Contribution of dry forests to rural livelihoods and the national economy in Zambia

Charles B.L. Jumbe, S. M Bwalya and M. Husselman

This paper analyses the extent to which dry forests contribute to rural livelihoods and the national economy in Zambia. We used case studies drawn from literature, data collected from a household survey conducted in eight sites in three of the nine provinces and secondary data from the Central Statistical Office and the Department of Forestry in Zambia. From the analysis, several products contribute significantly to rural livelihoods and the national economy. Most notably, charcoal and firewood provide 70 percent of the country’s energy needs. A wide range of wild foods are common in rural diets, providing essential vitamins and minerals; more than ten leafy vegetable species, twenty-five mushroom types and thirty-five edible species of caterpillars. At the national level, forests provide revenue for the government from taxes, fees, royalties and other charges levied on forest-based activities although the relative importance is small given that the majority of forest users extract low-value products mainly for subsistence uses and only a small part of the trade is recorded. Further analysis reveals that forests are ranked the second or first important source of income in five of the eight sites. Overall, subsistence and cash income from forest products account for 20.6 percent of the total household income in the eight sites surveyed. However, there are large variations in the importance of forests in total household income and in forest income share among the poor and the rich with the poor depending more on forest products than the rich. The fact that forests are an important source of livelihood among the poor segments of the society requires government to promote policies that will harness the potential of forest to improving rural livelihoods. The main conclusion from our analysis is that although forests are recognized to have an important poverty mitigation function, they are not a means to move most people out of poverty unless strategies are put in place to promote value addition to forest products and develop markets for forest products.

Key words: Forests, Caterpillars, rural livelihoods, national economy, Sub-Saharan Africa, Zambia

Introduction

Zambia has vast forest resources covering about 42 percent of the total land area (FAO 2005). The country’s forests can be classified into three main categories: closed forests in south-western Zambia; dry woodlands of the large valleys; and the extensive miombo woodlands dominated by Brachystegia and Isoberlinia found on the plateaus throughout the rest of the country. These indigenous forests are rich in biodiversity and are home to approximately 5,500 species of flowering plants, 88 species of mosses and 146 species of ferns (Government of Zambia-GRZ, 1997). About nine percent of the forests are gazetted as protected forest areas or local forest reserves (Government of Zambia-GRZ 2006). The rest are un-gazetted, mainly found on traditional or state land and within municipalities. These un-gazetted forests fall under the jurisdiction of the Commissioner of Lands, Municipal Councils or Traditional Rulers. In addition, there are about 50,000 hectares of plantation forests managed by the Zambia Forestry and Forest Industries Corporation (ZAFFICO) in the Copperbelt Province, as well as about 10,000 hectares of local and regional forest.

1 Corresponding author: Senior Research Fellow, University of Malawi, Centre for Agricultural Research and Development, Bunda College of Agriculture, P.O. Box 219, Lilongwe, Malawi. Tel: +265 1 277433, Email: charlesjumbe@bunda.unima.mw or charlesjumbe@yahoo.com
plantations in most provinces to supply raw wood materials for pulp and paper, furniture and processed wood (Government of Zambia-GRZ 2006).

The forestry sector contributes significantly to both national and rural economy in Zambia. For example, forests are a source of energy in the forms of charcoal and firewood providing 70 percent of the country’s energy needs. In addition, a wide range of non-timber forest products such as wild foods, game and caterpillars are common in rural diets, providing essential vitamins and minerals. Many people in rural Zambia are involved in selling forest products such as firewood, timber and non-timber forest products providing an important source of income. At the national level, forests provide revenue for the government from taxes, fees, royalties and other charges levied on forest-based activities. This paper aims at quantifying the contribution of forests play to rural livelihoods by assessing whether forest resources are important engines for growth and poverty reduction, and the extent to which they provide the subsistence needs of forest users and their role in poverty prevention or avoidance in selected provinces in Zambia.

Methods

The work draws on a literature review of specific forest products used in Zambia and a household survey conducted in 2005 covering a sample of 435 households randomly selected from eight villages in three provinces with different agro-ecological and socio-economic settings. The total number of households sampled in each area was determined by the size and spatial distribution of the villages as shown in Table 1.

