

The Role of Common Pool Resources in Economic Welfare of Rural Households

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Abstract:

Several studies have shown that rural households use common pool resources (CPRs) extensively to meet their daily economic, spiritual and social needs. However, most household income and expenditure surveys in the developing world do not capture the contribution of the CPRs to the household income. This paper examines the role of CPRs in the welfare of rural households. We use a case study of rural households in Botswana to quantify the contribution of CPRs in household income. Our main objective is to show that CPRs have a significant contribution to welfare of rural households and hence their sustainable management can serve as a potential poverty alleviation strategy. Any economic analysis of rural households that does not capture the contribution of CPRs to household income may not be accurate since a significant source of economic value is ignored. An attempt is made here to examine the economic contribution made by CPRs to rural household welfare, as well as assess CPR commodity utilisation by different income subgroups by computing income shares of major income sources of rural households, and by correlating environmental use to the demographic characteristics of users using a sample of 500 rural households. Our findings show that the level of dependence on CPRs increases as a household becomes more economically marginalised. The more marginal a rural community, the greater is the proportion of its income from CPRs. Data indicate that sub-marginal and marginal rural households receive 18 to 51 percent of their income from CPR produce. As poverty increases, women become more prominent in ensuring the survival of households by assuming greater responsibility in providing food commodities from forests and CPRs. Therefore, CPRs play a major role in economic welfare of rural households and hence the need to ensure their sustainable management.

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1. Introduction

Recent studies offer further empirical evidence for the extent of dependence of rural households on common pool resources (CPRs) (Hedge et al., 1996; Godoy et al., 1995). Others have noted the important role of CPRs not only in meeting subsistence needs but also in poverty alleviation of rural households (FAO, 1995). Rural households in developing countries derive livelihoods from diversified portfolios. In the case of Botswana, the rural households derive their livelihoods from agriculture, off-farm income sources such as remittances, CPRs, government transfers and the informal sector activities such as beer brewing, brick moulding and tourism related activities, etc.. The extent of dependence on a particular source of income is often associated with socio-economic characteristics of a household such as ethnicity, household size, gender of the head of the household, geographic location and wealth. The inextricable link between CPRs and rural livelihoods emphasizes the need to account for the role of CPRs in economic analysis of rural households. The central issue here relates to how the household, defined as an income-pooling group, adopts economic strategies to increase the size of household income. More broadly articulated; how do the households draw on, and allocate, CPRs? Understanding established patterns of CPR use in pursuing economic self-interest is of great importance in understanding social and economic change of rural communities. In the same light, a number of studies emphasised the importance of people's involvement in biodiversity conservation (Chopra *et al.*, 1990; Palit, 1993; Poffenberger and McGean, 1996; Sarin, 1996). These studies show that in many rural institutional settings of developing countries, natural resources are better managed when people's voluntary participation is secured, and there is high level of dependence on the resources.

Literature on the relationship between poverty and the environment is extensive, particularly regarding rural livelihoods. Hypotheses abound, such as the theory that there is a vicious cycle of poverty, population growth, and environmental degradation. Some cases support that theory; others show quite the opposite. We have little empirical evidence that allows us to conclude with certainty that, in any particular

circumstance, causality will be from one direction rather than another. Several factors such as macro-economic policies, the effectiveness of local institutions and property regimes, and gender relations decisively influence the extent to which the poor have access to and control over natural resources and the potential to derive income from them. It is also important to assess the set of property regimes (individual, collective and common) which underlie access rights and influence the actual use and management of CPRs in rural communities.

Although the causes may vary in different cases, research shows that links between CPRs and livelihoods of the poor can be very strong. Poor rural households often derive a significant share of their incomes from CPRs (Cavendish 1999). However, even though the poor are more resource dependent, they generally use less of these resources than the better off mainly due lack of properly defined individual rights. An understanding of these issues, especially one which focuses on the relationship between use and level of dependence, may provide a database for generating natural resource policy. This can also shed light on how national policy priorities and objectives contradict or facilitate the realisation of users' needs and interests in the context of CPRs. An understanding of these relationships helps illuminate the possible contradictions that emerge at the policy level between those who represent state interests on the one hand and rural communities on the other.

