

Financing Sustainable Development

IDEAS
for **ACTION**
2017

Edited by
Mahmoud Mohieldin
Djordjija Petkoski

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Overview

We are pleased to present the results of the 2017 Ideas for Action (I4A) initiative, a youth competition on financing for development that is jointly organized by the World Bank Group and the Zicklin Center for Business Ethics Research at the Wharton School of the University of Pennsylvania. This is the third year of the competition, and the 2017 winners were selected from among 743 proposals from 118 countries.

We focus on youth for this competition because 3 billion people—43 percent of the world’s population—are under the age of 25. Today’s youth have the most at stake in achieving the 2030 Agenda for Sustainable Development, and its associated Sustainable Development Goals (SDGs). The world’s youth will implement this global agenda, contributing their unique solutions and shaping their future and ours.

The SDGs are a set of 17 global goals that seek to end poverty, promote peace, and preserve the planet for future generations, all by 2030. More ambitious than their predecessor, the Millennium Development Goals, the SDGs cover a broad range of interconnected issues, from ending hunger, promoting health, addressing inequality, creating jobs and sustainable economic growth to improving governance and addressing global challenges such as climate change.

The I4A competition encourages young people from around the world to develop and share their ideas for innovative approaches, through the smart use of technology, as well as financing solutions, to solve development challenges. It attracts engagement from young people across the globe, with about 38 percent of submissions from Sub-Saharan Africa, 15 percent from Latin American and the Caribbean, 13 percent from South Asia, 12 percent from East Asia and the Pacific, 12 percent from North America, 8 percent from Europe, and 2 percent from the Middle East and North Africa.

The winners were selected through a vigorous three-stage selection process evaluating the creativity, significance, feasibility, and clarity of the proposals. Reviewers included young World Bank Group staff and Wharton students, along with technical experts and senior executives from the World Bank Group, Wharton School, MasterCard, PepsiCo, Firmenich, and the G-24 Secretariat. Other competition partners included the World Bank Group Youth to Youth Community, the Young Americas Business Trust, and the Organization of American States.

The 2017 winners will present their proposals at the World Bank Group–International Monetary Fund Annual Meetings in October 2017 in Washington, D.C., and at other high-level international events. The

Wharton School will offer the winners training and opportunities to exchange knowledge.

2017's Winning Proposals

The 2017 winning proposal, **Kitovu**, from Nigeria, is an innovative platform and system that matches fertilizer type and quantity, improved quality seeds, and other inputs to the right soil. It envisions a web- and mobile-based decentralized fertilizer and seedling warehousing system that matches the right inputs to different farm locations owned by smallholder farmers in distant locations so as to lower the cost of cultivation while ensuring increased yields. The platform also seeks to create market access for smallholder farmers in distant locations by using a mix of web, mobile, and SMS platforms to link farmers to processors, produce buyers, transporters, and other ecosystem stakeholders to tackle postharvest losses and enable produce traceability while increasing farmer income.

The second-place proposal, **Gifted Hands**, from Uganda, is a network that seeks to reduce breast cancer deaths and provide an employment opportunity for women who are visually impaired. The network is designed to facilitate training for women who are visually impaired to become certified medical tactile examiners to carry out early breast cancer detection and prevention using their heightened and well-trained sense of touch. The certified examiners will use their blindness as an opportunity to create employment as well as to save the lives of women who might otherwise die from breast cancer without the early examinations.

The third-place proposal, **Agratam**, from India, works to convert low-lying, waterlogged wastelands into productive fish farming units in the state of Bihar. This program is aimed primarily at providing sustainable employment opportunities for the extremely poor fisher communities that do not have access to a consistent and stable source of income. By aggregating this unproductive land, Agratam also provides rental income to marginal and smallholder farmers who own small parcels of land from which they cannot extract value or generate economic returns.

Project Forward, one of the three runners-up, proposed a social currency-backed ecosystem that allows nonprofits to indirectly incentivize volunteers. It facilitates the monetization of volunteer hours through a proprietary digital currency.

SAVE, another runner-up, focused on the provision of sanitation to the poorest segments of society in the Province of Laguna in the Philippines through a portable toilet solution, anchored on a utility business model and supported by a public-private partnership and the community. Eligible

households will be given a portable toilet bundled with their water service connection. These toilets will have a collection system to ensure proper disposal and treatment in a wastewater treatment facility.

The final runner-up, **She-Is**, is a socio-productive model for entrepreneurial education and the promotion of business activity for women who are victims of armed conflict. In the case of Colombia, the campaign seeks to champion women in postconflict situations as successful entrepreneurs by harnessing their knowledge and generating a positive impact on the peace process.

The I4A competition offers the winners a platform to share and discuss their ideas and encourages young people to take ownership over implementation of the SDGs. It also provides the winners access to some of the leading professionals in the global development field and in the private sector.

Cultivating the Next Generation of Leaders

Our hope is that I4A will bring together the creative insights and thoughtful innovations of the next generation of business and public sector leaders with the implementation potential of development organizations. We further hope that it will foster a sense of ownership while incubating some exciting ideas that can shape our shared future for the better. The submissions included in this book, as well as the rest of the 733 submissions, have clearly demonstrated the innovative and creative potential of youth.

I4A is not exclusively an essay competition. I4A has also convened several workshops, called IdeasLabs, as opportunities for interested young people to get information and share knowledge and ideas. Equally important was the creation of several I4A clubs, and among the most active of these are at Wharton School, and in Belgrade, Hong Kong SAR, and China. These targeted activities have engaged the young professionals who took part in the competition, as well as those simply interested in global development.

The 2015 and 2016 versions of this book were used as teaching tools at undergraduate and graduate classes at Wharton as well as at several other schools throughout the world. Students had the opportunity to comment on the winning proposals and shared their ideas with the winning teams. To facilitate the use of the book, teaching notes will be made available to interested academics.

One of the main goals of I4A continues to be engaging leading schools of finance and development and connecting them with practitioners around the world. This endeavor helps redefine the global development

conversation and assists the World Bank Group and other development organizations in leveraging their resources and convening power more effectively.

It is our hope that I4A will help the World Bank Group and other development partners recognize young people with bright ideas so they can participate more fully in solving the world's greatest challenges. Thus, by encouraging the next generation of global leaders to think beyond the existing approaches to development issues, we can help innovative solutions germinate and take root.

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Acknowledgments

The Ideas for Action (I4A) initiative was launched jointly by the World Bank Group (WBG) and Wharton Business School of the University of Pennsylvania, and in partnership with the WBG's Youth to Youth Community (Y2Y) and the Young Americas Business Trust (YABT) at the Organization of American States. Over the past three years, this initiative has benefited from the enthusiasm, commitment, and insightful feedback of the staff of these organizations, as well as the dedicated champions of the initiative.

At the WBG, this initiative is coordinated by Arunima Dhar and Farida Aboulmagd from the Office of the Senior Vice President for the 2030 Development Agenda, UN Relations and Partnerships (SVPMM). The Wharton team led by Marie-Louise Wiegert is composed of Joseph Kupferberg, Maryam Alausa, Michaela Asamoah, Walid Beramdane, Sisan Dorsu, Farirai Baya, James Goh, Halle Aberhm, Faithe Hill, Michelle Jaffe, Melissa Jassir, Jeffery Chen, Jiaying Li, Kevin Yang, Tyler Knox, Polina Naumenko, Olivia Ryan, Cynthia Song, Kamelia Stavreva, Ekunda Wonodi, and Kevin Lee. Partners in Latin America included Mariana Urban, Victória Laurentiz, Sofia Martinelli, Gustavo de Carvalho Marin, José Roberto Macri, and Amanda Bessoni. The I4A student initiative representatives included Ned Shell (Harvard University) and Sue Mohieldin (Dartmouth College). Julian Friederich, German Chamber of Commerce São Paulo/Wharton Team, supported the publications process.

The WBG Y2Y partner colleagues included Georgie Chisholm, Manuela Dimuccio Gonzalez, Angela Elzir Assy, Djeanane Monfort, Bruna Moraes, Pooja Thapar, Angela Ting, Coralie Vannoye, and Ermal Vila.

The YABT team included Luis Viguria and Isabella Troconis.

This year, the Ideas for Action initiative would especially like to acknowledge the World Bank Africa Region External Communications team led by Haleh Bridi for its outreach efforts in the region. With Erick Rabemananoro, the team comprised Elita Banda, Zeria Banda, Daby Diack, Carlyn Hambuba, Kafu Kofi Tsikata, Olufunke Modupe Olufon, Keziah Muthembwa, Taleb Ould Sid'ahmed, and Diana Styvanley. We would also like to acknowledge Harisoa Rasolonjatovo from the Education Global Practice.

The selection process was conducted in three phases. The first round of reviews was completed by Kay Atanda, Farida Aboulmagd, Demet Cabbar, Devy Damayanti, Arunima Dhar, Julius Gwyer, Lobna Hadji, Veronica Piatkov, and Ferran Perez Ribo from the World Bank Group; Marie-Louise

Wiegert, Joseph Kupferberg, Maryam Alausa, Michaela Asamoah, Walid Beramdane, Sisan Dorsu, Farirai Baya, James Goh, Halle Aberhm, Faithe Hill, Michelle Jaffe, Melissa Jassir, Jeffery Chen, Jiaying Li, Kevin Yang, Tyler Knox, Polina Naumenko, Olivia Ryan, Cynthia Song, Kamelia Stavreva, Ekunda Wonodi, Kevin Lee, Mariana Urban, Victória Laurentiz, Sofia Martinelli, Gustavo de Carvalho Marin, José Roberto Macri, and Amanda Bessoni from Wharton Business School; Ned Shell from Harvard University; and Sue Mohieldin from Dartmouth College.

The 60 English language proposals that qualified for the second round were reviewed in three working groups that considered 20 proposals each. The groups were chaired by Marco Scuriatti, Adviser, SVPMM, WBG; Mike Kelleher, Adviser, SVPMM, WBG; and Djordjija Petkoski, Lecturer and Senior Fellow, Wharton Business School. Group A comprised Jos Verbeek, Special Representative to the WTO and UN in Geneva, SVPMM, WBG; Christopher Juan Costain, Lead Financial Sector Specialist, Finance & Markets Global Practice, WBG; Filip Fidanoski, Researcher, Luxembourg School of Finance, University of Luxembourg; Felipe Gonzalez, University Diego Portales (UDP), Santiago, Chile; Victor Gabriel de Oliveira Rodriguez, University of São Paulo (USP), Brazil; and Dragan Radic, Senior Specialist, Employers' Activities, International Labour Office.

Group B comprised Steve Dimitriev, Lead Private Sector Specialist, Trade and Competitiveness Global Practice, WBG; Gabriela de la Garza, Sustainability Director, PepsiCo, Inc. Latin America Beverages; Chris Thomas, Lead Strategy Officer, Strategy and Organizational Performance, WBG; Gustavo Díaz, UDP; Carolina Busco, UDP; Juliana Domingues, USP (Ribeirão Preto Law School); and Maria Alejandra Gonzalez Perez, Departamento de Organización y Gerencia, Universidad EAFIT.

Group C included Bjorn Gillsater, Special Representative to the United Nations, New York, SVPMM, WBG; Eduardo Saad-Diniz (USP); Thomas Tim, Vice-Presidência, Hauptgeschäftsleitung; Dragan Loncar, University of Belgrade, Faculty of Economics; and Berangere Magarinos-Ruchat, Vice President, Sustainability, at Firmanich.

In addition, the qualifying Spanish proposals were reviewed by Christopher Juan Costain, Lead Financial Sector Specialist, Finance & Markets Global Practice, WBG; and Gabriela de la Garza, Sustainability Director, PepsiCo, Inc. Latin America Beverages.

The final 10 proposals were reviewed by an expert panel, chaired by Mahmoud Mohieldin, Senior Vice President for the 2030 Development Agenda, UN Relations and Partnerships, WBG. The panel comprised Luis Montoya, President, PepsiCo, Inc. Latin America Beverages;

Snezana Stoiljkovic, Vice President, Blended Finance and Partnerships (CBFVP), WBG; Marilou Uy, Director, G24 Secretariat; Stephane Wyper, Senior Vice President, New Commerce Partnerships and Commercialization, MasterCard; Kasturi Rangan, Harvard Business School; David Shipman, Group Vice President, Global Corporate Compliance & President, Firmenich North America; Haleh Bridi, Director, External Communication, Africa Region, WBG, and Djordjija Petkoski, Lecturer and Senior Fellow, Wharton Business School.

Finally, a very special thanks go to the young people who contributed to the 743 submissions and the 1,965 teams that registered representing 5,254 youth from 118 countries.

2017 Ideas for Action Winning Proposals

**Ideas on Financing for Development
to Help Achieve the 2030 Agenda for
Sustainable Development and the
Sustainable Development Goals**

CHAPTER 1

Creating Kitovu: A Web/Mobile-Based Decentralized Fertilizer and Seedling Warehousing System That Increases Crop Yields in Nigeria by Matching the Right Inputs to the Right Soils

Team Kitovu

Nwachinemere Emeka
Nduka Miracle
Adegbola Adedotun

Abstract

Most of the world's poorest people are smallholder farmers. At least 570 million farms worldwide are smallholdings, with more than 475 million of those farms owned by families who cultivate less than two hectares of land. In Nigeria, 70 percent of the working population, or about 121 million people, are farmers. In Sub-Saharan Africa as a whole, agriculture accounts for 64 percent of the labor force and 75 percent of the people who survive on less than \$1 per day work in the agricultural sector. This level of poverty results primarily from very low yields, compared with global yield averages, as well as from very high postharvest losses. Annual postharvest losses range between 40 percent and 60 percent, depending on the value chain being considered. After years of trying to find solutions to low crop yields, we formed the Kitovu Technology Company and developed the Kitovu platform. The Kitovu team consists of a passionate group of young people who have experience in agriculture, processing, and consultancy services within the African agricultural value chain.

The Kitovu team firmly believes that improving the use of inputs by farmers has the potential to lift millions of smallholder farmers out of poverty. But for that to be feasible, a system must be in place that matches the right composition and quantity of fertilizers, good quality or improved

seeds, and other inputs to farms' actual soils and sites. These practices would improve yields and consequently increase farmers' incomes.

This report describes how the Kitovu platform solves the problem of low yields and explains the platform's estimated effects on poverty and social well-being.

Problems and Context: Raising the Incomes of Smallholder Farmers through Increased Productivity

Most of the world's poorest people are smallholder farmers. Of the more than 570 million farms worldwide, at least 475 million of these are family farms of less than two hectares. In Sub-Saharan Africa, agriculture accounts for 64 percent of the labor force. In rural areas, 75 percent of the people who are living on less than \$1 a day work in agriculture. In Nigeria, 70 percent of the working population, or about 121 million people, are farmers. These statistics represent the least of our challenges.

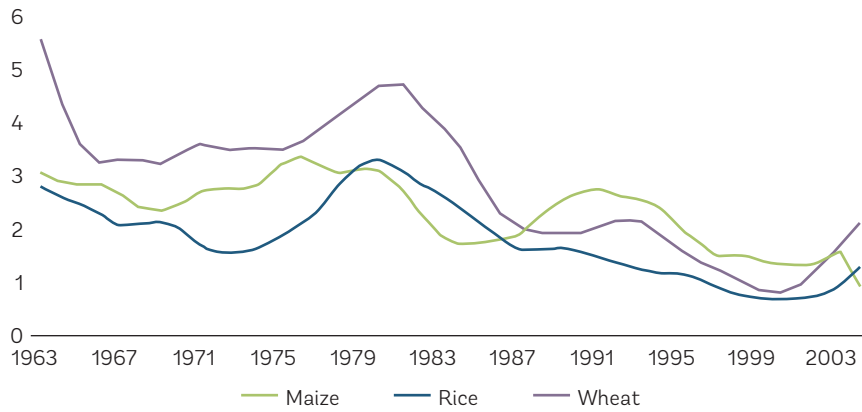
The Nigerian agricultural sector is a maze, a patchwork of fragmented smallholdings in which the disconnected stakeholders coexist. This disconnection ensures that farmers are not up-to-date on agricultural best practices, improved varieties, and available cultivars. Nor do they have access to markets for buying and selling. As a result, farms do not have the right inputs—whether fertilizers, agrochemicals, or seedlings—and thus experience very low yields.

Many smallholder farmers find the use of fertilizers undesirable for a variety of reasons, but the top reason is the high cost. In addition, high transport costs, small markets that lack economies of scale, lack of a rural dealer network, middlemen who exploit farmers, and lack of a competitive private sector all reduce the returns on farmers' investments.

When farmers do use fertilizers, they seldom use effective quantities, or they apply fertilizers without considering the state of the soil and its nutrient needs—decisions that lead to suboptimal yields. The outcomes are glaring: yields are 45–60 percent below the potential. For example, in Nigeria maize has an average yield of 1.2 tons per hectare, whereas globally the average yield is about 3.0 tons per hectare. Figure 1 shows the general decline in productivity of cereals in developing countries.