### Table 1: Study area and sample distribution

<table>
<thead>
<tr>
<th>Province</th>
<th>District</th>
<th>Study area</th>
<th>Main Selection feature</th>
<th>No. of households interviewed</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern</td>
<td>Kasama</td>
<td>Paul Kalemba</td>
<td>Rural, poor market access</td>
<td>Charcoal</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nseluka</td>
<td>Rural, poor market access</td>
<td>Caterpillar</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Mpika</td>
<td>Kopa Main</td>
<td>Rural, good market access</td>
<td>Caterpillars &amp; tubers</td>
<td>73</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lw itkila</td>
<td>Rural good market access</td>
<td>Caterpillars &amp; tubers</td>
<td>37</td>
</tr>
<tr>
<td>Copperbelt</td>
<td>Ndola</td>
<td>Katanino area</td>
<td>Peri-urban, good market access</td>
<td>Charcoal &amp; mushrooms</td>
<td>41</td>
</tr>
<tr>
<td>Central</td>
<td>Rural</td>
<td>Lutale</td>
<td>Rural, poor market access</td>
<td>Timber</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Mumbwa</td>
<td>Nalusanga</td>
<td>Rural, poor market access</td>
<td>Timber</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chibuluma</td>
<td>Rural, poor market access</td>
<td>Timber</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>435</td>
<td>100</td>
</tr>
</tbody>
</table>

In the Northern Province, two villages in Kasama, namely Paul Kalemba and Nseluka were sampled. The former is an important charcoal producing area whereas the latter was previously important for caterpillar harvesting. In the same province, two other villages in Chief Kopa’s area in Mpika district were sampled, where forests are predominantly on customary land and caterpillar trade is an important source of income for most households. The survey included households living around the Katanino Local Forest Reserve, which is a more urban province (Copperbelt). These households supply most of the charcoal and mushrooms in Ndola urban markets. Mumbwa district in Central Province is relatively close to the country’s capital, Lusaka, and a lot of land has been converted to agricultural fields. Here, three villages were surveyed (Lutale, Chibuluma, Nalusanga), mainly to capture information on small-scale timber operations (pit-sawing).

A pre-designed questionnaire was used to collect information from respondents on all sources of income, both cash and subsistence in all areas of activity: forestry, subsistence agriculture, cottage industries, formal and informal wage employment, transfers and remittances.
Results and Discussion

Contribution of forests to the rural household economy

Figure 1 below shows that on average, agriculture production is the main source of income accounting for 45 percent of total household income, followed by forest income (c. 20%) and trading in manufactured products (c. 20%). Forest income is the first or second most important income source in five of the eight study sites, notably those with high value forest products or good market access. In Katanino, 47.6 percent of total household income is derived from forest products, predominantly charcoal. This is mainly due to the fact that markets for these products are well developed. Similarly, many households in Paul Kalemba depend on charcoal as their main source of income, while caterpillars are a major source of income among households in Lwitikila village. Our results are comparable with those obtained from case studies in some neighboring countries by Cavendish (1999), Campbell et al. (2002) and Fisher (2004), who reported forest incomes of about 20 percent of the total household income.

From the survey, results indicate that forest-based activities such as carpentry, beekeeping and timber and rattan sales provide more than 50 percent of the average household income, but the types of forest products traded vary between areas (Puustjärvi et al. 2005). Mushrooms, fruits, leafy vegetables, tubers and insects collected from miombo woodlands are widely consumed by rural households and enrich their starch-based diets with important vitamins and minerals. These foods are often available at the start of the rainy season and thereby serving as an important gap-filler when food stocks are low (Packham, 1993; Chileshe, 2005). Most forest product harvesting and sale is seasonal, providing cash income at different times of the year. Moreover, whereas collection and trade of high value forest products such as honey and charcoal is controlled by men, mushrooms, fruits, vegetables and insects are considered activities for women and children (Chileshe, 2005).
Charcoal and firewood

Our estimates indicated that on the average, a household consumes 100 kg of dry wood per month. The average per capita income from charcoal production was 4.8 times higher than that from farming (Chidumayo, 2001). Charcoal is a source of cash income for almost half of the households in Katano, which is near large urban centers such as Ndola and Kitwe (Table 3). In Paul Kalenba, only 10 percent of the households sell charcoal earning on average ZMK1,889,250 (US$ 423) per annum. In the other study sites, less than 10 percent of households produce charcoal for sale and the farm-gate prices are lower due to the distance to urban markets. About 20 percent of all the households interviewed use charcoal mainly for domestic heating, cooking and baking.

