TOOL 8

MONETARY VALUES

AIM: TO EXPRESS THE CONTRIBUTION OF FORESTRY IN MONETARY TERMS.

In order to make the case for the importance of forests to local people, some kind of numerical data is almost essential. Calculations suggested here view the data gathered during the Field Toolkit exercise in the context of official per capita income data. This is the only way of deriving numerical data from toolkit data. Even a rough and ready method for assigning cash values to the forest proportion of annual incomes can be useful for making a preliminary case for the importance of including forest product questions in future household surveys.

The critical first step is to obtain data from the national or provincial statistics body and to understand what these figures do and do not include. The data needed for this exercise, which should be readily available, include:

- Mean income for the country
- Mean income for the actual province, district, ward or village surveyed (or at least a breakdown between rural and urban income)
- An analysis of where this income comes from (e.g. percentages from employment, remittances, agriculture and other activities)
- Mean household size for the country, and for the actual province, district, ward or village surveyed
- The number of households in the village or district where the tools were applied
- The number of households in each of the four wealth categories (these figures come from Tool 1, Wealth Ranking, rather than from official statistics)

Usually, the official statistics on sources of household income do not include non-cash income. Sometimes the statistics do include non-cash income from agriculture but not non-cash income from collected wild products and forestry (as in the worked example from Tanzania below). It is important to know whether and how different forms of non-cash income are included, because these differences will affect your calculations of monetary value.

Two worked examples, from Tanzania and Madagascar, demonstrate the use of this tool using slightly different approaches. Again, note that your calculation will most likely need to be adapted according to the kind of official statistics that you have and the assumptions made in those statistics (e.g. inclusion of forest products and of non-cash income). The example from Tanzania is worked in US$ values, useful for international communications, but can be worked in the same way in the national currency.

WORKED EXAMPLE FROM TANZANIA

Figures and definitions from Bureau of Statistics data

1. The average per capita income for all Tanzanians in 2005 stood at $327.

Making an estimate of unaccounted for income from forests. The example of poor/very poor women in Busongo

Cash income		Cash income estimated as 49% of total income	
1.Forest	14%	6.86	7
2. Farm	75%	36.75	37
3. Other	11%	5.39	5
	100%	49.00	49
Non-cash income		Non-cash income estimated as 51% of total income	
4. Forest	44%	22.44	22
5. Farm	56%	28.56	29
	100%	51.00	51
Total annual cash and non-cash income		100.00%	100%

Wealth Rank categories of HHs in Busongo		Column 1 Ave. No of Cattle (score 1 per head)	Column 2 Ha. of land (score 3 per ha)	Column 1+2 Wealth Score	Wealth score x no. of HHs	% of Busongo income owned by each wealth category
Rich HHs	18	30	10 x 3 =30	60	1080	28.0
Middling	29	15	5 x 3 =15	30	870	22.0
Poor	150	5	2 x 3 = 6	11	1650	42.0
Very poor	58	1	1 x 3 = 3	4	290	8.0
TOTALS	255				3890	100.0

2. Shinyanga (where the toolkit was tested), as one of the country's poorest regions averages 74% of this figure, or $242.
3. Average household size in Shinyanga is about six, so the average household income in the region is $1,452.
4. Per capita income ***includes*** cash income from all sources (1, 2 and 3 in the chart) and non-cash income in the form of farm-raised crops consumed at home (5 in the chart). It ***excludes*** non-cash off-farm income such as forest products, which are consumed and not sold (4 in the chart).

USING THE FIGURES IN CONJUNCTION WITH TOOLKIT DATA

1. *Adding in the missing fraction of income derived from non-cash forest resources.* The average per household income figure from the official statistics ($1452) includes non-cash income from agriculture but not from forestry. Therefore the total household income (cash and non-cash) must be higher than the official figure. If 22% of total household income is non-cash income from forestry, then the total household income amounts to 100/(100-22) x $1452 = $1862. This is an additional $410 a year per household.
2. *Additionality.* An additional $410 a year for a household ($68 a head) may not sound like much, but the sum may be much more than the annual per capita sum allocated by the district to a specific budget item such as health or education in the area.

GOING BEYOND AN AVERAGE PER CAPITA FIGURE: WEALTH DISTRIBUTION

However, an average figure for the whole of Shinyanga does not allow us to look at the different cash value of forest for richer and poor people. Is there any way of taking the calculation further? An attempt was made as follows.

1. In the original village wealth-ranking exercise, the team was told that there were 255 households in the village in total of which 18 were wealthy, 29 were middling, 150 were poor and 58 were very poor.
2. The team was also given average cattle numbers and land holdings for each of these categories as indicators.
3. From these, a simple scoring system was devised in order to develop a 'wealth score' for each category, with which to develop an indication of wealth distribution among the four categories.
4. Shinyanga's 255 households, with an average of six household members each, have a population of 1,530. With official per capita income at $242, it can be said that Busongo's total average income is $370,260. Including the component from non-cash forest income, the per capita income comes to $310 ($242 + $68) and the total for Busongo is $474,300. How is that sum split between the different wealth categories?

