



Ruti Irrigation Project Effectiveness Review - Summary Report



Oxfam GB
Livelihoods Global Outcome Indicator:
*% of targeted households living on more than
£1.00 per capita per day*

February 2012

Acknowledgments

We would like to thank the Oxfam team in Zimbabwe for their support in administering this evaluation. Particular thanks to Sebastian Grey and the Irrigation Project team in Gutu.

Photo credit: David Bishop

Executive Summary

As part of Oxfam Great Britain's (OGB) Global Performance Framework (GPF), sufficiently mature projects are being randomly selected each year and their effectiveness rigorously assessed. Zimbabwe's Ruti Irrigation Project was selected to assess the extent that it has promoted change in relation to OGB's global livelihood indicator:

- **% of targeted households living on more than £1.00 per day per capita**

The Ruti Irrigation Project aims to contribute to sustainable livelihoods and resilience to climatic change among poor and vulnerable households in Gutu district, Zimbabwe. The project seeks to do this through the establishment of a 60 hectare surface irrigation scheme in which 240 farmers are directly supported to cultivate individual plots of land. The farmers are provided with start-up seeds, tools, fertilisers and pesticides, and are also supported with complementary training on improved farming methods, agri-business and marketing skills, and soil conservation techniques. The year-round output of crops from this project is further intended to indirectly benefit up to 50,000 people in the surrounding wards by enabling a more diverse and secure source of food.

In October 2011, with the support of Oxfam's Zimbabwe team, a household survey was administered to 232 beneficiary farmers from the three phases of the project. Phase 1 beneficiaries were defined as the intervention group, as they had already harvested crops from the project. Phase 2 and 3 beneficiaries, on the other hand, were defined as the comparison group as they were yet to harvest or begin planting. The survey comprised of questions not only relevant to the above indicator but also a number of other measures associated with the project's other intended outcomes. In order to control for observable differences between the intervention and comparison households, statistical analysis of the resulting data was undertaken using propensity score matching (PSM) and multivariable regression (MVR).

The results of the review found that between 8 and 10 per cent more of the intervention households are living above £1 per day per capita (PPP) compared to the comparison households. In addition, the former exhibit a greater increase in asset ownership and report being in a better position to meet household needs. The intervention households were also found to be more food secure than those in the comparison group. These findings are likely to be driven by the average increase in maize production of 240% for the intervention households between 2009 and 2011.

While there is evidence to demonstrate that the support to the beneficiary households has brought about significant positive change, there is scope to strengthen aspects of the project's underlying approach. It is hoped that consideration of the following programme learning considerations will strengthen the support so that greater impact can be achieved:

- Consider increasing efforts to organise the producers and support the marketing of the agricultural commodities in order to maximise the benefit gained from increased production
- Review options to strengthen the health and hygiene interventions and training components of the project
- Consider further research to assess the food security impact of the project on the wider community
- Follow up on some of the specific findings from this report with further qualitative research

Introduction and Purpose

Oxfam GB has put in place a [Global Performance Framework](#) (GPF) as part of its effort to better understand and communicate its effectiveness and enhance learning across the organisation. This framework requires programme/project teams to annually report generic output data across six thematic indicator areas. In addition, modest samples of sufficiently mature projects associated with each thematic indicator area are being randomly selected each year and rigorously evaluated. One key focus is on the extent they have promoted change in relation to relevant OGB global outcome indicators. The following global outcome indicator was endorsed for the livelihood strengthening thematic area: ***% of targeted households living on more than £1.00 per day per capita***.

The Ruti Irrigation Project in Zimbabwe was selected for evaluation in relation to this indicator. This project is providing surface irrigated plots and livelihood related support to 240 farmers in Gutu district. At the time of the data collection in October 2011, these farmers were divided into three cohorts, with Phase 1 farmers preparing to harvest their second crop from the project; Phase 2 farmers planting their first crop; and Phase 3 farmers preparing their land for first planting.

One key purpose of the effectiveness review was to assess the extent the supported farmers are better off in relation to the global livelihood indicator than if they had never been supported. However, attempts were further made to assess the project's impacts on several of the other intended outcomes it is attempting to deliver (e.g. increased asset ownership, increased agricultural production, improved food security, and improved water/sanitation practice).

