether rights do ensure equity and justice and that these are desirable goals. If equity can lead to marginalisation and exclusion, should this be a common aim in natural resources management whether in the urban or rural sphere? Furthermore, even if we can agree on what is just and fair then how can this be achieved and sustained within urban natural resource management systems given the 'hidden' form of many of these livelihoods?

If we look at the case of waste management in Lusaka in more detail we can illustrate some of these points. A consortium of people in one location of the city has become the *de facto* household waste management supplier for their district of the city. They are not responsible to the community as a whole in any formal way, but they have been more effective than the city council in supporting fair and just access rules to the waste resources. However, questions have been raised about how far the waste management system involves the equal participation of the broader community, how far it reflects a fair decentralisation of decision-making and service provisions, and whether it can regulate the opportunities for 'free-riding' in the system. The Lusaka experience demonstrates the

complexity of multiple and overlapping rights, rules and practices within urban communities. Furthermore it highlights how we might disaggregate different interest groups in what are often seen as geographically bounded and homogenous communities in both urban and rural areas.

7 Spaces of Opportunity: Towards Creative Urban Development Policy?

This discussion of natural resource use, common property systems and CBNRM in urban contexts has produced a number of important insights. Thinking about natural resources in urban areas contributes to breaking down the rural-urban dichotomy. Lessons from the use of natural resources challenge simplistic views of communities. Focusing on CPRs in urban areas demonstrates the complexity of overlapping tenure systems and livelihood portfolios, offering insights into CPR systems in rural areas. Looking at organic CBNRM systems in urban areas shows how CBNRM systems in rural areas might change and reconfigure with changing populations or pressure on scarce resources. So how might understanding natural resources, common property and CBNRM in urban contexts lead to more effective policy for eliminating urban poverty? There are examples from the developing world of both effective constructive, and ineffective destructive policies. Constructive policies include the recognition of the rights of waste pickers and the formation of a waste pickers union in Mexico, or the formalisation of informal waste management systems in Bangalore. Policies ensuring security of tenure in Maputo for collectives of farmers has improved food security in the city as food products are sourced both from rural areas and the city's *zonas verdes*.

Many of the questions about how to ensure that urban development policies support the livelihoods of poor people remain unresolved. The body of literature on waste, for example, has a small number of useful examples of the impact of policy on poor waste pickers but these examples are confined to a limited number of urban areas and are geographically limited, mostly to South and South East Asia. We need to develop more case studies of the ways in which urban development policies have impacted on the livelihoods of poor people, across a wider range of resources, livelihood portfolios and different urban areas. A key focus on this work would involve distinguishing between facilitating pro-poor private management of natural resources and regulating to avoid anti-poor management.

We also need to learn more about where it is inappropriate to intervene. In some cases it might be better to make no policy at all. Making certain NR-dependent livelihoods more profitable or making them more visible may actually have a negative affect on the people who depend upon them. Certain activities (for example the sand mining on the Cape Flats in Cape Town) help poor people precisely because they provide a small income and do not interest other, richer, households. Activities are either too labour-intensive or pay too little or are too distasteful for richer households to choose to get involved in them. The discussion of conflicts that may arise if the activity became highly profitable raises key questions about how policies can support the poor people who depend on these sorts of activities for their livelihoods. Would intensification of activity, improvement of working conditions, recognition of contributions and, most of all, increased financial benefits lead to conflicts over resources and livelihoods that had previously been hidden? In Lusaka, extension services for urban farmers have led to increasing competition for and conflict over vacant land. When urban cultivation becomes more profitable, women are vulnerable to losing their land to male counterparts. Could policy intervention in some cases be inappropriate? Can revealing the significance of natural resource use turn a hidden, secure livelihood into a visible, insecure livelihood?

The key here is to understand the activities well enough to know when an intervention would damage livelihoods more than it enhanced them. Thus we need to understand both the conceptual dynamics as well as theoretical underpinnings of NR-dependent urban livelihoods. The framework outlined in Section 2 (and the matrix in Table 2) suggested a useful three way separation of NR-dependent livelihood activities: primary use, i.e. direct use of the NR to support the livelihoods;

secondary use where the NRs form the basis of production; and tertiary use where the NR provides the basis of service provision. Through the case study material we examined the different dimensions of the matrix and the interactions and linkages between different types of activities and NRs. This matrix has the potential to be a useful tool to inform more creative and effective policy making. We also suggested that the scope for intervention could be categorised conceptually into: facilitating pro-poor private (whether individual or joint) management of natural resources; regulating to prevent anti-poor management; and managing externalities. This requires greater detail about the 'hidden' forms of NR-dependent urban livelihoods alongside context-driven policy analysis. Furthermore, we have suggested ways in which these frameworks can be used to identify gaps in our understanding both of livelihood dynamics but critically, at the intersection with policy.

Overall we have demonstrated that natural resources and their contribution to livelihoods have been widely explored within the rural context and yet have received relatively little attention within the urban context. However, we have shown that natural resources can contribute significantly, if modestly, to urban livelihoods in a number of often 'hidden' ways. We have demonstrated the different ways in which urban 'natural' resources are used to support urban livelihoods, and we have critically evaluated the analytical or conceptual framework through which we can understand the systems that govern access or tenure over these resources. This has created innovative thinking about urban livelihoods and livelihood strategies that can feed into new policy debates within urban development and that will facilitate pro-poor urban policy but also regulate and prevent undesirable outcomes from policy for the poor. Lastly, this report has explored the conceptual and empirical foundations of our understandings of urban NR-dependent livelihoods, to better inform policy intervention in urban areas, be it supported by state, private sector or donor agency.

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Appendix 1

Case Study 1: Waste

Rachel Slater, ODI

Images of waste and waste-picking are powerful symbols in urban poverty: The child wastepicker who scratches out a living scavenging for food and recyclable materials in dustbins and on local dumps that double as a home has become a posterchild for the social and economic ills of urban areas in the development world. Waste that lies in the streets in informal settlements demonstrates the lack of capacity of governments to provide services. Waste is associated with environmental and health problems including the contamination of water supplies, soils and air, and the spread of diseases (Furedy and Chowdhury, 1996; Hunt, 2002). There is stigma attached to people who work with waste in poor urban areas. Waste pickers and scavengers are seen as being dirty, social outcasts and frequently are accused of being thieves. Overall, these negative images of waste and waste pickers in urban areas are linked to the view that both are a problem to be solved or a barrier to be overcome in the pursuit of urban development.

To others, waste-picking as a livelihood activity is seen as a reflection of the gross inequalities of urban life. Municipal capacity to deal with waste is focused on more affluent parts of cities whilst those in informal settlements lack sanitation services of any kind (Ratnam, 1994). The affluent generate increasingly large amounts of waste whilst the poor make their living sorting and sifting through that which is of no value to their richer counterparts. Structural adjustment policies that have encouraged the privatisation of formerly municipality-run waste management systems further entrench the inequalities since waste management at a commercial level is more difficult and expensive in poorer informal settlements that are without roads, drains and other infrastructure.

However, there is a growing body of research that suggests a different view of waste and waste-picking might be appropriate if we are to think more innovatively about urban development and about anti-poverty development strategies in urban areas (Bunting et al., 2001). In this literature, waste pickers are rarely referred to as scavengers as the term itself conjures up negative connotations. Instead, the positive aspects and effects of waste-picking are emphasised. Effective waste management, even where carried out informally, can be an important facet of environmental protection and conservation (Allison et al., 1998; Kundu, 2002). The collection of organic waste, for example, means that there is less rotting rubbish left lying in the streets. This is in stark contrast to many other forms of environmental protection which are disruptive of or endanger poor people's livelihoods. So, whilst conservation may involve prevention of poor people's access to, for example, water resources or to grazing land for their animals (even in urban areas), waste-picking offers a survival strategy for some of the most marginalised people in urban areas without compromising or competing with environmental demands. Indeed, effective waste-pickings can strengthen environmental protection and well-being in urban areas. Finally, the growing literature on waste-picking is also identifying the ways in which waste-picking can present opportunities to some to lift themselves out of poverty, for example by learning new skills, getting access to different and more lucrative markets, or by getting more education.

However, there is still much about waste resources that we do not know. For example, in an attempt to better understand the ways in which natural resources contribute to urban livelihoods, the combination of organic or naturally-occurring resources at dumps and garbage tips or in household dustbins challenges us to think more carefully about what constitutes a 'natural' resource in an urban context, and indeed in a rural context. There are also questions about whether the informal urban waste sector, given the health risks associated with it, is an appropriate place to try and support the livelihoods of poor people.

The aim, therefore, of this case study is to review the range of resources and activities that contribute to the livelihoods of poor people within the urban waste sector. From there, the findings of past waste-picking research will focus on the ways in which poor people organise themselves within waste-picking in order to review some of the options for policy and to identify important new areas of research.

