Future Agricultures

Working Paper

Enhancing the Productive Capacity of Extremely Poor People in Rwanda

Consolidated Analysis Cohort 1: 12 Months Report

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Executive Summary

Concern Worldwide launched a programme called 'Enhancing the Productive Capacity of Extremely Poor People' – known as the 'Graduation Programme' in this report – in two districts of southern Rwanda in May 2011. The Graduation Programme is designed to support extremely poor households[1] through cash transfers to meet their basic needs, skills development to enable them to improve their livelihood options, and savings to increase resilience to shocks, thereby enabling sustainable exits from poverty.

Concern Worldwide has adapted the 'graduation model'[2] to the Rwandan context, by combining several 'social protection' and 'livelihood promotion' aspects, including:

1. cash transfers to meet basic needs;
2. sensitisation and reinforcement of savings promotion activities for risk mitigation and potential investment in productive activities;
3. skills development and the provision of resources to enable the development of productive income generating activities (IGAs);
4. reinforcement of community-based support mechanisms to enhance non-farm employment;
5. capacity development to graduate into access to credit.

The specific outcomes aimed for by Concern's Graduation Programme are:

1. increased income to meet basic needs including access to food, shelter, education and health services;
2. increased skills and access to productive assets to sustainably generate income;
3. engagement in formal and informal financial services;
4. equality of outcome in male and female headed households;
5. reduced isolation of the extreme poor and improved social cohesion;
6. improved diversity of effective livelihoods options to reduce risk and vulnerability to shocks.

A seventh outcome is to have a comprehensive monitoring and evaluation (M &E) system, to produce and disseminate evidence and learning with regards to sustainable graduation from extreme poverty. Poverty is at the core of the analysis of sustainable graduation. The overall aims of the research activities are to identify:

- different pathways to graduation for different participating households;
- human and social indicators of graduation as well as income- or asset-based indicators;
- indicators of resilience and sustainability over time that go beyond reaching benchmarks or crossing thresholds at one point in time;
- enablers and constraints to graduation beyond the household or programme level, including markets, infrastructure, policies, complementary programmes and services.

This report presents the findings from a quantitative survey conducted 12 months after 1st cohort participants on Concern Worldwide Rwanda's Graduation Programme received their first cash transfer, as well as qualitative research conducted a few months later. The monitoring and evaluation (M&E) component of the programme includes a quantitative **baseline survey**, a **'first 12 months survey'** conducted 12 months after the first cash transfer is disbursed (while the cash transfers are still ongoing and before the asset transfer and associated livelihood support begins), and **qualitative fieldwork**. The next stage of the research is to evaluate whether any of the observed graduation is sustainable, meaning 'sustained over time'. To assess whether or not these positive outcomes become sustainable impacts over time requires further testing of these hypotheses after the cash transfers end. For this reason, two further **follow-up surveys** will be conducted 18 months and 31 months after the final cash transfer is delivered. Other research objectives – such as the identification of different pathways to graduation for different participating households, and enablers and constraints to graduation beyond the household or programme level – will be assessed in the follow-up surveys and in the qualitative research and will be digested in future consolidated reports. This is a comprehensive set of research activities that aims to monitor and evaluate the impacts of the Graduation Programme against its objectives, recognising that it is important to understand and learn lessons from what works, what does not work and why.

The baseline survey confirmed that beneficiaries of the Graduation Programme were extremely poor before the programme started, while the control group households were marginally less deprived, according to most indicators. This difference may be the result of location, as the control group households were selected from different villages. Beneficiaries and control households were drawn from the bottom two Ubudehe (social mapping) categories in their communities, they also had to be homeless, landless or own less than 0.25ha of land, no cattle, and have no income-generating activity, no support from another project, and no secondary school or technical diploma. Not all beneficiary households met all these criteria – e.g. one in three had an income-generating activity and 45 percent owned their own house – but on average they were poorer than other

households in the bottom two Ubudehe categories. Even when the same criterion was applied for selecting the control group, it is likely that regional differences exists and thus account for the small differences that are found in some of the indicators reported here. Fortunately, the use of statistical tools and the application of regional controls enable us to deal with some of these differences when estimating the changes in the indicators over time.

For many indicators, control group households were better off than beneficiary households at the time of the baseline survey, but a year later this situation had reversed, and beneficiary households were better off than control group households. It can be assumed that this 'leapfrog' effect is largely attributable to the Graduation Programme, which is currently in the stage of cash transfer support. For most indicators, control households stayed the same or reported a decline, so we can conclude that all the recorded improvement for beneficiary households for these indicators is due to their participation in the Graduation Programme. For those few indicators where control households improved between the baseline and 'first 12 months' surveys, beneficiary households usually improved to a greater extent, and in these cases the difference between the two recorded improvements is attributed to the Graduation Programme.

One of the most impressive signs of improvement is in the 'deprivation index', a composite measure of a household's ability to meet its most basic needs for food security and health care. Before joining the programme, most beneficiaries could not afford to buy enough food, medicine or health insurance, but after one year most beneficiary households could afford to pay for all these essentials.

Similar, but less dramatic, positive trends were observed for ownership of productive assets such as land, cows, other animals, hoes and bicycles. Except for hoes, fewer beneficiaries than control households owned these assets at baseline, but after receiving cash transfers for 12 months beneficiaries owned around 2 more assets than control group households, and these assets include the most expensive items like cows and bicycles. When these and other productive assets are combined into an index the familiar leapfrog effect appears: on average, beneficiaries were worse off initially but, after a year of participating in the Graduation Programme, they were better off than control group households in terms of their ownership of key productive resources.

Another significant improvement was recorded for house ownership, which almost doubled among Graduation Programme households, but did not change significantly among control households, between the baseline and after 12 months of cash transfer surveys. Households also used the purchasing power provided by the cash transfers as a means of acquiring small consumer goods such as forks, spoons, plates and basins – a minority of beneficiaries (<50 percent) owned these utensils at baseline, but almost all (>80 percent) owned them after 12 months of cash transfer. For larger consumer goods such as radios and mobile phones, ownership was low for all beneficiary and control households initially, but several beneficiaries acquired mobile phones and over half owned a radio by the time the 'first 12 months' survey was conducted. Overall, the average beneficiary household doubled the number of discrete consumption assets they owned over the year, while the number owned by control households fell slightly but not significantly.

For the deprivation index and the productive asset index there were no significant differences by gender, but female-headed households owned significantly fewer consumption assets than male-headed households.

Programme participants were strongly encouraged to save. After 12 months of cash transfer, beneficiary households were more likely to have savings and had higher average savings than at baseline and compared to control households. Beneficiaries were also significantly more likely to borrow and had taken larger loans than control households. Unfortunately, one limitation of this study is that we have no information about repayments of these loans by households, which is important to know if beneficiaries could be perceived as creditworthy by lenders.

Graduation Programme participants received training in keeping books, and after 12 months of cash transfers their book-keeping skills and numeracy – but not their literacy – had improved significantly *vis-à-vis* control households. Female-headed households were less likely to be literate and numerate, and richer households were more likely to be literate and numerate. It is important to highlight that literacy skills training is not part of the Graduation Programme, so increase in literacy was not expected as an attributable outcome.

The Graduation Programme supported children's education by making uniforms, school books and materials affordable, and this was reflected in higher proportions of beneficiary households sending their children to primary and secondary school after 12 months of cash transfers than at baseline.

There is some evidence that members of beneficiary households improved their nutrition status thanks to participating in the programme. Between the baseline and 'first 12 months' surveys, beneficiaries increased their frequency of eating meat and drinking milk, and were more likely to grow enough vegetables and fruit for their family's needs, relative to the control group. Also, fewer beneficiaries perceived signs of malnutrition among household members after 12 months of cash transfers. Related to this are significant recorded improvements in hygiene practices such as using soap and changing clothes frequently.

Finally, programme participants significantly increased their participation in social and communal activities, including church, *Umuganda*[3], women's groups and cooperatives – both over time and relative to non-participating households. Qualitative research revealed that this was mainly due to participants having

increased self-confidence and their social status as their situation improved, which is a significant non-material benefit of the Graduation Programme.

The list of variables that we are monitoring – assets, income, savings, housing, diet/food security, child education, health, social inclusion/ social capital – are all variables where we might expect to see some evidence of positive change, thanks to household participation in the project. So the '1st level testable hypothesis' is that:

Households that participate in the 'Unleashing the Productive Capacity' project will register overall improvements in well-being after 12 months of cash transfer than at baseline, in comparison to control or comparison group households.

These findings are summarised in the 'Key impact indicators' table below. This table will be updated after the follow-up surveys 18 months and 31 months after

Key impact indicators for the Graduation Programme in Rwanda

#	Hypothesis	Baseline		+12 months	
		Control	Treatment	Control	Treatment
1	Households that participate in the Graduation Programme will register lower levels of deprivation than at baseline, in comparison to control group households. (*The deprivation index is inverse, so a higher value represents lower levels of deprivation*)	2.26	1.94	2.51	6.96
2	More households that participate in the Graduation Programme will register higher levels of productive assets than at baseline, in comparison to control group households. (*Value represents an index of productive assets*)	3.10	2.43	3.27	4.59
3	More households that participate in the Graduation Programme will register higher levels of consumption assets than at baseline, in comparison to control group households. (*Value represents an index of consumption assets*)	4.45	3.44	3.71	6.87
4	More households that participate in the Graduation Programme will have savings than at baseline, in comparison to control group households. (*Value represents proportion of households who saved*)	9%	12%	8%	96%
5	More households that participate in the Graduation Programme will have basic book-keeping skills than at baseline, in comparison to control group households. (*Value represents proportion of households with book-keeping skills*)	11%	6%	13%	21%
6	More households that participate in the Graduation Programme will send some or all of their primary school-age children to primary school than at baseline, in comparison to control group households. (*Value represents proportion of children*)	64%	63%	75%	80%
7	More households that participate in the Graduation Programme will send some or all of their secondary school-age children to secondary school than at baseline, in comparison to control group households. (*Value represents proportion of children*)	11%	6%	13%	21%
8	More households that participate in the Graduation Programme will be eating meat than at baseline, in comparison to control group households. (*Value represents proportion of households who eat meat at least once a month*)	18%	8%	5%	41%
9	Fewer households that participate in the Graduation Programme will perceive that members of the household are malnourished than at baseline, in comparison to control group households. (*Value represents proportion of households*)	42%	25%	31%	12%

10	More households that participate in the Graduation Programme will be using mosquito nets than at baseline, in comparison to control group households. (*Value represents proportion of households who have at least some members sleeping under mosquito nets*)	60%	76%	57%	64%
11	Households that participate in the Graduation Programme will be changing their clothes more frequently than at baseline, in comparison to control group households. (*Value represents proportion of households*)	75%	72%	69%	97%
12	More households that participate in the Graduation Programme will be attending women's meetings than at baseline, in comparison to control group households. (*Value represents proportion of households*)	69%	62%	64%	80%
13	More households that participate in the Graduation Programme will be members of cooperatives than at baseline, in comparison to control group households. (*Value represents proportion of households*)	26%	18%	18%	75%

the final cash transfer is disbursed, to assess whether any observed impacts of the programme are sustainable.

In conclusion, our research showed enough evidence for the comparability of control group households to beneficiaries during baseline. Over time, we showed significant improvement in assets, a reduction in deprivation, some investment in human capital, more social participation, adoption of health related behaviours and improvement in savings. The question that remains, which is the core of the research, is: are these changes sustainable in the absence of cash support? The research team will focus on the answer to this question during the subsequent rounds of data collection. Our recommendations are based on ensuring that we can successfully address this important question.

1. Introduction

This section provides contextual information on poverty and vulnerability in Rwanda, introduces Concern Worldwide's 'Graduation Programme' in Rwanda, explains how eligible beneficiaries were selected for the programme, and sets out the rationale and objectives of this impact evaluation.

1.1. Poverty and social protection in Rwanda

Despite being one of the poorest countries in the world, Rwanda has achieved sustained economic growth and poverty reduction over the last 10 years. Nevertheless, 45 percent of the population remains in poverty and a quarter of the population remains in extreme poverty, unable to afford even the basic necessities of life (NISR 2012).[4] Households that are in extreme poverty are unable to reduce their exposure to risk, to mitigate the effects of risk, or to cope with shocks once they occur. They generally exist in a poverty trap, knocked deeper into poverty with each small setback, unable to accumulate even the meagre assets necessary to begin to make any movement out of poverty. The extremely poor lack the human, physical and financial assets to enable them to diversify their income-generating activities. They are often trapped in subsistence-oriented agriculture with very small land-holdings, or are dependent on agricultural wage labour, which makes make asset accumulation and coping with risk very difficult. Households with children under 16 years and especially female-headed lone parent families are those most at risk of extreme poverty (Abbott forthcoming; NISR 2012; Vinck et al 2009).

The over-arching policy framework in Rwanda is provided by Vision 2020, which outlines the long-term national development goals. The mid-term (2008-13) implementation was through the Economic Development and Poverty Reduction Strategy-1 (EDPRS-1) (Ministry of Finance and Economic Planning 2008). The strategy was designed to drive pro-poor economic growth through economic transformation and private sector development, underpinned by good governance and targeted programmes to sustainably lift the poorest out of poverty. Some policies encourage small farmers to improve the productivity of their land by using modern farming methods, including improved seeds and fertiliser, while complementary policies encouraged investment in non-farm small enterprises. The poor are also encouraged to save so that they are able to mitigate shocks and potentially accumulate the capital to invest in a small non-farm enterprise.

The government's flagship programme to enable the extremely poor to exit poverty sustainably is the 'Vision 2020 Umurenge Programme' (VUP). Extremely poor households where no-one is able to work are entitled to a cash transfer, while households with adults who can work are eligible to participate in paid public works projects. The third strand of the VUP is access to credit for investment in income-generating activities. Beneficiaries are expected to save some of the income they receive so that they can invest in income-generating activities (Ministry of Local Government 2011). Other government policies designed to benefit the poor are: the mutual health insurance scheme, with the extremely poor being exempt from payment for membership; fee-free 12-Year Basic Education; the Land Tenure Regularisation Programme giving secure title to land holdings; and the 'One Cow a Poor Family'.

Eligibility for VUP and other social protection benefits is based on a community-based social mapping which classifies households into 'Ubudehe' categories. Those classified in category 1 (the destitute) and category 2 (the very poor) are eligible. A participatory process is used to place households in the Ubudehe categories, and this process is repeated regularly for retargeting purposes. The lists are held by local authorities and a national register has been set up.

1.2. Concern Worldwide's 'Graduation Programme' in Rwanda

Concern Worldwide launched a programme called 'Enhancing the Productive Capacity of Extremely Poor People' – known as the 'Graduation Programme' in this report – in two districts of southern Rwanda in May 2011. The Graduation Programme is designed to support extremely poor households[5] through cash transfers to meet their basic needs, skills development to enable them to improve their livelihood options, and savings to increase resilience to shocks, thereby enabling sustainable exits from poverty.

The programme also aims to contribute to the efforts being made by the Government of Rwanda in implementing the National Social Protection Strategy. Specifically, it is closely aligned with the government's 'Vision 2020 Umurenge Programme' (VUP), because a primary objective of both interventions is to enable extremely poor households to exit poverty sustainably. Concern's Graduation Programme aims to unleash the productive capacity of those poor households who have capacity to work and increase their resilience to shocks,[6] by providing support not only to meet their basic needs but also to develop livelihood strategies, social networks and confidence that will generate sufficient income to escape from poverty and remain out of poverty. The programme also aims to build confidence and enable the participants to plan for their future.

Governments, including the Government of Rwanda, are increasingly interested in assisting poor households to 'graduate' out of poverty or extreme poverty, Graduation must be distinguished from 'exit', which describes a process whereby individuals or households move from a position of dependence on external assistance to a state where they no longer need such support and can leave the programme. Graduation is popular with governments and development partners because it signifies success

in terms of poverty reduction policy goals. 'Exit' is also popular, because it reduces programme costs and can make very expensive programmes fiscally affordable. The approach to graduation championed in Bangladesh – by BRAC's 'Challenging the Frontiers of Poverty Reduction' (CFPR) and the 'Chars Livelihood Programme' – combines cash transfers to the poorest households with productive asset transfers, microfinance (promotion of savings and access to credit), training in income-generating activities, and strengthened community support mechanisms. Evaluations have confirmed that this approach can achieve positive impacts, including graduation. BRAC's programme has positively influenced occupational choices with a 92 percent increase in the number of hours devoted to self-employment after four years and a decline in wage labour hours. The number of days worked in a year increased by 15 percent while the number of hours worked in a day decreased by 15 percent. Incomes increased by 38 percent over a four year period. Female beneficiaries now work in occupations that generate comparable returns as middle-income women. Improvements were recorded in the health and nutrition status of female participants, while household spending on education doubled and infant mortality fell. Fully 95 percent of participants have graduated from the CFPR programme.[7]

Concern Worldwide has adapted the 'graduation model'[8] to the Rwandan context, by combining several 'social protection' and 'livelihood promotion' aspects, including:

1. cash transfers to meet basic needs;
2. sensitisation and reinforcement of savings promotion activities for risk mitigation and potential investment in productive activities;
3. skills development and the provision of resources to enable the development of productive income generating activities (IGAs);
4. reinforce community-based support mechanisms to enhance non-farm employment;
5. capacity development to graduate into access to credit.

The specific outcomes aimed for by Concern's Graduation Programme are:

1. increased income to meet basic needs including access to food, shelter, education and health services;
2. increased skills and access to productive assets to sustainably generate income;
3. engagement in formal and informal financial services;
4. equality of outcome in male and female headed households;
5. reduced isolation of the extreme poor and improved social cohesion;
6. improved diversity of effective livelihoods options to reduce risk and vulnerability to shocks.

A seventh outcome is to have a comprehensive monitoring and evaluation (M &E) system, to produce and disseminate evidence and learning with regards to sustainable graduation from extreme poverty. Poverty is at the core of the analysis of sustainable graduation. Poverty is a multifaceted concept, including economic and social elements, and is generally conceived as either absolute or relative. Poverty is associated with lack of income, or failure to attain capabilities. It is a dynamic concept, changing and adapting according to consumption patterns, social dynamics and even technological change. For example, having access to a mobile phone today in many East African countries is seen as intrinsic to social and economic inclusion, but 10 years ago was considered as a luxury good.

Key activities of the Graduation Programme include:

- reinforcing community-based support mechanisms, in order to enhance income-generating opportunities and support for vulnerable and resource-poor groups in the informal economy and through social protection schemes;
- training community and local government leaders in implementation of social protection schemes that are designed to focus on enhancing the productive capacity of vulnerable and resource poor households;
- skills development and resource transfers to develop productive assets with an emphasis on entrepreneurship, marketing and income generation activities, savings promotion activities and asset transfers;
- documentation and dissemination of best practice in community-level social protection interventions and the graduation approach at local, national and international levels.

These activities are sequenced, starting with consumption support, followed by savings promotion, then skills training, and finally asset transfers. Skills training was scheduled to start after six months but was delayed (until after the 12-month period covered by this report) due to the need to undertake a value chain analysis prior to the selection of viable micro-enterprises. Also, many programme participants invested their cash transfers in upgrading their housing (in response to the government's thatched roof eradication campaign), so they were not ready to take on the asset transfer.