Evaluation Approach

The core challenge of a social impact evaluation is to credibly estimate the net effect of an intervention or programme on its participants. An intervention's net effect is typically defined as the average gain participants realise in outcome (e.g. income) from their participation. In other words:

Impact = average post-programme outcome of participants – what the average post-programme outcome of these same participants would have been had they never participated

This formula seems straightforward enough. However, *directly* obtaining data on the latter part of the equation is logically impossible. This is because a person, household, community, etc. cannot *simultaneously* both participate and not participate in a programme. The counterfactual state of a programme's participants can therefore never be observed directly; it can only be estimated.

In response to this challenge, the evaluation design involved comparing the Phase 1 farmers (who had already harvested produce following the project's support) with the Phase 2 and 3 farmers (who were both yet to harvest). A household survey was administered to all available farmers from each of the phases. A total of 232 farmers were interviewed – 70 from Phase 1, and 162 from Phases 2 and 3. Propensity score matching (PSM) and multivariable regression were subsequently used to control for measured differences between the two groups of households during the analysis of the data collected through this process.

Outcomes Evaluated

The following list shows the intended outcomes of the Ruti Irrigation Project which were assessed:

Outcome 1 – Greater household income (**global outcome indicator**)

Outcome 2 – Increased household asset ownership

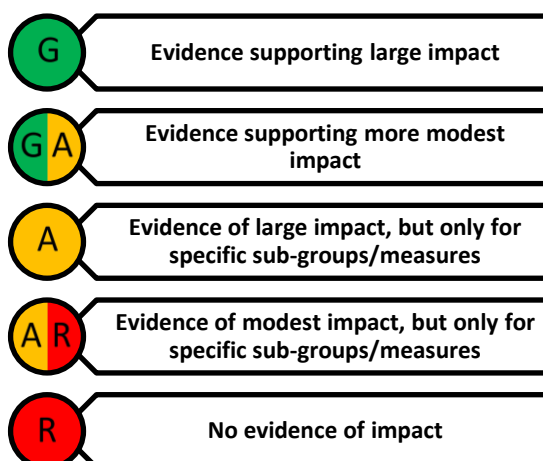
Outcome 3 – Improved food security

Outcome 4 – Increased agricultural production

Outcome 5 – Improved water and sanitation behaviour

Impact Assessment Summary Table

The following summary table provides an overview of the findings from the evaluation. Short analyses relating to each of the outcomes are included after the table, whilst a separate ‘full report’ is also available which provides detailed commentary, statistics and analysis. The full report can be accessed at Oxfam’s Policy and Practice website or through the Programme Performance and Accountability Team (ppat@oxfam.org.uk). The table below lists the 5 outcomes that were evaluated, together with a simple 5-point ‘traffic light’ system to indicate the impact evidenced by this study. The key opposite presents the details of the classification used to determine which ‘traffic light’ is attributed to each outcome.



Outcome/Impact	Rating	Short Commentary
Outcome 1 – Greater household income (global outcome indicator)		Some evidence of modest increases in consumption and expenditure.
Outcome 2 – Increased household asset ownership		Strong evidence of impact in household asset change since the start of the project.
Outcome 3 – Improved food security		Some evidence to suggest that the intervention households are more food secure than the comparison households.
Outcome 4 – Increased agricultural production		Strong evidence of significant increases in maize production among the intervention households.
Outcome 5 – Improved water and sanitation behaviour		Evidence of very small impact in relation to changing the type of water and sanitation facility used by the household.

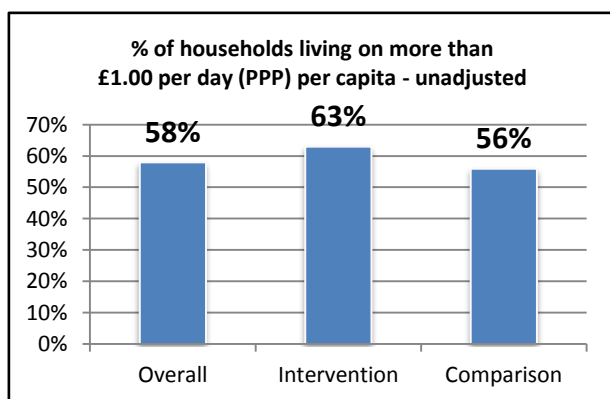
Impact Assessment Findings

Outcome 1 – Greater household income (**global outcome indicator**)



OGB’s global livelihoods indicator is informed by consumption and expenditure data, given that most of the people Oxfam supports are not formally employed. Household respondents are asked to

recall the types and quantities of food consumed during the previous week, as well as how much they spent on various non-food items.