Defining waste: What constitutes urban waste?

There are various ways of defining waste. The Wildlife and Environment Society of Southern Africa views waste not as a resource but as something that damages the environment, for example by acid leaching from mining, pollution by industry, or sewage pollution of water from informal settlements. Waste is viewed as a costly and damaging externality.

More technical definitions of waste differentiate between organic or inorganic and solid or liquid forms of waste. In urban areas waste comprises household, commercial, institutional and industrial waste. This is a starting point for viewing waste as a resource rather than an externality. Something which has no value for one person can be an important asset for others. For example, organic waste may have calorific value when eaten or be a source of energy when burnt. Thus, Cointreau (1984) argues that waste is ‘the organic and inorganic waste materials that have lost their value in the eyes of the first owner’ but may hold value for others. Similarly, at the core of legal definitions of waste is the notion of discarding materials. It is not the nature of the material itself that defines whether something is waste, but the actions of the holder of the material (CEFIC, 1995). This definition supports our inclusion of waste as an urban-natural or environmental resource. We are concerned in the context of this paper not with the material nature of waste but its usage.

How does urban waste contribute to livelihoods, especially of the very poor?

Solid waste management is a huge part of the urban economy and there are a plethora of different livelihood activities that make up the waste economy. Beall (1997a), for example, describes the range of activities through which people participate in waste collection and recycling. These include the ‘wet’ stream of pickers, municipal sweepers, private sweepers and domestic workers, and a ‘dry’ stream of waste hawkers, middle and main dealers and recycling industries. Another way of differentiating between different types of livelihood activities within the waste sector is Muller and Scheinberg’s useful distinction between service-based and commodity-based activities.

Service-based waste management is related to a payment for a service, and usually this service is removal of waste, litter, latrine sludge, shit. Service-based activities are usually paid by unit of work, that is, by the hour, by the kerb-metre swept, by the household served. Commodities-based economic activity is based on trading items or materials for a price. The price is usually paid per kilo or ton, but sometimes also for specific items, like glass bottles or car accumulator batteries. The payment is based entirely on the material value of the item or material (Muller and Scheinberg, 2002, p. 2).

This distinction is useful because many of the issues surrounding service-based waste management and commodity-based economic activity are different. For example, commodities-based activity relies on trading, and waste pickers can find themselves subject to global price fluctuations in recyclable commodities (e.g. paper), whilst the emptying of latrines is worth only what people are willing to pay for the service. The views of the community towards the contributions of waste-pickers and service providers are also different. Whilst people value the contribution that service providers make to local environmental protection they rarely applaud the activities of pickers at

waste dumps. The distinction is also a useful starting point for thinking about how to distinguish between natural resource-based livelihood activities in urban areas more generally.

Waste-picking is, therefore, one of a broad range of activities that include people in various locations, from households up to large-scale recycling and transportation industries. However, in terms of the livelihoods of poor people, it is activities such as waste-picking and sweeping that are most important. The more profitable service-based activities require investments in equipment, machinery, tools and vehicles that poor people cannot make. Waste-picking itself takes various forms. Some people sift and sort through waste at garbage dumps, some sort public rubbish bins for aluminium cans, glass, paper and food, others are itinerant pickers. Itinerant pickers follow the routes of municipal and private rubbish collectors and arrive at people's homes in the middle of the night or early hours of the morning to sort through rubbish that has been put out for collection.

Waste-picking is an activity that people turn to when they are excluded from the formal labour market or from other more lucrative activities within the informal sector.

In countries where exclusion from formal labour markets is the norm rather than the exception, involvement in waste recycling often constitutes the first point of entry as well as a last resort for thousands of workers in the informal economy (Beall, 1997a, p. 73).

Since women are disproportionately disadvantaged in the labour market, they tend to predominate in the waste-picking sector, along with children. As Huysman argues in the case of Indian cities 'Because of the combination of their low caste background, their low level of education, and their child-rearing and domestic responsibilities, working as waste pickers is one of the few income-earning possibilities open to them' (Huysman, 1994, p. 155). This is not the case everywhere. For example, Peters (1998) suggested that, in low-income areas in Nairobi the majority of waste pickers are men. The reasons for this remain unclear.

Men and women collect different types of materials. Men tend to collect higher value materials whilst women and children are left to lower value materials. Men dominate higher value materials in waste-picking because they are geographically more mobile than women. Women itinerant pickers often have young children and can cover less ground than men. Men travel further afield and at night with less fear of sexual harassment or assault. Both men and women face risks: Women are mistaken for prostitutes whilst men are picked up by the police or other authorities because they are thought to be thieves.

Evidence from Latin America (Ojeda-Benitez et al., 2000) and South Asia demonstrates that there are also caste and class dimensions to waste-picking.

In much of South Asia, the low social status of people working with waste is compounded by the idea that people are born to this work. For example, in predominantly Hindu countries such as India, work with waste has been and still is done by *Dalit* [untouchables] groups ... In other parts of South Asia, including Islamic countries such as Pakistan, waste work is often the preserve of hereditary status groups which are associated with waste work, either through tribal origin or ancestral occupation (Beall, 1997a, p. 74).

How class relations are reflected in waste-based livelihoods in Southern Africa is not known. It is also not understood how poor people might become trapped in waste-picking from one generation to the next.

Are there CPR ‘rules’ supporting or inhibiting the access, use or control of urban waste?

Whatever their formal tenure, most dumps are viewed as common land and so there are sometimes CPR rules governing access to them. Just as rural residents have usufruct rights over certain open spaces for grazing land, so households living close to dumps often share tacit usufruct rights to ‘graze’ the dumpsite.

We have seen some evidence of the caste, class, age and gender dimensions of waste-picking activity, but know little about how these influence people’s access to the site of urban waste.

In relation to waste-picking territories, there is evidence (Huysman, 1994) that women in India do not compete with one another over picking locations. The women interviewed by Huysman suggested that

We have a belly, the other women who come in this area to collect waste also have a belly. We are hungry but they are also hungry, so why should we object (in Huysman, 1994, p. 161).

In contrast, in Cape Town, where itinerant pickers search through waste bins for glass, paper and aluminium cans, there can be fierce territorial confrontations over waste bins on particular streets and roads. It is not unusual to see waste pickers, especially children, fighting over scraps of food or glass bottles on which a deposit will be repaid.

Dealers, to whom the materials collected from waste-picking are sold, also have territories. They are able to dominate the market in certain areas of the city, or in certain parts of the dump, either because the costs of travelling elsewhere to sell recovered materials are too high or because waste pickers often find themselves caught in interlocking markets or in patronage relationships (for example when dealers extend credit to them). Whilst we know that waste pickers do get caught in these exploitative relationships, it is not clear the processes by which such relationships develop nor the means by which they are perpetuated. For example, attempts by the Ragpickers Education and Development Scheme (REDS) found that the relationships between young boys who picked on rubbish dumps in Bangalore and dealers were highly complex:

We realised that a street boy has the greatest affiliation towards those who purchase from him ... he will normally give five or ten rupees to the boy, a kind of understanding that he will look after him when he is sick. Sometimes they hold back money for a few days as a subtle way of keeping him attached ... Sometimes it is hard, very hard. The young fellows cannot protest or run away. They will be caught and will be beaten up and a lot of harassment takes place ... But you can’t look at the retailer [dealer] again as a tyrant. Sometimes he is more than a parent to the child. Like the way he looks after him when he is sick and when he is in the police station he will go and pick him up and come. He will do all those things. At the same time he can be a tremendous exploiter. So it is cruelty with co-existence (in Beall, 1997a, p. 85).

We know a little of the access issues, the formal and informal processes and the cultural and social relationships and networks that exist within the waste-picking economy in Asia and Latin America. However, there is a need to research the means by which people control or demarcate picking territories, particularly in terms of access to the best waste-picking sites in Southern Africa. How are certain people able to dominate or claim ‘tenure’ over certain parts of rubbish dumps, over the rubbish bins in certain parts of town, or over certain waste collection routes?

Are there formal policies / programmes relating to access, use and control of livelihoods derived from urban waste?

Macro-level policy and structural change

The nature and pace of urbanisation have a big influence on waste-based livelihoods. One of the reasons why there is so much more research into service-based waste management and commodities-based waste management in Asia, and relatively less in Africa, may be because of the state and rate of urbanisation in the two locations, and the population densities in urban areas in each location. In comparison with other activities that are based around natural resource use in urban areas (for example urban cultivation), waste-based livelihoods are not so dependent on having access to land and individual usufruct rights to that land – so they take place even where there is very high population density.