Construction materials and timber

Following wood-fuels, construction materials (i.e. thatching grass and poles) are the most widely used forest products collected by more than 40 percent of the households in all the sites (Table 2). However, these are collected mainly for subsistence (>90%). According to the National Statistics, 68.5 percent of the rural households live in traditional dwellings, which use thatching grass and poles (CSO 2004). Miombo woodlands are not generally rich in commercial timber species with the exception of a few hardwoods (i.e. Baikiaea plurijuga, Tectona grandis and Pterocarpus angolensis) with stocking rates ranging from 0.5 to 2.0 tons per hectare (Government of Zambia-GRZ, 1997). Due to the need to pay concession fees, few households in the study sites are involved in pit timber sawing. Lutale is the main commercial timber production area where 16 percent of the households earn on average ZMK606, 250 (US$135) per year from timber sales. However, households in Paul Kalenba and Nseluka obtain even higher returns from timber production, thus, ZMK4.5 million (US$1008) and ZMK1.4 million (US$314) respectively, though only a few households are involved.

Crafts

Selling reed mats is the most profitable forest-based activity in Nalusanga and Kopa, where households involved in this enterprise earn, on average, between ZMK913,000 (US$205) and ZMK450,000 (US$101) per year, respectively, although very few households are involved (Table 3). Similarly, woodcarving may be quite profitable (i.e. in Nseluka and Chibuluma) but it is not practiced on a large scale.

Honey

Northwestern Province is the main beekeeping area in Zambia with an estimated 70 percent of the country’s beekeepers living in this province (ITC/DTCC, 2007). They produce between 90 and 95 percent of locally traded and 100 percent of the exported honey. Nearly all beekeepers are males who use the traditional bark hives suspended from branches high above the ground (Mickels-Kokwe, 2006). There are two main seasons for harvesting honey in Zambia. Collecting wild honey or keeping bees is practiced, on average, by about 20 percent of sampled households, with most honey produced in Mumbwa district, where up to half of the households are involved (Table 2). Revenues from honey sales at household level are highest in Mumbwa district and Katano: between ZMK108, 000 (US$24) per year (Table 3). Trading income from the selling of a popular local brew made from honey is very important for households in Nalusanga.

Wild fruits

Wild fruits contribute to food security and nutritional diversity at the household level. More than fifty species bearing edible fruits are found in the miombo woodlands. Farmers often retain and protect high-value indigenous fruit trees in their fields (Akkinnifesi, 2006). Selling of wild fruits is not common in most villages (<10%) due to the long distance to markets and short shelf life of the fruits. Households Nseluka earn on average ZMK108, 000 (US$24) from selling indigenous fruits (Table 3).

Roots and tubers

The prices offered for tubers in village markets are higher around Kasama and Mpika than in Ndola Rural and Mumbwa. This is mainly due to differences in tuber species preferred and sold by households in these
areas. Chikanda\(^2\) is the most commercially valuable tuber preferred by rural households in Kasama and Mpika, while households in Mumbwa prefer busala for own consumption and sale in local and district markets. Because of the high demand and over-exploitation, chikanda has been depleted in most wetlands where they occur. As a result, the local and urban price of chikanda has increased significantly over the last decade and this trend is expected to continue to increase. Apart from Chikanda, roots of various species such as Rychnosia, Eminia and Vigna are harvested to make munkoyo\(^3\), a fermented non-alcoholic beverage (Zulu et al., 1997). The roots are sold fresh or dried, but no specific data was collected on the trade of munkoyo in the selected study sites.

