



CONFERENCE
Strategies to Overcome Poverty & Inequality
"Towards Carnegie III"
University of Cape Town, 3 - 7 September 2012



This paper was presented at "Towards Carnegie III", a conference held at the University of Cape Town from 3 to 7 September 2012.

Please note that copyright is held by the author/s of the paper, and it may not be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information retrieval systems, without express permission from the paper's author/s.

**NATURAL RESOURCE RICHNESS MITIGATES AGAINST INCOME POVERTY
AND LIVELIHOOD VULNERABILITY**

Charlie Shackleton & Sheona Shackleton

Dept of Environmental Science, Rhodes University, Grahamstown, South Africa

ABSTRACT

Although it is well appreciated by scholars and policy-makers that poverty (and its correlates of insecurity and vulnerability) is a multifaceted concept and experience, the need to measure and quantify it usually results in only a few metrics being widely used and reported. Most of these metrics are based on economic or social attributes. Rarely are biological resource attributes included. Yet, this paper will present accumulating evidence from South Africa and internationally not only of the dependence of marginalised (rural and urban) and poor communities on natural biological resources (such a fuelwood, wild foods, building materials, medicinal products) for daily living and income generation, but that (i) such use extensively mitigates against income and asset poverty, (ii) in certain contexts can alleviate income poverty and (iii) it significantly reduces vulnerability to local and wider shocks. Use of such biological resources typically provides 15 – 25 % of total income to rural households in South Africa, and for many households surpasses incomes from arable cropping and livestock combined. It is markedly higher amongst poorer and vulnerable households and in neighbouring countries, where it can be over 40 %. Without access to such biological resources, income poverty levels and vulnerability would be appreciably greater, placing a greater burden on the State and donor agencies. Promoting and securing access to a diversity of natural biological resources thus needs to be integral to any debates or programmes around poverty alleviation. Informal trade in such resources is worth billions of Rands annually, but only weakly supported by development and government agencies and at times actively curtailed by conservation agencies. The social, economic and cultural value of such trade needs recognition through development of integrated perspectives and policies on how best to support it without jeopardising the sustainability of the harvested resources and associated ecosystem services.

1. INTRODUCTION

The multifaceted nature of poverty and human well-being has long been appreciated (Alkire 2002), spanning aspects such as health, access to services, energy security, food security and sufficient income, to meet the requirements for a decent life. Yet, monitoring programmes, debates, and policies frequently select just a single, or a handful of metrics to quantify and track trends in poverty and well-being (Waglé 2008). For example, the most widely used index of relative wealth (and poverty) at a national or regional scale remains the Gross Domestic Product, which is based solely on measures of economic production. Attempts to broaden the mensuration and quantification of poverty resulted in use of indices such as the Human Development Index (HDI) which is based on a mean aggregate measure across three attributes, namely Life expectancy at birth, GDP per capita and Education levels as measured by the mean number of years of schooling. The Human Poverty Index is similar, being a composite index of life expectancy, adult illiteracy rates and access to safe or improved water sources. Dissatisfaction with such indices that consider only a few facets of poverty or well-being resulted in the UNDP recently introducing the Multidimensional Poverty Index (MPI). However, this still concentrates on the education, health and living standards sectors, but draws in more measures (two under education, two under health and six under standard of living) to develop the overall index. Whilst such composite indices are useful for comparative purposes, no single one can cover all dimensions, and hence an array of easily defined and measured indices are viewed by some commentators as a better option (Ravallion 2011).

Whether a single composite index or an array of indices is used, relatively few of the empirical variables measured draw on environmental or biological attributes (Comim et al. 2009). There remains a strong reliance on economic and social variables when attempting to quantify poverty or well-being. This may be a reflection of the scarcity of biologists or environmentalists participating in poverty studies and debates, or that biological variables are harder to quantify in a systematic and comparable manner and so are avoided. Irrespective, we argue that this omission has resulted in (i) an under-appreciation of the role that biological resources and natural environments play in human well-being and alleviation of poverty and (ii) quantification of poverty in terms and measures that ignore the realities and core components of local livelihoods in many regions of the world. The purpose of this paper is to demonstrate this by drawing on work in southern Africa.

2. CONCEPTUALISING THE LINKS BETWEEN ENVIRONMENTAL CONDITION AND POVERTY

The importance of a relatively intact environment to underpin human well-being was strongly advocated by the Millennium Ecosystem Assessment (2005). Natural and modified environments offer a variety of goods and services, termed ecosystem goods and services, that are the foundation for all facets of human endeavour and well-being, from materials for shelter, food and health, to support systems that drive nutrient and hydrological cycles and provide recreational and spiritual contentment. Thus, a reduction in environmental integrity or quality can lead to a change in the quantity and quality of the ecosystem goods and services provided for human benefit; for example forest fragmentation in Costa Rica has been linked to declining quantity and quality of coffee production due to loss of pollinators (Ricketts *et al.* 2004), or a decline in water quality increases the incidence of disease (Ashbolt 2004). These changes result in opportunities and constraints on local livelihoods, the magnitude of which is dependent on the (i) livelihood strategies typical of the region under scrutiny and (ii) government responses. In rural, agrarian or underdeveloped regions, the links between environmental goods and services is direct and immediately obvious. In more urban and developed contexts, the links are less obvious, but are nonetheless significant, especially for, but not restricted to, the urban poor. Typically the focus has been on maximising the benefits for humans from having an intact, diverse and productive environment. However, poverty can also be reduced by minimising the adverse impacts of environmental factors on human endeavours, such as flooding, crop pests and wild fires. Collectively these have been termed ecosystem dis-services (Zhang *et al.* 2007).