2. Analytical Framework

CPR utilisation is not adequately covered by conventional economic surveys of households. Therefore little is known about their value in terms of overall rural household welfare, and about how their use and value might vary across household types. This research captures the economic contribution made by CPRs to rural household welfare, using panel data that captures the rural households' CPRs use with accurate measures of other household economic activities. To qualify as a CPR use, a resource must be freely provided by natural processes. In the study area, the vast bulk of these resources were derived from areas such as rangelands, woodlands, dams, and rivers that were held under common property regime. According to Shackleton et al (2000) communal areas in Southern Africa provide a diversity of wild resources ranging from fuelwood, wood for construction and implements, craft materials, foods

and medicines are all utilised by a high percentage of households. Majority of rural households harvest the wild resource products mainly to meet subsistence needs whilst others are harvested for commercial purposes as well as inputs into other production systems (Shackleton et al, 2000). By using CPRs, rural households are able to fill income gaps due to short falls in production which enhance livelihood security of the poor rural households. However, the capacity of rural households to use CPRs in a sustainable manner may be impeded by hierarchical division and economic inequality among its members as well as commercial opportunities. When CPRs become commercialised, there is often a large increase in the scale of harvesting which may pose threats to their sustainability. The CPRs end up largely captured by the rich, who have access to advanced technology, transport and labour. Access to the resource by the poor is limited, threatening their traditional source of subsistence.

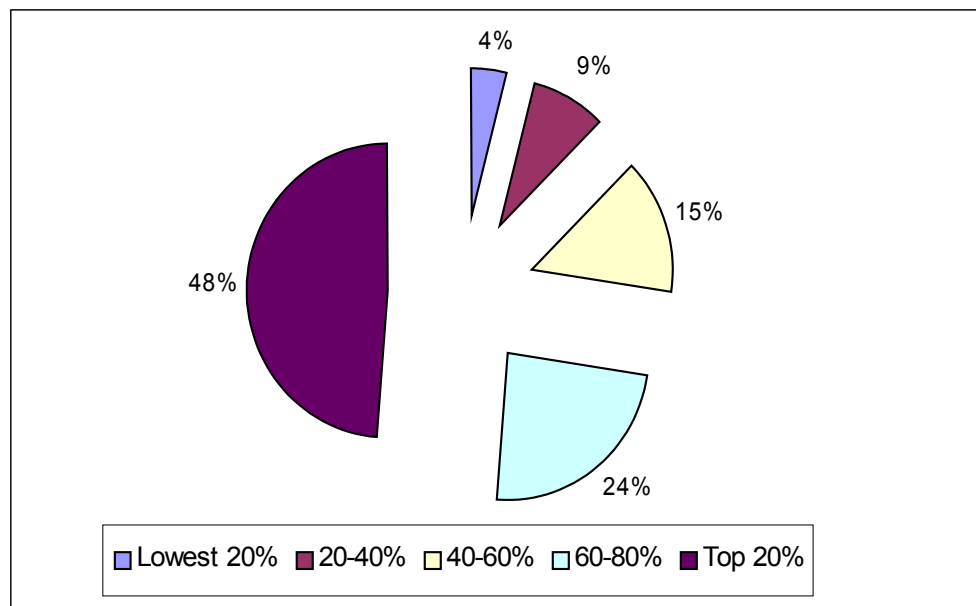
A household survey that explicitly integrated quantitative environmental data with household economic data was conducted in 1999, over a period of five months. The surveys were conducted in Chobe and Ghanzi/Kgalagadi areas of Botswana, comprising full household data. In order to provide a rigorous measure of the value of CPRs to household income, the surveys were based on four basic principles. They included as wide a range of CPR goods as possible. They allowed calculation of household values on the basis of CPR use rather than resource availability. They collected local price data to calculate resource values; and they allowed calibration of CPR use values against a full accounting of the household's other economic activities.

The database includes a total of 500 individual household interviews. Structured interviews were administered to selected households to solicit data on the characteristics of resource-using communities, the extent of dependency of communities on natural resources under their control, and factors that affect individual participation in common property regimes. The questionnaire used was the income, consumption and expenditure type, with modifications to fit the particular requirements of this research. The questionnaire was designed to solicit data on the characteristics of resource-using communities; the extent of dependency of communities on natural resources; and income, consumption and expenditure of households.

