

2019 NURU KENYA IMPACT REPORT



RAY MARSHALL CENTER FOR THE STUDY OF HUMAN RESOURCES

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FEBRUARY 2020

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This report is commissioned by Nuru International



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EXECUTIVE SUMMARY

In 2008, Nuru Kenya (NK) set out to provide meaningful choices that empower communities to lift themselves out of poverty in a sustainable way. The integrated Nuru model seeks to address three key areas of need: 1) food insecurity, 2) inability to cope with economic shocks and 3) unnecessary disease and death. From inception, NK developed the Agriculture, Financial Inclusion and Healthcare impact programs as solutions for these areas of need by using a co-creative program planning process.

The programs evolved over the years based on the data and lessons learned. Starting in 2019, NK closed the Education Program, while Agriculture, Financial Inclusion, and Dairy combined to make the Rural Livelihoods Program. This report reviews Nuru Kenya's impact results from baseline collected in 2018 to the first follow-up in 2019 for Rural Livelihoods and Healthcare. To track program impact, the NK Monitoring and Evaluation (M&E) team collects yearly evaluation data to support all data-driven decision making. Since 2016, Nuru International has partnered with the Ray Marshall Center (RMC), an applied research and policy institute, to better understand program outcomes and impacts.

Nuru Kenya's **Rural Livelihoods Program** aims to increase crop and dairy yields, farm income, household savings, and build strong farmer organizations. Participant households are all members of cooperatives, through which they receive services. Agriculture and dairy inputs are disbursed on loan and coupled with training and extension services. The provision of quality farm inputs on loan are linked to household financial savings behaviors. As members of cooperatives, households repay their loans and are better able to cope with economic shocks as on-farm income increases. Key findings of the 2019 impact report include:

- Nuru farmers saw a 98% increase in agriculture yield since baseline, which fully met the program performance target set.
- The combined income for Nuru farmers in 2019 was \$400 USD, which is \$165 USD more than was generated in 2018.

With the intent of improving maternal and child health, the Nuru Kenya **Healthcare Program** works with Nuru farmer households to adopt healthy behaviors via cooperative care groups. The chosen health promotion behaviors have been proven to decrease unnecessary disease and death, particularly for mothers and young children. Behavior change is supported by tailored interpersonal communication within care groups. Adoption of healthy behaviors continues to show progress and positive outcomes.

The key finding of the 2019 impact report is that the Healthcare Program intervention group experienced a 25% reduction in under five child mortality, which is equal to saving 21 lives.

RURAL LIVELIHOODS

INTRODUCTION

The full suite of Rural Livelihoods (RL) activities included in this report represent the Agriculture and Dairy Programs. Interventions under RL aim to equip NK farmers with the best agronomic skills such as utilization of quality inputs and best practices in crop and dairy management to increase yields, increase income, and encourage savings to better cope with shocks. Increased production is also expected to result in the availability of surplus yields in households, which can then be sold to increase income thereby reducing poverty levels. These activities build the adaptive and absorptive capacities that contribute to the resilience of communities to shocks and stressors ensuring they can maintain their identity in the face of a crisis.

Throughout the season, farmers receive technical assistance from experienced NK field officers as well as periodic farm visits to ensure they are able to follow best practices and to monitor adoption. Field officers regularly join cooperative meetings and trainings in order to build trust and solidarity with cooperative members. Farmers finish repaying their loans to the cooperative contributing to the cooperatives revolving fund (working capital) held in a formal bank account. They also aggregate their surplus produce for commercialization and have successfully fulfilled sales contracts with local and regional buyers.

OBJECTIVE

This report integrates the impact results of all agriculture and dairy activities at NK. The following presentation of individual-level data provides an update on the progress Nuru farmer households are making towards improving crop production, dairy production, and increasing household income. It is representative of the Kuria East sub-county in Migori county and the progress made by farmers in this region over the past 3 to 5 years. The dairy program was initiated in 2017 in Kuria East, while the diversified crop intervention with maize, sorghum, and millet was initiated in 2015.