These calculations can be used to show what proportion of total household income, expressed in monetary terms, comes from forest for households in different wealth categories.

Wealth Rank categories of HHs in Busongo	No. HHs	% of Busongo income owned by each wealth category	Proportion of all Busongo income in $$	Income Per HH	Income Per cap.
Rich HHs	18	28	132,804	7,378	12,300
Middling	29	22	104,346	3,598	600
Wealth Ranking of HHs in Busongo	**No. HHs**	**% of all Busongo income**	**Proportion of all Busongo income in $$**	**Income Per HH**	**Income Per cap.**
Poor	150	42	199,206	1,328	221
V.poor	58	8	37,944	654	109
TOTALS	255	100	474,300		

WORKED EXAMPLE FROM MADAGASCAR

South-East

What is the overall dependence on forest products for all residents (poorer and richer, men and women) of both villages?

In Ambinanindrano and Ampasipotsy there are a total of 220 households (from Tool 1), which have been classified by local people into categories of richer (*Rich + Middling*) and poorer (*Poor + Very Poor*). We assume an equal distribution of men and women in the two wealth categories. Different wealth and gender classes within the two villages have a different split between cash and non-cash income and between forestry and non-forestry (agriculture + other) revenues. Using the percentage of households in each of these four groups in the two villages, it is possible to calculate overall figures for the importance of forest products to cash, non-cash and total income.

How do we apply a monetary value to these percentages?

The average income of rural households in Vatovavy Fitovinany Region was 215,536 Ariary in 2005 (Source: l'Enquête Periodique Ménages 2005, INSTAT-DSM) and is expected to be similar in 2008. This figure includes both cash and non-cash income. The Enquête Periodique Ménages 2005 estimated that non-cash income from agriculture accounts for about 30% of total household income, which is comparable to the finding in this study

ESTIMATION OF OVERALL VALUE OF FOREST PRODUCTS TO ALL RESIDENTS IN AMBINANINDRANO AND AMPASIPOTSY

	Ambinanindrano				Ampasipotsy				
	PW	PM	RW	RM	PW	PM	RW	RM	Total
Number of households	57	57	22	22	20	20	11	11	220
% total hhs in the two villages	26%	26%	10%	10%	9%	9%	5%	5%	100%
% income that is non-cash	57.5%	60%	35%	71.5%	65%	70%	37%	66.5%	58.5%
% forestry contribution to non-cash income	45%	36%	23%	23%	39%	38%	40%	40%	37%
% forestry contribution to cash income	5%	7%	30%	4%	22%	9%	6%	16%	10%
% forestry contribution to total income	28%	25%	27%	17%	33%	29%	19%	32%	26%

Wealth Rank categories of HHs Ambinanindrano and Ampasipotsy (Mizilo)		Column 1 Ave. No of Cattle (score 1 per head)	Column 2 Ha. of land (score 3 per ha)	Column 1+2 Wealth Score	Wealth score x no. of HHs	% of village income owned by each wealth category	Annual household income (cash + subsistence) in Ariary	Annual value of forest products to household in Ariary
Rich	17	4	4 x 3 =12	16	272	23.5	655,480	150,760
Middling	48	2	2,25 x 3 =6.75	8,75	420	36.5	360,574	82,930
Poor	148	0	1 x 3 = 3	3	444	39	124,950	34,990
Very Poor	7	0	0,5 x 3 = 1.5	1,5	10.5	1	67,740	18,970

that non-cash contributions from agriculture account for from 22% to 55% of total household incomes, with an overall contribution to all households of 37%.

However, the Enquête Periodique Ménages 2005 estimates the contribution of non-cash income from non-agricultural enterprises, including forestry, at only 0.2% of total household income, whereas the estimate in this study is 21% (proportion of income that is non-cash x proportion of forestry's contribution to non-cash income). There are several possible explanations for this difference, including (a) the EPM definition of agricultural products includes some of the products that the Forests-Poverty Toolkit defines as forest products, such as fruits, (b) the EPM figure includes urban households, which are expected to have a lower dependency on forest products, (c) the questions in the EPM do not extract the full range of forest products that are recorded in the Forests-Poverty Toolkit.

If the total household income in Vatovavy Fitovinany Region is 215,536 Ariary per year and forest products contribute 26% of this income (cash + non-cash) then the annual contribution from forestry to each household is 56,039 Ariary (approximately US$35).

However, it is not possible, from an average figure of the two villages, to estimate the respective financial contribution of forests for the richer and the poorer.

1. In the initial classification of households by wealth/social class, the team established that there was a total of 220 households (158 Ambinanindrano, 62 Ampasipotsy), of which 17 (12+5) were *Rich*, 44 (31+13) *Middling*, 147 (111+36) *Poor*, and 7 (4+3) *Very Poor*.
2. The team also recorded the average number of livestock and the average cultivation area (paddy fields + dryland fields) for each of those classes, as indicators.
3. On that basis, a simple scoring system was devised to establish a "wealth score" for each class, to provide an indication of wealth distribution among the four classes.
4. If the total income of the two villages is 47,417,920 Ariary per year (215,536 x 220), the mean income can be estimated separately for each wealth class by dividing total income proportionately among the four classes.
5. The contribution of forestry can then be calculated separately for the four classes using the percentage of total income from forestry for the richer group (23%; *Rich* and *Middling*) and the poorer group (28%; *Poor* and *Very Poor*).