3. DIRECT CONSUMPTION OF WILD NATURAL RESOURCES

There is a growing wealth of resource valuation and livelihood studies that have revealed the importance and magnitude of wild resource consumption by rural communities in sub-Saharan Africa. However, significantly fewer have considered the use of such resources relative to other livelihood sectors and can thereby illustrate the proportional contributions (Table 1).

Table 1: The proportional contribution of wild biological resources to rural household total net income.

Country	Site	Rel. contribution to hh income (%)	Source
South Africa	Makua	28.2	Crookes (2003)
	Manganeng	22.0	Crookes (2003)
	Thorndale	19.3	Dovie (2001)
	Makushane/Mashishimale	48.0	Ward (2012)
	Macubini	7.2	Ward (2012)
Ethiopia	Tigray	27.1	Babulo et al. (2009)
	Oromiya	38.2	Tesfaye et al. (2011)
	Dendi	39.0	Mamo et al. (2007)
Ghana		38.0	Appiah et al. (2009)
Malawi	Chiradzulu	15.0	Kamanga et al. (2009)
Uganda	Rwenzori	18.7	Tumusiime et al. (2011)
Zimbabwe		17.2	Cavendish (2002)
	Mutangi & Romwe	15.2	Campbell <i>et al.</i> (2002)
	Shindi	22 – 23 [#]	Cavendish (2000)
Cameroon	Mount Cameroon	4 – 20 %	Ambrose-Oji (2003)

[#] gross income

These studies show that when all income streams are included, the contribution from wild biological resources typically accounts for between one-quarter and one-fifth of net total household income, but can be close to one-half in some situations. Vedeld et al. (2007) reported a mean contribution of 22 % across 51 studies worldwide. This is a meaningful contribution, which if not available to collecting households (through overuse, infrastructural development or harvesting restrictions) would result in significantly deeper poverty levels. For example, Toillier et al. (2011) describe how conservation restrictions on forest access and use in eastern Madagascar resulted in some households having to reduce food consumption levels or migrate away in search of other livelihoods, whilst others increased the cropping frequency catalysing declining yields. Madubansi & Shackleton (2007) reported how harvesting distances and time of firewood increased in the face of declining stocks.

Not only are the contributions in rural areas high, the relative contribution to household incomes received from wild biological resources frequently equals or exceeds that from other land based livelihood activities, i.e. arable agriculture or livestock husbandry, and at times both combined. The review by Shackleton *et al.* (2001) first argued this, and has since been substantiated by more refined empirical studies (Table 2). Yet the natural resource sector rarely receives the same level of

governmental support, investment and regulation that the two agricultural sectors do. Indeed, whilst most countries have supportive policies and extension services for arable agriculture and animal husbandry, the extension services in the natural resource sector typically play a constraining role rather than promotion of sustainable use, incomes and poverty alleviation (Shackleton 2009).

Table 2: Relative contributions of natural resources, arable cropping and animal husbandry to household income.

Country	Site	Relative contribution to total hh income (%)			Source
		Natural resources	Arable cropping	Animal husbandry	
South Africa	Thorndale	19	16	23	Dovie (2001)
	Makhushane/Mashishimale	48	14	1	Ward (2012)
	Machubini	7	2	18	
Uganda	Bigodi (*)	57	30	13	Gosling (2011)
Ethiopia	Tigray	27	43	16	Babulo et al. (2009)
	Oromiya	38	17	32	Tesfaye et al. (2011)
Zambia	Maeve	43	18	20	Mutamba (unpubl.)
	Nkhulwashi	49	13	30	
	14 Miles	44	7	16	
	Sosal	49	14	9	

(*) proportional contribution of these three sectors only, not to total cash incomes

The use and value of wild resources is not the domain solely of rural communities and households. Several sectoral studies have revealed the importance of firewood (or charcoal), medicinal plants and bushmeat to urban populations for both consumptive and cultural purposes (Lawes et al. 2004). The recent work of Davenport *et al.* (2012), Ward (2012) and Evans (2012) has examined the proportional contributions of all income streams in and around several urban sites in South Africa. Davenport *et al.* (2012) reported that 13.8% of total household income for township dwellers of three towns in the Eastern Cape came from collection and use of wild biological resources (with livestock contributing 3.7 % and urban agriculture 1.0 %). They reported that between 27 % and 70 % of township households in the three sites used at least one wild biological resource. The figures from Ward (2012) and Evans (2012) were a lot lower for Queenstown (Eastern Cape) and Phalaborwa (Limpopo Province). Averaged across the two towns, natural resources contributed 2.1 % to incomes of township dwellers and 0.2 % of residents in the town suburbs. In comparison, urban agriculture provided 3 % for township residents and 0.2 % for town residents and livestock

contributed 0.3 % and 1.4 % respectively. In calculating total incomes, both Davenport *et al.* (2012) and Ward (2012) evaluated them against poverty line benchmarks, both with and without the contribution of wild biological resources. Averaged across the three towns Davenport *et al.* (2012) found that 12 % more township households (from 46.7 % to 58.7 % of households) would fall below the poverty line if the contributions of wild biological resources were unavailable to them. Corresponding figures from Ward (2012) for Phalaborwa was 7 % and Queenstown 1 % more.