The Nuru Monitoring and Evaluation (M&E) team supports this work by conducting an annual assessment (Table 1) towards the evaluation question: *What is the impact of the Nuru Kenya Rural Livelihoods Program?*

Table 1. Rural Livelihoods survey timeline and sample sizes

Study Group	Sample Size: Agriculture	Sample size: Financial Inclusion	Sample size: Dairy	# of Enumerators	Data collection and QC dates
Nuru	516	671	671	15	Nov 4 –29, 2019

METHODOLOGY

The 2019 data analyzed in this report was collected in October and November 2019 toward the end of the rainy seasons in southwestern Kenya. The NK M&E team hires and trains a team of temporary enumerators to collect impact data on the following indicators using QuickTapSurvey on mobile phones:

- Crop equivalent yield
- Dairy yield and best management practices
- Livelihood diversification income (combined income generation)

Crop Equivalent Yield

Nuru farmers have access to mixed seed packages for their crop loan packages including maize, sorghum, millet, ground nuts, and/or beans. For purposes of comparability across Nuru farmers and versus baseline, Nuru employs a single composite indicator of crop performance: Crop Equivalent Yield (CEY). The CEY calculation converts the performance of select crops into one standard unit of maize kilograms per acre. This is done using the farm gate prices per kilogram of, for example, haricot beans and maize. Finally, M&E transforms all crops into maize via the price ratios of haricot beans versus maize. One way to interpret this calculation is to ask: *If farmers only grew maize this season, how much maize would they have produced?*

In 2017, there was a methodological change in measuring farmers' land sizes. Previously, the M&E team paced each field to obtain crop areas.¹ As Nuru farmer numbers increased, pacing became prohibitively time-intensive and expensive for the small NK M&E team. To address this, the M&E team stopped pacing Nuru farmers and instead uses loan package details to calculate land sizes based on the

¹ Pacing methodology measures the distance in a field.

amount of seed provided and seed spacing. Since Nuru farmers are trained on and apply a standard planting spacing, calculating cropped area based on the planting rate of seeds per area was determined to be an equivalently precise method to pacing.

MONITORING

In addition to yearly impact evaluations, the NK RL team collects monitoring data throughout the year (Table 2). While evaluations focus on a sample of farmers, program teams monitor the entire Nuru farmer population. The monitoring data provides NK country teams with quarterly data for real-time data-driven decision making.

Table 2. 2019 Monitoring Results

Indicator	Performance ²	Target	Actual
Number of Nuru farmers (active cooperative members)		2,200	1,919
Number of households enrolled in dairy program		600	489

