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Informal Forest Economy

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Informal Forest Economy

By M.M. Lwaile & Gumbo

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Measuring the Informal Forest-based Economy as Part of the National Forest Monitoring and Assessment

Technical Paper prepared for the Forestry Department, the Ministry of Lands, Natural Resources and Environmental Protection and the Food Agriculture Organization of the United Nations as a part of the Integrated Land Use Assessment Phase II

by

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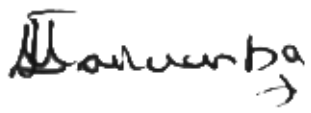
FOREWORD

The development of statistics on the informal economy helps to improve national accounts. The informal economy plays an important role for employment creation, income generation and poverty reduction in many countries, especially developing countries. Statistics on the informal economy are needed as an evidence-based tool for research and policy-making. They enhance the visibility of the many workers in the informal economy and of their economic contribution.

Forests in Zambia and many countries in Africa offer numerous benefits to the rural communities. Such benefits include consumptive resources, spiritual and aesthetic needs, employment, and ecological services such as carbon sequestration and water provision. However, in many situations, access to such benefits is neither uniform nor equitable both between and within communities. The social functions of forests are often more difficult to measure and can vary considerably among countries, depending on their level of development and traditions. In Zambia, the contribution of forests to the economy is undervalued due to the fact that, much of the informal forest activities are not captured in the official statistics. For example, non-timber forest products are widely harvested, processed and traded across Zambia through informal markets channels and yet not captured in national accounting.

ILUA II commissioned a study of the Informal Forest Economy in order to identify parameters that would help bring out the forest livelihood and economy aspects. This paper not only supports the ILUA II process, but is a good reference material for socio-economic surveys in the forestry sector.



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ACRONYMS

BIN	Bio-physical Information Needs
CSO	Central Statistics Office
FAO	Food and Agriculture Organization of the United Nations
FGM	Forest Governance Monitoring
FD	Forest Department
GDP	Gross Domestic Product
GNP	Gross National Product
GRZ	Government of the Republic of Zambia
IFE	Informal Forest Economy
ILUA I	Integrated Land Use Assessment I
ILUA II	Integrated Land Use Assessment II
LCMR	Living Conditions Monitoring Report
LFS	Labour Force Survey
MLNREP	Ministry of Lands, Natural Resources and Environment Protection
MTENR	Ministry of Tourism, Environment and Natural Resources (now MLNREP)
NFMA	National Forest Monitoring and Assessment
NGO	Non-Governmental Organizations
NTFP	Non-Timber Forest Product
SAP	Structural Adjustment Programmes
SEM	Socio-Economic Monitoring
SFM	Sustainable Forest Management
ToR	Terms of Reference
ZFAP	Zambia Forestry Action Plan

ABSTRACT

The informal economy encompasses many different kinds of economic activity, including home-based work, street vendors, entrepreneurs who employ other workers, self-employed and casual workers whose work is seasonal or who work in out-sourced industries. According to estimates made in sub-Saharan Africa, the informal economy accounts for between 40 to 60% of urban employment. In Zambia, statistics on the contribution of the informal sector to GDP are inconsistent. The picture is worse for the country's informal forestry sector where data are unavailable. While the forestry sector contributes 5.5% per annum to GDP, this could very well go up to 23% per annum, provided data were collected from the informal forestry economy. This paper reviews the state of data collection from the informal forestry sector by looking at the current data sources, the needs of key stakeholders, and the development of measurement variables for the sector. Starting with a definition of the informal forestry sector, the paper shows the processes that were used to develop key variables and tools for collecting data from this sector, which are proposed to be developed as an instrument for ILUA II.

1. INTRODUCTION

There are claims that the informal sector, based on the number of people involved, contributes significantly to livelihoods and national economies the world over. However, there is no agreement on the extent of its contribution. The World Bank estimates that, globally, 60% of employees are located in the informal sector (World Bank 2009). For much of sub-Saharan Africa (SSA), estimates show that between 50% and 75% of the region's employees are in the informal sector (African Union 2008, Verick 2008). Chen (2001) has shown that of all the new jobs created in the 1990s in the SSA region, 93% were in the informal sector. Dominated largely by private but unincorporated enterprises engaged in trading, vending, and informal employment, the sector has remained in the shadows of the formal economy for the last 30 years (Schneider, 2007; Hussmanns, 2005). Working in the informal sector is a survivalist strategy for people with limited human capital, for retrenchees, for people engaged in informal work that are balancing home and income-raising responsibilities, and for entrepreneurs operating informally with a view to avoiding regulations and taxes associated with formal registration (Bacchetta *et. al.,* 2009).

In Zambia, as with the rest of sub-Saharan Africa, the informal economy is viewed as a less attractive but important undertaking in the face of limited formal employment opportunities (Richards et al., 2006; Bernabè, 2002; ZCTU, 2002). A majority of the people eke out a precarious living through informal activities such as subsistence agriculture, small-scale trading, crafts and services (Match Maker Associates Limited, 2005; Muuka, 2003). The numbers of people involved in the informal sector have increased since the structural adjustment programme (SAP) in the late 1990s, which forced retrenched mineworkers to swell the ranks of the unemployed (ZCTU, 2002; Muneku, 2001). According to the 2004 Living Conditions Monitoring Report, 83% of all employed persons in Zambia were engaged in the informal sector (Richards, et al., 2006; CSO, 2004). The importance of the sector is further demonstrated by its overall contribution to the Gross National Product (GNP). Using World Bank figures, Schneider (2002) estimated that Zambia's informal economy contributed approximately 48.9% to the country's GNP in the period 1999/2000. However, while this is a significant figure, the overall contribution of Zambia's informal sector to the national economy has not been consistently reported on over the years due to the lack of information and data for incorporation into national accounts.

The informal economy sector could very well be contributing over 50% to the GDP, but as no figures exists it is difficult to measure the sector's true contribution to the national economy. This problem is well pronounced in Zambia where the forestry sector alone contributes 5.5% to GDP (Kalinda et al*.,* 2008; Puustjärvi et al., 2005). However, it is unclear how much of this contribution is from the informal forest-based economy. While there have been issues surrounding the modalities of collecting forestry data, and depositing such data with the Central Statistics Office (CSO), a review carried out by Ng'andwe et al. (2006) showed that if the right policy changes are effected, and better ways of data collection are put in place, the contribution of the sector to the GDP would significantly rise. In this report, issues pertaining to data collection for the informal forest-based sector economy, and in particular non-timber forest product (NTFP) harvesting, processing and

trade, are examined and guidelines for collecting such data and frameworks for policy engagement outlined. The paper also draws upon the Forest Department's (FD) lessons under the Integrated Land Use Assessment Phase 1(ILUA I) project, which sought to generate data on the state and use of forest resources in Zambia.

1.1. Exploring the informal forest sector in Zambia

Zambia's informal sector produces and distributes a broad array of economically valuable goods and services, most of which are carried out by entities that are not protected by law (Ndhlovu, 2011; Muuka, 2003). Non-timber forest products are widely harvested, processed and traded across Zambia through informal markets channels (Mickels-Kokwe, 2005; Gondo *et. al*., 2002; Mulombwa, 1998). Economic activities associated with NTFPs may in some places involve monetary transactions while in others exchanges could be through barter (Alexander et al., 2002), practices which are potentially subject to taxes, business regulations and licensing, labour regulations, and a host of other formal regulations or reporting requirements. In Zambia, the NTFP sub-sector is dominated by subsistence activities, market and non-market transactions (e.g. gifts), and partial or non-compliance with labour and harvesting regulations. This sub-sector makes huge contributions to livelihoods and the national economy but the associated transactions have yet to be quantified.

In this case study, the NTFP sub-sector serves as an example for illustrating the implications of capturing sector data and information on natural resource policy and management. The sub-sector is well-suited for study in that a lot of economic activity within the NTFP sector has historically taken place outside of, or on the edges of, Zambia's formal economy. In Zambia, there are claims that the formal forest sector is not "prominent" and is lowly prioritized. If this is the case, then the informal forest-based economy is "hidden" and largely unknown and evidence needs to be gathered to bring it to the fore. Lately, there has been a gradual acceptance that NTFP trade can be a vehicle for economic development. Governments and development agencies do now agree that NTFPs might provide opportunities for employment generation, poverty reduction, improved livelihoods, and the national economy (Timko et al., 2010; Handley et al., 2009).

The NTFP literature identifies a number of benefits associated with the gathering, processing and trade of NTFPs (Shackleton et al*.,* 2011). These include economic buffering, identity expression, social networking, leveraging economic value and social meaning, as well as connecting humans with nature (Shackleton and Gumbo, 2010). Studies have shown that across southern Africa, a variety of wild resources are harvested or collected from village commons and processed by the poor for household consumption or sale across. Zambia is not an exception (Kepe, 2002). Reports such as those produced by Puustjärvi et al. (2005); Mickels-Kokwe (2006); FEVCO (2006); Gondo et al. (2006); and SNV (2006) provide useful background information on the role of the informal forest-based economy. Further, Puustjärvi et al*.* (2005) and Mickels-Kokwe (2006), when read together with Jumbe et al., (2008); Ng'andwe et al. (2008)**;** Whiteman (2003); CSO (1997) and Mutamba (2007), provide some indications of which data variables would need to be gathered. Documents such as the Zambia Forestry Action Plan (1997), the Labour Force Survey reports of

2005 and 2008, as well as the Living Conditions Monitoring Reports, will also provide additional information.[3]

Zambia's informal sector is characterized by economic activities centred on trading, in particular, vending (Hansen, 2004; Richards et al., 2006; Todd and Shaw, 1980). The lack of a comprehensive policy framework addressing the country's informal economy has remained a matter of concern. Two issues emerge from the challenge associated with the collection of forestry data and their incorporation into national accounts. Firstly, forestry data, once gathered, must be deposited with the Central Statistics Office (CSO). The CSO's mission is to provide and operate a comprehensive statistical database yielding timely, relevant and high quality statistical information for institutions of government, private sector, national and the wider international community for effective decision-making and promotion of informed debate on the economy (CSO, 2001). The CSO carries out all censuses and surveys and organizes a coordinated scheme of social and economic statistics relating to Zambia. In providing this service, the CSO is assisted by statistical units in the line ministries and parastatals, universities, research institutes, the Bank of Zambia and the private sector and NGOs. In the recent past, the FD piloted a forestry data-gathering project, but the data generated have not been deposited with the CSO and therefore they are not part of national accounts.

A second, and related, issue is that policy change must take place in the forestry sector at two levels. In the first instance, a change in the manner in which data are gathered must be reviewed and aligned to the benchmarks set in 1994 (CSO, 1997). Under the Census and Statistics Act of 1964, CAP 127 of the Laws of Zambia, the CSO is to carry out all censuses and surveys and to organize a coordinated scheme of social and economic statistics relating to Zambia. In 1994, it was established that the CSO was not capturing forestry, fisheries and informal sector thereby using inadequate data to project GDP (CSO 1994). In this respect, in 1997, the CSO produced a document detailing what parameters would be included to ensure that all sectors, including forestry, would be captured (CSO 1997). While Ng'andwe et al. (2006) argued for the adoption of some international data gathering formats, the suggestion of this study is that existing variables used in CSO surveys are modified so that forestry issues are adequately addressed. In the second instance, the data gathered must be used to facilitate evidence-informed policymaking in forestry and to translate these conditions into practical tools for the government (Nutley, 2003). Zambia's informal forest-based economy is complex as it involves multiple institutional relationships and structural constraints, but these provide opportunities for agency, action, and change (Long 1992). Zambia does not have a clear policy on the informal sector as a whole and less so on the informal forest-based economy. It has also been shown that there is an overall expectation in policy circles in Zambia that entities in the informal sector should be turned into formal enterprises (ILO/UNDP,

[3] The key documents are Labour Force Survey 2005 and 2008; Living Conditions Monitoring Survey 1996, 1998, 2002/3; 2004; post-harvest survey, 2003-2004; Priority Survey I and II, 1991 and 1993 respectively; demographic and Health Surveys, 1996, 1992, 2002; The Evolution of Poverty in Zambia 1991-1996; Crop Forecasting Survey 2007/2008; Census of Population and Housing 1990, 2000, 2010; and Zambia HIV/AIDS Service Provision Assessment Survey 2005, http://www.zamstats.gov.zm

2000) and that those involved with forest products would have to contend with forestry policy issues.

Yet, there is a need to reposition the forestry sector and demonstrate the economic value of the sector by generating data on the informal forest-based economic activities. To do this, the policy guiding the sector must be changed through scientific evidence (Young et al., 2002; Davies, 1999). Bridging the gap between science and policy is a political, economic, social and cultural issue (Nutley, 2003; Davies, et al., 2000); an encounter between politicians and scientists. The country's forest policy must be linked to a clear policy position on the informal sector. To date, policy implementation in the forest sector has been affected by the relationships between forest managers and other stakeholders, such as forest product user groups and political authorities. There have been increasing calls for more implementation-oriented perspectives on forest policy, which allow for negotiation and bargaining within and among the different actors across the country, as espoused by Hill (1997). A major goal of evidence-based policy is to ensure that policy-making *integrates* the experience, expertise and judgment of decision makers with the best available external evidence from systematic research (Davies, 2003). The gap between the two could be widened by differing language and discourse, which may act as obstacles to communication between research and policy-making. In addition, the difficulty in understanding different perspectives may be exacerbated by the absence of appropriate channels for communication between the key actors. More importantly, the research fraternity needs to be more aware of the need to "translate" the results of their research into policy implications. This may be affected by differing time scales of policy-makers and scientists. Barriers may be overcome through the use of participative and proactive approaches through which research priorities can be identified. In addition, dialogue panels, conferences and similar initiatives, if appropriately focused and moderated, can help remove suspicion and intolerance. Use can also be made of professional and trade publications, while direct collaboration between policymakers and researchers should be encouraged.

2. OBJECTIVES AND METHODOLOGY

2.1. Objectives

The aim of this study is to develop an approach that can contribute to data generation, while meeting the information needs of the informal forest-based economy, as well as to develop related measurement tools. In addition, the study followed the ILUA II implementation framework to which it contributed the following outputs:

i. Definition of the informal forest sector
ii. Methods to be used in quantifying the contribution of the informal forest sector to the national economy
iii. Methodology for monitoring the informal forest sector and assessing the extent of its contribution to people's livelihoods
iv. Development of globally acceptable guidance tools for socio-economic and governance monitoring components of **National Forest Monitoring and Assessment** (NFMA) systems

2.2. Methodology

Socio-economic data and information on forests are central to policy, planning and decision making in this sector. In the past, where instances of data gathering on forests were carried out, the data covered biophysical attributes and less so the socio-economic aspects. Increasing calls for socio-economic data to demonstrate the importance of the forest sector in the country have been growing. A more comprehensive forest assessment exercise under the first integrated land use assessment project phase was launched and did include some micro-socioeconomic surveys. Unfortunately, the data gathered under ILUA I included forest and other land uses, but there was very little on the informal forest sector and forest governance. Under this study, the main tasks were to specify operational methods and materials for use in gathering informal forestry data. As part of the process, an information needs assessment had to be carried out. This was defined as *a planned systematic approach to determining the type of information needed to establish a methodology for measuring the informal forest sector in Zambia*. According to the Terms of Reference (ToR), a review of data and documents is at the center of information needs assessment (McKillip, 1998). Three sources were reviewed and used: *priority documents, secondary data sources and stakeholder consultations.*

2.2.1. Document Search

A variety of sources of data and information e.g., documents, reports, data files and other written artifacts, provide independently verifiable data and information on the informal forest-based economy in Zambia. Table 1 lists some of the key sources of data and information.

