IMPACT REPORT

Results of Impact Study – LOK MCF

This report presents the impact results of housing microfinance products provided by LOK MCF in Bosnia and Herzegovina. The study is based on an approach and (customized IT-based) survey tool developed by Oxfam Novib. This approach involves obtaining impact information directly from end-clients and includes their perception of changes experienced in key dimensions of poverty. At the start of the study, a theory of change was developed to disentangle the expected impacts of the housing microfinance products and services provided by LOK MCF. The expected impacts were tested with the help of a survey conducted among a randomly selected sample of clients (target group) and a control group. Propensity Score Matching was used to analyze the survey. A positive impact was found on self-esteem and positive impacts were found for specific client segments on the livelihood and life & security indicators, and women empowerment. Contrary to expectations, no significant impact was revealed on clients' health and for a specific client segment a negative impact was found on life evaluation.
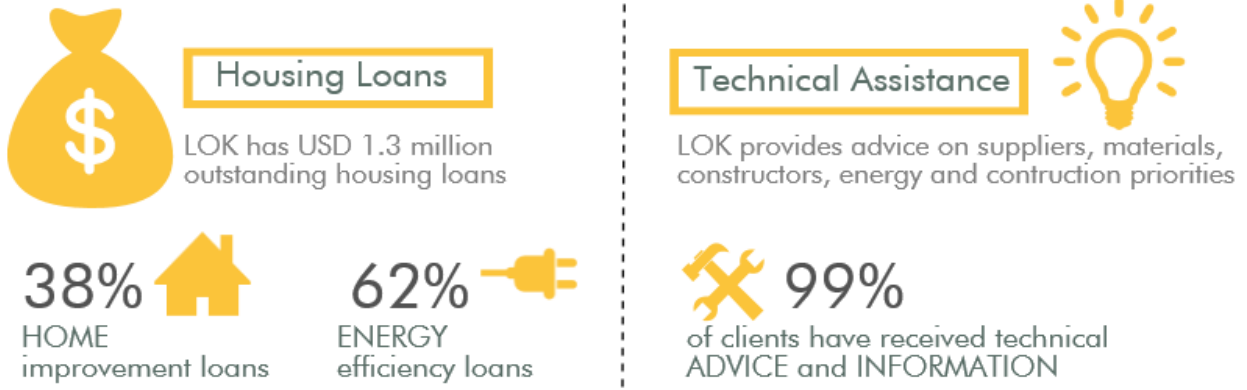
LOK MCF is a large MICROFINANCE institution in Bosnia Herzegovina
This study is related to LOK's **1200** housing microfinance CLIENTS

Sample characteristics

37% FEMALE clients

53% clients in RURAL areas

71% clients own a HOUSE

76% clients wage LABORER

LOK provides **housing microfinance** products and services:

Housing Loans

LOK has USD 1.3 million outstanding housing loans

38% HOME improvement loans

62% ENERGY efficiency loans

Technical Assistance

LOK provides advice on suppliers, materials, constructors, energy and contruction priorities

99% of clients have received technical ADVICE and INFORMATION

61% of clients use home improvement loan for RENOVATIONS, furniture (20%), and small investments (20%)

46% of clients use energy loan to INSULATE the house and 37% install new doors/windows

80% of clients consider the advice "relevant" and 15% "very relevant"

Short-Term Social and Economic OUTCOMES

Clients have a positive **PERCEPTION** of their home:
Comfort
Pride
Privacy
Safety
Beauty
Space
Confident

60% of all clients own a water meter; however, in the long-term this does not lead to lower water bills

Long-Term IMPACTS of Housing Microfinance

An increased level of **SELF-ESTEEM**

High level of **LIFE EVALUATION**

TA on priorities increases **INCOME**

No significant impact on **HEALTH**

EMPOWERMENT in urban areas higher

EXECUTIVE SUMMARY

This report presents the results of an impact evaluation conducted among the clients of LOK MCF (LOK). LOK was founded in 1997 to continuously provide a wide range of microfinance services to the economically less developed population categories. This will enable them self-employment, soundness, financial stability, increased income, an improved standard of living as well as access to the market. Over the last four years, Habitat for Humanity International and LOK have formed a partnership on housing microfinance. On 31 October 2014, 1.204 active clients were registered with a total amount of 2.428.393 BAM (1.393.540 USD) outstanding.

Oxfam Novib designed an evaluation to assess the impact of the housing loan products and technical assistance provided by LOK. The results are based on an assessment of the differences in outcomes between 251 clients who received a housing loan from LOK in 2011 (the target group) and 250 new clients who just have received a loan (the control group). To reduce selection bias in the results, propensity score matching (PSM) was used for the statistical comparison of the two groups.

Key findings

- The fact that clients in the control group also have **high scores on each type of assistance** received, allows us to conclude that within 6 months after receiving the loan the construction project managers have already managed to deliver.
- **LOK's clients have a positive perception of their house**. The target and control groups both show high values on perception of housing, although there is no significant difference between them.
- There is a **significant and positive impact on the self-esteem scale** for the target group. This implies that having a housing loan for a longer period of time has a positive effect on the level of self-worth of clients. In particular, clients who used their loan for renovation have a higher level of self-esteem.
- The scores on **wellbeing and life evaluation are encouragingly high** for both the target and control groups. Clients in the target group are slightly satisfied with their lives and score an average of 7.4 out of 10 on the wellbeing indicators (control group scores a 7.2 on average). No significant difference between the two groups was found.
- Clients who **received advice on construction priorities** show an **increase in income**. This holds for both the perceived change in income and the increase in monetary income indicators. The explanation of LOK for the positive correlation between the advice on construction priorities and perceived increase in income is that people who received this advice can implement their construction work in a more cost-efficient manner. These cost savings might give clients a perceived increase in disposable income.
- **No significant impact is found on health indicators,** despite the positive expectations from the theory of change. LOK found this a surprising finding as they believe that especially the energy efficiency loans contribute to better housing conditions that indirectly result to better health conditions of clients.
- Clients with an **energy efficiency loan** show a **negative impact on the life evaluation scale**. In other words, in the long-term, the energy efficiency loan has a negative effect on clients' level of life evaluation. A possible explanation for this finding is that clients who recently improved some elements of their home experience a peak in life satisfaction. Therefore clients who received a loan 3-4 years ago score lower on life evaluation, since this effect wanes over time.
- **Female clients are more confident to cope with future disasters** than female clients in the control group. They show a higher confident level in coping with theft, state action, and fire.

CONTENTS

INTRODUCTION

Oxfam Novib has conducted a study on the impact of housing microfinance on the lives of LOK MCF's clients. Habitat for Humanity International (HFHI) commissioned this study to support microfinance institutions (MFIs) offering housing microfinance products and technical assistance in becoming more effective agents of positive social and economic change. Measuring impact enables MFIs to adapt their housing products and technical assistance to create more impact in the future. Additionally, impact evaluations allow them to tell their story to stakeholders and be accountable to both donors and beneficiaries. Telling a good narrative requires facts and impact data, not just information on outputs. An impact evaluation reveals an organisation's actual results and shows the level to which a MFI delivers benefits to its clients. This transparency is expected to increase involvement of external stakeholders and it motivates employees and volunteers, since it enables them to see their effect on the organisation's progress.