RESULTS & DISCUSSION

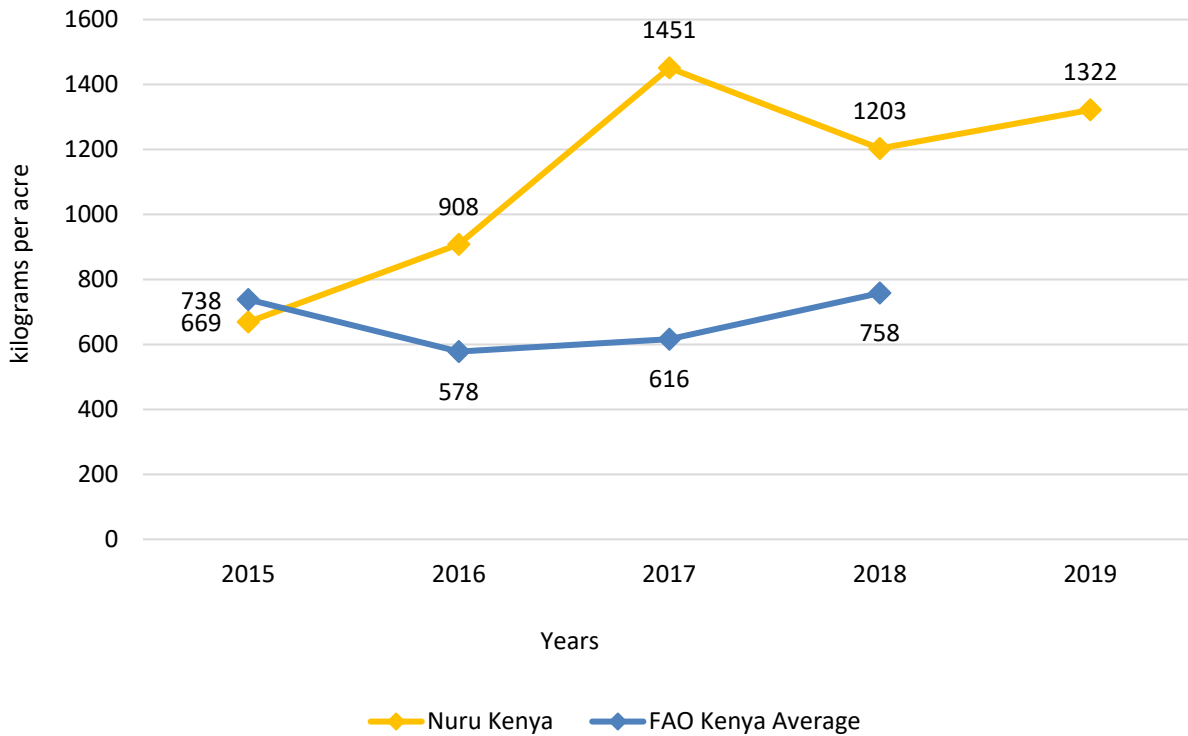
Crop Yield³

In 2019, Nuru farmers experienced increases in their crop yields by 98% over baseline (Figure 1) exceeding the annual target of 32%. As can be seen in figure 1, Nuru farmers have significantly surpassed the national yield average for maize production in Kenya as reported by the UN Food and Agriculture Organization. Most importantly, Nuru farmers have maintained the high yields for three consecutive years which translates into steady and significant income increases for their households to advance on-farm production into higher value products like dairy and oilseeds.

² The indicator is considered fulfilled if it achieves 75% of the target.

³ Agricultural yield findings from 2015 through 2018 were identified from Nuru's internal analyses, prior to RMC's analysis.

