

**Participatory assessment of sustainable agriculture and biodiversity in Malawi
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**Case study for discussion on
“Methods, tools and processes for participatory surveying or monitoring of biodiversity”
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1. Context

The participatory impact assessment described in this case study was carried out in Malawi in 2000 as part of a nationwide evaluation of the Starter Pack agricultural scheme, which had distributed 20 kg of free modern variety (MV) seeds and fertilizer to all rural households with land in an effort to boost household food security and encourage more sustainable agriculture practices². Its purpose was to assess the contribution of the Starter Pack scheme to sustainable agriculture in Malawi, including its impact on biodiversity.

Sustainability was defined as farm family food security and soil fertility and recognised as including longer-term economic and environmental impact of technologies and practices, and also institutional structures and processes. Agricultural biodiversity was defined as encompassing the variety and variability of plants, animals and micro-organisms at genetic, species and ecosystem level which are necessary to sustain key functions, structures and processes in the agro-ecosystem in support of food production and food security. It was recognised that sustainable use of agricultural biodiversity can make a critical contribution to agricultural sustainability directly, in terms of providing food, cash income, building materials, medicines, etc. and indirectly, through providing desirable attributes in crops and livestock, and contributions to soil quality, water cycle, climatic and habitat protection at ecosystem level. However, there is no such thing as an a priori ‘optimum’ level and mixture of agricultural biodiversity in an agro-ecosystem; rather, the desirable configuration is determined by prevailing local natural and socio-economic circumstances.

It was decided to focus on the views of farmers, because these had not been solicited on a national scale in Malawi before. The assessment did not attempt to report on the views of other stakeholders such as government, NGOs and donors.

The aim was to design an approach that elicited farmers’ views as unbiased as possible by the study team, and that captured regional variations and differences between farming practice groups and gender groups as well as reporting on national trends and patterns (see Box 1).

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² The full report on the 1999-2000 Starter Pack evaluation is available on CD-Rom from Carlos Barahona at c.e.barahona@reading.ac.uk. This case study is summarized from the full report and ODI AgREN Paper No. 112 which can be viewed at www.odi.org.uk

Box 1: Dimensions of agricultural sustainability and biodiversity explored by the study

- the indicators farmers use to assess the sustainability of the agriculture they see practiced around them;
- whether sustainability, as defined by farmers, varies significantly between regions and types of households;
- farmers' assessments of trends in sustainable agriculture over the last 30 years;
- farmers' "Dream Packs" – the type of inputs and extension package that would most help them increase the sustainability of their agriculture.

2. Methods and tools

The basic framework chosen for the impact assessment was an **adaptation of participatory well-being ranking**³ to measure farm families' sense of agricultural sustainability instead of well-being. In collaboration with farm families, we developed sustainability categories, which we called **'Farming Practice Groups'**. In each case study village, key informants ascribed farm families to a particular Farming Practice Group and this formed the basis for focus group discussion about movement between sustainability categories over time and reasons for this movement.

Preliminary participatory fieldwork was needed to:

- identify which variables farmers themselves use to assess agricultural sustainability, i.e. to generate a set of common sustainability indicators which could be used as a starting point for village-level discussions;
- assess which particular participatory tools and techniques would be most appropriate for facilitating discussions at community level.

Accordingly, an in-depth preliminary field study was carried out at three sites. The sites were chosen to represent the variability in altitude, one of the main factors determining farming practices in Malawi. Within each site, the individual village was chosen to be of medium wealth and accessibility, to avoid extremes in these two variables unduly influencing results.

The study team spent 6-7 days in each village, starting with an open meeting to discuss farming activities (problem-objective tree) and moving on to identifying different farming practices within the village with key informants (transect walk) and discussing their sustainability (phrased as *ulimi okhazikika* – literally 'stable agriculture'). From the transect walk and discussion, the team was able to generate for each village a list of farming practices considered to be indicators of sustainable agriculture, with descriptions of how to distinguish 'high', 'medium' and 'low' sustainability for each practice (which we called Farming Practice Group 3, 2 and 1 respectively). The team then spent time experimenting with different participatory exercises (institutional mappings, history timelines, pair-wise rankings, trend analyses, dream-nightmare visions, etc.) in different formats (open meetings, key informants, focus group discussions, etc.), to assess approaches which would be most appropriate for the main study for generating the information needed within the limited time available. The preliminary fieldwork in each village concluded with a feedback meeting for the whole village, at which the team presented the results and incorporated comments from village members.