The Graduation Programme targets 1,200 extremely poor households in two cohorts, with 400 in the first cohort and 800 in the second. The first cohort was

Table 1: Vulnerable groups in Rutasira sector, Huye District and poorest male and female headed households in Ubudehe category 1 &2 in Kibeho sector, Nyaruguru District

(a) Rutasira sector

Vulnerable group	Number (%)
Elderly	211 (0.8%)
Disabled	249 (0.9%)
Orphans	347 (1.3%)
Widows/widowers	985 (3.6%)
Very poor	3,716 (13.7%)
Total poor/vulnerable	5,508 (20.4%)
District population	**27,017 (100%)**

Source: Adapted from Concern Worldwide (n.d.)

(b) Kibeho sector

Ubudehe categories	Number (%)
Ubudehe 1 – female	151 (10.7%)
Ubudehe 1 – male	70 (5.7%)
Ubudehe 2 – female	253 (14.2%)
Ubudehe 2 – male	187 (12.4%)
Sector: Ubudehe 1+2	661 (11.1%)
District: Ubudehe 1+2	**5,938 (100%)**

scheduled to receive cash transfers for 12 months (though this was extended to 18 months, for reasons explained above). The average value of cash transfers was RwF. 18,000 per month, based on the number of dependents in the household. Coaching of households is done by volunteer Community Development Animators (CDAs). Each CDA has approximately 15 households whom they visit at least twice a month. They work with households on planning and prioritising their problems and needs to be addressed using cash transfers; spending and savings plans; shared household decision-making and other programme-related activities.

1.3. Beneficiary communities and households

The Graduation Programme is located in two rural sectors, Kibeho and Rusatira, in the Districts of Nyaruguru and Huye in South Province. Kibeho is a remote rural area but Rusatira is less remote and is located near to the main road between Kigali and Butare. The sectors were selected based on an analysis of the poverty and vulnerability profiles of the two Districts, also taking into account the opinion of local government leaders. Sectors that had already benefited from the Government's VUP programme were excluded – Maraba, Kinazi, Rwaniro, Mukura and Karama in Huye; and Rusenge, Nyagisozi, Ngera and Kivu in Nyaruguru.

The two sectors selected for the Graduation Programme each had high proportions of poor and vulnerable people in their respective districts in 2010. In Huye District, Rusatira sector had the highest proportion of its population living in extreme poverty (13.7 percent), and the second highest proportion of its population belonging to one of four vulnerable groups (elderly, disabled, widow[er]s, orphans) (6.6 percent) (Table 1a). In Nyaruguru District, Kibeho sector has the highest proportion as well as the highest absolute number of extremely poor people in the district, based on the Ubudehe classification system (Table 1b).

Allocation of households to a Ubudehe category is done through a participatory process at village level. All households are allocated to one of 5 or 6 wealth categories, from the poorest to the richest. Those in the bottom two categories are considered by the members of their communities to be extremely poor and vulnerable. Analysis of FinScope 2012 data (by Pamela Abbott) indicates that 5 percent of households in Rwanda are in the bottom category and 26 percent are in the second poorest category.

Households targeted by the Graduation Programme were selected through a participatory process. Firstly, a household had to be classified in one of the bottom two Ubudehe categories. Next, the whole community of each village (divided in three groups of women, men and opinion leaders) were asked to identify the poorest households amongst them and the lists they drew up were then discussed and agreed by all adult members of the communities. A committee comprising of Local Cell Authority, Concern and partner staff validated the list to ensure that the poorest and most vulnerable households that meet the programme selection criteria, were selected. Eligible households had to meet the following criteria:

- at least one adult member is able to work;
- landless or with less than 0.25ha of land;
- have no cattle;
- are not supported by another project;
- homeless;
- have no income-generating activity;
- no-one in the household has a secondary or technical school diploma.

The lists were posted on the Cell offices for the community to review and comment. A complaints response mechanism (CRM) was established and feedback from the community on selected households that did not meet the criteria was reported through the CRM, validated by the committee and any households excluded at this stage from the lists were replaced

through consultation with the community. Ultimately, 400 extreme poor eligible households (200 from each sector) were selected from Nyaruguru and Huye districts, and approved by local government officials. Both male- and female-headed households were eligible, and almost two-thirds of households selected (64 percent) were female-headed.

1.4. Rationale and objectives of the 'first 12 months survey'

This report presents the findings from a quantitative survey conducted 12 months after 1st cohort participants on Concern Worldwide Rwanda's Graduation Programme received their first cash transfer, as well as qualitative research conducted a few months later. The monitoring and evaluation (M&E) component of the programme includes a quantitative **baseline survey**, a **'first 12 months survey'** conducted 12 months after the first cash transfer is disbursed (while the cash transfers are still ongoing and before the asset transfer and associated livelihood support begins), **qualitative fieldwork**, and two **follow-up surveys** that will be conducted 18 months and 31 months after the final cash transfer is disbursed. This is a comprehensive set of research activities that aims to monitor and evaluate the impacts of the Graduation Programme against its objectives, recognising that it is important to understand and learn lessons from what works, what does not work and why. The findings of the baseline survey have been reported elsewhere.[9] This report draws on the baseline survey and the 'first 12 months survey' to measure changes in indicators during the first year of implementation, and complements these quantitative data with qualitative evidence from case study households.

The overall aims of the research activities are to identify:

- different pathways to graduation for different participating households;
- human and social indicators of graduation as well as income- or asset-based indicators;
- indicators of resilience and sustainability over time that go beyond reaching benchmarks or crossing thresholds at one point in time;
- enablers and constraints to graduation beyond the household or programme level, including markets, infrastructure, policies, complementary programmes and services.

The Graduation Programme is expected to generate positive impacts on a range of areas that are being monitored by these research activities. Specifically, the following series of hypotheses will be tested in this report.

- Households that participate in the Graduation Programme will register lower levels of deprivation after receiving cash transfers for 12 months than at baseline, in comparison to control group households.
- Households that participate in the Graduation Programme will register higher levels of ownership of productive assets and/or consumption assets after receiving cash transfers for 12 months than at baseline, in comparison to control group households.
- More households that participate in the Graduation Programme will improve their saving capacity and ability to borrow after receiving cash transfers for 12 months than at baseline, in comparison to control group households.
- More households that participate in the Graduation Programme will invest in education, both for primary school age children as well as for secondary school age children after receiving cash transfers for 12 months than at baseline, in comparison to control group households.
- More households that participate in the Graduation Programme will invest in health and health related issues including hygiene and preventative health care for adults and children after receiving cash transfers for 12 months than at baseline, in comparison to control group households.
- More households that participate in the Graduation Programme will be more included in social activities after receiving cash transfers for 12 months than at baseline, in comparison to control group households.

For each of these hypotheses there are a number of indicators or outcomes which enables us to quantify the changes over time that could be the result of the Graduation Programme. These outcomes are being assessed after 12 months of programme implementation. The next stage of the research is to evaluate whether any of the observed graduation is sustainable, meaning 'sustained overtime'. To assess whether or not these positive outcomes become sustainable impacts over time requires further testing of these hypotheses after the cash transfers end. For this reason, two further impact evaluation surveys will be conducted 18 months and 31 months after the final cash transfer is delivered.

Other research objectives – such as the identification of different pathways to graduation for different participating households, and enablers and constraints to graduation beyond the household or programme level – will be assessed in the follow-up surveys and in the qualitative research and will be digested in future consolidated reports.

The findings from the research will:

- contribute to our understanding of if, and how, the extremely poor can be supported to exit poverty sustainably using the graduation approach;
- contribute information and insights to inform the design and implementation of Rwanda's Vision 2020 Umurenge Programme (VUP);
- inform policy debates in other African countries around implementing social protection programmes for sustainable graduation from extreme poverty;
- contribute to global debates about the definition and conceptualisation of graduation;
- provide evidence on graduation from a sub-Saharan Africa Graduation Programme that can influence design of the global scale-up of the programme.

2. Methods

Assessing the success of a programme or intervention requires a rigorous evaluation methodology to measure its impacts. Impact evaluation can include using qualitative as well as quantitative methods, although generally a central element is the collection of quantitative indicators, at least twice (before and after the intervention is introduced), to record any changes in measurable indicators over time.

The first stage is collection of baseline data, in other words collecting relevant data that establishes the situation of programme beneficiaries or participants before the programme begins. To enable confidence in the attribution of any change to the intervention itself, a control group must also be surveyed. The control group is selected so as to match the beneficiary group as closely as possible. This is important because changes in indicators could be due to other influences, not the intervention itself, so monitoring changes in households that are similar in every respect except that some are not benefiting from the intervention 'controls' for these non-programme influences.

Both beneficiaries and control group households were surveyed at baseline and 12 months after the first cash transfer payment. Identical questionnaires were administered to beneficiaries and control group households. The difference between changes in outcomes in the control group and changes in outcomes in the beneficiary group (also called the 'difference in differences') is the attributable impact of the programme.[10]

2.1. Methodology

Understanding the impact of interventions is about more than measuring changes in indicators, it is about understanding the impact on beneficiaries' lives, and how they make sense of the changes. The methodological approach is therefore based on realist evaluation, which recognises the complexity of interventions in the social world and the difficulty of isolating the impact of a single intervention (Pawson and Tilley 2004). Realist evaluation has an explanatory quest. It sets out to provide findings for the purpose of refining the intervention, improving it and indicating how it might be transferred to other contexts. It does not assume that there will be a simple answer to the question about whether or not outcomes have been achieved. Instead the realist approach seeks to explore *what works, for whom, in what circumstances* and *why*. Realist evaluation seeks to understand how observed changes in beneficiary's lives come about in a dynamic system. In this sense the evaluation can only hope to show that the Graduation Programme contributed to improved outcomes, as opposed to demonstrating a causal link.

The evaluation uses a quasi-experimental research design – the research is designed to share the logic of an experiment but recognises that we cannot control for all the interventions and changes in people's lives. Nor can we find a control group who are identical to the beneficiaries and who live exactly the same lives as the beneficiaries apart from the Concern intervention. Nor can we control the lives of the control group to ensure that they do not benefit from any programmes or projects that might improve their lives in the ways aimed for by the Concern programme. The 'before and after' survey design enables us to measure changes in the lives of the beneficiaries as aimed for by the programme, as well as measuring changes in the lives of the control group, but it does not enable us to attribute any changes unambiguously to the Graduation Programme. The control group does enable us to control to some extent for confounding factors (factors other than the programme that may have led to the observed changes). To the extent that the beneficiary group's lives have improved more than those of the members of the control group we can conclude that the Graduation Programme has, on the balance of probability, contributed to the positive outcomes.

2.2. Baseline and 12 months surveys

To measure the impact of any programme it is necessary to have measurable indicators so that data can be collected before the programme starts (baseline survey), at other monitoring and evaluation points and when the programme ends (endline survey). The indicators have to clearly measure the phenomena of interest. The changes aimed for are set out in the programme's logical framework and provide the basis for measuring the impact of the programme.

The design of the baseline and endline surveys was developed in collaboration with Concern and the participation of stakeholders. The method used to collect data to provide the basis for the measurement of the impact of the Graduation Programme was a survey of the beneficiary households and of control households. Baseline data for the beneficiary group for the Graduation Programme were collected prior to the programme starting in May 2011 and data for the control group were collected in December 2011. Similarly a survey was carried out 12 months post the initial cash transfer in August 2012 for both beneficiaries and control group, using the same questionnaire as used in baseline. A quantitative questionnaire administered face-to-face was used to collect both data sets.

2.3. Sample

A 100% census of beneficiary households was included in both the baseline and endline surveys, making 400 households (200 per Sector) in the baseline and 390 households during the endline. (the reduction is due to 10 beneficiaries dropping out of the programme). In addition, 200 households (100 per sector) were selected to be the control group by Concern. A sector not in receipt of VUP and not adjacent to the intervention sectors was identified and 200 households who were in the bottom two Ubudehe (participatory poverty) categories were sampled.

2.4. Questionnaire

The questionnaire was developed in consultation with Concern Worldwide Rwanda, stakeholders and programme beneficiaries. The questionnaire was approved by Concern before data collection started. It was initially developed in English and then translated into Kinyarwanda. It was amended following discussions with stakeholders and Concern, and further amended following a pilot. Data collection was carried out by trained enumerators supervised by Concern staff. All interviews were carried out face to face in Kinyarwanda. Quality assurance checks included 10 percent call-back and checks of questionnaires for consistency and completeness of data collection.

The questionnaire was designed to measure the socio-economic situation of households by collecting information for indicators which are typically highly correlated with income or consumption poverty. These indicators are easier to collect than income and provide a good tool for measuring multiple deprivations and for targeting purposes. In any case income is a poor guide to poverty in an economy where a high proportion of households are dependent to some extent on subsistence farming, where much income is in kind (food production) rather than in cash, work is seasonal and income fluctuates across the year (Abbott et al 2012; NISR 2012). The questionnaire collected information on:

- assets (productive and non-productive);
- income-generating activities;
- financial inclusion and saving;
- housing conditions;
- diet and food security;
- child education;
- health;
- social inclusion and social capital.

2.5. Data analysis

The data were coded and entered into an Excel spreadsheet in preparation for statistical analysis. Data analysis was carried out using STATA and SPSS. Significance was tested using Cramer's V and the t-test. Cramer's V is used as a statistical tool to measure associations between two categorical variables, while the t-test measures association between an ordinal variable and a dichotomous variable. The minimum significance level accepted was 95 percent ($sig<0.05$). This means that we are at least 95 percent certain that any differences recorded between the beneficiaries and the control group are statistically significant and are not due to chance.

The data were re-coded for analysis and several indexes were constructed. Indexes provide greater stability than using single indicators in measuring differences between groups and change over time, as they even out random variation. The purpose of the indexes is to be able to measure progress in poverty reduction and asset accumulation, by combining related indicators into clusters. Given that the Graduation Programme is working with very poor households we would expect averages (means) for indicators such as asset ownership to be low, and for the distribution to be skewed to the bottom end. The inclusion of items that no-one, or very few households, own is important as we would expect more households to acquire these assets as the programme progresses. Equal weighting of items means that the acquisition of rare items does not unduly influence average changes. The normalised (Z-score) distributions were saved to enable the distribution around the mean to be considered.

2.6. Qualitative methods

In May 2013, qualitative fieldwork was undertaken by Concern Worldwide staff on a small sample of Graduation Programme households and non-participants in the same communities. The method used was face-to-face interviews with case study households. The qualitative information complements the quantitative survey-based

evaluation methods. Nine respondents were purposively selected as household case studies, to display the following characteristics:

- 'Progressing': households that have successfully utilised programme support to improve their situation and are on a pathway to graduate out of poverty (3 interviews)
- 'Facing Challenges': households that are continuing to struggle despite receiving programme support (3 interviews)
- 'Dropouts': households that have dropped out of the programme (1 interview)
- 'Community members': non-participating households from the target community (2 interviews)

Although it is rewarding to report on 'success stories', some of the most important learning comes from understanding the challenges that people face and reflecting on how programme interventions can be adapted to better meet the needs of participants and help them overcome these challenges.

The purpose of adding qualitative case study data is to provide context, texture and explanatory depth to the quantitative findings. Specifically, the qualitative research highlights changes in the lives and livelihoods of programme beneficiaries over time; focusing on the enabling factors and challenges for change as expressed by the beneficiaries themselves as well as key stakeholders. Furthermore, one-on-one discussions with beneficiaries generate information that enables programme implementers to understand beneficiary perceptions about the changes taking place in their lives, particularly those that are attributable to the programme, and how these perceptions influence the choices they make.

2.7. Limitations

There are certain limitations of our research design which are worth highlighting here. First, beneficiaries were not selected at random, but targeted to be those most in need in selected sectors. To reduce the potential bias or the lack of random selection, control group households were selected using the same criteria as for beneficiaries (i.e. those households most in need) in sectors without VUP and without support from Concern. Secondly, it is impossible to isolate the potential impact of multiple interventions on households. It is possible that at any point in time during the intervention households, especially control group households, can receive support from the government or any other organisation. Thirdly, the timing for the collection of baseline information for beneficiaries did not coincide with that for control group households. It is possible, therefore, that results are somehow affected by seasonality effects as well as regional differences. Fourthly, although control group households were selected using the same criteria as beneficiaries it is likely that there are differences between the former and the latter. To verify the potential bias from seasonality and differences in selection criteria, a comprehensive baseline report was produced. From this report, it was concluded that there was enough statistical evidence to conclude that beneficiaries and control group households were similar across many different indicators during baseline.

Figure 1:Deprivation index

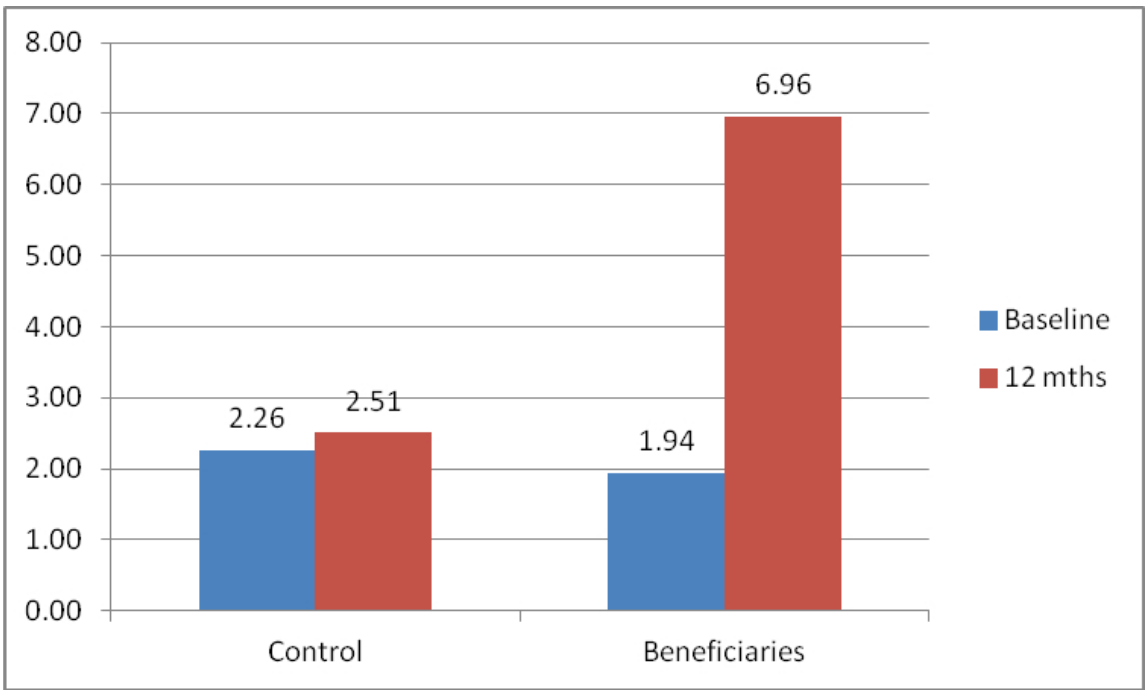


Table 2: Average deprivation index before and after the programme				
	Baseline	12 months	Difference	Significance
Control	2.26	2.51	0.24	
Beneficiaries	1.94	6.96	5.02	**
		Difference in differences =	4.78	**

In addition, control group households have been called upon to participate in the study, initially without any form of support for their time. It was decided that in subsequent data collection exercises, that is subsequent from the baseline, a non-monetary payment will be given. During the 12 months post the initial cash transfer study control group households were given one hoe, worth RwF. 2,500 (2.5 GBP). In subsequent data collection points it is possible that a larger incentive is given to reduce attrition. There is also the problem of survey fatigue. Control group households have been called to participate as control group for two different cohorts of beneficiaries. Control group households have been responding to several surveys, which increases the problem of survey fatigue. With survey fatigue households start to give errant responses to the survey or decide not to respond to certain sections. Missing data thus becomes a risk. It is for this reason that a larger incentive was planned for subsequent rounds of data collection.