3. Income Distribution in Study Area

A highly unequal distribution of income often depresses community efforts to conserve CPRs. Reducing income inequality tends to increase collective action and reduce resource degradation. Our findings show a skewed of income distribution in the study area. The top quintile receives roughly 48% of total income, while the bottom quintile receives only 4% of total income (Figure 1).

Figure : Income Shares by Income Group
Source Survey



Provision of paid employment to the poor may reduce the income disparities. Some biodiversity activities are clearly pro-poor. When poor people clearly depend on CPRs their livelihoods, biodiversity conservation activities can be the best way to reduce income disparities. Long term livelihood opportunities for the poor may be integrated into plans for biodiversity management, such as hiring the poor as escort guides or guards in community and national parks, forests, and biodiversity reserves.

4 Contribution of CPRs to Household Income

Households use CPRs for more than one purpose, but their dependence on each activity differs. Low-income groups depend on a greater variety of CPR commodities than high-income groups. High-income groups are primarily interested in cattle production; thus they use greater quantities of environmental resources in total. Activity patterns have changed substantially because of institutional arrangements governing resource access and physical resource availability. Table 1 below shows the overall share of CPR use by different income groups in the sample.

CPR income makes a substantial contribution to total incomes, comprising 41% total income. The second important source of income private transfers (25%), followed by public transfers (18%). Employment and own produce from agriculture and small scale enterprises contribute the least to household income in the study are. The contribution of CPR to household income comprises a variety of CPR commodity related income sources. Overall the largest contribution comes from grazing, which accounts for 10% of total income, followed by wild fruits and vegetables, which contributes almost 10% of total income. Firewood also plays a more important role (9%) while crafts also accounts for 8% of total income. Therefore, the households in the sample derive CPR income from quite a wide range of contributions by different environmental resources. Despite this contribution of CPR to household income, the role it plays in the welfare of rural households has not yet received the attention in the literature as compared to other sources of income such as cash crop production, unskilled labour income and small-scale enterprises.

Across the 500 households in the sample, the bottom 20% of the population generated a remarkable 51% or more of their total income from CPR, while for the middle three quintiles of the sample, CPR income generally comprised 20% of total income or more. It is only for the top quintile that the contribution of CPR income drops significantly, to 17%.

Table 1: Total Income Shares by Quintiles and Major Sources of Income

| Income Source | Lowest 20% | 20-40% | 40-60% | 60-80% | Top 20% | All Households |
|---|---------------|---------------|---------------|---------------|---------------|----------------|
| Employment own produce | 8.64 | 41.92 | 41.03 | 43.67 | 51.81 | 14.10 |
| Drought Relief | 6.04 | 21.25 | 5.18 | 10.23 | 9.70 | 6.00 |
| Enterprises/Formal job | 2.20 | 0.44 | 14.03 | 13.30 | 21.01 | 4.00 |
| Livestock and crops | 0.40 | 21.23 | 21.82 | 20.14 | 21.10 | 4.10 |
| Private Transfers (Remittances) | 13.04 | 10.37 | 16.53 | 20.37 | 18.11 | 25.69 |
| Public Transfers: Old age pension Destitute allowance | 26.25 | 22.45 | 19.55 | 14.76 | 13.00 | 18.44 |
| CPR Income | 51.98 | 25.26 | 22.89 | 21.20 | 17.08 | 41.77 |
| Wild fruits/ vegetables | 18.57 | 5.81 | 3.44 | 3.02 | 1.46 | 9.54 |
| Firewood | 10.92 | 5.01 | 5.81 | 5.00 | 1.22 | 8.71 |
| Crafts | 9.39 | 3.53 | 1.37 | 0.35 | 0.34 | 8.17 |
| Construction material | 9.01 | 4.54 | 2.09 | 1.13 | 1.04 | 5.33 |
| Livestock grazing | 4.09 | 5.37 | 10.18 | 11.70 | 13.02 | 10.02 |
| Total Income | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

Source: Survey

These results suggest that resource dependence varies systematically with income. The share of aggregate CPR income decreases as income rises, so the poor are definitely more dependent on CPRs than the rich. This systematic relationship between CPR dependence and income quintile also holds for some interesting resource subgroups. The income share of the collected wild fruits and vegetables displays a secular decline as the income quintile rises. Lower income households clearly depend more heavily on utilisation of wild fruits and vegetables than do higher income households. The underlying assumption is that these households are unable to allocate as high a share of cash income to purchased foods as better off households. There are similar transitory declines in the income shares of firewood and construction material. For economic services that these subgroups offer, the poor are more heavily dependent on CPR use than the rich.