**Mushrooms**

Mushrooms are collected by more than half of households in all sites, but few households sell them (<10%). Approximately 25 different edible mushroom species have been documented in Zambia (Pegler and Pearce, 1980). In Chiulukire local forest, Eastern Province, eleven species are commonly collected during the rainy season (Mutale and Haamukwanza, 2000). Women are responsible for collecting the mushrooms usually when returning from their maize fields. At the rural household level, only a small proportion is consumed fresh. Ninety percent is dried, after which they are wrapped in leaves of Uapaca kirkiana and tied with fiber for later use (Mutale and Haamukwanza, 2000). The local trade in mushrooms is common though the volumes and value traded are unknown at the national level. One company in Lusaka packages dried ubowa mushrooms for sale in grocery shops and supermarkets. Selling mushrooms is most profitable in Katanino, where they fetch ZMK30, 000 (US$67) per 25 kg bag and households earn on average ZMK300, 000 (US$67) per season from selling mushrooms.

**Edible insects**

From the study, caterpillar collection is limited to Kopa and Lwitikila areas, where more than three quarters of the households collect chipumi caterpillars (Table 2). The market for these edible insects is very large in all Zambian cities and even extends to Zimbabwe and the Democratic Republic of Congo. In 2000, the farm gate price for one meda (or gallon) was more than US$4 (Mbata et al., 2002). When the bush is rich with caterpillars, harvesters can collect up to 20 liters a day (DeFoliart, 1999). Chipumi caterpillars provide cash income for 58 percent and 62 percent of the households in Kopa and Lwitikila, respectively (Table 3). Caterpillars are very seasonal and are only collected in November and December, providing households on average more than ZMK300,000 (US$67) per season in cash. In the other villages, few or no households collect caterpillars such as chipumi. Urban traders travel up to one thousand kilometers to buy caterpillars. In Kasanka National Park, Northern Province, trade in caterpillars has always been a main source of income, and local chiefs receive a handsome share of this revenue, which encourages them to promote caterpillar breeding.

**Medicinal plants**

Roots, shoots, leaves and bark of many plants, as well as animal products are used for healing diseases and protective purposes. Plant-derived medicines are used in self-treatment of common ailments, such as coughs, headaches and stomach problems. For more serious diseases, it is common for people to get medical help from traditional healers. Between 30 and 50 plant species are used for medicinal purposes and there is a flourishing market in urban areas, where traditional healers sell both plant extracts and remedies (Puustjärvi et al. 2005). On average, a healer can earn a monthly income of US$147 (Nsawan, 1998). In Chiawa chiefdom, a total of 19 different indigenous plant species such as Strychnos cocculoides, Musa species, Solanum delagoense, Ximenia caffra, Diplorhynchus condylocarpon and Croton megalobotrys are used to treat sexually transmitted diseases. All these species were found within easy reach of the villages (Ndubani and Höjer, 1999).

---

\(^2\) Chikanda is a favourite snack prepared from the roots of orchids from Disa, Habenaria and Satyrium genera. The roots are pounded mixed with peanuts and boiled to make a meat-like cake, which is eaten in a sandwich or as a relish with maize, sorghum or cassava (Bingham, 2004).

\(^3\) Munkoyo is a popular local soft drink, in particular amongst women and children, and also used during traditional ceremonies (Malungo, 2001).
Who benefits from dry forests?
Using the survey data, households in each study site were grouped into quartiles depending on their total income per capita. Within these income quartiles, the contribution of forests to total household income was calculated (Table 4).

<table>
<thead>
<tr>
<th>Household income quartiles</th>
<th>0-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>above 75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total income per capita</td>
<td>113.750</td>
<td>262.832</td>
<td>462.828</td>
<td>2,021.277</td>
</tr>
<tr>
<td>Total forest income per capita</td>
<td>73,362 (64.5)</td>
<td>125,768 (47.8)</td>
<td>147,730 (31.9)</td>
<td>245,302 (12.1)</td>
</tr>
<tr>
<td>Total agric. income per capita</td>
<td>32,444 (28.5)</td>
<td>96,967 (36.9)</td>
<td>250,379 (54.0)</td>
<td>1,035,985 (51.3)</td>
</tr>
<tr>
<td>Total employ. income per capita</td>
<td>2,047 (1.8)</td>
<td>10,642 (4.0)</td>
<td>16,109 (3.5)</td>
<td>146,471 (7.2)</td>
</tr>
<tr>
<td>Total trading income per capita</td>
<td>5,242 (4.6)</td>
<td>28,140 (10.7)</td>
<td>46,929 (10.1)</td>
<td>588,843 (29.1)</td>
</tr>
<tr>
<td>Total remit. income per capita</td>
<td>655 (0.6)</td>
<td>1,315 (0.5)</td>
<td>1,681 (0.4)</td>
<td>4,676 (0.23)</td>
</tr>
</tbody>
</table>

