




Do Environmental Resources Help Reduce Poverty?

A Study of Indigenous Communities in South Africa

Abstract

This CEEPA study from South Africa looks at the contribution that environmental resources make to the welfare of the San and Mier communities, who live adjacent to the Kgalagadi Transfrontier Park (KTP) in the Northern Cape Province. It finds that these communities are highly dependent on environmental resources, especially the poorest households and that, on average, environmental income makes up 20% of their income. As well as shielding households from poverty, environmental resources (such as wood, medicines and bush meat) reduce income inequalities amongst them.

There are current proposal to grant local communities access to environmental resources inside the KTP. Given its findings, the study concludes that this policy proposal will have a positive impact on household welfare. However, the study underscores the need for environmental resource extraction to be sustainably managed, to balance ecological and socio-economic needs. It also highlights the need for any development policy to be pro-poor to avoid the marginalisation of the less well-off by families who are better placed to help themselves. 



Fuel wood is a key environmental resource

A summary of CEEPA Discussion Paper No.XX: 'Environmental Resources Dependence And Household Welfare In The Kalahari Drylands Of South Africa' by Gladman Thondhlana and Edwin Muchapondwa.

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Report Summary

In recent years, there has been a growing interest in the extent to which rural households in developing countries depend on the goods and services provided by environmental resources. These resources can have a significant value to households and can help reduce poverty. What's more, information on environmental income can be important for conservation policy makers, as it can help determine the impact of limiting access to environmental resources on poor communities.

Despite an increase in the number of studies on environmental resource-poverty links world-wide, most studies in South Africa have been based on agrarian-based societies and have not been from arid areas such as the Kalahari where crop production is not practiced. Furthermore, there is a limited understanding of the contribution of environmental resource to the livelihoods of typically indigenous communities such as the San and Mier. This study therefore aimed to help fill this information gap. It also aimed to provide relevant policy advice for the management of the study region and, especially, the KTP.

The study had three key research objectives. Firstly, to see how dependent different income groups were on environmental resources; secondly, to investigate the role of environmental income on poverty and income inequality; and thirdly, to examine how the use of environmental resources is affected by various household and community socio-economic factors.

The Study Area and the Study Communities

The San and Mier communities are two culturally different groups. The Mier people are generally involved in wage employment and livestock production. In contrast, the San do not generally work for other people, but undertake resource utilization work for themselves. The San and Mier people are the original inhabitants of the Kalahari drylands but were forcibly displaced from their ancestral land. Following a land claim, in 1999 the two communities were allocated more than 80,000 hectares of resettlement farms outside the Kgalagadi Transfrontier Park (KTP), and a further 50,000 hectares of land in the KTP. There were an estimated 163 San households or 1,000 people and 6,000 Mier households at the time of the land-claim.

The KTP is situated in the Northern Cape Province. The Northern Cape is the largest but driest province in South Africa. It has an average rainfall of less than 200 mm per year, so crop production is virtually impossible without irrigation. The region ranks amongst the worst in the country in terms of poverty and income inequalities.

“ Environmental resources provide an important buffer against poverty. ”

Collecting Information on Environmental Resource Use

The information for the study was collected through a structured survey of 200 households (100 San, 100 Mier). These households were all drawn from community groups that had benefitted from the 1999 land claim. Household heads and other decision makers were interviewed.

Information was collected on households' socio-economic characteristics. Information was also collected on all the types of resources harvested, the volumes of harvests, harvesting frequencies, harvesting locations, the use of resources, whether or not harvests were for the market and the prices of marketed goods. Resource use diaries were used to validate the information received. Twenty-five households in each community were randomly selected to record their resource use. The diaries were filled in for three months with close supervision from the researcher.

Analysing the Collected Information

Environmental income was calculated as the sum of subsistence and cash incomes from wild natural resources including wild foods, medicinal plants, fuelwood, bushmeat and crafts.

To measure income inequality, the households were divided into five groups (or quintiles) based on their income. The Gini coefficient of the households' income spread was then calculated (the higher the Gini coefficient the less equal the distribution of income). The level of income diversification amongst the two communities was assessed by calculating the degree to which household income was concentrated into various income sources. (This was done using the Herfindahl index – the lower the index the more diversified an income portfolio). An Ordinary Least Squares (OLS) approach was used to estimate the effect of selected explanatory variables on environmental income. The impact of characteristics such as non-farm income, age, education, gender, household size, membership in organisations and the value of livestock herds (amongst others) was also assessed.

