# Methods Summary – ASSETS Malawi

Attaining Sustainable Services from Ecosystems through Trade-off Scenarios (ASSETS) was a research project led by Professor Guy Poppy from the University of Southampton in collaboration with researchers from CIAT (Colombia), University of Malawi - Chancellor College, World Fish (Malawi), Basque Centre for Climate Change Research (Spain), Conservation International (USA) and the University of Dundee, conducted from 2012 - 2016. The project aimed to explicitly quantify the linkages between ecosystem services that affect - and are affected by - food security and nutritional health for the rural poor at the forest-agricultural interface.

The project examined the multiple (and multi-directional) links between ecosystem services, food security and maternal and child health outcomes in poor rural communities, addressing three main themes, each guided by two research questions (see Figure 1).

Graphical user interface, diagram, text, application

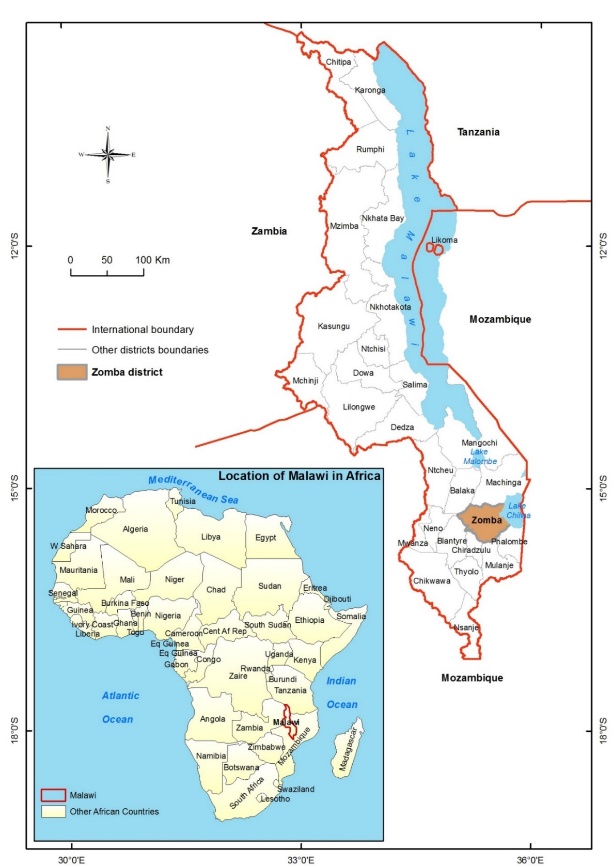
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**Figure 1:** ASSETS Research Themes and Questions (Schreckenberg et al., 2016).

Research was conducted in Peru, Colombia, and Malawi. This document summarizes the methods used to select sites and conduct the surveys in Malawi.

# Selection of sites and sampling of households

The Zomba District (see Figure 2) was considered suitable for researching key challenges the country faces due to an above-average proportion of households affected by poverty (National Statistical Office, 2006, 2012), limited access to drinking water (National Statistical Office, 2012), and malnutrition (Ministry of Health, 2011; National Statistical Office (NSO) and ICF Macro, 2011). In addition, the region was exposed to a high variability of weather conditions between seasons (National Statistical Office, 2008; Zomba District Assembly, 2009) as well as to extreme weather events (Department of Disaster Management Affairs [DoDMA], 2009; C. S. Ngongondo et al., 2011; Record et al., 2016). The individual villages were selected along a transect with varying degrees of access to natural resource hotspots from Lake Chilwa in the east, through and beyond the Zomba forest reserve in the west.



**Figure 2:** Location of Zomba within Malawi and of Malawi in Africa (Joshua, 2020).

# Selection of sites and sampling of households

Six rural villages in Zomba and Machinga Districts in southern Malawi were selected for the ASSETS project. In the six villages, 565 out of a total of 1,064 households were randomly sampled to participate in the household questionnaire surveys (see Table 1). As part of the survey, either the heads of the household or their spouses were interviewed by trained enumerators using the Surveybe computer package. Repeat visits ensured that representatives of all households were interviewed. Households that dropped out after the first visit were substituted, which was particularly common in the village of Mpheta.

**Table 1:** Number of households randomly sampled in each of the six Malawian villages.

|  |  |  |  |
| --- | --- | --- | --- |
| **Village No.** | **Village** | **Number of households** | |
| **Wave 1** | **Wave 2** |
| 1 | Mtuluma | 29 | 29 |
| 2 | Mtogolo | 10 | 14 |
| 3 | Mtwiche | 138 | 171 |
| 4 | Mpheta | 202 | 207 |
| 5 | Makombe | 62 | 61 |
| 6 | Kasonga | 59 | 66 |
|  | Total | 500 | 548 |

The household survey was divided into different modules covering various topics, although these differed slightly between the two waves: there were 30 modules in Wave 1 and 31 modules in Wave 2 (see survey format documentation). The objectives were to:

* Obtain information on the nutritional condition of children under five years of age that permit an estimate of stunting rates in the region.
* Obtain socio-demographic indicators for rural households in southern Malawi.
* Generate information on material living conditions in poor rural settings in southern Malawi.
* Obtain information that allows assessment of food (in)security conditions among poor rural households in southern Malawi.
* Provide data that helps generate rural income estimates among rural households of southern Malawi.
* Provide information that helps generate expenditure estimates for rural households in southern Malawi.
* Generate quantitative information stating nature’s contributions to rural residents’ basic needs and income generation activities.
* Provide socioeconomic and environmental indicators comparable to government’s’ nationwide living standards measurement studies and parallel surveys taking place in Colombia and Peru.

The thematic coverage included:

* Socio-demographic characteristics of household members
* Education
* Health and maternity
* Time use and employment
* Housing and material living conditions
* Food consumption and food security
* Subjective wellbeing
* Anthropometric measures (children under 5)
* Farm characteristics: agriculture and livestock
* Extractive activities: fishing, hunting, and wood-extraction

The first of the two survey waves was conducted between January 2012 and February 2015, the second between January 2012 and March 2016.

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