1 US$1.00 = Zambian Kwacha (ZMK) 4,463 as of 2005
Values in brackets are percentages of total income

It is clear that per capita household income earned by the top wealth quartile from forest gathering is three times higher than that earned by poorer households. The top quartile also stands out in terms of much higher values for agriculture, wage employment and trading than the three lower quartiles. The share of income from employment and remittances to total household income was relatively small for all quartiles. It is particularly important that 64.5 percent of income is forest income for the poorest quartile but only about 12.1 percent for the richest quartile.

Contribution of forests to the national economy
According to the official figures for Zambia, the contribution of forestry to the GDP is low (6.5%) compared to mining (8.6%) or manufacturing (10.6%). Given that GDP estimates capture traded products and not from non-traded products, the value forest products used for subsistence are not captured in the national accounts. However, forests provide about 70 percent of the energy needs (Ministry of Finance and Planning, 2002). Studies have shown that woodfuels (firewood and charcoal) are by far the largest energy source in Zambia and the major commercial forest product from indigenous forests. Annual consumption of woodfuel was estimated at more than 7.2 million tons in 2002 (FAO, 2005). Approximately 72 percent of households in Lusaka use charcoal for cooking and heating while 10 percent use firewood (Kalumiana, 1997). Charcoal consumption increased from 174,000 tons in 1990 to 245,000 tons in 2000 and is projected to reach more than 500,000 tons by 2020 (Chidumayo, 2001; Frey and Neubauer, 2001). Most charcoal comes from Lusaka, Central and Copperbelt Provinces and is sold at municipal markets, by the roadside or at homesteads (Kalumiana, 1997).

Beekeeping became an important commercial activity in Zambia when Portuguese traders from Angola came searching for beeswax in the 1890s (Clauss, 1992). The beekeeping sector was recorded as the third largest employer in Kabompo district, Northwestern Province, in 2004 (Kaithisha, 2007). Two large companies export approximately 400 metric tons of certified organic honey per year, mainly to the UK (55%) and Germany (35%) (ITC/DTCC, 2007). A significant amount of the beeswax is bought by informal Tanzanian traders to supply the cosmetics industry in Eastern Africa (Mickels-Kokwe, 2006).

Fresh mushrooms are another forest product for which urban demand exceeds local supplies, particularly during the dry season. In 2001, about 25.5 tons were imported from South Africa (Puustjärvi et al. 2005). There have been several attempts to export wild mushrooms from Zambia. For example, in 1995, Amunita Zambiana Ltd. exported 31.5 tons of chantarelles to Europe. More recent figures are from The Miombo Project in Mpongwe, which exported 1.5 tons of dried wild mushrooms in 2002 from an organically certified forest of 185,000 ha (Puustjärvi et al. 2005).

Medicinal plants make a major contribution to the Zambian economy, but data is generally scanty. There are approximately 40,000 traditional healers, locally known as n’ganga in Zambia. Healthcare may account for 35 to 60 percent of total household expenditure (Phiri and Tien, 2004) for which traditional medicines are the most accessible to the rural households than modern medicine. In addition, certain types of illnesses that are believed to be caused by witchcraft and can only be cured by a n’ganga. Again, traditional medicines...
are also believed to treat problems associated with fertility and potency (Spring, 1980). Commercial markets for medicinal plants are dominated by herbal material from dried roots and bark or bulbs and seeds. Aphrodisiacs derived from plants are sold as bottled preparations and a common sight in urban markets (Cunningham, 1993).

**Contribution of forests to government revenue**

In Zambia, forests contribute to government revenue through taxes, charges, fees and extraction royalties levied on forest operations. Table 6 shows revenue collection from forest operations by the Forestry Department between 1996 and 2003 by province. The sources of forest revenue are mainly from major commercial forest products, such as timber, poles and woodfuels. Revenue from other forest products is minimal, and may be captured through income tax from registered traders, municipal market fees, or in the case of honey, for example, through export tax.