Figure 1. Kg/acre CEY over baseline and compared to FAO, 2015-2019



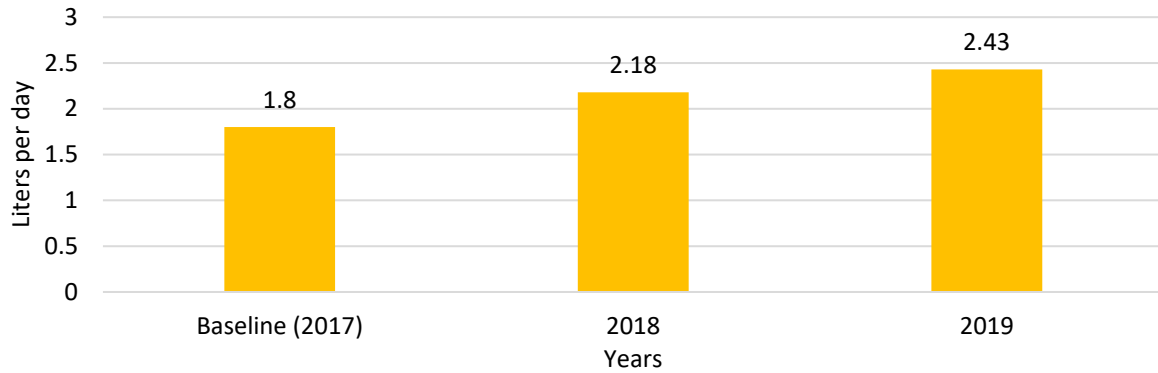
Dairy Yield⁴

The Nuru Kenya Dairy Program aims to diversify the livelihoods of Nuru farmers and develop sustainable production and marketing systems for milk in Migori County. In 2019, the dairy program expanded from 9 cooperatives to 10, and reached 489 farmers. The yield of milk per cow per day in 2019 was found to be 2.4 liters as can be seen in figure 2. This translates to a 35% increase from the 1.8 liters baseline. Milk yields have steadily increased for Nuru farmers since the inception of the program in 2017 with a 21% increase in 2018 and the 35% increase in 2019 over baseline. This translates to an extra 67 liters of milk in 2018 and 110 liters of milk in 2019 per cow per year⁵. A significant increase in protein rich milk is now available for household consumption thus improving nutrition and income generation opportunities for Nuru-supported households.

⁴ Dairy yield findings from 2017 through 2018 were identified from Nuru's internal analyses, prior to RMC's analysis.

⁵ Assumes a 175-day average lactation period per cow annually

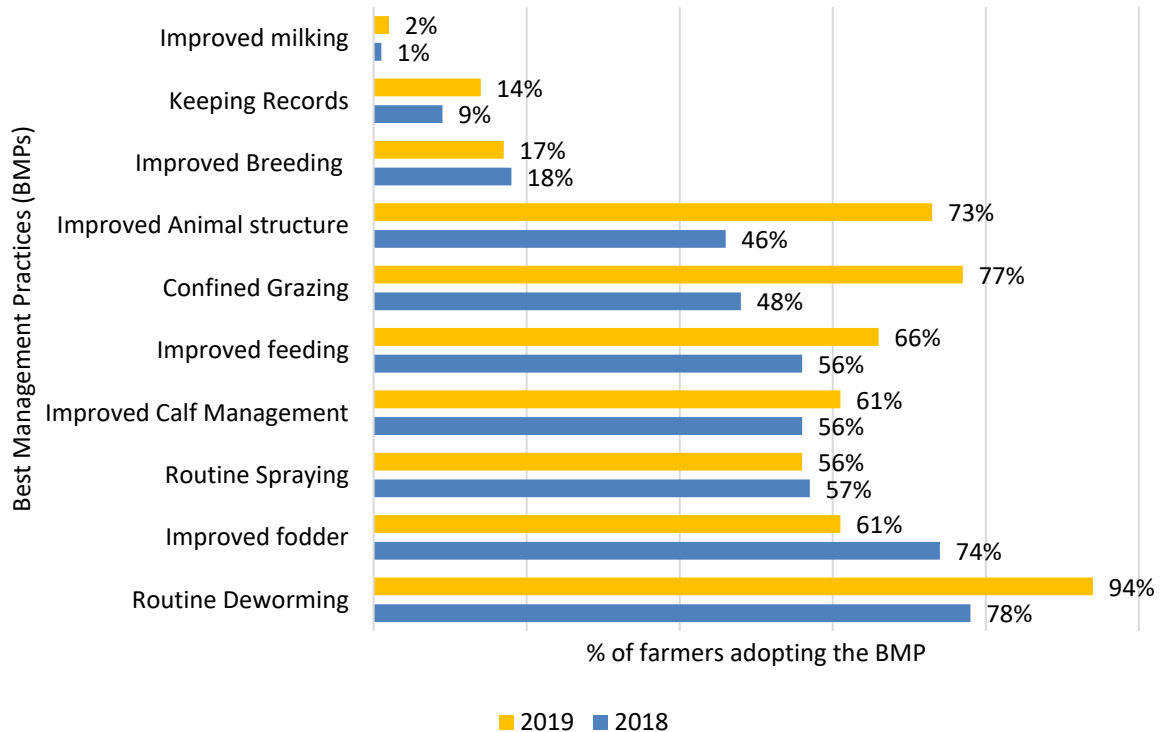
Figure 2. Milk yield per cow/per day, 2017-2019



