NTF4Ag:
Emerging Lessons and New Frontiers

INNOVATE FINAL SYNTHESIS REPORT

April 2020

Contents

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Advisory Group: Thank you to the project advisory group for the valuable contributions and relevant expertise provided throughout the duration of INNOVATE: John Amimo (African Rural and Agricultural Credit Association (AFRACA); Carolina Trivelli, (Instituto de Estudios Peruanos); Dan Zook (ISF Advisors); Kerry Max (Global Affairs Canada) and Calvin Miller (Agricultural Finance Expert).

This work was carried out with the aid of a grant from the International Development Research Centre (IDRC), Ottawa, Canada. The views expressed herein do not necessarily represent those of MEDA, IDRC or their respective Board of Governors.

About MEDA

Since 1953, MEDA has been implementing effective market-driven programs globally. MEDA combines innovative private sector solutions with a commitment to the advancement and empowerment of excluded, low-income and disadvantaged communities (including women and youth) with core expertise in market systems, financial services, and investment. MEDA partners with local private, public and civil society actors, strengthening individuals, institutions, communities and ecosystems, and thereby contributing to sustainable and inclusive systemic change.

About INNOVATE

INNOVATE – Adoption of Agricultural Innovations through Non-Traditional Financial Services, is a three-year initiative implemented by MEDA and funded by the International Development Research Centre (IDRC). MEDA and its partners are assessing the potential of non-traditional finance to enable large scale adoption of agricultural innovations among women and men smallholder farmers in South Asia, South America and East Africa. The research and learnings will contribute to developing policy and programming recommendations.

Learn more: **www.meda.org/innovate**

MEDA

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Canada

Introduction

In 2016, MEDA held a series of roundtable discussions with the aim of engaging with agricultural finance stakeholders and experts to address the question "which financial services can catalyze change in target market segments (smallholder farmers)?" Research undertaken by MEDA together with the discussions and themes generated from the regional roundtable events contributed to the design of INNOVATE - Adoption of Agricultural Innovations through Non-Traditional Finance, a three-year research initiative (2017-2020) funded by the International Development Research Centre (IDRC). The project set out to explore the potential of non-traditional finance in fostering agricultural innovation adoption by women and men smallholder farmers.

What This Report is About

"NTF4Ag: Emerging Lessons and New Frontiers" brings together key results, insights from the case studies, pilots and cross-cutting research conducted by MEDA and its partners over the last three years. The report is framed around INNOVATE's four learning themes (see text box), which emerged in an iterative manner from the research portfolio along with engagement with key stakeholders through events, conferences, and ongoing dialogue. Each learning theme section provides a summary of the theme, key takeaways and supporting evidence from the INNOVATE research. The final section of this report outlines potential opportunities for further learning, research and action.

Who This Report is For

This report is aimed at a diverse set of actors in the smallholder finance landscape including the private sector, research organizations, implementing agencies, funders, and policymakers. As you engage with the content, we hope the findings and insights will provide you with some new ideas, approaches and models that could be tested in the country contexts and smallholder farming communities in which you work. We invite readers to approach this report with a customer-centric lens focused on smallholder farmers and to keep these questions in mind:

- What are some key assumptions about smallholder farmers that I work with/serve that could be tested, uncovered or re-imagined?
- How 'customer-centric' are the products, services, models or programs that I oversee or am involved in?
- What kinds of social, economic and systemic drivers and factors contribute to women and men smallholder decision-making and adoption of innovation?

Effectively serving smallholder farmers requires rapid and affordable innovation cycles, farmer-centric policies and regulation, and coordination/cooperation among market actors to deliver products and services to farmers that meet real needs. We hope this report spurs not only reflection but also action – in current and future product, service, program, and/or policy design and implementation.