The chart opposite displays the results of the intervention and comparison groups in terms of the OGB global livelihood outcome indicator - % of households living above £1.00 per day per capita – adjusted for purchase power parity (PPP). As is evident, there is an overall difference between the intervention and comparison groups, with a 7 percent difference in favour of the former. However, after controlling for observable differences between the groups, the difference increases to between 8 and 10 percent.

This indicates that – despite the fact that Phase 1 beneficiaries had only started harvesting their second crop from the project at the time of data collection – the project is already having a positive effect on household income.

Outcome 2 – Increased household asset ownership and ability to meet household needs



Household asset ownership is another recognised way of measuring household wealth. Wealthier households tend to have more tangible material possessions or other locally relevant wealth indicators, such as livestock, tin roofs (as opposed to grass), bicycles, radios, cemented floors (as opposed to dirt), etc.

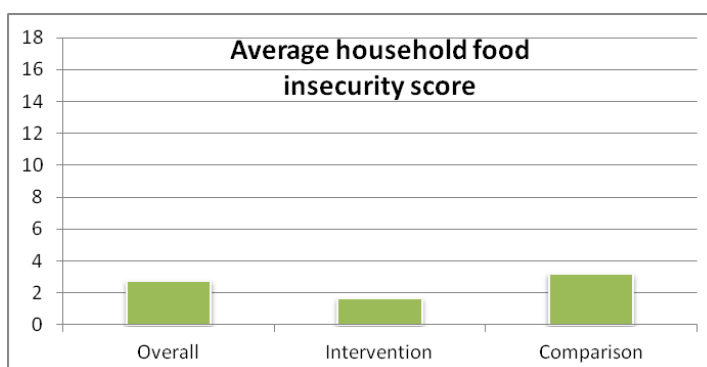
After statistically controlling for their measured differences, the intervention households were found to have experienced greater asset gains between 2009 and 2011. There is evidence, then, that the project has positively affected the supported household’s wealth status.

The respondents were also asked to report how their household is faring in relation to meeting needs. Over 90 per cent of the intervention group respondents reported being able to at least meet their basic needs, compared to 56 per cent for the comparison group. This difference between the two groups on this measure held at between 27 per cent and 34 per cent following propensity score matching and multivariable regression.

Outcome 3 – Improved food security



Household food security was measured using the Household Food Insecurity Access Scale (HFAS) developed by USAID’s Food and Nutrition Technical Assistance (FANTA) Programme.¹ Respondents are asked to describe behaviours and attitudes that relate to various aspects of the food insecurity experience. For example, questions are asked relating to whether anyone in



¹ http://www.fantaproject.org/publications/hfias_intro.shtml

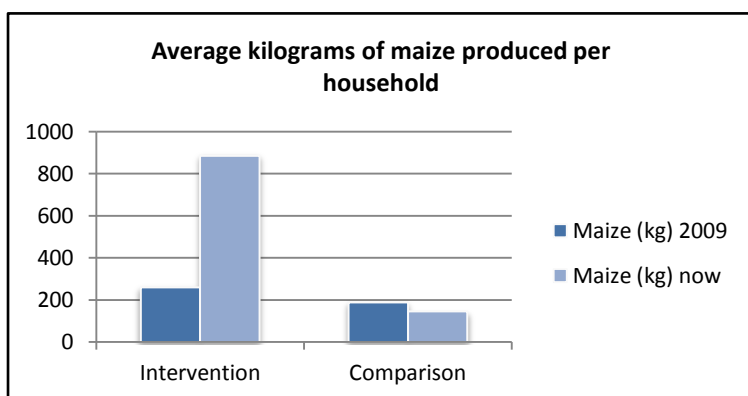
the household had to eat less than normal, whether anyone in the household went to bed hungry because there was not enough food, and questions relating to the frequency and diversity of food consumed by the household.