Although the results also indicate that poorer households are more resource dependent on CPRs than the rich, the poor are not in fact the main users of CPR in quantity terms. Contrary to the results on income shares, absolute demands for CPR do not decline with income. The quantity of CPR commodities consumed does not necessarily inversely decline with total income quintile. This pattern of rising absolute resource demand is prominent for livestock grazing. The top quintile consumes twice the value and hence quantity of CPR commodities than the lowest quintile. This

pattern suggests that it is rising quantities of resource demand and resource utilisation that cause CPR degradation. This implies that one would have to accept comparative wealth rather than comparative poverty as the primary issue of concern. However, while there are clear connections between income levels and resource use, these are not a complete explanation of resource use patterns. This is both intuitive, and also can be seen from the fact that not all resources have declining income shares and increases in total value consumed or used as income quintile rise.

CPR Use and Gender

Collection and use of CPR is also strongly linked to the sex of the individual concerned. Labour specialisation in resource use is also linked to patterns of gender specialisation found in the broader household economy. Women dominate firewood collection and craft production. Construction is a man's responsibility, so it is men who are pole collectors and builders. In general, much of the gender specialisation in the survey is due to the strongly differentiated gender roles and gender rights that exist in traditional African communities.

In the study area, the CPR uses were associated primarily either with men or with women. According to the results in Table 2, men alone hunt and sell wild animals (100%). However, the collection and sale of wild vegetables and fruits, and home brewed beer and the collection and or sale of thatching grass are activities carried out almost exclusively by women. Joint activities do exist. For example, both sexes can make or sell certain mats e.g. *moseme*, and both sexes are involved in wood collection (Table 2).

Table 2. Percentage of CPR Utilisation by Gender

| Activity | Male | Female |
|----------------------------|------|--------|
| Herding/Livestock Grazing | 97 | 3 |
| Wild Fruits and vegetables | 5 | 95 |
| Hunting | 100 | 0 |
| Firewood | 24 | 76 |
| Beer brewing | 0 | 100 |
| Thatch grass | 12 | 88 |
| Construction material | 83 | 17 |
| Crafts | 41 | 59 |

Source: Survey

Traditional healers (*ngaka*) can be either male or female. Sale of wild medicines can therefore be done by either sex. There are a variety of reasons for this strong pattern of gender differentiation. One of them is the physique needed to do certain jobs. For example, chopping trees is an extremely strenuous activity for which men are naturally advantaged. Another reason is economic, efficient handicraft making requires two adults (one collector of raw materials, one processing and making of crafts), so that in a two-parent household, both sexes can be involved. The increasing number of female-headed households is gradually shifting some of the roles which are traditionally male responsibilities to females, thus limiting the efficiency derived from a male headed and two or more adult households.

CPR Use and Age

Different individuals and households use different resources at different ages. Although hard data are difficult to get, fieldwork evidence showed children, and particularly poor children, depended heavily on wild foods at certain times. For example, 33% of school children ate breakfast at home before their often long walk to school. Besides supplementary school feeding, most children relied heavily on the gathering of wild foods (wild fruits) on their trips to and from school. These items formed the bulk of food intake for schoolchildren until the evening meal at home. Similarly, when herding livestock children can spend the whole day away from the homestead, during which time they are expected to forage for wild foods to feed themselves. Certain foods are regarded as unfit for adult consumption. There is age differentiation with respect to wild food. Although children may eat a wide variety of insects and wild fruits, adults consume a much more restricted set of these foods. Adulthood and marriage brings a boom in construction uses. Every man must provide for his wife a kitchen hut and bedroom hut, causing a rapid surge in construction activity and associated firewood use, construction poles, roofing poles, thatching grass, and bark-based ropes and fibres for binding the thatch to the roof (Table 3).