North-West

What is the overall dependence on forest products for all residents (poorer and richer, men and women) of both villages?

In Ambodimanga and Ambodibonara there are a total of 278 households (from Tool 1), which have been classified by local people into categories of richer (Rich + Middling) and poorer (Poor + Very Poor). We assume an equal distribution of men and women in the two wealth catego-

ESTIMATION OF OVERALL VALUE OF FOREST PRODUCTS TO ALL RESIDENTS IN AMBODIMANGA AND AMBODIBONARA

	Ambodimanga				Ambodibonara				
	PW	PM	RW	RM	PW	PM	RW	RM	Total
Number of households	72	72	18	18	39	39	10	10	278
% total hhs in the two villages	26%	26%	6%	6%	14%	14%	4%	4%	100%
% income that is non-cash	72%	73%	79%	74%	72%	53%	46%	37%	68%
% forestry contribution to non-cash income	40%	20%	12%	43%	52%	41%	43%	52%	36%
% forestry contribution to cash income	26%	29%	23%	11%	13%	9%	23%	15%	21%
% forestry contribution to total income	37%	22%	14%	35%	37%	26%	33%	38%	30%

ries. Different wealth and gender classes within the two villages have a different split between cash and non-cash income and between forestry and non-forestry (agriculture + other) revenues. Using the percentage of households in each of these four groups in the two villages, it is possible to calculate overall figures for the importance of forest products to cash, non-cash and total income.

How do we apply a monetary value to these percentages?

The average income of rural households in Sofia Region was 225,240 Ariary in 2005 (Source : l'Enquête Periodique Ménages 2005, INSTAT-DSM) and is expected to be similar in 2008. This figure includes both cash and non-cash income. The Enquête Periodique Ménages 2005 estimated that non-cash income from agriculture accounts for about 30% of total household income, which is comparable to the finding in this study that non-cash contributions from agriculture account for from 30% to 70% of total household incomes, with an overall contribution to all households of 45%.

However, the Enquête Periodique Ménages 2005 estimates the contribution of non-cash income from non-agricultural enterprises, including forestry, at only 0.2% of total household income, whereas the estimate in this study is 20% (proportion of income that is non-cash x proportion of forestry's contribution to non-cash income). There are several possible explanations for this difference, including (a) the EPM definition of agricultural products includes some of the products that the Forests-Poverty Toolkit defines as forest products, such as fruits, (b) the EPM figure includes urban households, which are expected to have a lower dependency on forest products, (c) the questions in the EPM do not draw out the full range of forest products that are recorded in the Forests-Poverty Toolkit.

If the total household income in Vatovavy Fitovinany Region is 225,240 Ariary per year and forest products contribute 30% of this income (cash + non-cash) then the annual contribution from forestry to each household is 67,572 Ariary (approximately US$42).

However, it is not possible, from an average figure of the two villages, to estimate the respective financial contribution of forests for the richer and the poorer.

1. In the initial classification of households by wealth/social class, the team established that there was a total of 278 households (180 Ambodimanga, 98 Ambodibonara), of which 8 (4+4) were *Rich*, 49 (32+17) *Middling*, 151 (96+55) *Poor*, and 70 (48+22) *Very Poor*.

Wealth Rank categories of HHs Ambodimanaga and Ambodibonara		Column 1 Ave. No of Cattle (score 1 per head)	Column 2 Ha. of land (score 3 per ha)	Column 1+2 Wealth Score	Wealth score x no. of HHs	% of village income owned by each wealth category	Annual household income (cash + sub-sistence) in Ariary	Annual value of forest products to house-hold in Ariary
Rich	8	15	3 x 3 =9	24	192	18	1,408,880	394,490
Middling	49	4	1.5 x 3 =4.5	8,5	416,5	40	511,160	143,120
Poor	151	1	0.5 x 3 = 1.5	2,5	377,5	36	149,280	44,790
Very Poor	70	0	0,3 x 3 = 0.9	1	70	6	53,670	16,100

2. The team also recorded the average number of livestock and the average cultivation area for each of those classes, as indicators.
3. On that basis, a simple scoring system was devised to establish a "wealth score" for each class, to provide an indication of wealth distribution among the four classes.
4. If the total income of the two villages is 62,616,720 Ariary per year (225,240 x 278), the mean income can be estimated separately for each wealth class by dividing total income proportionately among the four classes.
5. The contribution of forestry can then be calculated separately for the four classes using the percentage of total income from forestry for the richer group (28%) for the *Rich* and *Middling* and the poorer group (30%) for the *Poor* and *Very Poor*.

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