The benefits of household use are not just from home consumption but are also important in terms of cash saving. Being able to collect and use wild natural resources to meet daily needs for energy, shelter, food and medicine, allows scarce cash resources to be used to secure other household needs and the accumulation of assets towards a more secure livelihood. This includes education of children, investment in agricultural tools, capital for income generation activities, and the like. For example, the direct-use value of firewood is over R2,000 per household per year. Such a cost saving would best be reflected by replacement values of the goods that the wild resources substitute, rather than direct-use value based on farm-gate prices. This needs to then be summed across the wide number of resources used. Thus, it is several thousands of Rands per household per year (Shackleton & Shackleton 2004). The magnitude of the cost saving is greater to poorer households than for wealthier households simply by virtue of the reduced total income sources and sizes for poor households (Cavendish 2000, Shackleton & Shackleton 2006). Moreover, the cost saving has benefits not only at the household level, but also the national level (Shackleton *et al.* 2007). The role of daily use of wild natural resources in the provision of energy, food, medicine and shelter to the rural poor alleviates some of the costs that the government would incur had it to provide these services in rural areas (although at a higher social cost). Thus, the government has a vested interest in ensuring the sustainable supply and use of these resources until it is capable of providing such services.

4. TRADE IN WILD NATURAL RESOURCES

Wild biological resources are not used solely within the household, but are also the domain of much small- and large-scale trade to generate cash incomes. In south and southern Africa, there are millions of consumers of traditional medicines, firewood, edible plants and insects. There are widespread trade networks between towns, provinces and countries in the region in each of these. The aggregate values are hard to estimate, but run into billions of rand per annum. In most instances

this trade is unregulated and uncounted in income surveys, and consequently absent from much of the poverty debates.

Disaggregating the national picture down to a household or individual level reveals large heterogeneity in involvement and in income earned (Shackleton et al. 2008). At one level, millions engage in petty trade as a part time or ad hoc activity and hence the income earned is low. Nonetheless, it might be sufficient to pay school fees, a debt, or purchase necessary items such as a school uniform, a water tank or some agricultural implements. At another level, some local entrepreneurs trade in wild biological products as a full-time occupation and may earn cash incomes well above poverty line levels. Shackleton et al. (2008) describe how some save sufficient to pay the considerable university fees for their children. Some of these local enterprises employ assistants to help harvest the resource or help in value adding processes. Incomes per hour from such full-time trade are normally several times above the rates paid to unskilled workers in the agricultural sector, assuming that such wage labour opportunities are available, which is often not the case (Shackleton et al. 2007). No wonder there is a perception amongst traders that the number of people engaging in trade is increasing (increasing (Shackleton et al. 2008, Weyer 2011). Shackleton et al. (2008) reported that 50 % of the traders they interviewed would not opt for alternative employment or income sources.

5. WILD NATURAL RESOURCES AS SAFETY NETS

For many households and communities poverty is transient with levels fluctuating through time in response to a host of external and local drivers (Barrett 2005, Radeny et al. 2012). Where these external drivers are sharp and unexpected (such as a death in the household, chronic illness, crop pests or livestock diseases, floods, fires, retrenchment), households employ a variety of coping strategies in an attempt to offset or buffer the negative impacts. If prolonged, these strategies may evolve into more or less permanent adaptive strategies. In the absence of viable coping or adaptive strategies affected households or communities may subside into deeper or acute poverty.

Coping strategies under such adverse circumstances have been explored by numerous social science disciplines, notably sociology, anthropology, medicine and economics. It is well noted across these disciplines that a widespread and frequent coping strategy is for households affected by such

idiosyncratic shocks to turn to kin and neighbours for assistance (such a borrowing of cash, consumptive goods or assets) or liquidation of assets or drawing down of savings (#ref). However, relatively few of these studies have included the use of wild natural resources as a coping strategy in times of adversity. Shackleton & Shackleton (2004) describe three ways in which use of wild biological resources can act as a safety net or coping strategy. First is the increased use of a resource that is already part of the household livelihood activities. For example, increased use of firewood to substitute for electricity or paraffin. The second is to the temporary inclusion of wild resources not typically part of the livelihood portfolio. For example, consumption of wild foods instead of purchased or grown food. The third is for the afflicted household to engage in temporary trade in one or more wild biological resources to generate cash income.