Four Learning Themes

- **Customer Centricity**
- **Smallholder Products and Services**
- **Smallholder Household Decision Making**
- **Policy and Regulatory Transformation**

Research *Problem*

Diverse and Complex Challenges in Smallholder Agriculture

A majority of the approximately 1.5 billion women, men and children that comprise an estimated 500 million smallholder farmer households worldwide, live below the poverty line.[1] Many of these farmers, particularly women, are trapped in vicious cycles of low productivity and low earnings, which limit capacity and willingness to adopt innovations that could improve productivity. Although women make up approximately 50% of the agricultural labour force in developing countries, they often have less access than men to necessary resources, services, time, and markets, which hinders their productivity.[2] Latest data from 2019 suggests that of the USD 240 billion finance demand for smallholder farming households, approximately 70 billion is currently being supplied, leaving around USD 170 billion (70%) of global demand unmet.[3] In Sub-Saharan Africa it is estimated that **one percent of bank lending goes to the agriculture sector**, yet agriculture contributes to almost 18 percent of GDP.[4] Of the one percent, an even smaller fraction is allocated to smallholder farmers.

Global agricultural productivity is growing at an average annual rate of 1.63 percent, which is less than the 1.73 percent required to sustainably produce sufficient nutritious food and agricultural products for the projected world population of 10 billion people in 2050. Total factor productivity in low-income countries is even lower, growing at 1 percent annually, far below the Sustainable Development Goal target of doubling the productivity of the lowest-income farmers by 2030.[5]

With the financing gap and productivity challenges in mind, a recent trend of new actors, innovations and business models have started to penetrate this market. The Pathways to Prosperity report summarizes this trend as, "the rise of lending 'innovators' – fintechs and mobile network operators that deliver credit directly to rural households through digital channels, holding the associated credit risk on their own balance sheet."[6] In addition, partnerships where banks, implementers and donors work together to serve farmers are increasingly common. For example, in 2016, KCB Bank Group and Mastercard Foundation announced an initiative to promote financial inclusion for at least 2 million smallholder farmers in Kenya and Rwanda.[7]

1. FAO, Smallholders and Family Farmers Factsheet, 2012.
2. Caroline Ayes and Emilio Hernandez, "Cultivating Opportunities for Women in Agriculture," CGAP, June 22, 2017.
3. RAF Learning Lab and ISF Advisors,"Pathways to Prosperity: 2019 Rural and Agricultural Finance State of the Sector Report," 2019: 4.
4. IFC and Mastercard Foundation, "Digital Financial Services for Agriculture Handbook," 2019: 14.
5. 2019 Global Agricultural Productivity Report.
6. Pathways to Prosperity, page 4.
7. Mastercard Foundation, "KCB Group and Mastercard Foundation Announce Agricultural Finance Program to Benefit Two Million Farmers," 2016.

The use of technology to drive agricultural innovation and to improve productivity has accelerated rapidly over the past few years. As mobile phone infrastructure and accessibility expand, internet penetration increases, and connectivity improves worldwide, the use of technology to enhance farming activities via agricultural technologies – AgTech - combined with financial services, continues to grow.

MEDA's INNOVATE project builds directly on this emergence of new actors, products/services and business models, and partnerships, and examines the role non-traditional finance can have in stimulating agricultural innovation adoption by women and men smallholder farmers. INNOVATE sought to explore finance as both a core need and an opportunity for greater agricultural innovation by women and men smallholder farmers. The research interest was in **non-traditional forms of finance with potential to impact smallholders' propensity to adopt new behaviours, mindsets, practices, and technology for improved productivity**. As Nathan Associates (2015) states, "Finance is a necessary but not sufficient condition for productivity growth –it can unlock critical constraints but just as critical are the unlocking of constraints in agricultural systems, such as access to markets for other inputs, storage and logistics and efficient market channels." Finance is often considered the key missing ingredient to the adoption of innovations by smallholder farmers. However, finance is also a catalyst, and is part of a larger ecosystem of actors, goods and services, and policies that can either incentivize or disincentivize growth, innovation and improved ways of tackling productivity gaps and market challenges.

Although long-standing challenges in agricultural finance, especially for smallholders, are widely known and documented – such as high transaction costs, inappropriate products, and collateral requirements – these issues persist. In addition, women and men farmers face different dilemmas in small-scale agriculture and family

Non-Traditional Finance can be an effective vehicle to incentivize the large-scale adoption of innovations among smallholder farmers. Generally, NTF includes products, services and/or delivery channels that go beyond standard lending and saving to actively engage with smallholder farmers, private investors and entrepreneurs, offering a broader range of bundled services (financial and non-financial). While the components of NTF are not necessarily new, the combination and application exhibit non-conventional business models.