Eighty four percent of the households in the overall sample depend on fuel wood as a source of energy for cooking. A number of households also use natural resource products to construct houses. In Chobe, 61% of the households used thatch for their houses; 76 % used local materials, such as poles, mud and reeds, for constructing

walls and the same percentage used mud for the floors of their houses. The figures for utilisation are higher for Ghanzi/Kgalagadi where in most cases the shelter is built with completely material from the forests. Construction pole demand is higher for persons who are less than 35 years. This can be explained by the fact that they are within the initial marriage, hence the need to build new huts, kraal and fence for farms. Similarly firewood demand is higher for the subgroup which may be explained by the role a newly married woman plays in which she has collect firewood for her own homestead as well as the in-laws homestead.

Table 3 Average Harvests by Different Age Groups

| CPR Commodity | Less than 35 | 35-60 | More than 60 |
|---------------------------------|---------------------|--------------|---------------------|
| Construction poles | 110.04 | 90.11 | 95.48 |
| Grapple plant (kg) | 0.61 | 0.68 | 0.65 |
| Phane (50 kg bags) | 0.27 | 0.24 | 0.24 |
| Vegetables(kg) | 4.91 | 7.67 | 6.77 |
| Thatch grass (bundles) | 18.20 | 52.60 | 43.01 |
| Stones (w/b ² loads) | 2.03 | 34.72 | 27.04 |
| Firewood | 175.41 | 146.87 | 155.37 |

Source: Survey

The acquisition of livestock requires building a kraal. Finally, as individuals age, their resource demands alter again. Older individuals have difficulty carrying out arduous tasks, and reduce per capita food production. In response, they depend more on wild foods (and on transfers). For similar reasons, older individuals can no longer conduct certain economic activities, such collect firewood and poles for sale, all of which demand considerable effort. Instead they turn to activities where collection of resource inputs is free of entry barriers, and which demand little physical labour, such as collecting wild vegetables and fruit. For all these reasons, then, the character of CPR utilisation alters over the lifecycle of individuals and households.

CPR Use Household Headship

CPR use can also be affected by household structure. An imperfect proxy here is to stratify the income data by gender of the household head. For *de facto female-headed*

2 Wheel burrow

households, remittances dominate the income accounts, comprising more 50% of total income. These households are cash rich, allowing them to purchase more and collect less food. The *de facto female-headed* households have a small proportion of their income derived from subsistence consumption of CPRs. The lowest share of their income is derived from the consumption of wild foods and have the lowest share of total income derived from total CPR income. However, the effect of gender stratification on CPR utilisation has certain implications. This stratification means that households' activity portfolios will differ systematically partly due to their gender composition. Certain households' gender composition means that various resource activities are closed off to them. The household head categories demonstrating this most clearly are *de jure female-headed* households with the head having never married, divorced or widowed as well as male-headed households without adult females. In the former, which lack adult male labour, restrictions on women's CPR activities show up in a distinctive pattern of CPR cash income, with shares of total income derived from sales of home brewed beer, wild fruits and thatch grass being the largest of any household head type. In the latter are those households headed by divorced or widowed males. Generally, the defining feature of divorced or widowed male-headed households is a lack of female labour to carry out the essential tasks of fetching water and collecting firewood, which adult males are incapable of doing. This implies that such households require cash to hire in labour for these activities. To earn cash, these households turn to certain CPRs and use them intensively. In both regions, these households generated significant income shares from CPR sub-components linked to classic male activities such as hunting, and thatching. In general, these households are highly dependent on CPR. These contributed more than 50% of total income in Chobe and as much as 68% in Ghanzi/Kgalagadi.