BACKGROUND LOK MCF

This study was carried out among housing microfinance clients of LOK MFC (hereinafter LOK). LOK is one of the largest microfinance institutions in Bosnia and Herzegovina, with almost 20.000 clients and a loan portfolio of around USD 30 million. Bosnia and Herzegovina is a south-eastern European country with Sarajevo as its capital and largest city. The country was involved in a fierce war from 1992 to 1995, causing a great deal of material destruction. The country has a population of roughly 3.9 million and the main ethnic groups are the Bosniaks (48.4%), Serbs (32.7%) and Croats (14.6%). The population is generally well educated with a literacy rate of 98.2% and the median age of the population is 40.8 years. Furthermore, 39.6% of the country's population lives in urban areas. The GDP per capita (PPP) is $9.800 (2014) and the country's labor force is mainly employed in the services sector (51.3%). Agriculture and industry still employ a substantial part of the population with 18.9% and 29.8% respectively. (Central Intelligence Agency, 2015)

LOK was founded in 1997 and besides housing loans provides loans for business, agriculture, and consumption purposes. LOK's mission is to "Continuously provide a wide range of micro financial services to the economically less developed population categories that will enable them self-employment, soundness, financial stability, increased income, improved standard of living as well as involvement in soundly market competition." Moreover, LOK complies with CGAP's client protection principles and has worked intensively on social performance over the last few years.

In this impact study we focus on the housing loan products and technical assistance provided by LOK. Over the last four years HFHI and LOK have formed a partnership on housing microfinance. Since the beginning of this cooperation, 3.684 loans have been disbursed for an amount of 9.736.854 BAM (5.588.790 USD). On 31 October 2014, 1.204 active clients were registered with a total amount of 2.428.393 BAM (1.393.540 USD) outstanding. This implies that clients have an average of 2.643 BAM (1.516 USD) outstanding which is 3.2 times the average monthly income in Bosnia and Herzegovina and the total amount outstanding is 8% of LOK's full portfolio.

STUDY OBJECTIVE

The objective of this impact evaluation is to measure achieved changes in the lives of people who are housing microfinance clients of LOK, to identify some common strengths and weaknesses in the effects. In particular, this report answers the question: *what is the social impact at client level of the housing products and technical assistance provided by LOK MCF?* The study was conducted between January and June 2015.

METHODOLOGY

The distinctive characteristics of the applied method are:

The methodology was developed to give a strong voice to clients. For this reason data is collected at client level. This study goes beyond measuring output. Instead it measures the changes in the lives of clients.

The survey sample was selected randomly. To get a reliable representation of the clientele a sample was randomly selected from the full list of LOK's clients who received a housing loan in 2011 (the target group). Dropouts are included in the sample, they are defined as the people who received a loan from LOK in 2011 but are no longer registered as clients. Including dropouts is important because they may be impacted differently. Moreover, including dropouts controls for the fact that there will likely also be future dropouts among the control group.

We used a control group to identify impact. The control group was used as a proxy for what would have occurred had there been no intervention. In total 501 respondents were interviewed; 251 clients (or dropouts) of LOK and 250 recent clients (the control group). The control group consists of people who received a housing loan from LOK no longer than six months ago. By composing the control group in this way we ensure that any potential selection bias towards people who are, for whatever reason, more interested in housing loans is a constant factor for both the target and control group.

The selection criteria for clients in 2011 and 2014 are the same. LOK applies three selection criteria for clients obtaining for a housing loan. These selection criteria did not change in the past five years and therefore the selection criteria for the target and control group are similar.

The questionnaire is based on a theory of change. The theory of change (see below) was discussed and finalised during a workshop with LOK and Habitat. Based on the theory of change, the most relevant questions were selected from the right-based poverty survey[1] developed by Oxfam Novib. A few questions were adjusted to better reflect the specific context in which LOK works.

A smartphone application was developed to collect survey data. The app facilitates cost-efficient and reliable data collection. The app exists of a questionnaire with multiple choice questions by which respondents were asked to rate and comment on different aspects of their livelihood.

Local loan officers were trained to collect reliable data. Appointing local loan officers to do the interviews had the advantage that they can verify the answers with reference to the local context. Clients are therefore more inclined to provide truthful information. However, there is always the risk that clients give socially desirable answers to gain positive treatment from LOK. To minimize this risk we hired a local consultant to do quality checks during the fieldwork and assigned the local loan officers to conduct surveys outside of their usual area.

Propensity Score Matching (PSM) was used to calculate impact. PSM is used to reduce bias in the outcome by making clients in the target and control groups directly comparable. It is a statistical method that matches individuals from the target group with individuals in the control group who are observationally similar in terms of general characteristics not affected by the intervention. This can include pre-program characteristics, such as sex, level of education, and marital status. The average difference in outcomes between the two groups is then compared to ascertain the impact of the intervention, in this case housing microfinance.

The data analysis was performed by Oxfam Novib. The data analysis and impact calculations are based on statistical methods. The methodological choices are made in consultation with the Wageningen University in The Netherlands.

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[1] Oxfam Novib has developed the World Citizens Panel; a poverty survey to support partner organisations measuring the impact of their projects and programs.

The recall method is used to measure changes in income, savings, and consumption. A recall method was used to define a baseline for these three topics, with the recall period being 12 months. Clients were asked to define their level of income, savings, and consumption twelve months ago and last month. This information is then used to calculate the change in these three indicators during the last twelve months.

The control group used in this study has limitations. Under ideal circumstances the control group would consists of future clients, i.e. people who will receive a loan in the near future but are currently on the waiting list. However, due to practical limitations it was necessary to add clients to the control group who received a loan no longer than six months ago. Looking into the distribution of disbursement date of housing loans in the control group, the data shows that most respondents (over 90%) report that they received the housing loan 4-6 months ago. The respondents in the control group therefore already received the loan and technical assistance, which makes it impossible to draw conclusions on short-term outcomes. Furthermore, it complicates the determination of the magnitude and direction of long-term effects.

A more detailed explanation of the used research design is provided in the **Annex** to this report.