Agricultural Innovation includes (but are not limited to) changes and transformations in production and cultivation, post-production/cultivation handling and processing, use of improved inputs and technologies, adoption of ICT, new business practices and models, supply chain transactions and efficiency, inclusion and equitable opportunities, shifts in societal, gender or community norms, and revenue generation for market actors.

farms. For example, savings groups are often very successful with women but not always with men. Men, however, often adopt digital solutions at a higher rate than women due to barriers to usage and ownership of mobile phones for women in developing markets.[8] **With new tools, emerging innovations, and a growing ecosystem of actors, such constraints in agricultural and smallholder finance can be tackled**. Digital financial services and leveraging data can reduce high transaction costs; traditional collateral requirements are undergoing reform in some contexts; and climate change resilience and adaptation is made possible through new technologies and improved production practices. However, as stated above, finance alone is not enough to drive productivity or to combat threats such as climate change or a growing digital and financial inclusion divide, especially for women. Inclusive and farmer-centric policies and regulation must also create favorable conditions for innovation, along with incentives, to serve smallholder customer segments with the full range of goods and services they need to thrive and adapt in their families and communities.

With these considerations in mind, INNOVATE selected partners with a range of diverse products and platforms for farmers, including digital solutions, that recognize and address these barriers. The results and insights from the 10 research projects, along with stakeholder engagement and learning events held over the past three years, affirm that inclusive and innovative financial and non-financial services for smallholders have immense potential to support agricultural innovation adoption by women and men smallholder farmers.

8. GSMA, "The market opportunity in applying a gender-lens to Agri VAS," 2017.

MEDA INNOVATE *Research*

Portfolio Snapshot

The INNOVATE research portfolio contains 10 projects conducted by partners in the three target regions. MEDA supported the selected partners to implement pilots or case studies, depending on the scope of the research question and overall hypothesis identified in their application. Of the 10 research projects, there were four in East and Southern Africa; three in South America; and three in South Asia. The projects were conducted by diverse organizations including finance companies, consulting firms, international NGOs, and research organizations.

	Pilot Study	Case Study
Purpose	Fund the design and/or implementation of new pilots that can test and report on promising NTF products, services, or delivery channels	To document learning from previous or current initiatives/projects that lack a strong knowledge management component
Learning Outcomes	Capture new learning from the development and deployment of piloted NTF products, services or models that foster innovation uptake by women and men smallholder farmers	Capture learning from ongoing programming that exhibit innovations in finance and agriculture and uptake by women and men smallholder farmers; OR, capture learning from completed programming where innovations have not been documented or shared

This synoposis provides an overview of each INNOVATE project, each project's hypothesis that underpinned the research and learning, and the particular NTF component(s). A **hypothesis testing form** (Annex 1) was used in the grant application to decide which projects to fund; the form was also used throughout reporting to encourage partners to reflect on the learning throughout the project, not just at the end.

Agronomy Technology Limited
Malawi | Case Study

Hypothesis: It is possible to develop a holistic and financially sustainable model that bundles access to quality inputs (seeds and inoculant), access to quality extension services, and access to fair markets

NTF Component: Bundled services - inputs on loan, GAP training, marketing services

iDE
Nepal | Pilot Study

Hypothesis: Utilizing community managed rural collection centers to act as "business correspondents" on behalf of a commercial bank will profitably increase smallholder access to rural finance and crop insurance and therefore increase uptake of innovative technologies to improve production

NTF Component: Embedded financial services (agricultural input loans) in collection centers

Bidhaa Sasa
Kenya | Pilot Study

Hypothesis: Bidhaa Sasa's distribution and finance model works for the adoption of agricultural tools and goods among rural women farmers in Western Kenya

NTF Component: Affordable agricultural goods/tools on credit via group liability and peer-to-peer learning model

Dodore Kenya Limited
Kenya | Pilot Study

Hypothesis: Smallholders farmers will buy more innovation and increase their production and income when they have a mobile Innovation-wallet which makes it easy to save and borrow funds specifically earmarked for innovation

NTF Component: Mobile wallet; targeted savings and borrowing for innovation (specific purpose savings account)

I-DEV International
Peru | Pilot Study

Hypothesis: If smallholders are provided with support to adopt an affordable pay-as-you-go mobile money payment scheme, they will purchase, adopt and reap the benefits of agricultural technologies (i.e. precision drip irrigation).