There is increasing evidence that wild biological resources are indeed crucial in times of shock for many households, especially in rural and poorer communities. For example, Paumgarten and Shackleton (2011) recorded coping strategies by afflicted household in two villages spanning a two year period. Turning to kin and neighbours was the most frequently used coping strategy for all households. Thereafter, use of wild resources was the second most common strategy for poorer households, many of whom turned to temporary trade in wild biological resources. In contrast, for richer households it was only the fifth most common strategy, none of which engaged in trade. Weyer (2011) reported that trade and increased consumption together was the most common strategy amongst a large sample of traders across five southern African countries. McGarry & Shackleton (2009a, b) reported significantly increased hunting and consumption of wild animal protein (including small mammals, insects, birds, and reptiles) by children in HIV/AIDS vulnerable households relative to non-vulnerable households, and Hunter et al. (2011) revealed increased natural resource use and who collects in the face of adult mortality from HIV/AIDS. Weyer (2011) showed that approximately half of traders in wild biological resources initially entered the trade as a coping strategy in response to a shock to the household, mainly death or retrenchment of a breadwinner. Indeed, many other studies have shown that most small-scale vendors of wild resources recount that the initial impetus for them taking to vending was some household hardship, especially for those with limited or no education (Rogerson & Sithole 2001, Shackleton et al. 2008, Weyer 2011). Nearly all detailed case studies of specific wild resource product industries or descriptions of rural household dynamics reveal the use of a coping strategy based on one or more of the three safety-net forms mentioned above, at some time or other. It is a ubiquitous phenomenon, the contribution of which to poverty alleviation or mitigation should not be underestimated by

development agencies. Importantly, the efficacy of kin or friend based coping strategies is limited in the face of covariate shocks, as all are adversely affected. In such situations, turning to wild resources may well be the key coping strategy.

6. WHO BENEFITS THE MOST FROM WILD BIOLOGICAL RESOURCES?

The preceding sections provide ample evidence of the importance of wild biological resources to most rural and some urban households in South and sub-Saharan Africa. Yet, when considering poverty dynamics and their measurement and appropriate policies, a more nuanced picture is required because there is considerable regional, community and household heterogeneity. The same applies with respect to natural resource use. There is substantive and growing evidence that it is the poorest households that are most reliant on wild natural resources as measured by proportional contributions to total household income. For example, the share of total household income to the poorest households in a community obtained from wild natural resources can be two to six times higher than the case for wealthy households within the same community (Shackleton et al. 2008, Kamanga et al. 2009). The quantities used are also typically higher (Shackleton & Shackleton 2006), even in urban communities (Brouwer & Falcão 2004).

7. CONCLUSIONS

Given the evidence presented above, a number of conclusions can be drawn regarding the role and importance of wild biological resource to livelihoods in southern Africa and their importance in poverty mitigation or alleviation.

1. Use of wild biological resource is widespread, and that such use represents considerable economic value at the national and local scale, which translates into significant income at the household level.
2. There is considerable heterogeneity at all scales, which demands that debates and interventions are targeted at the appropriate scale and at the poorest households or areas.
3. Because of the above, any actions, trends or shocks that jeopardise or diminish the supply or security of access to wild biological resources can result in a worsening of poverty for affected households or communities.
4. Consequently, any investment in securing access to natural resources, or improvement in their availability, management and yield, can be deemed as a poverty reduction strategy.

5. The contribution of wild biological resources needs to be included in debates on poverty as well as poverty measures.

8. POLICY CONSIDERATIONS

A supportive policy environment which recognises that wild natural resources can make a significant and sustainable contribution to the livelihoods of the rural and urban poor. More specifically, the use of and trade in natural resources needs to be viewed as a complementary rural development option and a vital part of the growing non-farm rural economy. Some of the policy issues and messages proposed by Shackleton & Shackleton (2011) are repeated below. These range from the broad to specific; all point to the need for government to give greater priority to wild natural resources and to invest more in natural resources related activities.

8.1 Recognise wild natural resources as integral to all aspects of rural welfare and culture

Wild natural resources need to be acknowledged as integral to rural people's welfare, livelihoods and culture. Their importance in providing housing, health care, employment, etc. needs to be recognised by a much wider range of stakeholders and sectoral departments than is presently the case. Support for natural resources should form part of an integrated strategy for poverty reduction and rural development. Risk reducing natural resource activities should be incorporated into pro-poor development strategies and policies (e.g. Sustainable Development Strategy, Rural Development Strategy) and recognised in local and regional development planning initiatives (e.g. Provincial Growth and Development Strategies, Local Economic Development Plans) (Hay 2004). Resource degradation and land transformation comes with considerable environmental and social cost and is jeopardising the livelihoods of the poor.

8.2 View wild natural resources as on a par with other rural development sectors

While poorly recognised, the trade in natural resources is as significant as many other rural development activities. Most of the local trade in wild natural resources is viable and competitive with other similar small-scale activities, is self-driven, and has little drain on the economy. Yet it does not receive the same support or subsidisation as other rural sectors, notably agriculture and livestock production. Work from Botswana has shown how investment in marketing and training substantially increased producers' incomes, providing a livelihood for people who would have otherwise been supported by more costly state welfare grants (Terry 1999). Marcus (2000) mentions

that investing in local craft production activities “is likely to have immediate and long-term social and economic benefits that are essential to development at the community level”. Such an approach is supported by the White Paper on Social Welfare (Department of Welfare 1997) that advocates for a shift to supporting people to help themselves, rather than just the conception of welfare as handouts (May 1999).