Table 1 *Documentation related to Informal Forest-based Economy in Zambia*

Source	Document type	Focus	Type of variables influenced
Government publications			
CSO, 2004	Survey report	Living conditions, incomes, livelihoods	Informal sector defined
CSO, 2010	Survey report	Labour/livelihoods	Informal sector defined
GRZ, 1973	CAP 199 Act and regulations	Forests	Limited community involvement
GRZ, 1991	Act	Local government	Role of local communities in NRM
GRZ. 1994	Policy/strategy/action	Environment and natural resources	General
GRZ, 1997	Policy/strategy/action	Forestry	Formal and informal aspects
GRZ, 1999a	Policy/strategy/action	Biodiversity	Indirect
GRZ, 1999b	Act and regulations Nolaw	Forests	Conditions for exploitation
GRZ, 1999c	Statutory instrument, Joint Forestry Management	Forests	Direct, NTFP use and marketing

Source	Document type	Focus	Type of variables influenced
Government publications			
GRZ, 2002a	Policy strategy/action	Poverty reduction	Indirect
GRZ, 2002b	Policy strategy/action	Decentralization	Indirect
GRZ, 2007	Policy	Environment and natural resources	Indirect
GRZ, 2006a	Policy document	Development	Contribution of forests to national development
GRZ, 2006b	Statutory instrument, Joint Forestry Management	Forests	Benefit sharing and roles
GRZ, 2007	Act and regulations	Municipal markets	Marketing of NTFPs
GRZ, 2009	Policy document	Forests	Conditions for exploitation Community involvement
GRZ, 2011	Policy document	Development	Role of forests to national economy
Reports			
Bwalya, 2004	Report	Joint forest management	Indirect
Chileshe, 2001	Report	Forestry outlook	Indirect
Environmental Council of Zambia, 2001	Synthesis report	State of environment report	Limited
FEVCO, 2006	Report	Forest products	Direct
France-Lanord, et al., 2007	Paper	Forest policy	Contribution of forests to livelihoods
Kalinda et al., 2008	Paper	ILUA data used	Contribution of forests to livelihoods
Mickels-Kokwe, 2005a	Paper	Household economy and forest products	Types of NTFPs, marketing
Mickels-Kokwe, 2005b	Paper	NTFPs exploitation	NTFPs and markets
Mickels-Kokwe, 2006	Paper	Example of NTFP exploitation – honey	NTFPs and markets
Mulombwa, 1998	Paper	NTFPs in Zambia	Resource types, harvesting, use
Puustjärvi, et al., 2005	Report	Forestry and national economy	Formal and informal aspects of forestry
Whiteman, A.	Report	Policy, forest product	Formal and informal aspects

Source	Document type	Focus	Type of variables influenced
Government publications			
2001		licensing	of forestry
Dissertations			
Chileshe, 2007	Dissertation	Tenure/resource	Limited
Bwalya, 2007	Dissertation	Joint forest management	Direct research instrument
Phiri, 2009	Dissertation	Joint forest management	Direct research instrument
Research			
Cavendish, 2000	Paper	Forest products and poverty alleviation	Forest products Contribution to household welfare
Mulenga et al., 2011	Paper	Forest products and food security	NTFPs, contribution, harvesting and use
Jumbe et al, 2008	Paper	NTFPs and rural livelihoods	Harvesting, use and marketing
Mutamba, 2007	Paper	NTFPs and rural livelihoods	Harvesting and use

Source: compilation by author

Accepting that information contained in extant data or documents that may not be independently verified means that there is value in interrogating such information. However, information or data in these documents may represent different perspectives, vary in time and context and the information provided not aligned with the information needs assessment for the informal forest-based economy in Zambia. For example, government policy documents and strategies do not necessarily need to address the expectations of researchers and development organizations. With this in mind, the documents outlined in Table 1 were classified into three categories, as required by the ToR. The first focuses on government policies, acts and regulations, and for the informal forest-based economy, the most central document is CAP 199 of the Laws of Zambia which describes forest produce and products (GRZ, 1973). The second category is that of reports and various syntheses carried out on this sector e.g., Puustjärvi, et al., (2005) while the last category consists of dissertations and specific case studies carried out in Zambia (e.g., Bwalya, 2007 and Mulenga et al., 2011, respectively).

According to the ToR, the information needs assessment would focus on priority and secondary documents, as well as stakeholder consultations. The study considered priority documents as documents, objects, etc. that were produced by eyewitnesses to, or participants in, an event or historical moment under investigation. Secondary sources were interpretations – often generated by scholars – that are based upon the examination of multiple primary sources. In addition, priority documents can also be in the form of primary data based on the qualitative or quantitative

attributes of a variable, or set of variables, collected by an investigator conducting the research, while secondary data are based on reprocessing and reusing collected data and information. Both methods have their advantages and disadvantages and depending on the nature of the research, one has to be keen on which of these is most applicable.

Priority documents were mostly government documents: policies, acts and regulations. A focus on these documents would provide much of the background and framework for the informal forest-based economy in Zambia. Most reports, papers and books used fell into the realm of secondary data. They have a tremendous influence on the study of the informal forest sector, and on commentaries or attempts to make the policies indicated above work or be better understood. The key documents are listed below (Table 2).

Table 2 *Key Priority and Secondary Documentation on the Informal Forest Economy in Zambia*

Priority documents were those suggested in the ToR and others addressing socio-economic as well as forestry related policy and strategic frameworks.		**Secondary data — data collected by people other than the user. In this category are synthesis reports, commissioned papers and case study specific research outcomes.**
Forest Act, Cap 199 of the Laws of Zambia		The Contribution of Non-Timber Forest Products to Rural Household Income in Zambia; Contribution of Dry Forests to Rural Livelihoods and National Economy in Zambia; (2008)
(Draft 2012 Forest Bill)		Forest Revenue, Concession Systems and the Contribution of the Forestry Sector to poverty reduction and Zambia's national economy (Puustjärvi et al., 2006)
National Forestry Policies (GRZ, 1998, 2009, 2010)		Non-Timber Forest Products with Commercial Potential in Zambia (Mickels-Kokwe 2006)
National Policy on Environment, 2005		The Forest Contribution to Rural Small-Scale Household Income in Zambia; The Contribution of the Forest Sector to the National Economy and Poverty Reduction in Zambia by SAVCOR – Indufor
Zambia Forestry Action Programme (ZFAP 1998-2018)		The Contribution of the Forest Sector to the National Economy and Poverty Reduction in Zambia by SAVCOR – Indufor
ILUA Data for forestry and agricultural policy review and		Non-Wood Forest products in Zambia

Priority documents were those suggested in the ToR and others addressing socio-economic as well as forestry related policy and strategic frameworks.		**Secondary data – data collected by people other than the user. In this category are synthesis reports, commissioned papers and case study specific research outcomes.**
analysis		
Sixth National Development Plan (2011 – 2015)		The socio-economic contribution of non-timber forest products to rural livelihoods in Sub-Saharan Africa: Knowledge gaps and New Directions in International Forestry Review
Living Conditions Monitoring Survey Report IV, 2004		Forest Livelihood Briefs.Vol.11, August 2008
Labour Force Survey, 2008		Mulenga et al., 2011
Living conditions monitoring Reports (CSO 2004, 2008)		Jumbe at al., 2008
Labor Force Survey (CSO, 2010)		Puustjärvi, et al., 2005
ILUA I reports		Mickels-Kokwe, 2005b
Forest Department, (2008)		Cavendish, 2000
Mukosha and Simpale, (2008)		Mutamba, 2007
Kalinda et al. (2008)		GRZ, 1991
National Environment Action Plan (GRZ, 1994)		GRZ, 2002a and GRZ 2002b
		GRZ, 2011
		Statutory instruments guiding JFM (GRZ, 1999c and GRZ, 2006b)
		Municipal Markets (GRZ, 2007)

2.2.2. Stakeholder Consultations

Most of the acts, regulations, strategies, reports and papers are held by institutions. The information needs assessment considered stakeholders as key sources of information, as their perspectives on the informal forest economy have a strong bearing on how the sector is being approached. However, it is critical to ensure that the perspectives of individuals interviewed would not outweigh an institution's work in this sector. As indicated by Seidman and Seidman, (1994), the objective of the individual can overshadow the institutional perspective. With this in mind, the following stakeholders were considered key to this study:

i. Forest Department
ii. Central Statistics Department
iii. Non-governmental organizations (development)
iv. Plan International
v. CARITAS Zambia
vi. Non-governmental organizations (environment)
vii. Civil Society for Environment Fund
viii. Civil Society for Poverty Reduction
ix. Academia (CBU, UNZA)
x. Planning Units (District and Provincial levels)
xi. Municipality, Lusaka City Council
xii. Knowledgeable individuals

From the review of priority and secondary data documents, as well as through consultations with stakeholders, the following outputs were derived:

i. Operational methods and materials for a literature-based information needs assessment, and for information gathering among stakeholders;
ii. An overview of information needs arising from respective sources, literature and stakeholders;
iii. Documented priority-ranked information needs on the informal economy ; and
iv. Tentatively identified variables for measuring the informal forest-based economy.

2.2.3. Secondary Data Availability Analysis

Secondary data analysis is based on published or original data, e.g. original archival. Generally, original data may be available but may not cover the timeframe and scale of interest. The objective of the original work does not have to fit into the realm of the research. The review recommended how the gaps in availability of secondary data could be covered.

To achieve this, the following tasks were undertaken:

i. Specifying the operational methods and materials for undertaking a secondary data collection process on identified key information needs;

ii. Identifying remaining information gaps and related measurement variables for primary data collection;
iii. Documenting available secondary data and related relevant specifications and further existing information gaps; and
iv. Preparing a report summarizing existing secondary data, information gaps, and alternative methods and selection criteria on ways for how to fill these gaps.

The main outputs attained were as follows:

i. A review of secondary data documents;
ii. A report on secondary data availability and gaps;
iii. A list of information gaps;
iv. Priority variables for primary data collection identified and specified; and
v. A proposal for alternative methods and tools for collecting data on identified information needs and gaps.

2.2.4. Identification of Suitable Measurement Methods

Specific activities under this task were as follows:

i. Proposing a limited set of alternative methodical approaches ("tools") and designs to consider for collecting new data on the identified information gaps; and
ii. Providing a set of criteria for selection, and respective information on the likely performance of the alternatives on these criteria.

From this task and accompanying activities, the outputs were as follows:

i. Operational definition of the Zambian informal forestry-based sector/economy;
ii. Key dimensions for measuring informal economy;
iii. Critical variables for measuring the informal economy;
iv. Criteria for selecting alternative methods, designs and tools; and
v. Specific methods and tools recommended.

2.2.5. Joint Proposal for Survey Design Options

This activity was aimed at establishing linkages between three consultancy assignments, all meant to contribute to national forest monitoring and assessment systems. The three assignments were the socio-economic monitoring (SEM), forest governance monitoring (FGM), and informal forest-based economy (IFE). The linking of these studies sought to do the following:

i. Propose a number of methods that can be considered for prioritized variables;
ii. Consolidate the variables; and
iii. Propose specific criteria of the best-suited methods for each variable.

Under this task, the outputs were as follows:

i. Coordination with SEM and FGM consultants in analysis and specification of variables;
ii. A design framework for combining and where possible integrating variables;
iii. A combined list of variables, key questions to address under each variable and methodological options; and
iv. A proposal for the scale of collecting information on all variables.

2.2.6. Input to draft guidance on socio-economic/ governance components of NFMAs

The activities under this task were to do as follows:

i. Provide written comments on the draft guidance documents on socio-economic/forest governance components of NFMAs;

ii. Comment on an adapted version of an inventory design support tool (DTIM), in particular on new functionalities developed and applied in the context of the studies, i.e. secondary data compilation and the provision of guidance on the selection of alternative methods for primary socio-economic/governance data collection; and

iii. Contribute to the drafting of a guidance document on measuring the policy relevant aspects of the forest-based informal economy, as part of a socio-economic component of NFMAs. The document integrates comments from other experts in the field and is an edit and language-check ready version of the guidance document.

A combined and integrated analysis of variables from socio-economic and forest governance was undertaken. The analysis looked at the relevance of each variable for capturing specified information and sought to determine the appropriateness of the operational questions and optional methods for collecting the information. Furthermore, the consolidated list forms the basis for further developing a data collection manual, as well as measurement tools.

An understanding of the informal forest-based economy in Zambia, including operational definitions, was provided. Within this broader understanding, key parameters for measuring the informal economy in Zambia, as well as a schema for collecting relevant information that includes policy related data, were identified.

2.3. Approach used in determining needs and methods

A five-step interactive approach was used in determining the information needs from which relevant variables were generated and appropriate methods for collecting primary data and information identified. The five steps, described below, were (i) inception meeting with key stakeholders; (ii) drafting an operational definition of the informal forest-based economy (IFE); (iii) document review; (iv) stakeholder consultations and joint working sessions among consultants; and finally (v) peer reviews by other experts.

2.3.1. Inception meeting

To derive a joint understanding of the assignment, the clients, namely the Forestry Department and the FAO, organised a one-day inception meeting for the three teams of consultants (Forest Governance Monitoring (FGM), Socio-Economic Monitoring (SEM) and Informal Forest Economy (IFE)). At this event, which was held on 9 March 2012, the consultants presented their proposed methodological approaches to the respective ToR. The specific tools to be used, as well as the timeframes, were discussed. Other stakeholders present were from the Survey Department, the Zambia Agriculture Research Institute (ZARI), the UN-REDD programme, and PMU–ILUA II. This preparatory stage proved useful, as the cardinal suggestion made was to operationalize the concept of an informal forest-based sector and/or apply it to the Zambian context.

2.3.2. Operational Definition of IFE[4]

The discussions around the concept of an informal forest-based sector helped define the boundaries and key dimensions. Informality has been typically defined as *economic activity that takes place outside of nation-state regulatory and reporting systems and in such cases, the value of goods and services produced may not be fully included, if at all, in national income accounts* (Hussmanns,2005). In Zambia, the informal forestry sub-sector is largely centred on the production and trading of non-timber forest products, characterized by subsistence activities, market and non-market transactions (e.g. gifts), and partial or non-compliance with labour and/or harvesting regulations. The sub-sector is said to make huge contributions to livelihoods and the national economy, but these contributions have not been adequately quantified.

As part of determining a way of studying the informal forest-based economy in Zambia, it was necessary to look at those parameters that support or augment informal forest-based economies. Following Reimer, (2000) these parameters are (i) knowledge and skills; (ii) social networks; (iii) social norms; and (iv) economic need.

In addition, the impact of resource abstraction and the resulting state of the forest resource base is also critical to understanding the informal forest-based economy. The resources, which make production possible, may include availability, land, tools, labour and time.

A flowchart for gathering data and information for the informal forest-based economy in Zambia is outlined in Figure 1 below. The model is based on four assumptions.

Firstly, that producers and marketers are guided by the defining parameters that drive this sector, as listed above. The extent to which the parameters will affect each group will be subject to the level of organization.

Secondly, it is assumed that producers are dominated by households (urban or rural) who may act in groups or singly to harvest and sell a given product, e.g. edible caterpillars. Some producer households may also act in the markets or sell directly to consumers (local-level), but the majority will sell to itinerant business people.

[4] A detailed conceptual framework of what informal forest-based economy in Zambia entails, is provided in Chapter 1. Definitions and characteristics are provided as well as a proposal for primary data collection under ILUA II.

The third assumption is that transport costs are borne by either the producer or seller. In some cases, the costs are borne by buyers of the commodity and this leaves very little room for producers to negotiate.

The fourth assumption is that sellers or marketers are found in markets designated by local authorities according to the Market and Bus Station Act of 2007, or that they sell in an open space. Such open spaces have to be identified if the value chain of each commodity is to be understood.

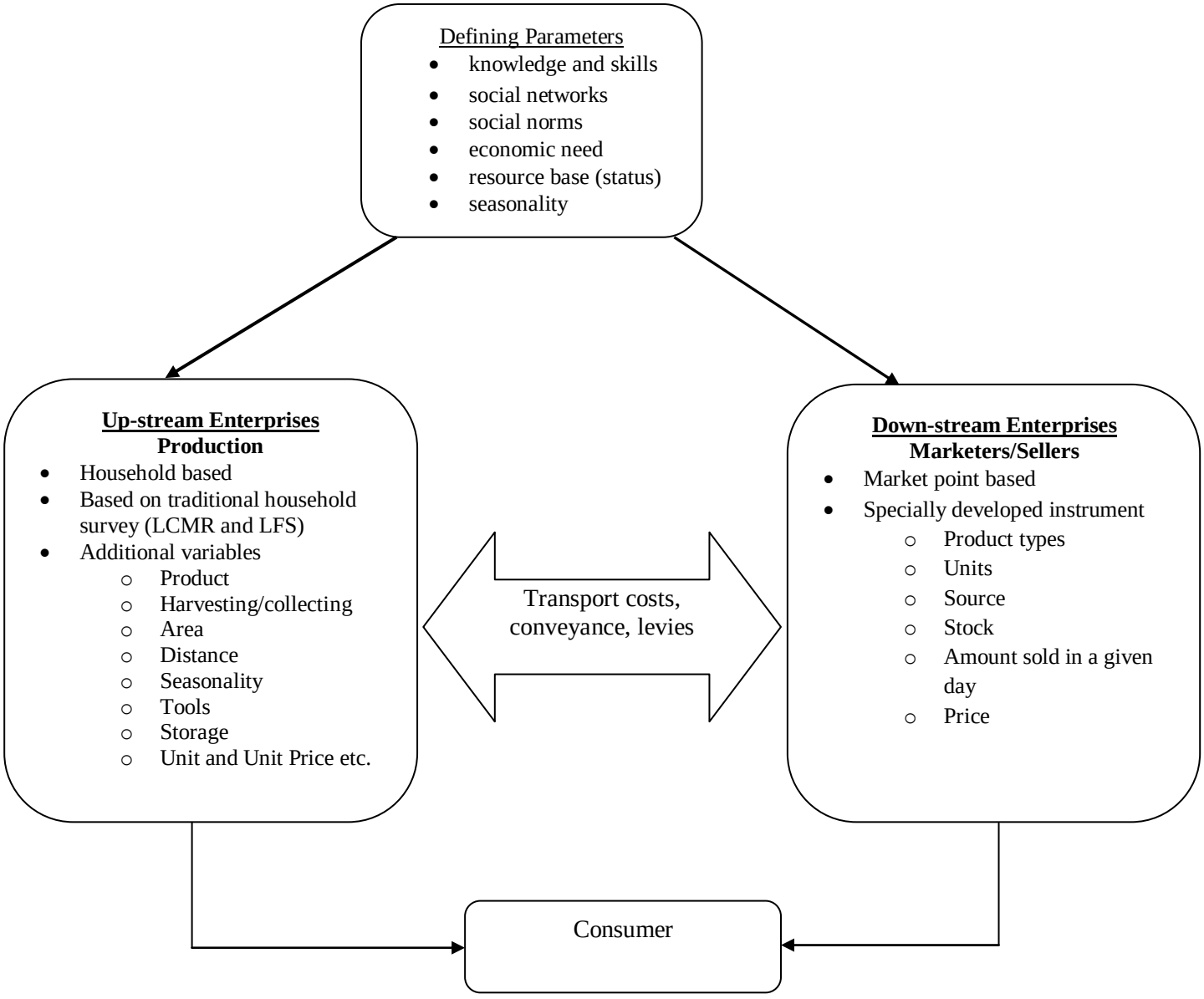

Figure 1 *Flowchart showing data and information gathered for informal forest-based economy*

Not all information is readily available when analysing the flowchart. Data will need to be generated for some variables. For the upstream enterprises, i.e. the producers, the first data set will be based on the household surveys and censuses as carried out by the CSO (CSO, 2001), and are largely determined by the benchmark statistics of 1994 (CSO, 1997). In Figure 1, we recognize that forest products (processed, semi-processed, or un-processed) will be transported from source areas to the market(s). It is important that the associated costs are captured. Annex 1 proposes a data sheet that indicates the kind of data to be captured. Transport routes (pathways for forest products) need to be identified and data gathered for a period of one year, but only during distinct seasons. The existing Forest Department and District Councils' network of checkpoints may be used for this, but their representativeness must be ascertained.