The survey was designed around a score card to minimise data collection and to obtain relevant information around indicators for the outcomes of the programme. Although this is a good approach with important monetary benefits in terms of cost reductions, it lacks the depth required to investigate some of the issues discussed in this report. Deprivation, asset ownership, education, social inclusion, health are all concepts that require different indicators to be able to obtain a meaningful estimate of the programme effects. While the score card contains an indicator, we are unable to investigate the same concept, for example health, using different indicators. Therefore, we are limited by the indicators collected in the poverty score card.

In addition to the number of indicators collected by the score card, the design of the score card produced some inconsistencies and overlapping categories which could impact on the reliability of the estimates over time. In terms of the inconsistencies, the score card during baseline failed to account for filter questions so it was not possible to estimate some indicators for women only or for children only. This problem was corrected for the 12 month survey, where we introduced a section which contained the household roster and thus we were able to identify male and female heads of households, households with and without children among other important indicators. For overlapping categories, the score card during baseline allowed for a classification of the household structure which was overlapping. Households were able to be, for example, 'a widow' and 'a woman living with children'. In order to avoid this issue, the 12 month survey collected detailed information about the household composition and we used this information to homogenise and re-estimate our models using the more reliable information.

3. Quantitative findings on programme impacts

This chapter presents findings from the 'first 12 months' survey and compares these to the findings from the baseline survey, for both beneficiary households and control group households, in order to assess whether any observed positive or negative changes in the living conditions of beneficiary households can be attributed to the Graduation Programme. Findings are presented on the following indicators: deprivation; ownership of productive assets and consumption assets; savings and borrowing; literacy, numeracy and financial management; children's education; nutrition, hygiene and prevention; and engagement in social activities. Note that most of the effects we expect to observe are due to the incremental income and purchasing power that beneficiaries enjoyed because they received regular cash transfers for 12 months. Since the asset transfers and business skills training had not yet taken place, we do not expect to record significant changes in livelihoods at this stage in the programme's life-cycle.

3.1. Deprivation index

During both the baseline and the 'first 12 months' surveys, information was collected on several indicators of deprivation, including individuals' ability (or inability) to afford food, their (in)ability to afford to pay for membership of the government subsidised Mutual Health Insurance Scheme, and their (in)ability to purchase medicines. The responses to these questions were combined to construct a simple index to measure changes in deprivation between beneficiaries and the control group over time. The scale ranges from 0 (only eats a few times a week, can never afford health care or essential medicines), to 8 (eats three times a day, can always afford health care and basic medicines).

Hypothesis: ***Households that participate in the Graduation Programme will register lower levels of deprivation after receiving cash transfers for 12 months than at baseline, in comparison to control group households.***

Figure 2: Lives on registered land

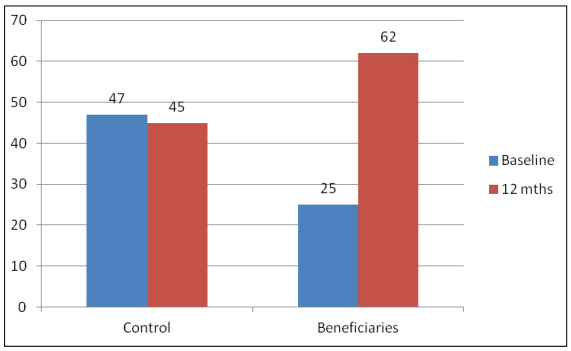
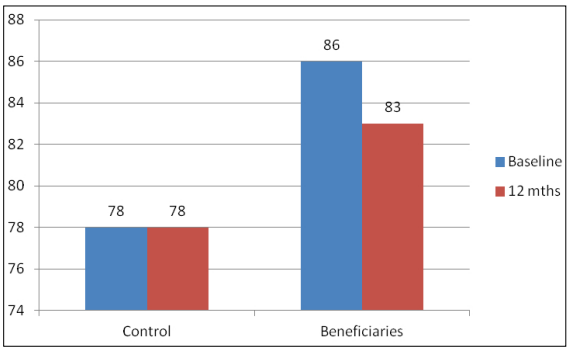


Figure 3: Uses land for agriculture



At baseline the mean value of this index was 1.9 for the beneficiaries and 2.3 for the control group. The difference was statistically significant, meaning that, on average, control group households were initially less deprived than beneficiaries. There were no significant gender differences. However, during the one-year period after the first cash transfer, this situation reversed quite dramatically. Control group households recorded a small but statistically insignificant improvement in their average deprivation index value (from 2.3 to 2.5), while beneficiaries recorded a substantial and highly significant improvement (from 1.9 to 7.0) (Figure 1), meaning that the average beneficiary household can no longer be described as 'deprived' based on these three indicators. The difference over time between beneficiaries and control group, the 'difference in differences', indicates an average reduction in the deprivation index of 4.8 (Table 2). This highly significant improvement in the wellbeing of the beneficiaries is attributable to the Graduation Programme.

Figure 4: Uses more than 1 plot for farming

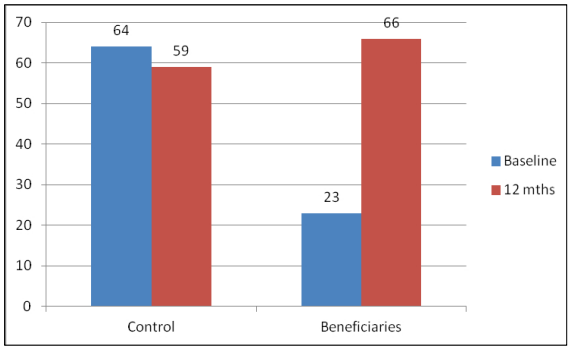
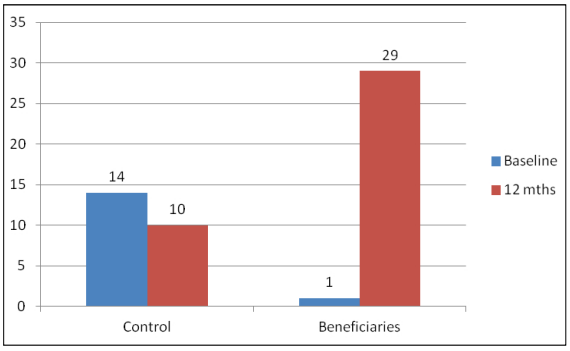


Figure 5: Uses improved seeds



3.2. *Ownership of productive assets*

The second key hypothesis investigated in this report is whether the Graduation Programme enabled individuals to increase their ownership of productive assets. Productive assets are defined as assets that have the potential to generate future streams of income. As such, the hypothesis established was:

Hypothesis: Households that participate in the Graduation Programme will register higher levels of ownership of productive assets after receiving cash transfers for 12 months than at baseline, in comparison to control group households.

There are several indicators of productive assets that were investigated for the first cohort. In both the baseline and one year post first cash transfer surveys, respondents were asked about their access to land for agriculture and

Figure 6: Owns at least 1 cow

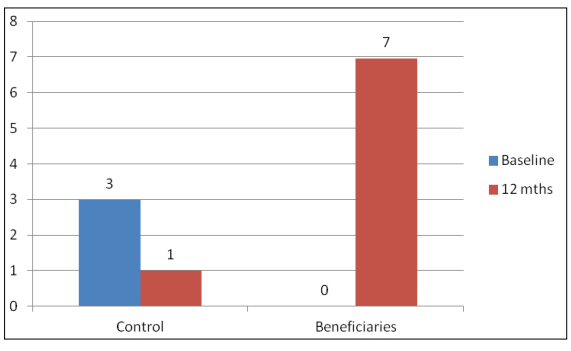


Figure 7: Owns other domesticated animals

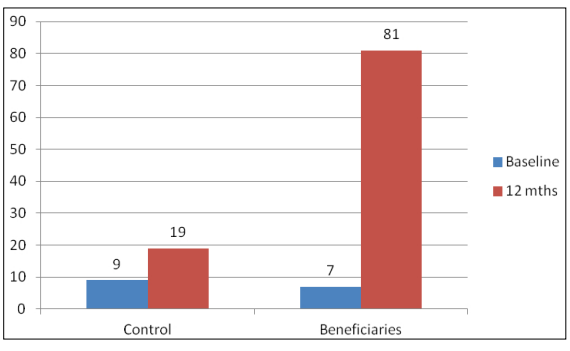


Figure 8: Owns a bicycle

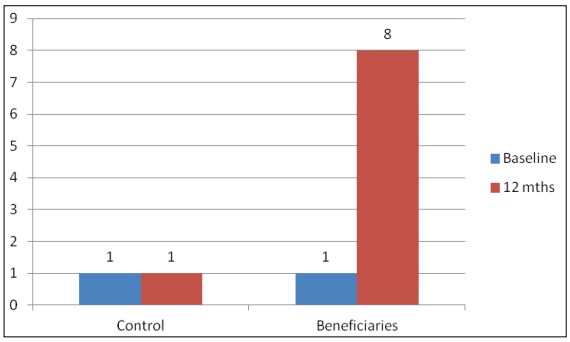
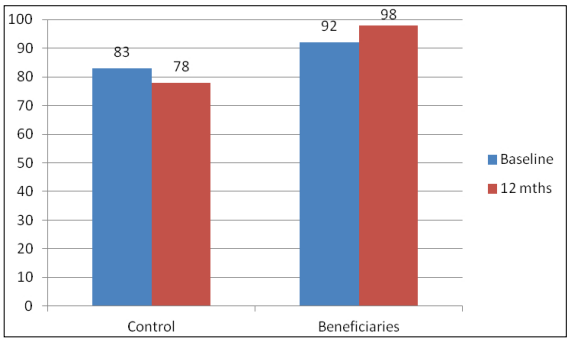


Figure 9: Owns at least 1 hoe



whether they use improved seeds for farming, their livestock ownership and whether they own farm tools and bicycles. These are relevant assets to monitor over time since the livelihoods of respondents are dominated by farming. The figures below show changes over time between beneficiary and control group households, for each of these key productive assets (see also annex Table 12).

At baseline, a significantly higher proportion of control group households than beneficiaries lived on registered land (47 percent *versus* 25 percent). Many beneficiaries apparently registered their land during the period of the project – the proportion living on registered land actually more than doubled (25 percent to 62 percent). However, the proportion of control group households living on registered land did not change significantly over this period (47 percent to 45 percent). This means that the proportion of beneficiary households living on registered land started off significantly lower than control group households but ended up significantly higher (62 percent *versus* 45 percent) (Figure 2).

This can be explained by noting that registration of land became mandatory under the government of Rwanda's land policy, instituted in 2008, which defines the modalities for land registration and tenure and guides land reform, and establishes principles for good management and the rational use of land. Each rural household must pay RwF. 1,000 to register their land, which Graduation Programme beneficiaries could afford to pay from their cash transfers.

Similar trends were observed for households that used more than one plot of land for agriculture. Control group households started at a significantly higher level than beneficiaries (64 percent *versus* 23 percent), but the proportion of beneficiaries farming on more than one plot almost trebled over the year (from 23 percent to 66 percent), while control group households fell slightly (64 percent to 59 percent) (Figure 4). Again, beneficiary households leapfrogged over control group households in terms of this indicator.

Figure 10: Productive asset index

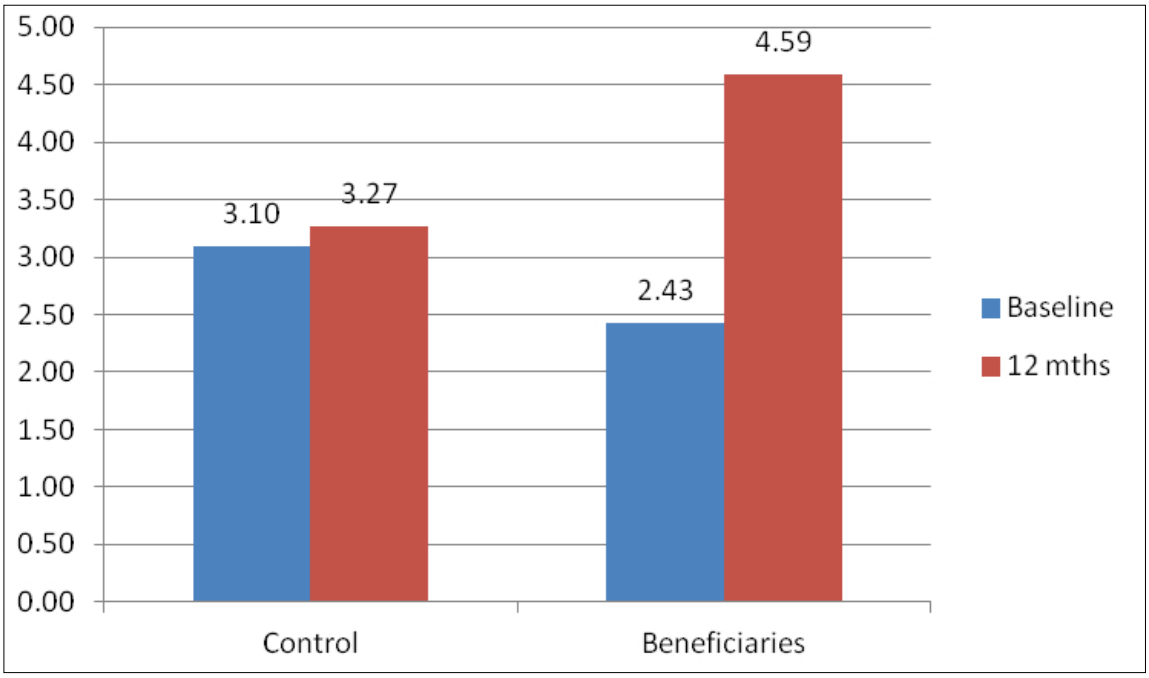


Table 3: Average ownership of productive assets before and after the programme

	Baseline	12 months	Difference	Significance
Control	3.10	3.27	0.17	
Beneficiaries	2.43	4.59	2.17	**
		Difference in differences =	1.99	**

However, in terms of agricultural indicators, the most dramatic case of 'leapfrogging' is in the use of improved seeds. Whereas virtually no beneficiary households used improved seeds at the time of the baseline survey, this increased to almost one-third of households by the time of the 'first 12 months' survey (1 percent to 29 percent). Over this period, control group households using improved seeds fell slightly (from 14 percent to 10 percent) (Figure 5). Since no specific training was given to beneficiaries on the use of improved seeds, the most likely explanation is that they could afford to pay for more expensive agricultural inputs and chose to allocate some of their cash transfers to purchasing improved seeds.

Very few households in the survey owned a cow at baseline (no beneficiaries *versus* 3 percent of control group households). One year after the first cash transfer several beneficiaries had acquired a cow (7 percent) (Figure 6). The trend in terms of other domesticated animals (e.g. goats) was even more dramatic. While control group households owning animals other than cows doubled (from 9 percent to 19 percent), the proportion of beneficiary households owning other domesticated animals increased more than 10 times, from a small minority to a large majority (7 percent to 81 percent). This means that more than four times as many beneficiaries as control group households owned other domesticated animals one year after the first cash transfer (81 percent *versus* 19 percent) (Figure 7).

Similar findings were recorded for bicycle ownership (a large consumer asset) as for cows (a large livestock asset). While very few households owned a bicycle at baseline (1 percent of all households), this figure increased significantly for beneficiaries (up to 8 percent) but stayed the same for control households. Bicycles can be seen as a luxury item and are often considered as an indicator of wealth, but they are also useful economic assets. They can be used to carry farm produce or small livestock to markets, and they can save on transport costs to reach essential services such as clinics or schools.

One of the most basic farm tools is the hoe, which is relatively cheap so ownership of hoes is close to universal in smallholder farming communities. More than 80 percent of control households and more than

Box 1. Housing issues in rural Rwanda

Lack of Shelter: Background

Given the poverty status of the Graduation Programme beneficiaries, the vast majority of beneficiaries lived in sub-standard housing, with thatched roofing, prior to the onset of the programme. In 2010, there was a Government of Rwanda initiative to eliminate all houses with thatch roofing, the 'Bye-Bye Nyakatsi Campaign', requiring affected households to relocate to designated village sites (Villagisation or *Imidugudu*) and to construct houses with iron sheeting or tiled roofs.

Thatched roofs (*Nyakatsi*)

The thatched houses (*Nyakatsi*) eradication campaign is part of community development and social welfare programmes. The campaign aims at ensuring that all Rwandans get access to decent homes, thus enabling the Government to reorganise the rural settlements for social and economic transformation.

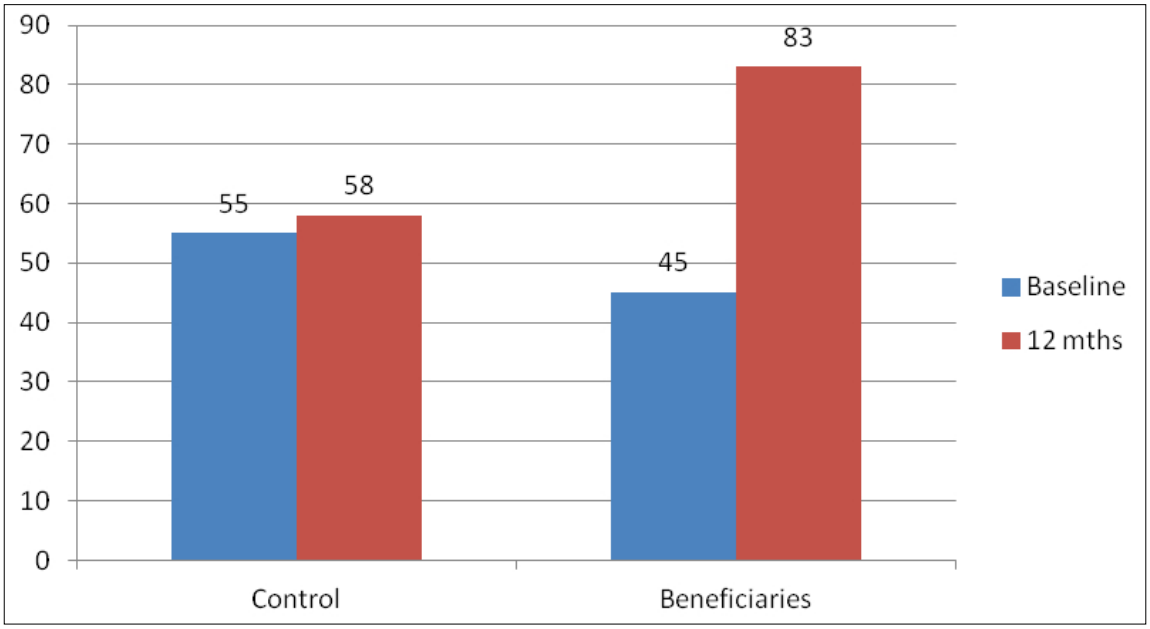
Source: Ministry of Local Government website

Villagisation *(Imidugudu)*

A 1997 ministerial-level decree stated that all new houses in rural areas were to be constructed only in *imidugudu*. Faced with land scarcity and an immediate housing crisis resulting from massive population displacements of the civil war and genocide, and later the return from exile of large numbers of Rwandans, the villagisation policy was initially intended as an emergency housing project. At the time of the implementation, however, it was redefined as an ambitious development programme establishing that all households living in scattered rural homesteads – the typical settlement pattern in Rwanda – should be regrouped into organised village settlements. On top of addressing the immediate housing shortage and the problems of arable land for agriculture, the major ambition is to improve service delivery and economic prospects for rural communities; by settling people in clusters, water, power, markets, schools, health centres and other services will be more readily available and accessible, stimulating non-farm income-generating activity and service provision and utilisation, but also freeing arable land for consolidated farming. Importantly, individuals who are still living within the valleys are encouraged to relocate into village settlements in order to expand the arable land base because of high soil fertility and flowing water used for irrigation throughout the year in those areas.