THEORY OF CHANGE

This study uses a multidimensional approach to determine impact, and is based on the assumption that multiple factors determine poverty beyond just income. To decide which impact indicators are relevant to include in the questionnaire a theory of change was used, which was developed in cooperation with Habitat and LOK. A theory of change is an approach to navigating the complexity of social change processes (Eguren, 2011). This is done by making our assumptions explicit and analyzing them critically. This study is based on a set of assumptions regarding the expected and intended benefits from housing microfinance, which have been made explicit in **Figure 1**.
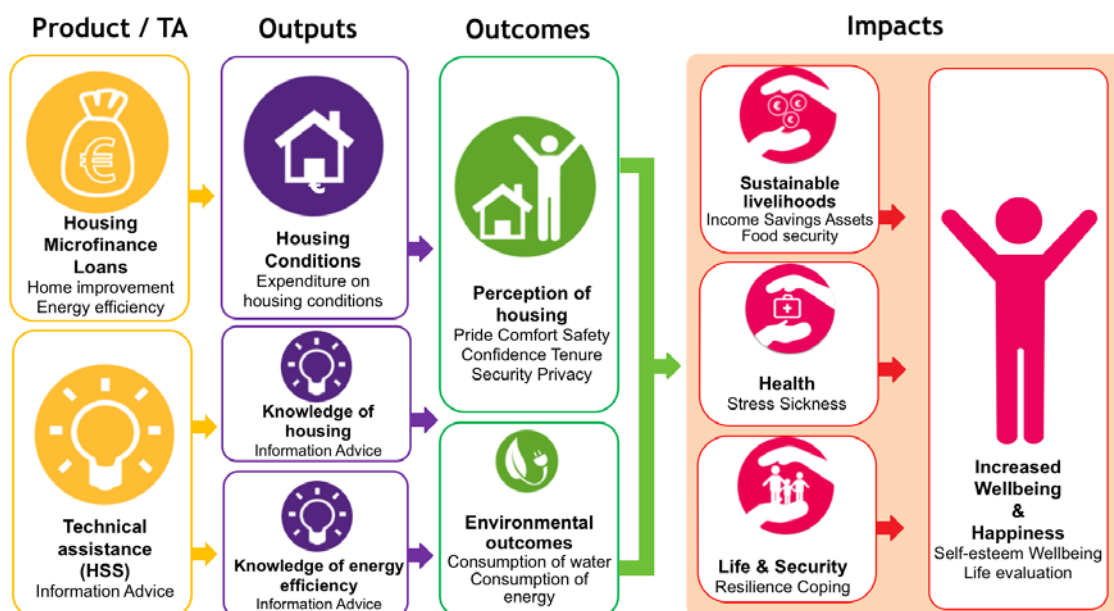

Figure 1: Theory of change Housing Microfinance

LOK offers two types of **housing loan products** and provides **technical assistance**[2] (TA) on different housing themes to its clients. These housing microfinance products should result in improved **housing conditions**. Additionally, the information and advice (TA) provided is expected to result in **knowledge of housing and energy efficiency** among LOK's clients (outputs).

A combination of improved housing conditions and knowledge on housing and energy efficiency is expected to have a positive effect on client's **perception of housing**. Improved quality of housing would lead to among other things a higher level of confidence, safety, and privacy. Furthermore, lower levels of **energy and water consumption** are considered to be direct outcomes of the improved knowledge of energy efficiency. The assumption is that improving clients' knowledge and increasing their financial resources should enable them to reduce their environmental impact.

The final step in the theory of change takes us to the impact. These are the long-term changes that are expected due to the housing microfinance products and TA. By improving the overall quality and energy efficiency of their homes we expect to see a change in the **livelihoods**, **health**, and **security** of LOK's clients. All of this should ultimately lead to a long-term improvement in **wellbeing** and **happiness** among the clientele of LOK.

The most relevant questions from Oxfam Novib's right-based poverty survey were selected to ensure the questionnaire reflects the above theory of change. Moreover, several questions were adjusted to better suit the local context faced by LOK.

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[2] Technical assistance (TA) is a common concept in microfinance; therefore we use TA to describe the housing support services provided by LOK.

RESULTS

Before the various impact indicators are analysed, the general characteristics of the target group and the control group are compared to assess to what extent the control group has similar observable characteristics to the target group. This analysis is important for determining whether the differences in outcomes on the impact indicators can be attributed to the services provided by LOK.

Interpretation of results

In the following section the results of the survey are presented. Comparisons between the target group and control group are presented in terms of the average treatment effect on the treated, which is the difference between the "matched" mean of the target group and the control group. Unless indicated otherwise, all figures refer to a matched comparison between the target and control group. The statistical significance of the differences between the matched means is expressed with one, two, or three asterisks (depending on the level of significance):

- * indicates $p < .1$: there is a 10% chance that the value is found "by chance" and 90% confidence that there is significant difference,

- ** indicates $p < .05$: there is a 5% chance that the value is found "by chance" and 95% confidence that there is significant difference,

- *** indicates $p < .01$: there is a 1% chance that the value is found "by chance" and 99% confidence that there is significant difference.

Hence, if for a specific indicator the difference or impact figure does not show an asterisk, the difference between the target and control group is not statistically significant. Should there be a significant difference; more asterisks indicate a higher level of confidence in the result.

A number of questions were explicitly asked to quantify any change during the last 12 months. The outcomes on these questions should be seen as the impact over 12 months in the context of obtaining a loan 3 to 4 years ago.

General Characteristics of LOK's clients

The general characteristics of both the target group and the control group are summarized in **Table 1**. These general characteristics are the so-called independent variables; implying that these variables are assumed to be independent from the microfinance interventions.

Table 1: General characteristics

|	Target Group	Control Group	Difference
% female clients	37.5	38.8	-1.3
% clients living in rural areas	52.6	50	2.6
Age (average)	48.6	47.3	1.3
% Bosniaks	65.7	56	9.7**
% Serbs	17.5	34.8	-17.3***
% Croats	15.1	8.8	6.3**
% Married	72.5	70	2.5
% Completed secondary school or higher	77.3	82.4	-5.1
Household size (average)	3.4	3.3	0.1
Number of loans (average)	4.7	6.5	-1.8***
% Owns a house	70.5	66.8	3.7
% Involved in non-agricultural labor	76.1	84.4	-8.3**
% Experienced flood	5.2	12.4	-7.2*
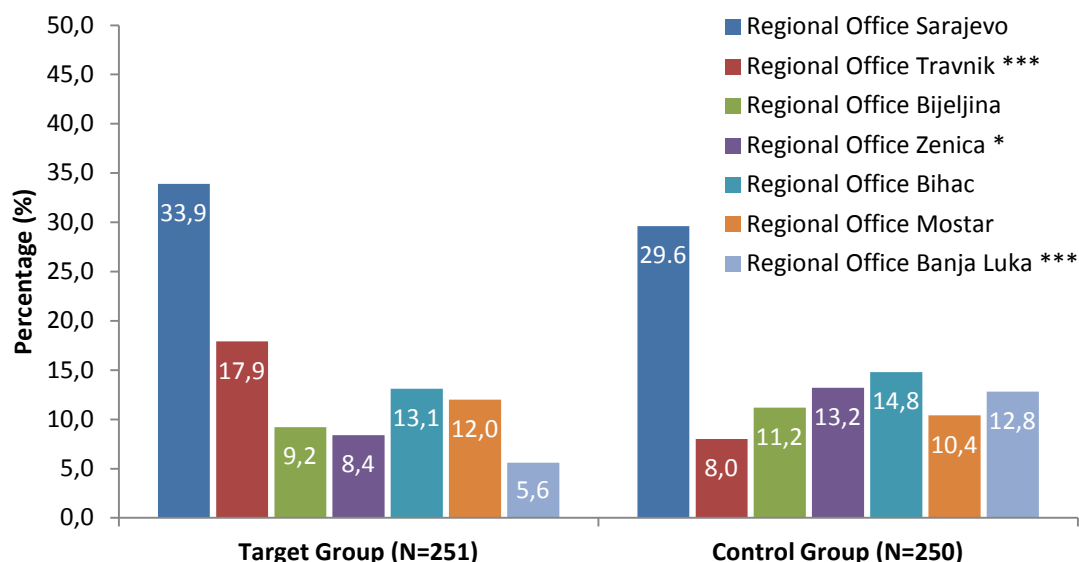
Figure 2: Respondents divided per regional office