Using the results of the preliminary field study, the team got a clear vision of how the information needed for the impact assessment could best be obtained in the main study using participatory approaches. This was written up as a field facilitators' manual, which guided the main study fieldwork. The team was able to identify 15 '**Sustainability Indicators**' which were mentioned

³ See, for example, Drinkwater, M. and Rusinow, T. (1999) 'CARE's livelihoods approach'. Presentation for NRAC '99. www.livelihoods.org/info/nrac/care.pdf and Temu, A. and Due, J. (2000) 'Participatory appraisal approaches versus sample survey data collection: a case study of smallholders farmers well-being ranking in Njombe District, Tanzania' *Journal of African Economies* Vol. 9, No. 1, pp. 44-62.

consistently across villages (Table 1). These were used as a set of standard indicators for which information was sought in each village during the main study.

Table 1: Farmers' indicators of sustainable agriculture & biodiversity in Malawi

Sustainability Indicator	Rank
Crop diversification	4.2 (high)
Access to seed	4.7 (high)
Farmland size	5.4 (high)
Tools and implements	5.5 (high)
Mixed cropping	6.0
Fertiliser application	7.0
Institutions	7.3
Crop rotation	8.1
Land husbandry	9.2
Livestock	9.5
Tilling or weeding	9.8
Manure application	11.2
Chemical application	11.3 (low)
Agroforestry	11.9 (low)
Fallow	12.2 (low)

Notes:

Figures = means of pair-wise rankings across villages. Top-ranking indicators was given one point and lowest ranking was given 15 points. An indicator was classified as highly important if rank is below mean + standard deviation, low importance if rank is above mean – standard deviation, otherwise average importance

Further information on each SI is given in ODI AgRen Paper No. 112.

The main study was carried out in 30 villages, with teams of four field facilitators spending three days in each village. Study sites were selected by proportional representation, based on a vulnerability assessment mapping exercise conducted in 1996 by the Famine Early Warning Unit. Within each study site, specific villages were randomly selected from the Starter Pack Logistical Unit national database of villages, excluding those villages with less than 30 or more than 300 households registered to receive Starter Pack. The fieldwork within each study village consisted of:

- introductions;
- background information: resource, social and institutional mapping, transect walk;
- pair-wise ranking of relative importance of Sustainability Indicators;
- categorisation by key informants of households into 'high', 'medium' and 'low' sustainability Farming Practice Groups, using the list of sustainability indicators;
- mixed gender focus group discussions with each Farming Practice Group about: the relative importance of different Sustainability Indicators; trend analysis of factors influencing the sustainability of their farming over time; impact (positive, negative, zero) of Starter Pack on their farming; and ideal contents of a 'Dream Pack' of inputs and extension advice for the future.

Throughout these exercises, symbols selected by the community were used to represent the sustainability indicators. The emphasis was on collecting information that could be used to make comparisons between sites as well as generalisations across sites. Thus, for example, scores were used in preference to relative rankings wherever feasible.

For each village, results were recorded in a debriefing document. One copy of the debriefing document was left in the village and the study team kept one copy. The information in the debriefing documents was then summarised in various simple Excel tables and charts which allowed comparisons between region and FPGs as well as national trends and patterns.

3. Successes

The transect walk and discussion worked very well in the Preliminary Field Study to identify the variables that farmers themselves use to assess agricultural sustainability. We concluded this was