CPR and Cash Income

Access to cash income plays a critical role in determining household prosperity. Certain key economic transactions require cash, such as purchasing of foods, purchasing of agricultural inputs, and so on. To examine the role played by CPR in generating cash income, individual cash income sources are expressed as a share of total cash income per capita. Once again, the most striking finding is the systematic, negative relationship between the CPR cash income share and income quintile. The

share of total CPR income falls monotonically as income quintile rises. Thus, the lowest quintile derived almost half its cash income from CPR sources. This proportion fell to 33 percent or more for the middle 60 percent of households and to 22 percent for the richest 18 percent. So the poorest households are highly dependent on CPR to generate the cash income that they require to conduct major economic transactions. This is the case mainly among the *Basarwa*. The counterpart to the declining CPR cash income share is the rising share of cash derived from remittances and, less significantly from large livestock. Entry barriers stop poorer individuals from involving themselves in such economic activities, hence their reliance more than anyone else on CPRs to generate cash. Gathering commodities such as the grapple plant and the *mophane* worms (the larval stage of the moth *Gonimbrasia belina*) from the CPRs, generate a lot of cash income to poorer households albeit to the detriment of the resource. Generally *Phane* occurs in the eastern and northern parts of Botswana and grapple plant in the southwestern parts of the country. In regard to the study area, *Phane* occurs in Chobe while Devil's claw occurs in Ghanzi/Kgalagadi. The highly nutritious *mophane* worm has even become an export product. There has been a significant increase in the commercial value of the *Phane* caterpillars over the past few years. Although some vendors sell the caterpillars in markets, the bulk of the harvest is purchased by local buyers (in 50 kg bags) who then export the caterpillars to some South African retailers at a high profit. The current prices paid to harvesters by the buyers have not been determined. Respondents say the prices range between P50 and P100 per bag, depending on the remoteness of the source. Grapple plant, although a good source of cash income for people in Ghanzi/Kgalagadi has not fared as well as *Phane*. Generally prices are low and thus induce overexploitation of the resource.

CPR and Livestock Production

The importance of livestock production to rural households is well known. However, the conventional surveys often underestimate its contribution to household welfare. Livestock is not only used as source of draught power but also as a safety net as well source of cash need to meet emergency needs of the households. In order to associate this important source of income with CPRs use, the study assessed the extent of dependence of livestock farmers on CPRs for fodder. Farmers in the study area have a

limited range of supply options for fodder, namely commercial fodder, communal rangelands. Fodder use does not vary systematically across households. In general poorer households again depend more heavily on CPR derived fodder than richer households (100%) without any supplementary feeding. Even for richer households, CPR grazing has a significant value share except that 58% of richer households provide supplementary feeding for their livestock in the form of bone meal, salts, etc. Thus CPR is an important source of fodder and hence an important input into livestock production for all households.

Conclusions

The outstanding finding of this research is the substantial quantitative contribution that CPRs make to rural households' incomes. There are two obvious implications of this finding. The first is that many households and in particular poorer households depend very heavily on CPRs. Therefore, the sustainable management of CPRs will be of great importance to the welfare of these households. The second is that, by ignoring the contribution of CPR utilisation, quantitative measurements of many rural phenomena such as incomes, consumption, expenditure, nutrition, agricultural productivity and even economic growth may have been significantly not representative of the true picture of rural economies. This under representation of rural economies varies by location and by survey date, but given the results in the previous chapter, the quantitative magnitudes are potentially large in the case of Botswana.

The significant contribution of CPR to household income offers both opportunities to rural economies as well as a threat of CPRs themselves. Generally there are growing concerns about the increasing and often unsustainable exploitation of medicinal plants world-wide. In the case of Botswana there are growing threats to veld products that have an established and growing international market. Utilising veldproducts is not as systematic and lucrative as wildlife utilisation, as government regulations are not yet definitive and harvesting, processing and marketing techniques are still being forged. One major veld product is the Devil's Claw (*Harpagophytum procumbens*), which provides both threat and opportunity. As with many wild-harvested medicinal plants, as demand for the resource grows without the implementation of sustainable resource

management, the resource is depleted. In the case of Devil's Claw the threats to the resource and to the livelihoods of the people who are its principal harvesters are clearly linked to the nature of a trade which is dominated by unsustainable management. This endangers the resource itself, and exploitatively in that those people who do most of the harvesting receive almost none of the value of the product in return. The tubers are dug up in remote rural areas, often under arduous conditions. They are then sliced into thin discs which are dried in the sun before being bagged and sold to exporters via an informal and often very long chain of middle-women. Most of the harvesters of Devil's Claw are from poor, marginalised communities such as *Basarwa* with few if any other opportunities for cash income. Harvesters are paid extremely low prices or in consumer goods or alcohol or sometimes not at all.