### Table 3: National annual returns from sale of forest products and services (Inflation adjusted, Zambian Kwacha 2003)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>Na</td>
<td>155,649,402</td>
<td>332,330,893</td>
<td>619,946,624</td>
<td>181,671,922</td>
</tr>
<tr>
<td>Copperbelt</td>
<td>557,432,328</td>
<td>1,071,409,818</td>
<td>734,448,003</td>
<td>981,059,942</td>
<td>178,541,505</td>
</tr>
<tr>
<td>Eastern</td>
<td>210,848,807</td>
<td>412,469,892</td>
<td>253,702,743</td>
<td>188,618,827</td>
<td>81,358,801</td>
</tr>
<tr>
<td>Luapula</td>
<td>-</td>
<td>61,494,262</td>
<td>196,257,863</td>
<td>84,702,921</td>
<td>48,589,732</td>
</tr>
<tr>
<td>Lusaka</td>
<td>144,587,197</td>
<td>423,016,120</td>
<td>435,161,357</td>
<td>386,660,843</td>
<td>144,809,605</td>
</tr>
<tr>
<td>Northern</td>
<td>505,128,284</td>
<td>82,487,724</td>
<td>522,560,297</td>
<td>93,941,596</td>
<td>57,770,501</td>
</tr>
<tr>
<td>N/w estern</td>
<td>111,548,606</td>
<td>313,804,642</td>
<td>275,374,991</td>
<td>250,202,377</td>
<td>73,700,522</td>
</tr>
<tr>
<td>Southern</td>
<td>503,907,948</td>
<td>415,934,053</td>
<td>391,794,053</td>
<td>353,414,824</td>
<td>165,903,549</td>
</tr>
<tr>
<td>Western</td>
<td>2,999,368</td>
<td>549,845,408</td>
<td>1,023,298,958</td>
<td>1,240,200,529</td>
<td>404,992,433</td>
</tr>
<tr>
<td>Divisions (Research, Nurseries, etc)</td>
<td>1,347,581,927</td>
<td>35,664,600</td>
<td>57,899,977</td>
<td>22,557,042</td>
<td>2,470,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,384,034,465</td>
<td>3,521,775,920</td>
<td>4222829,136</td>
<td>4,222,072,896</td>
<td>1,338,808,570</td>
</tr>
</tbody>
</table>

1 US$1.00 = Zambian Kwacha (ZMK) 4,733 as of 2003

Source: Forest Department, (Various Years). Ministry of Tourism, Environment and Natural Resources, Lusaka

In general, low staffing in the relevant government departments have led to unsupervised logging and poor forest revenue collection (Ministry of Finance and Planning, 2002). In addition, the price of license fees discourages many producers from reporting their activities to the Forestry Department. Kokwe (2004) argues that increases in taxes on forest products, which have been introduced by the government during the past eleven years have directly contributed to the decline in collected revenues. The introduction of Value Added Tax (17.5%) and a 2,500 percent increase in forest tree license fees in 1996 led to the closure of a number of reputable timber producing and processing firms as the price of raw materials did not match the market price of finished products. The increase in license fees did not, however, reduce the demand for timber and as a result the illegal trade increased.

**Conclusions**

Our results show that forest income is generally higher for richer than poor households, but the share of forest income to total household income is highest for poor households. A number of forest products are important at national level, most notably charcoal and fuelwood. Forests are the primary source of household energy for more than 70 percent of the population. The high level of dependence on forest resources among rural households in Zambia suggests that forests play a role in meeting household needs in times of difficult but cannot alone lift people out of poverty. Urban demand for certain forest products (e.g. charcoal, caterpillars and honey) has created a vibrant trade, which provides cash income to thousands of rural households, often exceeding that from agriculture. The fact that forests are an important source of livelihood among the poor segments of the society requires government to promote policies that will harness the potential of forest to improving rural livelihoods. The main conclusion from our analysis is that although forests are recognized to have an important poverty mitigation function, they are not a means to move most people out of poverty unless strategies are put in place to promote value addition to forest products and develop markets for forest products.
Acknowledgements

The work was funded primarily by the World Bank-administered Trust Fund for Environmentally and Socially Sustainable Development. We thank Peter Dewees for detailed comments on an earlier draft. Some staff time was contributed through the Sida-funded Dry Forest Project.

References