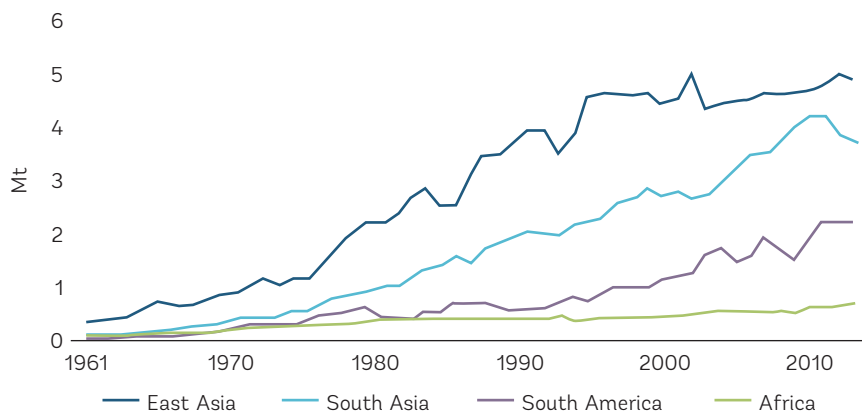
Figures 2–4 highlight the relationship between high prices, fertilizer use, and food production by continent. Sub-Saharan Africa has the highest prices of fertilizers and the lowest fertilizer use, so unsurprisingly it is one of the lowest contributors to global food production.

Figure 1 Declining Productivity Growth in Developing Countries, 1963–2003



Source: International Food Policy Research Institute (IFPRI), *World Development Report 2008*.

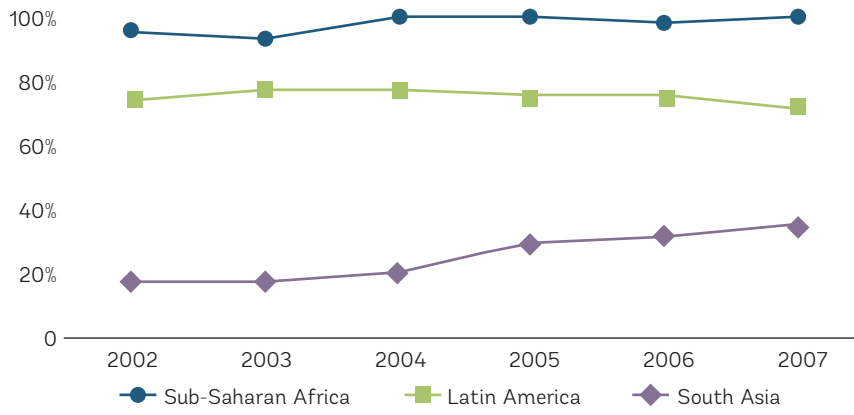
Figure 2 Fertilizer Consumption in Selected Regions (million tons), 1961–2013



Source: Gro Intelligence, <https://www.gro-intelligence.com/insights/fertilizers-in-sub-saharan-africa>.

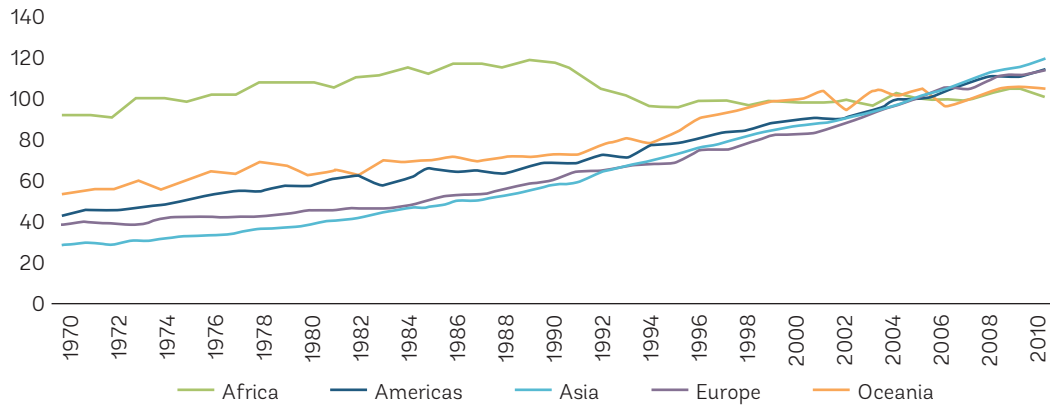
As figures 5 and 6 show, applying fertilizer increases crop yields. Because increasing crop yields means increased income for farmers, increasing fertilizer use has the potential to lift millions of smallholder farmers in Nigeria and Sub-Saharan Africa out of poverty, if done effectively. However, the only effective way to achieve these yields is to use a system that matches the right fertilizers with the right soils, provides access to improved seedlings of proven quality, gives farmers access to agricultural best practices, and connects their farms to the markets or distribution system, because a fertilizer-only approach is ineffective. To achieve these outlined objectives, we founded the Kitovu Technology Company.

Figure 3 Imports of Fertilizer as a Percentage of Consumption in Sub-Saharan Africa, Latin America, and South Asia, 2002–2007



Source: Research Gate, citing Hernandez and Torero 2013, http://www.researchgate.net/figure/257922160_fig2_Figure-3-Imports-of-fertilizer-as-a-percentage-of-consumption-sub-Saharan-Africa.

Figure 4 Food Production by Continent (million metric tons), Indexed, 1970–2010

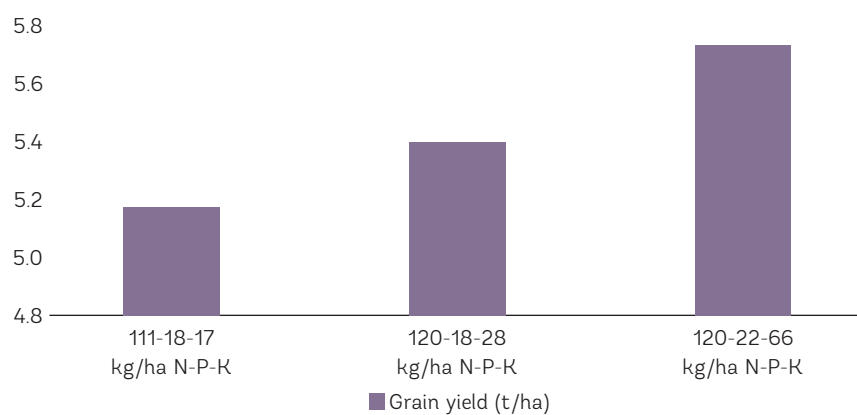


Source: Food and Agriculture Organization of the United Nations, FAOSTAT database, <http://www.fao.org/faostat/en/#home>.

Solution: Web- and Mobile-Based Decentralized Fertilizer and Seedling Warehousing System

To achieve the objectives outlined in the Problems section, we formed the Kitovu Technology Company and developed the Kitovu platform. The

Figure 5 Impact of Balanced Fertilization on Grain Yield of Rice



Source: Haifa Group website, <http://www.haifa-group.com/>.

Note: kg = kilograms; ha = hectare; N = nitrogen; P = phosphorus; K = potassium; t = ton.

Figure 6 Reported Increase in System of Crop Intensification Crop Yields

Crop	Yield Increase
Finger Millet	200–300%
Legumes	50–200%
Maize	75%
Mustard	200–300%
Sugarcane	20–100%
Tea	200–400%
Turmeric	25%
Vegetables	100–270%
Wheat	10–140%

Source: *New Internationalist* 2013.

Kitovu team consists of a group of young people who are passionate about agriculture and food sustainability. They have experience in agriculture, processing, and consultancy services within the African agricultural value chain.

The Kitovu platform uses a web portal, mobile application, and USSD platforms (an interactive SMS service) to create a decentralized warehousing system that matches the right inputs needed by smallholder farms—fertilizers, agrochemicals, and seedlings—to their farms’ actual soils and sites (figure 7). According to the model, Kitopreneurs—-independent entrepreneurs who work with the Kitovu team—collect and synchronize

Figure 7 How Kitovu Works

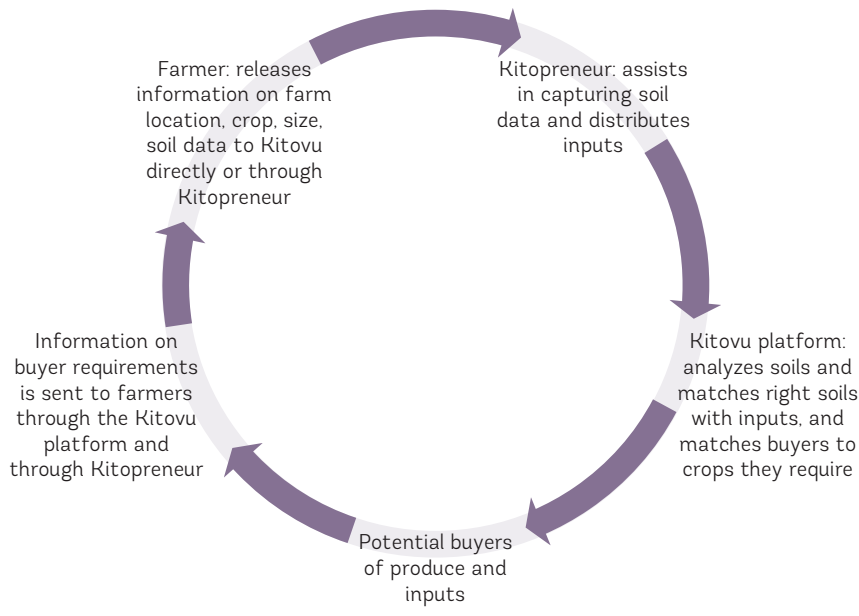



Figure 8 Kitovu Farmer User Profile

Kitovu User Profile	
Name	Aisha and Ajewole
Age	28-59
Profession	Farmer
Other Key Charecteristics	
	<p>Aisha and Ajewole live in a rural community with their five children. They work on the family's small holder farm. And they have a mobile phone.</p> <p>Their cassava farm is due for harvesting; it is already two years old, but they can't find a buyer that would offer them a fair price and with each passing day, they risk their cassava tubers rotting in the ground.</p>

the farmers' data to the web portal, as in figure 8. By matching the right inputs to the soils, the platform can lower costs of cultivation and increase yields, and therefore increase returns on investment. Having this network of Kitopreneurs ensures that even farmers in isolated locations, with no Internet or mobile connectivity, can benefit from our system.

The Kitovu platform also will enable smallholder farmers to connect with the entire agricultural sector using their phone. The platform can create market access by linking farms to input suppliers, crop processors, produce buyers, and other stakeholders to reduce postharvest losses and allow them to trace their produce. By linking farmers to all the aspects of their markets, the platform can increase their incomes. (See figure 8.)

In a “One Locality, One Kitopreneur” approach, Kitopreneurs will work in different localities by signing up farmers and teaching them agricultural best practices. The system involves setting up and maintaining a small mud storage warehouse, out of which fertilizers and other inputs are sold to farmers during the growing season. The warehouse would also serve as temporary storage for harvested produce. Working with Kitopreneurs who assist in capturing farmers’ data, selling inputs to them, and buying produce for resale, the Kitovu team will be able to reduce the cost of inputs by cutting out middlemen who often hoard inputs to drive up costs.

Piloting the Solution

Starting in September 2017, we are planning to locate our pilot at Kangangalo in Wushishi Local Government of Niger State, Nigeria, where about 200 smallholder farmers grow maize and other grains with a maturity window that falls within three months. These smallholder farmers are in isolated “pocket” locations. As a result, they typically have to make long journeys to the city to buy fertilizers; however, they are not educated and have no access to information on improved seedlings and agricultural best practices. They plant any seeds available to them, and they rely mostly on fate to determine crop yield. They depend on family labor to grow their crops. In many cases, with cheaper inputs, they would be able to increase the size of their farms.

The first phase of the pilot was set for three months, which is the maximum time it takes for maize to be ready for harvest. During the pilot, we plan to record videos in the local languages to demonstrate agricultural best practices being implemented. The video then can be used to teach farmers in other locations as the project expands.

Three months into the pilot, we will distribute 3,000 bags of fertilizer (generic and soil-specific variants), 15 bags of improved seedlings and cultivars, and 1,200 liters of chemicals to 600 smallholder farmers in distant pocket locations. To carry out the distribution, we will contract with 15 Kitopreneurs, which will give them an additional source of income. Ninety smallholder farmers who don’t have funds to purchase inputs also will benefit from our input-produce swap package, which will be available after the

third month. During the first two months the team will carry out due diligence on both farmers and Kitopreneurs.

Table 1 highlights the milestones we expect to achieve from the first month of the pilot to year two. Figure 9 summarizes our projections and figure 10 illustrates the operating model.

Figure 9 Summaries of Kitovu Projections

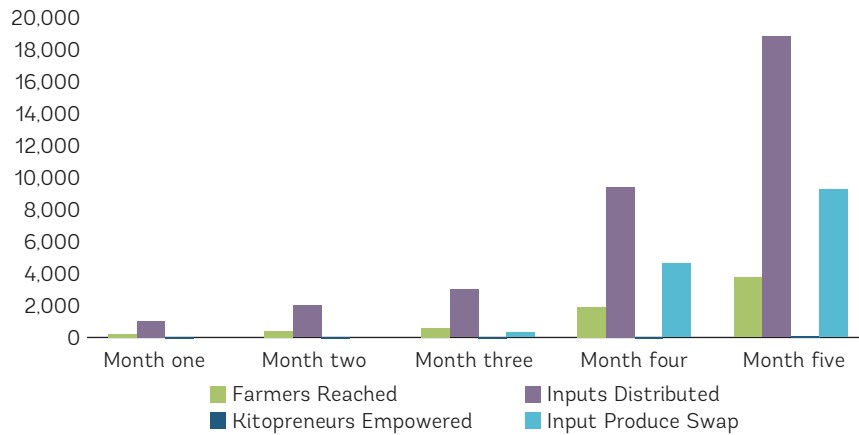


Figure 10 Kitovu Operating Model

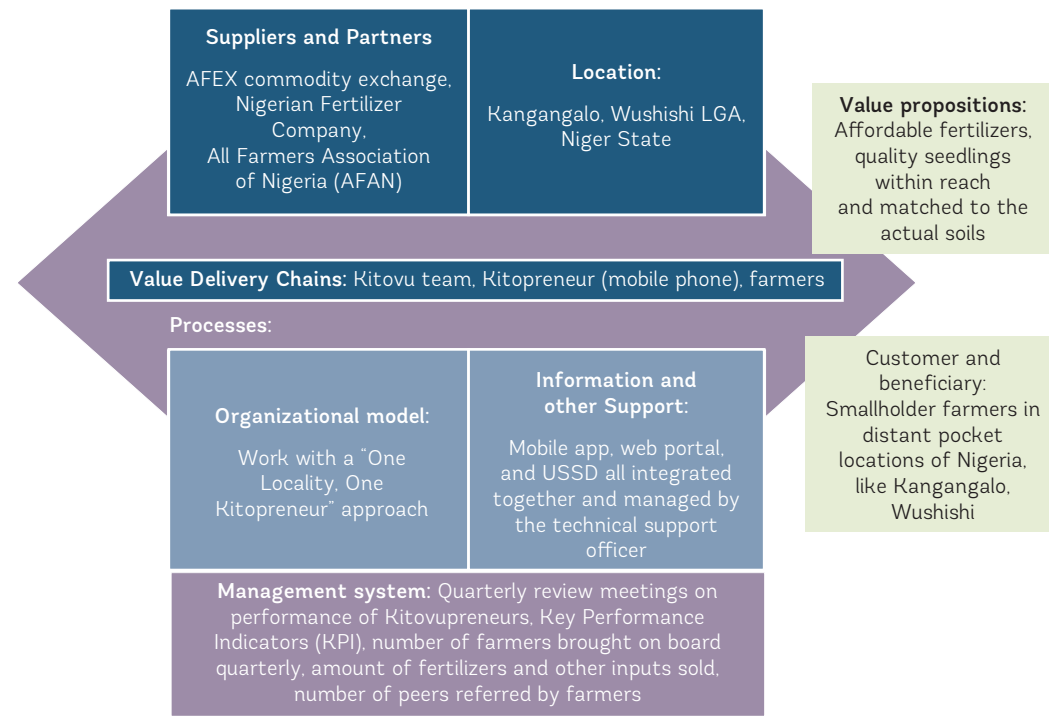


Table 1 Expected Milestones

Month 1		
Productivity Solution	Quantity of Productivity Solution to Be Distributed	Number of Direct Beneficiaries
Fertilizers	1,000 bags of generic and soil-specific variants	200
Improved seedlings	5 bags of improved seedlings	200
Agrochemicals	400 liters of chemicals	200
Input-produce swap	Not available in first month of the pilot	0
Employment (Kitopreneurs)	5 Kitopreneurs	200
Month 2		
Productivity Solution	Quantity of Productivity Solution to Be Distributed	Number of Direct Beneficiaries
Fertilizers	2,000 bags generic and soil-specific variants	400
Improved seedlings	10 bags of improved seedlings	400
Agrochemicals	800 liters of chemicals	400
Input-produce swap	(Not available in second month of pilot)	0
Employment (Kitopreneurs)	10 Kitopreneurs	400
Month 3		
Productivity Solution	Quantity of Productivity Solution to Be Distributed	Number of Direct Beneficiaries
Fertilizers	3,000 bags of generic and soil-specific variants	600
Improved seedlings	15 bags of improved seedlings	600
Agrochemicals	1,200 liters of chemicals	600
Input-produce swap	300 bags of fertilizer, 200 liters of chemicals, and 5 bags of improved seedlings	90
Employment (Kitopreneurs)	15 Kitopreneurs	600
Year 1		
Productivity Solution	Quantity of Productivity Solution to Be Distributed	Number of Direct Beneficiaries
Fertilizers	9,375 bags of generic and soil-specific variants	1,875
Improved seedlings	45 bags of improved seedlings	1,875
Agrochemicals	3,600 liters of chemicals	1,875
Input-produce swap	4,600 bags of fertilizer, 3,600 liters of chemicals, and 45 bags of improved seedlings	180
Employment (Kitopreneurs)	35 Kitopreneurs	1,875
Year 2		
Productivity Solution	Amount of Productivity Solution to Be Distributed	Number of Direct Beneficiaries
Fertilizers	18,750 bags of generic and soil-specific variants	3,750
Improved seedlings	90 bags of improved seedlings	3,750
Agrochemicals	7,200 liters of chemicals	3,750
Input-produce swap	4,600 bags of fertilizer, 3,600 liters of chemicals, and 45 bags of improved seedlings	930
Employment (Kitopreneurs)	75 Kitopreneurs	3,750

The first step in our Kitovu team operations has to do with the development of the Kitovu platform. The platforms include a web end, a mobile app, and a USSD framework that are all integrated seamlessly. Once development is completed, it will be debugged and beta tested with a handful of farmers. Then the final version will be made available for public use.