8.3 Protect the role of wild natural resources in subsistence and food security

The critical safety-net role played by countless wild resources needs to be protected, as in many situations access to these resources prevents further poverty and deprivation. This is particularly relevant with respect to food security and the HIV/AIDS pandemic and the predicted dire impacts of global warming on agricultural systems in Africa’s dry regions. This means recognising and paying attention to the importance of subsistence uses of natural resources and finding ways to ensure the sustainable management of these. Currently, the national and provincial government departments pay only lip to this (Shackleton 2009). It needs to be a mainstay of rural extension and development services.

8.4 Develop and implement a supportive extension service

In the rural areas of southern Africa, most governments supply extension services in support of arable and livestock farming. Very few offer supportive equivalent services for the natural resource sector around sustainable harvest approaches, management options, markets and value addition. Most simply have restrictive policing against harvesting. Given that livelihood incomes from the natural resources sector are equivalent or more than these farming sectors, government should commit to provide supportive extension services to improve management and livelihood benefits.

8.5 Develop political support for and national pride in traditional natural resource based products

Political support for wild natural resources and the products derived from these can enhance their profile. In Namibia, for instance, the Minister of Forestry is outspoken regarding the value of important indigenous species such as marula (*Sclerocarya birrea*), and a cross-departmental, multi-stakeholder task team known as the Indigenous Fruit Task Team was formed to promote this sector (Schreckenberg 2003). This has since evolved into the broader Indigenous Plants Task Team. In Mexico some items such as embroidered pita palm belts are considered items of international prestige and exchanged as gifts with visiting heads of state (Schreckenberg *et al.* 2006).

“Domestic markets usually provide larger and more stable outlets than some of the industrial and niche export markets that have tended to attract the attention of intervention programmes recently” (Arnold & Townson 1998). Many producers successfully market their goods locally and in

urban townships, regionally and nationally. There is a marked demand for traditional products and those with cultural significance (such as brooms, medicines, mats) (e.g. Cocks & Dold 2004a, b). Urban demand could be further stimulated through cultural initiatives and the spirit of the African Renaissance. Contemporary variations on traditional items could also be developed by tapping into the interior design market to reach yet more consumers (Kotze 2001).

8.6 Improve resource access and management to achieve sustainability

There is a need to improve access and rights to resources on State land and, in some instances, communal land. Despite policy (and rhetoric) to the contrary, resources on State land, other than those managed by the Department of Water Affairs and Forestry, are still difficult for producers to access. Some of the species used (e.g. thatch grass, reeds, woodroses, wild fruits and spinaches) show good potential for sustainable use, providing an ideal opportunity for conservation managers to demonstrate their commitment to rural neighbours and to involve local producers in resource management efforts. Advocacy is needed to translate this opportunity into practice. In communal areas, institutional weaknesses are resulting in some local contestation over who has access rights to particular resources, while also contributing to the poor management of these resources, threatening their long-term sustainability. Major government effort and commitment is required to rebuild and support local institutions for natural resource management in the communal areas of the country (Lawes *et al.* 2004). The need to manage the resource base is one of the central features differentiating the natural resource trade from other spheres of local production and income generation; it implies that supporting and promoting the trade must go hand in hand with effective management of the resource.

8.7 Build on what exists

Considerable local initiative and energy exists with regard to the harvesting and sale of natural resources. Support needs to be directed at stimulating and promoting this already vibrant sector (Mead & Liedholm 1998, Martin 2004). Too often rural development initiatives focus on group or cooperative type projects that tend to be restrictive and exclusive (Philip 2002), and on the development of new skills and products that often have poor or high-risk market potential. The focus on new, high value-added markets (e.g. rainforest crunch – Dove 1993) has tended to obscure what people have been doing for themselves often over long periods of time (Arnold 2002 Shackleton 2005). Intervention should focus, certainly initially, on improving conditions and removing obstacles to current trade and building on this to reach new markets, as has been so successfully done by the NTFP Exchange Network in Asia (see <http://www.ntfp.org>).

8.8 Recognise the complexity and heterogeneity of the sector

The diversity of products, markets and livelihood outcomes of natural resource product commercialisation need to be recognised and appreciated. While it is possible to draw certain tentative conclusions and to emphasise broad patterns in order to influence policy and national and international frameworks, the complex reality means that practice and intervention will often need to be designed on a more case or 'client' specific basis (Mead & Liedholm 1998, Lawes et al. 2004, Shackleton et al. 2008).

8.9 Minimise regulatory barriers

While the barriers to entry for natural resource trading are usually minimal, allowing some of the poorest people to participate, there are a range of obstacles (mainly related to regulation) which constrain productivity. For example, informal trading laws that discriminate against seasonal and poor producers and traders in the market place have been pointed out in numerous studies (e.g. Gyan & Shackleton 2005, Rogerson 2004). National legislation may also present barriers (Scherr et al. 2004, Sunderland & Ndoye 2004); for example, marula beer producers encountered legal difficulties selling alcohol and were frequently harassed by formal, licensed dealers. Unnecessary bureaucracy and unhelpful, even obtuse, officials are commonly articulated problems in terms of both marketing and raw material access. In some situations the permitting system to harvest or cultivate particular species especially for commercial use may be overly bureaucratic, sometimes prompting producers to act illegally. In other instances numerous legal and capacity hurdles exist. The requirements for a business licence, for example, assumes literacy and a certain basic level of income and assets, which can prevent poor, uneducated, small-scale entrepreneurs or community-based enterprises from moving from the informal to the formal sector. Unnecessarily complex procedure and legislative barriers to collecting and trading in wild resources and in expanding markets thus need to be revised based on the principle of 'less is more' that is appropriate for many such systems if they are going to be pro-poor (Wynberg & Laird 2007).