General observations:

- Most clients (about 77%) of LOK have completed **secondary school**;

- About 38% of the clients are **female** and the majority of the clients (73%) are a (married) **couple**;

- The **average age** of the clients is 49 years old;

- On average, **households**[3] exist of 3.4 persons;

- 53% of the clients live in **rural areas**[4];

- In the target group the percentage of **Bosniaks** (65.7%) and **Croats** (15.1%) is higher compared to the control group, while in the control group the percentage of **Serbian** clients is higher (34.8%);

- Most respondents are client in the Sarajevo regional office. There is a **significant difference** in the number of respondents between the target and control groups for **regional offices Travnik, Zenica, and Banja Luka**;

- On average, clients in the control group have a higher **number of loans**. Furthermore, the number of loans per clients is relatively high with 4.7 in the target group and 6.5 in the control group;

- In both groups, around 70% of the respondents **owns a house**. There is not a significant difference between both groups;

- More than **three quarters** of the respondents in the target group is involved **in non-agricultural labor**. For the control group this is with almost 85% significantly higher;

- In the **control group**, a **higher percentage of the clients experienced a flood** in the past 12 months.

Based on the data in **Table 1** and **Figure 2**, we can conclude that the target group and control group do not differ significantly with regard to marital status, age, percentage of women, the percentage of respondents living in rural areas, education, and household size. However, there is a significant difference between the target and control groups in **ethnicity** and **regional offices**.

We applied the Propensity Score Matching method (PSM), as explained in the methodology section, to calculate the impact despite the differences in ethnicity and regional offices between

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[3] We define household as a social unit comprised of one or more individuals living and or eating together in the same dwelling or place, often (but not always) tied together through marriage or kinship.

[4] Following LOK's definition rural areas are defined as villages with a maximum of 5000 citizens.

the target and control group. Without this method it would be difficult to conclude that observed differences in outcomes on the impact indicators are the results of microfinance. The difference in outcome could be caused by the differences in these independent variables. Matching reduces this issue and diminishes the bias in the final results. It should be mentioned that PSM is not a panacea; the method diminishes the bias of the control group based on observable characteristics but can, by definition, not include any bias contained in unobserved characteristics of respondents.

Housing loans and technical assistance (products/TA)

LOK offers two types of housing loan products and provides technical assistance on different housing themes to its clients. This subsection provides an overview that illustrates the usage of the loans and types of home improvements and energy efficiency measures that LOK's clients in our sample have taken. Additionally, the different types of technical assistance, information and advice that was provided, to these clients is shown.

Housing loans

The housing loan products consist of **home improvement loans** and **energy efficiency loans**. The size of both loan types ranges from 1.000 BAM (580 USD) to 10.000 BAM (5.800 USD) and the commission fee is 2% of the total loan size. The interest rate charged for the home improvements loan is 1.98% per month and the interest rate on energy efficiency loans is slightly lower at 1.78% per month.

Table 2: Loan characteristics

	Target Group	Control Group	Difference
% has an home improvements loan	37.8	34.4	3.4
% has an energy efficiency loan	62.2	65.6	-3.4

- Of the two housing loan types, clients favour **energy efficiency** loans (62%) over **home improvement** loans (38%)

Technical assistance

In addition to its loan products, LOK offers technical assistance based on HFHI's expertise. This expertise consists of identifying gaps and formulation of long-term goals in the housing process. Technical assistance is provided by Construction Project Managers (CPM) and contains the assessment of clients' needs and purposes for the housing loans. Technical assistance ensures that households focus on improving comfort levels in the home, the quality of life therein, and that the construction intervention was carried out correctly. Technical assistance is provided on setting construction priorities, creating awareness on energy savings, and giving advice on the selection of construction material, suppliers, and constructors. **Table 3** illustrates the different types of TA received and the level of implementation.

Table 3: Type of technical assistance received

	Target Group	Control Group
% received information	99.6	99.6
% received advice	98.8	99.6
% followed advice of CPM	99.2	98.8
% thinks advice of CPM was relevant	98	92.7
% checked by CPM	98.4	98

- Based on **Table 3**, we conclude that a large majority (99%) of LOK's clients received information and advice from the construction project manager.
- More importantly, almost all clients (95%) consider the received **advice (highly) relevant** and have **acted accordingly** (99%).

- Furthermore, in 98% of the cases the construction project manager **checked the construction** during and after implementation

Housing conditions and knowledge (outputs)

The housing loan products and technical assistance which is provided by LOK can be used by clients for different purposes. The assumptions following from the theory of change are that clients use their housing loan to make home improvements or become more efficient in their energy use. Additionally, the technical assistance provided by LOK gives clients the opportunity to receive information and advice on the usage of their housing loan. Information consists of brochures or other printed information, while advice is related to planning and support of the usage of the housing loan.

Housing conditions

The obtained loans can be used for different purposes. **Table 4** describes the percentage of the loan that is actually used for its intended purpose.

Table 4: Use of loans

Type of loan	Target Group		Control Group	
Home improvement	Purpose	% spent	Purpose	% spent
	Home improvement	90.6	Home improvement	87.5
	Energy efficiency	6.8	Energy efficiency	8.2
	Other	2.6	Other	4.3
Energy efficiency	Target Group		Control Group	
	Purpose	% spent	Purpose	% spent
	Home improvement	11.5	Home improvement	6.5
	Energy efficiency	88.5	Energy efficiency	93.4
	Other	0.1	Other	0.1

- The home improvement loans and the energy efficiency loans are mostly spent on their **intended uses** (i.e. roughly 90% is spent on respectively home improvement and improvements to increase energy efficiency in both the target group and the control groups).
- Only a small portion of the loan is usually spent on **other purposes**.

Table 5a describes the different types of home improvements that are realized with the home improvement loans in more detail. In general, home improvement loans are used to renovate houses, buy furniture, small improvements of the house, reconstruction, building an outhouse, and/or adding living space. Energy efficiency loans are used to install hydro or thermo insulation, replace windows and doors, double glazing, replace roof, install energy / heating systems, solar panels, and /or install an energy meter (see **Table 5b**).