Next, the Kitovu team plans to partner with Notore and other fertilizer suppliers to guarantee a supply of fertilizers at affordable prices. Concurrently, we will extend a hand of fellowship to AFEX commodity exchange and All Farmers Association of Nigeria (AFAN). AFEX would guarantee that they would buy all produce sourced through the Kitovu platform as well as supply quality seedlings from research institutes. Representatives of AFAN would provide direct links to smallholder farmers in Kangangalo, through their leadership at the local government levels.

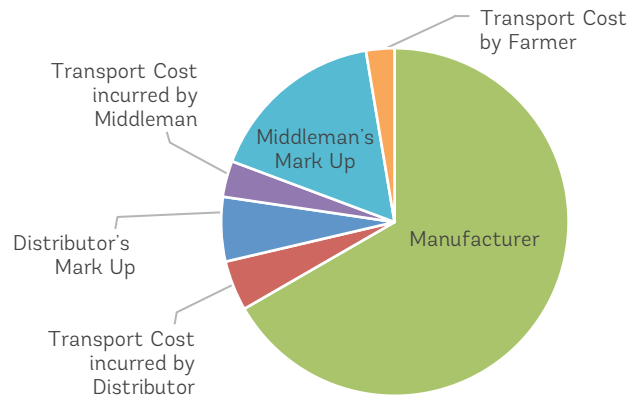
The team also would identify a willing Kitopreneur in the Kangangalo locality and train him or her on the use of the platform and the mobile app to capture relevant data. We would work together to build a dual-purpose miniwarehouse made of mud. We also would organize a Kitovu farmers meeting to sign up farmers. Other meet-up activities include teaching farmers agricultural best practices, such as the microdosing technique of fertilizer application, optimal spacing of seeds, and crop rotation. All these methods ensure optimal yield from reduced use of fertilizers and so guarantee lower costs of cultivation for farmers.

Once we get farmers to sign up for the platform, the Kitopreneur working with Kangangalo (or another locality) will use the mobile app to capture relevant farm data, including vegetation types and GPS location. With the GPS data, we will extract soil and meteorological data of the location, then analyze and index all the data on our online database. The data then enable the Kitopreneur and Kitovu team to match each farm with the right inputs—fertilizers, seedlings, and other agrochemicals—at the right time.

We then will purchase fertilizers, seedlings, and agrochemicals directly from partnering manufacturers and distributors and stock them in the dual-purpose mud warehouse managed by the Kitopreneur. When a farmer makes a search for inputs, our online database will be able to remotely match his farm with the right fertilizer, along with the quantity to be applied for optimal yield. Simultaneously, the details of the farmer's request will be sent to the Kitopreneur, who will then supply the farmer with the inputs, thereby cutting out middlemen who often raise prices by hoarding supplies to create artificial scarcity.

For farmers who may not have funds to cover the cost of inputs, the Kitovu team will set up input-produce swap deals with them. Farmers will be able to sign an agreement to pay a percentage of their total yields,

Figure 11 Contributions to Final Cost of Inputs



Source: Compiled by Kitovu team using data from Sheahan and Barrett 2014, <http://siteresources.worldbank.org/INTAFRICA/Resources/257994-1351111689757/Africa-Can-Feed-Africa-Part02.pdf> and personal research.

calculated using a template that factors the ratio of input costs to total cost of crop cultivation and a little margin.

Because all inputs are stored in environmentally friendly mud silos in every location with Kitovu coverage and are sold directly to farmers, the farmers save the cost and stress of shuttling long distances to make purchases. Figure 11 shows the typical factors that contribute to the cost of inputs, and their percentage share. The chart illustrates the potential savings the farmers will enjoy by participating in the Kitovu system and eliminating markups and transportation costs.

At harvest, the Kitopreneur will buy the farmers' produce on behalf of the Kitovu team and store it temporarily in the mud silo. We will then supply the produce to AFEX and other commodity buyers in bulk, after aggregating produce from different locations. The Kitopreneur will earn 20 percent of the profits from selling inputs to the farmers and produce to buyers.

Expected Impact

After completion of the pilot, the Kitovu team plans to expand first across Nigeria, one locality at a time, and ultimately across Sub-Saharan Africa. In Nigeria, of the about 121 million farmers, 22.9 million have mobile phones. This figure is set to increase with increasing mobile service penetration. In Nigeria alone, we expect to distribute the platform to about 23 million farmers in the next five years, and we hope to cover the entire African continent

in 10 years. To drive rapid expansion, adoption, and engagement on the Kitovu platform, we plan to sign up farmers for free. We expect that farmers will also come onboard willingly when we present testimonials of farmers whose yields were increased by their use of the platform. We would offer incentives to processors and produce buyers to join the platform by making it very easy for them to source high-quality produce that is easily traceable through our proprietary produce rank algorithm. With our platform in place, we would work to halve postharvest losses while doubling yield rates.

Where We Are Now and Where We Go Next

We have developed our mobile app platform, carrying out a limited pilot program in three locations—Okaka, in Oyo state; Toro, in Bauchi state; and Wushishi, in Niger state. During the pilots we introduced our concept to farmers and carried out beta testing of our mobile app. In Okaka, we worked with the International Fertilizer Demonstration Center to set up a maize demonstration farm where we taught farmers. For our efforts so far, we were awarded the Nigerian Innovation Award for best agricultural mobile app. However, the USSD framework and portal are still under development. Our efforts are all geared to carrying out a successful full pilot phase.

To get the platform operating in the market, we are working on partnerships with commodity buyers such as AFEX, fertilizer companies such as Notore, and farmers associations such as AFAN, as well as the federal and state ministries of agriculture. We also plan to approach private equity investors once we have completed the pilot phase of our work and are able to show some encouraging results.

In two years, we expect to be serving about 4 million farmers in six states of Nigeria. We would fund our expansion and growing operations through retained earnings from revenues from digital advertising, commissions on sales of inputs (fertilizers, agrochemicals, and seedlings), and subscriptions by processors and produce buyers. As we grow, we plan to use our knowledge, experience, and data on agricultural producers and end users to provide agricultural logistics services. We intend to capture 10 percent of the new media advertisements in the first five years. As market entry leaders for this innovative approach, we also intend to gain 60 percent of the market for farm logistics.

Comparable Solutions

Although some similar platforms do parts of what we project to do, none currently offers them as a bundle. Our farmers-first approach to execution

is also not the focus of these other solutions. Moreover, none of these solutions would work effectively with smallholder farmers in isolated locations in Sub-Saharan Africa for two main reasons.

First, these other solutions are all mobile applications, and smallholder farmers are generally located in areas that lack Internet connectivity (which mobile apps need to function). We are different in that we incorporate a USSD framework; therefore, our mobile apps can capture data offline and then upload the data once the device is in a location with Internet. In Nigeria particularly, while there are about 22.9 million farmers with mobile phones, only about 3,000 have smart phones that can support mobile apps; the rest are feature phones that can support only a USSD platform

Second, most smallholder farmers that our project targets fall within the very low income groups and thus are people living on below \$1 per day. As such, they would be very unlikely to be able to afford the other solutions. This revelation from our research informed our decision to adopt a “freemium” model—giving farmers access to our platforms for free, while making money from other means.

Finally, none of these other solutions are localized or take into consideration the complexities of the Sub-Saharan African agricultural landscape. Nor do they address the critical issues affecting the population—that is, low yields and postharvest losses. Not only do we take these problems into account, but we also have incorporated a productivity distribution mechanism into our solution—an input-produce swap for smallholder farmers who may not have the initial capital to buy inputs for their farms and so rely solely on natural processes and fate for their farms’ outcomes.

The following are some of the comparable solutions we looked at:

SoilWeb. The USDA–National Resources Conservation Service app provides soil survey information at the touch of a button. The app works with a smart phone’s GPS receiver to identify soil properties anywhere in the lower 48 U.S. states where there is cell phone coverage.

AgIndex. The app from Monsanto Company presents all the markets, weather, news, and agronomic advice a farmer might want, in one quick-to-read dashboard. Farmers can receive push notifications customized to their location and crop portfolio to keep up with changes in commodity pricing and insect alerts. As advertised, “AgIndex turns your smart phone or tablet into a complete agronomic information source, so you can stay fully informed while in the field or on the road.”

Soil Test Pro. This is a GPS-enabled app developed by TapLogic that makes soil sampling for the farm easier. The app’s features include unlimited access to Farm Logic’s precision ag specialists, aerial imagery of all maps, and test results in 5–7 days. It works on Android, iPhone, and iPad.

Challenges

As we consider scaling up the Kitovu platform across Sub-Saharan Africa, we know we will encounter countries with more stringent requirements for doing business and with protectionist political interventions. The countries in West Africa have somewhat similar business regulations, but each country is unique, and we plan to treat them differently. We know that for our expansion across West Africa to be smooth, we will have to work with and gain the trust of each country's ministry of agriculture and regulatory bodies for information technology (IT). (Nigeria IT is governed by the Nigerian Information Technology Development Agency; in Ghana, the agency is the National Information Technology Agency; and for Gambia, it is Information Technology Association of the Gambia.) The same holds true for every Western African country we have our sights set on. To ensure that our relationships with key regulators and officials are sound, we have decided to adopt a company structure that gives us the flexibility to work with each country differently. We will have country managers for different countries, with a local advisory team that is well versed in the legal, business, and regulatory frameworks in those countries.

Another challenge we recognize as typical is the fact that for our program to be successful, a lot of users—both farmers and produce buyers and distributors—must change their approach to doing their work. And we know that long-held practices, whether sustainable or not, are not easy to unlearn.

As with every multifaceted model, we are experiencing the famous chicken-or-egg paradox: Who comes first? The farmers or other users, such as produce distributors? Logically, inputs suppliers, farmers, and produce buyers and distributors all need to be onboard for the platform to be successful. But the cost of signing up and verifying all stakeholders would be costly. So far, profiling farms and farmers by their locations and sizes and capturing soil data are proving to be a huge constraint, considering our present financial limitations.

We also realize that having the support and partnership of some stakeholders, such as the federal and state ministries of agriculture, would give us voice and legitimacy. Having credit with major companies that sell fertilizer and inputs would also reduce our financial constraints, allowing us to pay later for delivery of inputs stock. However, for now, we have yet to secure any such partnerships.

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CHAPTER 2

Reducing Breast Cancer Death Rates among Women in Uganda and Increasing the Employability of Visually Impaired Women



Team Gifted Hands Network

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Abstract

The Gifted Hands Network turns problems into opportunities by training women who are visually impaired to conduct breast cancer examinations. As a result, women with breast cancer are more likely to receive treatment in time for full recovery, and women who are blind gain employment and social standing.

Uganda is a developing country with a population of approximately 42 million people. More than 56 percent of the population is female, and more than 85 percent live without access to good health facilities. This situation has led to significant loss of life. Good health care is needed in Uganda, but health services are very expensive and few people can afford them.

Uganda is among the African countries most affected by breast cancer. Breast cancer has increased drastically over the past 10 years. The Breast Cancer Working Group report from Makerere Medical School states that more than 30,000 women have breast cancer and more than 2,500 women die from the disease annually in the country. Dr. Fred Okuku, a medical oncologist at Mulago Hospital in Uganda, said in his medical report of 2014 that there is an additional unknown number of women dying from undiagnosed breast cancer.

Uganda has more than 1.6 million people who are blind. Socially, people who are blind are looked on as misfits, nonproductive people, and dependents. They are discriminated against and marginalized in society. More than 99.5 percent of them are not employed even though many have received rehabilitation and some are university graduates. These individuals have a genius sense of touch that would enable them to detect breast cancer early once they have received medical training.

Problem and Context

Uganda has more than 1.6 million people who are blind, 99.5 percent of whom are unemployed even though some are university graduates and many have received rehabilitation. These individuals who are sight-impaired are qualified, but society looks at them as nonproductive people.

In addition, Uganda has more than 30,000 women with breast cancer. More than 2,500 die each year because few health centers are available. For example, only two mammography units are located in the urban center Kampala, and one of those machines is damaged and not working. Few medical experts are trained in early breast cancer detection. As a result, women go to hospitals for detection and find they are already in advanced stages of breast cancer. Many of these women are referred overseas for treatment, but 99 percent of them cannot afford the treatment and transportation costs. Even if more mammography units were available, some women are not comfortable with using machines for breast cancer detection because they fear exposing their bodies to harmful radiation and X-rays.

Solution

The Gifted Hands Network reduces breast cancer deaths by training women who are visually impaired to become certified medical tactile examiners. The examiners carry out early breast cancer detection and prevention using their genius and their heightened and well-trained sense of touch. This project turns their blindness into an opportunity to create employment for themselves and to save the lives of other women. When breast cancer is detected early through examinations, it can easily be cured by treatment methods available in Uganda, including chemotherapy.

The target customer population is women ages 20 to 50. Women who are visually impaired ages 18 to 35 receive the medical training. We also target stakeholders such as investors, donors, and other caregivers to boost the

social business and to support us in scaling up to many places across Uganda and Africa at large.

The African Summit on Entrepreneurship and Innovation recognized the Gifted Hands Network as one of the best start-ups and awarded the business US\$10,000 because of its social impact on the lives of people and because of the employment opportunities it provides. The social business also was one of the finalists for the African Entrepreneurship Award, and representatives attended a boot camp in Casablanca, Morocco, for start-ups most likely to be successful and able to be scaled up in Africa. The project is also a finalist in the Startup Cup Uganda and is heading to South Africa for the African Startup Cup competition.

Gifted Hands Network officially started implementation by organizing a Dinner in the Dark event, in which we raised more than US\$5,000 to train women who are blind to become certified medical tactile examiners to carry out the early breast cancer detection.

In April, we sent two women who are blind to Discovering Hands Germany, where they were trained and certified as trainers of trainers. The women are scheduled to return to Uganda in July and will train eight other blind women to become medical tactile examiners to carry out early breast cancer detections. By October, the 10 women will officially start early breast cancer detection.

Each examination will cost US\$10 per person to support the sustainability of the project and to help in scaling it up. Detections will be carried out from partner hospitals and clinics that have already sent letters of intent indicating that they are ready to give us space in their premises for our well-trained and certified medical tactile examiners.

Expected Impact

We expect to see a reduction in rates of death from breast cancer among women in Uganda as a result of using certified medical tactile examiners to carry out early breast detection at a cost-effective price. Health care services will improve through the systematic application of a well-trained sense of touch by women who are visually impaired. In addition to accomplishing early detection and prevention of breast cancer through examinations, we hope to raise awareness about the causes and risks of breast cancer among women.

Women who are potential breast cancer patients will benefit from the superior natural abilities of well-trained female examiners who are visually impaired and will enjoy a pleasant private human examination that is high quality, confidential, and affordable and does not expose their bodies to X-rays and radiation.

The well-trained women who are visually impaired will earn employment to secure a source of income for themselves. These women will gain self-esteem, confidence, and a positive attitude that promotes independence, self-sustenance, and full participation in society. Socially, the stereotyped negative attitude that people have toward women who are blind will decrease as people recognize the benefits they contribute to society.

Comparable Product Offerings

A similar program is offered in Germany by Discovering Hands, a social enterprise we are franchising with. However, we are the first group to provide this service in Africa. Our partner, Discovering Hands, is a well-established social enterprise that saves the lives of women from breast cancer and creates employment opportunities for women who are blind in European countries and sponsors pilots in some American countries such as Colombia and Asian countries such as India.

Potential Challenges

We may face a lack of financial support to scale up the social business to more places in Uganda and in Africa at large. We could address this challenge by seeking investment or donations from stakeholders such as caregivers, donors, and social investors in the community and abroad.

Another challenge is making women aware of our new model of early breast cancer detection. This challenge can be addressed through organizing informational programs and raising awareness in communities about the benefits of our model and also by encouraging women to take advantage of our services for early breast cancer detection.

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Dr. Fred Okuku, a medical oncologist at Mulago Hospital, Uganda, in his 2014 medical report on breast cancer.

CHAPTER 3

Converting Unproductive, Waterlogged Land into Productive Fish Farming Units to Generate Sustainable Livelihoods, Provide Food Security, and Develop Critical Avenues for Economic Growth for Local Rural Communities

Team Agratam

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Abstract

Bihar, India, has more than 9,000 square kilometers of low-lying, waterlogged wasteland. It has a population of about 130 million, 80 percent of whom are below the poverty line of US\$1 a day. Of those, 15 million people belong to the fisher community, all of whom live below the poverty line and are classified by the government as an extremely backward caste. Fish is the staple diet in the region, with annual consumption of fish at US\$1 billion, but Bihar suffers from a gap between demand and supply of more than 232 million kilograms of fish per year (US\$390 million). To fulfill that unmet demand, Bihar is importing fish from neighboring states through unorganized channels.