Ultimately, policies and structural processes that drive or retard urbanisation (for example Influx Control in South Africa under apartheid, the war in Mozambique or the industrialisation of the Zambian copper belt in Zambia) have a strong impact on the size of the urban population that have waste-based livelihoods. In the 1980s and 1990s, structural adjustment policies may also have increased the number of livelihoods derived from waste-based activities in urban areas. The rolling back of the state under structural adjustment has resulted in many places in the privatisation or subcontracting of waste management systems. Whilst waste management may be a lucrative commercial activity for private business in certain parts of urban areas (for example where infrastructure is in place to transport rubbish on a larger scale), in poorer informal settlements where infrastructure is lacking, commercial waste management is likely to be more costly, and therefore less profitable. Thus, in the poorer parts of cities, structural adjustment programmes may have led to a reduction of state or private waste management systems, a gap which in some cases has been filled by informal actors.

In terms of government attitudes towards people who work at the micro-level with waste, recognition of the activities of waste pickers varies quite significantly between countries and between urban areas. In Mexico, there is a formal labour union for waste pickers whilst in Quezon City in Metropolitan Manila, the Payatas scavengers, a 4,000 strong groups of waste pickers who live adjacent to a 15-hectare open pit, have been recognised as a people's organisation by the government (Vincentian Missionaries, 1998). In contrast, the Nairobi City Council (NCC) supports waste-picking where it is part of a formal 'Clean-Up Nairobi Campaign' but the activities of informal, individual waste pickers are poorly regarded and sometimes viewed as irritating and responsible for the spread of disease.

Non-government organisations

Non-government organisations have played a significant role in enabling waste pickers in various places to get recognition from the government and in some cases to be more fully (or formally) integrated into formal waste management systems. In Quezon City, for example, the Vincentian Missionaries were instrumental in achieving recognition of waste pickers.

However, NGOs have also played numerous other roles. NGOs have provided education to the children of waste pickers to try and help them to escape the poverty trap that forces them into waste-picking as adults. Adult and child waste pickers have also be given education to enable them to better protect themselves from the health risks associated with their work. NGOs have also provided equipment (masks, gloves, etc.) to make waste-picking a less hazardous activity.

Beyond alleviating health risks, where NGOs have tried to facilitate the collective organisation of waste pickers they have sometimes been able to increase the bargaining power of waste pickers with dealers, so that they get more money for the materials that they recover. Increasingly the collective bargaining power of waste pickers is one part of a move towards trying to foster effective community-based waste management systems. Some of the lessons from these attempts are as follows:

- Simple models of social capital (for example those focusing on vertical and horizontal networks) are inadequate for understanding the networks and power relations that affect waste pickers.
- Through collective action, waste pickers can form cooperatives for marketing wastes and thereby get access to higher prices for their commodities.
- Formal organisation can help decrease the stigma and negative attitudes associated with waste-picking.

There are, therefore, many aspects of community-based waste management and economic activity that require further work. These include:

- Understanding the forms of social capital, social networks and community relationships that support or enable more productive, safe and efficient waste-picking and waste management.
- Understanding more about the ways in which waste pickers control territories, particularly the gender issues related to this.
- Understanding more about the most appropriate forms of organisation and collective action to support waste-picking, especially with reference to relationships between the public and private sectors, CBOs and NGOs.
- Understanding more about how education and training of waste pickers can help them get access to other, more remunerative, sources of livelihood.

Appendix 2

Case Study 2: Urban Mining and Quarrying

Chasca Twyman, University of Sheffield and Rachel Slater, ODI

What constitutes urban mining and quarrying resources?

Given that emphasis of this thinkpiece is on exploring ‘hidden’ natural resource use in urban areas, mining and quarrying constitute a serious challenge to analysis, given that the establishment of mines and quarries drives the urbanisation process. Throughout Southern Africa, there are countless examples of cities that have grown up around mines, from the diamond mines of Kimberley in South Africa, as far north as the towns of Ndola and Kitwe on the Zambian Copperbelt. So why include mining and quarrying as a case study in this paper? The answer is that we are concerned with ‘hidden’ livelihoods, those which are un-noticed or invisible in urban areas, either because their contribution to livelihoods is so small, or because it is assumed that such activities do not take place. For both these reasons, it is argued here that the small-scale use of mineral resources in urban areas, in contrast with the extraction industries of large-scale commercial mining companies are of great interest to us as we seek to uncover and explain urban NR livelihoods.

The types of activities that are important in the Southern Africa context vary from small quarries and ‘borrow pits’ for the extraction of rocks and clay for building purposes to sand on beaches that is excavated, usually for use in construction. People also scavenge on beaches for other resources including shells, driftwood and waste that is washed ashore.

How do urban mining and quarrying contribute to livelihoods, especially of the very poor?

Small-scale mining and quarrying contribute in a number of ways to urban livelihoods. In both Cape Town (South Africa) and Walvis Bay (Namibia) sand is extracted from beaches to use for construction purposes. In Lusaka, particularly around low-income settlements, urban residents dig small-scale quarries (1–5 metres in depth) from which they extract stone. In some cases the stone is used for building their own homes and reducing the costs of materials for construction. Other urban households sell their labour power and collect stone or clay or sand, either for richer neighbours or those unable to do the heavy labouring themselves. Other households earn a large proportion of their income by collecting mineral resources and then selling them at the roadside. In coastal urban areas, such as Cape Town and Durban, sea shells are collected and sold to the tourist market providing local communities and outsiders with a significant income.

What are the social/institutional dynamics surrounding urban mining and quarrying resources?

We know very little about the social and institutional dynamics surrounding small-scale mining and quarrying in urban areas. For example, in urban Lusaka it is men who dig small quarries and extract rocks for use in construction. However, whilst we might expect the activities surrounding mineral extraction to be dominated by men, in fact the rocks are then broken up, sorted and sold by women. In the short distance between Kalingalinga and Mtendere locations, there are about 15 women each selling various sizes of rock. On the other side of Lusaka, on the main road south to Kafue, there are gaping holes adjacent to the informal settlements from which building materials have been

extracted. Women line the roadside with piles of rocks for sale. However, we do not know how significant a contribution this livelihood makes to the portfolio of livelihoods that a household follows. We do not know how gender relations are negotiated, nor whether women and men work individually or in small groups for this activity.

There are, therefore, an important set of issues that need to be explored around urban mining and quarrying. Key questions include:

- Who has access to these resources? For whom is it an important livelihood?
- Gender relations – who collects, sells and is responsible for products?
- Who decides within households how labour is to be allocated to these activities?
- Do women/men work in small groups for collection/sale etc. or is this purely an individual activity?
- If some form of collective group then how are decisions made, conflicts overcome and institutional dynamics negotiated?

The use of locally mined sand, rocks and other resources may be illicit and illegal or subject to rules, or ignored by municipal authorities. In each case there are CPR systems or tacit / informal 'rules' that govern access and use of the resource.

In the case of illegal use of private resources, there are risks associated with illicit extraction. In Cape Town sand on the extensive Cape Flats is used in both large scale commercial enterprises (in Philippi) as well as by local communities. However we do not know how access to this resource is negotiated between the different stakeholders (commercial enterprises, local communities, neighbouring communities). Furthermore, it is not clear whether or not there are 'rules' governing use of this resource (quality, location of extraction, timing etc.). If local communities are trespassing on the land of commercial operators, how intensive must local use become before commercial operators take action against them?

Elsewhere on the Cape Flats there are other sand dunes on municipal land that people extract sand from. Here, there is no evidence that the municipality has explicit rules governing the mining of sand. Indeed, sand mining may even be beneficial to the municipality if it clears or flattens dunes in areas where housing is planned. As long as sand mining continues at a relatively un-intensive rate, or in locations where mining is of benefit, it seems unlikely that the municipality will take any action. However, if sand mining becomes more profitable and more intensive, this may lead the municipality to take some action. This has significant implications for how pro-poor policy can support urban miners or quarry workers. If the activity becomes profitable, it is likely to become unsustainable. Similarly, in Lusaka, urban population numbers are rising putting increased pressure on the land for settlement. However this is the same land that is being mined for building materials (much needed for the expanding settlements). However it is not known whether or not there are tacit or explicit rules governing the location and extent of mining/quarrying activities.

Key issues that we need to understand more about in mining and quarrying. Are there CPR 'rules' (tacit/explicit) supporting/ inhibiting access, use or control of urban mining and quarrying resources?

- On communal land, are there rules governing mining and extraction of rock? If so who makes these and enforces these rules?

- Are there different access rules to regulate for commercial operators, local people, outsiders?
- How much room for manoeuvre is there for collective/individual action within this?

Are there ‘rules’ (tacit/explicit) supporting/ inhibiting access, use or control of urban mining and quarrying resources on privately owned land (or other tenures)?