Table 5a: Type of home improvement

Home improvement	Target Group	Control Group
% small improvements	22.1	19.8
% reconstruction	6.3	12.8
% renovation	61.1	65.1
% outhouse	23.2	16.3
% furniture	21.1	19.8
% living space	0.0	0.0
% other	5.3	3.5

Table 5b: Type of energy efficiency

Energy efficiency	Target Group	Control Group
% hydro or thermo insulation	46.2	35.4
% roof	6.4	6.7
% replacement of windows / doors	37.2	38.4
% energy / heating systems	12.8	12.8
% solar panels	0.0	0.0
% energy meter	1.3	1.8
% double glazing	22.4	21.3
% other	7.1	7.3

- The home improvement loan is particularly popular for financing **renovations**, with over 60% percent of respondents indicating this as one of the uses of their loan.
- Other popular categories are **small improvements**, **outhouses, and furniture** with roughly 20% each.
- **Reconstruction** (6%) and the creation of **additional living space** (none) are the least popular options among clients.
- The energy efficiency loan is mostly used for **hydro or thermo insulation** (46%), the replacement of **windows or doors** (37%), and **double glazing** (22%).
- None of the respondents opted to install **solar panels**.

Knowledge of housing and energy efficiency

The technical assistance provided by LOK enables clients to receive information and advice on the usage of their loan. Below in **Table 6** the different types of information and advice are analysed in more detail. Five categories of information and advice can be distinguished: advice on how to prioritise different construction elements; which adjustments are necessary to realise energy savings; differences between different types of construction materials; and on how to select a supplier or constructor.

Table 6: Types of information and advice received

Type of information or advice	Target Group		Control Group	
	Information	Advice	Information	Advice
% on construction priorities	45	44.6	36.4	35.2
% on energy savings	65.7	63.7	75.6	76
% on construction material	44.6	49	37.6	42.4
% on selection supplier	35.5	37.5	37.2	36
% on constructors	32.7	31.9	34	34.8
% on other	0.4	0	0	0

- All information and advice categories are popular among LOK's clients, with each category being requested by at least 30% of them.
- The **need for information and advice on energy savings is the highest**, with over 60% of clients requesting information and advice on this particular topic.

Perception of housing and environmental outcomes

The housing loans of LOK give clients the opportunity to increase their expenditure on home improvements and energy efficiency. Additionally, they receive technical assistance on the proposed construction. Based on the theory of change, the combination of the housing loan products and technical assistance will improve the houses of clients and their knowledge of

housing, which is subsequently intended to lead to an improved perception of housing and environmental outcomes. For example, the awareness that double glazing would improve the energy efficiency of a house in combination with the financial resources needed to actually realise this investment will in turn reduce clients' consumption of energy for heating. It should be taken into account that, since the respondents of the control group already received these products and services and the outcomes are expected in the short-term, a significant difference between the two groups on the scale of these seven indicators related to the perception of housing is not expected.

Besides analyses between the full target and control groups, we conduct a number of more in dept analyses by focusing on specific client sub-groups. This segmentation to sub-groups allows LOK to assess whether certain client sub-groups are impacted differently than others. The sub-groups used in this study are the following:

- Male and female clients;
- Clients living in rural areas and urban areas;
- Clients with home improvement loans (LOK1) and energy efficiency loans (LOK2);
- Client sub-groups based on type of loans usage and type of technical assistance received.

This implies that when we focus on, for example, women, only women are included in the analysis and men are not included in this particular analysis. The resulting analysis compares women in the target group with women in the control group. These additional analyses result in a substantial amount of data and in order to avoid presenting a copious amount of tables we will only present the significant results per domain.

Perception of housing

Table 7: Perception of housing

	Target Group	Control Group	Difference
I feel confident in my house	4.27	4.16	0.11
I have enough privacy in my house	4.23	4.22	0.01
I have a beautiful house	3.89	3.87	0.02
I have enough space in my house	4.14	4.05	0.09
I feel safe at my house	4.25	4.12	0.14**
I feel proud about my house	4.08	4.06	0.02
I feel confident in my right of ownership of my house and land[5]	4.52	4.43	0.09
Perception of housing scale[6]	4.14	4.08	0.06

- The values for the perception of housing are ranged from 1-5, with 1 indicating that the respondent strongly disagrees with the statement and 5 indicating a strong level of agreement. Since most values are 4 or higher, on average most respondents agree with the statements and have a **positive perception of their house**.
- The target group has a significantly **stronger feeling of safety** in their home. None of the other indicators reveal significant differences between the two groups.

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[5] The number of respondents (N) for this indicator is smaller than for the other statements about the perception of housing. Out of the total 126 respondents, 90 are from the target group and 36 from the control group.

[6] In this scale the first six statements of perception of housing are included and equally weighted, so that each of them receives a weight of 1/6. The maximum score on this scale is 1. As the seventh statement only has 126 observations, this indicator is not used for the scale.

Environmental outcomes

Table 8: Environmental outcomes

	Target Group	Control Group	Difference
Perceived change water consumption	3	3	0
Amount water bill (in BAM)	16.6	15	1.6
% clients owning a water meter	61.8	60.6	1.2
Perceived change energy consumption	3.3	3.3	0
Amount electricity bill (in BAM)	67.6	65.9	1.8

- The values for the perceived change in water and energy consumption range from 1 to 5. In which 1 indicates a large increase of consumption and 5 a large decrease of consumption. On both indicators **no major changes in water consumption** are found.
- Although there is no significant difference between the two groups, **over 60% of the respondents owns a water meter**.
- The **water and electricity bills are not significantly different** between the groups. This is in line with the theory of change. Since energy savings can be obtained quickly after the disbursement of the loan, the respondents of the control group can already face savings on their water and electricity bills.

Table 9: Environmental outcomes for clients who received advice on suppliers

TA - Supplier	Target Group	Control Group	Difference
Perceived change water consumption	3.0	3.3	-0.3***
Amount of water bill (in BAM)	17.7	11.6	6.0**

- Clients in the target group who received TA on the selection of a supplier have a **significantly lower score on perceived change in water consumption over the past twelve months**. The target group's perceived change in water consumption (3.0) has remained unchanged, while the control group (3.3) report a small decrease. In the long-term water consumption thus appears to remain constant for LOK clients, whereas new clients experience a perceived decrease in water consumption.
- The **average water bill** for the target group is 17.7, which is **significantly higher** than the average for the control group of 11.6. Since, both groups have invested a similar number of loans on energy savings (see Table 2), we can conclude that the target group thus either uses more water or pays a higher price for water consumption.