8.10 Provide flexible business support to build trade volumes and networks

A framework for institutional support by government and other agencies for the natural resource trade is required (also see Rogerson 2004). This should take an integrated and flexible approach, and include support for both locally and internationally marketed products. This support could come in various forms. For example, Terry (1999), in her policy implications for the craft industry in Botswana, suggested subsidisation of the sector as a route to assist producers. This included subsidised transport, assistance with marketing (e.g. a government supported buyer), accessing new markets and training. Marcus (2000) and Kotze (2001) also mention the potential benefits of

facilitated purchasing and marketing. Numerous studies highlight the need for skills training and capacity building as key areas for intervention (e.g. Terry 1999, DACST 1998, Marcus 2000, Rogerson 2000, Scherr et al. 2004, Campbell et al. 2006). Such training could build skills for the production of new and improved products (product development) as well as better entrepreneurial practice. Building organisational and institutional capacity by assisting producers to organise themselves better so that they have an identity, and can lobby and negotiate with different stakeholders regarding their needs, undertake group activities such as sharing transport to distant markets, and cooperate in terms of, for example, price fixing, etc. is a critical area of intervention (Scherr et al. 2004, WRI 2005, Campbell et al. 2006). Campbell et al. (2002) suggest that institutional functioning is a key variable determining livelihood outcomes, and stress that intervention for poverty alleviation must work on strengthening local organisations. Another potential support role would be to link local producers with private production and marketing organisations (Scherr et al. 2004, WRI 2005), and to encourage outsourcing.

REFERENCES

- Alkire, S. 2002. Dimensions of human development. *World Development*, 30: 181-205.
- Ambrose-Oji, B. 2003. The contribution of NTFPs to the livelihoods of the 'forest poor': evidence from the tropical forest zone of south-west Cameroon. *International Forestry Review* 5, 106-117.
- Appiah, M., Blay, D., Damnyag, L., Dwomoh, F.K., Pappinen, A. & Luukkanen. 2009. Dependence on forest resources and tropical deforestation in Ghana. *Environment, Development & Sustainability*, 11: 471-487.
- Arnold, J.E.M. 2002. Clarifying the links between forests and poverty reduction. *International Forestry Review*, 4: 231-234.
- Arnold, J.E.M. & Townson, I. 1998. Assessing the potential of forest product activities to contribute to rural incomes in Africa. *Natural Resource Perspectives* No. 37. Overseas Development Institute (ODI), London
- Ashbolt, N.J. 2004. Microbial contamination of drinking water and disease outcomes in developing regions. *Toxicology*, 198: 229-238.
- Babulo, B., Muys, B., Nega, F., Tollens, E., Nyssen, J., Deckers, J. & Mathijs, E. 2009. The economic contribution of forest resource use to rural livelihoods in Tigray, Northern Ethiopia. *Forest Policy & Economics*, 11: 109-117.
- Barrett, C.B. 2005. Rural poverty dynamics: development policy implications. *Agricultural Economics*, 32: 45-60.
- Brouwer, R. & Falcão, M.P. 2004. Wood fuel consumption in Maputo, Mozambique. *Biomass & Bioenergy*, 27: 233-245.
- Campbell, B.M., Cunningham, A.B. & Belcher, B. 2006. Carving out a future – planning for woodcarving into the 21st century. In: Campbell, B.M., Cunningham, A.B. & Belcher, B. (Eds.). *Carving out a future: tropical forests, livelihoods and the international woodcarving trade*. Earthscan.

Campbell, B.M., Jeffery, S., Kozanayi, W., Luckert, M., Mutamba, M. and Zindi, C. 2002. *Household livelihoods in semi-arid regions: options and constraints*. CIFOR, Bogor. 153 pp.

Cavendish, W. 2000. Empirical irregularities in the poverty-environment relationship of rural households: evidence from Zimbabwe. *World Development* 28, 1979-2003.

Cavendish, W. 2002. Quantitative methods for estimating the economic value of resource use to rural households. In: Campbell, B.M. and Luckert, M.K. (eds). *Uncovering the hidden harvest: valuation methods for woodland and forest resources*. Earthscan, London. pp. 17- 65.

Cocks, M.L. & Dold, A.P. 2004a. A new broom sweeps clean: the economic and cultural value of grass brooms in Eastern Cape Province, South Africa. *Forests, Trees and Livelihoods*, 13: 33-42.

Cocks, M.L. & Dold, A.P. 2004b. The informal trade of *Cassipourea flanaganii* as a cosmetic in South Africa. In: Sunderland, T. and Ndoye, O. (Eds). *Forest products, livelihoods and conservation. Case studies of non-timber forest product systems. Volume 2: Africa*. Centre for International Forestry Research (CIFOR), Bogor. Pp 73-90.

