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2016

http://hdl.handle.net/10539/21725

Ragie, Fatima Hassen (2016) Relationships between household resource dependence, socio-economic factors, and livelihood strategies: a case study from Bushbuckridge, South Africa, University of Witwatersrand, Johannesburg, <http://wiredspace.wits.ac.za/handle/10539/21725>

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RELATIONSHIPS BETWEEN HOUSEHOLD RESOURCE DEPENDENCE, SOCIO-ECONOMIC FACTORS, AND LIVELIHOOD STRATEGIES: A CASE STUDY FROM BUSHBUCKRIDGE, SOUTH AFRICA

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4 August 2016



The abstract of a dissertation submitted to the Faculty of Science, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Masters of Science

ABSTRACT

Environmental income in rural socio-ecological systems consists of the monetary and non-monetary value derived by people from non-agricultural ecosystem goods and services that are sourced from wild or uncultivated natural systems. This environmental income forms an important part of rural households' diversified livelihood income portfolios and includes resources like fuelwood, herbs, fruits, game, medicinal plants and other materials that are used for clothing, shelter, arts and crafts. Rural households also depend on income from two other land-based income streams, crop farming and livestock husbandry, and off-farm activities income stream, which includes grants and wages, for both consumption and cash generation. While rural livelihoods are becoming increasingly reliant on off-farm income, land-based livelihood income streams (including environmental income) still play an important supplementary role, especially to satisfy subsistence needs.

Past studies in the developing world have quantified livelihood incomes and have often associated these income values to the socio-economic characteristics of households. However, neither do these studies examine the different livelihood income streams collectively as a portfolio, nor do they sufficiently account for and create understanding around the correlations within the suites of influencing factors. Livelihoods are often analysed using frameworks that are used to understand households' livelihood income portfolios, especially their environmental income dependencies, in relation to influencing factors. These frameworks can be useful tools to gain a quantitative understanding of households' livelihood income portfolios.

This study aimed to quantify and understand the contribution of environmental income to rural households as part of their diversified livelihood portfolios and relate these livelihood portfolios to household socio-economic characteristics and adopted livelihood strategies using the Sustainable Livelihoods Approach (SLA) framework. Interviews were conducted during 2010 in 590 households spread across nine villages in the Bushbuckridge region, Mpumalanga, South Africa. The interviews focussed on the quantification of four livelihood income streams — environmental, livestock, crops and off-farm. These income streams were assessed at three points of assessment (POAs) in the livelihood income chain — the initial, primary income value into the household, the value used for household consumption, and the amount of cash generated. Livelihood incomes were analysed using summary statistics, frequency distributions and ordinations. These were used to gauge the value of these incomes to individual households as well as to the system as a whole, in both absolute terms and relative to each other. Ordinations were then used to explore the relationships between variables within the suite of household socio-economic characteristics and within the suite of adopted household livelihood strategies, and finally incorporating both. Lastly, the proportional

environmental income dependencies of households were explored using global fractional logit generalised linear models (GLMs). The models first included the socio-economic characteristics as explanatory variables, and then the adopted livelihood strategies.

Almost all households used the environmental, crop and off-farm income streams for primary income and consumption, with the primary income from off-farm activities being in the form of cash generation. In contrast, less than 12% of households were involved in the primary collection and consumption of livestock income. In general, fewer households were involved in the cash generation from the land-based livelihood income streams. However, these sellers represented a larger fraction of users for the livestock income stream then when compared to the other two land-based income streams. While livestock income was used less frequently than the other two land-based income streams, it was comparatively as valuable as the off-farm income stream to its users. Overall, absolute changes in the correlated land-based income streams were not related to the off-farm income streams. Relative variation in livestock primary income was related to the relative variation in primary income values from off-farm activities. Relative variation in the crops and environmental cash generation was related to corresponding cash generation values from off-farm activities. Whether the livelihood incomes were examined for primary income, consumption or cash generation, the worth of the different livelihoods were valued differently to the socio-ecological system as a whole compared to their value to households that were involved in those activities, and their value to individuals within households.

The collective variations at all POAs of the land-based strategies were associated with different sets of household socio-economic characteristics and adopted livelihood strategies, compared to the sets that were associated with the off-farm livelihood income stream. Factors that were associated with an income stream at one POA did not necessarily have the same association at the other POAs. The choice of adopted livelihood strategies reduces the need to understand and account for all factors that influences the translation of different types of capital, which includes household socio-economic characteristics, into livelihood incomes. This simplified connection is crucial to standardising and creating models that can be put into practice at all POAs within the livelihood chain in these socio-ecological systems. Furthermore, proportional environmental income dependencies can be useful for evaluating how the worth of environmental income is related quantitatively to influencing factors. However, many of the dynamics between influencing factors and the income streams that contribute to environmental income stream are not captured.

The methodological approach used in this study in analysing the livelihoods of households in the Bushbuckridge region provides a standardised framework of analysis. The quantification of the

livelihood data in common monetary units at the three different POAs of primary income, household consumption and cash generation, allows the analysis to be expanded to different platforms of understanding. The collective understanding of the variation between the different income streams can be expanded to understand the worth of these income streams to households and individuals within these households, as well as to understand the worth of these income streams to the socio-ecological system as a whole. When combining the collective understanding of the income portfolios at the different POAs with a collective understanding of the suite of household socio-economic characteristics or with a collective understanding of the suite of adopted livelihood strategies, a platform for understanding the dynamics within livelihoods is created. This has potential for creating workable predictive models of environmental income dependency in these systems, especially using the adopted livelihood strategies. The results of this dissertation also raise caution that analyses of these socio-ecological systems needs to be interpreted at all POAs simultaneously with the collective understanding of the links between incomes and socio-economic characteristics, and with the links between incomes and adopted livelihood strategies.

There is more value during strategic planning in asking how to encourage a set of adopted livelihood strategies that are associated with the desired dependencies than asking which socio-economic household factors are likely to result in said dependencies. Policy intervention in the area that is aimed at increasing households' dependence on land-based activities needs to differentiate whether it will be encouraging the subsistence sourcing and consumption of resources, or will it encourage the cash generation from these income streams. Particular attention needs to be paid as to which households will be addressed. It will be wiser to implement some interventions across all households and rather focus other interventions on a few more involved households.