Agratam India works in the state of Bihar to convert low-lying and unproductive wastelands into productive fish farming units. The project primarily aims to provide sustainable employment opportunities to the members of the extremely poor fisher community, who do not have access to a consistent and stable source of income. By aggregating the unproductive parcels of land held by smallholder farmers, Agratam also provides

these farmers with rental income on land from which they otherwise extract negligible value or economic returns.

Agratam's aim is to use existing natural resources in an economically productive and sustainable manner to create income-generating opportunities for the poorest sections of the community.¹ The holistic model focuses on converting unproductive land mass into profit-generating assets, thereby creating employment, stabilizing incomes, developing skills, and addressing food security and malnutrition, all of which contribute to the sustainable development of underserved rural communities.

Problem and Context

Resource Base

With a population of about 130 million, 80 percent of whom are below the poverty line, Bihar is the third largest of the 28 states in India and has been classified as one of the four poorest states in the country (Census of India 2011).

Located at the heart of the Gangetic plain, Bihar has extensive land and freshwater resources, but it also experiences annual flooding and drought. Currently Bihar has about 700 square kilometers of embanked water bodies (ponds and tanks) and 9,000 square kilometers of land that is waterlogged from seasonal flooding, a third of which is perennially under water. Despite significant potential for fisheries, naturally occurring in-state resources remain underutilized.

Demographics and Structural Realities

Even though a large majority of the rural community are fishers by profession, they do not have access to or control of the critical resource: water bodies. Most of the waterlogged land belongs to smallholder farmers and is so fragmented that building a 20-acre fish farm could sometimes require leasing land from at least 40 to 50 smallholder farmers. Moreover, because the fishers belong to an extremely backward caste and are very poor, they do not have the security or margin money that banks require to extend project-based loans. Furthermore, the banks do not have a clear policy or established mechanisms for lending to fishers, thereby severely limiting

¹ This goal is in line with the 2030 Agenda for Sustainable Development (FAO 2016). The agenda addresses the contribution and conduct of fisheries and aquaculture to achieve food security and nutrition, using natural resources in a way that ensures sustainable development in economic, social, and environmental terms.

their access to institutional credit. The application process is cumbersome, and disbursements are extremely hard to execute. Furthermore, despite the existence of a few subsidy schemes for fisheries development, there is no focused governmental support for aquaculture, such as training, bank financing, inputs availability, market linkage, or support price.²

Nutrition and Quality

Fish is the most popular local source of protein in Bihar, and demand far exceeds production. Fish must be imported from neighboring states, significantly reducing the state's gross domestic product. With 80 percent of Bihar's population living below the poverty line, most families, especially children, suffer from widespread malnutrition. According to a report by the Food and Agriculture Organization (FAO 2012), undernutrition, including inadequate consumption of foods rich in animal proteins, remains a huge and persistent problem.³

In Bihar, the most commonly available fish consumed by residents is an average of 10 days old, because fish must be transported on ice from the neighboring state of Andhra Pradesh (2,000 kilometers by road). Despite the compromised freshness and quality, the fish commands high prices, between Rs 120 and Rs 150 (US\$2.00–2.50) per kilogram.

Demand versus Supply

Bihar produces about 288 million kilograms of fish annually and consumes almost twice that, on average: about 520 million kilograms. The gap of 232 million kilograms is met through imports from other states in India (Government of Bihar 2008). The shortfall in production can be attributed to the poor physical condition of existing community ponds, heavy siltation of those ponds, lack of technical know-how and skilled workers, multiple ownership of existing water bodies, lack of quality fish seeds from hatcheries, and the general lack of infrastructure to support a fisheries value chain.

² As compared to the extensive support extended to agriculture in India, systemic support to aquaculture is severely lacking. Currently, agriculture benefits from established support frameworks such as availability of high-quality inputs, a subsidized interest rate on bank credit, subsidized crop insurance, guaranteed procurement at predefined support prices, and so on.

³ Fish is usually low in saturated fats, carbohydrates, and cholesterol and provides not only high-value protein but also a wide range of essential micronutrients, including various vitamins, minerals, and polyunsaturated omega-3 fatty acids. Thus, providing fish even in small quantities can effectively address food and nutritional security among the poor and vulnerable populations (FAO 2012).

Pricing and Distribution

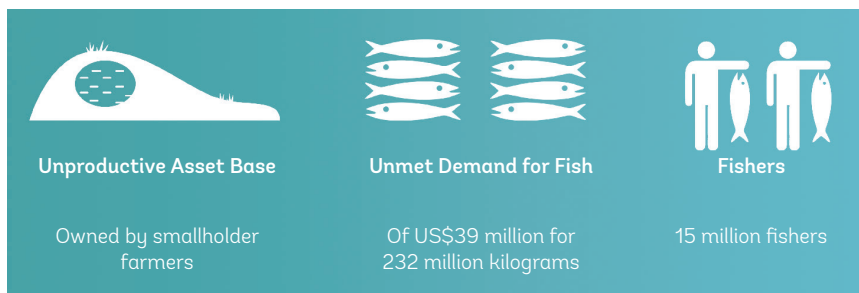
Most of the fish stock produced in Bihar is currently farmed on a small scale by tenant farmers or small landowners. The fish are harvested twice a year and then sold through local informal markets. All the locally harvested fish are currently sold at the farm gates and rarely reach the wholesale market. The consumers in this largely unorganized retail market are the local, rural population, who pay a higher price for fresh fish than for the dead fish that is typically imported from neighboring states and sold in local markets.

Even in the most rural and economically underdeveloped areas in Bihar, the lowest cost for imported fish is Rs 100 for 1 kilogram of fish (about US\$1.70 per kilogram). At the local market, this usually ice-preserved fish stock is sold at a 100 percent margin or higher, depending on the quality. The money that currently flows out of Bihar annually to pay for fish imported to meet demand is at least Rs 15 billion (US\$390 million). This estimate excludes transportation costs, cold-chain storage during the journey from neighboring states, state import tax, and so on.

Yields

Bihar is blessed with the best natural resources for inland fisheries in the country. Currently, production yields in Bihar are half the national average, but they could increase to 16 times the national average if more standardized and innovative farming methods were implemented. Large-scale fish farming activities across the state are currently very limited, despite the significant market opportunity, available government support, and subsidies aimed at enhancing in-state production. Underdeveloped infrastructure,

Figure 1 Context of the Problem



Agratam's model works with existing natural resources to sustainably solve two of Bihar's inherent problems. First, the model increases in-state production of fish. Second, it provides long-term sustainable avenues of income generation and skill development to rural communities.

gross mismanagement of existing fish farming operations, poor distribution networks, lack of access to knowledge, and subscale and unscientific farming methods are key reasons for the largely informal and substandard approach adopted to date.

Solution

To harness Bihar's significant resource opportunity, Agratam India began operations in 2014 using the "composite value generation" model. The model is based on cross-subsidization, which uses profits from a for-profit arm to fund activities of a not-for-profit arm to generate long-term social impacts in the community. Agratam's first objective is to create employment and generate income opportunities for local communities by providing capital and technical support to fishers and entrepreneurs. Agratam will use its not-for-profit arm, Agratam India Foundation, to undertake community-level projects, including youth engagement, women's self-help groups, sanitation projects, and provision of health care (see annex 1).

Designing the Initiative

Agratam India is creating a sustainable, profit-generating asset base while simultaneously addressing the unmet demand for fish and the unmet needs of very low-income communities in Bihar. Using a sustainable business model, Agratam works to convert unproductive waterlogged lands to productive and profitable assets, improve the volume and quality of fish production yields, enhance the distribution network and cold storage facilities, address food security and nourishment issues, and establish local entrepreneurs. (See figure 1.)

Fish is highly nutritious and can be an important source of vitamins, minerals, and protein, even when consumed in small amounts. A World Bank survey (2013) also showed that small-scale fish farming consistently pays off by raising workers' incomes, creating stable work, and increasing food supplies.

To demonstrate and quantify the opportunity in Bihar, Agratam began by developing a model fish farm on 20 acres of aggregated land leased from smallholders who could not farm their extremely low-lying, waterlogged, and unproductive land. The objective was to convince the local population of the viability of the project, through a real-life example, using the most unproductive pieces of land. Agratam has used its initial pilot farm as both a demonstration unit and a training facility, and succeeded in reinvesting returns into building a second 20-acre farm.

Increasing the Productivity of Bihar's Low-Lying Land Area

The primary way to increase productivity of the region's low-lying, flood-affected areas is to convert them into ponds by building embankments around them. Agratam secures the land through long-term (29-year) leases with smallholder farmers and then invests in the development of the necessary infrastructure. Agratam makes the initial financial investments needed to secure the leases, fund the land development, and provide initial working capital to generate a return on the investment.

Improving Yield Volume and Quality

Although much of Bihar's land area remains submerged year-round, Bihar is primarily an agrarian economy with farmers at best producing two crops from their upland—land that is not affected by waterlogging. However, even maximum yields from crop cultivation on high quality upland are relatively poor when compared with fish farming. Local marginal farmers are increasingly acknowledging that aquaculture is the best use of their land. As annex 2 shows, on mainstream agricultural land, even if a farmer is successful in producing two crops, the annual income generated (maximum Rs 25,000, or US\$385) is lower than conservative aquaculture projections. Currently, the average yield from fish farming on 1 acre of land in Bihar is nine times the maximum agricultural yield achievable on high quality upland (see annex 2).

Fish farming incorporates three core systems: hatcheries, fish feed mills, and ponds. The first two currently do not exist in Bihar, so part of Agratam's long-term strategy is to develop hatcheries and feed mills to build out the end-to-end fish value chain in the region. Providing fish farmers with high-quality inputs (fish seed and fish feed) at cost-effective prices is a prerequisite for profitable production. As Agratam scales up the program, its focus will include setting up common resource centers, establishing a network of distribution channels, and providing access to markets.

India's average national production from fish farming is more than 3,000 kilograms of fish per hectare (2.47 acres), with Bihar currently producing about 1,500 kilograms of fish per hectare. Research has shown that Bihar can produce 15 to 16 times the national average if resources are used efficiently.⁴ Agratam is currently targeting production of about 5,000 kilograms per hectare.

⁴ Research by the government of Bihar (2008) has included relevant literature reviews and extensive hands-on field research. Most of the research team grew up in the area or have been working in Bihar for several years and therefore have in-depth knowledge.

Agratam's goal of improving volume and quality of fish depends not only on providing fishers with access to healthy yearlings and high-quality fish feed. It also requires establishing bulk supply agreements and providing technical assistance to improve farming methods. The pilot pond and additional fish farming projects and ponds—each sufficient to supply a few villages—are expected to generate strong cash inflows for the local communities through direct and indirect channels, thereby contributing significantly to improving livelihoods in rural economies.

Enhancing the Distribution Network and Cold Storage

Within a span of three years, Agratam has established itself as the largest producer of fresh fish in North Bihar. Given the assured supply Agratam provides, traders buy directly from the farm gates and supply to neighboring local markets. The fresh fish Agratam is supplying to local markets commands a higher price than the imported dead fish and its consistent availability is having an impact on consumption preferences and patterns as people inherently prefer fresh fish to dead fish.

The overall distribution network for farmed fish in Bihar remains significantly underdeveloped. Cold-chain storage infrastructure needs to be developed from the farm to the market. Agratam aims to begin organized distribution and cold-chain storage by coordinating the harvest, collection, storage, and transport in refrigerated vans for all local ponds.

Developing Local Fish Entrepreneurs

Agratam has begun work on the following objectives:

- *Entrepreneurship development programs.* Programs involve (a) training local populations to build viable projects using realistic assumptions and (b) equipping people with tools and know-how to execute aquaculture projects. Providing training and information to fishers is essential because they have no access to the latest developments in technology and management practices.
- *Development capital.* By considering investments on a case-by-case basis, Agratam may use its capital to cover any shortfall at the fish entrepreneur's end. In each case, it puts in place a suitable partnership agreement, depending on the level of capital commitment.
- *Technical support.* Agratam has begun hiring technical experts, marketing professionals, accounting and finance professionals and analysts who will be available to visit the fish entrepreneur's worksite

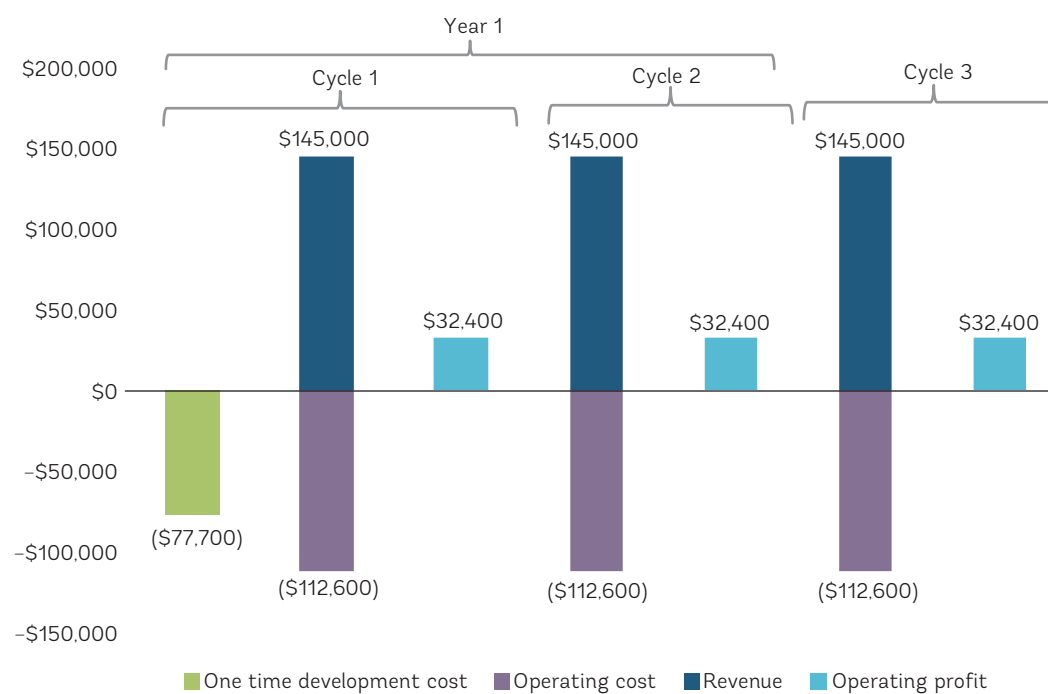
monthly and provide support services. This support will embed a structure of accountability, help with monitoring and evaluation, and help measure tangible impacts on an ongoing basis.

Current Operations

Agratam currently operates one 20-acre farm, the initial demonstration unit that it set up in 2014 (see table 1). The farm's direct beneficiaries include 34 smallholder farmers (the landowners) and 35 fishers who work as full-time staff and netters. The ancillary beneficiaries also include hundreds of fish traders who regularly buy the fish from the farm to sell locally. The availability of fresh fish has provided traders with a high degree of livelihood assurance.

Having reinvested profits and infused new capital into the program, Agratam is now building a second 20-acre farm in a neighboring area. As demonstrated in figure 2, breakeven is achieved in two years, with a profit expected in year three for a 20-acre farm.

Figure 2 Cycle Economics and Working Capital Flows on the 20-Acre Farm



Source: Food and Agriculture Organization of the United Nations, FAOSTAT database, <http://www.fao.org/faostat/en/#home>.

Note: USDollars.

Agratam's aim is to encourage fishers to take entrepreneurial initiative and organize themselves into small groups (potentially under limited partnership agreements) that will collectively lease the land from the small-holder farmers as well as own their own ponds. The agreements would give fishers sustainable livelihoods, foster self-reliance, break them out of the vicious cycle of day laboring and living hand-to-mouth, and give them an opportunity to benefit from pond profits.

Agratam's involvement would be decided on a case-by-case basis, but feedback suggests that the fisher groups would like Agratam to hold a minority stake in their ponds at all times to ensure adequate operational and oversight support. If sufficient funds are raised to scale up Agratam's activities, we envision using a combined holding company plus operating company structure.

Annex 2 compares aquaculture yields with agricultural yields per acre.

Table 1 Fish Farm Economics on a 20-Acre Farm

Fixed Cost Details	Amount (Rs)	Amount (US\$)
One-time development cost (earthwork, civil construction, lighting, pump sets, pipes, and so on)	5,000,000	77,000
Total Fixed Costs	5,000,000	77,000
Operating Cost Details per Cycle – (two cycles per year)	Amount (Rs)	Amount (US\$)
Purchase of fish seed (yearlings) <ul style="list-style-type: none"> Each acre of water area is stocked with 15,000 yearlings. The 20-acre farm will have about 15 acres of water. Total stocking requirement is 225,000 yearlings. 	1,350,000	21,000
Purchase of fish feed <ul style="list-style-type: none"> Only supplementary feed is needed because pond ecosystem provides nutrition naturally. 	5,000,000	77,000
Labor costs <ul style="list-style-type: none"> Operation requires 15 fishers at about Rs 5,000 each per month. 	450,000	6,900
Other costs <ul style="list-style-type: none"> Costs include half of annual lease, medicine, and so on. 	500,000	7,700
Total Operating Costs per Cycle	7,300,000	112,600
Revenue Details per Cycle (two cycles per year)	Amount (Rs)	Amount (US\$)
Sale of fish <ul style="list-style-type: none"> Sale weight assumes that 75 percent of yearlings survive and grow to 700 grams each in 6 months. Total fish sold per acre of water is 7,875 kg. Total fish production from 15 acres of water area for one cycle is 118,125 kg. Estimated sale price is Rs 80 per kg. 	9,450,000	145,500
Total Revenue per Cycle	9,450,000	145,500
Total Operating Profit per Cycle	2,150,000	32,900

Note: Currency exchange assumes US\$1 = Rs 65.