Most forest products will come from the hinterland to established markets, e.g. Soweto in Lusaka. These markets have wholesale and retail sections. Capturing data from wholesalers must be purposively selected and data gathered at stipulated times (anniversary days in a week) and information for each product recorded as indicated in some of the variables listed in the flowchart.

2.3.3. Literature search and review

Literature review was one of the key approaches applied throughout the process (see Table 1). Documents were classified into priority and secondary categories, as described above. To perform the review of both primary and secondary data sources, a document analysis tool was developed and applied. Several tools of analysis and steps were followed, as shown below:

(i) Process and Tools

- Study of priority documents
- Secondary data availability analysis
- Document analysis tool
- Information needs analysis
- Information gaps identification
- Identification and specification of variables for primary data collection

(ii) Key Research Questions

- How is the informal forest-based economy defined?
- What data and information are available that covers the forest-based informal economy, and is found in the country's main socioeconomic survey frameworks?
- How are that information/data collected?
- What are the current variables in use?
- Are the variables reported in the same way?
- What data and information related to the forest sector are collected by stakeholders? Of these, which ones are related to the informal sector?
- Are new and additional variables required?
- What IFE data and information are required for policymaking?

- In the absence of requisite data and information, how can the informal forest-based economy be measured?

(iii) Document Analysis Template

The document analysis template is a matrix used for reviewing primary and secondary data sources. For each reviewed document, three key aspects were explored: the main thrust of the document; the information pertaining to informal forestry-based economy; and information need or gaps were identified.

The key parameters used in the review of the informal economy were employment, forest derived income, contribution of forest income to the welfare of primary producers, and contribution to the national economy. For policy, strategic framework and legal documents, the review focus was on the strategic measures and legal guidelines put in place for supporting sustainable use of the forestry, and other natural resources applicable to the informal forestry economy sub-sector. In nearly all the documents, the overall performance of the forestry sector in Zambia provided information on sector weaknesses and issues, which over the years had prevented the achievement of the stated policy objectives and actions. Weaknesses and shortfalls provided a basis for needs identification.

In examining secondary data sources, the assessment included a review of variables and methods used in collecting data on key parameters. The focus was placed on geographical coverage, the type of variables used in data collection, research design, study limitations, and conclusions made.

The research design, tools and methods of data collection used in secondary reports were examined against the information needs, to determine how well they met the needs. Where applicable, the weaknesses and shortcomings of secondary data sources to fill the identified needs led to gap analysis.

While appreciable literature exists on the informal forestry-based economy at an international level, this is not the case in Zambia. Comprehensive data sets that could be used in examining the role of forest products in poverty alleviation and contribution to national economy are not available. Secondary data availability analysis revealed scanty and un-coordinated storage of information on the Zambian informal forest-based economy. For a detailed description of information availability, see Annex 1.

From the identified information needs and gaps as contained in the analysis template, preliminary variables for primary data collection were extracted.

2.3.4. Stakeholder Consultations

A checklist for conducting consultations with stakeholders was developed. Key questions are listed below:

i. What is the core business/objective of your institution/organisation?

ii. Do you hold any data and information relating to the informal economy?
iii. Do you hold any data and information relating to the forest-based informal economy?
iv. What type of data and information do you have relating to the above?
v. What are the current variables being collected?
vi. Are the variables reported on in the same way?
vii. Are these well understood by other stakeholders?
viii. Does your institution/organization collect any data?
ix. How frequently are the data and information generated?
x. What methods were used in generating the information/data?
xi. What are your data and information needs/requirements with respect to Zambia's informal forest-based economy?

While some stakeholder suggestions relate directly to policy decisions, most information needs were identified by the stakeholders engaged. From the needs, a list of possible variables for measuring the informal forestry-based economy was made. Besides providing additional needs and related variables, stakeholder consultations validated priority information needs already identified from primary and secondary data sources.

2.3.5. Priority list of variables

Information needs and persistent gaps were identified. Against each identified information need, a list of corresponding variables with a potential to cover the need was drawn. Tentative lists of variables were compiled from the operational definition of the Zambian informal forest-based economy; primary documents; secondary data sources; and individual and collective stakeholder consultations. At secondary data availability and analysis stage, some of the variables in the preliminary list, were found to provide sufficient, regular information. A second list of variables with insufficient information was consolidated suggesting various potential information sources.

A consolidated list was then prepared, comprising priority variables only, with recommendations for specific methods and tools deemed relevant for primary data collection. In addition to suggested methods and tools, a framework for a joint survey design to include those of forest governance monitoring and socio-economic monitoring was prepared.

2.3.6. Joint Working Sessions and Peer Reviews

In addition to the above steps, periodic reviews were held among the three national consultant teams (FGM, SEM and IFE) and the international consultant on IFE. They included coordination meetings held on 12 April 2012 and 24 April 2012; and peer review meetings involving the Forestry Department and FAO held on 25 and 26 April 2012. This was supplemented by a meeting with experts from FAO Rome held between 23 and 27 April 2012. In all instances, the meetings were useful for reporting the progress made as well as for focusing on the most critical aspects of the assignment.

From the interactive process outlined above, the major outputs achieved include the following:

i. An inception report on the approach and tools of analysis;
ii. A theoretical framework for measuring the informal forest-based economy;
iii. A Needs Assessment report;
iv. A report on existing data;
v. An overview of information gaps;
vi. A proposal for data collection methods ; and
vii. A methodical approach for ILUA II

3. INFORMATION NEEDS ANALYSIS

The information needs identified, as well as the preliminary variables for meeting these needs, are provided in Tables 3 and 4.

3.1. Derived information needs and possible variables

Table 3 *Document-based Information Needs*

Document-based Information Needs Identification	Possible Variables
1.0 Information Needs from Priority Documents **1.1 Income** • Difficulties to obtain accurate income data	**1.1.1 Income** • Income sources • Income from NTFPs • Forest-based income • Income from NTFPs gifts • Income from NTFPs exchange • Income from NTFPs bartering • Consumed income
1.2 Volumes • More data on timber volumes & biological growth functions of commercially valuable tree species need to be complied and analyzed • No statistics on charcoal production figures due to non-licensing or poor record keeping • No statistics on deforestation rates due to charcoal production and other deforestation activities • Trading in NWFPs has not been recognized	**1.2.1 NTFPs** • Traded NTFPs • Consumed NTFPs • Production volumes of NTFPs
1.3 Employment • Employment generated by the forestry sector is not specified nor the value in financial terms thereof	**1.3.1 Employment** • Employment • Employment by sector • Wage structure

Document-based Information Needs Identification	Possible Variables
	• No of workers
1.4 Stocks • Estimates of stocks for most non-wood forest products & services lacking • No reliable information on the stock growth of resources/stock volumes • Inadequate access and availability of up-dated information on stock and utilization of natural resources • Lack of bio-mass inventories of grass and other herbaceous plants • Little data/inform on stock & utilization parameters e.g. extraction, production, processing, marketing, distribution & consumption • Need to conduct comprehensive forest inventory surveys • Quantities and quality of most IFE activities not specified	**1.4.1 Stocks** • Extracted volumes • Production volumes • Processed volumes • Traded/volumes sold • Value addition/state of sale • Consumed volumes
1.5 Values • Forest sector to national economy grossly under-reported • Inadequate accounting and valuing forestry services/ understated value of forest contributions • Indirect forest values not accounted for in national accounts/ not effort has been made to quantify the protective value of forests	**1.5.1 Values** Annual quantities • Extracted • Consumed • Traded or sold • Gross revenue • Profit margin
1.6 Methodological • Inadequate management plans/management of forest resources not planned as no management plans exist • Methodology used cannot adequately capture all dimensions of IFEs • Socio-economic importance of herbaceous plants to rural livelihoods is lacking • Some wood-based industries are included in manufacturing, construction and trading sectors • No scientific based information on the impact of firewood collection on forest conditions and deforestation • Rates of deforestation not conclusively done through inventories	
2.0 Information needs from Secondary Data Documents **2.1 Income** • Lack of comprehensive data sets for examining the role of forests for subsistence and cash income	**2.1.1 Income** • Subsistence income

Document-based Information Needs Identification	Possible Variables
• Little data on forest income for the Kalahari sand forests • National statistics on the contribution of forest products to countries' economies are extremely poor • Only cash income generating NTFPs were considered • Only income from cash and non-cash sales of NTFPs is considered • Quantification of the consumption and exchange of forest products at household level has been extremely difficult • Subsistence consumption was excluded • Sustainability of forest income not discussed adequately • Value of NTFPs consumed within a household not included •	• Cash income sources • Non-cash income • Quantities of NTFPs consumed • Quantities of NTFPs exchanged • Quantities of NTFPs extracted • Quantities of NTFPs traded • Market prices
2.2 Volume • Total volumes of different forest foods collected and traded in Zambia are unknown • Huge volumes traded remain unaccounted for • Local/domestic consumption not considered • Non-availability of reliable data on volumes and values of subsistence consumption of NTFPs • Production volumes remain unknown for most forest produce/products • Subsistence use and much informal trade are not captured in GDP calculations • The trade of mushrooms is visibly substantial but volumes traded at national level remain unknown • There is almost no quantitative data on medicinal plant use and trade	**2.2.1 Volumes** • Volumes of NTFPs gathered • Volumes of NTFPs traded • Volumes consumed in household • Market prices of NTFPs • Volumes produced/collected • Traded volumes at different points • Types of forest produce being traded at different points
2.3 Employment • *Difficulties to estimate the number of players for each value chain* • No estimate on employment are made	**2.3.1 Employment** • Production • Processing • Value addition/enterprises • Market • Transport • Consumption • Gathering/collection
2.4 Stocks • Determining how much of the resource base is being used • Determining the distribution of forest resources base countrywide • Estimates of the rate of deforestation are alarmingly	**2.4.1 Stocks** • Volumes produced • Utilization from production to market

Document-based Information Needs Identification	Possible Variables
high, but no single rate adopted • Limited inventory data availability on indigenous forests • Little or no data on the sustainability of present intensity of forest use • Little quantitative data on use of extractives and fibers • Need for sufficient information on growing stock, quality and regeneration status of forests **2.5 Values** • Lack of documented information on true value of NTFPs & services • Non-availability of reliable data on volumes and values of subsistence consumption of NTFPs • One aspect of forest utilization not addressed relates to ash fertilizer as direct contribution to agriculture production • Revenue collected for licensing is used for computing financial contribution • Uncertainty/un-reliability in figures used for estimating financial contribution by the sector • Underestimated woodland income, in particular large subsistence component • Value of environmental services provided by forests do not have data **2.6 Methodology** • A one – time snap shot approach is used as opposed to panel data to better understand households participation over time • Data available does not reflect small & medium timber processing, logging and illegal timber • Data on medicinal plants and their contribution to Zambian economy is generally lacking • Different units were used in determining productivity (kg, 'medas', litres, bundles, buckets without stating the actual mass involved). • Empirical research is required to verify figures on forest contribution For most NTFPs thus making it difficult to meaningfully measure the size and actual contribution of the IFE activities.	**2.5.1 Values** • Market prices • Volumes traded • Volumes consumed • Volumes produced

Table 4 *Stakeholder Information Needs*

Stakeholders	Stakeholders Information Needs	Possible variables
Forestry Department (Province and District)	• Activities related to NTFPs not funded • The amount of NTFPs that can be produced from each woodland type unknown • Inventories on NTFPs unavailable • Lack of mechanisms for capturing data on NTFPs Lack of research results on forest performance e.g., number of trees required to produce a bag of charcoal • Market value of NTFPs remain unknown • No knowledge of baseline conditions on status/availability of forest produce • Non-availability of working structures at community level except for bee-keeping • Systems of capturing data are lacking • Units of measurements are not standardized	• Forest products • Resource availability • Market prices • Value of products • Quantities • Units of measurement
Plan Zambia (International)	• How much income is being generated • Income levels per household • Availability of markets for NTFPs • Access to markets for NTFPs • Quality of honey being produced • Number of producers • Utilization of income • Value addition • Knowledge base for all events in a value chain • Extension services • Quantities and volumes related to o Extraction o Used in a home o Traded • Mean farm gate prices	• Income • Value of income • Markets for trading • Availability • Accessibility • Market information • Prices • Value addition • Expenditure • Knowledge levels • Extension services • Quantities extracted • Quantities used • Quantities traded
Caritas Zambia	• Forest product demand at district, provincial and national markets • Number of producers to determine competition levels • Location of producers of similar products • Pricing information • Value of forest products	• Value of household income • Real value of environment • Quantities traded • Quantities consumed • Demand for products • Market prices

Stakeholders	Stakeholders Information Needs	Possible variables
		• Size of the sector
Provincial Planning Unit	• Extent of the informal forestry sector • Quantities of forest products being produced • Values of what is being produced and used • Measures to formalize IFE activities to determine contribution to GDP • Establishing a functional data collection system at provincial, district and community levels	• Number of producers • Characteristics of IFE • Quantities of forest produce • Values of what is produced • Value of what is used • Data collection tools
Central Statistical Office	• Current stocks on forest produce • Rate of deforestation • Trends in afforestation • Trends in charcoal production • Filling gaps in national accounts statistics	• Resource assessments • Resource utilization • Quantities being used • Charcoal production • Units of measurement

3.2. Information Needs Report

The requirements for additional information for a better understanding of the extent and characteristics of the informal forest-based economy in Zambia are many and varied. Conceptually, the information needs identified can be classifiable into two main categories: the underlying methodological weaknesses, and their outcomes or effects. Information needs include, but not are restricted to, the following;

i. Methodological weaknesses;
ii. Non-disaggregation of available data according to employment levels created by the informal forest sector;
iii. Difficulties in computing forest-based incomes (subsistence and cash);
iv. Volumes produced, conveyed, traded and consumed unknown;
v. Understated or un-reported forestry contribution to national economy;
vi. Unknown statuses of forest products especially NTFPs; and
vii. Inadequate Information on Management Plans.

3.2.1. Methodological Information Needs

Zambia's mainstream socio-economic data generation and sector specific studies use five major data collection methods. These include census, surveys, administrative sources, Management

Information Systems (MIS) and Participatory Assessments.[5] Whilst these sources complement one another, the current formats and processes of data gathering and analysis prevent a fuller understanding of the informal forest-based economy.

Studies and official documents provide qualitative descriptions of the socio-economic contributions of forest products to the livelihoods of rural-based people. Procedurally, nothing is wrong with qualitative assessment methodologies, but these are inadequate in determining data or statistics relating to issues of employment and financial contributions; information vital for policy decision-making. Without the backing of statistics, it also becomes difficult to measure, meaningfully, the size of the informal forest-based sub-sector.

Whilst a few studies have attempted to quantify the size of the informal forest-based economy, they have not succeeded either, mainly due to inconsistencies between data collection methods used and conclusions drawn. Most studies seem to lack validity and a limited focus on IFE and therefore only make inferences from their data sets due to limited sample size, while the geographical coverage and forest products measured are neither comprehensive nor representative.

It was established from the various documents, including the Forest Act[6], that Zambia is endowed with numerous forest produce or products spread across the country. In particular, the gathering and trading of non-timber forest products characterize the informal forest-based economy. The diversity in endowment and disposal patterns has created methodological challenges. Of the many challenges described herein, it has proved difficult to quantify domestic consumption and exchanged forest products at household levels. Even fewer studies have estimated or measured the proportion of forest-derived income in relation to other income streams. In instances where this has been attempted, the figures used in computing values and estimates of contribution can safely be described as uncertain due to methodological constraints. While provisional estimates on volumes produced and traded have been made for limited activities including charcoal, firewood and honey, subsistence use and quantities traded for most informal forest-based activities have offered great challenges to be measured and valued.

Another common weakness in methods applied to measure the informal forest-based economy is the process of collecting information on relevant variables. Most documents have heavily relied on a single-visit approach and often, the responses recorded are based on the recall of the respondents. Quantities and related values are assigned as reported by the respondents. In the absence of records, as is typical for Zambia, the data provided may not be accurate. Relatedly, the single-visit approach may not necessarily capture the full range of activities undertaken due to diversity, uniqueness and seasonality in the availability of forest produce. Instead, this approach has tended to leave out some forest-based activities despite their visible abundance.