Source: Rwanda Development Board website

Figure 11: Own house



90 percent of programme beneficiary households owned at least one hoe during the baseline survey. One year after the first cash transfer, hoe ownership had fallen slightly but not significantly among control households, to 78 percent, but had risen to 98 percent among beneficiary households. One possible explanation for the increase among beneficiaries is that many were landless and homeless when the Graduation Programme started, but they used their cash transfers to rent or buy land and to increase their farming activities, for which they bought hoes. Routine monitoring data tracking the use of cash transfers confirms that renting land and buying farm tools are among the first expenditures incurred by beneficiaries when they receive the Graduation Programme cash, the motivation being to enhance household food security through food production.

We generated an index for productive assets which combines information from eight different indicators: lives on own land; land is used for agriculture; amount of land used for agriculture; uses improved seed; owns a bicycle; owns a cow; owns other animals; owns at least one hoe. Our combined measure for productive asset ownership clearly shows an overall improvement for beneficiaries. On a scale of 0 to 8 (where 0 means no ownership of any of the above productive assets and 8 indicates at least 1 of each of these assets), we find that the control group had a marginal but statistically insignificant increase in their ownership of productive assets (from 3.1 to 3.3). Conversely, beneficiaries increased their ownership of productive assets by slightly more than two assets, almost doubling their index value (from 2.4 to 4.6) (Figure 10).

Figure 12: Owns at least 1 saucepan

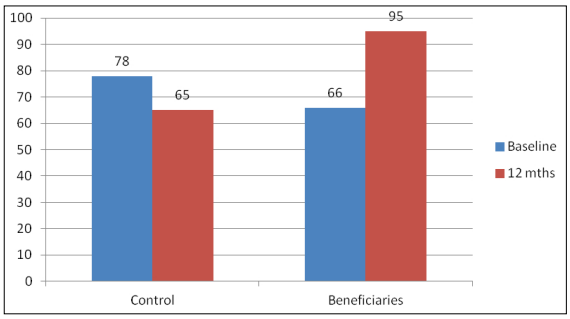


Figure 13: Owns at least 1 spoon or fork

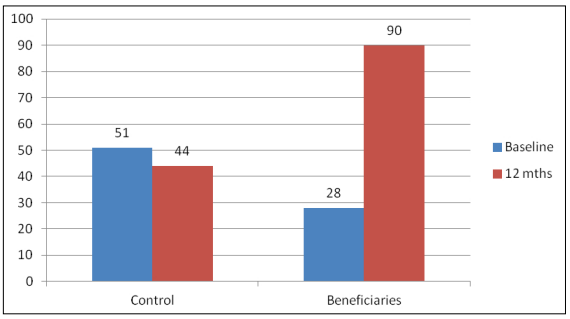


Figure 14: Owns at least 1 plate

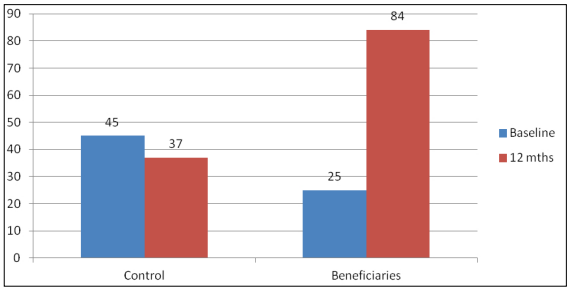


Figure 15: Owns at least 1 basin

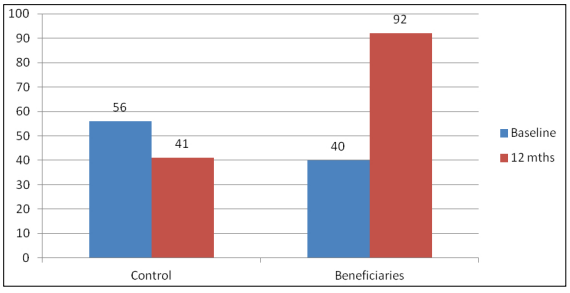


Figure 16: Owns at least 1 jerry-can

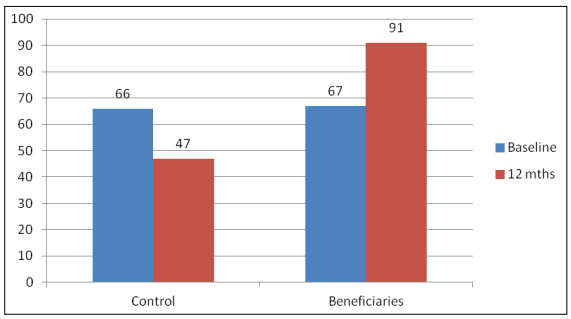
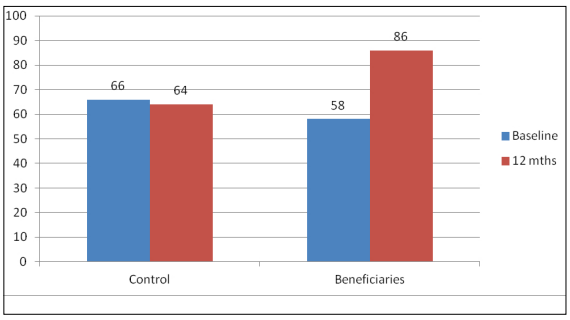


Figure 17: Owns at least 1 chair



Once again we observe the 'leapfrog' effect. Beneficiaries owned fewer productive assets than control households at baseline, but more productive assets than control households after participating in the Graduation Programme. The difference in differences between beneficiaries and control households in productive asset ownership is statistically significant, at nearly two assets (Table 3).

3.3. *Ownership of consumption assets*

Another outcome of interest for programme impact is whether there was an increase in consumption assets owned among beneficiaries. For this reason, respondents were asked if they owned their house, kitchen utensils (plates, saucepans, spoons and forks), furniture and household equipment (chairs, basins, jerry-cans) and electronic goods (radio, mobile phone).

Figure 18: Owns a radio

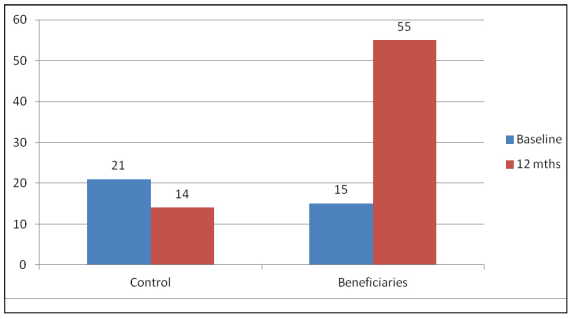
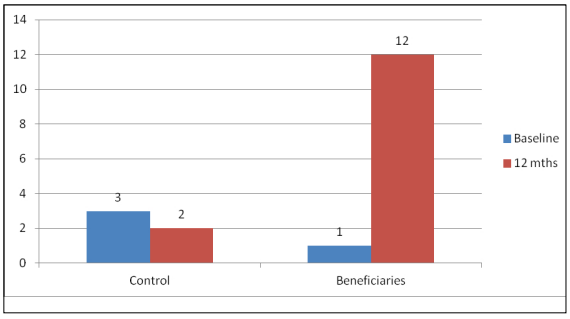


Figure 19: Owns a mobile phone



Hypothesis: ***Households that participate in the Graduation Programme will register higher levels of household assets after receiving cash transfers for 12 months than at baseline, in comparison to control group households.***

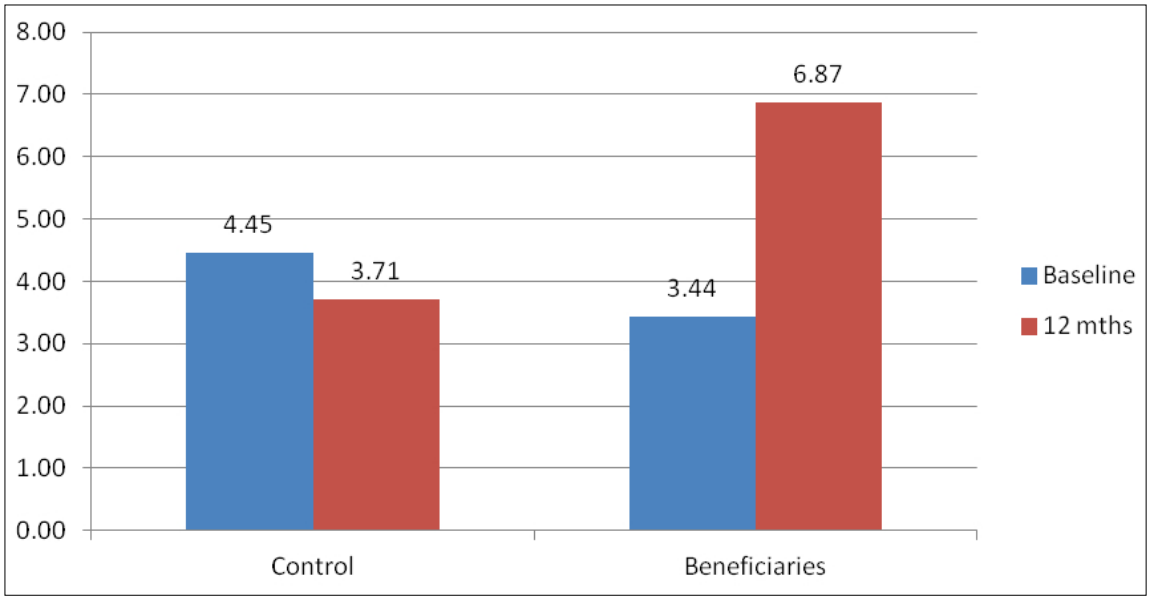
One of the most visible impacts of the Graduation Programme has been on home ownership. Before the programme started, more than half of beneficiary households were homeless (55 percent) and most of these were living with relatives or friends. One reason for this is pressure on land, but another is the government campaign to eradicate thatched roofing and the villagisation programme (see Box 1).

Cash transfers disbursed by the programme financed the construction of many houses, and one year later less than one in five of beneficiaries surveyed (17 percent) did not have a house of their own (Figure 11). In addition to the cash transfer, Concern provided support to 242 households with 2,258 iron sheets (roofing) for their houses (numbers varied depending on the size of each house), as well as 2-4 doors and 2 windows for each household. Although there was a small increase in the proportion of control group households owning their own house over this period (from 55 percent to 58 percent), this was not significant, meaning that the substantial increase in home ownership among beneficiary households is a major positive programme impact.

Table 4: Average ownership of consumption assets before and after programme

	Baseline	12 months	Difference	Significance
Control	4.45	3.71	-0.74	
Beneficiaries	3.44	6.87	3.44	**
		Difference in differences =	4.18	**

Figure 20: Consumption asset index



Kitchen utensils are much smaller and cheaper assets than a house, but very poor people and homeless people living with others often do not even own kitchen utensils. For saucepans, spoons and forks, plates and basins, there is a clear leapfrog effect: beneficiaries were less likely than control group households to own at least one of each of these items before joining the programme, but more likely to own these items one year after participating in the programme. Interestingly, and difficult to explain,[11] fewer control households reported owning each of these items after the programme started than at baseline. The most dramatic changes were reported for plates, ownership of which increased more than three times among beneficiaries (from 25 percent to 84 percent of households) while falling quite significantly among control households (from 45 percent to 37 percent). It is likely that part of the dramatic increase in ownership of kitchen utensils is associated with the increase in home ownership – when formerly homeless people moved into their new houses, they probably stocked up on utensils and other basic household goods.

Similar observations can be made about other household equipment and furniture, as represented by ownership of jerry-cans and chairs respectively. Beneficiary households increased their ownership of jerry-cans and chairs after joining the Graduation Programme, while some control households apparently lost these assets over the same period.

Ownership of electronic goods is much lower among this population than is ownership of kitchen utensils, furniture and household equipment. At baseline, 21 percent of control households and only 15 percent of beneficiary households owned a radio. However, one year after the first cash transfer was given, radio ownership reported by control households had fallen by one-third, to 14 percent, but radio ownership among beneficiary households had risen almost fourfold, to 55 percent or over half of all beneficiaries.

Almost no households in these communities owned a mobile phone when the Graduation Programme started – only 3 percent of control group households and 1 percent of beneficiary households. There was no significant change for control households over the year after the first cash transfer. On the other hand, a significant number of beneficiary households acquired a mobile phone over the same period; the proportion increased from 1 percent to 12 percent.

Annex Table 13 summarises the results for changes in the ownership of consumption assets between baseline and one year after the first cash transfer. As seen above, for beneficiaries we found significant increases in ownership of all consumption assets over time. In contrast, the situation for the control group deteriorated over time, with a lower proportion of households reporting ownership of almost all of these assets.

To synthesise the data on consumption assets, a simple index was constructed, being the sum of the following assets owned by households: house, saucepan, spoon or fork, plate, basin, jerry-can, chair, radio, mobile phone. For each household, the value of the index ranges from 0 (indicating extremely asset poor – no consumption assets owned) to 9 (indicating asset rich – ownership of at least one of each of these assets).

Combining the information on consumption assets into a single index shows the expected results for overall changes in consumption assets over time. Beneficiaries actually doubled their average level of consumption asset ownership, from 3.4 to 6.9 points (equivalent to an increase of 3.4 distinct assets). Conversely, control group households experienced a reduction in their ownership of consumption assets, from 4.5 to 3.7 points, though this was not statistically significant. The difference in differences between control group and beneficiaries is more than 4 assets and is statistically significant (Table 4).

Table 5: Difference in differences in indices for beneficiaries and control, before and after

	Deprivation Index			Productive Asset Index			Consumption Asset Index		
	Parameter	S.E.	Sig	Parameter	S.E.	Sig	Parameter	S.E.	Sig
Initial difference	0.146	0.252		-0.854	0.199	**	0.148	0.283	
D-in-D	5.073	0.140	**	1.997	0.102	**	3.144	0.134	**
Female Head HH	-0.137	0.116		0.038	0.077		-0.266	0.103	**
HH size	-0.033	0.030		0.044	0.021	**	0.154	0.029	**
No. Rooms	0.063	0.049		0.000	0.036		-0.068	0.046	
Floor-earth	0.277	0.307		-0.053	0.163		-0.217	0.242	
Roof-tiles	0.087	0.122		-0.002	0.089		0.385	0.116	**
Kitchen inside vs. NO	0.374	0.123	**	0.413	0.090	**	0.588	0.121	**
Kitchen outside vs. NO	0.144	0.348		0.098	0.206		0.729	0.347	*
Good Kitchen vs. NO	0.358	0.241		0.132	0.176		0.727	0.201	**
Regional control (Cells)	Yes			Yes			Yes		
No. Obs	1125			909			1114		
R^2	0.61			0.41			0.52		

Source: Concern Worldwide Rwanda. Notes: Asterisks*, ** indicate statistical significance at 5 & 1% level, respectively

3.4. Multivariate analyses on deprivation and asset indexes

In the previous section we estimated that there were differences in outcomes between beneficiaries and control group households, and between baseline and 12 months after the first cash transfer. This is called the 'difference in differences'. This difference in difference indicator is an unbiased estimate of the impact of a programme under the assumptions that (i) selection into and out of the programme was done at random, (ii) there are no initial differences in outcomes, (iii) there will be no other influencing factors on the outcomes of interest during the period of the intervention, and (iv) both groups are assumed to react in the same way to the intervention.

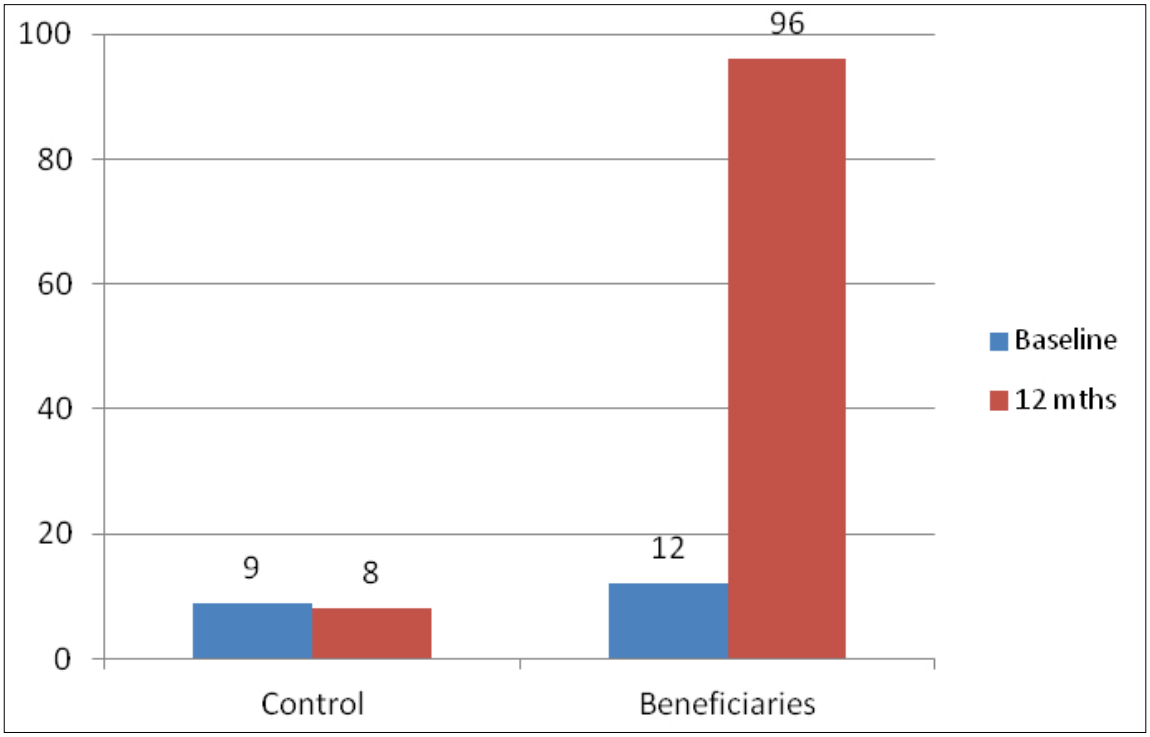
As previously explained, there was no random selection of households into treatment (beneficiaries) and non-treatment (control) groups. There were also some initial differences in outcome indicators between beneficiaries and control group households, perhaps due to seasonality and/or selection method. We do have information about the region in which Concern is working and hence, to some extent, we believe that both beneficiaries and control group households have been exposed to similar external factors. Finally, due to the similarities of the region and of the households' background, we can assume that both groups will react in the same way to the incentive provided by the programme.