NTF Component: Cooperative-managed revolving loan fund for agricultural technology such as drip irrigation[9]

CIDRE IFD
Bolivia | Pilot Study

Hypothesis: The dissemination of a financial technology that enables the use of non-conventional collateral to back innovation capital lending operations AND the implementation of the required legal regulatory setting will enable farmers to access innovation capital

NTF Component: Registration and management of non-conventional collateral for innovation capital loans

CARE Bangladesh
Bangaldesh | Pilot Study

Hypothesis: Nesting both commercial banking and insurance services into the existing Krishi Utsho value chain will improve the financial stability and livelihoods of smallholder farmers

NTF Component: Embedded bundled commercial banking services in input supply shops

Pakistan Microfinance Network
Pakistan | Case Study

Hypothesis: The current regulatory framework and the existing ecosystem for Warehouse Receipt Financing Scheme can be adopted for smallholder farmers in Pakistan through microfinance institutions

NTF Component: Warehouse receipt systems

Global Canopy
Peru | Case Study

Hypothesis: By integrating smallholders' perceptions and needs, the design of rural green credit lines can be improved and therefore enhance uptake by smallholders

NTF Component: Green finance (loan products) for smallholders to transition to sustainable agricultural practices

World Relief
Rwanda | Case Study

Hypothesis: Linking female smallholder farmers with agricultural training, input suppliers, and VSLA groups will improve investments in agriculture inputs/innovations, raise production, and improve access to more diverse food

NTF Component: Savings groups combined with agricultural training and farmer field schools

9. Original design included PAYG mobile money payment scheme for solar-drip irrigation.

INNOVATE RESEARCH PORTFOLIO *AT A GLANCE*

7
Innovations / Models Tested or Analyzed

Tested:

1. Revolving Loan Fund (Peru)
2. Non-Conventional Collateral Registry (Bolivia)
3. Bundling (Malawi, Nepal, Bangladesh)
4. Digital Wallet (Kenya)
5. Ag Tools on Credit & Group Liability (Kenya)

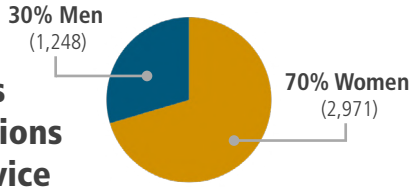
Analyzed:

1. Warehouse Receipt Financing (Pakistan)
2. VSLAs + Farmer Field Schools Model for Improved Ag Investment and Household Nutrition Outcomes / Diet Diversity (Rwanda)

20+
Unique Ag Innovations

Drip Irrigation
Drying Canvas
Fertilizer
Improved Seeds
Grain Silos
Hermetic Storage Bags
Improved Seeds
IPM
Thai Jar
Mini Tiller
Sunflower Pump
Plastic House
Plastic Pond
Hail Net
Sprayers
Sprinkler
Water Tanks

4,219
Smallholder Farmers Adopted Ag Innovations via NTF Product/Service



USD $539,381
Mobilized for Ag Innovation

12
Events with Partners + Key Stakeholders
(Online / In-Person)

MEDA: 9
PMN: 1 (Islamabad)
CARE: 1 (Dhaka)
Global Canopy: 1 (Lima)

3
Regions

8
Countries

Bangladesh, Nepal, Pakistan, Kenya, Rwanda, Malawi Peru, Bolivia

10
Research Partners

INGOs
Advisory Firms
Non-Bank Finance Companies
MFI
MFI Association

3
New or Improved Finance Products Developed / Tested

Wholesale Ag Loan
Muktinath Bikas Bank Limited (Nepal)

Ag Loan
Bank Asia (Bangladesh)