Scalability

One of Agratam's main aims is to lead by example and stimulate the understanding of and interest in fish farming. Agratam's model has motivated several people to begin aggregating unproductive waterlogged lands for fish farming.

Inspired by Agratam's success, a resident of a neighboring district to where Agratam currently operates, recently aggregated 100 acres of low-lying waterlogged land from 534 smallholder farmers. He then approached Agratam India to ask for financial support to implement the project. He also sought management and technical assistance, guidance, and regular inputs from Agratam's fishery experts to estimate and achieve desirable production yields.

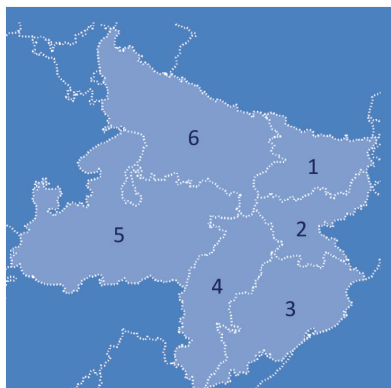
Currently, Agratam India has access to over 500 acres of waterlogged land that can be developed and put into operation within a period of 12 to 18 months. However, lack of funds has prevented Agratam from beginning these projects.

The most significant scaling opportunity is expanding operations and capabilities to cover the entire fishery value chain. Building up this value chain would require

- inputs such as fish hatcheries and feed;
- outputs, such as collection, transportation, and market links; and
- fish preservation and storage facilities.

Agratam's model could be easily replicated, not just across Bihar but also into neighboring states that have similar geographic features (see map 1).

Map 1 Opportunities to Scale Up Fish Farming on Low-Lying Lands



1. Bihar (current operations)
2. Jharkhand
3. Odisha
4. Chhattisgarh
5. Madhya Pradesh
6. Uttar Pradesh

Comparable Projects

Bihar currently has no other businesses or organizations working on a fish farming model. The concept of aggregating and using waterlogged, unproductive wasteland for aquaculture is an innovative step forward from the artificial tanks used predominantly by commercial, for-profit aquaculture operations.

Andhra Pradesh, where commercial aquaculture is far more established, has several freshwater aquaculture initiatives, but we do not know of any that are based on models similar to Agratam's.

Internationally, Thailand and Vietnam have traditionally farmed fish in flooded rice fields, but production has always been more for personal consumption rather than on an industrial or commercial scale.

Challenges

Table 2 explains the challenges facing aquaculture operations in India and particularly those in Bihar. It also highlights how Agratam India has demonstrated the benefits of aggregated production to landowners, beneficiary fishers, and other ecosystem players.

The Road Ahead

Agratam's primary strength is the strong community relationships it has formed over the past four years through its local presence, community engagement, and proven skills in executing its initiative. Trust among the local community is one of Agratam's strongest attributes. Without it, land acquisition and operations would prove difficult. The model's success is demonstrated by the increasing number of smallholder farmers who have been approaching Agratam to lease their lands.

The economic and growth potential that Agratam offers to the local community is extraordinary. Having successfully demonstrated the viability of the model through the pilot project and established a track record, Agratam now seeks funding support to scale up its operations and generate greater impacts.

Table 2 Challenges and Benefits of Aquaculture in Bihar

Challenge	Comments	Mitigation
Land acquisition or rental from smallholder farmers	<ul style="list-style-type: none"> The unproductive land is largely owned by many smallholder farmers, each of whom owns less than an acre of land. Acquiring this land from farmers and aggregating parcels under one lease can be challenging. 	<ul style="list-style-type: none"> Agratam's founder is a native of the area who has strong connections within the local community. He has spent over three years working with local communities and earned the respect and trust of the people. Through the pilot, he has demonstrated that he can inspire sufficient trust among farmers to sign up for the lease. Farmers are willing to lease the land because it has remained waterlogged and has not produced any economic benefit. By leasing this land, the farmers can earn a healthy, lucrative rental income for 29 years. Agratam already has more than 500 acres of land pledged in principle.
Engagement with fishers	<ul style="list-style-type: none"> The model requires fishers to buy into the investment thesis and sign on to the limited partnership agreements. 	<ul style="list-style-type: none"> Besides the significant trust the founder has built within the local community, the pilot project has also been instrumental in demonstrating the benefits of the fish farm, including the potential for sustainable economic benefits to the wider community.
Destruction of ponds or low fish yield	<ul style="list-style-type: none"> Fish farms are exposed to the elements, and fish stocks are exposed to risks of disease and theft. Small-scale farming techniques may also produce low yields and variable quality. 	<ul style="list-style-type: none"> Fish stocks can be insured by the Oriental Insurance Company, a public-sector enterprise that provides a significant safety net to small- and large-scale fishing activities. Advancements in farming techniques can improve both the yield and the quality of the fish harvested. Part of the service that Agratam offers is educating fishers on the latest scientific technologies and farming techniques.
Political environment and support	<ul style="list-style-type: none"> Research by the International Finance Corporation (IFC) has shown that investments with a strong internal rate of return have been the most successful in creating and sustaining jobs. With widening income inequality and entrenched poverty, the government of India is focused on achieving significant developmental impacts by supporting economic growth through the broader private sector rather than focusing solely on government handouts and subsidies. 	<ul style="list-style-type: none"> This project is a mechanism to ease the government welfare burden in a disadvantaged area of the country. Therefore government support assumes little risk of failure.
Sustainable fish production and supply	<ul style="list-style-type: none"> In several parts of the world, aquaculture has acquired some disrepute because of the proliferation of unsustainable and harmful practices to increase productivity and cater to growing commercial demand. 	<ul style="list-style-type: none"> Large-scale fish farming can be done without placing unacceptable demands on the environment if a region has the existing water resources and pond development does not require the destruction of large tracts of sensitive land or mangroves. Bihar is a good example. Agratam's methods follow guidelines to ensure that its practices are environmentally sustainable and that it avoids resource and manpower exploitation.

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Annex 1. Agratam India's Activities



For-profit investment arm



Financial assistance
Equity and working capital



Management assistance
Market links, audit, strategy



Technical assistance
Training, monitoring and evaluation, governance



Not-for-profit arm



Women's and self-help groups
Employment, income, savings



Rural youth
Skill development, entrepreneurship



Sanitation
Personal toilets, clean drinking water

Annex 2. Fish Farm versus Agricultural Economics in Bihar per Acre

Fish Farming Economics for 1 Acre of Waterlogged Land

Fixed Costs	Amount (Rs.)	Amount (US\$)
One-time development cost (earthwork, civil construction, lighting, pump sets, pipes, and so on)	250,000	3,900
Total Fixed Costs	250,000	3,900
Operating Cost Details per Cycle (two cycles per year)	Amount (Rs)	Amount (US\$)
Purchase of fish seed (yearlings) • Each acre of water area is stocked with 15,000 yearlings.	90,000	1,400
Purchase of fish feed • Only supplementary feed is needed because pond ecosystem provides adequate nutrition naturally.	250,000	3,900
Labor costs • Operation requires labor of Rs 10,000 per month.	60,000	925
Other costs include half of lease costs, medicine, and so on.	25,000	400
Total Operating Costs Per Cycle	425,000	6,625
Revenue details per cycle (two cycles per year)	Amount (Rs)	Amount (US\$)
Sale of fish • Sale weight conservatively assumes that only 75 percent of yearlings survive and only grow to 700 grams each in 6 months. • Total fish sold per acre of water is 7,875 kg. • Estimated sale price is Rs 80 per kg.	630,000	9,700
Total Revenue Per Cycle	630,000	9,700
Total Profit Per Cycle	205,000	3,075

Note: Currency exchange assumes US\$1 = Rs 65.

Agricultural Economics for 1 Acre of Most Fertile Land

Crop 1—Paddy	Amount (Rs)	Amount (US\$)
Maximum production	20 quintals (2,000 kg)	20 quintals (2,000 kg)
Minimum support price (provided by the government)	1,400 per quintal	21
Maximum total revenue	28,000	430
Minimum input cost (seed, fertilizer, land rental, labor, etc.)	14,000	215
Crop 1 Profit	14,000	215
Crop 2—Wheat	Amount (Rs)	Amount (US\$)
Maximum production	15 quintals (1,500 kg)	15 quintals (1,500 kg)
Minimum support price (provided by the government)	1,400 per quintal	21
Maximum total revenue	21,000	320
Minimum cost ((seed, fertilizer, land rental, labor, etc	10,000	155
Crop 2 Profit	11,000	170
Total Combined Profit in 1 year	25,000	385

Note: These are the economics for the most fertile land and assumes that the farmer can produce at the highest level of productivity and is also able to sell the harvest at the maximum price (which is not the case in reality). It also assumes no leakages in the supply chain.

Annex 3. Key Performance Indicators (KPIs) of Impact

The measurement parameters include regular estimations on improvements compared with baseline indicators (per capital household income levels, employment, availability of fresh fish, per week fresh fish consumption, and so on).

Expected impact: Agratam measures its impact on both a primary and secondary level. At a primary level, beneficiaries and impact generated include those that are directly involved in the fish farms.

Primary Beneficiaries	Impact
Local fishers	Promotion of employment and income generation
Smallholder farmers	Assured rental income for landowners
Traders (buying at farm gate)	Assured supply

At a secondary, ecosystem-wide level, Agratam's activities have gone a long way in facilitating not only the associated value chain participants but also local community development.

Secondary Beneficiaries	Impact
Traders (wholesale local markets)	Assured supply allowing for accurate sale projections and for better managing supply-demand dynamics
Ancillary products (net makers, etc.)	Income consistency
Consumers	Consumption of healthy, organically grown, nutritious fresh fish

Annex 4. Agratam's Team Credentials

Akshay Verma

Relevant Experience:

- 3.5+ years of Leveraged Finance experience at UBS Investment Bank, London
- Extensive experience of working with local communities and entrepreneurs in Bihar
- 3.5+ years of startup experience in the Indian ecosystem

Education:

- B.A. (Hons.) Mathematics, St. Stephen's College, Delhi University, India
- MSc. Financial Economics, Oxford University, United Kingdom
- Master of Public Administration, Columbia University, New York

Arpita Sinha

Relevant Experience:

- 6 years of Leveraged Finance experience at Barclays Corporate and Investment Bank, London
- Experience of working with rural communities and disaster relief programs
- Extensive independent consulting experience

Education:

- B.A. (Hons.) Literature, LSR College, Delhi University, India
- MSc. Management, Warwick Business School, United Kingdom
- Master of Business Administration, Impact Investing, Oxford University, United Kingdom

2017 Runners-up

CHAPTER 4

Encouraging Volunteerism Using a Proprietary Digital-Currency Incentive

Team Project Forward

Faith Suwilanji Kaoma, co-founder, Copper Rose
Daniel Kashani, financial associate, Willis Towers Watson
Michael Kashani, vice president, Goldman Sachs
Cole Pergament, University of Pennsylvania Class of 2020
Tristan Thoma, Baruch College Class of 2020
Matthew Weiss, University of Pennsylvania Class of 2020

Abstract

Project Forward is an innovative, self-sustaining, and social currency-backed ecosystem that allows not-for-profit organizations to indirectly incentivize volunteers. At its core, Project Forward facilitates the monetization of volunteer hours through a proprietary digital currency.

Within the United States alone, there is a stark drop-off in the rates of volunteerism. In the past 12 years volunteer rates fell from 28.8 percent in 2003 to 24.9 percent in 2015 (U.S. Bureau of Labor Statistics 2003; U.S. Bureau of Labor Statistics 2016). While there are several theories as to why the rate of volunteerism is declining, it is clear that not-for-profit organizations are having less success encouraging people to engage and become more active in their communities. To cultivate meaningful and long lasting engagement, organizations that rely on volunteers must entertain the thought of creating a more comprehensive incentive.

The use of digital currencies continues to increase. Technology has created the next wave of transactional components that banks and individuals alike have begun to adopt: a new medium of exchange involving digital wallets and smart contracts. To expand this usage and create something that will yield a better value structure, Project Forward has married two vitally beneficial functions. Millennials especially will now be able to obtain the skills required to conduct business in this new era of technology while also giving back. What was once considered an elusive part of the technology world will instead aid the future of positive social impact.

Problem and Context

According to the 2016 World Giving Index (CAF 2016), 63 percent of the U.S. population donates to charity. The tax incentives available in the United States for charitable contributions are widely cited as one of the main reasons for this extremely high contribution rate. On average, just 22 percent of the population donates in countries that offer no tax incentives for charitable contributions. Thus, it is critical to provide an incentive that will drastically augment charitable contributions to society.

While the percentage of people donating to charity in the United States is still quite high, the percentage of people who volunteer continues to decline. A study covering the year ending in September 2015 released by the U.S. Bureau of Labor Statistics (2016) reported that only 24.9 percent of the population volunteer, with that rate slightly lower for seniors and then declining sharply for younger age groups, the unemployed, and individuals without a college education. Additionally, the percentage of people who volunteer is materially lower than the percentage of people donating to charity in the United States and continues to decline at an alarming rate. By facilitating incentives for volunteering, we believe Project Forward can increase volunteerism rates, thus helping organizations that want to make a positive impact on the world.

The Solution

By facilitating incentives for volunteers, we can increase volunteerism rates, thus magnifying the ability of not-for-profit organizations to achieve their missions. The social currency that Project Forward creates to incentivize volunteerism will provide new opportunities for social engagement and participation. Local stores and universities will be able to create self-sustaining systems that use a digital currency based on the blockchain¹ to strengthen the characters of consumers and students. At its core, Project Forward facilitates the monetization of volunteer hours through a digital currency.

HOW IT WORKS

A person sets out to volunteer at a participating not-for-profit. Once the not-for-profit confirms that the person has volunteered for a specific number of hours, it communicates the amount of Forward Coins earned by the volunteer to Project Forward. After the process is confirmed, the volunteer will receive Forward Coins into his or her digital wallet. This transaction

¹ “A digital ledger in which transactions made in...cryptocurrency are recorded chronologically and publicly” (Oxford University Press 2017).

can take place using a digital smart contract, which automatically facilitates, verifies, and enforces the negotiation of a contract. The coins earned have monetary value and are transferable.

Upon receiving the Forward Coins, the user has two options:

1. The volunteer can accept and use the coins: Volunteers can exchange Forward Coins for gift cards or account credits with participating retailers. Participating retailers can accept Forward Coins directly on their sites. In the long term, Project Forward will facilitate the transfer of credit to almost any website for the purchase of items. Forward Coins can be used for exclusive promotions in which only Forward Coins are accepted (for example, concerts and sporting events). Project Forward will also facilitate person-to-person transactions, such as currency exchanges and transfers.
2. The volunteer can pay it forward: Volunteers who are not comfortable with being compensated for their efforts can choose to transfer the Forward Coins to a different not-for-profit. In this scenario, the volunteer never takes possession of the coins, thus avoiding potential future or regulatory tax implications. Volunteers also have the ability to nominate nonprofits that are not currently registered with Project Forward, thus expanding the Project Forward network. The “pay it forward” option dramatically magnifies the societal impact of each volunteer hour and eliminates the potential objection some individuals may have to being paid to volunteer.

FORWARD COIN

The Forward Coin is based on blockchain technology, which enables transparency and reliability of information. The use of Blockchain will facilitate the transfer of Forward Coins without a central bank and will immutably record the details of every transaction.

- **Forward Coin value.** The value of each Forward Coin is backed directly by donated funds from sponsoring partners to Project Forward, initially on a one-to-one basis. These donated funds serve to underwrite the Forward Coins, providing an immediate redeemable value and confidence in the currency.
- **Certification and storage.** Each Forward Coin has a digital imprint certifying its philanthropic origin, minimizing the possibility of fraudulent activity and providing invaluable information regarding volunteering trends. Unlike point systems, coins that have been redeemed do not expire but rather are held at the Project Forward Bank for future consideration.

- **Social implication.** The Forward Coin currency not only is a digital or cryptocurrency, but importantly, also is a social currency that individuals may use and retailers may redeem with the knowledge that it was created through socially impactful means.

PROJECT GOVERNING STRUCTURE

- **Project Forward.** Project Forward is a 501(c)(3) corporation responsible for building and maintaining relationships among volunteers, nonprofits, and sponsors. The corporation is also responsible for auditing nonprofits to confirm the validity of volunteer attestation and serves as a conduit between volunteers and the Forward Coins they have earned.
- **Project Forward Bank.** The Project Forward Bank is a for-profit financial services corporation. The bank is the creator and initial owner of all Forward Coins. It is obligated to accept a combination of volunteer attestation and sponsor donations in exchange for Forward Coins. It facilitates the redemption, trade, and sale of Forward Coins through a self-managed exchange or bank.

Although Project Forward envisions that it will be available for all volunteers globally, the following use cases are first steps for expansion.

UNIVERSITY ENGAGEMENT STRATEGY

The situation. Most university students have the time and desire to be socially engaged but lack the personal incentive or an organized system in which to participate. With Project Forward, students will be able to accrue digital currency to redeem on campus or forward to local charities.