because they allowed for open-ended discussion but in a forum focused on the matter at hand, i.e. walking through village farmland. Farmers' identification of appropriate indicators for assessing sustainable agriculture was felt to be an extremely important aspect of the study, as a number of the indicators selected – and the parameters dividing the three Farming Practice Groups – were not obvious to the study team, or significantly different from their assumptions. Thus the study provided several interesting insights into farmers' perceptions of sustainable agriculture and biodiversity. For example, all 15 SIs relate to the immediate production potential of farmers' own land; no Indicators for non-use values nor for wider ecosystem resources were selected. A number (e.g. implements and tools, land size) appeared to the study team to have only a tangential impact on sustainable agriculture and biodiversity, but farmers had a lucid explanation for how these assets directly affected farmer's ability to practice sustainable agriculture. Linked to this, for many SIs, it was often *lack* of assets that defined farmers in the "low sustainability" Farming Practice Group – contrary to the widespread assumption amongst researchers that it is poor farmers who practice sustainable, biodiverse farming more than richer farmers. Interestingly, three out of the top five SIs related directly to access to agricultural biodiversity: crop diversification (defined as growing a range of staple crops); seed availability (enough seed for timely planting at recommended spacing for all crops); and mixed cropping (optimal mix of crops for in-field soil fertility management through inter-cropping and relay planting). Malawi's experience does not therefore appear to fall within the commonly-assumed paradigm of highly biodiverse small farm agriculture at risk from the interventions of the formal seed sector. Rather, it appears to be closer to the experience documented in, for example, Wood and Lenne (1993)⁴, of small farmers being *short* of crops and varieties and keenly seeking new sources.

In the Main Study, the pair-wise ranking of Sustainability Indicators, the categorisation of households into different Farming Practice Groups, and the focus group discussions with each FPG – together with the use of absolute scores rather than rankings – worked very well to provide an objective common framework that permitted comparisons across groups (regional, FPG, gender) and over time. The ranking of SIs across regions and FPGs was fairly consistent. Interestingly, the team assumed farmers would be quick to mention the practice of agroforestry, the practice of fallow, and low applications of crop chemicals. In practice, these three variables were the lowest ranked of the 15 SIs, the reasons given being shortage of land, and lack of knowledge and availability of inputs. Farmers indicated that the presence or absence of agricultural service delivery institutions has a significant impact on the parties of sustainable farming locally. Both male and female key informants agreed that a greater proportion of female-headed households fell into the low sustainability FPG.

At the same time, the framework used allowed participants' views to emerge on *reasons* behind the trends, background information, and anecdotal evidence, as in the discussion of the farmers asset base, and the discussion of the influence of agricultural service delivery institutions.

All the tools used to garner information were adaptations of straight-forward and widely known participatory exercises that required little interpretation at field level. This meant that the students provided by the study team to facilitate the exercises in each village were able to do so easily and effectively. Furthermore, most exercises were organised so that key informants or focus group members led the discussions and study team staff acted only as facilitators and note-takers. This meant that a number of important issues were raised that may not have arisen if the study team staff had actively directed the discussion, e.g. by using check-list approaches.

As well as providing a degree of objectivity and being relatively straightforward to implement, these methods and tools kept the time required from farm families (and from the study team) to a minimum and relatively focused on the topic under investigation. For example, in the Main Study, only a few hours was spent in an open meeting of the whole village, with the rest of the time involving smaller groups of key informants and focus groups discussing particular issues.

⁴ Wood, D. and Lenne, J. (1993) 'Dynamic management of domesticated biodiversity by farming communities'. Paper presented at Norway/UNEP expert conference on biodiversity.

In conclusion, by using participatory approaches, the study team was able to get a much clearer understanding of the underlying relationships involved in sustainable agriculture than if we had relied solely on quantitative survey data.

4. Problems

There were the usual problems inherent in participatory work of needing a long time to explore issues adequately, and therefore some issues had to be missed out (e.g. differences *within* families, which it was hoped to explore using individual household interviews but for which there was not enough time). Also of community leaders and dominant men leading discussions, although this was dealt with to some extent by organising discussions in sub-groups of farmers in common situations.

The SIs identified by farmers relate closely to farmers' immediate food production needs, with no reference made to longer-term horizons nor to wider ecosystem functions, which is a significant gap in any assessment of sustainability. Also, by definition, none of the SIs related to the overall institutional sustainability of the Starter Pack scheme, as farmers had very little knowledge or understanding of upstream linkages to research, extension and other institutions, so analysis of this was based instead on extrapolation by the study team.

A certain degree of subterfuge had to be used in introducing the study in villages, in order to avoid biasing farmers' responses. For example, the study team deliberately did not introduce the study as an impact assessment of the Starter Pack scheme. Neither were the FPG categories introduced as 'more' or 'less' sustainable, rather they were given numbers and introduced as referring to different kinds of farming practice. Nonetheless, a number of the SIs identified by farmers are closely related to prevailing extension messages concerning best farming practices.