On the Cape Flats, there is a patchwork of different forms of land tenure, complicated by the fact that land tenure is changing rapidly as a result of the land reform programme and the broad application of permission to occupy certificates. However, we know very little about the ‘rules’ that govern people’s access to mining and quarrying resources differ on privately-owned land and other tenures. Rules of access, and whether they are enforced or not, depend in part on the level of intensity of use and the subtractability of the resource. A key difference between the example of sand mining on the Cape Flats and small quarries in Lusaka, is that, at the current state of extraction, sand mining does not prevent future use of the land for different purposes. In contrast, the quarrying that is taking place in Lusaka is in direct competition with people who are searching for site on which to build houses.

So, in the case of sand mining, until the sustainability of the resource is threatened, the rules governing access may not become explicit. Furthermore, competition for sand is likely to be overtaken by competition for land on the Cape Flats long before the sand itself becomes in short supply. In Lusaka, conflicts and disputes are likely to arise much sooner, and it will be useful to contrast the rules that emerge governing use of these resources with experience from other CPRs.

We need to know:

- How are ‘rules’ different on private land and how does this influence the negotiation of access to these resources?
- How does subtractability and sustainability of resource use influence the CPR system that governs access, use and control of different resources?

Are there community-based natural resource management systems supporting/ inhibiting access, use or control of urban mining and quarrying resources?

There is no evidence of community-based natural resource management system in any of the cases that have been discussed so far. However, if there are examples of this in Southern Africa, they are likely to provide a good framework for negotiating access and use rights for a multiple set of stakeholders. For example, the patchwork of land tenures and land uses across the Cape Flats present a challenge to effective community-based natural resource management systems that could inform other experiences of CBNRM systems elsewhere.

Appendix 3

Case Study 3: Urban Cultivation

Rachel Slater, ODI

Urban agriculture (UA) has been defined in various ways that distinguish between levels of urbanisation (particularly between peri-urban and urban activity), between different types of activity (for example aquaculture, on- and off-plot cultivation and pastoralism) and between different types of participants (those who cultivate on plots within the urban areas and those who commute daily to plots outside the city). In this discussion, a broad definition is used, namely:

Agricultural and gardening activities (for example vegetable production, livestock rearing, aquaculture and flower / ornamental gardens) in both urban and peri-urban areas (Slater, 2001a)

Urban agriculture is not a new phenomenon, nor is it restricted to the developing world. Latz (1991) describes the persistence of agriculture in urban Japan, Tinker (1994) discusses the impact of rooftop gardens in urban areas in Russia and in the UK emphasis is placed on the significance of the 'Dig for Victory!' gardens of the Second World War. From the hanging gardens of Babylon to Watts' (1987) description of how pre-colonial Kano and Timbuktu fed themselves from within the city walls, cities in the developing world have long found some proportion of their food from within the built-up area of the city. However, in the 1980s, urban agriculture found its way onto the research agenda of development organisations and academics in earnest. In part this corresponded to the view from the United Nations Development Programme that there was capacity within the urban informal sector to provide a palliative for social and economic ills in the developing world cities. More recently, much of the interest in urban agriculture has been couched in discussions of the need to understand the hidden ways in which urban dwellers seek livelihoods, in the context of structural adjustment programmes which have reduced employment opportunities in the public sector and left many households facing an increasing burden in terms of education and healthcare payments. With respect to Tanzania, Mlozi has gone so far as to call urban agriculture a 'micro-level or people' initiative to cope with economic crisis while governments struggle to carry out their structural adjustment programmes' (Mlozi, 1996. p. 47).

Urban agriculture and household economics

Research into urban agriculture in Southern and Eastern Africa has focused heavily on the economic impacts of the activity (Rogerson, 1992). The need for urban agriculture research to advocate the beneficial economic impacts on poor urban households stems from the negative perception of urban agriculture in the eyes of urban development policy-makers and city planners. In many cases, urban agriculture is viewed as a signal that development (often viewed narrowly as the shift from the prevalence of rural people in agricultural activity to an increasing prevalence of urban people in non-agriculture activity) is not proceeding as it should. The presence of peasant farmers in cities and towns is seen as a signal that urban development has, somehow, gone wrong. This ideological objection to UA is rarely voiced explicitly, but it does underpin a range of objections to urban agriculture that themselves are incorrect or misleading. Examples include the commonly made statement in Zimbabwe and Zambia (disproved in 1980 by Zimbabwean scientist Mazambini) that the cultivation of maize in urban areas provides a breeding ground for malarial mosquitos whose larvae live in water caught in the stems of maize plants; and the objection from East Africa, especially Kenya, that maize plants in urban areas provide a haven for thieves, muggers and people smoking marijuana. With respect to maize cultivation in Nairobi, Hake described how

Such cultivation was illegal within the city, and was particularly discouraged by the Colonial power during the Emergency as the crops were believed to provide cover for fugitives or for the growing of *bhang* (marijuana). In 1964–65, when there was an acute maize shortage in Nairobi and throughout the country, groups of supervised prisoners could be seen slashing maize growing in, for example, the ‘Town Centre’ vacant plots and road reserves in Eastlands, because in the eyes of the authorities the crops were illegal (Hake, 1977, p. 191).

The impact of these negative, and sometimes misplaced, attitudes towards urban agriculture has been that researchers have sought to demonstrate the positive economic benefits that urban agriculture can have for poor urban dwellers. Research has demonstrated that urban agriculture can account for about one-third of the food needs of Tanzanian households or 40% of the calorific intake of urban households in Kampala (Drakakis-Smith, 1992; Sanyal, 1986; Jamal, 1988). The importance of urban agriculture can be even more important at particular times of the year or when household food supplies from rural areas are threatened. For example, in Lilongwe in 2003, there has been a rapid increase in urban and peri-urban cultivation of maize as a response to the maize shortages and rising prices.

Dimensions of agricultural activity

Land is the key resource in enabling people to get involved in all forms of agriculture. To cultivate households need access to land – either through ownership or leasing or, though this is risky, by invading vacant plots or unused land. In the latter case, households are much more vulnerable to losing their access and, sometimes, their crops.

Thus, one important thing to note about urban agriculture, is that the conditions in which poorer and richer households cultivate are very different. In many locations, but especially where overcrowding is acute, the contribution of cultivation to the livelihoods of very poor households is limited. In Southern and Eastern Africa, those who benefit most from urban agriculture are public sector workers, particularly teachers, whose plots are large enough to plant maize and can use maize production to supplement incomes which are decreasing in real terms. Poorer households have to find vacant land, sometimes far from their homes, on which to grow food. This is called off-plot urban agriculture.

This has implications for the capacity of women to practice urban agriculture when they have childcare or other responsibilities at home and means that crops can be lost to theft. In many parts of Southern and Eastern Africa, platforms or towers are built above plots of maize to enable cultivators to guard their crops. At harvest time, men often sit in these towers at night to protect their crops.

There are also issues related to people’s capacity to protect the land on which they cultivate. Men are better able to control and demarcate areas of land and their needs are better represented in community meetings over disputes about land.

There is also significant variation between the activities of men and women, partly related to women and men’s differential access to land. Men are much more likely to be involved in pastoral activities whilst women predominate in back-yard gardening. Women’s reduced geographical mobility results from their reproductive roles in the households. They can easily combine reproductive labour roles with backyard or on-plot gardening but not so easily with off-plot activities. Men can control larger portions of land and tend to produce cereal crops, especially maize, whereas women have small plots that they work more intensively to produce vegetables. Men also dominate the pastoral sector for a number of reasons. Pastoralism tends to be part of men’s traditional role in rural areas, men have greater mobility and can take animals to various

different grazing locations and they are better placed to represent themselves in disputes over grazing or commons access. In terms of poultry production, both men and women are involved, though women are more likely to enter into collective poultry production than their husbands are.

Urban agriculture and the environment

Elsewhere urban agriculture has been problematised in terms of the negative impact that it can have on the environment in urban areas – particularly through soil erosion. Just as with the use of other natural resources in urban areas, UA's environmental impact has been viewed as a problem to be solved and, with the exception of some NGOs, very little attention has been paid to the potential positive environmental benefits of urban agriculture (for example impacts on air pollution, the greening of the environment, etc.)

The way in which negative attitudes on the part of governments and city authorities towards urban agriculture are heavily couched in the expression of environmental problems is also somewhat ironic given the failure of many city authorities to provide adequate sanitation and waste management systems. For example, to express concern about the levels of lead contamination that may be present in vegetables grown in cities is rather bizarre given that poor households are forced to live adjacent to industrial areas that release toxic chemicals into the air and local water courses. Similarly, concern about whether mosquitoes might breed in water caught in the stems of young maize plants seems strange when all over developing world cities, stagnant and waste water is trapped in pools and ponds because of the inadequate sanitation and waste water system.