Unsustainable growing practices are encouraged by the low prices and the unpredictability of the market encourage unsustainable practice on the part of harvesters because by including the taproot and so, of course, killing the plant, more weight is added. Furthermore, because harvesters rarely have much, if any prior knowledge of the arrival of a buyer or of when or whether s/he will come again, they are desperate to take each opportunity for sale as it comes and so harvest as quickly as possible. They tend to include the taproot rather than take the time to refill the hole around it so that the plant can regenerate. As a result the plant is most under pressure in areas where people are most dependent on its survival. Establishment of sustainable and fair trading of Devil's Claw can significantly improve the income of harvesting communities and at the same time satisfy the needs of buyers looking for good quality Devil's law. Given that for *Basarwa* the sale of Devil's Claw is often their sole source of income and until this project started, they often had little choice but to sell their cut and dried Devil's Claw for as little as 10 pence/kg. Although harvesters allocated quotas according to the findings of an ecological survey, there is no monitoring of harvesting itself.

Direct links between harvesters and buyers may lead to prices that are purely market led. By creating as direct a link as possible between the harvesters and the international buyers who want good quality, fair trade produce which is certified as organic, much higher prices can be secured by the harvesters from buyers attracted by the higher returns of such products. This in turn contributes to the protection of the resource

because with higher prices and a predictable market it is in the harvesters' interests to harvest sustainably so that they can be sure of an income in subsequent years.

Benefits to the rural communities would be through the economies of scale resulting from selling, as community marketing co-operative, especially with regard to transport, should increase the benefit to each community and harvester. Crucial to the long-term sustainability of such venture is the establishment of an institutionalised structure controlled by and therefore representative of the interests of the harvesters themselves. Eventually, the communities should have direct contact with traders in Europe and be able to organise the collection; export of and income accruing from trade in Devil's Claw. For this to happen, participating communities must organise themselves into some form of legal entities in order to be able to trade in their own names. The government can assist in establishment of such a body linking participating communities and the wider market place would also enable those communities to use the same structure to facilitate the marketing of other potentially viable veld or craft products. Crafts co-operatives, can provide a small but important source of cash using an indigenous skill base. In Botswana, crafts are a loosely structured as co-operative, which acts as a middleman, buying crafts and selling them for the artisans. The structure is simple and accessible, and its purpose straightforward. Used as a starter activity, the process of decision-making and handling of earnings could be observed prior to complex tourism ventures. Furthermore, crafts groups usually have a higher percentage of female participants. Crafts group members are mainly women, and this provides a crucial source of income for female-headed households.

A 1997 study on Poverty and Poverty Alleviation undertaken by the Botswana Institute for Development Policy Analysis (BIDPA), reported that the national poverty rate had declined sharply from 59 percent in 1985 to 47 percent in 1994. In 2002/3 national income poverty was estimated at 32.89 percent, and subsequently in 2005/06 was estimated at 30.2 percent. . In some parts of the country poverty is endemic and for many livelihoods depends on destitute payments by the state. This situation persist mainly in the smallest settlements often referred to as remote area dwellers (RADs) who reside in settlements and cattle posts, as well as villages. RAD households are still highly dependent for their survival on rapidly depleting natural resources. The BIDPA study estimated that at least 62 percent of the poor or very

poor lived in rural areas. In all, 48 percent of rural households were estimated to be poor or very poor. Our findings from this study underscores BIDPA findings that the incidence of poverty is high in rural areas and that CPRs or commodities derived from CPRs plays a vital role in supplementing incomes of rural households.