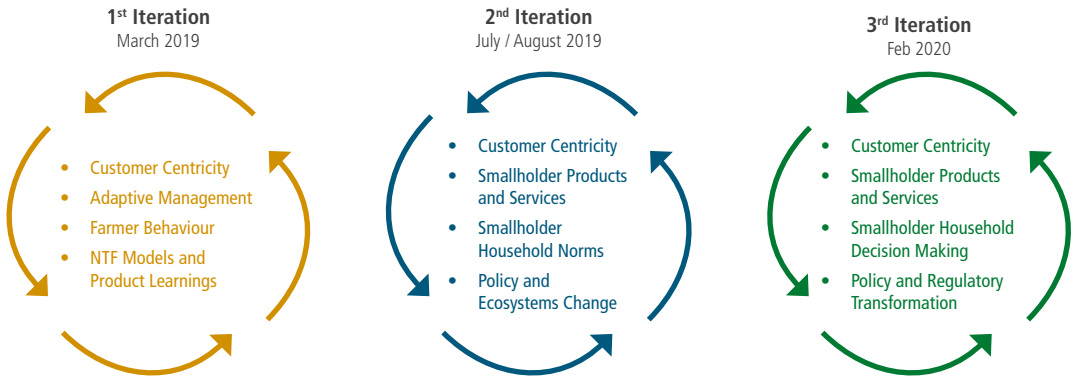
Weather-Based Insurance
Green Delta Insurance (Bangladesh)

Learning Agenda *and*

Learning Themes

The MEDA INNOVATE learning agenda was formed iteratively throughout the project while anchored on the overall research goal and key research questions related to adoption of agricultural innovations through non-traditional finance.

Early on, customer centricity emerged as a key theme across the INNOVATE portfolio, MEDA's cross-cutting research and various stakeholder interactions. As INNOVATE explored intersections among products, services, technologies, and smallholder farmer segments, customer centricity, as a strategic business approach and orientation towards one's customers, became a critical and foundational theme for MEDA and its partners. The other three learning themes took further refinement and iteration over a few learning cycles.



Research Goal

To understand and learn about different products, services, and models of non-traditional finance (NTF) and the role NTF may have in the adoption of agricultural innovations by women and men smallholder farmers in the three target regions: Eastern and Southern Africa; South Asia; and South America

Research Questions

- *Awareness:* How do women and men learn about non-traditional finance and agricultural innovations available to them?
- *Access:* Do women and men have equal access to non-traditional finance and agricultural innovations?
- *Affordability:* Can women and men smallholders afford non-traditional financing options and agricultural innovations available to them?
- *Value:* Do women and men smallholders perceive available financing and agricultural innovations as valuable and desirable?

Learning Questions

- **Customer Centricity:** How can customer-centric principles and practices influence the design and deployment of products and services that meet smallholder customer needs and demands?
- **Smallholder products and services:** What do smallholder farmers value and what are they willing to pay for?
- **Smallholder household decision-making:** How do social norms, power dynamics and market factors impact smallholder household agricultural decision-making alongside competing household needs?
- **Policy and regulatory transformation:** How can governments, regulators and financial institutions learn and adapt in light of emerging trends and disruptions (technology, climate change, migration etc.) that are transforming markets?

The following sections cover each learning theme and explore the associated learning question with key takeaways and examples from INNOVATE partner results and insights learned from the research.

Learning Theme *No. 1*

Customer Centricity

There are varying definitions of **customer centricity**, but at its core, it is an approach (also a commitment, strategy, and perspective) that puts the customer at the center of all business decisions, processes and actions. The goal of customer centricity is assuring the success of one's customer and creating positive customer experiences. For INNOVATE, customer centricity as a key theme enabled MEDA and its partners to adjust activities and overall orientation to remember to ask ourselves:

"Who is the customer? What do they need? What do they value? What can they afford? What influences decision-making and behaviour? What are the key drivers of adopting new products or services?"

According to CGAP, although customer centricity is widely accepted and generally agreed upon, **it takes more than good intentions** to implement and streamline this approach and mindset within an organization.[10] Harvard Business Review also notes while some companies struggle with lack of systems, technology or skills to segment and profile customers, others lack the processes and operational capabilities to target customers with personalized experiences or communications. Beyond these, **the most common and perhaps greatest barrier to customer centricity is related to organizational culture**.[11] If culture does not change, it's difficult to imagine or see processes, policies and solutions that are driven with the customer at the center.