Urban agriculture, collective action, community development

As a result of this preoccupation with overcoming environmental problems and demonstrating economic benefits, there has been scant consideration of the social benefits accruing from urban agriculture or of the importance of community networks and development processes that arise from urban agriculture. Research in Cape Town, Maputo and Zambia demonstrates that poor people, especially women, have found urban agriculture can be crucial in establishing social networks, empowering women and promoting community development, even in communities that are characterised by fragility and instability.

In Cape Town, for example, urban agriculture by women has cultural, social and symbolic dimensions (Slater, 2001a and b). Whilst years of urban apartheid and forced removals meant that there was little urban agriculture in black townships under apartheid, after the first democratic elections in 1994, people began to cultivate gardens. Under apartheid people were unwilling to invest time and resources without secure tenure in the city. In the post-apartheid era, gardens symbolised people's permanent roots in the city and their sense of stability. Linked to this is the way in which many women in Cape Town, after years of separation from their husbands and children, express their happiness in being able to live as a family by reverting back to the traditional rural women's task of producing a home garden. In contrast, other women use urban agriculture to question and renegotiate patriarchal household gender relations. By growing particular foods that are traditionally eaten only by women, they take more control of the allocation of food within the household. Finally, there is strong evidence that women's agricultural activity helps to establish or strengthen social networks through which women are empowered. Indeed, in one township in Cape Town, it was a women's gardening group (particularly the strong bond and trust that was established between the women) that acted as a catalysts for the community taking action against rape, violence, child abuse in the community and on HIV/AIDS. It is clear that, in addition to

potential economic and environmental benefits of urban agriculture, there are also strong social development benefits that accrue from the activity.

Questions about social capital and urban agriculture are important, both with respect to the ways in which urban agriculture depends on various types of social relations or networks and in terms of the possibility for urban agriculture to strengthen social capital. Certainly, social relations and networks can be vitally important to the protection of crops and land holdings. Examples include the cultivation of the urban plots of sick people by their neighbours or people guarding neighbouring plots to prevent theft. Notwithstanding the examples from Cape Town above, significantly less is known about how urban agriculture strengthens social capital. Until we know more about this, we can't really say whether urban agriculture is an appropriate or effective driver of urban development, nor suggest what policy choices will support urban livelihoods and drive urban development.

In summary, we know from research that urban agriculture is not necessarily just about economics. It is also important in the establishment of social networks and the promotion of community development. However, our understanding of these processes results from people who practice agriculture as individuals rather than in formal, organised groups. There are a whole set of issues that arise then about how community-based urban agriculture might work. Some of the key questions that arise are:

- What are the most appropriate forms of social organisation to promote livelihoods based on community-based urban agriculture?
- What forms of land tenure and access to other resources does this depend on?
- What form of existing institutions can support this process? What new institutional frameworks could better facilitate the process?
- What sorts of policies can best facilitate sustainable livelihoods through urban agriculture in cities?
- Since it is unfeasible for urban agriculture to contribute to a very large proportion of the income of urban households, what are the best ways of developing linkages between urban agriculture and other activities that enable people to spread risk, get access to more remunerative livelihoods and, ultimately, lift themselves out of poverty?

Appendix 4

Case Study 4: Urban Trees

Rachel Slater and Cecilia Luttrell, ODI

In reviewing the importance of urban forestry in towns of the Sahel, Sene argues that in early settlements trees were viewed as propitious for settlement. They were evidence of water availability, land fertility, abundance of game or simply a parasol that allowed restful shelter. In fact, ‘the names of many towns and large villages in the Sahel stem from trees’ (Sene nd). Sene goes on to argue that links between African people and trees and forests have not been subsumed beneath the culture of urbanisation, rather that urban populations still depend heavily on the consumption of popular forest foods, even in urban areas, and that urban trees are important in providing foods and commodities, as well as holding spiritual and cultural significance.

In contrast to this, as urbanisation has increased throughout the developing world, towns and cities have pushed back areas of forests and woodlands. The land on which forests once stood has given way to buildings, roads and other urban infrastructure, whilst elsewhere trees have been used to meet urban needs for fuelwood and charcoal. In this context it is widely assumed that both the prevalence and importance of forest and tree products in urban areas has declined. However, an examination of the evidence reveals some interesting trends. These will be explored in the following case study.

Urban forestry or urban tree resources? What constitutes urban tree resources?

Urban forestry might be defined in a number of ways, but the emphasis of definitions tends to focus on management systems. For example, Kuchelmeister (1998) defines urban forestry as ‘the planning and managing of trees, forests and related vegetation to create or add values to the local community in an urban area.’ Similarly, Carter, writing for the FAO, says that ‘Urban forestry is defined as the planned, integrated and systematic approach to the management of trees in urban and peri-urban areas for their contribution to the physiological, sociological and economic well-being of urban society. Urban forestry is multi-faceted; it deals with woodlands, groups of trees, and individual trees where dense conglomerations of people live, involves a wider variety of habitats (streets, parks, derelict corners, etc.), and is concerned with a great range of benefits and problems (FAO, 1994, p. ix).

These definitions throw up problems for an analysis of the ways in which people gain some part of their livelihoods through urban forestry. The problem stems from the way in which we understand ‘planning and management’. For whom are we planning and managing? Who carries out this planning and managing? Whilst a focus on urban forestry defined in this way would make sense if there were some clear, overarching and explicit policy and programme of action on forest policy, in many countries in the developing world this is not the case. In many places, the management and planning of urban forests takes place in an ad hoc and sometimes invisible way. If we are trying to make sense of the ways in which poor people use urban forests support their household livelihoods, the definition doesn’t really help us to understand what happens at an individual, household or local level, not does it allow us to understand and identify both the formal *and informal* rules that govern access and use of urban forests.

Instead, it is perhaps more appropriate to focus on the urban tree resources that people actually draw on to support their livelihoods – these might be from a single tree in a backyard, or from woodlands

in public parks, or from trees planted by urban authorities. In this way we can shift from a preoccupation with the trees themselves and what they can potentially provide, to concern with the lived experiences and livelihoods of poor people. As Carter argues

The key problem is that most literature on urban forestry concerns trees, rather than the people who might benefit from them. There is a particular dearth of published information about the relationship of Third World urban dwellers (particularly the poor) to urban trees and forests; on whether or not they value, use or would like to use trees; and how urban trees affect their health and well-being' (FAO, 1999, p. ix).

Similarly, in reviewing the contributions of forest and tree products to the urban poor, Wiggins and Holt (2000) argue that a series of case studies by the FAO in Asia, Africa and Latin America tell little about the relations between urban forestry and livelihoods and still less about the livelihoods of the poor in urban areas.

How do urban tree resources contribute to livelihoods, especially of the very poor?

One of the key reasons for the concern with trees themselves rather than people in research into urban forestry in the developing world has been that the rationale and interest in urban forestry has largely been driven by the research agenda for urban forestry in the developed world, particularly the USA. Much of the literature on urban forestry is about the United States, with a heavy focus on the environmental and recreational benefits of urban forests. In contrast, in developing countries there are thought to be many more material benefits that poor people gain from tree resources. Kuchelmeister conceptualises this difference in terms of 'Conventional Urban Forestry' and 'Development Forestry' and argues that, whilst in developed countries the latter predominates the planning agenda, in developing countries both are important.

Table A4.1 Foci of urban forestry in developed and developing countries

Multi-purpose Urban Development Forestry = Urban Forests for Local Needs	
Conventional urban forestry focuses on amenity value in 'developed countries'	Development forestry focuses on economic benefits, employment and support of agriculture in 'developing countries'
<ul style="list-style-type: none"> • reduces noise • reduces air pollution • reduces climatic extremes • cools cities and planet • conserves energy • provides beauty and shade • improves water quality • controls water runoff • provides habitat for wildlife • increases recreational value • increases health/well-being 	<ul style="list-style-type: none"> • provides food • provides fuel • provides fodder • provides fencing material • provides timber • provides medicine, oil • provides raw material, fibre • increases cash / subsistence income • provides employment • improves gardening conditions • plus all benefits of Conventional Forestry

Source: Kuchelmeister (1998)

Thus, poor people in the developing world seek some part of their livelihood through the use of trees. Trees provide vital materials through which shelters can be constructed. Fibres can be used to make hammocks. Forests in or peripheral to cities are important for initiation rites. Baobab trees retain their role as a community meeting place for discussion, consultation and education. Trees provide nuts, fruits and a range of ingredients for medicines. Palm trees are tapped for palm wine.