Comim, F., Kumar, P. & Sirven, N. 2009. Poverty and environment links: an illustration from Africa. *Journal of International Development*. 21: 447-469.

Crookes, D. 2003. The contribution of livelihood activities in the Limpopo Province: case study evidence from Makua and Manganeng. *Development southern Africa* 20, 143-159.

DACST 1998. *The South African Craft Industries Report*. Dept of Arts and Culture, Pretoria. 132 pp.

Davenport, N.A., Shackleton, C.M. & Gambiza, J. 2012. The direct use value of municipal commonage goods and services to urban households in the Eastern Cape, South Africa. *Land Use Policy*, 29: 548-557.

Department of Welfare. 1997. Social welfare white paper, August 1997. Principles, guidelines, recommendations, proposed policies and programmes for developmental social welfare in South Africa. Department of Welfare (now Department of Social Development), Government of South Africa, Pretoria. <http://www.welfare.gov.za/documents/1997/wp.htm>.

Dove, M.R. 1993. A revisionist view of tropical deforestation and development. *Environmental Conservation*, 20: 17-25.

Dovie, D. 2001. *Woodland resource utilisation, valuation and rural livelihoods*. M.Sc. thesis, University of the Witwatersrand, Johannesburg. 149 pp.

Evans, M. 2012. *Changing livelihoods along the rural-urban continuum*. M.Sc., Rhodes University, Grahamstown. 186 pp.

Gosling, A. 2011. *A case study of Bigodi Wetland Sanctuary as a community driven Community-based Natural Resource Management initiative: maintaining livelihoods and wetland health*. M.Sc., Rhodes University, Grahamstown. 185 pp.

Gyan, C.A. & Shackleton, C.M. 2005. Abundance and commercialisation of *Phoenix reclinata* in the King Williamstown area, South Africa. *Journal of Tropical Forest Science* 17, 334-345.

Hay, D. 2004. Delivering support to crafters. *Delivery: The magazine for local government*, Spring 2004: 54.

Hunter, L.M., Twine, W.C. & Johnson, A. 2011. Adult mortality and natural resource use in rural South Africa: Evidence from the Agincourt Health and Demographic Surveillance Site. *Society & Natural Resources*, 24: 256-275.

- Kamanga, P., Vedeld, P. & Sjaastad, E. 2009. Forest incomes and rural livelihoods in Chiradzulu District, Malawi. *Ecological Economics*, 68: 613-624.
- Kotze, D.C. 2001. Promoting crafts woven from wetland plants: Guidelines for fieldworkers and other stakeholders. Unpublished report, Institute of Natural Resources (INR) and Centre for Environment and Development (CED), University of Natal, Pietermaritzburg.
- Lawes, M., Eeley, H., Shackleton, C.M. & Geach, B. (eds). 2004. *Indigenous forests and woodlands in South Africa: policy, people and practice*. University of KwaZulu-Natal Press, Pietermaritzburg. 863 pp.
- Madubansi, M. & Shackleton, C.M. 2007. Changes in fuelwood use and species selection following electrification in the Bushbuckridge lowveld, South Africa. *Journal of Environmental Management*, 83: 416-426.
- Mamo, G., Sjaastad, E. & Vedeld, P. 2007. Economic dependence on forest resources: A case from Dendi District, Ethiopia. *Forest Policy & Economics*, 9: 916-927.
- Marcus, T. 2000. Crafting in the context of AIDS and rural poverty: a livelihood strategy with prospects. *Transformation* 44, 17-35.
- May, J. (ed). 1999. *Poverty and inequality in South Africa: meeting the challenge*. David Phillip, Cape Town. 304 pp
- McGarry, D.K. & Shackleton, C.M. 2009. Is HIV/AIDS jeopardising biodiversity? *Environmental Conservation*, 36: 5-7.
- McGarry, D.K. & Shackleton, C.M. 2009. Children navigating rural poverty: rural children's use of wild resources to counteract food insecurity in the Eastern Cape province, South Africa. *Journal of Children & Poverty*, 15: 19-37.
- MEA (Millennium Ecosystem Assessment) 2005. *Ecosystems and human well-being: synthesis*. Island Press, Washington DC.
- Mead, D.C. & Liedholm, C. 1998. The dynamics of micro and small enterprises in developing countries. *World Development*, 26: 61-74.
- Paumgarten, F. & Shackleton, C.M. 2011. The role of non-timber forest products in household coping strategies in South Africa: the influence of household wealth and gender. *Population & Environment*, 33: 108-131.
- Radeny, M., van den Berg & Schipper, R. 2012. Rural poverty dynamics in Kenya: structural declines and stochastic escapes. *World Development*, 40: 1577-1593.
- Ravallion, M. 2011. On multidimensional indices of poverty. *Journal of Economic Inequality*, 9: 235-248.
- Ricketts, T.H., Daily, G.C., Ehrlich, P.R. & Michener, C.D. 2004. Economic value of tropical forest to coffee production. *Proceedings of the National Academy of Science*, 101: 12579-12582
- Rogerson, C.M. 2004. The impact of the South African government's SMME programmes: a ten-year review (1994-2003). *Development Southern Africa*, 21: 765-784.
- Rogerson, C.M. & Sithole, P.M. 2001. Rural handicraft production in Mpumalanga, South Africa: organization, problems and support needs. *South African Geographical Journal* 83, 149-158.
- Scherr, S.J., White, A. & Kaimowitz, D. 2003. *A new agenda for forest conservation and poverty reduction. Making markets work for low income producers*. Forest Trends and Centre for International Forestry Research. Forest Trends, Washington, D.C.