To overcome the problem of lack of random selection and initial differences in outcome indicators, we can introduce controls in the estimate of the difference in differences indicator. These controls are variables whose purpose is to see if the size of the estimate of the difference in differences is reduced, or conditioned out, by the inclusion of these factors. For instance, if there were initial differences in the level of education between beneficiaries and control group households, and it is this level of education which is behind the observed change in some key outcomes, then the inclusion of level of education in a multivariate equation can serve to condition out this impact from the estimate of the difference in differences.

Table 5 shows results from the multivariate analysis on the difference in differences estimate for our three indices (deprivation, productive assets and consumption assets).[12] Table 5 (and all the following tables using multivariate analyses) should be interpreted as follows: The first parameter is called 'initial difference' and it measures the initial difference in the average level of the outcome variable between beneficiaries and control group households. This is the average difference at baseline. Ideally, there should be no average differences in the outcome variables between beneficiaries and control group, to avoid selection bias and to allow for comparability of the treatment effect between beneficiaries and control group. The second parameter is the 'difference in differences'. The rest of the parameters estimate the conditional average difference in the outcome variable according to the confounding variables introduced. So, for the case of female-headed households, the confounding variable indicates the average difference between male- and female-headed households in, say, the deprivation index over time. Finally, all estimations allow for regional variations in the outcome variable and these regional differences are measured at the level of Cells.[13]

In terms of **deprivation**, our results show that there was no initial difference (in 2011) in the average level of deprivation between beneficiaries and control

Figure 21: Household has savings



households. Over time there is a positive impact of the programme for beneficiaries of nearly 5 points. Only having a kitchen and cooking inside the house during round 1 is a statistically significant predictor of changes in the deprivation index over time. None of the other controls introduced were statistically significant, suggesting no difference in deprivation index between male- and female-headed households, and no linear variations across household size.

For **productive asset** ownership the situation is somewhat different. Table 5 indicates that there was an initial difference between beneficiaries and control households in the average level of ownership of productive assets. However, this difference was negative, suggesting that beneficiaries had lower levels of productive assets in 2011 than non-beneficiaries. The difference in differences estimator remains statistically significant. Its size is nearly 2 assets increase over time in favour of beneficiaries. We also find significant differences in household size and kitchen ownership, whereby larger households are more likely to have higher ownership of productive assets and those who had a kitchen and cooked inside the house during round 1 were also more likely to have productive assets compared with those who had no kitchen facilities at all. The result for household size confirms the importance of conditioning out for family size in estimations of asset ownership since larger households could have more assets in total, but maybe not per adult equivalent. The result for kitchen ownership confirms the importance of conditioning out for prior wealth in the estimation of impact effects.[14]

For **consumption asset** ownership, we did not find initial differences in the average level of assets prior to the interventions (Table 5). The difference in difference

Table 6: Difference in differences in likelihood of saving money for beneficiaries and control group, before and after programme

	Parameter	S.E.	Sig
Initial difference	2.639	1.002	**
D-in-D	5.455	0.383	**
Female Head HH	0.171	0.260	
HH size	0.041	0.072	
No. Rooms	-0.147	0.104	
Poverty Index (R1)	0.247	0.077	**
Productive Asset Index (R1)	0.035	0.116	
Consumption Index (R1)	-0.063	0.068	
Regional control (Cells)	Yes		

Source: Concern Worldwide Rwanda. Notes: Asterisks*, ** indicate statistical significance at 5 & 1% level, respectively

indicator continues to be statistically significant, with a value of little less than 3 assets in favour of beneficiaries over time. In terms of confounding variables, household size and two wealth indicators are also significantly associated with the ownership of consumption assets. Interestingly, we also find that there are differences in the average level of consumption asset ownership between male- and female-headed households, with female-headed households showing lower levels of consumption asset ownership.

3.5. Savings and borrowing

As part of the Graduation Programme, beneficiaries were asked to open a bank account, as this was the way in which cash transfers were disbursed. Since opening a bank account was mandatory for the beneficiaries, changes in the proportion of households who have a bank account is not seen as an impact of the programme but as compliance with the programme procedures.

Hypothesis: ***More households that participate in the Graduation Programme will have savings after receiving cash transfers for 12 months than at baseline, in comparison to control group households.***

Beneficiaries were also encouraged to save some money from the cash transfers provided. Basic information showed that one year after the first cash transfer 96 percent of the beneficiaries reported that they had saved money, mostly in a SACCO. In contrast, only 8 percent of the control group interviewed one year after the first cash transfer had managed to save any money. Figure 21 shows how the proportion of beneficiaries with savings increased from almost none (12 percent) at baseline to almost all (96 percent) after 12 months of cash transfers, with no change among control households. Results in Table 6 show the massive increase in the proportion of beneficiaries who save relative to non-beneficiaries (even after controlling for initial conditions about female headed household, household size, number of rooms in the household, deprivation index at baseline, productive asset index at baseline and consumption index at baseline). The difference in differences estimate shows a 5-fold increase over the first 12 month period of the intervention in favour of the beneficiaries.

Using information from the survey one year after the first cash transfer and considering only those who managed to save, we found that, on average, beneficiaries saved RwF. 2,600 per month whereas control households saved less than half of this amount, only RwF. 1,080 per month.

With respect to taking loans, our results showed that 88 beneficiaries took loans (slightly over 20 percent) whereas only 20 control group households took a loan (10 percent) one year after the first cash transfer. This means that more than double the proportion of

Figure 22: Literate

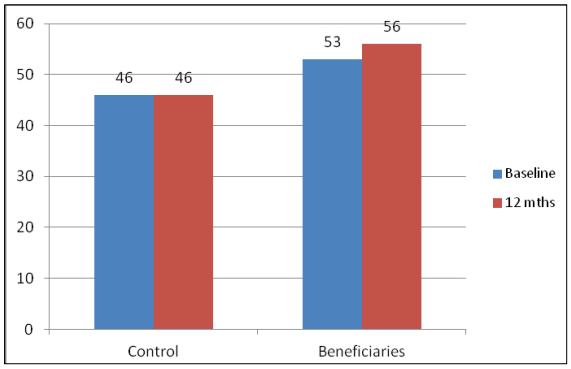


Figure 23: Numerate

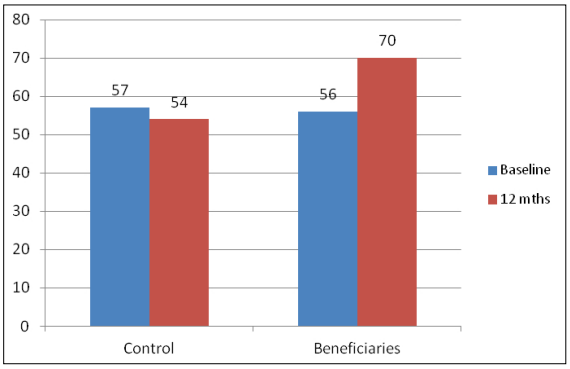


Figure 24: Financial management skills

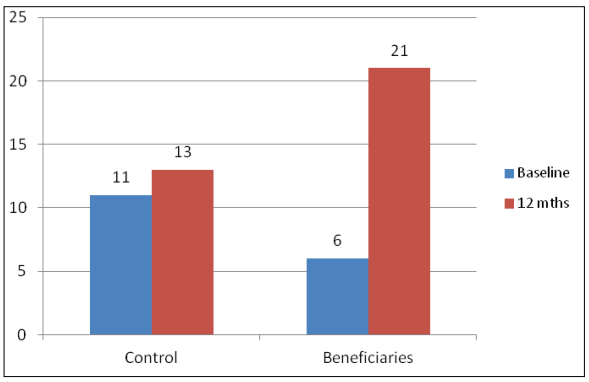


Table 7: Difference in differences in likelihood of being able to read, count, and keep books for beneficiaries and control before and after programme

	Literacy			Numeracy			Keeping books		
	Parameter	S.E.	Sig	Parameter	S.E.	Sig	Parameter	S.E.	Sig
Initial difference	0.415	0.317		0.094	0.327		-0.797	0.539	
D-in-D	0.163	0.160		0.596	0.172	**	1.566	0.279	**
Female Head HH	-0.482	0.138	**	-0.370	0.143	**	-0.378	0.208	
HH size	-0.048	0.035		0.032	0.037		0.047	0.054	
No. Rooms	-0.041	0.063		-0.003	0.066		-0.058	0.095	
Poverty Index (R1)	0.165	0.051	**	0.140	0.053	**	0.105	0.070	
Productive Asset Index (R1)	0.001	0.071		0.064	0.071		-0.161	0.096	
Consumption Index (R1)	0.148	0.041	**	0.128	0.042	**	0.197	0.062	**
Regional control (Cells)	YES								

Source: Concern Worldwide Rwanda. Notes: Asterisks*, ** indicate statistical significance at 5 & 1% level, respectively

beneficiaries took a loan than non-beneficiaries. On average, the amounts borrowed by beneficiaries were much higher than loans taken by the control group. Using information only on beneficiaries who took a loan less than RwF. 20,000 (to eliminate outliers which can distort the average), beneficiaries took loans worth RwF. 5,800 on average whereas control group households took loans worth only RwF. 3,100.

Respondents were also asked to answer a question about their potential to borrow funds given their current situation (during the 1 year post first cash transfer survey). *"How much money could you dare to borrow now?"* Although on average control households reported a higher average amount (RwF.147,300) than beneficiaries (RwF.133,300), the difference between these is not statistically significant. Both beneficiaries and control group are likely to report similar amounts to be borrowed, indicating that beneficiaries have not yet seen a permanent change in their condition – which could lead to an increase in their potential to borrow money.

3.6. Literacy, numeracy and financial management

As part of the Graduation Programme, beneficiaries were given training in terms of book-keeping and those who started saving in a SACCO also received some training in keeping records for savings and loans. During the baseline survey information was collected on whether each respondent was able to read and write, whether he/she can count and whether he/she was able to fill a management book. It is important to mention that literacy and numeracy activities are not part of the Graduation programme, but are done in the area by other local and international organisations. Hence, results about literacy and numeracy are not directly related to the activities of the programme.

Hypothesis: ***More households that participate in the Graduation Programme will have basic book-keeping skills after receiving cash transfers for 12 months than at baseline, in comparison to control group households.***

Figure 22 shows that beneficiary households were slightly more likely to be able to read and write at baseline than control households. After 12 months of cash transfers this gap had increased slightly as a few additional beneficiary households claimed to have basic literacy skills, but there was no change in the literacy rate among control households. Figure 23 shows a bigger change in the same direction for basic numeracy skills: there was no difference between beneficiary and control households at baseline and no change among control households over the next 12 months, but a significant improvement among beneficiaries over this period. Another programme impact was registered for book-keeping skills, which improved significantly (from 6 percent to 21 percent) among beneficiaries and only marginally (from 11 percent to 13 percent) among control households (Figure 24).

Table 7 shows the difference in differences estimator of the likelihood that beneficiaries would increase their literacy, numeracy and book-keeping skills. Results show that over time, beneficiaries did not increase their ability to read and write by more than the control group. The difference in difference estimator is not significant (nor is the initial difference). Among the confounding factors we found that female-headed households were less likely to be able to read than male-headed households. We have previously found that there were more female-headed households among the beneficiary group. Hence, lack of statistical significance may be due to this important confounder and also due to the result that more affluent households (less deprived and with higher ownership of consumption assets) were more likely to read and write.

For numeracy and keeping books we found a significant improvement for beneficiaries over time. The difference in difference estimator in Table 7 shows that a higher proportion of beneficiaries relative to control households increased their ability to count and to keep books as a result of the programme. This result holds even when we found that female-headed households

Figure 25: Primary school

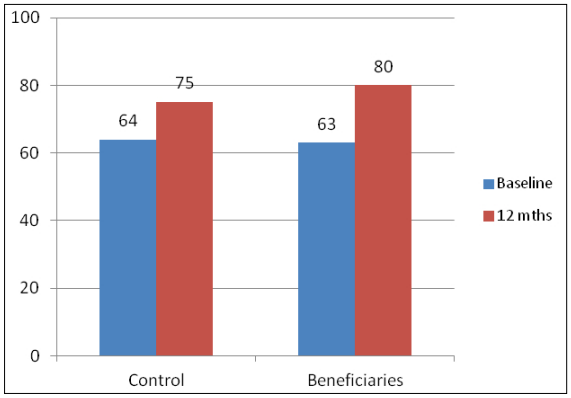
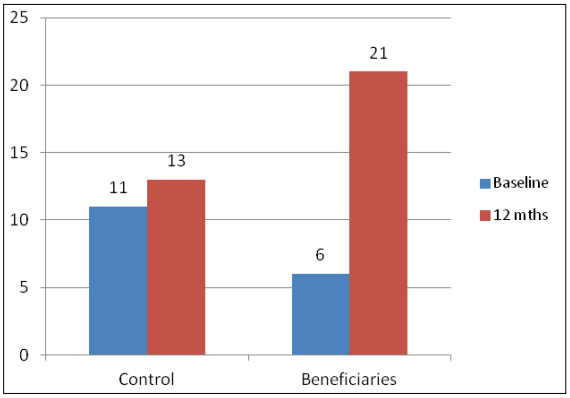


Figure 26: Secondary school



were less likely to be able to count numbers and that more affluent households were more able to count. The result also holds with respect to keeping books even when more affluent households were more able to keep books (as indicated by the significant parameter for consumption assets, to condition out initial wealth from the estimations).

3.7. Children's education

Another important indicator in terms of programme effects is children's education. Poor households may not send their children to school if they cannot afford the cost of schooling, or if the opportunity cost of sending children to school is too high. Alternatively, families may not send their children to school if they perceive the quality of education as very bad or if there is no school nearby. During the baseline survey information was gathered on children's education. However, the baseline survey failed to collect a household roster, so it was impossible to determine which households had resident children of school-going age. Fortunately, during the second round of the survey information was collected on the household roster, so it is possible to identify households with children of primary and secondary school age.

Hypothesis: ***More households that participate in the Graduation Programme will send some or all of their primary school-age and secondary school-age children to school after receiving cash transfers for 12 months than at baseline, in comparison to control group households.***

Figure 25 and Figure 26 reveal that participation in the Graduation Programme does appear to increase the likelihood that school-age children in the household will go to school. For both primary school and secondary school, higher proportions of children in beneficiary households were attending school after 12 months of cash transfers than at baseline (from 63 percent to 80 percent and from 6 percent to 21 percent respectively). However, control group households also registered positive changes on these indicators, and by almost as much for primary school children, so the attributable improvement is lower than it appears.

Table 8: Difference in differences in indicators of children's schooling for beneficiaries and control before and after programme

	Primary school			Secondary school			Uniforms			Books and materials		
	Parameter	S.E.	Sig	Parameter	S.E.	Sig	Parameter	S.E.	Sig	Parameter	S.E.	Sig
Initial difference	-0.712	0.408		-1.445	0.944		-0.553	0.504		-0.269	0.406	
D-in-D	2.637	0.237	**	1.668	0.429	**	3.492	0.236	**	4.289	0.277	**
Female Head HH	0.407	0.170	*	0.347	0.572		0.084	0.188		0.067	0.192	
HH size	-0.028	0.055		-0.004	0.142		-0.018	0.061		-0.030	0.057	
No. Rooms	0.117	0.078		0.659	0.253	*	0.064	0.086		0.009	0.080	
Poverty Index (R1)	0.058	0.066		-0.132	0.160		0.195	0.072	**	0.259	0.071	**
Productive Asset Index (R1)	0.125	0.086		-0.208	0.194		0.005	0.088		-0.079	0.075	
Consumption Index (R1)	0.103	0.054	*	0.244	0.116	*	0.085	0.054		0.087	0.055	
No. Obs	293			126			316			316		
Regional control (Cells)	YES											

Source: Concern Worldwide Rwanda. Notes: Asterisks*, ** indicate statistical significance at 5 & 1% level, respectively

Figure 27: Eat meat

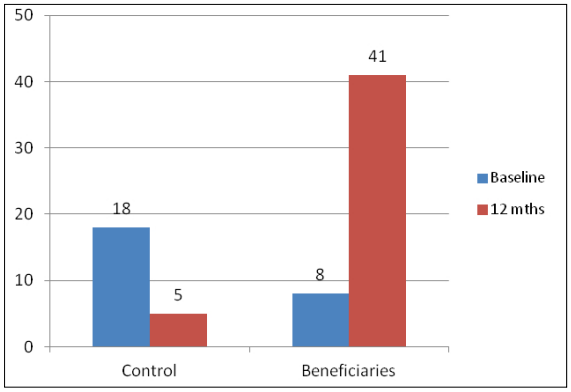


Figure 28: Drink milk

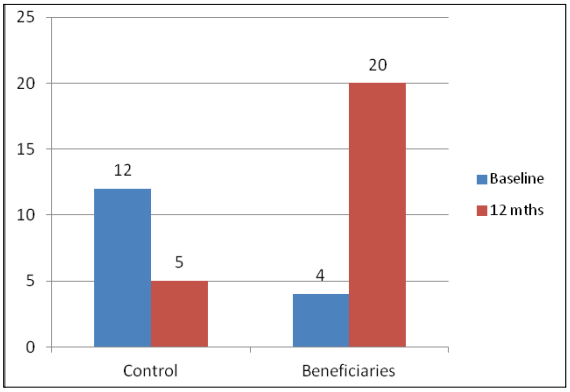


Table 8 shows results of the difference in difference estimators for children's schooling, comparing changes in school attendance for primary school between baseline and one year after the first cash transfer for those families that had children in primary school. The question asked was whether all, some, few or none of the children of primary school age attended primary school. Since this indicator is ordinal, we used an ordered logit model to estimate the parameter of the probability that a household will send an increasing proportion of children to school.

We found that beneficiaries are more likely to send more children to school over time (Table 8). We also find that richer households, as defined by the consumption asset index in baseline, were more likely to send children to school. There are no initial differences between beneficiaries and control households in terms of the proportion sending children to school. But over time, the proportion of households sending children to school increased more for beneficiaries than for the control group. Similar results were found for attendance at secondary school, where again, of the 126 households with secondary school age children, those in the beneficiary group increased the proportion of their children enrolled in secondary school by more, implying that this was a result of the programme.