The proposition. Universities often consist of young, socially conscious, and energetic student bodies already involved in dispersed community engagement efforts with no organized method of growth. Project Forward would serve to organize and incentivize students, providing a self-sustaining ecosystem that encourages them to engage in their community. The university framework facilitates numerous volunteering opportunities in and around campus as well as receptiveness to adopt this technology. Many universities currently allocate funds toward social engagement initiatives. Such funding could act as sponsorship for Forward Coins that could be redeemed with the university itself or a closely aligned foundation. In this scenario, the incentive for students is to use Forward Coins to subsidize costs of student life, such as campus food, books, apparel, printing, and other supplies. This approach to campus impact is replicable at universities around the world.

Winners

- *Universities.* With Project Forward, universities can expand their community engagement efforts and greatly increase their institutional value. A university that implements programs to benefit students and other local organizations will be recognized as innovative and socially impactful. These added values attached to the university's name could result in greater alumni support and future student enrollment.
- *Student-volunteers.* The Project Forward ecosystem will help encourage college students to direct their energy to community impact. Young adults are statistically the least likely to volunteer, so incentivizing them at universities could break this downward trend (U.S. Bureau of Labor Statistics 2016). By getting involved in volunteering starting in college, the person is more likely to continue volunteering into adulthood. The experience and skills gained while volunteering also would help the students after graduation when they enter the job market.
- *Not-for-profit organizations.* Not-for-profits can be introduced to Project Forward in a highly controlled process, with the university promoting confidence in the system and giving the not-for-profits a source of volunteers who are engaged. The incentives provided by Project Forward will increase the access to an engaged pool of volunteers. Additionally, the digital nature of the currency will increase the visibility of the not-for-profit as volunteers tie the earning of Forward Coins to their social media accounts. Finally, because they are responsible only for the attestation of volunteer hours, not-for-profits can easily partner with Project Forward.

The university strategy offers a unique environment for testing and scaling the Project Forward ecosystem, given the concentration of participating entities. University student bodies also represent the most socially active age demographic, which can propel Project Forward's growth exponentially.

CORPORATE ENGAGEMENT STRATEGY

The situation. Corporations are increasingly dedicating significant resources to philanthropy and corporate engagement within their communities, including organizing volunteering opportunities for their employees. Some corporate employees may feel that these volunteer initiatives are limited in their effect on the not-for-profit institutions, because they are typically one-day experiences and only sometimes provide a pathway to a continued relationship with the not-for-profit. Additionally, corporate volunteering is becoming more important to employees, forcing companies to

come up with more dynamic offerings to attract and retain talent (CyberGrants 2015).

The proposition. Rather than replacing the tailored approach that each corporate engagement or human resource department has developed, Project Forward would serve as an overlay that would seek to enhance the experience of the volunteer-employee and provide greater engagement with the not-for-profit institution. In this scenario, the corporate entity that is providing the volunteer to the not-for-profit would also act as the sponsor for the underlying value of the Forward Coins. Additionally, the volunteer in this case would be required to pay it forward and send the Forward Coins to a different not-for-profit.

Winners

- *Corporations.* By overlaying the prospect of earning Forward Coins to the existing volunteer opportunities, the corporation increases interest in what is commonly a predictable program by introducing a dynamic way for employees to double their impact. In addition to the recognition from the initial volunteering opportunity, the corporation could be associated with the Forward Coins that the employee-volunteers pay forward to the not-for-profit of their choice. Finally, the corporation could track the Forward Coins they sponsored, thereby providing a more expansive way to measure their impact.
- *Employee-volunteers.* The introduction of the Forward Coin opens a new dynamic, providing employees with a greater sense of ownership and an opportunity to multiply their philanthropic efforts to what is typically regarded as strongly encouraged volunteering. Also, Project Forward is introduced to the exact demographic that is historically more likely to volunteer, thereby increasing the possibility of heightened adoption outside the corporate setting.
- *Not-for-profit organizations.* Not-for-profits can be introduced to Project Forward in a highly organized process, more closely involving the corporations and giving the not-for-profits a source of volunteers who are more likely to be engaged. This experience will make the not-for-profits more likely to participate in Project Forward outside corporate engagement settings as well, especially because the process will be streamlined and many of the concerns removed.

In short, the corporate engagement strategy introduces a wide array of the three most important players to the Project Forward platform: sponsors, volunteers, and not-for-profits. If the program were widely adopted,

Forward Coin circulation could increase substantially, not only because of the initial release of the Forward Coins through corporate volunteering but also because of a wide audience (which we believe is more likely to pay it forward) now exposed to the platform.

EMERGING MARKETS STRATEGY

The situation. There is often a discrepancy between charitable dollars given and their results, which are often scattered, undefined, or nearly invisible. If donors could confirm the number of hours of labor for social good that their dollars were enabling, they would be more satisfied with and would potentially increase their contribution.

In addition to the handful of large global charities, there are a multitude of localized not-for-profit organizations in emerging markets that could make a significant impact in their communities but that lack adequate financial and operational support. The true needs of each community are best known by its local inhabitants, who understand the region's specific culture, history, and social background. If given adequate support, these local not-for-profits in emerging markets could make a lasting impact.

The proposition. Emerging markets and developing countries are in need of community engagement. By appropriating funds to not-for-profits that are making quantifiable impacts on the ground in these areas, the Project Forward ecosystem will ensure the growth of communities in the direst need. In addition to encouraging volunteering, Forward Coins can be used in non-volunteer activities, potentially in government-sanctioned or government-sponsored initiatives. Additionally, the opportunity for sponsorship of Forward Coins through a recurring revenue stream (such as a line item in a municipal budget) could result in sustained impact that garners broad community support.

Winners

- *Donors.* Forward Coins monetize volunteer hours so that donors know the quantifiable impact that their philanthropic dollars are making. Because of differences in exchange rates, donors in developed countries can also see their donated dollars sponsor more hours and drive more social impact. Additionally, this would enable them to publicly demonstrate their organization's commitment to positive social change with a tangible result that could easily be linked to their social media accounts.
- *Communities and not-for-profit organizations.* With a transparent flow of resources incentivizing community members to become more

involved in not-for-profits, local communities can improve the social conditions for all parties involved. This perpetuates community support more than any outside organization could by coming in and providing resources.

- *Volunteers.* By improving conditions in areas with unemployment rates in the high double digits, Project Forward encourages volunteers to be engaged in their local communities and develop skills and relationships through organized volunteering. The incentives derived from Forward Coins and earned through constructive community engagement will likely go to food, medicine, shelter, and education. Although the option to “pay it forward” will still be available, the opportunity to improve access to basic necessities while also assisting their communities will be an extremely attractive proposition to a younger generation that seeks to be a proactive force.

Emerging markets potentially provide the fastest growing and most impactful avenue for Project Forward, given the reduced red tape and potential for municipal support. The reality is, most not-for-profit organizations in the United States and Europe have country offices in developing countries, where arguably the need is greatest.

Expected Impact

- **Increased rates of volunteerism and social engagement.** Individuals will be able to do well while doing good and find a new incentive to assist communities and people in need.
- **Newly gained education in digital currencies and wallets.** Users can develop an appreciation for a type of stored value that will likely characterize future transactions in the global marketplace.
- **Creation of new social value in the world.** The Forward Coin currency is not just a cryptocurrency but more importantly is also a social currency that individuals can use with the knowledge that it was earned through socially impactful means.
- **Long-term scaled vision for social impact.** In the United States alone, Project Forward anticipates engaging up to 5 million new volunteers per year. This figure, multiplied by the 52-hour median volunteer rate (U.S. Bureau of Labor Statistics 2016) would produce 260 million new volunteer hours associated with Project Forward per year. Conservatively estimating that 10 percent of the existing 62 million volunteers (6.2 million) would also participate in Project Forward leads to the following annual Project Forward social impact forecast: assuming the \$24.14 per hour value of volunteer time estimated by the Corporation

for National and Community Service for 2016 (Independent Sector 2017), 11.2 million volunteers per year × 52 volunteer hours per year = over \$14 billion in volunteer monetization per year. The importance of volunteering is not limited to the United States, and the \$14 billion in volunteer monetization for the United States alone is a conservative estimate for Project Forward's value creation globally.

Potential Challenges and Frequently Asked Questions

HOW DOES PROJECT FORWARD PREVENT FRAUD?

Because Forward Coins are on the blockchain, they are trackable and verified, which allows for an auditing process. Any not-for-profits that commit fraud would be risking their reputation, one of their most important assets, to make a nominal sum. Additionally, individuals will be limited to the number of coins they may earn per month.

WHY NOT A POINT SYSTEM INSTEAD?

Points are not traceable or reusable on a large scale. Because a Forward Coin is based on the blockchain, it is traceable and reusable, so the positive value of volunteering can have a multiplying impact on society. Simply, a Forward Coin is valuable because there is no doubt how it is earned, and because it can be reused, its value multiplies. In addition, the point system removes a sense of legitimacy that a currency contributes to the global environment. To effectively solve an issue as pertinent as increasing volunteerism, we must ensure that the strongest methods are used.

HOW DO SPONSORS BENEFIT?

In addition to contributing toward the promotion of volunteerism, sponsors donating to Project Forward will receive significant tax benefits because Project Forward is a 501(c)(3) nonprofit. Sponsoring can also be an opportunity for additional brand loyalty through widescale branding using our website, for participating in exclusive events, and for reaching a younger audience over social media.

IS THERE SOMETHING SIMILAR TO PROJECT FORWARD?

The system most similar to Project Forward is a community currency such as Ithacash,² used in Ithaca, New York. Ithaca Dollars are used to reward shopping locally, provide grant support to causes, and make credit available for micro and community-based enterprises. Partner institutions,

² Find a complete description of how Ithacash works at <http://ithacash.com/#the-marketplace>.

residents, and visitors to the Ithaca community may also purchase Ithaca Dollars. A variable buy-in bonus is added on such purchases as a gratuity for the commitment to purchasing locally. Ithacash can be earned by shopping, paying, and posting listings in the app. Participants can also sell goods in the marketplace, work for a place that accepts Ithacash, or add personal value to the system. The main incentive that individuals have for using this technology is that they can bolster their local economy and feed off the ecosystem they are directly involved in and care about. However, Ithacash does not operate on the blockchain and is specifically designed to bolster one local community.

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CHAPTER 5

Portable Toilet Solution: Sustainable Sanitation for the Base of the Pyramid

Team SAVE: Sanitation Availability for Various Economies

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Abstract

Sanitation means more than just the improvement of health and well-being of people. It is an avenue that uplifts human dignity. Given its importance, sanitation should be available and accessible to all; no one should lack proper sanitation. An elixir to the many challenges the world is facing, sanitation is a right and a responsibility of all.

Most Filipinos who belong to the base of the pyramid (BoP) openly defecate in the fields, bushes, and seashores, which poses a wide range of risks to human health and the environment. To help those low-income communities gain access to proper sanitation, Team SAVE proposes to provide them with portable sanitation units. The Portable Toilet Solution (PTS), which is based on a utility business model, depends on two levels of cross-subsidies: (a) between the water supply and sanitation services and (b) across customer classes, to make the system available and affordable for all.

To ensure sustainability of the program and address the lack of awareness about the importance of sanitation, the program must be a collaboration between the public and private sectors and should involve the target communities.

The proposal will be piloted in the province of Laguna. The program's implementation will benefit from the existing public-private partnership between the provincial government of Laguna and Laguna Water, a water and wastewater service provider. The program can then be replicated and scaled up elsewhere in the Philippines and in other developing countries.

Problem and Context: The Importance of Improving Access to Adequate Sanitation

Clean water and sanitation are not only about hygiene and disease, they're about dignity too... Everyone, and that means ALL the people in the world, has the right to a healthy life and a life with dignity. In other words: everyone has the right to sanitation.

—King Willem-Alexander, UN Secretary General Advisory Board on Water and Sanitation (COHRE et al. 2008)

Ensuring access to clean water and adequate sanitation plays a vital role in achieving other sustainable development goals. The United Nations Children's Fund and World Health Organization (UNICEF and WHO) Joint Monitoring Programme reported (2015) that the world was able to meet its Millennium Development Goal for safe drinking water. That achievement has given more than 90 percent of the world's population access to improved water sources. However, the sanitation target was not achieved. Although countries have made good progress on sanitation, 2.4 billion people still use inadequate sanitary facilities.

In the Philippines, the people and the government have given low priority to improving access to proper sanitation. More than 30 million Filipinos lack adequate sanitation. Of those, 7.8 million do not have toilets and must resort to open defecation (UNICEF and WHO 2015). In addition to ensuring access to toilet facilities, sanitation programs should include the treatment of wastewater produced by each household, because poor sanitation leads to various health and environmental problems and economic losses.

Many families exposed to improper sanitation belong to the socioeconomic group called the base of the pyramid (BoP). Either they do not have the financial capacity to build their own toilet facilities, or constructing a toilet in their dwelling is physically impossible.

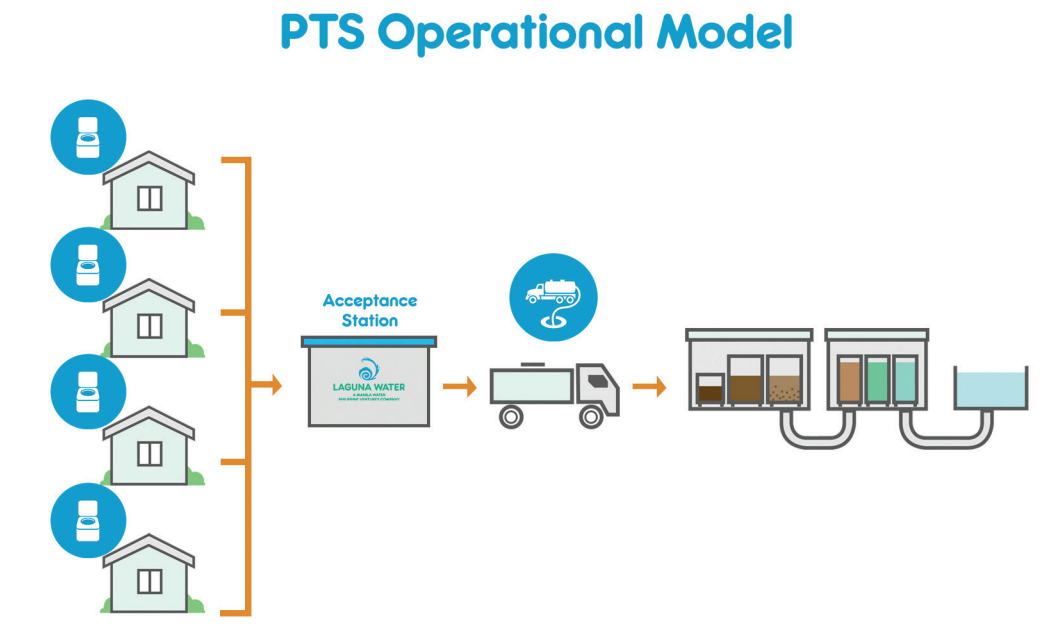
The location for implementing Team SAVE's PTS program is the province of Laguna, which has the largest body of freshwater in the Philippines—Laguna Lake. The lake has been called the world's largest septic tank because of the high levels of domestic waste that pour into the lake from informal settlements and other communities nearby. Also, in 2008 the province experienced an outbreak of typhoid fever caused by poor sanitation. An estimated 50,000 households throughout the province still have no access to proper sanitation—the same number of families who openly defecate (DOH 2015).

Solution: Portable Toilet Solution That Uses a Utility Business Model Supported by a Public-Private Partnership and Community Involvement

To help the marginalized sector gain access to a healthier life, Team SAVE proposes providing the lowest-income populations with access to sanitation systems through the Portable Toilet Solution (PTS). To ensure the program's availability and affordability, we have based it on a utility business model that will be supported by a public-private partnership and by community involvement. The model has two levels of cross-subsidies: (a) between the water supply and sanitation services and (b) across customer classes. The public-private partnerships and community involvement will ensure sustainability of the service by creating demand and ensuring supply.

Under the PTS system, BoP households will be given a portable toilet bundled in their water service connection. The toilets will have a collection system to ensure proper disposal and treatment of household waste in a wastewater treatment facility (figure 1).

Figure 1 Overview of the Portable Toilet Solution



PTS is an avenue to improve health, alleviate poverty, and increase productivity of BoP families. Its design will ensure that households are comfortable using and maintaining the portable units. A cartridge containing the waste from the toilets will be collected by Laguna Water's roving vehicle from each household for pre-treatment in an acceptance station before seamlessly being integrated into the utility's existing wastewater infrastructure and treatment facility. The utility will be responsible for the collection, transport, and treatment of wastes.

The PTS Pilot

Team SAVE will conduct a two-phase pilot to ensure scalability and replicability of the PTS model. The first phase will focus on the technical component of the PTS—the technology and infrastructure of the system. The second phase will focus on the commercial component, specifically the utility business model.

In the first phase, the project will gather consumer feedback on the portable toilets and treatment schemes. Twenty households will be targeted to participate in providing consumer insights, customer experience, cost-to-serve (capital expenditure and operational expense), and technology reliability. There will be two vendors involved in the study for parallel checking of the best-fit toilet. Vendor 1 technology will be tested for one month and Vendor 2 technology for another month in those 20 households. The portable toilets will be redesigned based on the consumers' feedback.

The second phase of the pilot will involve collecting feedback from 30 households that are using the final versions of the portable toilets from the two vendors and their treatment schemes. The feedback will stress-test the utility business model, including validation of the economics of the project. The success of the second phase will determine the launch of the PTS service in 2018.