The results of the survey showed that both the intervention and comparison households had a relatively low food insecurity scores, indicating a reasonably high level of food security. Despite this, households in the intervention group had a lower score than the comparison households, indicating that the project has had some success in reducing food insecurity in intervention households. This finding is supported by the analysis which examines the number of meals consumed by the respondent in the previous 24 hours. Overall, respondents from households in the intervention group reported having an average of 3.9 feedings in the previous 24 hours, compared to 3.4 meals in the comparison households. However, no difference was identified in the number of different foods (i.e. diversity of food) consumed in the previous 24 hours between the two groups.

Outcome 4 – Increased agricultural production



The survey also assessed the changes in agricultural production, specifically maize production. There is strong evidence that the project had significantly increased maize production for the intervention households. On average, the annual production of maize per supported household has increased



from 261kg in 2009 to 886kg in the year leading up to the review – an increase of 625kg per household. Maize production in comparison households actually decreased from 189kg to 146kg in the same time period. After controlling for measured differences between the two groups, there is evidence that the project has increased maize production by 240% among the Phase 1 beneficiaries.

Outcome 5 – Improved water and sanitation behaviour



A complementary objective alongside increasing assets, food security and agricultural production was to influence change in water and sanitation behaviour. A number of health and hygiene training sessions were carried out, together with measures to improve water sources and latrines on the project site. The results showed no significant behavioural differences between the intervention and comparison households in relation to the type of toilet facility used. A similar picture emerges for household water use, with very small differences between the intervention and comparison households, and in behaviour change between 2009 and 2011. These findings indicate that there is scope to strengthen these supporting activities.

Programme Learning Considerations

The findings and learning considerations in this report are based on the quantitative analyses carried out using household questionnaires. These may benefit from a qualitative understanding of the context and causal factors underlying the reported findings. We would therefore propose a collaborative process between Oxfam advisers and the programme team to discuss the findings and

learning considerations in order to forge a way forward which benefits both this project and future work of this type.

Initial learning considerations emerging from the analysis of the data include:

- **Consider how to better support the producers to organise themselves collectively and support the marketing of the agricultural commodities to maximise the benefit gained from increased production**

While the data reveal striking increases in maize production in the intervention households, it was unclear how the surplus harvest will be marketed. This area was not explored in detail in the questionnaire. However, when respondents were asked about the ‘usefulness’ of the various services, the marketing/business training service was rated the least useful. Further anecdotal evidence suggests that this is an area of work which is still underdeveloped. It is therefore suggested that a strategic approach be considered to both coordinate production and the marketing of crop products. This should be informed by an agri-business feasibility study which examines the comparative production advantage of the supported households and market demand for the identified crops. Exploring these approaches would likely promote wider improvements in household food security beyond the project site, and further increase the income available to the producers. Discussion with Oxfam’s economic advisers may assist in highlighting specific market linkage interventions which would benefit this project.

- **Review options to strengthen the health and hygiene interventions and training components of the project**

While not the main focus of the project, there have been several important interventions relating to improving health and hygiene practice amongst beneficiary households. Despite these interventions, the analysis, as described above, shows no significant change in beneficiary household behaviour in terms of water and sanitation use. Further qualitative research with beneficiaries is recommended to explore this issue more deeply. This could prompt the review of project activities in terms of promoting good hygiene practice, and result in strengthened future implementation.

- **Consider further research to assess the food security impact of the project on the wider community**

As the project matures, it will be interesting to assess how it has impacted wider communities in relation to food security. Within the project logic model there are explicit objectives regarding improving food security conditions for approximately 50,000 households in the wider surrounding areas of the project. It is suggested that the project team consider a similar evaluative approach as in this effectiveness review with neighbouring communities to assess wider impact.

- **Follow up on some of the specific findings from this report with further qualitative research**

Further qualitative investigation may help to explain why the large change in asset ownership between 2009 and 2011 in the intervention group is not mirrored by large changes in household expenditure. In addition, it would be interesting to find out how the surplus maize produced in the first harvest by Phase 1 (intervention) farmers was specifically used (e.g. storage, provision to family/neighbours, sold at market etc) in the absence of complementary marketing interventions.