In addition to the non-recording of information on production, consumption and trading, another methodological challenge relates to the informality in the manner of transactions of forest products.

[5] CSO 2001. Data Requirements for the Poverty Reduction Strategy Programme.
[6] The Forest Act identifies 59 types of forest produce as found in Zambia.

Some cash transactions involving non-timber forest products happen in informal markets. Given these attributes and other challenges, subsistence use and informal trade are not captured in gross domestic product calculations.

Irrespective of the methodological design used (either qualitative or quantitative assessments), none of the reviewed methodologies adequately captured all dimensions of the informal forest-based economy.

3.2.2. Volumes and Quantities

The quantities and volumes of the various forest products, at all points of any commodity chain, remain unknown, including the state and quality in natural endowments. The immediate implications are methodological challenges in computing financial values and contributions of the informal forest-based sub-sector. Despite the attempts by different stakeholder studies to fill these gaps, there is need for information on the following:

i. Availability and status of the various non-timber forest products
ii. Activities based on non-timber forest products
iii. How much is being produced
iv. How much is collected from the natural habitats
v. Proportions being used at household level
vi. Proportions being traded and/or exported

The quantification and valuation are critical in determining the size of the informal forest-based sub-sector; information considered important and necessary for setting a policy agenda. The un-reported or under-valuations in government official statistical data partially emanate from this factor. Given diversity in the number of activities within the informal forest sector, varying characteristics of the activities or commodities, various strategies are required to meet this need.

In this regard therefore, given inadequate or even profound lack of information on NTFPs, there is a great need for the following:

i. *Research on the quantitative status, not just mere availability* but also the *potential contribution* to employment creation;
ii. Sufficient information on the growing stock, quality and regeneration status of forests to make planning for sustainable harvesting of NTFPs possible; and
iii. Empirical research to validate estimated figures on forest contribution.

3.2.3. Non-disaggregation of statistics on employment created by IFE

Employment is a major parameter and variable that can be used in measuring the informal forest-based economy. While the roles played by non-timber forest products to livelihood sustenance and national economy are acknowledged, the scale of employment generated and maintained by the informal forest-based sub-sector largely remains unknown. For instance, while use of medicinal plants is acknowledged in both official documents and studies conducted in the last decade, and described as 'wide', no reliable estimates on employment generated thereof are available.

With the exception of charcoal and honey that do have estimates on their employment potential (Puustjärvi et al., 2005 and GRZ 2005), most non-timber forest products lack estimates of their contribution to employment in national statistical databases. In broad categories however, estimates of people employed in the informal sector, which includes the forest-based sub-sector, can be found (CSO, 2004 and 2010). What is lacking is the disaggregation to specify how many of those in the informal sector fall under the forest-based sub-sector.

The study's findings demonstrate that regular efforts have been made to collect information and data on relevant IFE variables, such as the Labour Survey Force and the Living Conditions and Monitoring Surveys. What is lacking is the form of data and information presentation, which in most instances remain un-specified, and thus do not reflect the individual contributions or proportions of contributions made by the forestry sector. In studies conducted outside the mainstream national socio-economic surveys, the main limitation in the context of employment is their restriction to measuring numbers of rural households deriving income from forest-based activities. Deriving an income and employment from forestry are not synonymous. At both up-stream and down-stream components of the informal forest-based economy, the size and nature of employment created and maintained remain unknown.

3.2.4. Difficulty in measuring forest income accurately

The most difficult aspect has been to address the challenge of quantifying and putting a value on domestic consumption and other non-cash transactions of IFE, which have therefore been omitted in nearly all the reviewed socio-economic reports. As discussed in the preceding paragraphs, the processes of collecting information on such variables require adjustments if forest derived incomes are to be captured in their totality. Another source of under-valuation of the forestry contribution relates to agriculture and livestock production. Ash fertilizer, which is a direct contribution to crop production, especially in Luapula, Northern, North-Western and parts of Central Provinces where shifting cultivation practices are dominant, has not been valued. Similarly, the contribution of natural pastures for livestock production continues to be un-valued.

Some reviewed studies and official documents have confirmed the challenges inherent in determining, in an accurate manner, the variable of forest-based rural income (ILUA: 2005). Even the Central Statistical Office, which is an official government agency mandated to generate statistics for official use, have more often than not lumped together income from the forestry sector with that of others, especially agriculture and fisheries (compare CSO: 2004; 2010 reports). Given such a manner of data presentation in broad categories, the role of forest products remains obscured and not fully recognized.

Issues of diversity, availability and seasonality are characteristic of most non-timber forest products, and present challenges in recording total revenue generated by producers. A one-time data collection event may not be the most appropriate to determine forest-based income, as the process often spreads over periods exceeding a month and is derived from more than one activity. Therefore, the nature and manner of production demands that revenue generated is monitored over a longer time-frame. Multiple, regular visits also reduce on data distortions due to recall problems, as recordkeeping by producers of NTFPs is best described as non-existent.

Owing to this challenge therefore, few studies have estimated or measured the proportion of total income streams of households that can be ascribed to forest goods and services (compare Mulenga et al., 2011; Jumbe et al., 2008; Puustjärvi et al., 2005; Mickels-Kokwe, 2005; ILUA, 2005). Arising from methodological challenges described above, the figures used in estimating the financial contribution by the sector are clouded in uncertainty. It has also been mentioned that the statistics used in official documents are not reflective of the entire sectoral contribution, such as revenue from small and medium timber processing, logging and illegal timber (Puustjärvi et al., 2005).

3.2.5. Under-stated values of forestry contribution (national level)

Past attempts to determine the contributions made by the forest sector to the national economy have mainly been drawn from timber-based enterprises and/or revenue generation form government taxes or user fees. Financial contributions from the non-timber forest products have been grossly under-reported. This is attributed to two related factors: the trading of forest products and goods occurs in the informal sector, and national systems of accounting and valuations of forest products in the informal sector have remained a great challenge. While the production and use values have been estimated for some activities; including honey, firewood and charcoal, the difficulty has its roots in the non-availability of data on production, subsistence consumption and traded volumes, which in turn is explained by other methodological and monitoring factors. Volumes produced and/or traded give a direct indication of the worth of products or produce. Thus, the inadequate availability of information on such a variable renders the determination of real values difficult. The lack of aggregate volume data also makes it difficult to measure the size of the informal forest-based economy, to identify and estimate the numbers of key players, such as producers; middle-men; processors; traders; and transporters, and to provide general estimates on the levels of employment created (Mickels-Kokwe 2005). Compounding the underreporting on the value of forestry contributions to the national economy is the irregular allocation of forest-based enterprises in national statistics, especially wood-based industries to other economic sectors such as manufacturing, construction and trading.

The literature reviewed revealed that huge discrepancies exist between recorded out-puts in government agencies and estimates of contribution made by the forest sector recorded, and the reality on the ground.

3.2.6. Unknown statuses of existing forest products, especially the NTFPs

While the importance of non-timber forest products in sustaining rural livelihoods and alleviating poverty is known and acknowledged in forest policy and relevant strategic frameworks (Draft Forest Policy, 2010; National Policy on Environment, 2005; ZFAP, 1998), there is little basis for planning interventions. In both the forest policy and strategic frameworks, strategies aimed at promoting forest-based industries and in particular those based on NTFPs have been pronounced. Such strategies, if implemented, are capable of providing employment and thus contribute in an effective manner towards poverty alleviation. Despite the availability of well-intended policy strategies, the available information and/or data sets have placed dominance on timber while NTFPs continue to get less priority. This concern stems from what is contained from official and other documents on non-timber products. One fundamental weakness in regard to stated policy

intentions aimed at planned sustainable management of NTPS at operational level is lack of data on existing growing stock and general productivity of most commercial NTFPs. Without data on stocks or general resource availability, envisaged contribution by NTFPS to poverty reduction may remain a pipe dream.

It has also been noted that there exists a variance in the amounts of available information on endowment patterns and utilization levels. Available literature fails to differentiate the two, making it rather difficulty for planning purposes. In addition, researchers or authors of case studies have demonstrated an element of bias in their reporting, whereby some of the NTFPs are given more prominence than others, thus also contributing to a lack of information on some commodities that define the informal forest sector. For instance, beekeeping has received a lot of attention owing to its international market, while fruits such as Ziziphus *Mauritania* (masau), largely from valley areas of Lusaka, Eastern and Southern Provinces, have received less attention. Therefore, we would like to argue that there is limited information available at species level for most NTFPs and suggest that a broader assessment is undertaken to cover them all.

3.2.7. Inadequate information on management plans

The apparent lack of sufficient data and/or information on the status of NTFPs ultimately has implications on the sustainable management of these important forest resources. The absence of such information means management plans and related systems are either not available or the interventions undertaken are not backed by any scientific information. Another result caused by the absence of management plans is also a direct failure to make informed choices with regard to adopting the best management options for the production of non-timber forest products.

There is a need for sufficient information on growing stock, quality and regeneration status of forests to make planning for sustainable harvesting of NWFPs possible.

4. REPORT ON SECONDARY DATA

Secondary data analysis had a dual purpose; sourcing key information needs and identifying information gaps and related measurement variables for future data collection. Another expected output from this review centred on the extent to which the Zambia Forest Action Programme (ZFAP) could indirectly contribute to the generation of data on IFE. The study's findings reconfirmed that the informal forest-based sub-sector is less well documented than other sub-sectors (cf. Mulenga et al., 2011, Jumbe et al., 2008, Ng'andwe et al., 2006).

Despite the limitations, the studies undertaken on the informal forest sub-sector provide useful information relating to variables and methods that may be used for collecting primary data in the future. A complete list of literature used in the analysis is presented in the references.

4.1. Policy considerations

Policy, legal and strategic frameworks acknowledge activities in the informal forest-based economy, but they appear inadequately provided for. What remains unclear is the extent to which the strategies and accompanying actions are implemented. The Forest Act defines what is legal by

imposing fees at the production level, or through conveyance, when the produce is intended for sale and/or trade. This is applicable in the NTFP sub-sector, which underpins the informal forest sub-sector. From a policy perspective, strategies meant to strengthen the NTFP sub-sector are outlined and respective actions clearly spelled out.

The Sixth National Development Plan (SNDP), covering the period 2011–2015, acknowledges the importance of natural resources as a basis for economic activity, livelihoods and energy. The plan has set the goal to reduce the rate of deforestation and degradation of land and wetlands; while the overall objective is to promote sustainable forest and land management. Specifically, four strategies related to the forestry sector are outlined:

i. Promote sustainable land management practices;
ii. Promote commercial activities and value addition for wetland resources;
iii. Rehabilitate beeswax and honey processing factories; and
iv. Strengthen the human resource capacity in forestry management and extension.

At sector level, the forest policy adequately recognizes the significant role of forest products for rural livelihoods and the national economy at large. Relevant and important measures include the following:

i. Regular inventories and monitoring of the management and utilization of forest resources; and
ii. Encouraging the participation of micro- and medium-sized enterprises in the harvesting and processing of forest products, including NTFPs.

The ZFAP is the main guiding framework for the forestry sector. ZFAP acknowledges the role of NTFPs as a mechanism for enhancing contribution to the national economy and poverty reduction. A major policy component titled *The Forest Industries and Non-Wood Forest Products Development* is meant to enhance general performance contribution by developing appropriate technologies for production, management and use. It recognizes the existing weaknesses which have hindered management of the forestry sector. Whether or not this programme is being implemented is largely disputed by the provincial and district forest staff.

The National Policy on Environment provides a comprehensive situation analysis on natural resources management and utilization, including the forest sector. For instance, the report concludes that destructive harvesting methods and inadequate forest management has led to a loss of productivity. Equally important are the NPE guidance principles and strategies relevant to the informal forest-based economy, which include the following:

i. Inventories and monitoring to be an integral part of sustainable forestry management;
ii. Forest management and control should be based on appropriate research;
iii. Provision of alternative income generating activities that should reduce pressure on forest products such as the commercial use of NTFPs;
iv. Economic values of natural resources to be established;

v. Opportunity costs of using natural resources and economic values of conserving them are reflected in market prices; and
vi. Well-designed research programmes to generate technologies for sustainable forest use are conducted.

Whether or not the NPE strategies and policy actions on non-timber forest products are being implemented may be questioned. It remains to be seen how far proposed activities like inventories and monitoring of the NTFPs sub-sector can go. However, policy implementers at provincial level and frontline staff at district level are of the opinion that policy pronouncements are not met with corresponding actions, and that budgetary allocations to monitor the NTFPs sub-sector are not forthcoming.

4.2. Activities in the informal forest sub-sector

Several secondary sources identify and classify activities, which describe the informal forest-based sector. Overall, the literature provides an understanding of the scope of the informal forest-based economy, information that is necessary for determining its contribution to household welfare and the national economy.

Zambia has a wide range of forest products and services that use both for subsistence consumption and cash economy. The Forest Act identifies 59 different types of forest produce, and the NTFP overview by Mulombwa (1998) provides further detail. Case studies on the informal forest economy and traded NTFPs are provided by Ng'andwe et al., 2006; Mulenga et al., 2011; Jumbe et al., 2005; and Puustjärvi et al., 2005. In general, limited information is provided on each identified forest product which focuses on the role of products in livelihood sustenance, and their ability to mitigate poverty.

The diversity and range of forest products found in different parts of the country is acknowledged. The key element of commercialization is discussed extensively in the literature. On the basis of perceived commercial value, some authors classify forest enterprises into fuel wood, wild foods, medicinal, construction materials, handicraft, beekeeping, carpentry, timber logging and others (cf. Jumbe et al., 2005 and Mickels-Kokwe 2005). The classifications grant an opportunity to examine the methods used in determining key forest products, and their contribution of forest products to rural households in particular, and the national economy in general. Within the concept of forest-based enterprise and value chains are issues for further examination, including employment creation.

Whereas the literature clearly identifies specific forest-based activities and/or enterprises, assigning them a contribution towards rural livelihoods, the detailed nature of such activities and enterprises largely remains unknown. Within each category, some activities contain more information than others, such as disparities between commonly paired products such as honey and honey beer; chikanda (ground orchid) and busala (*Dioscorea spp.*); poles and thatching grass; and caterpillars and other edible insects. All the products mentioned first have more information than those mentioned second. It therefore becomes difficult to generate meaningful statements on the socio-economic conditions existing among the users, which may result in under-estimation of a

forest product's contribution. A broader assessment, with the full participation of local forest resources users, is thus ideal. If adopted, the broader-based assessments of forest resources will help in selecting interventions, which can safeguard the forest assets.

Sustainability threats on some key NTFPs have also been revealed, owing to extraction practices and deforestation, which have resulted in reduced resource availability (Jumbe et al., 2008; Mulombwa, 1998; Mickels-Kokwe 2005). Examples include harvesting or extraction methods such as excessive removal of bark and/or roots from medicinal shrubs or plants that may lead to tree mortality or affect subsequent regeneration. In addition, excessive harvesting of roots and tubers may have impacts on species' population and structure (Mulombwa, 1998). Mickels-Kokwe 2005 discusses the risk of selected *chikanda varieties (*ground orchids, e.g. *Disa spp*.) and *munkoyo (Rynchosia spp.)* plants becoming exterpiated. Either a reduction or fluctuation in resource availability patterns renders valuations of expected outputs difficult, while the absence of correct information and planning of interventions also becomes difficult.

4.3. Contributions to income: national and household

Several studies have made an attempt to measure the contribution of the forestry sector as a whole, or that of the NTFPs, to the welfare of households in Zambia and the national economy. Some studies have focused on selected forest products (Mickels-Kokwe 2005), while others have included a broader range in their analyses (Ng'andwe et al., 2006; Jumbe et al., 2008 and Mulenga et al., 2011). Often, the studies have measured the contribution of forest products to household income, but the value of NTFPs to household subsistence was not included due to the non-availability of data. It is also highly unlikely that such estimations took into account non-cash sales of NTFPs through barter, gifts or exchange.

The difficulty of computing the total forest-based income is an international concern (Timko et al., 2010). Multiple definitions and interpretations of income mean that it is fraught with complexity (Ibid). This difficulty perhaps explains why different studies reviewed have employed different methods in valuing the financial contributions of the forest resources to different players in the value chain. For instance, quantification of consumption and exchange of forest products at household level remains extremely difficult (Mickels-Kokwe, 2005), as is quantification of forest services, including fodder and ash fertilizer (Timko et al., 2010). Aware of such limitations, a few of the studies measuring forest-based income among rural households in Zambia have made inferences about the contribution by the entire forest sector to Zambia's economy (Jumbe et al., 2008; Puustjärvi et al., 2005; Mickels-Kokwe, 2005).

Whereas several studies discuss the contribution of forest products and services in a qualitative way, only a few have included quantitative information in their analyses. Central to their studies was their broad understanding of forest-based or derived income which was used in their estimation computations regarding forest dependency ratio, total forest income and the valuation of forest products. Estimated values were reached by drawing on the estimated total forest-based incomes and the number of households involved in forest products use. One major limitation with the conclusions drawn relates to the unit of income measure used, namely *per capita* income. Puustjärvi et al., 2005 argue that given the large proportion of children and youth in the Zambian

population, *household* income (as opposed to per capita income) is a more reliable measure of forest contribution.

