

# FINAL TECHNICAL REPORT / RAPPORT TECHNIQUE FINAL ANNEX 13B- EXTERNAL ADVISORY BOARD FF4F UPDATE

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IDRC Grant / Subvention du CRDI: 107982-001-Scale Up of Homestead Food Production for Improved Nutrition in Cambodia (CIFSRF Phase 2)

# [FF4F Research and Scale-up Update]

[October 10<sup>th</sup>, 2017]

“Scale up of Homestead Food Production for improved household food security and nutrition in Cambodia”

FISH ON FARMS PHASE 2:

FAMILY FARMS FOR THE FUTURE (FF4F)

IDRC Grant Agreement No. 107982-002

Helen Keller International and University of British Columbia



# TABLE OF CONTENTS

<b>1. Introduction.....</b>	<b>1</b>
<b>2. FF4F Research Milestones.....</b>	<b>1</b>
2.1 Gender Analysis .....	1
2.2 Baseline survey .....	2
2.3 Monthly surveillance and 24-hour dietary recalls .....	2
2.4 Marketing tools pilot test .....	2
2.5 Quasi-experimental Aquaculture Trials .....	3
<b>3. Scale-up milestones .....</b>	<b>3</b>
<b>4. Annexes .....</b>	<b>5</b>

# 1. INTRODUCTION

Helen Keller International (HKI) and the University of British Columbia (UBC) in collaboration with Ministry of Agriculture, Forestry and Fisheries (MAFF), through funding from the Canadian International Food Security Research Fund (CIFSRF), are conducting a two-phase research and development project with the overall aim to improve household food security, nutrition, livelihoods and women's empowerment in Cambodia, through sustainable models of Enhanced Homestead Food Production (EHFP), using low environmental approaches. During the first phase, Fish on Farms, we completed a 30-month cluster-randomized control trial (RCT) testing the efficacy of plant-based EHFP with or without aquaculture at improving nutrition and food security outcomes. The second phase, “Scale up of Homestead Food Production for improved household food security and nutrition in Cambodia”, otherwise known as Family Farms for the Future (FF4F), will build upon successes and lessons learned from phase one in order to refine, adapt and scale up EHFP methodologies and technologies and determine low-cost, scalable and sustainable solutions to food and nutrition insecurity in Cambodia and the larger region. The key objectives of the FF4F project are as follows:

- To refine the technologies, methodologies and practices for EHFP developed and tested in Fish on Farms and adapt them for different geographic regions, contexts and scale;
- To develop and evaluate approaches for social impact investment models and training by women and men farmers to expand the reach of EHFP using research results from Fish on Farms.
- To scale-up optimal models of HFP with local and national governments, local and international NGOs, private enterprise, and research and academic institutions; and
- Use the evidence base to inform The National Strategy for Food Security and National Agriculture Policy and contribute to nutrition strategies and policies supported by national and international stakeholders.

## 2. FF4F RESEARCH MILESTONES

### 2.1 GENDER ANALYSIS

An in-depth gender analysis using participatory rural appraisal methods was conducted in September 2015 in all four project areas: Kampot, Kampong Cham, Prey Veng and the peri-urban district of Khan Meanchey in Phnom Penh. This analysis was commissioned to better understand intra-household decision-making processes related to production, income management and women's mobility in addition to the social determinants of food security and infant and young child feeding practices (IYCF). In-depth interviews with men and women and, group activity sessions designed to explore traditional gender roles and social customs, revealed context-specific ways in which gender influences household decision-making in spending, agricultural production and food consumption. Key findings revealed from the analysis included gender-mediated disparities in: feeding priorities, control of assets, decision-making, domestic violence, household division of labour, community participation and, social judgements made about women. Recommendations based on these findings were then incorporated into the package of interventions in HFP designed to enhance women's knowledge and practical skills in production and income generation thus mitigating some of the structural factors limiting women's agency. Additionally, insights from this analysis were also incorporated into the Cambodia-specific adaptation of the Nurturing Connections gender

transformative tool which is currently being used to facilitate discussions with influencers at the community level and at the household level in joint sessions. See **Annex 1** for the full gender analysis report.