Trees are also seen as fulfilling a range of cultural, social and psychological needs of urban dwellers – indeed, poor people (*if they have time*) are the most frequent users of municipal parks and open spaces, because they cannot afford to pay for other sources of recreation. For more information see Sene, nd, Dwyer et al., 1991; Wiggins and Holt, 2000; FAO, 1994). Activities involving urban tree products are used for both income generation and subsistence.

Whilst our knowledge of the extent to which these activities contribute to household livelihoods is limited, we do know that there are significant differences, between different localities within the city (for example, urban and peri-urban), class groups and between geographical regions. We know less about how men and women, or younger and older people use tree resources in supporting their livelihoods and little about the incremental contributions that tree resources make to livelihoods on a seasonal or cyclical basis.

Are there CPR ‘rules’ (tacit / explicit) supporting / inhibiting access, use or control of urban tree resources?

There are very few examples of ‘rules’ that relate to people’s access to urban trees. In Delhi, Carter describes how:

poor people gain income from harvesting and sale of a number of products from trees growing on land owned by the Municipal Corporation. These include *jamun* (*Sysigium* spp) and kapok; the Corporation auctions harvesting rights every year to collectors who camp under the trees (FAO, 1994, p. 53)

However, there is a lack of knowledge about the extent to which conflicts arise over ownership or usufruct rights to trees on public land, the forms that these conflicts take and the social (for example gender) dimensions that these conflicts have.

Are there ‘rules’ (tacit / explicit) supporting / inhibiting access, use or control of urban tree resources on privately-owned land (or other tenure)?

Land tenure presents the most significant obstacle to increasing the options for development of livelihoods supported through urban tree resources. But there remain many questions about exactly how land tenure affects the use and control of urban tree resources on private and publicly-owned land.

On the one hand, it can be argued that people are unlikely to care for trees or other vegetation planted on land that they do not own or feel responsible for. If people do not have secure tenure they are less likely to invest time and resources in planting trees that may only start to provide material benefits after a number of years.

On the other hand, Carter asks whether, because the illegal occupation of land is so common in urban areas in the developing world, lack of security of tenure may actually be much less of a constraint to urban tree planting than it is in rural areas. Similarly, in many parts of the Sahel, the planting of trees denotes ownership of land (Sene, n.d.). In Guatemala City, the authorities actually planted trees on vacant plots to show that they were occupied. It is not clear whether, where land ownership is unclear, people may actually plant trees to claim ownership of land themselves.

We also know little about how responsibility for urban tree planting and maintenance is apportioned in different towns and cities in the developing world (FAO, 1994).

Are there community-based natural resource management systems supporting / inhibiting access, use or control of urban tree resources?

Kuchelmeister (1998) argues that ‘urban forestry programmes can also help to strengthen urban community-building’. However, community-based efforts are hampered by a lack of well-organised groups and lack of participation. Kuchelmeister suggests that there is a lack of participation by women and children in decision-making, planning and management of urban trees. Carter, in the FAO paper, argues that

From the choice of tree species to actual planting, tending and (where appropriate) harvesting of tree products, urban dwellers should be able, and actively encouraged, to participate in decision-making and implementation as far as possible. This does not mean that urban dwellers should be expected to do all the physical labour of tree establishment and management themselves (sometimes this may be best left to professionals; in other cases local residents may wish to do the work themselves). The essence of participation is that people’s needs, opinions and preferences should be incorporated into the planning and management process (p51).

Whilst the agroforester.com suggests that public involvement with trees in towns can help strengthen neighbourhood communities by providing people with an opportunity to work together for the benefit of the local environment. Again though, the evidence for this comes largely from the developed world and we know very little about how trees and tree resources can contribute to community development in the urban areas in the South.

Are there formal policies / programmes relating to supporting / inhibiting access, use or control of urban tree resources?

Formal policies are partly hindered by the difficulties associated with the valuation of trees. Whilst trees can be valued in terms of their tangible benefits (the value of fruit that they bear or firewood they provide) it is much more difficult to value the intangible benefits (shade, cultural values, etc.)

Formal policies that do exist tend to be top-down, and characterised by institutional conflict.

In sum, we already know:

- What people *can* use trees for in urban areas and what (in a very patchy range of locations) what they *do* use trees for.
- In rural areas people don’t like to plant and tend trees with tenure security in rural areas.

We don’t know:

- How urban tree use is disaggregated by age, class, gender, castes, etc.
- What people would want to do with trees.
- Whether lack of tenure security is a constraint in urban areas that prevents or discourages people from planting trees or whether lack of clarity over land ownership presents opportunities for people to ‘colonise’ vacant plots in urban areas.
- What tenure arrangements (both for trees and land) might encourage the use of urban trees to support livelihoods.
- What the linkages are between livelihood activities based around the use of urban tree resources, and livelihoods based on other resources.

Appendix 5

Case Study 5: Water

Tom Slaymaker, ODI

Water is arguably the single most important common property resource and improving access remains central to global efforts at reducing poverty. Management regimes reflect its fundamental importance as the basis for a clean, healthy and productive life, and the complex nature of externalities (both positive and negative) associated with different water uses. Issues and problems faced by the poor in rural and urban settings are similar in many ways but the nature and structure of *demand* for water may be quite different. The challenge for decision-makers is understanding, assessing and responding more effectively to demand for water in these different contexts.

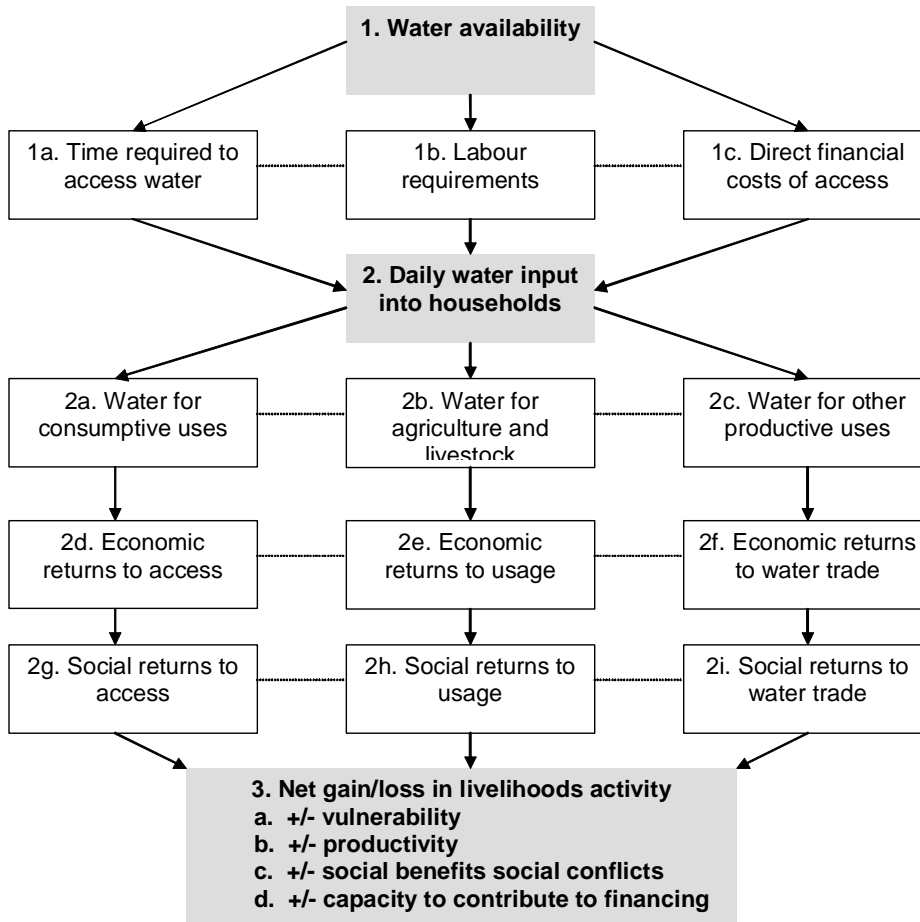
The term urban water resources is used here to refer to freshwater used for productive and reproductive uses (including sanitation). The focus is primarily on household-level rather than large-scale industrial or agricultural water uses. Poor people in urban settings typically rely on multiple water sources. Different sources are often associated with different uses e.g. drinking, washing, irrigation etc., and source preference may also vary seasonally according to availability. Even in large developing country municipalities piped networks supplying treated water achieve only limited coverage and untreated sources remain very important. As in rural areas a distinction can be made between ‘protected’ sources such as boreholes or wells with hand pumps and ‘unprotected’ or open sources such as open wells, springs, and watercourses etc. Roof water harvesting is also of growing importance in urban areas for a variety of household-level uses. Surface water drainage is generally classed as ‘wastewater’ but the importance of gutters, sewers and dug-outs as a source of water for the poor, especially for urban agriculture, is also now increasingly recognised (see RUAF, 2002).