Puustjärvi et al., 2005 assessed the contribution of the forest sector to the national economy and to poverty reduction in Zambia. The study used different sources of secondary data to determine the financial contributions made by the forest sector. Simple partial budgets were used to determine the value at each value chain point for identified enterprises. Subsistence consumption was valued at market prices, in an effort to obtain the true value of forest contribution to the national economy, as well as towards poverty reduction. True values of small-scale enterprises were not included in the estimations. However, the authors themselves acknowledge the difficulty in computing financial data owing to old information used as well as the unreliability of information sources used. Hence, the financial contributions discussed are termed provisional.

In two similar studies by the same author, but applied differently at household and at Gross Domestic Product (GDP) levels (Mickels-Kokwe 2005a and b), contributions of non-timber forest products are examined. Values at different points of selected value chains are given. The approach takes a broader assessment of incomes as proposed in the conceptual framework for measuring the informal forest-based economy in this assignment. Of particular importance is the distinction between consumption and cash income, and the report includes methods for discounting non-forest sector contributions, as well as the percentage of wastage to incomes at both household and national levels. Hence, important tools for discerning forest income are provided. However, the studies suffer from serious limitations such as a heavy reliance on secondary information and data whose validity cannot be stated with certainty. Equally limiting to the reliability of figures used in the two studies are volumes produced, consumed and traded.

Another difference observed in the reviewed studies relates to the scale of measurement and coverage of data collection. For instance, while Ng'andwe et al. (2006), Mulenga et al. (2011) used a national sampling frame, others employed a restricted coverage to capture production sites in few districts only. With respect to the latter, this offers challenges when drawing inferences, and thus their values of forestry contribution may not be applied at national level. Despite the inclusion of quantitative data in their descriptions of forestry contributions to household and national levels, the studies reviewed have used different methods, and in some cases different tools of measuring income, creating a situation that makes it difficult to compare the findings.

4.4. Employment generation

Another important parameter is employment generation capacity; the magnitude and characteristics of jobs created and maintained in the informal forest-based economy. Using primary and secondary sources, the literature makes provisional estimates on the number of job opportunities that are created and/or available in the informal forest-based sector (Ngandwe et al., 2006 and Puustjärvi et al., 2005). The notable and most common measurement tool is the computation based on the number of active forest producers or users. These figures are drawn from forest utilization surveys and formal employment opportunities. Puustjärvi et al., 2005 use a somewhat similar tool to the one used in the Labour Force and Living Conditions Monitoring Surveys (CSO: 2010 and 2004). Variables such as source, characteristics and sector of employment

in selected commodity value chains are provided. This is different from estimates made by previous studies, some of which have attempted to extrapolate employment solely from survey results and proportions of rural households. However, not all rural-based households are active forest users, and estimates made through such an approach may not be reliable. Hence, some studies report difficulties in estimating the numbers of key players along the NTFP value chains.

4.5. Information Needs from Secondary Data Sources

From the review of secondary data sources, the following information needs were derived:

i. Value of consumed NTFPs within the households;
ii. Value of non-cash sales of NTFPs through barter, gifts or exchange; and
iii. Employment generated and maintained.

4.6. Preliminary Variable Classification

Table 5 *Preliminary Variable Classification by relevancy to measuring informal forest-based economy*

Variables derived from information needs	Already being collected through household surveys	Require disaggregation to capture NTFPs	Policy Interventions	Critical to measuring IFE
1. Annual quantities consumed 2. Annual quantities extracted 3. Annual quantities traded or sold 4. Cash income sources 5. Consumed Income 6. Consumed NTFPs/ used at production level 7. Consumed volumes 8. Employment by sector 9. Forest-based Income 10. Gathering/	• Cash income sources • Consumed Income • Employment by sector • Forest-based income • Income from NTFPs • Income sources • Markets • Market prices • No of workers • Subsistence incomes • Value addition/ enterprises • Wage structure	Bartering of wild foods Exchange of food stuffs Employment created in the informal sector • Sub-sector • Size • type Gathering/ collection; • Types of forest produce collected • Harvesting methods • Processing methods • Storage practices Income from	• Annual quantities for domestic use • Annual quantities extracted for trade • Employ-ment size by sector • Gross revenue • Market prices of NTFPs • Profit margin • Value & Quantities of NTFPs traded • Value &	• Produce and sub-products volumes gathered/ harvested • Volumes used at domestic level • Volumes traded • Transaction costs • Market prices • Units of measurement • Bartering of NTFPs • NTFPs contribution to food security • NTFPs contribution to nutrition • Value of gifts

Variables derived from information needs	Already being collected through household surveys	Require disaggregation to capture NTFPs	Policy Interventions	Critical to measuring IFE
collection 11. Gross revenue 12. Income from NTFPs 13. Income from NTFPs bartering 14. Income from NTFPs exchange 15. Income from NTFPs gifts 16. Income sources 17. Markets 18. Market prices of NTFPs 19. No. of workers 20. Processed volumes 21. Processing 22. Production 23. Profit margin 24. Quantities of NTFPs traded 25. Quantities of NTFPs consumed 26. Quantities of NTFPs exchanged 27. Subsistence income 28. Traded NTFPs 29. Traded volumes at different		NTFPs • Bartering • Exchange • Gifts • ash Income • Non-cash income • Consumed Markets and prices • Types of NTFPs being traded • Different marketing points • Seasonal variations/ • trends • Locations where sold Quantities of NTFPs: • Traded • Consumed • Exchanged • Extracted Value of NTFPs; • Domestically used • Exchanged/ bartered • Gifts • Traded/sold Value addition / enterprises	Quantities of NTFPs consumed • Real value of forest products • NTFPs Value addition/ enterprises	• Exchange and value of NTFPs • Value addition/state in which NTFPs are sold • Impact in sourcing areas

Variables derived from information needs	Already being collected through household surveys	Require disaggregation to capture NTFPs	Policy Interventions	Critical to measuring IFE
points 30. Transport 31. Types of forest produce being traded at different points 32. Utilization from production to market 33. Value addition/ enterprises 34. Value addition/ state of sale 35. Volumes consumed at local level 36. Volumes consumed in household 37. Volumes of NTFPs gathered 38. Volumes of NTFPs traded 39. Volumes produced 40. Wage structure				

5. INFORMATION GAP ANALYSIS

Persistent information gaps were drawn from secondary data, stakeholders consultations and the identified information needs. The key research questions used in determining information gaps were as follows:

i. Of the information and data available, which one is relevant to measuring the informal forest-based economy?
ii. How adequate is the available data and information to capture and measure key dimensions of IFE?
iii. What is missing from what is available? – Gaps determination

Few studies have been undertaken on the financial contributions of the forest sector, especially non-timber products in household welfare in Zambia (Mulenga et al., 2011, Jumbe et al., 2008 and Mickels-Kokwe, 2005). The studies provide useful information on the contribution of forest products to rural livelihoods, where such resources are abundantly available. While most of these studies have estimated contributions of forest products to rural household incomes and/or national economy through exports, the following gaps still exist.

5.1. Values for NTFPs consumed within a household

Of the studies conducted on non-timber forest products in Zambia, some have measured the contribution at household level, while others estimated their value to the national economy in export value or estimated value in terms of energy consumed at national level. Strikingly absent from the literature are the *financial* values of subsistence consumption, including nutrition, health and raw materials. This is especially true for wild foods, medicinal plants and raw materials used in construction, respectively. The proportion of income derived from non-timber forest products has been estimated to be in the range 20-60% of total household income, depending on the wealth status of a given household. However, the estimations have not considered the value of own consumption, thus rendering the reported values less than what is being obtained on the ground. The gap in information is partially caused by the process of data gathering, as noted and summarized by Mulenga et al. (2011). Panel data is better for understanding household participation over time, as opposed to a snapshot surveys. Given this limitation, owing also to seasonality in availability and lack of record keeping, it is little wonder that huge discrepancies between recorded out-puts in official government records and actual values continue to exist. If the true value of forestry contribution is to be known, a combination of data collection tools with a national coverage is a must.

5.2. Volumes on non-timber forest products

The reviewed literature suggests that the size of the informal forest sector is big, and that its overall contribution to national economy is significant. Some activities within this sector may impact negatively on other natural resources. Despite such conclusions, the volumes produced, harvested, collected, traded and consumed largely remain unknown for most forest produce within the informal forestry sector. Again, this is on account of data collection methods and/or tools employed to obtain such data. Given the diversity in the genetic make-up of most NTFPs, standards for

measuring volumes need to be developed. Attempts have been made in the recent past to do this, but this has depended on the recall of the respondents, thus highlighting the methodological inadequacies.

5.3. Value of environmental services provided by forests

While this is beyond the scope of works for this assignment, it is also acknowledged that the value of environmental services provided by forests have not been quantified and no data are available. From the reviewed literature, not a single methodology has neither been used nor proposed. In the near future therefore, it becomes necessary that consideration is given to developing tools of analysis which capture and measure such contributions.

5.4. Disaggregation of data to reflect NTFPs

Few studies on the importance of the NTFPs sub-sector have a national coverage, as they either cover the whole forestry sector, or focus simply on NTFPs. For example, the Labour Force Survey 2008, CSO 2010, Mulenga et al. (2010) and Ng'andwe et al. (2006), provide data at these different levels, but the data do not inform each other. Thus, the contributions made by the informal forest-based economy activities and enterprises to total household income, employment generation and national economy have largely remained unclear. Statistics from government agencies have tended to include NTFPs in broader categories, namely agriculture-forestry-fisheries thus not recognizing their roles to the three dimensions mentioned above. This is a methodological challenge in that the variables used could have been cast in such a manner that they can meaningfully bring out the specificities of the sub-sector.

5.5. Methodical issues and tools of measurement

The studies offer valuable and diverse methods for measuring the informal sector economy. In particular, the Labour Force Survey and Living Conditions Survey reports (CSO, 2010 and 2004) jointly provides important variables, which the assignment considers to be adequate. Besides defining informal employment, guidelines are provided on measuring issues of income by different sources of economic activity. The points of difference, however, relate to the sampling procedures and actual data collection processes employed by the two studies. In this paper, we argue that, while the sampling procedures are scientifically sound and are globally used, they are not appropriate to forest-based income determination. Of course, the intended use and purposes in these surveys are wider than a forest utilization survey. Inappropriate or inadequate sampling relates to the failure to obtain a wider representation of interests of forest user groups. Not all rural-based households are forest-dependent, nor are they users of all forest products. The diversity in the range of forest products, including NTFPs, as well as the varying abundance across geographical locations demands sampling which caters for this variety. Another shortcoming relates to the actual data collection processes. Seasonality in the availability of forest products at different times in a year demands that data collection be undertaken by more than one visit, a suggestion practically impossible for consideration by the developers of major surveys owing to the large costs involved.

The tools of measurement used by different studies and surveys are a good start for this assignment. Most commonly used variables by the respective tools include the following:

i. Background characteristics;
ii. Demographic characteristics;
iii. Employment and unemployment and their operational definitions;
iv. Sector of employment;
v. Prevalence of secondary jobs;
vi. Income; and
vii. Skills training.

6. PRIORITIZED AND CONSOLIDATED VARIABLES

Table 6 *Consolidated List of Variables*

SEM variables	FGM	Stakeholders	Priority Variables to IFE
• Age • Annual household income • Barter system • Consumption areas • Cost of energy sources • Cost of transportation • Cultural values • Demand trends • Distance from sources/ markets • Diversified income • Education • Food purchase • Food scarcity • Forest management practices • Forest products • Gender • Harvesting methods • Household size • Illegal timber cutting	• Annual revenue • Categories of services produced by forests • Ecosystem services generated by forests • Extent of forest resource use • Forest-based enterprises • Gender structures in communities • Illegal timber sales • Level of transparency in budgeting and use of revenue	• Accessibility • Availability • Expenditure • Extension services • Income • Knowledge levels • Market information • Market prices • Market value of products • Markets for trading • Prices • Quantities • Quantities available • Quantities extracted • Quantities of NTFPs produced • Quantities produced • Quantities traded • Quantities used • Resource	**Household Income** • Sources • Bartering • Exchange • Forest products • Consumptive • Income activities • Annual income **Quantities and Volumes** • Gathered • Consumed • Traded • Wasted • Gifts • Harvested **Values of Forest Products** • Products gathered • Consumed • Traded • Transported • Transaction costs • Market costs **Markets** • Costs • Prices • Buyers • Traders **Units of Measurement** • Products

• Income loss • Informal forestry income generating activities • Knowledge of forest products uses/utilization • Main income activities • Marital status • Migration pattern • Population • Product category • Production areas • Quantities harvested • Skills • Sources of energy • Sources of food • Sources of income • Specific non-wood species • Supply trends • Trader • Unit cost of product • Wild food collection	from forests • NTFP certification • Quantities of forest products harvested by household per year • Quantity and value of medicinal forest products on local market • Revenue collection levels by councils • State of resource management • Status of forest management plans • Status of forest reserves • Type of medicinal forest products exported • Type of resource harvested by household • Value of ecosystem services	availability • Resource availability • Specific units for each NTFP • Units of measurement • Value addition • Value of domestic use • Value of available NTFPs • Value of income • Value of NTFPs sold • Value of produced NTFPs • Value of products • Volumes • Demand for forest products • Size of IFE	• Extraction • Consumed • Traded • Exchanged • Cost of product **Production Areas** • Locations • Rules of access and collection • Distance • Supply trends • Impact of collection **Employment** • Forest-based enterprises • Number of jobs • Job categories **Welfare** • Food security • Nutrition • Expenditure **Resource Base Forest Produce** Baseline conditions on • Status • Availability • Trading areas

	produced by protected *forests* • *Value of ecosystems services generated by forests* • Value of NFTP		

7. METHODOLOGICAL PROPOSAL FOR ILUA II

The proposed methods and measurement tools are provisional and should be treated as such. They will be pre-tested before validation. Whereas the proposals for the approach and processes of data collection are presented, there is still a greater need to have the names of all non-timber forest products recorded in all the seven major Zambian languages for final incorporation in the field manual. It is at this stage that incorporation of diversity in the availability of NTFPs is assured. Diversion from this recommendation will result in the data collection being of little or no use. Equally important is the policy dialogue between the Forestry Department and the Central Statistical Office to agree on the proposed set of variables with a view of incorporating them into CSO scheduled routine national surveys. Failure to do so may result in the perpetuation of existing gaps in the profiling of the contribution of the forestry sector to poverty alleviation and the national economy.

7.1. Background on proposed survey design and options

In proposing methods and tools for capturing data on Zambia's informal forest-based economy and understanding its contribution to livelihoods, poverty reduction and national economy, the following factors and considerations are important:

(i) Short-falls in data collection methods and tools

Process of data capture: The main weakness identified in relation to the process of collecting data pertains to critical variables such as income, quantities and market prices. The method for how information was captured, the frequency of collecting information; and the sources used are generally deemed inadequate.

Geographical coverage: Most data and information collected on the informal forest-based economy was collected at a few sites in selected districts or provinces. Extrapolation to a national level becomes scientifically invalid. Of the few data collection processes which have attempted to cover the entire country, the samples' sizes used cannot be said to be representative.

Key variables missing: The inadequate capturing of income data has more often than not resulted in understating the real value of contributions made by the various activities which underlie the informal forestry sub-sector. In particular, bartering, namely the exchange of labour and values embedded in domestically consumed products, largely remains unaccounted for. This has distorted the real value of the informal forestry-based economy.

Diversity of NTFPs: Related to the above is the capturing of information and data on the diverse range of activities or products within the informal forestry sub-sector. In primary production alone, 59 commonly available forests have been documented. Yet, most of the reviewed documents and studies concentrate on a far lesser number. Technically, this omission of some products compounds the under-valuation of the overall contribution made by the sub-sector.

Data not disaggregated to capture NTFPs: For already collected data on activities within the informal sub-sector, the omission has been to apportion in an appropriate manner the contribution made by the non-timber forest products to either livelihood sustenance or the national economy. This short-fall is more applicable to national surveys conducted by the Central Statistical Office.

(ii.) Information Gaps

Another factor used in proposing the methods to use under ILUA II draws directly from persistent information gaps that require to be filled. This is mainly inadequate availability or even non-availability of reliable data on quantities produced, traded and used at household domestic level. Yet, these data are critical in working out the true value being generated by the informal forestry sub-sector.

(iii.) Variables and their relevance to measuring the informal forestry-based economy

The difficulties related to the capture of data on critical variables have been highlighted above. Suffice to state, however, that some variables may require more than one approach if data are to be adequate and appropriate and are to reflect the informal forestry sector. By their nature, longer time-frames, repeated visits and validation are required.

7.2. Design Considerations

The proposed methods and tools for measuring the informal forest-based economy take into account the identified challenges and the nature or characteristics of informality. Owing to variations in geographical availability, heterogeneity, patterns of scarcity, levels of exploitation and other typical NTFP characteristics, a multiple approach is applied in order to generate robust data.

7.2.1. Preparatory Activities

The units for measuring the activities in the informal forestry-based economy need to be tested during the pilot phase and validated thereafter. In addition, it is recommended that some other preparatory activities, outside the scope of the current assignment, are under-taken:

i. A list of forest produce should be prepared with local names for all the major Zambian languages: Tonga, Lozi, Chewa-Nyanja, Luvale, Kaonde, Mbunda, Lunda, Bemba et cetera. Local names should be validated by team members drawn from the National Offices, and district and community-based structures. Without an appropriate local name list, there is a danger that facts are misrepresented.

ii. For compiling the sampling frame, a NTFP mapping activity also needs to be undertaken in order to:

- Identify common forest produce, especially NTFPs available in each district of Zambia;
- Provide locations where each NTFP is commonly found; and
- Estimate the distance of such production sites to district centres.

