



**Preliminary Study
Results:**

**Valuing Forests in the
Malawian economy**

Presentation to the Stakeholder Workshop
12 March, 2013
Lilongwe, Malawi

Dr. Joy E. Hecht
Dr. Victor Kasulo

Consultants to CARDNO Emerging Markets (UK) Ltd.
Framework Contract Benef. Lot 1 Specific Contract N^o 2012/307827 /1

Malawi's forest challenges

- Significant degradation of forest resources
- Declining public sector support for forest management
- General perception that forests contribute little to the economy
- Little appreciation of their importance to well-being

DoF Response: about this study

- Analysis of the economic contributions of the forests
- Carried out January-March 2013
- Funded by the EU through Improved Forest Management for Sustainable Livelihoods Programme
- Managed by Cardno Emerging Markets (UK) Ltd.
- Carried out by Dr. Joy Hecht (Independent Consultant) and Dr. Victor Kasulo (Mzuzu University)
- Full results including spreadsheet and technical report will be available from DoF.

Overview of the Presentation

- The three measures to be estimated: GDP, TEV, livelihoods
- Calculating the contribution of forests to GDP
 - Methodology
 - The numbers
 - Depreciation
 - Comparison with national accounts figures
- Calculating TEV
- Calculating the contribution to livelihoods
- Conclusions and Recommendations

Three components to the study

- Estimate the contribution of forests to Gross Domestic Product and Net Domestic Product
- Calculate the total economic value (TEV) of the forests
- Calculate the contribution of forests to the livelihoods of the Malawian people

1. Contribution of forests to GDP/NDP

- Crucial value because it is used to allocate public funds among ministries
- Published national accounts data:
 - 2007: 4.797 billion kwacha
 - Projected 2010: 6.579 billion kwacha
 - Less than 1% of GDP in both years
- Share of forests in GDP/NDP should be higher than this.

Important elements of forest accounts

- Techniques developed initially to factor depreciation into estimates of forest income
- Need to include the value of non-marketed forest products such as fuelwood
- ISIC classification includes artisanal charcoal production in forestry sector; this should be included.
- Methods for forest accounting standardized by UN Statistics Department

Collaboration with national accounts

- National accounts are prepared by National Statistical Office
- Their forest accounts depend on data from DoF
- The study team worked closely with NSO to understand what they are doing now
- NSO is very much interested in improving their forest accounts along the lines of this study

2. Calculation of Total Economic Value

- Four components:
 - direct use of forest products
 - indirect use, e.g. environmental services
 - option value
 - existence value
- Methods are not standardized, therefore results carry less weight than contribution to GDP/NDP
- Study focuses on direct and indirect use of forest products

3. Contribution to livelihoods

- How many people (or households) earn a living from forest-related activity
- How much they earn
- Value of resources that are gathered in the environment
- How many households depend on such resources

Calculating GDP & TEV: stocks vs. flows

- Stocks are a wealth measure – the value of productive assets like forests
- Flows are an income measure – what is produced each year from the asset, e.g. trees grown and sold, asset depreciation each year
- National accounts measure flows, not stocks
- Therefore this study also measures flows.
- Flow values are for what is actually happening; not what might happen under other policy scenarios.

Choice of base year

- When measuring flows, they are in one year, they are real values for that year
- Possible choices of year: 2010 or 2012
 - 2012 is most current, and new forest prices are in effect as of 2011
 - But major data sources apply to 2010; integrated household survey and spatial data on land cover
- Base year is 2010.

Structure of Accounting Calculations

	Revenue
<u>less</u>	Intermediate consumption (material inputs, services purchased, etc.)
<u>less</u>	Subsidies
<u>equals</u>	Gross Value Added (or contribution to GDP)
<u>less</u>	Consumption of fixed capital (depreciation of productive assets)
<u>equals</u>	Net Value Added (or contribution to NDP)
<u>less</u>	Compensation of employees (wages, salaries, and benefits)
<u>equals</u>	Net operating surplus (or profit)

Accounting calculations, 10³ kwacha

Plantations:		
<u>DoF</u> Plantation revenue	299,864	<u>DoF</u> revenues from firewood, log sales, license fees, and concessions. <u>Data were provided by DoF</u> . They cover the period from July 2010 to June 2011; data for January-June 2010 were not available.
Less Depreciation of Plantations	<u>not available</u>	All evidence indicates that plantations are being harvested at an unsustainable rate; however the available data did not enable us to calculate it.
Use of natural forests:		
Department of Forestry revenues from natural forests	32,264	<u>DoF</u> royalties on indigenous timber sales (from natural forests). Data provided by John <u>Chunga</u> , Head Accountant, <u>DoF</u> , covering July 2010 to June 2011.

Accounting calculations, 10^3 kwacha

Household use of gathered fuelwood	63,375,930	Data from the Integrated Household Survey; this is the gathered share of the national total of what households would have spent on fuelwood had they purchased all that they consume.
Household fuelwood purchases	4,285,134	This value, calculated based on IHS data, captures the value added of those who sell wood to households.
Household charcoal consumption	not available	See discussion in technical report about the problems with charcoal price data in the IHS
Charcoal consumption by business		

Accounting calculations, 10³ kwacha

Value added from household forest-based businesses	97,049	Data from the Integrated Household Survey
Provision of wood to institutions and industry	6,698,556	Data on wood use by institutions and industry come from several sources; it is valued using the government's price per m ³ for indigenous firewood.
Bamboo and poles	22,181	Data from the Integrated Household Survey; this includes both gathered and purchased consumption of these products.
Grasses for thatch	52,240	