Dairy Best Management Practices

Nuru Kenya set an ambitious target for behavior change in year two at *75% of farmers adopting a minimum of 60% of ten improved dairy management practices*. Against this target, 63% of farmers adopted at least 60% of the best management practices. This is an improvement on the 2018 adoption of 54% of farmers adopting 50% of the same best management practices. Moreover, the adoption rates for individual best management practices increased for 7 out of 10 practices from 2018 to 2019.

Figure 3. Best Management Practice adoption 2018 and 2019

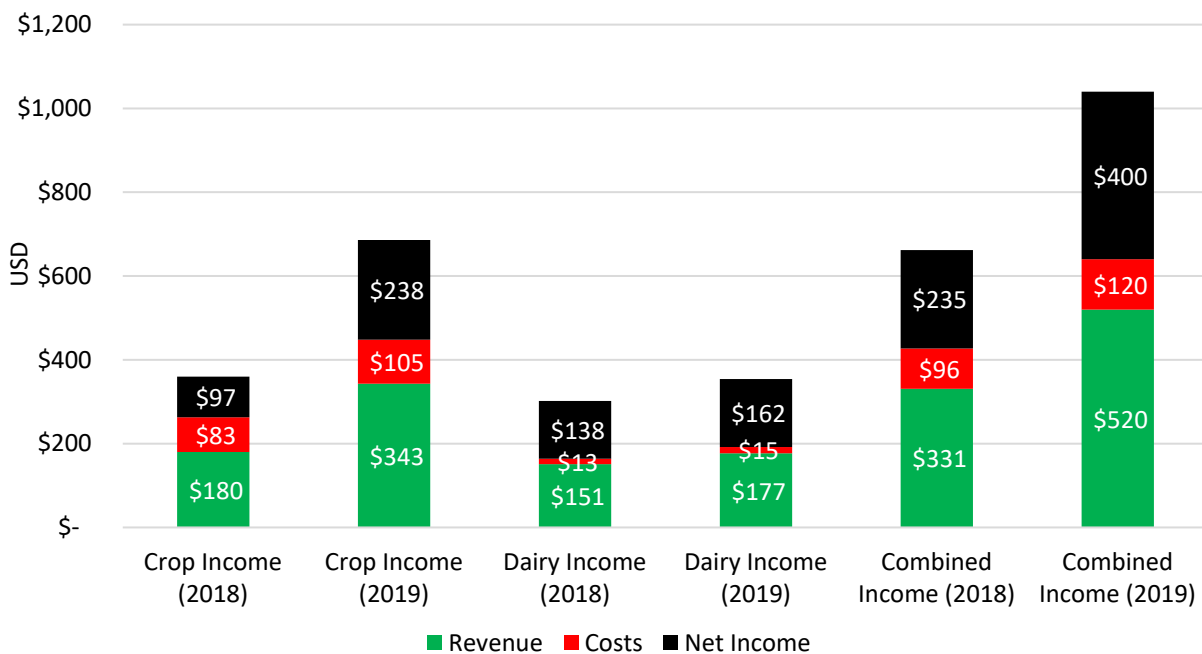


The adoption of improved management practices in livestock production is a behavior change metric. Best management practices are one of the three key components of measuring sustainable productivity. Yield improvements and income generation are the other two components. Assisting communities on their journey through the stages of change takes time. It can be met with environmental and social barriers to change. Barriers include extreme weather events, pests and diseases, and even entrenched social constructs (e.g. risk aversion to artificial insemination). However, as farmers begin to see the gradual benefits of improved genetics and animal health practices in the form of yield increases the rate of adoption will increase.