Many of Botswana's poorest people live in the remote areas. The most severe poverty is in the rural southwest of Botswana (in Ghanzi and Kagalahadi Districts, and in western parts of Kweneng and Southern districts, where most of the Basarwa³ and other ethnic minorities live. Here some 71 percent of the population were found to be poor in 1997, and 59 percent were classified as very poor. Botswana government in the past embarked on policies which augment incomes of rural poor, among which is the Remote Area Development Program (RADP) of 1978, which was initially targeted towards Basarwa (San People) but later targeted towards citizens of Botswana who live in remote areas. The basic premise of this program is that the primary constraint to remote area development and poverty reduction was geographic, and had also to do with inadequate access to basic social services. The Community Based Natural Resource Management (CBNRM), which has been implemented in Botswana since 1992. Policymakers have sought to attain two goals: (1) increased conservation of wildlife and wildlife habitat; and (2) improved social and economic welfare in rural communities. CBNRM assumes that if ownership rights or custodianship and management responsibilities for wildlife are transferred to rural communities. The CBNRM relies heavily on the use CPR products as incentives to for a sustainable management biological resources such as wildlife for improved wellbeing of rural households and rural development, underscoring the potential significant role CPRs have in alleviating poverty. These findings also show that female-headed households tend to be more reliant on CPRs. Although gender is a key factor in socio-economic relationships, with incidence of poverty being high among female-headed households, policy makers rarely consider gender implications of community conservation strategies such as the CBNRM. Furthermore, the findings show that poor rural households in Botswana have limited diversified income sources, with commodities from CPRs such income from the sale of crafts, raw materials accounting for a significant proportion of household income. Therefore, policy interventions should be

³ San people of Botswana who constitutes an ethnic minority.

geared towards enhancing the productivity CPRs as well as promoting their sustainable use.

This study gives a few insights into the role CPRs in rural household economic welfare. Thus much work remains in with respect to issues raised by these questions. There is need for further research to address the following questions: how does the inclusion of CPR income as a source of economic value improve conservation of such resources? Does inclusion of CPR contribution change the view of rural poverty and inequality? How does the fact of economic differentiation in CPR commodities alter the analysis of sustainability? Most fundamentally, why are rural households generally so dependent on CPRs? What are the dynamics of this process? How might policy encourage investment in rather than destruction of CPRs, given these rates of resource dependence and resource use?

References

- Adams, M., Cousins, B. and Manona, S. (2000) *Land Tenure and Economic Development in Rural South Africa*. pp. 111-128. In: Cousins, B. (Eds.).
- Ashley, C. and LaFranchi, C. (1997) *Livelihood Strategies of Rural Households in Caprivi: Implications for Conservancies and Natural Resource Management*. DEA Research Discussion Paper 20. Windhoek: DEA.
- Baland, Jean-Marie and Platteau, Jean-Philippe. 1996. *Halting Degradation of Natural Resources: Is There a Role for Rural Communities?* Oxford: Food and Agriculture Organization and Clarendon Press.
- Baland, Jean-Marie and Platteau, Jean-Philippe. 1997. *Wealth Inequality and Efficiency in the Commons: The Unregulated Case*. Oxford Economic Papers 49: 451-482.
- Beck, Tony and Cathy Nesmith. 1999. *Building on Poor People's Capacities: The Case of Common Property Resources in India and West Africa*. Paper presented at a World Bank Conference on "Poverty, environment, growth linkages" Washington DC, 24-25th March 1999
- Berkes, Fikret. 1989. *Common Property Resources: Ecology and Community- Based Sustainable Development*. London: Belhaven Press.
- BIDPA (1997). *A Study on Poverty and Poverty Alleviation in Botswana*. MFDP.
- Cavendish, W. (1999) *Empirical Regularities in the Poverty-Environment Relationship of African Rural Households*. WPS 99-21.
- Hasler R. (1991) *The Political and Socio-Economic Dynamics of Natural Resource Management: The CAMPFIRE Programme in Chapoto Ward 1989-1990*. CASS. University of Zimbabwe. Harare.
- Jodha, N. S. 1986. *Common Property Resources and Rural Poor in Dry Regions of India*. Economic and Political Weekly 21, no. 27 (July 5):1169-81.

Jodha, Narpat. S. 1995. *Common Property Resources and the Dynamics of Rural Poverty in India's Dry Regions*. Unasylva 180. Vol.46: 23-29.

Keohane, Robert O. and Ostrom, Elinor (eds.). 1994. *Local Commons and Global Interdependence: Heterogeneity and Cooperation in Two Domains*. London: Sage Publications.

McAllister, P. (2000) *Maize yields in the Transkei: How Productive is Subsistence Cultivation?* PLAAS Occasional Paper Series no. 14. Cape Town: University of the Western Cape.

Shackleton S, Shackleton C and Cousins B (2000), *Revaluation of the Communal Lands of Southern Africa: New Understandings of Rural Livelihoods.*, ODI Perspectives Number 62.