Accounting calculations, 10³ kwacha

Gross Value Added	74,863,217	Sum of the previous items
Less depreciation of natural forests	-30,090,210	Details discussed below
Net Value Added, ISIC 02	44,773,008	Contribution of the forest sector to NDP

Calculating Depreciation of Natural Forests: several steps

- Estimate sustainable yield from the forests
- Sum total use of wood, in cubic meters
- Compare sustainable yield to total use
- Identify a price with which to put a value on excess harvests
- Multiply excess harvest times price
- Subtract the result from GDP to get NDP

Calculating sustainable yield

- Total natural forest area is available from “Japanese” land cover project: 2,296,700 hectares
- Mean annual increment:
 - 2 m³/ha for the southern region
 - 3 m³/ha for the central region
 - 4 m³/ha for the northern region
- Total sustainable yield from natural forests: 7,132,200 cubic meters per year

Comparing use with yield

Household fuelwood consumption:	m³
Total consumption	11,240,264
Less wood gathered from household and community woodlots	-3,378,142
Household charcoal consumption	2,434,218
Institutional and industrial use of firewood, except brick-making	1,075,411
Brick-making	1,708,074
Total, natural forests	13,079,823
Sustainable yield, natural forests	7,132,200
Excess harvesting from natural forests	-5,947,623

Monetary value of depreciation

- Price used: weighted average of the value per cubic meter of household fuelwood (6,020) and the 2011 government price per cubic meter of indigenous fuelwood (2,500) = 5,115
- Depreciation of natural forest: just over 30 billion kwacha
- Net value added from forest sector: just under 45 billion kwacha

Comparison of Gross Value Added

	National Accounts, in 10 ³ current kwacha	Study Results
Forestry Gross Value Added, 2010	8,664,496	74,863,217
GDP	875,873,009	942,071,731
Forestry Share of GDP	0.989%	7.947%

Comparison with National Accounts

- Published accounts estimate forest sector value added based only on DoF plantation revenue
- They do not include:
 - Timber company value added; this is classified as manufacturing. NSO is interested in developing a new survey to capture forestry activities of major timber companies.
 - Household fuelwood use. NSO is working on integrating this into revised 2010 accounts.

Comparison with National Accounts, cont'd

- Charcoal; problems with IHS expenditure data make this unusable.
- Forest sector activity of household businesses
- Value added from provision of fuelwood to institutions and industry
- Non-timber forest products. The revised accounts for 2010 do include this.
- Forest depreciation. The revised accounts do not include this.

- NSO is interested in all strategies to make forest accounts more accurate.

Calculation of Total Economic Value

- Higher than net value added because it includes total output of forest sectors, not just value added
- Includes output of sectors that are heavily dependent on forests, e.g. sawmills, furniture, trade in forest products.
- Includes estimate of park revenues, nature-based tourism.
- Considers watershed protection; however this is conceptually difficult to estimate.

Components of Total Economic Value, in 10³ kwacha

Contribution of Forest Sector to NDP (ISIC 02)	44,773,008
Total, output of household businesses	23,986,308
Output of formal sector forest-based businesses	1,204,315
Government expenditure on the Department of Forestry	804,178
DOF Revenue not from ISIC 02	40,663
National Park Revenues	45,572
Expenditure in Malawi by forest-based inbound tourists	1,976,979
Watershed protection: costs now imposed by degradation of the Shire River	484,680
Total Economic Value	73,315,703

Livelihoods: major observations

- Household businesses are major creators of forest-based employment
- Salaries from forest-based jobs are well above 2010 GNI per capita (\$330 or 49,000 kwacha per year)
- Earnings from household businesses are higher than from other jobs
- Value of gathered fuelwood per household is 45% of 2010 GNI per capita; this is a **major** contribution in kind to household income.

Contribution of forests to livelihoods, in 10³ kwacha

	Number of households	Number of jobs (FTEs)	Value	Value / <u>hhold</u>
Employment				
Large companies		2,914	398,447	136,757
Household businesses	92,464	24,898	9,035,752	362,913
Government		5,207	1,034,701	198,713
Total employment		33,018	10,468,900	317,063
Consumption of gathered forest products				
Fuelwood	2,831,916		63,375,930	22,379
Bamboo and poles	26,748		16,371	612
Grasses	45,935		37,815	823
Total	(a)		63,392,300	
(a) <u>The number of households</u> is not summed because there may be substantial overlap among households gathering the different forest products.				

Conclusions

- The share of the forest sector in the economy is far greater than typically appears; forestry GVA represents 7.5 rather than 1% of GDP.
- Deducting natural forest depreciation from GVA still leaves the forest sector with a large role in the economy.
- Better information is needed to estimate depreciation of plantations.

Conclusions, cont'd

- TEV is higher than forest net value added, but it is a less useful measure because not standardized.
- Data about the importance of forests to Malawian livelihoods are very compelling; they offer a clear message about the benefits of stronger forest management.

Recommendations to the DoF

- Support NSO with technical assistance to change forest accounting processes and develop a separate forestry questionnaire for the annual economic survey.
- Improve management of DoF financial flow data so the results can be used for policy and planning.

Recommendations to the DoF, cont'd

- Invest in better data collection focused on:
 - Fuelwood, because of its huge share in forestry VA.
 - Charcoal, because of its environmental impact
- Data collected should include one-time survey on quantities of fuelwood and charcoal used and ongoing monitoring of fuelwood and charcoal markets in conjunction with routine NSO market surveys.



Thank you!