10. Tanaya Kilara and Elisabeth Rhyne, "Customer-Centricity for Financial Inclusion," CGAP, June 2014.

11. Denise Lee Yohn, "6 Ways to Build a Customer-Centric Culture," Harvard Business Review, October 2, 2018.

Takeaway *No. 1*

Adopt a learning mindset to know your customer needs, pain points, motivations and aspirations

A learning mindset and orientation will best serve firms and organizations to create and sustain value for farmer customer segments. Adopting such a mindset is not a one-time initiative or decision, rather, it requires buy-in and participation from all levels of the organization. Everyone is a stakeholder of 'championing' customer centricity; all functions and divisions must collaboratively drive understanding and addressing customer needs and goals.

In the early stages of managing the INNOVATE research portfolio through kick-off workshops in each region, quarterly reports, and initial monitoring visits, MEDA observed three categories of partners in relation to customer centricity:

1. **Already embedded in processes, operations and culture**
2. **Aspirational but not operational**
3. **Not top of mind as a business priority**

MEDA used a **prototype and hypothesis testing form** to not only evaluate project proposals that were submitted for funding, but also throughout implementation and reporting for those selected. Among the partners, we observed some partners who used the hypothesis tool to track and reflect on learning each reporting period more actively than others.

The final selection of research projects benefited from a group of seasoned agricultural finance experts, who were advisors to INNOVATE throughout the life of the project. The projects that stood out, demonstrated curiosity and approached participation in INNOVATE as an opportunity to learn, especially to learn from farmers' needs, pain points and experiences.

For example, World Relief investigated the Village Savings and Loans Associations (VSLA) and Farmer Field Schools (FFS) models and the potential influence on adoption of improved agricultural inputs and innovation by smallholders in Rwanda. The study was an opportunity for World Relief to understand the effects of these two approaches, not only in Rwanda but across programs in other countries. Participation in INNOVATE enabled partners such as World Relief and others, to focus on learning rather than only achieving targets or milestones. Partners could uncover insights about clients that otherwise would not have been discovered, or at least not at the pace that was facilitated by MEDA's support and funding.

Takeaway *No. 2*

Experimentation is a simple yet powerful way to generate useful smallholder customer insights

Click to read more about Bidhaa Sasa's experience and lessons in their final learning report

MEDA learned from the INNOVATE experience that several key factors inhibit smallholder farmers to adopt innovations, and can be summarized in these four categories:

- **Affordability** (cost)
- **Value** (perception and risk/return)
- **Awareness** (knowledge and information)
- **Accessibility** (availability or proximity)

Experiments are a great way to test an idea at a small scale, and whether it's successful or not, you have quick results that can inform next steps. For example, **A/B testing**[12] can be used to explore price variations among multiple groups (with similar characteristics) to determine optimal product pricing.

A leading example of this in the INNOVATE portfolio comes from **Bidhaa Sasa**, a last-mile finance and distribution company in Kenya that offers affordable and accessible household goods and agricultural tools to rural families, especially rural women. Since its founding in 2015, Bidhaa Sasa embedded the **Lean Startup methodology** into its operations and organizational culture.

With INNOVATE funding, Bidhaa Sasa aimed to learn whether its current distribution and finance model (focused on household goods like clean cookstoves and home solar lighting) would work for the adoption of agricultural innovation, specifically hardware agricultural goods, amongst its rural women farmer customers. Bidhaa Sasa ran a series of experiments including the identification, testing and commercialization of five different products: a tarpaulin drying canvas, hermetic bags, grain storage silos, water tanks, and pressure sprayers. If the experiments were deemed successful, Bidhaa Sasa could expand its range of agricultural products and deliver more value to its customers. Over the pilot duration, over 100 units per month were sold (almost **4,000 units total**), and **73% of clients who purchased were women** – they also were the ones who paid for and used the products. Here is a breakdown of products sold:

BIDHAA SASA: SALE OF NEW AG PRODUCTS

Product	Units Sold	% Female Clients	Average PAR30	Average NPS
1 Canvas + 4 Bags	3178	73%	12%	56%
Silos	82	76%	0%	39%
Water Tanks	328	77%	0%	41%
Pressure Sprayer	73	53%	2%	N/A

12. Amy Gallo, "A Refresher on A/B Testing," Harvard Business Review, June 28, 2017.

Takeaway *No. 3*

Customer centricity is not a destination, it's a journey

Among the ten organizations that received MEDA research grants, some were familiar with customer-centric principles and approaches, while for others, it was new. An **adaptive management** approach was utilized by MEDA in managing the research portfolio by demonstrating flexibility, customized technical assistance and support based on each partner's needs and gaps. In some cases, MEDA provided targeted support to re-emphasize the principles of learning, testing and iteration – rather than the need to strictly deliver on the implementation plan and targets set out in the original proposal.

CIDRE, a microfinance institution in Bolivia, has a long history of research, social and economic development, and inclusive rural financial services in the country. In partnership with MEDA INNOVATE, CIDRE sought to develop and pilot a non-conventional collateral (NCC) registry system, to standardize its own processes of registering, valuing, and monitoring NCC used by CIDRE clients for loans.

Click to read more about CIDRE IFD's experience and lessons in their final learning report

Early in the project, MEDA worked with CIDRE to adopt a lean and agile approach, borrowed from best practices used in software and application development. CIDRE used the information and feedback to design a plan to develop and test a 'Minimum Viable Product' (MVP), rather than spending a lot of time and effort on a fully developed registry system.

CIDRE's Head of Risk, who oversaw the pilot shared:

"I was definitely tempted to build the whole car at the beginning. Why? Because from a project manager's perspective, you want to develop the best thing possible. Once MEDA mentioned the MVP approach, I was convinced that this is the best way for the project. A MVP, actually, is common sense - but the problem is, it's not always on our radar, but for developers, MVP is very integral for what they do."

Customer centricity does not happen overnight. By starting small and instilling iteration throughout processes and culture, firms and organizations can create value for clients, and potentially deepen customer relationships and loyalty.

Smallholder Household Decision-Making

Customer Centricity

Learning Theme *No. 2*

Smallholder Products & Services

INNOVATE's second learning theme relates to **Smallholder Products and Services** and the question, "*What do smallholder farmers value and what are they willing to pay for?*" For those working at the intersection of agriculture and finance, we know that smallholder farmers are extremely cash-flow sensitive and that most loan products are not designed to align with smallholder client needs and circumstances. The few banks and financial service providers that have successfully developed appropriate and affordable products or services for farmers, "have done so through a mix of product, distribution, and collateral customizations – all of which begin with a fundamental understanding of whatsmallholder clients want and need."[13]

Businesses and NGOs alike face the challenge of finding the right product-market fit: **the degree to which a product satisfies a strong market demand**. This is even more difficult to do for smallholder farmer customers. Irregular cash flow, crop seasonality and price sensitivity must be considered to align and design the right product or service to meet smallholders' needs. Although learnings from the INNOVATE projects are context-specific, the following takeaways are relevant for a variety of actors in the smallholder finance landscape.

13. Dan Zook, "Understanding Smallholders' Financial Needs is Key First Step," CGAP, January 21, 2014.

Takeaway *No. 1*

Design and align products and services according to smallholder cash flow and willingness to pay

Price and cash-sensitivity are factors critical to product and service design and delivery, especially when it comes to smallholder farmers. Price-setting must consider how much customers will pay, and in many instances it is difficult to get this information by directly asking farmers.[14] Without this understanding, there can be a disconnect with how products or services are priced in the market, and what customers are willing to pay. Another factor that should not be underestimated is cash flow. Products and services marketed to smallholder farmers must not only meet a market demand, but also be affordable and appropriate in terms of payment or financing terms and mechanisms, and align with crop calendars.