5. Combining useful methods and tools in processes which include all relevant stakeholders

Malawi small farmers were the stakeholders on whom this impact assessment sought to focus. The study team felt that the particular framework and participatory exercises used had been successful in including the range of small farmers' views (across regions, gender groups, farming practice groups) in a balanced way.

Government and NGOs at local and national level, and donors, are other groups with a stake in sustainable agriculture and biodiversity assessment in Malawi. The purpose of this study was to inform them of small farmers' views on sustainable agriculture and biodiversity, and the policy implications; it did not seek to include their views explicitly. It should be possible to use the kind of participatory well-being ranking approach adopted by this study to garner the views of these other stakeholders. However, producing any kind of synthesis of views would be much more difficult as it would necessitate agreeing relative weights for the ranks and values attributed by different stakeholders - a hugely contentious area.

By focusing on the values and viewpoints of selected stakeholders, participatory approaches are sometimes considered not to generate all the information needed to identify policy options and potentials. However, we suggest they can be very useful where these values and viewpoints have not been sought before, as here, and can be presented in a nationally representative way with clear, reasoned policy implications. Malawi policy makers were convinced and made some changes to the design and implementation of the Starter Pack scheme for 2000-01 based on the evidence and conclusions presented in this study.

These changes provided some immediate, tangible benefit to local people from their participation in the assessment (e.g. including preferred maize varieties in the 2000-01 Starter Pack). This perhaps went some way towards off-setting the cost of their participation, which was primarily the time required from them for the 3 days field work in each village.

However, a number of the assessment's other policy implications, which had more fundamental personnel and other resource implications, were not acted upon (e.g. providing more hands-on extension demonstrations of how to use Starter Packs). It would be interesting to know whether the farmers who had participated in the assessment felt the benefits had justified their costs.

The assessment was helped by the positive attitude of farmers towards the Starter Pack scheme at the time, which was perceived as a welcome free gift from government. This made farmers willing to spend time participating in the field exercises. In subsequent years SP distribution in Malawi has been more limited and this has generated some bad feeling which means future participatory field work on this topic might be much more difficult.

6. The influence of context on the success of methods and processes

This case study shows that it is possible to use participatory approaches to generate meaningful assessments of biodiversity at village level that can also be used to point up trends and variations at national level. The main requirements are for the individual participatory exercises to be set up within an **objective common framework**, so that comparisons can be made, and to be replicated at a sufficient number of nationally representative sites. (Which requires sufficient baseline data at national level on which to base sample selection).

These requirements will often limit the detail with which assessments at individual sites can be carried out. In any case, participatory approaches **cannot provide information on all the topics necessary** for a full-scale biodiversity assessment, particularly long-term trends, wider ecosystem changes, national institutional issues, and the views of multiple stakeholders.

Grass-roots participants must be involved in the development of indicators, as complex causal factors and linkages are involved which researchers cannot anticipate. This need not involve much extra time and can be achieved using adaptations of conventional participatory exercises, if the key questions for the assessment and therefore the information required are clearly specified at the start. In this case, farmers focused on indicators that related to the immediate production potential of their own land.

7. Implications for further work

This impact assessment would have benefited from further information in three areas:

- methods and tools for helping local people to conceptualise and articulate views about **longer-term trends** in sustainable agriculture and biodiversity;
- methods and tools for helping local people to conceptualise and articulate views about **wider ecosystem issues** in sustainable agriculture and biodiversity;
- methods and tools for **weighting the views of different stakeholders** within the national system about sustainable agriculture and biodiversity.

One of the outcomes from this impact assessment and other work on on-farm conservation of crop diversity in Eastern and Southern Africa is the design of a project to use participatory approaches to assess the potential for scaling-up different kinds of grass-roots level support for on-farm conservation in the region. The project seeks to contribute to Element 3 (capacity building) of the Convention on Biological Diversity programme of work on agricultural biodiversity by means of participatory impact assessments of six different kinds of support (e.g. Farmer Field Schools, village breeding programmes, seed fairs). A project team has been formed and, if funding applications are successful, work will start in June 2002.