Business Model Implementation

The proposal involves implementing the PTS system using a utility business model. The program will work with communities to strengthen their awareness of sanitation. The partnership between Laguna Water and the provincial government of Laguna will enhance the PTS system's sustainability (figure 2).

Laguna Water will contract with the manufacturers to design the portable toilet in a way that considers functionality and sustainability. The manufacturers' relationship with Laguna Water is purely as a vendor.

Figure 2 Structure of Implementation



Laguna Water will then offer the portable toilets to BoP consumers. The utility will be responsible for the collection, transport, and treatment of wastes. Team SAVE will develop various educational and informational programs to increase communities' awareness of the importance of proper sanitation to the health of people and the environment. In addition, the government can champion the social acceptance of sanitation through implementation of ordinances and regulation.

To reduce the cost of the PTS to BoP consumers, Laguna Water will integrate subsidies into its utility business model where possible across services (water supply and sanitation) and across customer classes (the wealthier customer base and BoP consumers). The business model will bundle PTS with its water supply services and with other wastewater services (figure 3 and table 1). Those include sewerage services for areas with

Figure 3 Utility Business Model

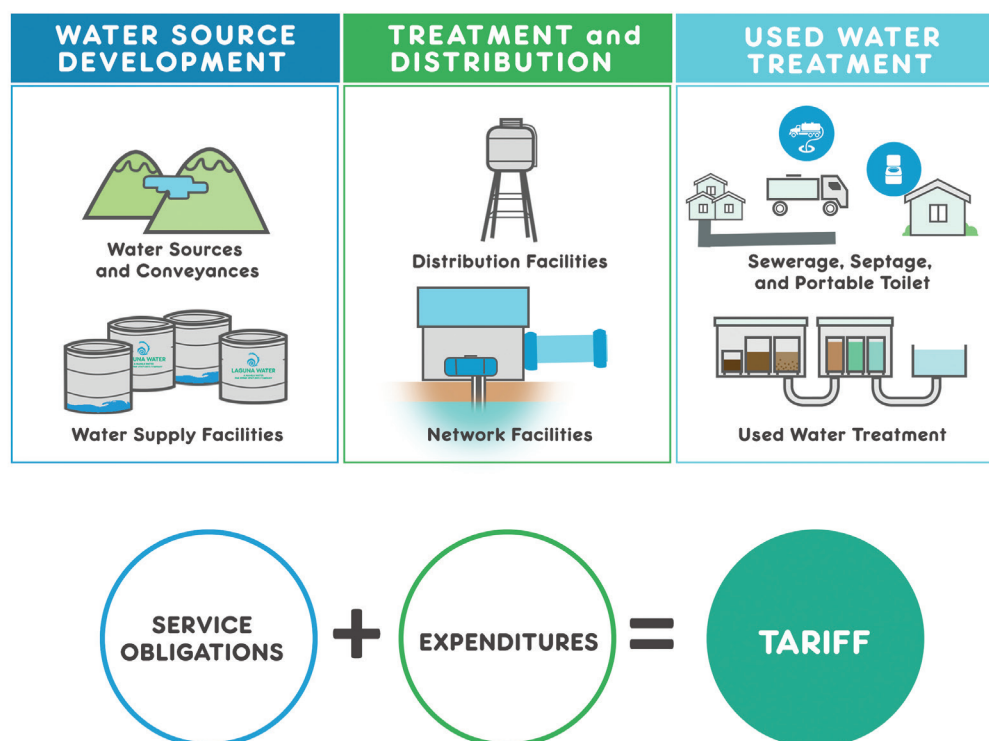


Table 1 Sample Computation for Bundling of Wastewater Service at X% of Water Charge

Water Consumption (m3)	10	15
Basic Charge for Residential (A)	181.32	271.98
Environment Fee at X% of Basic Charge (C)	X * 181.32	X * 271.98
Vatable Charge (V)	A + C	A + C
VAT (12%) (T)	0.12 * V	0.12 * V
Total Amount Due	V + T	V + T

sewers and desludging services for areas with septic tanks. The bundling will reduce the cost to BoP consumers, compared with a stand-alone service offering.

The involvement and participation of the community in the pilot will be critical to determine the viability of the PTS prior to its commercial launch. The BoP households that participate in the pilot study will naturally be the ambassadors of the PTS as the inaugural users. Their acceptance can influence others to shift their traditional practice of open defecation to a more convenient, healthier, and safer means of waste disposal.

Expected Impact

Communicating the importance of sanitation is essential in increasing communities' awareness of how the use of the PTS will prevent the spread of waterborne diseases like diarrhea, typhoid, and cholera, among others. In the Philippines, the lack of clean water and proper sanitation are the main causes of death for 55 people daily, on average. (National Sewerage and Septage Management Program as cited by Jones, 2015).

Owning a toilet is a sign of progress. By addressing the problem of open defecation in Laguna, the province will give BoP families privacy in performing hygienic practices, which in turn will give them a sense of dignity, improve their self-worth, and boost their confidence. Moreover, sending sewage to a treatment facility ensures that the effluent complies with quality standards before being discharged to receiving inland water bodies. Treatment is essential in closing the loop for public water use because it aids in the natural water purification process—through water cycling—and is therefore a more sustainable process for generating reusable water.

The PTS business model's cross-subsidizing of sanitation charges will lower costs to the marginalized sector and increase the availability of sanitation services. Increased access to sanitation also will reduce health costs attributed to waterborne diseases, which are caused by exposure to unsanitary conditions and untreated waste reaching the groundwater. That savings frees public funds for other improvement projects. The involvement of the private sector in a public endeavor also will free other government resources, which are typically scarce in developing countries like the Philippines. With a public-private partnership, the government can use its funds for other equally important social initiatives to benefit the public.

Comparable Product Offerings

Container toilets are being offered elsewhere in the developing world, but none have proved to be scalable and sustainable. The business model used by some private companies, nongovernmental organizations, or partnerships of those, is as a stand-alone service. Ghana, Kenya, and Peru were among the first to benefit from the toilet technologies of Clean Team, Banza, and XRunner, respectively.

The technologies used by the comparable container toilets also focused only on the design and customers' ease of use. Sustainability remains a challenge in such systems, given the maintenance cost and other expenses of the portable toilets they offer. The fees also are burdensome to the BoP households when they are paid by the customer alone. Where they are subsidized by donor institutions on a limited arrangement, long-term viability is quite fragile.

In addition, program models that distribute container toilets only strengthen the supply chain; they do not incorporate the creation of demand. Such models lack promotional techniques to transform the social mind-set and reform the behavior of consumers regarding the importance of sanitation. Both are key ingredients in creating a sustainable business model.

Potential Challenges

One of the challenges that the team may encounter when introducing PTS is the BoP community's acceptance of the program. Throughout the province of Laguna, an estimated 50,000 households still have no access to proper sanitation, which is the same number of families without toilet facilities.

Although most of Laguna's population has a hygienic lifestyle, those behaviors are not being translated to effective sanitation practices because of lack of knowledge and information. Thus, Team SAVE will focus on making the community aware of the importance of sanitation and of the danger of open defecation. Our Information, Education and Communication Campaign: SANITARY (Sanitation Is Necessary) will reach out to the marginalized sector not only by holding seminars but also by conducting a social experiment, such as showing the impact of sanitation using a diorama. This initiative can contribute to breaking social norms and can change the community's behavior.

Another challenge is that the BoP communities are usually situated in environments that may be narrow, rocky, flood-prone, and difficult to

reach. Locating the toilet may be a primary concern. With the PTS's portability, however, space may not be a problem.

Sustaining the business side of the project also may be a challenge in some communities. However, charging sanitation service fees can be an effective tool in instilling a sense of ownership, which can strengthen the accountability of users. As part of the public-private partnerships of the PTS system's business model, Laguna Water will ensure access to improved sanitation. Along with the system's ease of use and maintenance, and the social benefits of proper treatment, the PTS system is designed to be sustainable.

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CHAPTER 6

A Socio-productive Model for Entrepreneurial Education and the Promotion of Business Activity for Women Who Are Victims of Armed Conflict

“She Is Who Walks, Thinks, Dreams, Inspires, and Improves Lives”

Team: She-Is

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Abstract

The nonprofit foundation She-Is empowers women by recognizing their peace entrepreneurship and acknowledging their very essence as entrepreneurs. She-Is strengthens productive units through its social brand that promotes the efforts, worth, and representation of women who have been directly affected by armed conflict and who face challenging life situations as a result of the violence they have endured.

She-Is implements a socio-productive model of entrepreneurial education and promotes business activity for women who are survivors of armed conflict. In Colombia, the She-Is foundation and its campaign is the first of its kind, with a social brand that seeks to champion women in postconflict situations as successful entrepreneurs by harnessing women’s knowledge to positively impact the peace process. This innovative model harmonizes the social brand with an approach that emphasizes soft skills and company

start-ups. This model also establishes a pattern for meeting sustainable development goals through economic empowerment.

Problem and Context

The armed conflict that has raged in Colombia for more than 50 years is having far-reaching consequences and has affected the human development patterns and indicators of the population groups that have suffered both directly and indirectly. A study of the phenomenon and of the various practical steps under way will help form the conceptual basis needed to understand how to transition toward postconflict development. Among the many groups that to-date suffer disproportionately from internal armed conflict, women constitute one of every two victims of conflict in the country. Women lag far behind other population groups in Colombia in terms of development indicators, which is a source of serious concern. These indicators include the individual plight of women in their road toward reclaiming their civil, social, economic, and cultural freedoms and rights.

In 2008, the Colombian Constitutional Court exposed several of the varying risks and vulnerability factors that explain how and why women are affected differently by conflict (Constitutional Court of the Republic of Colombia 2008). These factors are subsumed in the two main findings of the National Unit for Integral Reparation and Assistance for Victims (UARIV):

- i. Women face specific risks because of their gender, which accentuate their vulnerability in armed conflict; (ii) their situations as survivors who are then obliged to assume family, economic and social roles to which they are not accustomed, and which impose undue and abrupt physical and psychological burdens on them (UARIV 2012, 10).
- ii. (i) The risk of sexual violence, sexual exploitation or sexual abuse during armed conflict; (ii) the risk of being exploited or enslaved by illegal armed groups to carry out domestic tasks and roles considered “women-appropriate” in a society with patriarchal traits; (iii) the risk of forced recruitment of their sons and daughters by illegal armed groups, or other kinds of even more serious threats against them (UARIV 2012, 10).

According to the Unique Registry of Victims in Colombia (RUV), there are currently 8,160,987 victims of the armed conflict and the situation in recent times has been worsening: By the end of 2013, 2.7 million women

Table 1 Means by Which Colombian Women Have Been Victimized

Victimization factor	Number of women	Percentage of women affected by armed conflict per victimizing factor (%)
Forced displacement	3,780,677	82.25
Homicide	458,781	9.98
Forced disappearance, loss of movable and immovable property, terrorist acts, kidnappings, and others	164,958	3.58
Threat	191,784	4.17

Source: UARIV database of women and armed conflict. Accessed July 26, 2017, <http://rni.unidadvictimas.gov.co/reportes>.

were confirmed victims/survivors. By the middle of 2015, there were 3.7 million confirmed women victims. These figures imply that within just a year and a half, the number of confirmed victims grew by one million, representing a 37 percent increase. Between mid-2015 and May 2017, 4,596,200 women were registered as victims. Displacement of 3,780,677 people continues to be the indicator with the highest number of registered cases, followed by 458,781 victims killed, 191,784 women who have been threatened, 77,100 who have been forcibly disappeared, 47,627 who have lost their property or estates, and 40,231 who have been affected by terrorist acts, attacks, combat, and harassment.¹

Table 1 provides information on the various ways women have been victimized during conflict.

In the past 15 years, women in situations of violence have been provided welfare-oriented programs by the Colombian government. The programs provided by the state have not included the necessary follow-up and sustainability measures for socio-economic improvement. For this reason, the government programs should be viewed as only a partial solution. It is therefore necessary to create a model that encompasses capacity building and historical memory to achieve economic empowerment as empowered women are a sign of a nation destined inevitably for success.

Solution: Implement She-Is

The She-Is foundation is aware of the territorial challenges facing Colombia in its postconflict phase. The stage is set for transforming the lives of all Colombians. In this regard, the foundation sees that the way to achieve peace and reconciliation is by strengthening cooperation and interinstitutional

¹ The registry's database is at <http://rni.unidadvictimas.gov.co/RUV>.

coordination among public, private, and academic stakeholders, who together can generate circles of opportunity and higher quality of life for the entire population.

Undoubtedly, one of the pillars of the new postconflict plans will be the development of cross-cutting proposals that focus on (a) gender equity for women, (b) entrepreneurship and social innovation, (c) integral reparation for victims of conflict, and (d) economic empowerment. These are the guiding principles of She-Is (see box 1 for a list of She-Is projects).

The construction of this social action model requires increasingly specific actions and more in-depth research into the social issues facing women. Such research must be interdisciplinary and use a sequential approach that adds value to the analyses already conducted in this area. Despite being a relatively new line of action in public policy, socio-productive entrepreneurship has proved to be an effective tool for promoting certain aspects of the reconstruction of the socioeconomic fabric. Also, because individual and collective efforts at reconstruction of the social fabric can unexpectedly have negative repercussions, it is even more important to have solid research to base decisions on.

The She-Is foundation is the first organization with a holistic model that covers and encompasses the entire value chain of economic empowerment and that presents not only evidence-based plans and quick results, but also the measurable outcomes that have been lacking in the fragmented programs and ongoing efforts of various organizations that support women (see box 2 for reasons to opt for the She-Is pilot program).

The beneficiaries of the project are women between the ages of 18 and 45 who have been victims of armed conflict, forced displacement, and poverty in Colombia. Many of the women have already been involved in informal business as their main form of subsistence. As such, the program offers assistance and training to build these efforts into sustainable productive units (businesses), with an emphasis on creating regional clusters of complementary industries. Accordingly, these efforts comprise the holistic process toward collective reconciliation, reparation, and dignifying women's human rights and their historic memory, with a social brand that highlights the potential of the women's entrepreneurial ideas bringing visibility to their individual stories and work.

The She-Is Foundation

- As a legal entity, the She-Is Foundation is a recently established non-profit institution. Nevertheless, over the past two years, the foundation has been promoting actions at the global and regional level to empower women, strengthen the labor profile of women across various work

Box 1: She-Is Projects

She-Is Esmeralda: The aim of this project is to empower women who are victims of conflict and multidimensional poverty, with emphasis on work in apparel, textiles, and handicrafts for women throughout the country.

She-Is Women of Peace

Through this program, women build sustainable peace through entrepreneurial, social, political and cultural ecosystems within their region and are empowered to develop projects that transform and motivate them. This ultimately allows them to effectively promote and bring visibility to entrepreneurial projects that affect women in a variety of sectors in the economy.

Lines of work under this project:

- **She-Is Macondo:** Intervention track in Fundación and Banana Zone in Magdalena, furthering entrepreneurialships of agricultural products.
- **She-Is Tropicico:** Intervention track in Santa Marta focused on furthering entrepreneurship of homemade artisanal marmalades for peace.
- **She-Is Andina:** Intervention track for peace entrepreneurs in the departments of Colombia's Andean region.

She-Is Peace Doves

This coaching and leadership project is aimed at empowering and guiding women in the recognition of historical memory and human rights and in their transition to sustainable entrepreneurship.

Through courses and leadership coaching, as well as trainings, forums and workshops, the She-Is Ambassadors of Peace program, otherwise known as the "Gaviotas de Paz" (Peace Doves) program, develops a variety of educational projects to give women a better understanding of their roles and their rights in the context of the peace process, to make their voices heard, to give them more visibility in their lives, and to empower them as leaders, as entrepreneurs, and as ambassadors of peace.

Research Center

The center will house relevant project information and data and focus on the production of relevant public policy content on women and the economy, economic inequity, and social mobility of women in postconflict contexts to impact public policy outcomes. It will also further the preparation of documentation on productive start-ups for the economic and postconflict development of women and their families.

She-Is Global

Internationalization and implementation of the model as a campaign and social brand and that will work to identify new productive work units of women in other countries.

Box 2: Five Reasons to Opt for the She-Is Pilot Program

1. Creates social mobility
2. Develops entrepreneurship for the postconflict period and for peace
3. Offers reparation through broad-based entrepreneurship
4. Provides a line of research on development economics focused on women
5. Creates productive links and acquisition of technological skills
6. Establishes the first social brand that identifies women in the process of reparation and peace

specializations, promote gender equity, reduce the education and wage gap with population groups, and advance the implementation of social entrepreneurship as an instrument of economic transformation. The members of the foundation have cross-cutting experience in their own right in the social field, in areas such as international project management, business development, designing and developing public policy, and advising and consulting in entrepreneurship, gender equality, sustainable economic development, international relations, and territorial development for governments and multilateral organizations. As a result of the foregoing, the proposals created by the foundation have been recognized internationally and nationally. Recognition further includes:

- Young Woman Entrepreneur Award 2017, the Young Americas Business Trust (YABT), the Organization of American States (OAS), and PepsiCo Latin America, in a joint effort to create better opportunities for young women in the Americas
- Nomination for the Viva Premios Schmidheiny 2017, Costa Rica
- All Ladies League “Iconic Women: Nurturing A Culture & Ecosystem for Innovation” Women Economic Forum Global Award, India
- International recognition at the Global Entrepreneurship Summit, held in Kenya in 2015, as one of the most promising ventures for peacebuilding in Colombia in the postconflict stage
- Iberoamerican Women’s Award of the Network of Iberoamerican Youth, by the government of Peru
- Nomination for the Nelson Mandela Innovation Award in the category of youth at the global level
- Pontifical Xavierian University Award for transformative models in societies that are building peace
- Award of the Cross of Excellence from the Governor of Cundinamarca and the Municipality of Cajica in Colombia for the organization’s program model and support to women victims

Pilot Project

The pilot program will have an estimated 90 women in the productive stage and 280 women receiving marketing support. The beneficiaries will be women between the ages of 18 and 45 who have been victims of armed conflict, forced displacement, and multidimensional poverty in Colombia. In each activity, the beneficiaries will be grouped by sector and specific skills. The pilot program will begin in the northern Caribbean region in the department of Guajira (in the city of Rioacha) and the department of Magdalena (in the city and municipality of Fundación) and will include work in the Banana Zone, in the town of Ciénaga near Santa Marta, as well as other rural zones/municipalities such as Puebloviejo and Aracataca. The pilot project chose to start in these particular municipalities as they have on a national level been the ones that have most suffered the scourges of the conflict and the areas with the least government presence. The successful implementation in the northern region, the She-Is Foundation, will expand to the southern region of Colombia in the department of Nariño (city of Tumaco) and the department of Putumayo (in the municipality of Mocoa).