IMPACTS

Home improvements and efficient use of energy creates a positive perception of housing for clients. Moreover, the improvements made to their house reduce the water and energy costs. As described in the theory of change, these changes in clients' perception and environmental outcomes are assumed to result in more sustainable livelihoods, improvements in health, and increased security. For instance, the replacement of doors will make a client feel safer in his or her house. This increased feeling of safety is expected to improve the confidence to cope with future disasters. Another potential pathway of change could be that exterior wall insulation reduces the energy costs of the client. Subsequently this reduction in costs would increase the amount of savings held by the household.

More sustainable livelihoods, improvements in health and more secure households contribute to the improved wellbeing and happiness of clients. More prosperous, healthier, and safer people will tend to be happier and evaluate their lives higher. In this section we analyze these impact

causalities. Impact on these domains is long-term and therefore a difference between the target and control group is expected to be found.

Sustainable livelihoods

Table 10: Sustainable livelihoods

	Target Group	Control Group	Impact
Perceived change of income	3.2	3.1	0.1
% change of monetary income	3.5	0.7	2.8
Perceived change of savings	3.1	3	0.1
% change of monetary savings	1.5	-0.1	1.6
Food expenses per month (in BAM)	97.2	98.1	-0.9
Assets index[7]	6.3	6.2	0.1

- No significant impact is found on the sustainable livelihood indicators (see **Table 10**). This means that there are **no significant differences** between the target group and the control group. However, when analyzing the results we do find that both the monetary **income and savings have increased more** for the target group in the past twelve months. It is possible that with a larger sample size the results will achieve statistical significance. A sample size estimation[8] reveals a required minimum sample size of N=646 for the found means and standard deviations.

Table 11: Change in income for clients who received advice on construction priorities

Clients with TA on construction priorities	Target Group	Control Group	Impact
Perceived change of income	3.3	3.1	0.2**
% change of monetary income	4.6	-0.9	5.5*

- When focusing on clients who received technical assistance on construction priorities, there is a **significant positive impact on the perceived change of income**. The target group's score is 3.3, indicating a slight increase in perceived income during the past 12 months. The control group score is exactly 3, which indicates that there has been no change in perceived income.
- For the target group the **average increase** is 4.6%, while the control group reports an average decrease of -0.9%. The difference between the groups is **5.5 percentage points** and is **significant**.
- According to LOK this positive impact on income for clients who received TA on construction priorities can be attributed to the cost savings of clients. With better information about priorities in construction, clients prioritize constructions that reduce costs of energy consumption, which subsequently increases clients' (disposable) income.

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[7] The asset index is a non-weighted index of thirteen assets used to measure the welfare of the household. For this index the following assets were used: washing machine, television, tablet, smartphone, computer/laptop, car, motorcycle, agricultural land, livestock, tractor, multi-cultivator, refrigerator, and other asset with a value of more than 1.000 BAM.

[8] This sample size is sufficient for finding a significant difference at the 10% level between the target and control groups.

Health

Table 12: Health

	Target Group	Control Group	Impact
Stress scale[9]	2.5	2.4	0.1
% of household members sick in last three months	7.8	6.4	1.4
% respondents sick in last three months clients	8.4	6.4	2

- The stress scale provides information on how often clients perceive stress. The values range from 1 (never feeling stressed) to 5 (always feeling stressed). In both groups clients were **sometimes stressed,** but there is no significant difference between the target and control group.
- Around 8% of the household members in the target group was sick in the last three months, this also holds for the clients themselves. Clients in the target and control groups are **equally often sick**.
- According to the theory of change and LOK's experience in housing microfinance, a positive impact on health indicators was expected. The lack of impact on health indicators found in this study is therefore surprising.

Table 13: Stress scale for women

Female clients	Target Group	Control Group	Impact
Stress scale	2.7	2.4	0.2*

- Female clients in the target group scores significantly higher on the stress scale, indicating that they are **more stressed** than the women in the control group. However, the difference on the stress scale is small and the impact found is low.

Life & Security

Table 14: Level of confidence to cope with future disasters

	Target Group	Control Group	Impact
Level of confidence to cope with theft	2.4	2.5	-0.1
Level of confidence to cope with state action	3.2	3.3	0
Level of confidence to cope with civil unrest	3.2	3.2	-0.1
Level of confidence to cope with flood	2.6	2.7	-0.1
Level of confidence to cope with fire	2.6	2.7	-0.1
Level of confidence to cope with a natural disaster	3.3	3.3	0
% clients that has measures taken to cope with future disasters	28	28	0

- The values in **Table 14** range from 1 to 5, where 1 indicates that respondents were not confident at all and 5 indicates that they were very confident to cope with future disasters. The **target and control group generally score the same on their confidence level** towards the future and therefore no impact is found on these indicators.
- Both the target group and the control group feel most confident to cope with **natural disasters** and less confident to cope with **theft**.

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[9] The stress scale contains four indicators to measure the stress level. The scale is an unweighted average of those four indicators.

Table 15: Level of confidence to cope with future disasters for women

Female clients	Target Group	Control Group	Impact
Confident to theft	3.5	3.1	0.4*
Confident to state action	2.8	2.5	0.3*
Confident to fire	3.3	3.0	0.4*

- For the sub-group women the target group appears to be **significantly more confident** than the control group concerning **theft**, **state action, and fire**. This implies that women in the target group are somewhat confident in dealing with theft and fire. However, despite scoring a higher value than the control group for confidence in dealing with state action, the target group is still somewhat unconfident about dealing with this issue with a score of 2.8.

Empowerment

Table 16: Empowerment in household decision-making

	Target Group	Control Group	Impact
% women involved in decision-making on durable items	89.5	87.9	1.7
% women involved in decision-making on savings	94.2	88.3	5.8
% women involved in decision-making on house improvements	83.7	81.6	2.1
% women involved in decision-making on food	94.6	94.6	0
% women involved in decision-making on education	94	95.5	-1.5

- Women are generally involved in the decision-making process. On all purchases and choices related to durable items, savings, house improvements, food, and education **women are highly involved** (80% - 95%) in the decision-making (see **Table 16**). No difference between the target and control group is found.

Table 17: Empowerment in urban areas

Urban clients	Target Group	Control Group	Impact
% women involved in decision-making on house improvements	86.1	72.2	13.9*

- In urban areas, women are more often involved in the decision-making process on house improvements compared to urban clients in the control group. This means that in the long-term, housing microfinance has a positive effect on women empowerment in urban areas.

Wellbeing & Happiness

Table 18: Self-esteem, wellbeing, and life evaluation

	Target Group	Control Group	Impact
Self-esteem scale[10]	21.71	20.97	0.75*
Wellbeing scale[11]	7.4	7.2	0.1
Life evaluation scale[12]	24	24.4	-0.4

- The self-esteem scale is used to measure self-worth of people by the meaning of positive and negative feelings they experience. The range is 0 to 30 and values from 15 to 25 are considered to be normal. Based on the findings we can conclude that clients in the target group have a significantly **higher self-esteem** than clients in the control group.
- On average the target group gives a **7.4 to the wellbeing** measures compared to a 7.2 for the control group. The wellbeing measures ranges from 0 to 10, with higher scores being better.
- Both the target and control group score roughly 24 points on the OECD's life evaluation scale, which means that they are **slightly satisfied with their lives**. The range for this indicator is 5 to 35.
- **No clear difference is measured on wellbeing and life evaluation measures** between the target and control group and therefore no impact is found.