7.2.2. Criteria for selecting data collection methods

The available information on the informal forest-based economy is dominantly qualitative. To supplement what is available, the proposed methods seek to collect *quantitative* data. Some critical variables require focus, considerable time–frames, and validation; while data on others may be collected within shorter timeframes. The differences in requirements mean that different methods need to be applied. At an operational level, therefore, some important guiding criteria used in determining the suitability of methods used include the following:

i. Time-frame for data collection on a given variable (shorter *versus* longer time-frames);
ii. Focused or special studies on NTFPs *versus* general socio-economic surveys;
iii. Direct observations and recording of goods and processes *versus* data generated from recalls by the respondents;
iv. Single visits *versus* repeated visits (to obtain means or averages and an observant perspective on goods and processes); and
v. Validity of data generated (methodological, representativeness and reliability).

In order to capture meaningful data required to measure the extent and characteristics of the informal forest-based economy, four major methods are being proposed, namely;

i. Forest produce surveys;
ii. Market surveys;
iii. Transport surveys; and
iv. Inventories.

7.3. Survey Design Options

7.3.1. Forest Produce

Aim

The main purpose of the forest produce survey is to determine the available NTFPs across the country. By determining resource endowment patterns by geographical location (district, community, chiefdom), policy makers will be provided with evidence-based information upon which to formulate policy strategies. By describing resource availability patterns, in terms of what and how much is available, selective interventions aimed at conserving the resource base, whilst

enhancing the socio-economic wellbeing of the primary producers/collectors, are expected to be applied.

Objectives
Specifically, this survey is meant to:

i. Establish a baseline of non-timber forest products being collected by type, and locations where these products are prevalent;
ii. Provide estimates on quantities being extracted, traded and used at domestic level and their economic values;
iii. Identify the characteristics and levels of employment generated by the informal forest-based sector; and
iv. Establish the size of the informal forest-based economy (quantitatively).

Design on data collection
Bearing in mind financial limitations, two scenarios are proposed for site selection. The literature suggests that differences in forest resources endowments should be given consideration when selecting study locations. In this regard, the selection of sample locations ought to consider the patterns of uniqueness/scarcity and abundance in the availability of resources. For example, rattan (*Calamoideae sp*), busala (*Dioscorea hirtiflora*), Livingstone potato (*Plectranthus esculentus*) and masau fruits (*Ziziphus mauritiana)* are geographically restricted to parts of Zambia, while mushrooms and thatching grass are found countrywide. Heterogeneity as opposed to homogeneity should be considered.
In order to meaningfully capture information, three methods will be combined: focus group discussions, individual interviews, and household surveys. However, not all households are involved in the collection and gathering of all different non-timber forest products available in any given location. Therefore, the choice of more than one method is meant to identify information on all critical variables and cross-check the reliability of the findings emanating from each approach in an interactive and intimate process meant to attain valid conclusions on observed patterns.

(i) Focus group discussions

Focus group discussions will be used for the identification of forest products in a particular location. Generating a product list provides a springboard for subsequent activities, which will collect information in greater detail on a limited number of variables relating to quantities. The events will also identify households and individuals extensively involved in gathering, trading and processing of forest products. The extent of exploitation and the number of persons and/or households involved need to be established. This will entail drawing up lists of households found in study sites. With the help of group discussion participants and local leadership, names of households mostly involved in gathering forest products and/or those running forest-based enterprises should be plotted and sampled accordingly.

(ii) Individual interviews/expertise

The focus in individual interviews is the expert individual. On the basis of the households plotted by area of specialization or interest in exploitation of natural resources, individual interviews shall then be conducted. Representativeness in relation to population size and inclusion of broader forestry activities should be strictly adhered to and attained. Specifically, this method is meant to capture the diversity in the range of forestry activities, i.e. to capture common and un-common forestry-based activities. It is of particular importance to obtain expert knowledge and in-depth experiences and this usually may not involve more than one family member. The respondent therefore should be allocated a professional title, such as honey hunter, grass cutter, pit-sawyer, charcoal burner, pole cutter etc.

(iii) Household survey

The household survey will collect information on variables which show the interactions between and among members of the production unit, as well as possible transactions on what is gathered from the forests. Information on volumes of produce collected, consumed at household level, and traded should be prioritized. Prevalence levels of a particular forest produce should be determined and data collection visits should correspond to patterns of availability to approximate and determine quantities. Prevalence levels go beyond the determination of quantities and trends, but also provide a direction on employment characteristics, including job sustenance.

Procedure for obtaining information on quantities

As much as possible, the data/information to be collected through the forest survey should be through direct observation during more than one visit to any selected individual expert and household. To obtain information on quantities of NTFPs, the following factors should be considered:

(i) Production/gathering/harvesting

i. Establish the unit of measure used by the respondent
ii. Establish prevalence patterns for each product, activity or enterprise in calendar months
iii. Record the least amounts collected per visit
iv. Record the greatest amounts collected per visit
v. Establish the number of visits made for each product prevalence pattern
vi. Determine the number and frequency of visits made for each product prevalence category. Use the unit of measure for visits correctly and consistently (daily, weekly, monthly, etc.)
vii. Where applicable, record the number of persons involved in each collection/visit
viii. If more than one person involved, add what each member collects and then sum up
ix. Determine averages

(ii) Domestic use/household consumption

i. Establish the unit of measure used by the respondent
ii. Establish prevalence patterns for each product, activity or enterprise in calendar months
iii. Record the least amounts consumed or used at household level
iv. Record the greatest amounts consumed or used at household level
v. Establish frequency of domestic use for each product prevalence pattern (daily, weekly, monthly, annually etc.)
vi. Determine averages

(iii) Bartering/exchange/gifts

i. Establish the unit of measure used by the respondent
ii. Establish prevalence patterns for each product, activity or enterprise in calendar months
iii. Establish and determine the items, goods and services for which NTFPs were either given out, bartered or exchanged
iv. For each item/good/services involved, determine the amounts/numbers involved
v. If more than one item/good/service were bartered, record least amounts of NTFPs bartered/number of units
vi. For every item, good and service recorded, determine frequency and number of units involved
vii. Then sum up the number of units for all the items/goods/services
viii. Record the least amounts of NTFPs processed and exchanged/number of units
ix. Record the greatest amounts of NTFPs processed and exchanged
x. Sum up the units used in exchange
xi. Record the least amounts of NTFPs given out in terms of units
xii. Record the greatest amounts of NTFPs given out to others
xiii. Sum up the total units given out

NOTE: *At this stage, ONLY record the number of UNITs involved and not the value for each transaction made.*

(iv) Cash transaction

i. Establish the unit of measure used by the respondent
ii. Establish prevalence patterns for each product, activity or enterprise in calendar months
iii. Record the least amounts in units sold per event
iv. Record the greatest amounts in units sold per event
v. Establish average quantities in units sold
vi. Establish number of transactions made for each prevalence pattern

(v) Prices and values

i. Information on prices can be aggregated or determined from frequencies being reported by the respondents through group discussions, individual and household levels.

ii. The lowest and highest prices reported should be validated before computing the average price.
iii. The value for any given utilization (e.g. trade, bartering) can then be derived by multiplying the average price with total units observed/recorded.
iv. For some wild foods however, care must be taken as some get preserved for future use. Therefore, quantities preserved should also be captured and included in total quantities for each commodity.

7.3.2. Market Surveys

Aim

The main thrust of the market survey is to determine value addition and demand for forest products at district, provincial and national levels. The demand and associated consumption trends are important for policymaking, more specifically for interventions meant to promote sustainable utilization presently and in future. Through computations of national demand for different forest products, economic valuations of produced goods will become feasible and thereby it will be possible to estimate the contributions made by the informal forest-based economy.

Objectives

In order to arrive at the financial contributions made by the informal forest-based economy, this survey seeks to;

i. Determine the quantities of the various NTFPs being traded on the Zambian market;
ii. Determine the economic values of the forest produce being traded on the Zambian market; and
iii. Validate the financial contributions being made by the informal forest-based economy as a whole to the gross domestic product.

Design on data collection methods

The study population will be drawn from traders and marketers in designated or informal market places. Given the informality of forest product market transactions, a purposive sampling design and direct observations will be used. This is underpinned by two assumptions. First, that there exists a forest products user group, which by implication provides demand for what is being produced. Second, that the economic needs of producers of forest products may also lead to their engagement in market transactions with a view to meet household cash requirements. Thus, some producing units may also engage in the market through traders or direct selling to consumers, and this information must be captured. While information and data on quantities being traded will come from different sources, the market survey is expected to capture most of it through the proposed data collection tool.

7.3.3. Transport surveys

Aim

This special study has a dual purpose to establish the linkage between the production or gathering of forest products, and the trading of the same. Through this survey, products produced and traded will be established, as well as their associated monetary value. Due to the informal nature of trading of forest products, the survey will also determine locations and destinations where the products originate and are traded from.

Objectives
This is a mechanism for validation of information sourced at different points of any given commodity value chain. In addition, this survey is expected to:

i. Approximate the flow of forest products between production sites and trading areas;
ii. Determine transaction costs associated with trading of forest products; and
iii. Indirectly ascertain compliance levels to statutory obligations including conveyance fees and council levy.

Design on data collection
The collection of data and information should correspond to availability trends of forest products. The data collection exercise should therefore be conducted within a 12-month calendar, so that seasonality in availability is captured. Therefore, data will predominantly be collected across the country at established road checkpoints (see Figure 1). Checkpoints that lead to major urban centres will be targeted as well as those leading to other provinces and/or countries, so that both inflows and out-flows are captured accordingly. Although it may not be feasible to implement this study in all parts of Zambia, it should attempt to cover major producing and trading locations of the various forest products deemed important by the local people.

7.4. Data collection procedures

7.4.1. Forest produce survey

The focus of the survey should be on identifying the broad range of various non-timber forest products available in Zambia and, by implication, this means the scope should be national and should cover all the districts in the country. The forest produce survey format is found in Annex 2. Among other things, the survey should highlight the following**:**

i. A baseline on available non-timber forest produce/products in Zambia ;
ii. Types of forest produce currently being harvested;
iii. Categories of NTFPs being used at household level (domestic consumption);
iv. Categories of NTFPs being traded;
v. Quantities being collected/harvested;
vi. Selling prices per unit measurement;
vii. Income types generated at household level;
viii. Contributions made by NTFPs to welfare of primary producers, and
ix. Characteristics and levels of employment generated by the informal forest-based sector.

i. Tools of data collection and process

The data/information to be collected through this form has to be by direct observation during more than one visit to any selected household. Depending on the seasonal availability, information should be collected throughout the year, so that trends can be depicted. Whilst units of measure will be identified and validated through pilot testing, the critical variables on which information should be

collected include quantities for different use categories and prices. To attain this, the information collected should meet a certain quality standard.

ii. Quantities

To obtain quantities, the procedure should involve:

- Determination of frequency of collection/harvesting/consumption/trading/ bartering/exchange/gifts
- Number of persons involved per collection/consumption
- Number of trips made to collect/gather
- Frequency of gathering daily/weekly/monthly
- Smallest/largest amounts collected per visit
- Average amount collected per visit
- Multiply average amount by total number of visits made in a season/week/month to arrive at annual quantities.

iii. Prices and values

- Information on prices can be aggregated or determined from frequencies being reported by the respondents
- The lowest and highest prices reported should be validated before computing the average price
- The value for any given utilization (e.g., trade, bartering) can then be derived by multiplying the average price with total units observed/recorded
- For some wild foods however, care must be taken as some may be preserved for future use. Quantities preserved should also be captured and included in total quantities for each commodity.

It is recommended that site selection criteria should include attributes such as the scarcity and abundance of specific NTFPs, and the distance to main consumption or market areas. For instance, source areas for products such as thatching grass, edible caterpillars, fruits, and mushroom should be deliberately included in the study. Although at times information on the proposed variables may be collected in a manner that is difficult for analysis, it provides a foundation which can be strengthened. Given the proposed observation and repeated visits over long timeframes, the short-fall noted above should be minimized. The proposed tools should collect information relating to quantities and values. They are inadequate to obtain information related to potential and actual employment levels, a critical variable being considered for measuring. However, it is proposed that information on the employment variable can be captured under the socio-economic component. Despite this likely short-fall, the data generated through repeated visits and direct observations over considerable timeframes should provide reliable data. To enhance the data quality, units of measurement for all gathered, domestically used, traded and non-cash transactions would be pre-determined. When the units are determined and validated, there is the likelihood that variables proposed could eventually be incorporated in other official nation-wide surveys usually conducted by the Central Statistics Office and other stakeholders. In addition, a combination of sampling designs discussed above should lead to minimal sampling errors.

7.4.2. Market surveys

The aim of market surveys is to quantify the economic potential and/or contributions made by the non-timber forest products to local markets and the national economy. As the title implies, the study population will largely comprise markets, which can either be informal or regulated. The market survey format is found in Annex 3. In particular, market surveys are expected to generate information on the down-stream stage (see Figure 1) for any given commodity and the following information will be generated:

i. Key players
ii. Market entry costs
iii. Prices and structures and variations
iv. Quantities being traded
v. mensuration units
vi. Sources of forest produce
vii. Trading patterns and availability trends
viii. Value addition
ix. Market types

It is expected that this tool will provide data and information in a user-friendly manner, as only policy relevant data shall be captured. Market surveys are expected to provide information that is not only vital to the computation of quantities and values but will also provide answers to one of the critical impediments to calculating specific contributions made by the informal forest-based economy, by providing disaggregated data specific to the sub-sector. Further, the proposed tool provides an excellent opportunity to observe market transaction levels, as well as demand and volumes traded, directly as opposed to using the recall approach. The added advantage is the ability of the tool to generate policy relevant statistics involving a broader range of forest products nation-wide. From this, vital information relating to the overall contribution of IFE to the national economy will be captured. It will also provide a mechanism for cross-checking the accuracy of data generated at production, transportation and purchases. One obvious limitation however relates to difficulties associated with determining the sustainability of jobs being created by this sector, an aspect which can be easily captured under the traditional household survey.

7.4.3. Transport surveys

The main purpose of transport survey is to establish linkages between the gathering of forest products and trading. The survey format is found in Annex 4 (see Figure 1). Through this tool, the following data will be generated:

i. Destination of forest products
ii. Forest products
iii. Mode of transport
iv. Packaging
v. Quantities being conveyed
vi. Costs of conveyance
vii. Source of forest products
viii. Transaction costs

ix. Mensuration units
x. Value addition

Other than the intended purpose of determining linkages between the production and marketing of forest products, the proportions of domestic consumptions and trade will be determined as well. Locations or main sources of forest products will be established through this tool. Such information provides a basis for interventions aimed at better management of the product as well as the conservation of associated production sites. Thus, the tool is very consistent with policy action plans that seek to protect natural resources against over-exploitation. However, due to non-compliance to pay regulated fees such as production, conveyance and council levy, the tool may not capture actual flows of forest products. It is common knowledge that forest products are often taken to the markets through unofficially designated routes, as marketers and transporters avoid official checkpoints mounted by the respective authorities along national roads. Random checks could also be instituted as an option**.**

7.4.4. Inventories of NTFPs

While the above-mentioned tools will focus on capturing socio-economic information, it is recommended that a biophysical resource assessment be carried out under the ILUA II. Reference has been made by all the policy and related strategic documents to the importance of the non-timber forest products and their contributions to local livelihoods and the national economy. In some instances, the necessary policy action plans have been recommended. However, to be certain about the sustainability of what is available, it is cardinal that the following is considered:

i. Determining the distribution and quantities of non-timber forest produce nation-wide
ii. Quality and regeneration status, where applicable.

Unlike the traditional forest inventories, what is proposed here is multi-disciplinary and should include a broader range of professionals to observe and gather information on various parameters necessary for drawing conclusions. The various subject matter specialists, including those who collect information on anatomy, botany, physiology, flowering, fruiting practices and others of the various plant species, should be involved.