Schreckenber, K. 2003. Appropriate ownership models for natural product-based small and medium enterprises and Namibia. Unpublished report, Trade and Investment Development Programme, Ministry of Trade and Industry, Namibia.

Schreckenber, K., Rushton, J., Bojanic, A. & Fabrice, E. 2006. Policies, laws and institutions. What framework for NTFP commercialisation. In: E. Marshall, K.

Schreckenber, K. & Newton, A.C. (Eds.). Commercialization of non-timber forest product: Factors influencing success. Lessons learned from Mexico and Bolivia and policy implications for decision-makers (pp. 71-76). Cambridge: UNEP World Conservation Monitoring Centre.

Shackleton, C.M. 2009. Will the real custodian of natural resource management please stand up? *South African Journal of Science*, 105: 91-93.

Shackleton, C.M. & Shackleton, S.E. 2004. The importance of non-timber forest products in rural livelihood security and as safety-nets: evidence from South Africa. *South African Journal of Science*, 100: 658-664.

Shackleton, C.M. & Shackleton, S.E. 2006. Household wealth status and natural resource use in the Kat River Valley, South Africa. *Ecological Economics*, 57: 306-317.

Shackleton, S.E. & Shackleton, C.M. 2011. Exploring the role of wild natural resources in poverty alleviation with an emphasis on South Africa. In: Hebinck, P. & Shackleton, C.M. (eds). *Reforming land and resource use in South Africa: impact on livelihoods*. Routledge, London. pp. 209-234.

Shackleton, C.M., Shackleton, S.E. & Cousins, B. 2001. The role of land-based strategies in rural livelihoods: the contribution of arable production, animal husbandry and natural resource harvesting. *Development southern Africa*, 18: 581-604.

Shackleton, S.E. 2005. The significance of local level trade in natural resource products for livelihoods and poverty alleviation in South Africa. PhD thesis, Rhodes University. 287 pp.

Shackleton, S.E., Campbell, B., Lotz-Sisitka, H. & Shackleton, C.M. 2008. Links between the local trade in natural products, livelihoods and poverty alleviation in a semi-arid region of South Africa. *World Development*, 36: 505-526.

Sunderland, T. & Ndoye, O. (Eds). *Forest products, livelihoods and conservation. Case studies of non-timber forest product systems. Volume 2: Africa*. Centre for International Forestry Research (CIFOR), Bogor.

Terry, E.M. 1999. The economic and social significance of the handicraft industry in Botswana. Unpublished PhD thesis, School for Oriental and African Studies, University of London, London.

Tesfaye, Y., Roos, A., Campbell, B.M. & Bohlin, F. 2011. Livelihood strategies and the role of forest income in participatory-managed forests of Dodola area in the bale highlands, southern Ethiopia. *Forest Policy & Economics*, 13: 258-265.

Toillier, A., Serpantié, G., Hervé, D. & Lardon, S. 2011. Livelihood strategies and land use changes in response to conservation: pitfalls of community-based forest management in Madagascar. *Journal of Sustainable Forestry*, 30: 20-56.

Tumusiime, D.M., Vedeld, P. & Gombya-Ssembajjwe, W. . 2011. Breaking the law? Illegal livelihoods from a Protected Area in Uganda. *Forest Policy & Economics*, 13: 273-283.

Vedeld, P., Angelsen, A., Bojō, Sjaastad, E. & Kobugabe-Berg, G. 2007. Forest environmental incomes and the rural poor. *Forest Policy & Economics*, 9: 869-879.

Waglé, U.R. 2008. Multidimensional poverty: An alternative measurement approach for the United States. *Social Science Research* 37: 559-580.

Ward, C.D. 2012. *Livelihood changes along the rural-urban continuum with an emphasis on natural resources*. M.Sc., Rhodes University, Grahamstown. 151 pp. (*)

Weyer, D. 2011. *Assessing linkages between local ecological knowledge, HIV/AIDS and the commercialisation of natural resources across southern Africa*. M.Sc., Rhodes University, Grahamstown. 169 pp.

WRI. 2005. *World Resources 2005. The wealth of the poor. Managing ecosystems to fight poverty*. World Resources Institute, UNDP, UNEP and World Bank. Washington D.C., World Resources Institute (WRI).

Wynberg, R.P. and Laird, S.A. 2007. Less is often more: governance of a non-timber forest product, marula (*Sclerocarya birrea* subsp. *caffra*) in southern Africa. *International Forestry Review*, 9: 475-490.

Zhang, W., Ricketts, T.H., Kremen, C., Carney, K. & Swinton, S.M. 2007. Ecosystems services and dis-services to agriculture. *Ecological Economics*, 64: 253-260.