One reason behind the increase in children's participation in education has to do with the Graduation Programme supporting the affordability of school uniforms as well as books and materials. Table 8 also shows that beneficiaries reported being able to afford uniforms and books for a higher proportion of their children. The difference in differences shows a significant increase in affordability of uniforms and materials over time in favour of the beneficiaries. Initial poverty is also highly correlated with lower affordability of education, as those who were poorer (as indicated by the deprivation index) were less likely to afford school uniforms, books and materials for all their children.

3.8. Nutrition, hygiene and prevention

We have already indicated that the deprivation index contains information on the individuals' ability to afford food, individuals' ability to afford to pay for membership of the Mutual Health Insurance Scheme as well as their ability to purchase medicines. Hence these indicators are not reviewed here again. Instead we focus on whether households increased their consumption of meat, whether they started fruit and vegetable gardens (kitchen gardens), whether they increased their weekly consumption of milk and whether they perceived that

Figure 29: Grow vegetables

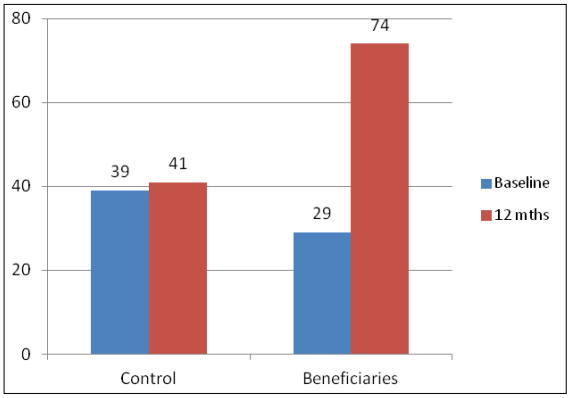


Figure 30: Grow fruit

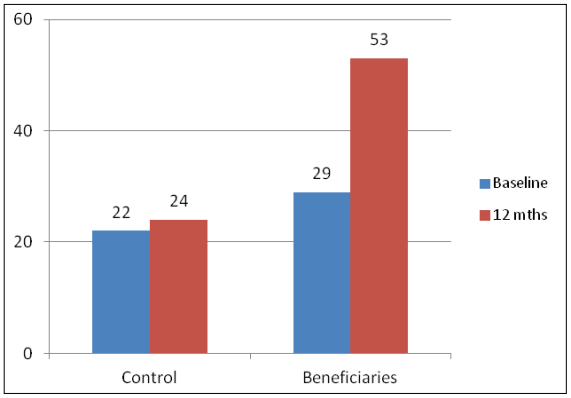
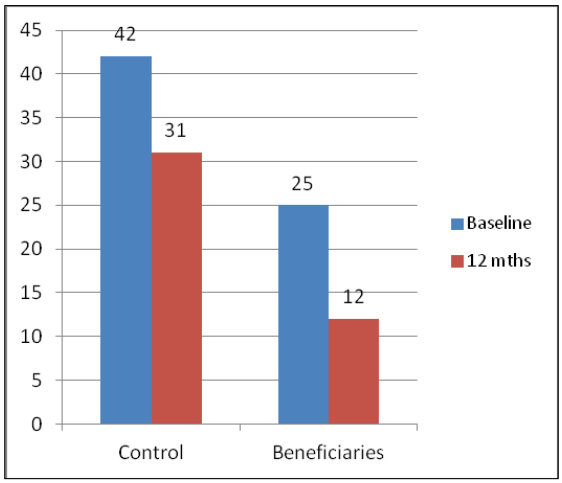


Table 9: Difference in differences in indicators of nutrition for beneficiaries and control before and after programme

	Eating meat			Fruit Garden			Veg. Garden			Milk		
	Parameter	S.E.	Sig	Parameter	S.E.	Sig	Parameter	S.E.	Sig	Parameter	S.E.	Sig
Initial difference	1.069	0.680		1.348	0.442	**	-0.284	0.353		-0.023	0.544	
D-in-D	2.084	0.220	**	1.170	0.158	**	2.116	0.155	**	1.754	0.315	**
Female Head HH	-0.682	0.174	**	0.058	0.148		0.194	0.136		-0.115	0.220	
HH size	-0.011	0.048		0.005	0.038		0.065	0.036		-0.052	0.063	
No. Rooms	0.114	0.081		0.075	0.070		0.111	0.062		0.067	0.106	
Poverty Index (R1)	0.129	0.060	*	0.051	0.055		0.074	0.048		0.066	0.068	
Productive Asset Index (R1)	0.076	0.102		0.281	0.075	**	0.142	0.065		0.455	0.132	**
Consumption Index (R1)	0.023	0.053		0.090	0.044	**	0.207	0.040	**	0.016	0.071	
No. Obs	485			487			477			475		
Regional control (Cells)	YES											

Source: Concern Worldwide Rwanda. Notes: Asterisks*, ** indicate statistical significance at 5 & 1% level, respectively

Figure 31: Perceived malnutrition



fewer children or other household members suffered from symptoms of malnutrition over time.

Hypothesis 26: ***More households that participate in the Graduation Programme will improve their nutrition, hygiene and health prevention after receiving cash transfers for 12 months than at baseline, in comparison to control group households.***

Figure 27 and Figure 28 show impressive increases in consumption of meat and milk by beneficiary households during the first 12 months of cash transfer disbursement on the Graduation Programme. The most likely explanation is that this is due to the income effect: cash transfers allowed the purchase of meat and milk, or the acquisition of livestock that produced meat and milk. By contrast, fewer control group households reported consuming meat and milk after 12 months than at baseline. Figure 29 and Figure 30 show two other indicators of improved food security – more beneficiaries are growing vegetables and fruit for consumption at home than when the programme started.

Results presented in Table 9 indicate that beneficiaries did increase their frequency of eating meat, their likelihood of growing fruit and vegetables for the family's needs in their kitchen gardens, and their frequency of drinking milk, relative to the control group between the baseline and one year after the first cash transfer surveys. These results are supported by the positive and statistically significant parameter of the difference in differences estimator for all four indicators.

In most cases, the inclusion of controls for initial levels of deprivation and poverty are significant. In all cases, results are consistent, indicating that relatively better off households during baseline tended to consume more

Figure 32: Use mosquito nets

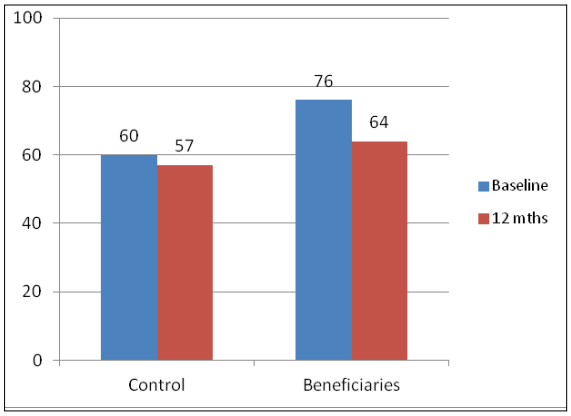


Figure 33: Use laundry soap

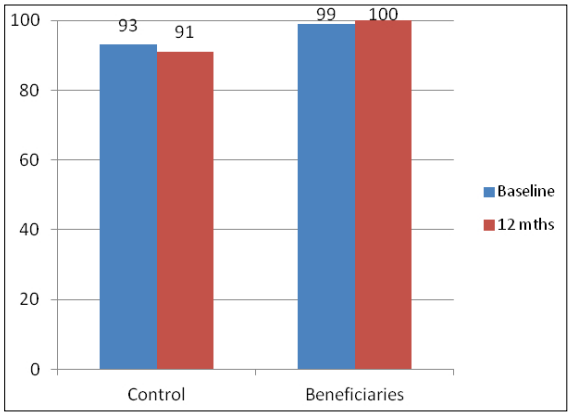
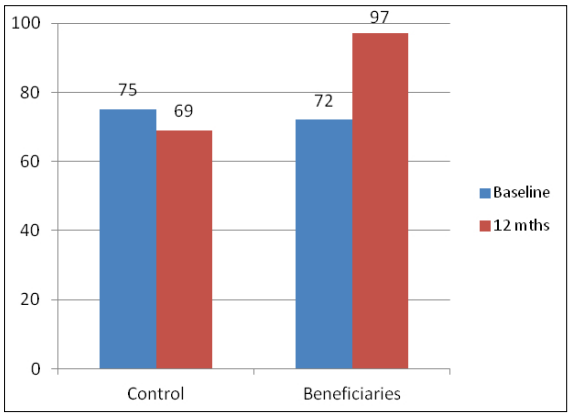


Figure 34: Change clothes



meat, drink more milk, and have kitchen gardens with fruits and vegetables to satisfy their family's needs. Only for the case of harvesting fruits in their kitchen garden did we find an initial difference, indicating that at the time of the baseline survey beneficiaries were more likely than non-beneficiaries to have grown enough fruits in their kitchen garden.

In the absence of anthropometric measurements of individual nutrition status, a subjective indicator was applied: respondents were asked for their perception of the prevalence of malnutrition in their households. Interestingly, fewer beneficiary households (25 percent) reported having household members with symptoms of malnutrition in the baseline survey compared to control group households (42 percent). During the 1 year after the initial cash transfer, both sets of households reported improvements in terms of perceived symptoms of malnutrition within their households, which halved among beneficiary households (from 25 percent to 12 percent) and fell by a smaller proportion among control group households (from 42 percent to 31 percent) (Figure 31). These reductions over time are not, however, statistically significant, meaning that beneficiaries and control group respondents reported statistically similar reductions in their perceptions of symptoms of malnutrition between the two survey dates. It is important to highlight that perceived malnutrition is highly seasonal and it is possible that this seasonality is responsible for the difference in the proportion of beneficiaries who perceived household members with symptoms of malnutrition compared with control group households during baseline (25 percent *versus* 42 percent). After 12 months, and once seasonality effects were controlled by the fact that the survey was collected during the same month for both types of households, we still find differences in perceived malnutrition, which could indicate both programme effects but also regional differences.

In terms of hygiene and preventive measures, households reported on whether their members sleep under mosquito nets (all do, some do, few do, none do), the frequency of using soap (always, often, sometimes, rarely, never), and the frequency of changing clothes (every 2 days, every 3 days, every 4 to 5 days, once every 2 week, once every month). Since these are also categorical ordinal variables we employed an ordered logit model for the estimation of the difference in difference parameter.

Results show that beneficiaries were more likely than non-beneficiaries to use mosquito nets for their household members during baseline (Table 10). However, there is no difference in the relative change over time (the difference in difference estimate). We found that the greater the number of rooms, the more mosquito nets were used, and the richer the household at baseline, as measured by the consumption asset index, the higher the use of mosquito nets. Again, both of these results are intuitive as having many rooms and many consumption assets are both linked to large family size but more

Table 10: Difference in differences in indicators of hygiene and prevention for beneficiaries and control before and after programme

	Mosquito Net			Laundry Soap			Change Clothes		
	Parameter	S.E.	Sig	Parameter	S.E.	Sig	Parameter	S.E.	Sig
Initial difference	1.647	0.330	**	0.951	0.304	**	0.421	0.295	
D-in-D	-0.174	0.157		3.575	0.197	**	2.679	0.157	**
Female Head HH	-0.035	0.140		-0.038	0.132		0.075	0.121	
HH size	-0.025	0.034		-0.047	0.036		-0.079	0.032	*
No. Rooms	0.138	0.061	*	0.056	0.061		0.001	0.057	
Deprivation Index (R1)	0.037	0.049		0.126	0.050	*	0.190	0.048	**
Productive Asset Index (R1)	-0.085	0.071		0.001	0.070		0.036	0.063	
Consumption Index (R1)	0.144	0.044	**	0.178	0.039	**	0.155	0.035	**
No. Obs	485			487			477		
Regional control (Cells)									

Source: Concern Worldwide Rwanda. Notes: Asterisks*, ** indicate statistical significance at 5 & 1% level, respectively

Figure 35: Church

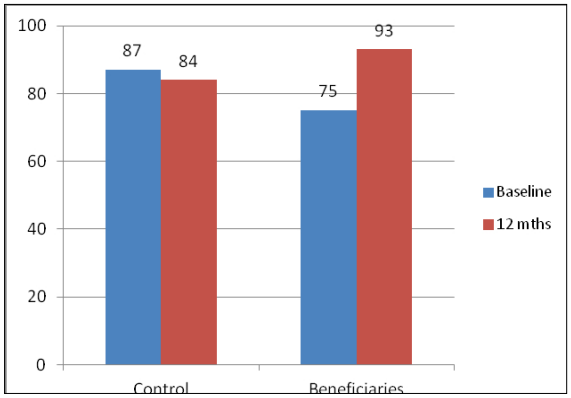


Figure 36: Umuganda

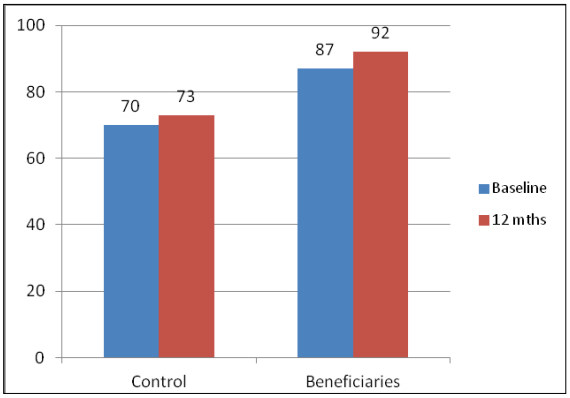


Figure 37: Women's meetings

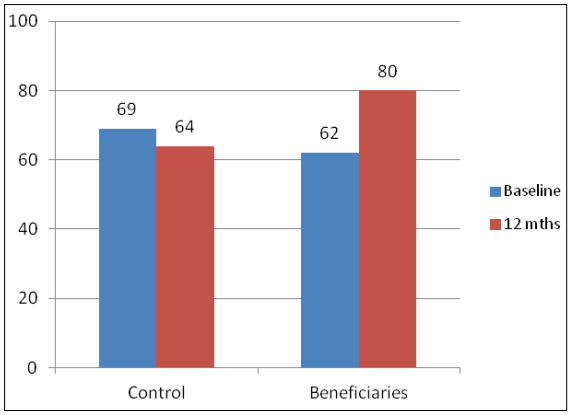


Figure 38: Cooperative

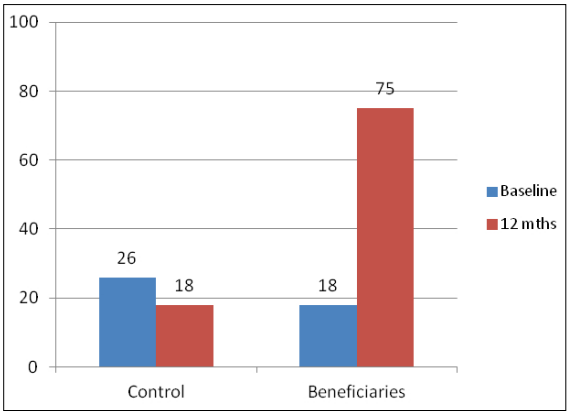


Table 11: Difference in differences in indicators of social participation for beneficiaries and control before and after programme

	Church			Umuganda			Women's Mtg			Cooperative		
	Parameter	S.E.	Sig	Parameter	S.E.	Sig	Parameter	S.E.	Sig	Parameter	S.E.	Sig
Initial difference	-0.236	0.383		-0.025	0.369		-0.390	0.296		1.489	0.659	*
D-in-D	1.093	0.192	**	1.451	0.170	**	1.344	0.149	**	2.739	0.196	**
Female Head HH	0.475	0.163	**	-0.632	0.137	**	0.221	0.132		0.018	0.173	
HH size	-0.074	0.041		0.085	0.039	*	0.132	0.036	**	0.016	0.045	
No. Rooms	0.074	0.078		-0.035	0.062		-0.045	0.060		-0.142	0.080	
Deprivation Index (R1)	0.113	0.064		0.095	0.053		0.085	0.045		0.124	0.057	*
Productive Asset Index (R1)	0.060	0.085		-0.162	0.075	**	-0.150	0.068	**	-0.094	0.088	
Consumption Index (R1)	0.086	0.050		0.013	0.042		0.060	0.039		0.139	0.050	**
No. Obs	487			485			473			485		
Regional control (Cells)	YES											

Source: Concern Worldwide Rwanda. Notes: Asterisks*, ** indicate statistical significance at 5 & 1% level, respectively

importantly here to wealth (as the measure of mosquito net used is relative, not absolute, so the association with number of rooms does not reflect household size).

As for use of laundry soap and change in clothes, we found that beneficiaries reported improvements more than the control group over time. In both cases the difference in difference estimator is positive and statistically significant. For use of soap and change in clothes, we also found that consumption index is an important factor to condition out in the analysis, as richer households are likely to use soap or change clothes more frequently. In addition, for changing clothes we found that larger households are less likely to change clothes often (again, indicating the well-known relationship between large family size and poverty). For use of laundry soap, we found an initial difference between beneficiaries and control group, with beneficiaries being more likely to use soap at baseline than non-beneficiaries.

3.9. Engagement in social activities

The Graduation Programme is expected to help individuals to engage more in social activities. Poor and vulnerable individuals often withdraw from social activities or else are excluded from communal activities, either because poverty reduces the time and money they have available for social events and commitments – all of their resources have to be allocated to securing their basic needs – or because they have feelings of shame (for example if they do not have good enough clothes to attend meetings). In this final section we test whether the programme has impacted on individuals' likelihood of participating in different social activities.

Hypothesis: ***More households that participate in the Graduation Programme will be engaged in social activities after receiving the transfer than at baseline, in comparison to control group households.***

The surveys collected information on the following four indicators of participation in social and community activities: (1) church attendance – measured as an ordered categorical variable (many times a week, once a week, once in a while, not at all); (2) engagement in community work or *'Umuganda'* (every month, once in a while, never); (3) attendance at women's workshops (every day, once in a while, never); (4) membership of cooperatives (a binary variable – yes or no).

Table 11 shows that beneficiaries were more likely to increase their church attendance over time relative to non-beneficiaries (difference in difference estimate of 1.093). Only being a female-headed household is a statistically significant predictor of church attendance – female-headed households are more likely to attend church. There is no association between wealth and church attendance. For *Umuganda* we found also that beneficiaries were more likely to increase their participation over time relative to non-beneficiaries. We found that female-headed households were less likely to participate in *Umuganda*, that large households were more likely to participate in *Umuganda*, and that richer households (with more productive assets) were less likely to participate in *Umuganda*.

With respect to attendance at women's meetings we again find that beneficiaries increased their participation over time relative to non-beneficiaries. Among the factors associated with attendance at women's meetings we found that large households were more likely to attend, but richer households (with more productive assets) were less likely to attend. Finally, for membership of cooperatives, we found that beneficiaries also increased their likelihood of membership over the duration of the programme, relative to non-beneficiaries. Richer households (with more consumption assets) were more likely to be members of cooperatives.