The project will be aligned with prioritized focus areas that address key challenges of the Colombian conflict:

- Peacebuilding
- Sustainable rural development
- Reparations for victims of the conflict and postconflict
- Reconciliation
- Empowerment
- Visibility of and reparation for women

The socio-productive model for entrepreneurial education and the promotion of business activity for women who are victims of armed conflict in Colombia will have three hubs or production centers in the department of Magdalena: in the municipalities of Fundación-Aracataca and Gran Vía (Banana Zone), and the municipality of Puebloviejo.

With pro-bono engagement of a Latina American law firm, the She-Is Foundation will be expanding into other countries in Latin and Central America such as Mexico, Peru, Bolivia, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Argentina.

General Profile of Participating Women

She-Is women are survivors of the armed conflict in Colombia for whom dispossession of land, internal displacement, murder of spouse and

relatives, and sexual abuse are the most common afflictions. The type of hardships experienced will be reflected in the first segmentation criteria.

Similarly, a large number of women find themselves in vulnerable social situations, as measured in Colombia by the NBI (Unsatisfied Basic Needs) and the IPM (Multidimensional Poverty Index) indexes.

When these indexes exceed 33 percent in terms of lack or deprivation of safe habitable living, health, education, basic sanitation, childhood, and environment, the women are destined to fall and stay in a poverty trap. Geographic zones selected in Colombia's Caribbean region, such as the municipality of Fundación and the rural zone of Tasajera in the municipality of Sitionuevo, are areas that have an NBI around 60 percent and an IPM close to 50 percent. Fundación is among the municipalities with the highest number of victims of the Colombian conflict, totaling around 27,000 as of 2015. Of this total, 50 percent are women. This factor also will be reflected in the first segmentation criteria.

Broad Outline of Main Actions

1. Acquire physical infrastructure for the She-Is model (Mentoring in Learning Circles) that are the physical spaces for the creation and the provision of workshops and technical assistance, that focus on dignifying human rights, historic memory, entrepreneurship and branding.
2. Establish a baseline for She-Is women.
3. Recruit skilled individuals: professional female mentors.
4. Design, structure, lay out, and digitalize manuals, protocols, and methodologies for the She-Is model.
5. Design and develop the social brand platform and online market place for She-Is women to sell their products.
6. Develop the mentoring program for soft skills in entrepreneurship.
7. Strengthen the entrepreneurial capacity of productive units.
8. Inject seed funding for fixed assets and working capital.
9. Promote She-Is as a global movement and brand.
10. Conduct fieldwork, identify issues already on the table, and enable the development of socio-productive work units (UAPTs) otherwise known as associations or co-working units.

Technical Details of Project

Following a consistent evaluation of the criteria previously described, the She-Is Project manages the selection of candidates through the development of an Impact Evaluation Matrix with the intent of mapping and

characterizing early entrepreneurship behaviors that focus on soft skills, employability, and acquisition of technical knowledge in business management. This process allows She-Is to establish an Impact Measurement Baseline of the women and is essential at the onset of the project as according to the Global Employment Rate (TGP) of the National Department of Statistics (DANE) indexes, a large number of women are forced, out of necessity, to be involved in informal businesses as a main form of subsistence, often which lack the entrepreneurial, financial, or productive standards to be able to succeed and be a sustainable source of income for women.

The matrix takes into account three fundamental dimensions, each of which has its own weight: (a) socioeconomic: the extent to which intervention by She-Is is required (weight: 35 percent); (b) entrepreneurial-productive: the potential and scalability of the business idea or subsistence business (weight: 45 percent); and (c) intra-enterprise: the level of experience and soft skills existing in the business before intervention by She-Is (weight: 20 percent).

The management of the She-Is Foundation also seeks to forge links with municipal and departmental authorities, with municipal offices or local governments, to get to know female leaders who could provide feedback about their experiences, review databases on social investment programs, and help develop a far more efficient baseline. We have already established a timetable for the rollout of the model in the municipalities of Fundación, Magdalena, and Corinto, in the department of Cauca, as well as Sibundoy, Putumayo, and Riohacha Guajira.

Our goal is to ensure that, in the long term, the She-Is model will become the cornerstone for the first Socioeconomic Center for She-Is Women and that it will focus on entrepreneurship and business development in the postconflict era. Such a commitment is not accounted for among the key points discussed at the peace negotiations in Havana. In addition, our aim is for She-Is to cover the entire chain of production, to generate sustainability. As we explained at the outset, we are already thinking in terms of generating demand for the output of producers and for the She-Is model. When the pilot project is up and running, we expect to be serving 45–90 women, comprising three to six productive units in world-class strategic sectors and clusters for Magdalena and Colombia.

Financial Considerations and Potential Partners

- **Minimum period for generating first management impacts:** 4–6 months.
- **Estimated cost for 4-month period:** US\$28,000

- **Estimated cost for 6-month period:** US\$49,460
- **Estimated cost for 12-month period:** US\$82,000

An annual financial sustainability plan that focuses on the diversification of the foundation's income will be prepared on the basis of negotiations with interinstitutional actors such as the following:

1. Institutional investors: Agencia Presidencial para la Cooperación (Presidential Agency for Cooperation); Ministerio del Postconflicto (Postconflict Ministry)
2. International development aid agencies: U.S. Agency for International Development (USAID)—United States government; Inter-American Development Bank (IADB); Organization of American States (OAS); other international development funds
3. Private corporations: AVIATUR Group, Bancamía, among others
4. Academic system: Red de Transformación Social de la Universidad Javeriana (Social Transformation Network of the Pontifical Xavierian University)

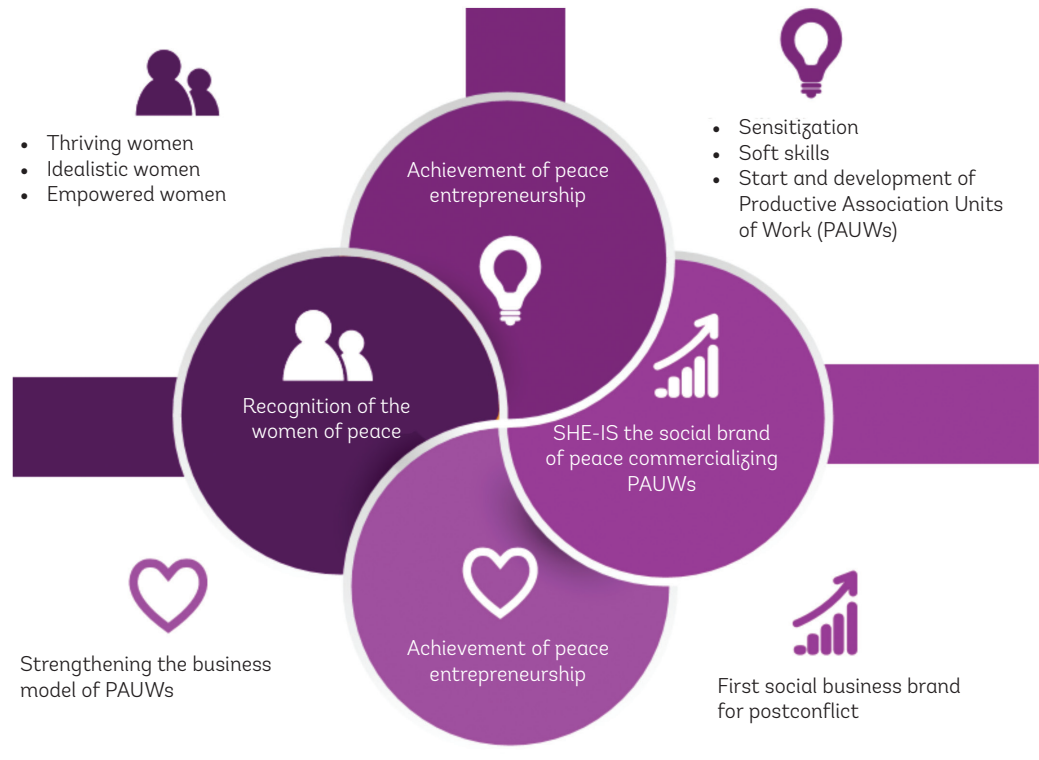
Recent Developments with the She-Is Project

A collaboration agreement and strategic alliance was recently finalized with Bancamía, an important social Colombian bank that allocates and raises microcredit resources for clients at the base of the social pyramid. Bancamía will provide technical assistance with financial training to the productive units formed by the She-Is model and will make the necessary evaluations for the allocation of microcredits for prospective units that, once certified, might require productive investment in two areas: fixed assets and working capital.

The Social Transformation Network of the Pontifical Xavierian University and the university itself have offered to support the project by providing technical advisory services in the implementation of the She-Is model in the proposed regions, as well as support evaluating the initiative's technical and methodological suitability.

Both the foundation and its model have recently been very visible in national and interregional media, such as radio, TV, and written press; the foundation's director has been advocating for women's issues in public policy discussion forums in Colombia and in international forums such as the Global Entrepreneurship Summit in Kenya; and the foundation has been nominated for the Nelson Mandela Innovation Award. Because of this

Figure 1 She-Is Model



attention, national and municipal leaders have submitted proposals to partner with our initiative and to extend its reach well beyond the areas initially envisaged: a measurable socioeconomic impact.

Similarly, we recently submitted a proposal to collaborate and form a strategic alliance and partnership with the Herencia de Timbiqui, a development foundation focused on cultural projects with women of African descent to catalyze the development of productive units that are led by women and that focus on the supply of biodiversity-related and artisanal products and services that can be included in tourism service supply chains in the state of Magdalena. We are still continuing discussions to increase our possible strategic allies.

Impact Assessment

Qualitative Results

The following indicators and evaluations will be used to assess the qualitative results and impact of the She-Is foundation:

- Assessment of the psychosocial characteristics of women before and after their participation in the program
- Periodic evaluation of cognitive acquisition of the techniques taught in the seminars in the Learning Circles
- Evaluation of intrapersonal and interpersonal behavioral changes, seeking to assess the psychological impact of these changes on day-to-day decision making
- Assessment of participants' management of personal finances during and after the pilot

Public Policy Analysis

The following questions will be used to analyze the project in terms of public policy:

To what extent can the experiences women gained in the She-Is pilot be repeated, reproduced, and adapted to other dimensions of, scales of, and experiences with public policy to support victims and actions to mitigate conditions of extreme poverty and social vulnerability?

What insights have been gained in social research on development as a result of the project?

Which socioeconomic transformation models contribute to the attainment of sustainable targets such as poverty elimination, economic empowerment, family ties, and sustainable development with gender equity?

Philosophy

She-Is who has the very big challenge of exploring the exponential and growing model of women's empowerment through social innovation. She-Is who invites you to change, She-Is who welcomes you to her community to reduce the inequality gaps and reach different regions. She is a girl, a young mother, a daughter, a sister, a grandmother, a wife, who together with him construct reciprocity, providing the spaces to breach the gender equality gap. She-Is the one who lives her everyday life, as a businesswoman and an ambassador of peace.

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APPENDIX: HONORABLE MENTION

The Appendix presents abstracts of the submissions among the finalists that received honorable mentions. They appear below in alphabetical order of proposal title.

Commodity Bonds: A Practical Solution to Crisis Vulnerability in Commodity-Dependent Developing Countries

Team: The Commodity Band

Rafael Proença, Master in Public Administration in International Development (MPA/ID), Harvard University–Kennedy School of Government, Class of 2018
Mohamed Qamar, MPA/ID, Harvard University–Kennedy School of Government, Class of 2018
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Abstract

Over two-thirds of developing countries' economies are highly dependent on commodities. These Commodity Dependent Developing Countries (CDDCs) face lower long-term growth prospects and higher risks of entering and remaining in international debt crises. Commodity bonds—bond contracts with coupon payments linked to the price of a country's main commodity export—are an efficient way of promoting crisis resilience in CDDCs. The idea of commodity bonds is not new. However, commodity bond markets never achieved enough scale to become a viable option for CDDCs.

Here we review past experience, identify barriers to adoption, and propose a novel arrangement to overcome these challenges. In our solution, the World Bank plays an important role in disentangling sovereign risk from commodity risk, making the commodity bond market more attractive to both debt issuing countries and private sector lenders. We illustrate the proposal with an application to Mongolia—a country with over 40 percent of export revenue from copper alone. Finally, we present a practical implementation plan to create a large, liquid commodity bond market that would present a new option for CDDCs to increase economic resilience and enhance long-term growth.

Filling the Credit Gap: Improving SME Accounting Standards and Data Collection in India

Team DataRISE

Anant Majumdar, Columbia University

Saurabh Goel, Columbia University

Abstract

The growth of small and medium-sized enterprises (SMEs) is critical to the overall economic growth of developing nations. However, many businesses in developing economies do not have sufficient access to the financing they need—they often lack both the financial data and the collateral necessary to acquire loans. Alternative lending, which takes advantage of nontraditional data sources, has the potential to mitigate this issue. However, surveys of alternative lenders suggest that a lack of proper accounting data currently hinders the ability of SMEs to obtain financing from these lenders. Consequently, alternative lending has yet to make a meaningful dent in the current SME credit gap.

To address this issue, the DataRISE team proposes a comprehensive, dual-platform solution available to both SMEs and alternative lenders. This system would take advantage of existing digital payment infrastructure to greatly improve accounting practices for SMEs and make these data readily available to alternative lenders, thereby reducing customer acquisition costs and enabling greater scale. By better connecting previously excluded businesses to lenders, our platform has the potential to boost SME growth in developing nations around the world. Currently, recent developments and economic conditions in India make the country an optimal environment to implement our solution. Eventually, this service can expand to other emerging markets.

Innovative Solutions to a Sustainable Blood Supply Chain Management System: A Technology-Driven Donor Management System in Nigeria

Team Haima Health Initiative (HHI)

Bukola Bolarinwa (Haima Health Initiative)

Nkechi Aģinge (Haima Health Initiative)

Chiedozie Nwafor (Haima Health initiative)

Abstract

The use of blood and blood products has become an integral part of modern medical practice globally, with about 108 million pints of blood utilized per annum. Every country needs a regular and safe mechanism for the supply of blood. A World Health Organization World Blood Donor Day Report in 2013 stated that in low-income countries, there is a huge demand for blood transfusion, mostly occasioned by complications in pregnancy or in children under age five who suffer from anemia.

Haima Health Initiative (HHI) is deploying mobile and web technology to build a sustainable blood supply chain system in Nigeria, hence mobilizing efforts toward meeting Nigeria's annual blood requirement of 1.4–1.7 million pints. Currently, Nigeria faces a 62 percent deficit in needed blood supplies.

This project has developed a digital blood bank with an online database of viable, voluntary, unremunerated blood donors who are connected to patients in times of emergency. It provides an excellent opportunity for scale, health sustainability, economic advancement, and public sector and private sector collaboration.

Wicked Problems, Simple Solutions, and a New Generation of Changemakers

Team Water Brainiacs

Nishtha Manocha, National University of Singapore

Björn Foortse, National University of Singapore

Abstract

Achieving the United Nations' sustainable development goals is a mammoth task that requires cooperation among different disciplines, structured classical solutions, and new out-of-the-box approaches. In addition to setting up new organizations to meet set targets, changemakers must reorganize existing systems by identifying elements that can work together to benefit the multiple stakeholders involved. Our proposed framework aims to improve the chances of achieving the sustainable development goals by adding more helping hands to the fight while, in the process, training an entire generation of future changemakers.

This idea explores the development of a symbiotic relationship between communities and universities to aid in achieving the sustainable development goals. We propose that universities adopt local communities as study areas for their students' final-year projects. The sustainable development goals will guide the definition of the project objectives. Local communities will serve as multifaceted, cross-disciplinary case studies and benefit from the completed projects. The educated, young, and ambitious students will obtain the chance to experience real-world problems, and the university will gain local expertise and data sets that enable further sophisticated problem solving. The data collected during the course of these projects will enable efficiency measurement, performance quantification, and priority identification. This, in turn, will aid in the reassessment of objectives and will facilitate improvement in the effectiveness of funding allocation.

The feasibility and scalability of the idea are explored in more detail in the proposal. Discussions include the stakeholder management framework, scale-up strategy, incentivization program for private investors, a funding strategy, and means to address potential "soft" problems that may surface during the implementation.