Water supply development in urban areas remains dominated by health-focused approaches which emphasise the need to increase coverage of ‘safe’ water supplies. However more recent research has highlighted the fact that the benefits of improved water access extend far beyond basic health impacts (Nicol, 1998; Lovell, 2000). Water is centrally important, not just for basic human consumption, but for a wide range of different livelihood activities. Furthermore, the priority of poor water users themselves is often not so much improving water quality but rather improving the quantity and, crucially, the reliability of supplies. The concept of secure water usefully directs attention to the means by which poor water users access water as well as the sustainability of supply arrangements. The ‘problem to be solved’ in most urban areas is therefore not just increasing access to ‘safe’ water, but rather increasing access to ‘secure’ water (SecureWater, 2002).

In recent years a growing body of water and livelihoods thinking has emerged which takes as its starting point an understanding of the way poor people make a living, and recognises that the poor typically pursue a ‘portfolio’ of activities to manage poverty and vulnerability (Nicol, 2000; Moriarty, 2001). A key issue is understanding water as a productive asset which can be combined with other assets to generate financial and non-financial livelihood benefits (SecureWater, 2002). The urban poor obviously require access to water for basic domestic uses such as drinking, cooking, washing and cleaning, but demand for these is essentially inelastic (Cairncross, 1992). In addition water is essential for many small businesses from food stalls to shops to hairdressers and hotels etc., but the relative importance of water quality and quantity for each varies. Certain small-scale backyard industries e.g. leather tanning, beer brewing, production of food oils, soap and detergents etc. are particularly water intensive. Many poor urban households also keep livestock, either for own use or producing meat and dairy products for market, which can consume large quantities of water. Agriculture is also an important water use in many urban areas, mostly producing perishable

fruit and vegetables either for local markets or own consumption. The scale of these activities varies significantly from household plots to organised cultivation of large areas. Levels of irrigation required also vary and depend on climate and soil characteristics, irrigation water is commonly diverted from rivers, gutters and sewers but is also drawn in many cases from water points designed for domestic use. Finally, water sources and courses themselves are important for fishing and other forms of aquaculture in urban areas.

Figure A5.1 Household water economy model



Source: SecureWater (2002)

A range of direct and indirect costs and benefits are associated with accessing water. These include significant opportunity costs, both in terms of time/labour expended on water collection activities as well as cash expended at the source and transport costs. The value of this 'wasted' time depends partly on the availability of other labour opportunities (see Churchill, 1987 for detailed cost-benefit analysis), but even in areas with high unemployment improved access can free up women's time for childcare and has been linked in many areas to increased school attendance, especially among girl children. Generally distances covered in search of water are shorter in urban areas than in rural areas but queues may be longer and high intensity use means water points breakdown more frequently. There are important gender dimensions to the household division of labour for water collection and management activities (see for example Cleaver and Elson 1995; Joshi, 2002). Women in urban areas are also generally more vulnerable to assault, especially whilst collecting water early in the morning or late at night. An added problem in many growing cities is seasonal water shortage resulting in water rationing whereby use of public taps may be restricted to a few hours each day. Unlike most rural areas private water vending is a common occupation in urban settings. This can take various forms ranging from tariff collection at source to household delivery by donkey cart. On one hand this can significantly increase the cost of water access for many poor

households but on the other water trade is an important source of income for the vendors (ITDG, 2001).

The structure of demand for water in urban areas is therefore clearly complex. Simplistic notions of x litres per capita per day for basic domestic needs are of limited practical relevance. Demand varies significantly according to both household size and livelihood activities. Furthermore changes in water access costs can impact, both directly and indirectly, on household food and non-food income in a number of different ways. Understanding the potential trade-offs between water expenditure (cash and labour) and other productive activities is important in order to develop a set of service options which are appropriate, affordable and sustainable and do not undermine the potential poverty impact of actions in other sectors e.g. health, education, agriculture etc. The 'water-sensitivity' of different livelihood activities varies according to context, and whether the activity is subsistence or income generating, but the potential benefits of improved water access clearly extend far beyond health. In short access to water is often a key determinant of livelihood security and water and livelihoods analysis can help interveners understand where water figures in the hierarchy of livelihood needs and priorities of different target groups.

As mentioned above, the concept of water security is useful in focusing attention on policy and institutional arrangements which affect access to water and thereby determine livelihood options and strategies. Current institutional arrangements need to be understood in the context of wider policy trends, notably the recent global shift in water policy from supply-led to demand-led approaches. The perceived failure of previous top-down, government-driven schemes to meet ambitious coverage targets or to achieve long term sustainability in operation and maintenance led to a crisis in public service provision in the 1980s coinciding with the rise of the neo-liberal economic agenda. In 1992 the principle of treating water as an economic good was enshrined in the 'Dublin principles', marking a significant shift away from public provision of water as a free 'public' good. The conceptual shift was subsequently embedded in the emergence of so-called 'demand-responsive approaches' (World Bank) which seek to engage water users in the management and financing of water supply development.

Box A5.1 Key principles of DRA summarised

- Informed choices by communities through participatory planning and community involvement in implementation to ensure ownership.
- Complete community management responsibility for operation and maintenance (O&M).
- Cost recovery – capital cost sharing (expression of demand and 'ownership') and 100% O&M.
- Promoting more options for service delivery.
- Integrating water supply with sanitation, environmental management and hygiene education.
- Targeting the poor.
- Supporting integrated water resource management.

Source: WSP (2001)

Many of the principles of DRA draw heavily on experiences from the CBNRM literature. Examples include. decentralisation of decision-making responsibility to local levels, or participatory planning and community involvement in implementation to ensure ownership etc. However, unlike CBNRM which seeks primarily to ensure the sustainability of the resource base, the overriding concern of DRA is to ensure financial sustainability of the supply system. While a financially sustainable system may well result in more efficient resource use it will not necessarily result in more equitable allocation of the resource. Achieving an appropriate balance between financial concerns and wider poverty reduction objectives will depend on improved understanding of the nature of demand for water and the linkages between water access, poverty and livelihoods. Setting appropriate tariffs which are realistic, feasible and affordable and do not undermine actions in other sectors designed to reduce poverty, remains a major challenge. Capacity to contribute to the costs of infrastructure

development or rehabilitation and to maintain payments for operation and maintenance in the face of economic shocks varies significantly both between and within communities. Emerging demand-responsive schemes seek to provide a set of service options to ‘communities’ of water users, which are largely assumed to be homogenous and conflict free. CBNRM literature based on experiences in rural areas has long recognised that this is not always the case, furthermore water is often a major dividing issue. The term ‘community’ is arguably even more problematic in urban areas and schemes that seek to respond to ‘demand’ expressed by communities could be usefully informed by lessons from CPR and CBNRM. Elite capture of the resource, either physically or indirectly through decision-making processes appears to be a universal problem.

Ostrom’s (1990) definition of common property characteristics is useful in focusing attention on the key issues of excludability and subtractability. Different urban water sources have different levels of ‘excludability’ associated with them. The limited coverage achieved by public water supply networks means that large numbers of poor people rely on private sources which are effectively operated as private goods i.e. potential users are excluded unless they can pay a stipulated price. Poor households which are remote from public sources and lack means to transport water themselves often rely on private vendors to deliver water to them. In this way public supplies are sometimes effectively privatised and monopolised by donkey cart operators. Small-scale private operators have been criminalised in many areas because the quality and cost of the service they provide is difficult to regulate. However the importance of the service they provide to poor households, especially in areas beyond the reach of government and large-scale private sector, is increasingly recognised and some governments are now seeking to find ways of harnessing this entrepreneurial spirit. Interestingly there is also some evidence of vendors forming user groups which act collectively to rehabilitate and maintain public systems which have fallen into disrepair due to neglect by local authorities (see for example ITDG East Africa/WEDC). The distinction between providing water as either a public or private good is therefore not always clear.

The capital costs of installing new water supply systems in urban areas can be huge and are beyond the means of most poor communities. In many places governments will meet the costs of installation on the understanding that water users will manage the services and cover future costs of operation and maintenance. This entails all the classic problems of collective action including so-called ‘free-riding’ whereby individual users fail or are simply unable to contribute to the costs of management. In more cohesive communities informal cross-subsidisation and systems of reciprocity can be observed which ensure that the poorest within the community are not completely excluded. Many societies have traditions which oblige water resource owners to provide for others in times of need. Although social traditions are increasingly strained in poor urban settings, especially where they are based upon relations of production and exchange which are no longer viable, those surrounding water use are surprisingly strong – especially in semi-arid areas. Tariff systems designed to ensure ‘cost recovery’ and ‘sustainable use’ are frequently not enforced and traditional access rights often prevail. Tacit/explicit arrangements for sharing of water resources between communities during different seasons or times of drought can also be observed e.g. pastoralist groups often pass through urban areas seasonally where they have traditional claims to water resources. However, growing resource pressure, conflicts between competing uses and commercialisation of relations between different water users increasingly threaten traditional resource use rules where they may have previously existed.