Table 19: Self-esteem scale for clients who used their loan for renovation

HI Usage – Renovation	Target Group	Control Group	Impact
Self-esteem scale	22.14	20.16	1.98*

- When zooming in on respondents that opted to use their loan for renovation purposes, there is a **positive and significant impact on their level of self-esteem**. The direct implication is that the target group (22.14) is more confident in these areas than the control group (20.16), which is in line with the expected long-term effects formulated in the theory of change. Values between 15 and 25 are considered to be normal scores and in this respect both groups do fall into the same category.

Table 20: Life evaluation scale for clients with an energy efficiency loan

Clients with an energy efficiency loan	Target Group	Control Group	Impact
Life evaluation scale	23.51	25.82	-2.31**

- Based on the data provided in **Table 20**, we can conclude that clients who obtained an energy efficiency loan more than 3 years ago, score lower on life evaluation indicators. This is conflicting with the theory of change.

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[10] The self-esteem scale consists of ten questions regarding self-worth by using both positive and negative statements.

[11] The wellbeing scale is the average value of four basic life evaluation indicators. These indicators provide information on which step of a ladder the respondents see themselves from 0-10. The indicators include: (1) the step on which respondents see themselves now; (2) how happy they are; (3) how satisfied they were 5 years ago; and (4) how satisfied they expect to be within 5 years.

[12] The life evaluation scale consists of five indicators of the respondentens' judgments on how they evaluate their lives.

Conclusions & recommendations

This study investigated the impact of both financial and non-financial products on the quality of life of LOK's clients over 3 to 4 years. The data was collected through a quantitative survey and the impact was determined by means of a statistical assessment of the differences in outcomes on key impact indicators. A control group was constructed as a proxy for the counterfactual (i.e. what would have occurred had these clients not received products and/or technical advice from LOK) and comprised clients that just received a housing loan from LOK (no longer than six months ago). The total sample size was 501 randomly selected respondents: 251 in the target group that were clients (including dropouts) of LOK in 2011 and 250 clients in the control group who received a housing loan between September 2014 and February 2015.

Main findings

In the general analysis that includes all respondents there are few significant findings for the different output, outcome, and impact indicators. The study does not confirm all expectations that were formulated in the theory of change. The reasons for this unexpected result might be twofold. First, the nature of the control group prevents us to reveal short-term effects. Since the control group already received the housing loan, they were already affected by the products and technical assistance provided by LOK, which made it impossible to draw conclusions on outcome level. This in turn made it impossible to draw conclusions on outcome level indicators. Furthermore, even though the expected impacts are long-term effects, the nature of the control group also influences the magnitude and direction of the measured impacts. Second, the impact assumptions underlying the theory of change might potentially be overly optimistic. However, the low number of significant impact findings is in line with other international studies on the effects of microfinance (e.g. Banerjee *et. al* (2014)), which show more nuanced effects. Nevertheless, this study provides some interesting results on the housing loan products and technical assistance of LOK that can help the organisation to learn and further improve its products and services.

Based on the statistical analyses, this study found that **LOK's clients have a positive perception of their house**. Both the target and control groups show high values on the perception of housing indicator, with no significant difference between the groups. Additionally, no impact is found **on environmental outcomes**. It might be the case that the control group scores as high as clients who received the loan 3-4 years ago for the reason that upon receiving the loan they immediately realized some energy saving improvements. Whether or not the outcomes of both groups are relatively high compared to people without a housing loan can only be verified by adding a control group that has not received a housing loan yet.

As described in the theory of change, the changes in clients' perception and environmental outcomes are assumed to result in more sustainable livelihoods, improvements in health, and an increased level of security. In this study we found that clients who **received advice on construction priorities** show an **increase in income**. This holds for both the perceived change in income and the increase in monetary income indicators. Furthermore, **no significant impact is found on the health indicators** even though a positive effect was expected based on the theory of change. **Female clients are more confident to cope with future disasters**, showing a higher confidence level in coping with theft, state action, and fire. According to the theory of change, more sustainable livelihoods, improvements in health and more secure households contribute to the improved wellbeing and happiness of clients. More prosperous, healthier, and safer people will tend to be happier and evaluate their lives higher. This study reveals a **significantly positive impact on the self-esteem scale** for the target group. This implies the self-worth of clients in the target group is higher than clients in the control group. Moreover, the scores on **wellbeing and life evaluation are encouragingly high** for both the target and control groups. Clients in the target group are slightly satisfied with their lives and score a 7.4 on the wellbeing scale. There is no significant difference between the two groups on these two indicators. A remarkable result is that clients with an **energy efficiency loan** show a **negative impact on the life evaluation scale**.

Recommendations

- It is recommended that LOK organizes a reflection session on the findings and considers developing specific actions in terms of further studies or possible program adjustments to strengthen positive impact and analyze potential causes for the observed lack of, or even negative, impact.

- Future qualitative research could assess the quantitative outcomes and create the context required to properly interpret some of the unusual findings of this study. For example, through in-depth interviews LOK might find an explanation for the lack of impact on health indicators or for the negative impact on life evaluation for clients with an energy efficiency loan.

- Future quantitative research could be focused on defining a more robust control group to ensure that the findings can be attributed to the housing loan products and TA of LOK. This control group could consist of people who are interviewed within a week after the loan is assigned.

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ANNEX: METHODOLOGY

This study uses a quantitative *ex post* impact evaluation method. The methodology was developed to give a strong voice to clients of LOK. For this reason data is collected at client level by asking clients about changes in their lives. The questions are based on a theory of change. The theory of change was discussed and finalised during a workshop with LOK and HFHI. Based on the theory of change, the most relevant questions were defined for this impact study.

COUNTERFACTUAL

This impact evaluation assesses the difference in outcomes on key impact variables between clients of LOK and a control group to identify impact. The control group was used as a proxy for what would have occurred had there been no intervention (also called counterfactual). Without information on the counterfactual, the next best alternative is to compare the outcomes of participating respondents with those of a control group that did not participate. In doing so, it is important to select a control group that is very similar to the target group. This ensures that the target group would have had outcomes similar to those in the control group in absence of the intervention. To prevent a bias in the outcomes, the selected control group should be (1) close to identical to the beneficiary group, (2) if they received the intervention, respond to the intervention in a similar way as the target group, and (3) be exposed to the same set of externalities as the target group (Karlan, 2001).

The disbursement of housing loans is a quick process, which results in a rather short waiting list for housing loans. In this study we therefore used clients who received a housing loan from LOK no longer than six months ago as a control group. This has direct implications for the interpretation of the results, as it is no longer possible to measure the expected short-term impacts and it complicates the analysis of long-term impacts.