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ANNEXES

Annex 1 *Document Analysis*

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
GRZ (2011) Sixth National Development Plan, 2011 – 2015 Ministry of Finance and National Planning	Medium-term development plan encompassing all sectors, presenting policies, strategies and programmes for broad-based, pro-poor growth, employment creation and human development. The strategic focus is infrastructure and human development	The importance of natural resources as a basis for economic activity, sources of livelihoods and energy (p 179) is recognized. Hence, the goal of this plan is to reduce the rate of deforestation and degradation of land and wetlands (p 180). The overall objective is to promote sustainable forest and land management practices (p 181). The plan addresses 4 strategies specific to the sector as follows: (i) Promote sustainable land management practices: (ii) Promote commercial activities and value addition for wetland resources; (iii) Rehabilitate beeswax and honey processing factories; (iv) Strengthen human resource capacity in forestry management and extension (p 181).	Except for beeswax and honey, the intentions to develop other NTFPs are un-stated. The plan also intends to increase access to electricity standing at 3.5% and 22% to 15% and 40% for rural and national levels respectively. However, the plan remains is mute on wood fuels.
GRZ (1973) Forest Act, CAP 199 of the Laws of Zambia	Legal document which (i) provides for the establishment and management of National Forests and Local Forests, (ii) makes provisions for the conservation and protection of forests and trees; (iii) provides for the licensing and sale of forest produce, and (iv) provides for matters connected with or incidental to the foregoing	The Forest Act provides a list of resources that can be deemed non-timber forest products. These resources may be collected or harvested from a forest subject to specific conditions. According to the Forest Act (1973), Forest Produce includes NTFPs and timber by-products, namely; *"bamboos, bark, bedding, bees, beeswax, boards, branch-wood, canes, caterpillars, charcoal, chips, climbers, cones, coppice, creepers, earth, fibres, flowers, fruits, fuel wood, fungi, gills, grass, gums, hives, honey, honeycomb, humus, insects, leaves, lichens, litter, logs, moss, mushrooms, nursery plants, peat, planks, plants, poles, reeds, resin, roots, rubber, rushes, sap, sawdust, scantlings, seed, seedlings, slabs, stumps, thatch, thinnings, timber, trees, vegetable-derived oils, vegetable-derived pitch, vegetable-derived tar, and wood spirits".* Generally, forest law stipulates that no person shall without a license sell, offer for sale, barter or otherwise deal in any	

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
		major forest produce from any state lands or customary area, and this covers most of the products listed above. However, according to the Act, some of these products may be gathered for free e.g., edible caterpillars, fruits (*Uapaca spp*; *Diospyros spp*, *Parinari spp*) and palm leaves. While production licenses will be required for charcoal for example, those products above gathered for free would require a conveyance license if transported to the market. What emerges from this Act also relates to issues of legality/ formality and informality. For instance, The lack of "fees" for collecting some forest products, e.g. mushrooms, makes the process legal; as well as the purchase of a conveyance certificate by an informal forest-based enterprise entity to transport a freely obtained forest product transforms the process from formal to informal.	
GRZ (2010) Draft National Forestry Policy MTENR	The draft policy aims to re-direct and motivate responsible forest management in Zambia. To achieve effective participation, the policy takes a holistic approach to SFM with a view to transforming the sector into a proactive economic one capable of sustaining itself.	The forest policy adequately recognizes the significant roles of forest products, including NTFPs play in rural livelihoods and the national economy at large. Important measures include regular inventories, monitoring in the management and utilization of forest resources, thus encouraging the participation of micro and medium enterprises in harvesting and processing of products including NTFPs.	No effort has been made to quantify the protective value of forests. Trading in NTFPs is not recognized. The forest sector contribution to national economy is grossly under-reported. Inventories should be explicit on NTFPs. Given the lack of information on NTFPs, including their status, there is a great need for quantitative data tied to issues of availability and the important potential or actual contribution to employment creation.
GRZ (1998) Zambia Forestry Action Programme Volume One MTENR	In recognition of a declining resource base and the need for a strategic approach to resource management, ZFAP is a comprehensive guiding	The forest sector's development objectives acknowledge the role of NTFPs as a mechanism for enhancing contribution to the national economy. In this regard, one of the major sub-components to the realization of full potential contribution is that of **Forest Industries and Non-Wood Forest Products**	No up-date information on the following dimensions of forest resources: • NTFP extent, location, growing stock volume

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
	framework outlining **policy sector objectives** and guiding **principles** for interventions in the sector, and/or to attain objectives. **It outlines seven programme components,** defines the required policy actions, institutional actions and **proposes investment requirement** for key actions.	**Development**, both as *a policy action*, as well as a general performance contribution *by developing appropriate technologies for production, management and use*.	• No reliable information on the growth stock of resources Management of forest resources not planned as no management plans exist Some wood-based industries are included in manufacturing, construction and trading sectors Contributions made by non-quantifiable services
GRZ (2005) National Policy on Environment MTENR	Umbrella policy for the welfare of the country's environment so that socio-economic development is achieved effectively without damaging the integrity of the environment or its resources. It was put in place to provide a comprehensive framework for effective natural resource utilization and environmental conservation, which will be sensitive to the demands of sustainable development. It incorporates a set of objectives, guiding principles and strategies that bind users to exercise caution. Whilst providing a framework and direction of sustainable development for Zambia, it is supported by many policies and strategies in other sectors	**A situation analysis on natural resources management and utilization including the forest sector is ably provided** Inadequate forest management has led to loss of productivity and destructive harvesting methods **Relevant guidance principles and strategies to effect principles relevant to IFE include:** • Inventorying and monitoring to be an integral part of sustainable forestry management • Forest management and control should be based on appropriate research • Establish economic values of natural resources • Opportunity costs of using natural resources and economic values of conserving them are reflected in market prices • Provision of **alternative income generating** activities that should reduce pressure on forest products such as the commercial use of NTFPs • Conduct well designed research programmes to generate technologies for sustainable forest use	Inadequate management plans

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
Kalinda et al. (2008) ILUA Data for Forestry and Agricultural Policy Review and Analysis in Zambia	The analysis seeks answers to the question: W*hat is the condition of forests and woodland resources in Zambia?* by using statistical ILUA data sets. In so doing, it seeks information that has the potential to support, inform and enhance policy formulation.	• Importance of forest and woodland resources to livelihoods and income for local communities • Importance of non-wood forest products and services stressed • Forest resources • Honey production • Illegal charcoal production • Fuel wood collection • Illegal timber logging • Efficiency and technology of charcoal production and use • Wildlife resources • Promoting commercialization and value addition for wetland resources • Poles, fodder, non-wood products • Forest-based livelihoods • Wood products • Provides socio-economic functions of grass and other herbaceous plants (source of forest foods, herbs, dyes, thatching grass, fodder, forbs for livestock and wildlife) • Monitoring and enforcement of timber licenses and harvesting guidelines are weak and penalties less punitive to be an effective deterrence. • Wild foods • Construction materials • Reliance on forest gathering of firewood and wild food • Rates of forest degradation	Inadequate access and availability of up-dated information on stock and utilization of natural resources Methodology used cannot adequately capture all dimensions on IFEs Estimates of stocks for most non-wood forest products and services lacking Inadequate accounting and valuing forestry services/understated value of forest contributions Forest statistics not based on any comprehensive information data sets drawn from forest sector Indirect forest values not accounted for in national accounts Lack of bio-mass inventories of grass and other herbaceous plants Socio-economic importance of herbaceous plants to rural livelihoods is lacking More data on timber volumes and biological growth functions of commercially valuable tree species need to be complied and analyzed Need to conduct comprehensive forest inventory surveys

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
			Need for forest reclassification to ensure all forests are properly classified and boundaries clearly mapped.
			• Unclassified large tracts of land under any protection status, ownership and land tenure system • Traditional forest management plans and systems based on scanty scientific information • ILUA data does not validate previous estimates of deforestation of over 500,000 ha

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
			per annum • Rates of deforestation not conclusively done through inventories • Difficulties to obtain accurate income data • Quantities and quality of most IFE activities not specified • No scientific based information on the impact of firewood collection on forest conditions and deforestation • No statistics on charcoal production figures due to non-licensing • No statistics on deforestation rates due to charcoal production • Little data/info is available on forest resources in respect of stock and utilization parameters e.g., extraction, production, processing, marketing, distribution and consumption
CSO (2004) Living Conditions Monitoring Survey Report	The Living Conditions Monitoring Survey IV was intended to provide the basis for comparison of poverty estimates derived from cross-sectional survey data (P 3). In addition, the survey provides a basis on which to (P 3): (i) Monitor the impact of government policy and donor support on the well-being of the Zambian population; (ii) Monitor poverty and its	Makes a distinction between formal and informal employment. Informal sector employees are those whose employment status was private and their employment was in the informal sector, meaning they were not entitled to paid leave, pension, social protection and that less than 5 people were employed at their work place (P 8). The survey included a broad range of topics, which are relevant to studying the informal forest sector (P 3). These include: • Demography • Education • Economic activities • Income and	Information or figures provided in the report on income, economic activities, sector of employment is generic and does not clearly bring out the role of forestry.

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
	distribution in Zambia; and (iii) identify vulnerable groups in society and enhance targeting in policy implementation.	• Household assets among others In addition it provides background variables that include: • province • location • sex stratum • socio-economic group • poverty status and • age-group	
GRZ (2010) Labour Force Survey 2008. Central Statistical Office, Lusaka	The main objective of the 2008 Labour Force Survey was to collect data on the economic activities of the population, including detailed information on unemployment, underemployment, wages, employment, and the informal sector. General characteristics of the labour force and the economically inactive persons (P IV).	According to the results, agriculture, forestry and fishing related occupations had the biggest share of about 71% (or 3,711,382 persons) of the total employed, followed by sales and services, craft and trade (P 56). The survey provides an operational definition of informal sector employment as "employment where the employed persons were not entitled to paid leave, pension, gratuity, social security and worked in an establishment employing less than 5 persons". All these requirements had to be fulfilled in order to classify a person as working in the informal sector (P53). This definition combined the concepts of informal production units and informal employment. The survey used a broad range of variables which include: • Demographic characteristics • Income • Employed population • Informal sector employment • Informal sector employment characteristics • Categories of labour force • Skills training and others	Employment generated by the forestry sector is not specified nor the value, in financial terms.

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
Mulombwa (1998) Non-wood Forest products in Zambia. EC-FAO	The article was meant to collect available data on NWFP in Zambia and to analyze the past, present and future status/trends for local consumption, trade and exports.	Identifies some relevant impacts of NWFPs: • **Harvesting/extraction methods** such as cutting down trees • Root and tuber extraction may have impacts on species population and structure • Excessive removal of roots/bark from medicinal trees/shrubs may cause tree mortality • Fibre extraction may lead to death of trees • Smoke/fire used to inactivate or kill bees affect future genetic materials • Deforestation negatively affects mushroom productivity/availability • Deforestation affects availability of medicinal trees/shrub species • Disturbed forests leads to reduced recurrence of mushrooms • Extraction methods affects subsequent regeneration	Little quantitative data on use of extractives and fibres Need for sufficient information on growing stock, quality and regeneration status of forests to make planning for sustainable harvesting of NWFPs possible Lack of documented information on true value of NWFPs and services Determining how much of the resource base is being used Determining the distribution of forest resources base countrywide
Mulenga et al. (2011) The Contribution of Non-Timber Forest Products to Rural Household Income in Zambia, FSRP Working Paper No.54. Lusaka	This paper uses statistical analysis to examine the role of NTFPS in rural household welfare in Zambia, with two main objectives. First, using rural household survey data, they estimate the share of NTFP income to total household income with the aim of assessing the proportion and distribution of business activities related to NTFPs. Second, they estimate the determinants of rural households' participation in the extraction and trade of NTFPs, with an interest in the characteristics of households that are more dependent on	Results show as follows: • Among NTFPs, charcoal/firewood is the most common source of income (65%) • Income from charcoal/firewood also represented the highest share of income (37%) P v • Caterpillars (19%) P v • Wild honey (12%) P v • Mushroom (8%) P v • Overall NTFPs collectively contribute about 34% to total household income(P v) • Households in Luapula, North-Western and Western Provinces were more likely to participate in NTFPs than their counterparts in other provinces(P v) • Increase in age and education level reduces the likelihood of a household to participate in NTFPs and level of NTFPs' contribution to incomes(P vi) • An increase in distance to markets reduces likelihood to participate in NTFPs and contribution of NTFPs to	Only income from cash and non-cash sales of NTFPs is considered Value of NTFPs consumed within a household not included A one-time snap shot approach is used as opposed to panel data to better understand households' participation over time.

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
	forest products for income (P v).	total household income(P vi)	
Jumbe C.B.L, Bwalya S.M, Husselman M. (2008). Contribution of Dry Forests to Rural Livelihoods and National Economy in Zambia	Using case studies drawn from existing literature, secondary data from CSO and FD and data from a household survey, the study attempts to analyse the extent to which forests contribute to rural livelihoods and the national economy in Zambia.	**Methods used to obtain an overview on contribution of forest products to rural holds and economy:** • Itemized key forest products harvested in different parts of Zambia • Literature review to identify key forest products • Case studies on forest products review • CSO Data • **Household Survey(435 households)** o *Purposeful sampling of villages to capture diversity, varying abundance and varying levels of use of forest products* o *Different forests and woodland conditions* o *Different levels of maturity host different non-wood products* o *Communities with access to disturbed, relatively undisturbed forests* o Included: ▪ Face-to-face interviews ▪ Focus group discussions with DFE officers, local communities ▪ Snapshot of local forest prices Provides a list and classifies specific IFE activities: *Timber Poles Charcoal Grass Mushroom Firewood Tubers Caterpillars Fruits Wood carving Reeds Honey Bamboo Beekeeping Carpentry Medicinal plants Munkoyo Rataan, Handicraft* **Classifications** • *Fuel wood*(charcoal & firewood) • Construction materials(poles & grass) • *Honey* • *Wild Foods:* mushrooms fruits leafy vegetables tubers Insects • Tubers (chikanda,busala,mumbu)	National statistics on the contribution of forest products to countries' economies are extremely poor Lack of comprehensive data sets for examining the role of forests for subsistence and cash income Estimates of the rate of deforestation are alarmingly high but not single rate adopted Some forest products including honey, charcoal, firewood have data sources most others have scanty data/information The trade of mushrooms is visibly substantial, volumes traded at national level remain unknown There is almost no quantitative data on medicinal plant use and trade GAP: the total volumes of different forest foods collected and traded in Zambia are unknown, but the literature suggests that the size and impact on the natural resources, the contribution to the national economy could be significant Data on medicinal plants and their contribution to Zambian economy is

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
		• *Medicinal plants* The analysis in the report: • *Makes an attempt to measure the value of forest products at household level* • *Identifies previous studies which recorded the amounts of wild foods collected and consumed during a period of 12 months*	generally lacking Official statistics underestimates the contribution of forests to Zambian households, given that subsistence use and much informal trade is not captured in GDP calculations
	Stocks Extraction Production Processing Marketing Distribution Consumption	*Sheds light on average value of gross production for forest products average value of sales of forest products* *Attempts to classify factors/variables that have a strong influence on dependency on forest resources* Furthermore, the report sheds light on associated impacts of each IFE activity on forest condition and other activities.	
Ngandwe. P et al. 2006. Forest Revenue, Concession Systems and the Contribution of the Forestry Sector to Poverty Reduction and Zambia's National Economy FAO in conjunction with the Forest Department, Lusaka	This study was meant to: • To study the impact of the forestry sector on poverty reduction • To analyse the economic contribution of the forest sector to the national economy • To study the forest revenue and concession systems • To analyse and make recommendations for the integration of the forestry sector into the national planning process • To validate the information obtained	The study determined the following: • Number of persons employed in the forestry sector • Employment and productivity in the forestry sector • Frequency of product utilization in each district and province • Comparison of district and provincial forest product utilization frequencies • Gross value added by product • Evaluating the rank of economic importance of forestry sector to national economy (P9) The report also suggests some measuring units for few of the NTFPs(P 17): • Number of trees • Number of poles • Number of canes for bamboo • Head load for fuel wood • Cord for cord wood	Only cash income generating NTFPs were considered Subsistence consumption was excluded Different units were used in determining productivity (kgs, medas, litres, bundles, buckets without stating the actual mass involved) Revenue collected for licensing is used for computing financial contribution

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
	through the national stakeholders workshop (P3).	• Cord for charcoal cord • Charcoal bags for charcoal	
Mickels-Kokwe G (2005a) Non-Timber Forest Products with Commercial Potential in Zambia **Annex to Puustjärvi et al. 2005 The Contribution of the Forest Sector to the National Economy and Poverty Reduction in Zambia, Lusaka SAVCOR – INDUFOR**	The article provides preliminary figures on the contribution of commercial NTFPs to the national economy. Using the value chain approach incomes generated along the market chains, including the economic benefits generated from trading, processing, refining and retailing of non-timber products are examined. For 7 categories of non-timber products, estimated values of contribution are made.	The article provides insights relating to various methodological issues including challenges and limitations. Some relevant issues raised include: • Potential variables that can be used in measuring the contribution of NTFPs to the national economy including an estimate on proportion of households involved in producing respective NTFPs • Provides guiding information on different supply chain points which are relevant for data collection, including pricing structures for NTFPs like farm-gate, urban markets, middle-men, traders, retailers, wholesale • Procurement/disposal methods: cash, in-kind, barter • Points at which extraction can be measured • Value addition points/products that are all relevant for measuring contribution • Additional points/locations of data collection like bars, beer halls, bus stops, super markets, market places, hotels, restaurants	Generally there is lack of data on • Production volumes • Local/domestic consumption • Traded volumes for most NTFPs thus making it difficult to meaningfully measure size and actual contribution of the IFE activities *Difficulties to estimate the number of players for each value chain* No estimate on employment are made
Mickels-Kokwe G. (2005b) ***The Forest Contribution to Rural Small-Scale Household Income In Zambia.*** **Annex to Puustjärvi et al. 2005 The Contribution of the Forest Sector to the National Economy and Poverty Reduction in Zambia, Lusaka**	The paper reviews different studies done between 1995-2005 and whose focus is to measure forest income among rural households. Studies reviewed include those with a national, regional and international focus. In conclusion the paper suggests the then existing data/information on contribution of forest products to household subsistence income varies greatly, between and within	The paper states that there is adequate qualitative data on the role of forests in local livelihoods in Zambia Identifies variables which determine frequency in use of forest products as • *Type or utility of forest product* • *Access to and availability of products in a locality* • *Access to forest products markets* In order to capture/obtain a true picture of what is obtaining on the ground, **the review indirectly offers guidelines on sampling including:** • *Gender of household head* • *Household livelihood strategy*	Quantification of the consumption and exchange of forest products at household level has been extremely difficult One aspect of forest utilization not addressed relates to ash fertilizer as a direct contribution to agriculture production Little or no data on the sustainability of present intensity of forest use Sustainability of forest income not discussed adequately