How Much is Environmental Income Worth?

Mean household income across all income sources was ZAR 35,631 (about ZAR 6,842 per capita) per year. This is slightly above the poverty line of ZAR 6,180 per capita per year. Wages made the largest contribution (36%) to household income, followed by social grants (27%). However there were huge differences in the magnitude and sources of household income between and within the study groups.

On average, households derived around ZAR 6,925 (20% of total income) per year from environmental income. This included natural resource-based earnings and resources consumed at a household level, such as fuelwood, medicinal plants, bushmeat and wild foods. It was clear that environmental resources provided more subsistence “in kind” income than cash income to local people.

Key sources of environmental income

Source	Mean net annual household income \pm SE (in ZAR)	Contribution to environmental income (%)
Fuelwood	5 460 \pm 733	79
Crafts	888 \pm 215	13
Bush meat	497 \pm 164	7
Medicinal plants	101 \pm 70	1
Wild plant foods	0 \pm 1	<1
All sources combined	6 950 \pm 818	100

On average, the value of fuelwood was ZAR 5,460 per household per year. This means that fuelwood alone constituted almost 80% of the total environmental income in the two communities. Fuelwood is particularly important because 86% of all sample households used fuelwood for cooking and heating. The second major contributor to environmental income was crafts made from natural materials (13%), though this was only practiced by 17% of San households.

Medicinal plants were used by about 60% of the households while bushmeat was hunted by just 39% of the respondents (mostly San households). Total income from bushmeat, wild food plants and medicinal plants ranged from ZAR1 to ZAR 4,97 per year. Although these values are low, interviews with key informants revealed that crafts, bushmeat, wild foods and medicinal plants have a high cultural value, especially for the San.

The Impact of Environmental Resources on Poverty

Environmental resources in the study area provide an important buffer against poverty. For example, the study found that the proportion of people living below the poverty line would increase from 60% to 72% if environmental income was removed. The severity of poverty would also increase (from 47% to 54%) if this happened.

Income share from environmental resources was highest (31%) for the poorest group (1st quintile) and decreased to 18% for the richest (fifth quintile). However, the richest group derived roughly two to six times more income from environmental resources than the other income groups. This shows that, while poor households depend more on environmental resources, the well-off may get more benefit from them in absolute terms.

The study found that environmental resources reduce income disparities. The calculated Gini coefficient with environmental income was 0.45 (when


environmental resources were not factored in it was 0.51). Furthermore, environmental income clearly acted as an insurance against falling deeper into poverty, especially for many poorer households. Environmental income also acted as an important “buffer” in and during times of change and crisis.

Environmental resources were also used as a form of household income diversification across all the income groups. The Herfindahl index fell from 0.34 to below 0.25 when environmental income was factored in. Environmental resource use was determined by a number of factors including the age of household heads, income and asset endowments. For example, high income and asset-rich households were able to maximise resource extraction as compared to asset-poor households. Poorer households were unable to break entry barriers (e.g. costs, access to transport) into high-return activities, with the result that they were locked into a poverty cycle. Different community groups also used environmental resources in different ways, with the San community showing more environmental resource use than the Mier. This was explained by the San’s close association with nature.

What This Means for Policy Makers

From a policy perspective, the findings imply that promoting and allowing resource access (such as that planned by the KTP) can help reduce poverty and livelihood insecurity for rural households. It is also clear that a lack of access to income from environmental resources may force local people to prioritise environmental resource extraction over the long-term, sustainable management of the environment. However, the study highlights the fact that poorly designed, implemented and monitored resource extraction could lead to environmental degradation. It therefore recommends that access to environmental resources should be carefully planned and allowed only within biological limits.

The study highlights a number of factors that influence environmental resource use. It therefore recommends that conservation policies targeted at improving resource use, such as the one proposed by the KTP, should take these intra- and inter-community factors into account. In particular, policy makers should consider the different patterns of income and asset endowment between user groups and the cultural differences between communities.

The study concludes by noting that, although environmental resources can play an important role in rural household welfare, they cannot be considered as the panacea for poverty reduction. Rather, they should be complemented by alternative sources of income and innovative development programmes. These should include: programmes for improving access to proper job opportunities, credit and market facilities for livestock production, payment for ecosystem services and the provision of alternative energy sources. Such efforts can provide poor rural households with alternative means to escape poverty and become relatively well-off, while maintaining the resource base that sustains their livelihoods. 

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