Combined Income Model

The combined income model found in Figure 4 is representative of the livelihood diversification activities implemented by Nuru Kenya in service of farmer households. The model is indicative of the net income that a farmer household achieves when investing in the full suite of rural livelihoods activities provided by Nuru. The net income is calculated by subtracting the financial investment of the farmer (costs) from the overall revenue generated from the commercialization of the crops and milk.

Figure 4. Combined income model results (2018-19)



The extra household income from dairy is a very important impact to highlight as it provides a smoothing effect on income during periods of extreme decline in maize prices as was experienced in 2018. Though maize yields were high for Nuru farmers in 2018 the maize markets in Kenya were negatively affected by poor national policy and governance. The return of more stable maize prices in 2019 coupled with a marginal increase in dairy income increased farmer household income by 70% compared to 2018. The 70% income increase generated an extra \$165 USD of income in 2019 for households that produced the diversified crop package and participated in the Nuru Kenya dairy program.

CONCLUSION AND RECOMMENDATIONS

Overall, Nuru Kenya farmers experienced positive impact in 2019 as it relates to combined income generation and maize yields. Incremental improvements were made in milk yield and the adoption of best management practices for dairy cow management. In short, Nuru farmers have \$400 USD of income to employ toward new opportunities on-farm, off-farm and to use for healthcare and education needs within their households, which is \$165 USD of extra income compared to 2018.

The dairy value chain presents a stabilizing and high value opportunity for Nuru farmers and their cooperatives with even marginal gains in milk yields. The next objective in 2020 is to increase milk yields even more per cow per day and to improve the cold supply chain of milk to Nuru-supported cooperatives. This effort will stabilize prices annually for farmers and be the first step toward creating a thriving dairy market ecosystem in Migori County.

HEALTHCARE

INTRODUCTION

With the intent of improving maternal and child health, the NK HC Program works with Nuru farmer households to promote the adoption of healthy behaviors. The chosen healthy behaviors have been proven by technical research to decrease unnecessary disease and death, particularly for mothers and young children. The NK HC Program utilizes evidence from the World Health Organization, which identifies the need to focus on maternal and child health.⁶ USAID's best practices on how to efficiently and effectively improve maternal and child health through behavior change also guides the HC Program implementation.⁷

Nuru Kenya delivers healthcare services via tailored interpersonal communication and the cooperative care group model. The tailored interpersonal communication approach employs observation and in-depth discussions to understand the specific needs of each household and where they fall in the stages of change continuum (pre-contemplation, contemplation, preparation, action, and maintenance phases). Small women's groups and elected volunteer leaders are trained to provide Nuru family households with information about maternal and child health behaviors and ways to put them into practice.

OBJECTIVE

The Nuru Monitoring and Evaluation (M&E) team supports this work by conducting an annual assessment towards the evaluation question: *What is the impact of the Nuru Kenya Healthcare Program on Nuru farmer households?* To this end, NK HC impact is assessed by calculating the percent change in under-five mortality applying the Lives Saved Tool (LiST).

⁶ WHO. Children: reducing mortality. Updated October 2017. Retrieved 2018 June 25 from <http://www.who.int/mediacentre/factsheets/fs178/en/index.html>

⁷ USAID: Acting on the Call: Ending Preventable Child and Maternal Deaths, June 2014; Technical Approaches to Proven Interventions by USAID, Ensuring Healthy Behaviors p107-110. Retrieved 2017 January 17 from https://www.usaid.gov/sites/default/files/documents/1864/USAID_ActingOnTheCall_2014.pdf

METHODOLOGY

Lives Saved Tool

This report includes calculations from the Lives Saved Tool (LiST) for the first time. LiST is modeling software designed to estimate the impact of maternal and child health interventions on mortality in low and middle-income countries.⁸ The tool aggregates the effectiveness of NK HC's indicators (Table 3) based on peer-reviewed literature and the software's mathematical algorithm. After inputting NK's indicators, the tool calculates an estimated percent reduction in under-five mortality.⁹