## 2.2 BASELINE SURVEY

After several rounds of targeted recruitment, 4600 households from 233 villages with one VMF per village were purposefully selected to participate in the project. The Baseline survey was then conducted on a sub-sample of the larger population from March 26-April 10, 2016 in ten districts spread throughout the four project areas. In contrast to the recruitment strategy, the sample size for the baseline survey was calculated to capture a change of 10 percentage points between baseline and end-line based on the following assumptions: I) baseline values of 50%; II) a Design Effect of 2; III) 80% power and an alpha 0.05; IV) finite population adjustment to account for the fact that the sample (n=1087) is greater than 5% of the study population (n=4600). The survey captured several dimensions of rural livelihoods to better understand current knowledge, attitudes and practices pertaining to: HFP; women's empowerment; water, sanitation and hygiene; IYCF; household food security status; access to and utilization of credit services; and anthropometric measurements of women of reproductive age and children under five years of age. See attached **Annex 2** for the full baseline report.

## 2.3 MONTHLY SURVEILLANCE AND 24-HOUR DIETARY RECALLS

The surveillance trial nested within the larger study is currently underway in Kampot province where (n=654) households will be followed for 24 months to assess the impact of the project on household food production and dietary intake of women and children throughout a full agricultural cycle. Recall that in year one, although EHFP was delayed for the control group (n=334), monthly data was collected on production/income earned from HFP and, dietary intake data was collected at two time points (once in peak agricultural season and once in the lean agricultural season). Detailed data on production specifically, EHFP practices, inputs sourced and used, and income earned from sale of surplus goods was collected. This production data coupled with corresponding market surveys that monetize outputs and capture variability in market behaviour will ultimately allow us to determine the cost-effectiveness of EHFP and, establish a clear evidence base for policy implications. Due to time constraints however, we were only able to collect nine rounds of monthly production/income data and corresponding market price information for HFP outputs amongst the control households during the past year. Dietary assessments however, were carried out as planned. Both rounds of 24-hour dietary recalls (HDR), in-depth interviews that capture detailed information on all foods and beverages consumed in the preceding 24 hours, were conducted with control households. Data has been cleaned and is currently under analysis at UBC's Center for Outcomes Research and Evaluation. After allowing for a full year of project implementation, data collection has now begun with intervention households (n=325) where 5 rounds of production/income and market surveys have been completed and one round of 24-HDR so far. Once intervention household datasets are complete (expected January 2018), comparative analysis between the two groups will take place where the following outcomes will be assessed: change in mean energy, protein, fat, riboflavin, thiamine, iron, calcium, zinc and vitamin A intake during lean and peak season and; a cost benefit analysis evaluating the incremental net monetary benefit of EHFP. For a detailed explanation of the methodology of the surveillance trial see the attached **Annex 3** for the complete manuscript.

## 2.4 MARKETING TOOLS PILOT TEST

Recall that one of the aims of the FF4F project was to improve the competitiveness of women farmers' HFP outputs through financial and business entrepreneurship training. To accomplish this, a marketing component was included to explore pathways to improve value chain participation and marketing strategies and, expand opportunities for households and VMFs to sell surplus HFP products. Based on evidence gleaned from the market analysis conducted in January 2016, five tools were then created and developed for testing with project households: (I) market information board; (II) price tracking ledger; (III) income-expense record book; (IV) crop profitability chart; and (V) crop selection checklist. The tools were piloted among 10 VMFs and 110 target households in 10 project villages to determine: (I) the feasibility of the tools and strategy; (II) efficacy of the training and support provided; and (III) the utilization, perception, and challenges from using the tools developed. Details on the outcomes of the pilot test can be found in the attached **Annex 4** for the full report.

## 2.5 QUASI-EXPERIMENTAL AQUACULTURE TRIALS

During the Fish on Farms trial, several households faced challenges in maintaining small indigenous species (SIS) fish stocks during the dry season or had considerably lower yields. To address this issue, we sought to identify new methods that would maximize SIS yields and ensure sustainability of production year-round. It has been found that raising fish that occupy different trophic and spatial niches in the same pond increases overall productivity and improves pond water quality due to symbiosis between fish species and their environments; however, the most optimal percentage composition of large fish in small pond polyculture has yet to be determined. Therefore, together with the Fisheries Administration (FiA) within the Ministry of Agriculture, Forestry and Fisheries (MAFF), we have conducted a small quasi-experimental study to test whether: SIS fish yields can be improved with an increase in stocking density of large fish species and; identify the most ideal percentage composition of different large fish species to improve SIS productivity. The study took place September 2016 – April 2017 with a small purposefully selected sample of experienced fish farmers (n=12). The findings of the study are currently under analysis and will be disseminated widely to beneficiaries and relevant stakeholders once the final report is available. See attached **Annex 5** for details of the study protocol.