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
SAVCOR – INDUFOR	forest types.	• *Household levels of affluence* • *Distance to markets* • *Presence of forest industries* • *Forest availability* • *Differences in data capture*	Underestimated woodland income, in particular large subsistence component Little data on forest income for the Kalahari sand forests **Empirical research is required to verify figures on forest contribution**
The Socio-economic Contribution of non-timber forest products to rural livelihoods in Sub-Saharan Africa: Knowledge gaps and New Directions **in International Forestry Review Volume 12(3) 2010 Timko J.A, Waeber P.O and Kozak R.A**	The article argues that whereas the majority of Sub-Saharan population relies on forest products for subsistence uses, cash income or both, it is imperative in case of NTFPs to • Clearly understand the socio-economic conditions that they make to rural livelihoods in order • Design policies, interventions and business ventures that safeguard forest assets for the poor in a targeted manner	The article gives definitions of key concepts used or that can be used in measuring the contribution of **NTFPs** to livelihoods. **NTFPs** broadly include all non-timber biological resources-derived products (animal, plant or mushroom) harvested from forested lands by rural households, and which are intended primarily for domestic consumption or small scale trade, with no or limited capital investment. NTFPs include roots, fruits, medicinal plants, resins and essential oils and fibers such as bamboos, rattans and other palms used for weaving and structural applications. **Poverty** – as a pronounced deprivation of well-being related to lack of material incomes or consumption, low levels of education of health, vulnerability and voiceless and powerless (as cited in Dubios 2002: 1). Arnold (2002: 231) provides further clarification: having insufficient food, income and other inputs to maintain an adequate standard of living, or assets to reach this standard, vulnerability to shocks to the livelihood systems, and inability to cope with and recover from them, and weaknesses in their position which prevent the poor exercising options that a resource endowment make available. **Income** is a difficult construct to disentangle, Multiple	Relatively few studies have examined the use of forest resources from a livelihood perspective, and even fewer have estimated or measured the proportion of total income streams of households that can be ascribed to forest goods and services. Analyses of the importance and role of environmental income are hampered by the lack of a clear understanding and the ambiguity of the application of the concept of NTFPs, to the point where there is not even an accepted typology of the different NTFPs that are available. Many governments have included NTFPs in broad categories such as forestry, agriculture and horticulture and hence statistics do not recognize the role of many of these products. A large impediment to producing accurate rural income data in Africa is the challenge of defensibly quantifying

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		definitions and interpretations of income mean that it is fraught with complexity, Sjaastad et al, 2005 (40) provide a simple definition of environmental income as "income earned from wild or uncultivated natural resources". A **'livelihood'** can be understood as that which "comprises the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutional and social relations) that together determine the living gained by the individual or household". Ellis 200: 10). **Poverty mitigation** or a voidance in forestry means the use of forest resources to meet household subsistence needs, to fulfil a safety net function in times of emergency, or serve as 'gap filter' in seasonal periods of low income in order to lessen the degree of poverty experienced or to avoid falling into poverty. **Poverty elimination** – the use of forest resources to help lift the household out of poverty by functioning as a source of savings, investment, accumulation, asset building and lasting increases in income and wellbeing (ibid). **Methodological issues** Difficulty in separating out the portion of household time, costs, returns attributable to just NTFPs. Different Approaches: • Resource valuations • Household economic surveys • Stakeholder analyses Conventional income assessment methods are not easily applied to the estimation of forest incomes given the remoteness, diversity and number of forest products	the role of NTFPs in rural households. Producers and users of forest products, many of whom are part of the informal economy generally do not keep books or records and income has proven to be a difficult variable to determine accurately. Many environmental goods are not traded in formal markets, which is why they are excluded from household budgets. While more data on the quantification of rural incomes is called for, the socio-economic contributions of NTFPs to forest-based livelihoods have been qualitatively assessed.
Puustjärvi E, Kokwe. GM and Chakanga M.	As the title implies, the report was prepared as a	Raises some methodical issues; the contribution of the forest sector tends to be overlooked or underestimated often	Value of environmental services provided by forest do not have DATA.

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
2005. **The Contribution of the Forest Sector to the National Economy and Poverty Reduction in Zambia, Lusaka SAVCOR**	contribution towards the preparation of the FNDP, analyses the direct financial contribution of the forest sector and/or secondary information was used to reflect this contribution.	because it makes its input outside the cash economy or the benefits are indirect or even intangible. *The question therefore is How can such contributions/benefits be measure*d?	Uncertainty/un-reliability in figures used for estimating financial contribution by the sector Non-availability of reliable data on volumes and Values of subsistence consumption of NTFPs Data available does not reflect small and medium timber processing, logging and illegal timber What industries and institutions undertake fuel-wood procurement/use Limited inventory data availability on indigenous forests Huge volumes traded remain unaccounted for More resource availability data required
CIFOR **Forest Livelihood Briefs** **Volume 11** **August 2008**		**CIFOR** Discusses methods that can be used or have been used in other parts of the world for collecting data on valuing the contribution of forestry to national economies. These include: • Public markets • Vendors • High-way check points • Interviews with key persons associated with marketing and trade of forest products Further, a typology on trade relations between producers and	Whilst the market potential of forest products is acknowledged, the article identifies critical constraints which include: • Informal economic activities remain unnoticed or unrecorded and thus not given due support • Huge discrepancies between recorded out-puts in government agencies and estimates of contribution made

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
		key market players is provided as typical characteristics prevalent among forest-based activities and the general business environment to include: • Producers of forest products not being organized • Not informed • Very poor usually • The *physical infrastructure* e.g. roads, transport, storage • *Business services* e.g. price information, credit, market linkages are either deficient or non-existent • Policy environment is either lax or too restrictive	• There is a dearth of data on many forest products
Dlamini.C.S and Geldenhuys C.J. Towards a Theoretical Framework for the Management of Non Timber Forest Products in Swaziland: A Review in *Journal of Geography & Regional Planning Volume 4(15). December 2011*	The study illustrates how to determine the socio-economic use, direct use values and management of natural forests and woodlands for edible and medicinal non-timber forest products in four ecological zones of rural Swaziland as a basis for improvement of policy and strategy for sustainable management of NTFPs.	The paper offers insights on the **methodological approach** for undertaking *user surveys* and *resource surveys* for assessing the condition and actual quantities of standing stock and for computing economic analysis of the value of standing stock for selected NTFPs. It furthermore provides guidelines which can **enhance the credibility of survey results** and thereby be able to use data generated for **comparison and generalization**, as follows: • Involve a broad spectrum of sites like major forest types, condition, variability in climatic, associated factors, socio-economic conditions, to allow calculation of variance • Selected communities/villages should live adjacent to natural forests/woodlands involved in harvesting, extraction, collection and utilization of NTFPs from neighbouring forest resources, i.e. only those dependent on direct harvest and use • Selection of forests and woodlands should be based on previously undertaken community consultations and already developed site selection criteria • Involvement of community representatives / community leaders as observers in resource inventories etc. **Specific Tools/methods Used:**	Reviewed and provided methodology restricted only to e*dible plants and medicinal plants*

Document Title	Main thrust of the document	Specific information/issues raised which pertain to informal forest activities	Information needs/ gaps
		• Group discussions • Individual interviews • Review of forest policy • Literature review • Community meetings • Employment status of household members • Questionnaires • Key Informant Interviews • Subject Matter Specialist • Traditional healers • Local collectors of NTFPs **Information gathering on:** • Anatomy/Botany • Physiology/Flowering • Fruiting phenology of the various plant species **Simple Economic Models** **Economic Valuation(user surveys)** Annual Value Extracted per Household = Annual Quantities extracted(domestic or trade) x Mean Farm Gate Price **Economic Valuation Model (resource surveys)** • Tree/shrub: Total valu**e=** No of trees x Annual Yield per tree x unit price • Under-storey: Total value**=** No. of individuals x annual production x unit price	

Annex 2 *Forest Product Survey*

Section 1: Identification and Location Characteristics

- Respondent's name
- Gender
- Age
- Marital Status
- Province
- District
- Chiefdom
- Village
- Main roofing material of main residential house
- Distance to the village market
- Means of transport used to get to the village market
- Average single trip cost per person to the village market using this means of transport
- Distance to nearest main market
- Average single transport cost per person to the main market using a car/truck

- Interviewer
- Period of Interview: Date/month/year to Date/month/year
- Checked by (supervisor's name)
- Date checked

Name of household member (start with respondent)	Sex	Age	edu cati on	Income Sources in last 12 months			Occupation for those aged 15 years and above			Industry		
				1	2	3	1	2	3	1	2	3
1	2	3	4	5	6	7	8	9	10	11	12	13

For income, occupation and industry, codes and corresponding optional responses need to be developed and inserted under this table as guidelines. Responses in columns 8, 9 and 10 should match those in 11, 12 and 13. These are tentative as size of table can be adjusted accordingly.

Section 2: Routine Data Collection Form

Forest Products Survey: Routine Data Collection/Monitoring Form

FOREST PRODUCT NAME:														
	Gathering/Production				**Period of collection/Production/Manufacturing**				**Trading**					
Date of Visit	Prevalence Pattern	Visit unit of measure	Produce Unit of measure	Total Units collected/ produced	No of members involved	Days	Weeks	Months	Units	Unit Price	No of Units sold	Buyers	Location	Value
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
	Domestic use/Consumption				**Bartering**				**Gifts**			**Exchange**		
Date of Visit	Unit of measure	Frequency	No of units	Value	Bartered items	Units	No of units	Value	units	No of Units	Value	Item used	Unit	No of Units
16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**

Section 3: Data Aggregation Form

Individual Person and Household Data Aggregation Form

Codes A		**Codes B**	**Codes C**	**Codes D**				**Codes E**	**Codes D**		**Codes D**		**Codes D**	
Gathering/Production			**Trading**			**Domestic use/Consumption**			**Bartering**			**Exchange/Gifts(tick the applicable one)**		
Specific product	**No of units collected**	**No of members involved**	**Length of involve-ment**	**Units**	**No of Units**	**Unit price**	**Value**	**Buyers**	**Units**	**No of Units**	**Units**	**No of Units**	**Units**	**No of Units**

Codes A to E are also required to be pre-determined and this is achievable after the pre-test of the data collection forms.

It is important that a list of forest products by location/district is prepared prior to field work.

Annex 3 *Market Survey*

Section 1: Identification and Location Characteristics

- Respondent's name
- Gender
- Province
- District
- Township
- Name of Trading Place/Market
- Means of transport used to get to the village market
- Average single transport cost per person to the main market using a car/truck
  - Interviewer
  - Date of Interview
  - Checked by (supervisor's name)
  - Date checked

Section 2: NTFPs Volumes and Prices

Product Name	Species	State/Form			Market Costs	Incoming Quantities				Trading - Outgoing			Who Is Buying			
		Raw	Semi-processed	Processed		Packaging	Unit	No Units	Unit Price	Items Sold	Price	Wastage/Use	Wholesaler	Retailer	Individuals	Others
Mushroom																
Roots & Tubers																
Fruits																
Edible Insects																
Edible Insects																
Bees' Product																
Wild Vegetable																
Tree Leaves Vegetable																
Energy																
Ornamental																
Fiber/Construct																

Product Name	Species	State/Form			Market Costs	Incoming Quantities				Trading - Outgoing			Who Is Buying			
		Raw	Semi-processed	Processed		Packaging	Unit	No Units	Unit Price	Items Sold	Price	Wastage/Use	Wholesaler	Retailer	Individuals	Others
ion																
Medicinal																

Annex 4 *Transport Survey*

Section 1: Identification and Location Characteristics

- Respondent's name
- Gender
- Province
- District
- Name of Road
- Name of Check Point
- Average single transport cost per person to the main market using a car/truck
  - Interviewer
  - Date of Interview:
  - Checked by (supervisor's name)
  - Date checked

Section 2: Transaction Costs and Volumes

Forest Product being transported	Species	State of Product			Mode of Transport				Quantities/Mass/Volume			Costs in Zambian Kwacha			Origin of Product	Destination
		Raw	Semi-processed	Processed	Bicycle	Truck/ Car	Scotch cart	Other	Packaging	Unit	No Units	transport	Conveyance	Levy	Town	Area	
Mushroom																	
Roots & Tubers																	
Fruits																	
Edible Insects																	
Edible Insects																	
Bees' Product																	
Wild Vegetable																	
Tree Leaves Vegetable																	
Energy																	
Ornamental																	

Forest Product being transported	Species	State of Product			Mode of Transport				Quantities/Mass/Volume			Costs in Zambian Kwacha					Origin of Product	Destination
		Raw	Semi-processed	Processed	Bicycle	Truck/ Car	Scotch cart	Other	Packaging	Unit	No Units	transport	Conveyance	Levy	Town	Area		
Fiber/Construction																		
Medicinal																		

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About Integrated Land Use Assessment (ILUA) Phase II

In 2005, the Government of the Republic of Zambia, through the former Ministry of Tourism, Environment and Natural Resources (now Ministry of Lands, Natural Resources and Environmental Protection; MLNRP) and in an effort to reduce poverty, promote economic growth, fill existing human capacity gaps and fulfil its international commitments, requested technical and financial assistance from the Food and Agricultural Organization of the United Nations (FAO) to design and implement an Integrated Land Use Assessment (ILUA). The aim of the project was to establish a permanent forest and tree monitoring system and to obtain baseline national-level data on forest and other related land use resources. This was in order to address the urgent need for knowledge on the state and trends of Zambian forestry resources, given the lack of existing national level surveys and the need to strengthen institutional and financial capacity. In this way, the ILUA served as a pilot to provide data on the national status of land cover, management and use. The ILUA results were seen as vital to supporting national policy processes and planning, but because ILUA was intended as a national-level inventory, the results had limited utility for informing provincial and district level land use planning and decision making due to limited available funds and therefore applied low sampling intensity.

Therefore, based on discussions held with project stakeholders, the continuation of ILUA through an extension was proposed, in March 2009, to the Government of Finland for financing. Since the Environment and Natural Resources Management and Mainstreaming Programme (ENRMMP) has been launched to bring improved coordination and implementation capacity to the environment and natural resource management sector in Zambia, the project is designed to be implemented during 2011-2014 under this programme, with technical assistance from the FAO.

While ILUA I generated baseline data, ILUA II, to be carried out from 2011 to 2016, aimed to enhance the use and development of data and information systems for forest resource monitoring and Sustainable Forest Management, particularly for provincial level land use planning as well as for selected districts. ILUA II aims to provide information on trends in forest change through refined methodologies, re-assessed field plots and a four-fold intensification of sampling density in order to report at the sub-national level. It also aims to cover socio-economic related information needs via the Forest Livelihoods and Economic Survey in order to better understand the drivers of deforestation and to inform policy interventions which support Sustainable Forest Management. Establishing a monitoring system that captures livelihood needs beyond the forests is critical to designing well-targeted and innovative policy solutions that can support and promote sustainable natural resource management. The principal objectives of the ILUA II project are to strengthen forest and land use inventories at the national and sub-national level, and to support the implementation of Sustainable Forest Management and initiatives to Reduce Emissions from Deforestation and forest Degradation (REDD) through better information, capacity building, dissemination of information, and improved multi-sectoral dialogue.

The main stakeholders of the project are: MLNREP and different departments and institutions with which it collaborates, Ministry of Finance and National Planning, Ministry of Agriculture and Livestock, Central Statistical Office, National Remote Sensing Centre (Ministry of Science and Industrial Research), University of Zambia, Copperbelt University, Centre for International Forestry Research, National Institute for Scientific Research, Zambian Agricultural Research Institute, other national and international education and research institutes, smallholder farmers, NGOs and civil society, UN-REDD and other projects, the FAO and other cooperation partners.

The intended beneficiaries of the project can be summarized as follows: policy and decision makers at all levels, forest industries with an interest in timber and non-timber forest products from forest areas, the international community and international organizations requiring reliable information on the natural environment, NGOs, academia and grassroots organizations with interests in forest resource management, environmental protection, timber trade and extension.

In line with the overall policy of the Government of the Republic of Zambia, the impacts of this project are that benefits of Sustainable Forest Management are increased and mainstreamed in the national economy and policies, thereby supporting sustainable development of environment and rural livelihoods and meeting the Millennium Development Goals in a changing climate.

The project's main outcome is ***"strengthened capacity in planning and implementation of Sustainable Forest Management and REDD through better information capacity building, dissemination of information and improved multi-sectoral dialogue"***. The three main outputs of the project are:

Output 1: Effective means of dissemination and utilization of the information for multi-sector dialogue

Output 2: Improved methodological and human capacity in collecting and analyzing forest resource information for Sustainable Forest Management, REDD monitoring and carbon inventory.

Output 3: Implementation of ILUA II Mapping and Field Survey

ILUA II
Integrated Land Use Assessment Project

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