4. Qualitative findings on programme impacts

4.1. 'Progressing' households

Margarita Mukamana, a widow with 7 children under 18 years old, was selected for the Graduation Programme because of her household's high dependency ratio and the associated poverty. She was homeless, her family normally ate only once a day, they had no money for clothes or school items, and she was indebted. Martin Ntawukuriryayo was selected because, as a returnee from the DRC he was landless, homeless, and struggling to find work to support his wife and 3 young daughters. Florence Uwizera, now 23, had been looking after her 3 younger siblings since her father was jailed when she was just 12 years old. This household was selected because all 4 household members are still attending school and Uwizera was struggling to support them. They were landless, owned no livestock and did not have health insurance.

All three households used their cash transfers from the Graduation Programme to improve their living conditions. Margarita spent some of the RwF. 18,000 ($28) she received each month to buy timber and other materials to construct her house. She also bought kitchen utensils (plates, saucepans), clothes and shoes for herself and her children and a radio for RwF. 5,000 ($8) to listen to news. She rents in land at RwF. 13,500 ($21) per year to grow food crops (millet, beans) for consumption and sweet potatoes which are sold to buy groceries. Martin used his monthly cash transfer of RwF. 21,000 ($33) to improve the quantity and quality of his family's diet. They now eat twice every day. Martin also purchased a radio, kitchen utensils, and furniture. He has spent RwF. 1,660,000 ($253) on constructing his house. Florence saved up from her monthly cash transfer of RwF. 18,000 ($28) to buy a plot of land for RwF. 80,000 ($126) where she is building a new house.

All these beneficiaries also invested their transfers in health and education (human capital). Health insurance has been purchased at RwF. 3000 ($5) per family member. Children in all 3 households are now attending school without financial difficulties. According to Martin: *"My children will study without a problem because they'll have all school materials and won't be hungry as they now seem more intelligent."*

The most direct impact on the wellbeing of these 3 families has come through investment of cash transfers in livelihoods. Margarita and Florence each bought a cow and goats. Margarita also bought rabbits while Martin bought pigs. Profits from selling the offspring of these livestock were used to buy larger livestock or invested in other livelihood activities such as farming. Margarita sold five goats to buy her cow for RwF. 95,000 ($150). Martin sold 5 piglets for RwF. 10,000 ($16) each, and used the cash to rent land and buy farm tools, seeds, and fertilisers. He earned RwF. 72,000 ($113) from sales of carrots, cabbages and eggplant, after spending RwF.2 3,500 ($38) on land and inputs. Florence purchased two plots of land for RwF. 40,000 ($62) and is cultivating rice and tomatoes for sale. Her rice harvest of 600kg earned RwF. 180,000 ($285), while her tomatoes sold for RwF. 100,000 ($160).

These families are now planning for the future with optimism. All 3 are aiming to buy more livestock, if possible cows for milk, manure and cash income. Margarita hopes to increase her enterprise income through her participation in a Self-Managed Group. Martin is saving towards the RwF. 200,000 ($317) he needs to open a small retail shop in 2 years time. Florence has ambitions of going to university and then to become a teacher.

Apart from material benefits, these 'Progressing' beneficiaries also report positive social impacts from their participation in the Graduation Programme. All 3 beneficiaries now participate more actively in community activities – meetings, communal work, church – and feel more confident than before. *"How could I attend meetings when I had no clothes to wear?"* Martin asked, stating that he is respected by his community now compared to before, when he was shunned by many because of his poverty. *"I have more friends now. I witnessed this when I had a family function at home, and many turned up."*

Margarita no longer begs from neighbours but actually has enough to help others in need, while Martin gives some of his beans and carrots to people who need food. Florence is supporting not only her 3 siblings but also 2 younger children who were abandoned by their parents. Margarita, Martin and Florence all claim that they are respected more by their neighbours. Margarita stated: *"Before joining the programme I was despised and looked down on. I was not confident enough to engage with other community members. I always felt embarrassed because I lacked almost everything. Now there's respect for me and my family because of the change they have seen in our lives."*

These findings confirm that all 3 households are excellent candidates and it is expected that they will continue to benefit from the package of support that the Graduation Programme offered. Although the cash transfers ended, training and advice on livelihoods initiatives, access to credit and other support are likely to continue, and will be used well to meet the households' basic needs, to develop their livelihood strategies and increase their incomes sustainably, to build confidence and enable planning for the future. In summary, all the immediate programme objectives were met in these 3 case study households.

4.2. Households facing challenges

Chantal Kaburanga was selected for the Graduation Programme because she was an HIV-positive single mother with 3 daughters under 15, and because they were made homeless by the 'eradicate thatched houses' campaign in 2011. Beltilda Nawunyangira was selected by the community because she is a widow with 4 children under 16, one of whom has a mental health disability and needs constant medical care. She is homeless and lives with her brother. Vianney Mudahanwa is the sole survivor of his family after the 1994 genocide, which left him traumatised. His community selected him for the programme because he was a homeless destitute with no property.

All 3 families enjoyed positive benefits from the Graduation Programme. They received cash transfers for 18 months, from June 2011 until January 2013. Chantal and Beltilda each received RwF. 18,000 (approximately $28) monthly, while Vianney received RwF. 7,500 ($11). All 3 allocated much of this windfall income to building a house – Chantal spent over RwF. 200,000 ($317) and Vianney spent over RwF. 100,000 ($158) – and iron roofing sheets and doors were provided by Concern Worldwide.

Other benefits included the purchase of health insurance for all family members, more and better food (including milk and fruit), clothing, and kitchen utensils. Chantal bought rabbits and a pig, while Vianney bought a goat. Chantal and Beltilda invested in farming – both rented land to grow food crops. Chantal was able to pay for all school-related expenses. *"The children perform well in class. They no longer spend the day hungry at school."*

However, there is little evidence of sustainable improvements in the wellbeing of these households. Unfortunately, none of the 3 houses were completed before the cash transfers were terminated. The builders contracted to construct Beltilda's house did a bad job, and she is still being accommodated by her brother. Even with the support of local authorities through community mobilisation, construction of Vianney's house was slow, and it is located downhill of water that threatens to displace the house.

Chantal's efforts to rear livestock were thwarted. With no space to rear her pig she gave it to a friend to rear instead, and her rabbits were stolen. Chantal is often too sick to work, and is concerned that she will be unable to cope without Graduation Programme support. Vianney can no longer afford to purchase the annual health insurance. Beltilda was diagnosed with tuberculosis and was hospitalised. She spent much of her cash transfers on medical bills, drugs and recommended foods.

Although Chantal, Beltinda and Vianney all participate in community meetings and go regularly to church, Chantal and Beltinda cannot do manual labour on community work projects. Both complained that it is more difficult to get help from neighbours and other community members now than before, because of a general perception that they are better off because they received support from the Graduation Programme.

All 3 of these households that are facing challenges display characteristics – in particular, each beneficiary has some form of chronic illness – that would make them candidates for long-term of permanent social welfare support, rather than temporary assistance on a graduation-oriented livelihood promotion programme.

4.3. 'Dropout' households

Joslyn Nyirandikubwimana was selected into the Graduation Programme after being abandoned by her husband while she was pregnant and, being homeless, was living with friends along with her 2 sons and her 10-year-old younger brother. Joslyn used her monthly cash transfer of RwF. 14,000 ($22) to build a house, pooling her cash with a friend to buy a plot of land for RwF. 60,000 ($95), and benefiting from iron sheets for roofing that were also distributed by Concern Worldwide. She used her remaining cash transfers to buy household utensils, children's clothes, and a pig, and to pay for health insurance for all the family.

Unfortunately, in June 2012 Joslyn was disqualified from the programme, for selling one of the iron sheets she was given for free to roof her house. This setback left Joslyn living in a half-built house with her sons and brother. The pig died and she could not afford to continue paying for her family's health insurance. Now she grows sweet potatoes on her plot of land and searches for work as an agricultural labourer, which is not always available and only pays RwF. 700 ($1) a day. She is hoping to earn enough from selling sweet potatoes to complete her house.

Despite being evicted from the programme prematurely, Joslyn still has confidence in the Graduation Programme. *"Seeing how other programme beneficiaries have improved their lives, the programme is a success."*

4.4. Other community members

Community members who were not poor enough to be eligible for the Graduation Programme recognise that those who were selected are poor and need assistance. *"Those who were selected deserved to be selected. ... They were suffering. They had nothing to eat and nowhere to live."*

Non-beneficiaries recognise the positive impacts of the programme. *"The programme is helpful because most beneficiaries bought land, constructed houses, interact better with other community members and go to church often. Some are able to send their children to school, purchase health insurance, buy clothes and food and can rent land for cultivation."*

Many community members have also benefited indirectly from the Graduation Programme. Protais Kanyandikwe was accommodating a poor relative who was selected and built a house with the cash she received from the programme. Damien Bigirimana was supporting two people who were homeless and also built houses using money from the Graduation Programme. All three people moved into their new homes, thereby reducing the burden of dependence on Protais and Damien. *"They have got their own homes, and they no longer have to beg people for food all the time."*

5. Conclusion

The focus of this consolidated impact report is on the outcomes that the Graduation Programme has had on beneficiaries who have been receiving a cash transfer for at least 12 months. In many cases changes in the circumstances of beneficiaries are expected, as the cash transfer increases the purchasing power of individuals and enables investment in income generating activities. Increase in income also reduces the burden placed by the lack of resources and allows households to invest in health and education, both for the adults and for their children.

For many indicators, control group households were better off than beneficiary households at the time of the baseline survey, but a year later this situation had reversed, and beneficiary households were better off than control group households. It can be inferred that this 'leapfrog' effect is largely attributable to the Graduation Programme, which is currently in the stage of cash transfer support. For most indicators, control households stayed the same or reported a decline, so we can conclude that all the recorded improvement for beneficiary households for these indicators is due to their participation in the Graduation Programme. For those few indicators where control households improved between the baseline and 'first 12 months' surveys, beneficiary households usually improved to a greater extent, and in these cases the

difference between the two recorded improvements is attributed to the Graduation Programme.

One of the most impressive signs of improvement is in the 'deprivation index', a composite measure of a household's ability to meet its most basic needs for food security and health care. Before joining the programme, most beneficiaries could not afford to buy enough food, medicine or health insurance, but after one year most beneficiary households could afford to pay for all these essentials.

Similar, but less dramatic, positive trends were observed for ownership of productive assets such as land, cows, other animals, hoes and bicycles. Except for hoes, fewer beneficiaries than control households owned these assets at baseline, but after receiving cash transfers for 12 months beneficiaries owned around 2 more assets than control group households, and these assets include the most expensive items like cows and bicycles. When these and other productive assets are combined into an index the familiar leapfrog effect appears: on average, beneficiaries were worse off initially but, after a year of participating in the Graduation Programme, were better off than control group households in terms of their ownership of key productive resources.

Another significant improvement was recorded for house ownership, which almost doubled among Graduation Programme households, but did not change significantly among control households, between the baseline and after 12 months of cash transfer surveys. Households also used the purchasing power provided by the cash transfers as a means of acquiring small consumer goods such as forks, spoons, plates and basins – a minority of beneficiaries (<50 percent) owned these utensils at baseline, but almost all (>80 percent) owned them after 12 months of cash transfer. For larger consumer goods such as radios and mobile phones, ownership was low for all beneficiary and control households initially, but several beneficiaries acquired mobile phones and over half owned a radio by the time the 'first 12 months' survey was conducted. Overall, the average beneficiary household doubled the number of discrete consumption assets they owned over the year, while the number owned by control households fell slightly but not significantly.

For the deprivation index and the productive asset index there were no significant differences by gender, but female-headed households owned significantly fewer consumption assets than male-headed households.

Programme participants were strongly encouraged to save. After 12 months of cash transfer, beneficiary households were more likely to have savings and had higher average savings than at baseline and compared to control households. Beneficiaries were also significantly more likely to borrow and had taken larger loans than control households. Unfortunately, one limitation of the study is that we have no information about repayments of these loans by households, which is important to know if beneficiaries could be perceived as creditworthy by lenders.

Graduation Programme participants received training in keeping books, and after 12 months of cash transfers their book-keeping skills and numeracy – but not their literacy – had improved significantly *vis-à-vis* control households. Female-headed households were less likely to be literate and numerate, and richer households were more likely to be literate and numerate. It is important to highlight that literacy skills training is not part of the Graduation Programme, so increase in literacy was not expected as a central outcome.

The Graduation Programme supported children's education by making uniforms, school books and materials affordable, and this was reflected in higher proportions of beneficiary households sending their children to primary and secondary school after 12 months of cash transfers than at baseline.

There is some evidence that members of beneficiary households improved their nutrition status thanks to participating in the programme. Between the baseline and 'first 12 months' surveys, beneficiaries increased their frequency of eating meat and drinking milk, and were more likely to grow enough vegetables and fruit for their family's needs, relative to the control group. Also, fewer beneficiaries perceived signs of malnutrition among household members after 12 months of cash transfers. Related to this are significant recorded improvements in hygiene practices such as using soap and changing clothes frequently.

Finally, programme participants significantly increased their participation in social and communal activities, including church, *Umuganda*, women's groups and cooperatives – both over time and relative to non-participating households. Qualitative research revealed that this was mainly due to participants having increased self-confidence and their social status as their situation improved, which is a significant non-material benefit of the Graduation Programme.

The question that remains, which is the core of the research, is: are these changes sustainable in the absence of cash support? It is the answer to this question that the research team will focus on during the next rounds of data collection. Our recommendations are based on ensuring that we can successfully address this important question.

6. Recommendations

Overall, findings presented here represent important improvements in the overall well-being of beneficiaries. Nonetheless, there are a number of recommendations to make so that the research aims of the programme are met:

1. **Follow-up questionnaires:** It is our recommendation that follow-up questionnaires follow the same structure as the questionnaires collected during the baseline and 12 month surveys. Additional questions may be asked to deepen knowledge in certain areas. However, the key output questions must remain unchanged. For example, we know that programme participants were substantially more likely to be farming using improved seeds after receiving cash transfers for 12 months than at baseline, but we do not know why. It could be an income effect (affordability), or it could be due to training received through the programme (knowledge). This could be verified by adding appropriate questions to the follow-up quantitative surveys about any change indicators:

   Q: If you use improved seeds more than before, why?

   a. Because I can afford to pay now, or

   b. Because the CDA trained me about using improved seeds.

   The survey found that many most programme participants did not live on registered land when the programme started, but this proportion more than doubled between the two survey rounds. However, we do not know enough about the barriers to registering land (are they financial, social, or lack of knowledge?) and how the programme could have led to this change (e.g. was it sensitisation messages; the cash transfer; or a combination of both?)

   Other examples include, beneficiaries were twice as likely as non-beneficiaries to take a loan during the first 12 months of cash transfer, and beneficiaries took substantially larger loans, on average. What does this mean? Does it imply that beneficiary households are considered more creditworthy because of their participation in the programme? Are the loans for business (investment needs) or for managing shocks (consumption needs)?

2. **Unexplained findings.** There are a number of findings that cannot be explained solely as a result of the questionnaire or monitoring activities carried out as part of the Graduation Programme. It is our recommendation that a full qualitative research component is planned alongside the quantitative work so that we can understand processes and reasons for the observed changes.

3. **Use of interesting cases.** Although results from the quantitative survey showed some average improvements, there are clearly some beneficiaries who have improved their situation much more than the average household. Similarly, there are beneficiaries who have faced difficulties managing their livelihoods. It is our recommendation that the information obtained from the quantitative research is used for sampling and selecting purposes. Using information from the survey, we can select interesting cases both from control group households and beneficiaries, and interview these households to deepen our knowledge about enablers and constrainers of graduation.

4. **Integration of findings.** It is our recommendation that findings are integrated in a comprehensive manner to address not only changes in the lives of beneficiaries but also reasons behind such changes, processes that work and factors that enable such change. Similarly, when no changes are estimated, we propose that these are integrated with the main constrainers for graduation.

5. **Exit strategy for the programme.** We recommend that there are no changes to the way in which the programme has been planned, in terms of providing additional support to beneficiaries who are facing difficulties even with the support provided over the past months. Providing additional resources to beneficiaries who are facing challenges can potentially disrupt the research component.

End Notes

1 Concern defines the extremely poor as those who lack the means for basic survival and are unable to meet their own or their household's basic needs for food, health care, shelter, and education.

2 See CGAP – Ford Foundation Graduation Program (www.cgap.org/graduation).

3 Umuganda is a local term meaning "community working together". It has become mandatory for all Rwandans and is usually carried out on the last Saturday of each month by communities in their villages.

4 Poverty is measured by consumption levels. An extremely poor household is defined as one that is unable to provide basic food to meet the needs of all its members, assuming that no resources are used for anything other than providing food.

5 Concern defines the extremely poor as those who lack the means for basic survival and are unable to meet their own or their household's basic needs for food, health care, shelter, and education.

[6] Rwanda is already experiencing the effects of climate change – unpredictable rainfall patterns, prolonged dry season, flooding, storms that destroy crops, landslides and erosion due to heavy rains.

[7] The approach has been adopted by the World Bank's Consultative Group to Assist the Poor (CGAP), which has funded implementation of further pilots in 7 countries since 2006 (http://graduation.cgap.org/wp-content/uploads/2012/10/Graduation-Program-Global-Meeting-2012-Summary-copy.pdf.)

[8] See CGAP – Ford Foundation Graduation Program (www.cgap.org/graduation).

[9] Pamela Abbott and Ricardo Sabates (January 2013) **Graduation Programme in Rusatira and Kibeho Sectors in Huye and Nyaruguru Districts, Rwanda: Baseline Report.** Kigali: Concern Worldwide Rwanda.

[10] To take an intuitive example: assume that before a school feeding programme is introduced to a poor community, the enrolment rate is 60 percent, and a year later it has risen to 90 percent. Is the 30 percent improvement due to the school meals? Possibly, but without a control group it is impossible to tell. Assume that school fees were abolished nationwide at the same time. In a neighbouring poor community with no school meals, school enrolment increases from 60 percent to 80 percent over the year. The attributable impact of the school meals is not 30 percent, but 10 percent (30-20 =10) – i.e. the 'difference in differences' between the change in the beneficiary group (90-60 =30) and the change in the control group (80-60 =20).

[11] One plausible explanation is interview bias. Control group households might have systematically under-reported their asset-holdings in the follow-up survey, believing that presenting themselves as poorer than they actually are might make them eligible for inclusion on the programme. However, there is no way of either validating or refuting this hypothesis.

[12] A technical explanation of how this multivariate analysis was done is provided in Annex 2.

[13] Rwanda's administrative structure is divided into four levels: Province, District, Sector and Cell.

[14] Although we acknowledge the fact that households could have improved their kitchen facilities as a result of the cash transfer, we are using here kitchen facilities in round 1 as a control for prior wealth. Hence, we are trying to avoid the fact that changes in kitchen facilities and cooking type may mask benefits of the programme (as opposed to prior wealth effects).

[15] Technical note: Since information on housing quality during baseline (round 1) was only collected for beneficiaries who owned their house, it was necessary to assume that housing quality during baseline for beneficiaries who did not own their house will be the same as it was during endline (round 2). We assume no changes in these variables over time (hence the quality of the roof remains unchanged). This is important to allow the model to condition out for prior wealth. Similarly with kitchen facilities, since we use the type of kitchen facilities in round 1 to condition out the impact of prior wealth.