QUANTITATIVE RESEARCH & SAMPLING

Quantitative research attempts to find causal relations between different variables in the research environment (Scrimshaw, 1990; Ellis, 2000). In this study we used a multiple choice questionnaire, respondents were asked to rate and comment on different aspects of their livelihood.

In order to obtain meaningful results, it is important to properly draw a sample. Only then can findings be generalized to the target population (representativeness of the clientele) and are risks of outcome biases minimized. It is therefore crucial to ensure that answers to the questions are given by a sufficient number of clients and that there is no bias in the selection of respondents.

To assess the impact of microfinance over 3 to 4 years, we have defined "people who became a housing loan client of LOK in 2011" as the target population. The sampling procedure included five measures for composing a valid sample and minimizing biases in the sample selection:

(1) A *control group has been selected to overcome the problem of the counterfactual;*

(2) *The characteristics of the people in the target group and the control group are similar.* The control group consists of people who received a housing loan from LOK no longer than six months ago. By composing the control group in this way we prevent any selection bias towards people who are, for whatever reason, more interested in housing loans;

(3) *Respondents are selected using simple random sampling.* Simple random sampling is used to select the respondents for the target and control group, where each person had the same probability of being selected (minimizing outcome bias). The sample of the target group was selected from a list of all clients receiving a housing loan in 2011 and the control group sample was selected similarly from a list between September 2014 and February 2015;

(4) *Dropouts are included in the target group sample.* Dropouts are the people who were clients in 2011, but no longer are. Dropouts include clients who repaid their housing loan and therefore

voluntarily are not a client anymore as well as forced dropouts of clients who did not repay their housing loan. By including dropouts, we control for the incomplete sample bias, since dropouts presumably were affected differently, from those who are still clients (Karlan, 2001). Moreover, including dropouts controls for the fact that there will likely also be dropouts among the future clients.

(5) *The selection criteria for the target and control group are similar.* LOK applies three selection criteria for clients obtaining for a housing loan: (a) the level of income of the respondent should be between 500 BAM (USD 290) and 2.000 BAM (USD 1.160) (b) the amount of monthly repayment for the housing loan should be maximal 50% of the respondent's monthly income and (c) the need for house improvements has been demonstrated and justifies the loan. These selection criteria did not change in the past five years and therefore the selection criteria for the target and control group are similar.

This study is based on a sample size of 501 respondents (N=501). In order to create maximum statistical power we have selected almost the same number of respondents in the target group and control group: of the 501 respondents 251 participants were from the target group and 250 participants were from the control group.

DATA COLLECTION

In order to assure high quality and reliability of the data we have developed a questionnaire, which primarily consists of multiple choice questions. An app is used to collect the data on a tablet, which is a cost-efficient and reliable way of gathering data. The app contains a number of built in quality checks to reduce the risk of incorrect data entry.

The interviews were conducted by 11 local loan officers. Appointing local loan officers as interviewers had the advantage that they speak the local language and could verify the answers with reference to the local context. Clients would therefore be more inclined to provide truthful information, although there is a risk that clients provide socially desirable answers to gain positive treatment from LOK in the future. Additionally, to improve the reliability of the answers, we hired a local consultant to do quality checks during fieldwork (e.g. to check if the answers were interpreted correctly).

The local consultant trained the interviewers in interview techniques. During the extensive training all interviewers received a tailor-made manual with explanatory notes for each question; regarding the interpretation of the response categories, tone of voice, and instructions on how to deal with potential cultural sensitivities. This contributed to a homogeneous and reliable process of data collection.

DATA ANALYSIS

Before we started analyzing the data we did some quality checks by crosschecking different answers to verify if values were realistic when compared to other questions. In case of an unrealistic answer (e.g. the number of people working in the household is higher than the total number of people in the household) we have not included the answer in our analyses. In addition, we have aggregated some data to create more meaningful variables. We have composed an asset index and various scales as a quantitative indicator for a number of impact indicators. The composed index and scales are non-weighted. We then simply sum up the scores on different indicators. This method has the virtue of simplicity, but also has the limitation of assigning equal weight to all indicators. The statistical program STATA 13 was used to make the calculations.

We used the Propensity Score Matching (PSM) method to calculate impact and used a control group that is as similar as possible to the target group in terms of *general (or observable)* characteristics. The idea of PSM is to find individuals in a large group of nonparticipants who are *observationally similar* to participants in terms of characteristics not affected by the program (this can include pre-program characteristics, since those are clearly not affected by subsequent program participation). Each participant is matched with an observationally similar non-

participant (Khandker *et al.*, 2010). In this study the following general characteristics are used to match the control group with the target group: sex, location, age, level of education, marital status, ethnicity, regional office and household size.

STUDY LIMITATIONS

The impact is measured by comparing the results of LOK's clients with a control group. In this study we used clients who received a housing loan up to six months ago as a control group. Ideally, we would have had a control group that consists of future clients; i.e. people who are on the waiting list for receiving a loan in nearby future. However, due to the short processing time of housing microfinance this was not possible since the waiting list was very short. We had to add very recent clients to the control group (people who have been a client for no longer than 6 months). As a consequence, at the time of the survey, these clients had received the loan and technical assistance. **Table 21** gives an overview of the disbursement date of housing loans in the control group. The interviews were conducted in March 2015, so most respondents (over 90%) received a housing loan 4-6 months ago. Since this is a quick process, the outputs and outcomes as defined in the theory of change, could already be achieved by the control group. Therefore, in this study we expect not a big difference between the target group and control group with regard to the outputs and outcomes. However, we do expect higher results of clients at impact level because these are long-term effects which are not expected to have affected the control group yet.

Table 21: Overview of disbursement date housing loans in control group

Date received	Frequency	Percentage
September 2014	69	28.4
October 2014	94	38.7
November 2014	62	25.5
December 2014	13	5.4
January 2015	3	1.2
February 2015	2	0.8

ETHICS

For Oxfam Novib research ethics are of the utmost importance. We emphasized that participation in the study was completely voluntary. Before each interview started, room was created to turn down participation. In order to allow people to turn down participation, a reserve sample list was composed for each region. Furthermore, all interviewers guaranteed anonymity and confidentiality. At the beginning of the interview it was explained that the research is for scientific purposes only. Finally, working with a control group raises ethical issues. As a solution, in this study the control group existed of clients who recently received a housing loan.

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ABOUT THE REPORT

This report is the result of a joint impact evaluation project initiated by **Habitat for Humanity International** and conducted by **Oxfam Novib**. This impact report is written to contribute to increased transparency on effectiveness, to support accountability, and to improve by taking the impact results in strategic decision-making. They do not necessarily reflect Oxfam's or Habitat for Humanity International's policy positions. The views expressed are those of the author and not necessarily those of Oxfam and Habitat for Humanity International.

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