The issue of subtractability is increasingly relevant in many urban areas where population growth and increased water use place increasing pressure on the resource base. Water resources by their very nature extend and flow beyond the boundaries of different user communities necessitating coordination and integration of ground and surface water management at the resource system or watershed level. The concept of Integrated Urban Water Resource Management (Global Water Partnership, 2002) builds on experience of catchment management in rural areas. It is increasingly

recognised that urban water should be managed alongside the management of other co-dependent natural resources e.g. forests, soils, aquatic life. However systems approaches which attempt to model flows of wastewater etc. in urban areas tend to be overly complex. The jurisdiction of urban authorities often doesn't relate to the boundaries of natural resource systems which further complicates management issues. In water scarce urban areas local authorities often attempt to ration public supplies during periods of scarcity but have little control over abstraction from private sources. Rules and regulations often exist to restrict drilling of private boreholes to ensure resource use or flow does not exceed rates of replenishment but enforcement can be problematic. It is generally the richer, more powerful, urban elites who are able to monopolise borehole quotas, often at the expense of the poor who cannot afford the necessary technologies themselves and are forced to pay a premium for access. Resource conservation is a major concern, especially in semi-arid regions and/or large municipalities. Bangalore and Delhi for example are both currently trying to develop policies requiring new buildings to make provision for rainwater harvesting (Times of India, 2002). It is worth noting that policies designed to improve efficiency in resource use, e.g. full-cost pricing, may well impact negatively on poor groups who rely on the abundance of wastewater.

Given the problems faced by the urban poor in gaining access to 'secure' water many seek to develop their own solutions. The urban poor are particularly vulnerable to economic shocks and the primary focus of livelihood strategies in these areas is often risk aversion, rather than asset accumulation. In the face of recent trends in water supply development which militate against them, poor urban water users are increasingly looking to alternative water sources. Rainwater harvesting is increasingly popular in many urban areas often supported by NGOs. Debates continue over issues of quality and potability versus the affordability of different construction materials for poor households (see ITDG, WEDC). Depending on conditions (climate, roof area, storage etc.) and the relative accessibility of alternative sources, rainwater harvesting techniques can significantly reduce the costs and risks faced by poor households in accessing water. The extent to which rainwater could be better harvested through collective action rather than just on an individual basis is an interesting question for further research.

A major problem in many urban areas in developing countries is land tenure. Inhabitants of informal/illegal settlements or slums often have no formal rights to the land they live on. This tenure insecurity is a major disincentive to investment in water supply solutions. Communities themselves are unlikely to invest in expensive infrastructure if there is a prospect of eviction and similarly large private sector operators regard these areas as commercially non-viable. Rights to established water sources in these areas are often contested or withheld and are often beyond the powers of local authorities to regulate or enforce. The relation between use and control of water and the 'hidden', 'grey' or 'black' economies of these areas is generally poorly understood. Informal settlements often account for over half the population of big cities in sub-Saharan Africa and are often over 20 or 30 years old. Clearly policy designed to reduce poverty or support livelihoods in urban areas must address these issues.

Use of wastewater, particularly for urban agriculture is now receiving increased attention in policy circles (IWMI/RUAF, 2002). The use of the urban wastewater in agriculture is a widely established practice, particularly so in urban and peri-urban areas of arid and seasonally arid zones. It has been estimated that approximately one tenth or more of the world's population eats food produced on wastewater. Importantly it is not just a source of irrigation but also a source of plant nutrients reducing the need for fertilisers etc. Diversion of water from ditches, ponds, gutters and sewers for productive uses was previously discouraged by local authorities. Health concerns remain but the principle of making use of wastewater is increasingly accepted, especially in water scarce urban areas.

Until recently wastewater has been effectively an 'open access' resource i.e. owned by everyone but little in the way of management structures to oversee its use. There are many examples of informal users collectively resisting attempts to cover drainage ditches or drain standing water sources upon which they have come to rely (RUAF, 2002). Health concerns have prompted moves to improve the quality of water being used to irrigate food crops but cost recovery remains a major obstacle (IRCSEA and WSSCC, 2003). The focus tends to be on pollution control at source but collective action to manage wastewater after it has left the source remains little researched. Clearly if interventions in this area are to effectively support the livelihood activities of poor households they must be based upon an understanding the needs and priorities of water users and the role and importance of water in relation to food security and wider livelihood strategies. The need to regulate to reduce health and environmental risks must be carefully balanced with the need to maintain and maximise livelihood benefits.

As in rural areas numerous informal operational rules surround the use of water resources in urban settings. These are increasingly being replaced by formal tariff structures which result in a certain loss of flexibility and dynamism. This is arguably necessary in order to try and institutionalise access rules to deal with increasing complexity but how? While legislation and regulation can help prevent access being denied outright, the terms of access (which crucially determine the extent to which outcomes are 'pro-poor') are continuously negotiated and renegotiated among different stakeholders. Relatively few disputes ever actually make it to tribunal and so building capacity for negotiation and wider political engagement at local level (individual, community, local authority) is arguably just as important as regulatory/legal reform.

Appendix 6

Case Study 6: Urban Spaces: Reserves, Parks and Wasteland

Chasca Twyman, University of Sheffield

What constitutes urban space and what resources does it contain?

The focus here is on urban space, defined to include land (private, state or communal) that is used either for conservation purposes (e.g. reserves), recreation (e.g. parks and community gardens), or wasteland (including dumps, verges, 'brown field' sites etc.). All these areas may form the sites on which livelihood activities take place (e.g. grazing resources, land for cultivation etc.), may have the potential to be transformed into sites to support livelihoods (e.g. through conservation). They also provide direct access to some NRs to support livelihoods e.g. tree and bush resources, wild foods. Areas such as parks contribute to livelihoods through improvements in well being and quality of life. There is also some discussion of urban pastoralism, since opportunities to rear animals in urban areas are heavily dependent on access to land for grazing, whether grazing takes place on roadside verges or at the local rubbish dump. A key element of this case study is the overlap with the previous case studies, as land can be viewed as the basis for many of the activities described above.

How does urban space contribute to livelihoods, especially of the very poor?

Various different forms of urban space need to be addressed as they make important and often overlapping contributions to the livelihoods of the urban poor.

- Reserves – these are generally state managed but in some places may have a form of community involvement either through planning and management or through waged work associated with conservation/preservation of areas. Reserves may also be seen as repositories for NRs with rules governing who can use what resources when and for what purposes, including as a direct contribution to livelihoods, for sale to provide income, for cultural or spiritual purposes etc.
- Recreation – parks may be used for leisure purposes contributing to people's well being and quality of life. In Durban, several community parks have been developed under Agenda 21 initiatives (Mehta, 1996).
- Wasteland/brown field sites – these are often the sites for other livelihood activities. For example, wastelands and brown field sites may provide valuable grazing resources for livestock, potential sites to support new livelihood activities etc.
- Commons – These provide a communal site for access to natural resources, principally grazing, but also collection of veld food, grass, trees etc.
- Verges – These provide access to NRs such as grazing, fodder collection, verge side crop production, trees etc. Rights over these resources are often complex and 'hidden' and often require negotiation between a variety of stakeholders.

What are the social/institutional dynamics surrounding NRs in urban spaces?

There is very little published literature about the social and institutional dynamics surrounding NRs in urban spaces. It is unclear in many cases who has access to these resources and for whom is it an

important livelihood. Gender relations have rarely been explored and understanding these requires information on who uses these spaces and is responsible for use/management issues. For example, in South Africa apartheid maintained a division of space that excluded many people from certain areas including urban parks. As Dodson (2000) notes, 'black South Africans can now legally use facilities previously restricted' including parks and recreational areas. In post-apartheid South Africa, much urban space is being re-negotiated for a variety of livelihood activities.

Issues relating to CPR rules governing many of these spaces are explored in the different case studies. For example, in Indonesia, rubbish dumps have provided the grazing resources for cattle and formal agreements have been made between the local government and local communities who want to graze their cattle on the dumps. Local communities benefit because of free grazing resources for their cattle (they would otherwise have to pay for grazing or fodder) and the local government benefit as they have found that the cattle manure helps accelerate the decomposing process (Aglionby, 2002). While these may be formalised spaces, much rubbish in urban areas is also on wasteland and brown field sites. As such, there are similar issues to be explored as those outlined in Case Study 1. Similar comparisons can be made for water, trees, mining etc.