Annex 1. Additional tables

Table 12: Households owning different productive assets over time

		Beneficiaries				Control		
		Baseline	1YR+	Change		Baseline	1YR+	Change
Live on registered land	%	0.25	0.62	0.37		0.47	0.45	-0.02
Use land for agriculture	%	0.86	0.83	-0.03		0.78	0.78	0.00
Use more than 1 plot for agriculture	%	0.23	0.66	0.43		0.64	0.59	-0.05
Uses improved seeds	%	0.01	0.29	0.28		0.14	0.10	-0.04
Owns at least a cow	%	0.00	0.07	0.07		0.03	0.01	-0.02
Owns other domesticated animals	%	0.07	0.81	0.75		0.09	0.19	0.11
Owns bicycle	%	0.01	0.08	0.07		0.01	0.01	0.00
Owns at least 1 hoe	%	0.92	0.98	0.06		0.83	0.78	-0.05

Table 13: Households owning different consumption assets over time

		Beneficiaries				Control		
		Baseline	1YR+	Change		Baseline	1YR+	Change
Own house	%	0.45	0.83	0.37		0.55	0.58	0.03
Owns at least 1 soucepan	%	0.66	0.95	0.29		0.78	0.65	-0.13
Owns at least 1 basin	%	0.40	0.92	0.52		0.56	0.41	-0.15
Owns at least 1 jerrycan	%	0.67	0.91	0.23		0.66	0.47	-0.19
Owns at least 1 spoon or fork	%	0.28	0.90	0.62		0.51	0.44	-0.06
Owns at least 1 plate	%	0.25	0.84	0.59		0.45	0.37	-0.08
Owns at least 1 chair		0.58	0.86	0.29		0.66	0.64	-0.02
Owns mobile phone	%	0.01	0.12	0.12		0.03	0.02	-0.01
Owns a radio	%	0.15	0.55	0.40		0.21	0.14	-0.07

Annex 2. Multivariate analysis of deprivation and asset indices

To evaluate the effects of the Graduation Programme on our indices for deprivation, productive assets and consumption assets we applied difference-in-differences estimation techniques. We assessed the changes in assets before and after the Concern Worldwide programme for beneficiaries and control households by:

$$A_{ht}^{BEN} - A_{ht-1}^{BEN} = \Delta A_{ht}^{BEN} \quad \text{and} \quad A_{ht}^{CONTROL} - A_{ht-1}^{CONTROL} = \Delta A_{ht}^{CONTROL}$$
$$\Delta C_{ht}^{BEN} - \Delta C_{ht}^{CONTROL} = \phi \qquad (1)$$

where A stands for assets, *h* stands for household, *t* is time, *BEN* denotes beneficiaries and *CONTROL* denotes non-beneficiaries. In this report *t-1* covers summer 2011 and *t* summer 2012.

The difference in these differences (ϕ) is an estimate of the effect of the programme on assets. This estimate is unbiased under the assumption that the programme is introduced randomly so that there are no differences between beneficiaries and non-beneficiaries with respect to their initial level of assets. However, we found that there were some initial differences between beneficiaries and control group, although the latter seemed to be better off in terms of some indicators of income and wealth. One way of handling this potential bias is to introduce controls for the characteristics of households and regional controls, by estimating an equation of the form:

$$A_{ah} = \alpha + \beta T_h + \phi T_h * Time + \varphi X_{ht-1} + u_{ht} \qquad (2)$$

where T_h is a binary dummy variable indicating difference between beneficiaries and non-beneficiaries and Time is a binary dummy variable indicating the period after the programme. The parameter ϕ is the difference in the average level of assets before and after the introduction of the programme, i.e. the difference-in-differences estimator. This will be biased (in a treatment-control programme evaluation setting) if β is estimated to be non-zero, in particular if it is positive as when the programme was introduced this indicates that beneficiaries were better off in their level of assets than control group households. If the parameter is negative, this is less of a problem as it indicates that during initial conditions beneficiaries were worse off than non-beneficiaries in terms of their level of assets. The matrix **X** contains household characteristics which are incorporated in the estimation to remove the initial difference in beneficiaries versus control households, evaluated by β. These household characteristics were whether there was a single mother, family size, number of rooms in the house, whether the house had floors made of packed earth, whether the house had tiled roofs, whether the household owned their kitchen and if the kitchen was inside the house, outside the house, or a good quality kitchen.[15] We also included regional controls by using dummy variables for different Cells.

Annex 3. Case study households from the qualitative research

Progressing household #1: Margarita Mukamana

Margarita Mukamana, 36 years old, is a widow who lives with her 7 children between the ages of 18 and 5 years. Margarita is a non-literate woman whose children are attending school, except the youngest child and the 2 eldest boys, who help her with work around the house and on the fields when they have to earn some income.

She was selected by the community because she was poor, homeless and living with her father in-law. For survival they sought for work as labourers that would pay them RwF. 500 (less than $1) a day and usually ate once a day, they had no clothes to wear, and getting school items for the children was impossible. She always had to borrow money.

When the community selected her for the programme, she received RwF. 18,000 ($28) per month as cash transfer. She used some of the money to buy timber and other materials to construct her house, at this point the government enlisted her for iron sheets through the sector offices but she received doors and windows from Concern.

With the cash received every month, she was able to buy goats which reproduced and she sold off 5 goats to buy a cow at RwF. 95,000 ($150) and three rabbits for the children. She uses her radio that she bought at RwF. 5000 ($8) to listen to news. Additionally, she bought essential household utensils such as jerry cans, saucepans cups and clothes for the family. She also rents land at RwF. 13, 500 ($21) per year where she grows sweet potatoes, millet and beans. Most of the food is for consumption, except surplus sweet potatoes which are sold to buy salt and soap. Her family now eats 3 times a day. Currently, the children attend school without difficulty and she can afford to purchase health insurance for all family members at RwF. 3000 ($5) per individual).

"Before joining the programme I was despised and looked down on, I was not confident enough to engage with other community members…I always felt embarrassed because I lacked almost everything. Now, there's respect for me and my family because of the change they have seen in our lives."

She no longer begs for anything from her neighbours but now has enough food to give to others. She now attends meetings and she can afford to buy some clothes and shoes for the children and herself.

"I hope to buy more livestock to help increase my household income as well as gain from the enterprises from the Self-Managed Groups."

Progressing household #2: Martin Ntawukuriryayo

Martin Ntawukuriryayo, 38, is married to a wife of 23 years and has 3 children who are girls of 12 years, 8 years and 2 years. As a returnee from the Democratic Republic of Congo, the community selected him because he was among the poor and homeless people in the village, accommodated by his father. It was also very hard to find work in the village to earn a living and support his family.

With cash every month of RwF. 21,000 ($33) from the programme, he was able to buy food for two meals a day. They consumed vegetables, tomatoes, carrots and sold off surplus production to buy foods like beans, maize or cassava flour. He has purchased health insurance for his family and bought livestock. He is glad he attends training on business skills development, family planning, conflict resolution and awareness on HIV and AIDS organised by the programme. *'I had never been trained before on anything'.*

He has invested in livestock such as a pig that cost him RwF. 10,000 ($16) and later sold off 3 of its 5 piglets at RwF. 10,000 ($16) each. He used the money from the piglets to complete the annex to his house which will be used as a boutique (small shop). He bought a radio at RwF. 6000 ($9) to keep him informed and is now renting 6 acres of land for cultivation, at a cost of RwF. 13,500 ($21) per year. Additionally, he bought agricultural inputs such as seeds, fertilizers and some tools to improve yields. He earns RwF. 45,000 ($71) from selling carrots each season, RwF. 15,000 ($23) from cabbages and RwF. 12,000 ($19) from eggplant with a total input worth RwF. 10,000 ($15). *'I have also bought household materials which I didn't have like saucepans, plates, cups, mattress, bed, wash basins and buckets, chairs among others.'* He has spent RwF. 1,660,000 ($253) on constructing his house.

"After programme support, I know I will be able to purchase my family's health insurance cover from profits from the sale of vegetables and sale of different items from my boutique. My children will study without a problem because they'll have all school materials and won't be hungry as they now seem more intelligent."

"How could I attend meetings when I had no clothes to wear?" says Martin about not attending meetings before the programme. Currently, he endeavours to attend community meetings, community work and goes to church unless he's unwell. When Martin is not around his wife represents the family. He is respected by his community now compared to before when he was shunned by many because of poverty. 'Where I can, I give advice to friends on how to farm and work hard and sometimes give a few vegetables (carrots) and baskets of beans to those in need of food. I have more friends now. I witnessed this when I had a family function at home, and many turned up."

Although he has no substantial financial savings, he hopes to start a boutique shop with an investment of RwF. 200,000 ($317) in the next 2 years. He hopes to acquire a cow to get milk for the children and manure for his vegetable gardens.

Progressing household #3: Florence Uwizera

Florence Uwizera, 23 years, lives with her 21 year old sister, 20 year old brother and 18 year old sister, who study in their 3rd and 4th year of secondary school, and 6th year of primary school respectively. At the age of 12, her father was jailed and Florence was forced to take care of the siblings when their mother abandoned them. She worked hard to sustain her siblings who were 10 years, 9 years and 7 years at the time.

When she heard of the village meeting being convened by local authorities and Concern Worldwide, where vulnerable community members would be selected for support, she dashed to it hoping to be selected. At the time, they ate once a day and had no known relative to assist them. They had no land, livestock or health insurance.

With cash transfer of RwF. 18,000 ($28), she worked hard and bought land at RwF. 80,000 ($126) to construct a new house because the old one is in an insecure place and she'll move to the new house in December. She also rented land for cultivation at RwF. 30,000 ($47) per year to grow rice where she harvested 600kg of rice grain and sold it off at RwF. 180,000 ($285), in one season. She then invested RwF. 150,000 to buy a cow and a bicycle as an important asset at RwF. 150,000 ($238). She has now purchased 2 plots of land (25x30ft each) for rice growing at RwF. 20,000 ($31) each. She also purchased 2 goats at RwF. 15,000 ($23) each and a number of household utensils and clothes. She has also embarked on growing tomatoes and has harvested and sold tomatoes worth RwF. 100,000 ($158).

She continues to pay school dues for herself and siblings, and also supports a 13 year old boy and 11 year old girl who were abandoned by their parents. She lives with them and caters for their needs. *"The neighbours are friendly and continue to avail advice whenever they can and are more friendly now than before because of the respect they have for us."*

Florence finds it hard to attend all community meetings because she has to study but endeavours to attend programme meetings which are always in the afternoon after school. *"I'm confident while I'm with my peers, especially now that I'm back to school and still defeat them in class, this makes me happy. I was the 11th out of 32 kids in my class. This is good."*

She used to make decisions on her own since she was the older one and more mature than her siblings, but since her father was released from prison they always have to decide and make plans together.

"I hope to study hard until I join university and become a teacher. Then also buy a better cow which milks more than 1 litre a day."

Household facing challenges #1: Chantal Kaburanga

Chantal Kaburanga, 32, is an HIV-positive single mother with 3 school-going daughters aged 14, 13 and 7. She got married at 16 years, but her husband left for Kigali and never returned. The community selected Chantal for the Graduation Programme because she was living at a neighbour's house after the 'eradicate thatched houses' campaign in 2011. Life was hard because finding food was difficult, the children were always hungry and they did not attend school regularly.

Chantal received a cash transfer of RwF. 18,000 per month for 18 months, which finished in January 2013 (4 months before being interviewed). She used the cash to start constructing a house on a plot of land that her husband's family offered her. She spent over RwF. 200,000 ($317) on building costs and RwF. 9,000 ($14) on renting land for cultivation per season. She was happy that she could afford to purchase health insurance for the family at RwF. 3,000 ($5) per individual, and could send her children to school with all school necessities.

"The children perform well in class and that means I have to make sure they have provisions for the following term of school. They no longer spend the day hungry at school."

"In short, my life has changed. Thanks to Concern, I have a house and the support I need."

Unfortunately, her attempts at rearing livestock have been futile. Firstly, she had no space to rear the pig she bought so she asked a friend to rear it for her, hence missing out on manure for her garden. Then the 3 rabbits she bought at RwF. 1,000 ($1.60) each were stolen and she has never replaced them. She only managed to save RwF. 700 ($1) since the programme commenced.

Her relationship with neighbours is not all rosy. It is hard for her to get help from neighbours because they believe she doesn't need any sort of assistance, since she is getting support from the programme. However, she always approaches the Cell executive secretary if she needs community support. She always attends meetings and does community work when she is strong enough to work. *"Sometimes I help someone who has no food to eat at home."*

Due to illness, Chantal does not believe she will be able to cope after the programme since she is always sick and weak. However, she hopes to work hard and purchase livestock, especially pigs due to their profitability from high reproduction rate.

Household facing challenges #2: Beltilda Nawunyangira

Beltilda Nawunyangira, 42, is a widow with four children aged 16, 13, 11 and 7. The 3 youngest children returned to Burundi because of the difficult life they were facing in Rwanda. Her eldest son of 16, who is mentally challenged, remained with her because he needed constant medical attention. She currently lives with her brother and his family.

"The community selected me because I was being accommodated by my brother and the relationship with my sister-in-law was chaotic. The children were always hungry and yet I had to work extra hard each day for 500 francs, if lucky, and we only ate when food was available."

Beltilda received a cash transfer for 18 months, from June 2011 until January 2013 [4 months before this interview]. With RwF. 18,000 (approximately $28) received monthly, Beltilda was able to buy clothes for herself and the children, as well as more food – she and her son now eat 3 times a day, including milk and fruit. She also purchased health insurance at RwF. 3,000 ($5) which has eased treatment of the tuberculosis illness she is still battling. She has bought household utensils, a radio and a mobile phone. She is also able to rent land at RwF. 8,000 ($12) per year to grow food especially beans. She has only saved RwF. 17,500 ($27) to date.

Progress for Beltilda has been slow due to a simple cough that turned out to be tuberculosis. She was later admitted to the referral hospital in Huye. For over 8 months she was clearing medical bills, buying drugs and buying recommended food in order to recuperate. Unfortunately, two of the builders contracted to complete the house did a shoddy job. She used what was left of her monthly cash transfer to complete construction of her house, with support from her Community Development Animator. Currently, Beltilda is still being accommodated by her brother.

Her relationship with community members is good, although most villagers think programme beneficiaries are self-reliant enough not to need any further assistance from them. She has assisted a few families whenever possible with food, especially beans which she grows, soap and body gel. She cannot do community work, which is usually manual, because of her illness, although she attends community meetings and religious gatherings whenever she is energetic enough to move.

Household facing challenges #3: Vianney Mudahanwa

Vianney Mudahanwa, 43, is the only survivor of his family after the 1994 genocide that left him trauma stricken. He was selected by the community because he was a destitute with no home and property to his name. Although Vianney received a monthly cash transfer of RwF. 7,500 ($11) for 18 months, there is little to show for how he has managed to improve his life. To date, he is still constructing his house, even with the support of local authorities through mobilisation of the community, the process has been slow. The sector secured him a place in the village settlement by exchanging land worth RwF. 50,000 ($80) that belonged to his deceased parents, although water from uphill threatens to displace the house.

He has spent over RwF. 100,000 ($158) to construct the house except for the iron sheets and doors, that were provided by Concern Worldwide. Additionally, he was able to buy food, clothes and a goat, and to purchase health insurance at RwF. 3,000 ($5).

However, with the conclusion of cash transfer, he is still being accommodated by a well-wisher and still works on their family land where millet, sweet potatoes, beans and cassava are grown in order for him to get food. He can no longer afford to purchase the basic annual health insurance.

He feels people are helpful in as much as they can be and his relationship with the community members is good. *"I attend community meetings and community work in order to get information about what is going on and what the government development plans are, and I also go to church often."*

He hopes to trade in small livestock especially goats in order to increase his household income, complete his house and hopefully, find a wife.

Dropout household: Joslyn Nyirandikubwimana

Joslyn Nyirandikubwimana, aged 21 years, is a single mother who lives with her two sons of 4 years and 3 months, and her younger brother of 10 years.

By the time the community selected Joslyn, her husband had abandoned her when she was 5 months pregnant and she was living with sympathisers who accommodated her in their tiny house. She had nothing to hope for.

With a cash stipend of RwF. 14,000 ($22) every month, she and her friend pooled resources and bought land at RwF. 60,000 ($95), started constructing her house and benefitted from the iron sheets for roofing, doors and windows that the programme had distributed. She also bought clothes for her children, household utensils and paid for health insurance for the family.

As fate may have it, in June 2012, Joslyn was disqualified from the programme after abusing one of the terms and conditions related to items distributed. It was found that Joslyn had sold an iron sheet. In the interest of fairness and accountability, this meant that she had to be evicted from the programme. The consequences were dire because this has drawn her back to a worse situation than she was in at the beginning. Currently, she lives in an incomplete house with her malnourished children and brother. The only livestock she had bought, a pig, died and she couldn't replace it, her medical insurance cover ended and she can no longer afford to recommit, she is back to eating once a day and yet the small land (30x40feet) that she owns and cultivates can only sustain sweet potatoes and nothing else. She now works as a labourer in a neighbour's fields and is paid RwF. 700 ($1) a day. Sometimes finding work is hard because it is not constantly available.

"Seeing from how other programme beneficiaries have improved their lives, the programme is a success. I now hope to finish construction on my house from any money I will make from cultivation."

Other community member #1: Protais Kanyandikwe

Protais Kanyandikwe, 95, has 14 living children and lives with his wife, one grandchild and three of his youngest biological children, the youngest being 20 years.

Protais, a wealthy man according to village standards, says that the Graduation Programme selected beneficiaries because they were suffering and had nothing at all. They had nothing to eat and nowhere to live.

The programme has been successful, according to him, because some of the beneficiaries have now constructed their houses, bought livestock like goats and pigs, their lives have changed.

Protais was relieved of the responsibility of catering for the needs of a relative when this relative was selected for the programme. She moved out of his house after building her house from the money she received every month.

"I was happy that people worse off than me were selected. I accommodated them until they got their own houses. I have little to give them most of the time. The programme did its best, it was successful. For those who failed to improve, it was their own making."

Other community member #2: Damien Bigirimana

Damien Bigirimana is 26 years old, the only brother to two girls of 27 and 15 years. They have accommodated beneficiaries from both the 1st cohort and 2nd cohort of the Graduation Programme in their home. They say the beneficiaries were selected for the programme by the community because they had nowhere to live and most of them were suffering.

"From observations, the programme is helpful because most beneficiaries bought land, constructed houses, interact better with other community members and go to church often. Some are able to send their children to school, purchase health insurance, buy clothes and food and can rent land for cultivation."

Damien also noted that the burden of living with strangers has reduced because they have got their own homes, and they no longer have to beg people for food all the time. His family still interacts with the people they helped and are happy for them. When their mother passed away, the beneficiaries supported Damien and his sisters emotionally and they still visit them. They don't expect much from the people they helped because they are still improving their lives and they have very little to give anyway.

"We have good things to say about the programme. Those who were selected deserved to be selected. It was open even though some people feel they should have been the ones selected."

Future Agricultures

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