## 3. SCALE-UP MILESTONES

Throughout the implementation phase, we have employed several strategies to disseminate and facilitate the adoption of optimal models of EHFP to improve food security, nutrition and livelihood outcomes in rural Cambodia. We have employed a multi-pronged approach to engage government and civil society organizations at local, national and international levels, private sector actors, and research and academic communities via high-level knowledge-exchange workshops, conferences, and meetings. As a leader of the civil society network Scaling up Nutrition (SUN) and member of several high-level working groups in Cambodia (e.g. National Nutrition Working Group, Technical Working Group for Agriculture and Water, and Sub-Working Group on Nutrition and WASH among others), HKI has used its position and influence to push EHFP to the center of the policy arena. Specifically, the project team has engaged with high-level officials, including Deputy Prime Minister, His Excellency Dr. Yim Chhay Ly, and continues to provide regular updates and presentations to key government ministries including the Council for Agriculture and Rural Development (CARD), MAFF, Ministry of Agriculture, and Ministry of Health. Furthermore, HKI's strategic partnership with CARD has also facilitated the organization's appointment to a key contributing role in the mid-term review of the National Strategy for Food Security and Nutrition 2014-2018. By

leveraging these key partnerships and networks, we are strongly positioned to contribute to long-term sustainable food security and nutrition policy in Cambodia.

In addition to engaging policy-makers through technical working groups and workshops, we have also shared our findings widely within the development and academic communities through abstract submissions and oral presentations at prominent international conferences such as the Micronutrient Forum, Southeast Asian Vegetable Symposium (SEAVEG), Experimental Biology Conference and finally, the International Congress of Nutrition planned for October 2017. Furthermore, since project implementation we have prepared and submitted six manuscripts for publication in reputable peer-review journals spanning multiple disciplines including public health, nutrition, agriculture, and economics further increasing the visibility of EHFP as a sustainable strategy for food and nutrition security.

At every turn, we have taken steps to document lessons learned from both phases of the project, continuously refining EHFP methodologies, technologies, tools and practices. In this spirit of continuous improvement, a comprehensive knowledge exchange workshop on EHFP best practices is planned for January 2018. HKI Cambodia will host representatives from all HKI country programs (e.g. Nepal, Bangladesh, the Philippines, Vietnam, Indonesia and Myanmar) and share updated technical training guides and tools developed during FF4F including: agriculture technical training guides; health, nutrition and gender equity focused behaviour change communication (BCC) materials and; financial management, entrepreneurship and marketing tools.

Finally, to ensure the sustainability of the project beyond the funding cycle and facilitate the transfer of knowledge and skills on EHFP, health and nutrition, and financial/business management to small-scale farmers, the following processes have been put in place thus far:

1. A total of 232 VMFs have been established (one per project village) which operate as microenterprises providing technical assistance, inputs for agricultural production and demonstrating optimal EHFP practices for surrounding communities;
2. Year-round production and optimal land utilization through improved agricultural practices has been actively promoted through BCC materials;
3. Uptake of new EHFP technologies and methodologies has been leveraged by incorporating indigenous knowledge and traditional agricultural practices to ensure sustainability;
4. Strategic partnership with the microfinance institution AMK has supported the implementation of the cost-sharing model and enabled households to increase investments in EHFP;
5. Promotion of private sector development through creation of 8 fish hatcheries, 4 nursery ponds, 20 commercial processing enterprises and VMFs thus increasing availability of local suppliers of agricultural;
6. Technical training on EHFP has been delivered to community organizations working in agriculture and food security and up-to-date manuals/protocols have been shared to build local capacity.

## 4. ANNEXES

Annex 1: Gender Analysis Report

Annex 2: Baseline Survey Report

Annex 3: Copy of Surveillance Paper

Annex 4: Marketing Tools Pilot Report

Annex 5: Aquaculture Trial Protocol