Table 3. NK HC indicators mapped to LiST inputs

NK HC Indicators	LiST inputs
HHs with a functional Latrine	Improved sanitation - Utilization of latrines or toilets
HHs washing hands at appropriate times	Hand washing with soap
HHs sleeping under LLINs	ITN/IRS Households protected from malaria
Active pregnant women on track with 4 ANC visits	Iron supplementation in pregnancy
	Multiple micronutrient supplementation in pregnancy
Deliveries in Health Facility	Skilled birth attendance & Health facility delivery
	Health Facility Delivery
Newborns immediately breastfed	Breastfeeding <1 month
Women exclusive breastfeeding	Breastfeeding 1-5 months
Children 6- 23 months on appropriate complementary feeding	Complementary feeding - education only
Newborn on track with Immunization (0-11)	BCG
	Polio
	Pentavalent (Includes DPT, H.Influenzae type B & HepB)

⁸ <https://www.livessavedtool.org/>

⁹ LiST was developed as part of the Lancet's Child Survival Series in 2003. In 2008, the tool was further developed by the Child Health and Epidemiology Reference Group with funding from the Gates Foundation. It was then shifted into the public domain as part of the Spectrum suite and is maintained by the John Hopkins School of Public Health. LiST estimates are utilized in reporting by USAID's Acting on the Call, UNICEF, Save the Children, and PATH, as well as in peer-reviewed journals.

<https://www.livessavedtool.org/list-in-reports> <https://www.livessavedtool.org/list-in-peerreviewed-journals>

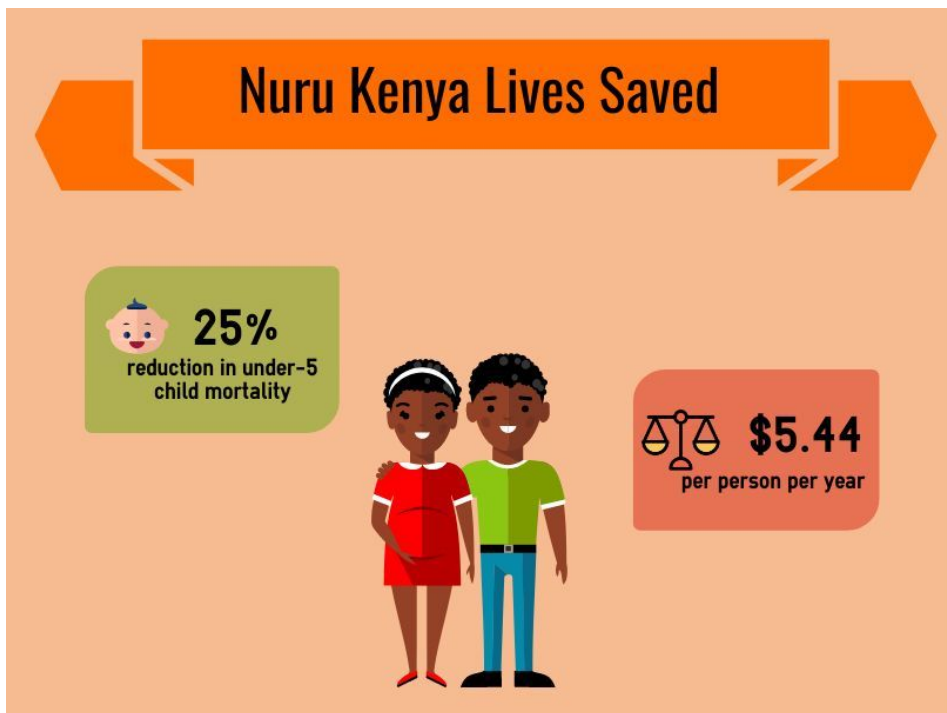
MONITORING

The NK HC team collects monitoring data (Table 4) throughout the year. In 2019, the HC program successfully met all targets.

Table 4. 2019 Monitoring Results

Indicator	Performance ¹⁰	Target	Actual
Percent of health groups meeting monthly		70%	67%
Percent of farmer families delivering children in a health facility		95%	100%
Percent of farmer families drinking safe water		85%	97%

RESULTS & DISCUSSION



Lives Saved Tool

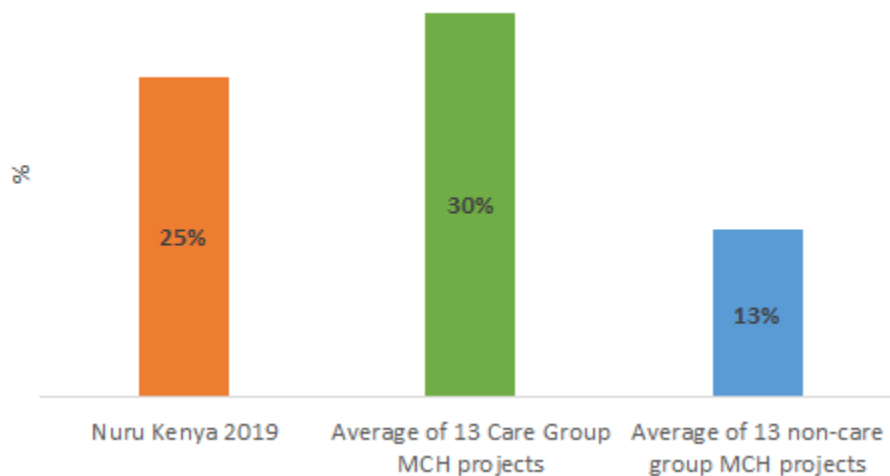
In 2019, LiST calculated Nuru's levels of behavior change created a 25% reduction in under-five child mortality. Over time, the rate of change will slow as this population continues to increase their

¹⁰ The indicator is considered fulfilled if it achieves 75% of the target

healthy behavior adoption rate. The main driver of this lives saved estimate is the delivery in a health facility behavior. All the behaviors work together to improve MCH and are dependent on one other for success.

Another useful feature of LiST is that it allows for comparisons between organizations working on maternal and child health interventions. An analysis of a peer-reviewed journal article by Perry¹¹ about the effectiveness of the Care Group method demonstrated that the average Care Group MCH intervention saw a 30% reduction in under-5 mortality, while the non-Care Group MCH interventions were found to have an average 13% reduction in under-five mortality (Figure 5). The cost per life saved in 2019 as calculated with the total care group programming cost is \$54,166 and the cost per person per year is \$5.44.

Figure 5. Estimated percent reduction in under-five mortality vs benchmarks¹²



¹¹ Perry, H., Morrow, M., Davis, T., Borger, S., Weiss, J., DeCoster, M., ... & Ernst, P. (2015). Care Groups II: a summary of the child survival outcomes achieved using volunteer community health workers in resource-constrained settings. *Global Health: Science and Practice*, 3(3), 370-381. <http://www.ghspjournal.org/content/3/3/370>

¹² Care Groups II: A Summary of the Child Survival Outcomes Achieved Using Volunteer Community Health Workers in Resource-Constrained Settings. Henry Perry, Melanie Morrow, Thomas Davis, Sarah Borger, Jennifer Weiss, Mary DeCoster, Jim Ricca, Pieter Ernst. *Global Health: Science and Practice* Sep 2015, 3 (3) 370-381; DOI: 10.9745/GHSP-D-15-00052

CONCLUSION AND RECOMMENDATIONS

The NK HC Program successfully achieved all its program performance metrics as described by its monitoring and effectively reduced under five child mortality by 25%. The primary recommendation for the intervention program is to focus on sustaining impact while decreasing costs. Both of these outcomes are expected to take place as NK incrementally transitions activities to cooperative-based care groups, rather than paid NK staff.