The learning journey of **I-DEV International** through its pilot in Peru captures lessons and insights on the importance of cash flow constraints, willingness to pay and also relevance/value perception of ag-technologies by farmers. I-DEV collaborated with a tara cooperative – the Asociación de Productores de Tara del Norte (APTN), located in San Marcos, Cajamarca, Peru. The pilot initially set out to (1) introduce precision solar drip irrigation solutions, and (2) integrate the use of Peru's national mobile money platform (BIM) for loan repayments and usage of the system. However, a few months into the pilot, it became evident that introducing several new elements and innovations to APTN farmers at the same time was not feasible or realistic.

I-DEV instead focused on providing locally-available drip irrigation systems, which are much less costly than importing solar-run systems. The final report shares relevant lessons for organizations working with farmer cooperatives/associations in designing affordable financial mechanisms for agtech upgrades such as drip irrigation systems.

Through a series of Human Centered Design (HCD) workshops and exercises, I-DEV learned these lessons/takeaways:

1. Use HCD methods and tools as early as possible in the research and design process of a pilot initiative.

2. Work closely with anchor partners (in this case, the cooperative) and explain your process, methodology and assumed drivers.

3. Apply empathy and identify your possible biases especially in these areas: income and cash flow, income-generation activities, risk tolerance and Maslow's Hierarchy of Needs, and day-to-day use and appreciation of technology; also, basic services (water, electricity, utilities) may not be consistent.

14. Rafi Mohammed, "How to Find Out What Customers Will Pay," Harvard Business Review, September 7, 2012.

Adding to the key lessons from partners like I-DEV, MEDA hosted a learning event in June 2019 with the author of Lean Impact, Ann Mei Chang, to encourage implementing organizations and the private sector to adopt *lean approaches* in the global development arena. In her book, Chang encourages readers to 'fall in love with the problem, not your solution.' This requires a fundamental shift: "falling in love with your problem means getting to the root cause, wherever it may lead. When we don't stop to understand the underlying drivers, we can waste time perfecting a solution that merely addresses a symptom and doesn't lead to sustained impact."[15]

Too often, companies and organizations identify a problem, and then quickly jump to solutions, because solutions sell, problems don't. When firms and organizations set out to tackle a problem that smallholder farmers face (e.g. low-quality inputs or erratic irrigation), investing the time and energy to understand the problem can uncover insights that can lead to potential solutions that are appropriate for customers' needs and pain points.

Click to read more about I-DEV International's experience in their lessons learned report

15. Ann Mei Chang, Lean Impact: How to Innovate for Radically Greater Social Good, 2018: 51.

Takeaway *No. 2*

Credit alone is not enough – quality inputs, information, services and trusted relationships are critical for farmers

Among several of the INNOVATE research projects, MEDA observed that demand for quality inputs was just as important as the financing needed to acquire such inputs. The emphasis on quality inputs is due to the impact on improved yields and future net revenue. While accessible, affordable and appropriate 'agricultural credit' is needed, credit alone is not enough. The recent industry trend of bundling products, services and information as a strategic and efficient (and sometimes cost-effective) way to support and create value for farmers was also observed across multiple INNOVATE projects.

iDE Nepal, in partnership with Muktinath Bikas Bank and two local NGOs, implemented a 20-month pilot that sought to increase household income through investment in climate-smart agriculture technologies. The project focused on women and marginalized groups, and offered a service bundle that combined non-traditional financial service (NTFS) loans and crop insurance products to stimulate commercial vegetable production. A key success factor of this pilot was the bundled offering of agricultural loans, crop insurance, access to agricultural technology and inputs, technical support, as well as access to extension services and information via collection centers in the communities.

Click to read more about iDE Nepal's experience in their lessons learned report

The model also built on trust that iDE built with the communities in previous programs. This previously established trust supported the demand and uptake of loans offered by Muktinath Bikas Bank, a new financial institution for most of the participating farmers in the pilot.

The pilot surpassed the target of reaching 900 clients – a total of 1,104 clients (832 women, 182 men) took up loans during the pilot period. The loans were taken for the cultivation of cole crops, cucurbits and tomatoes. The combination of loans and training supported farmers to adopt 10 different types of agricultural technologies like drip irrigation, plastic houses, hail nets, and sprinklers etc. A total of total purchase of 5,278 individual units were purchased for improved commercial vegetable production. On average, it took 7.5 days from the time of application submission to loan disbursement, ranging from same-day approval up to 14 days. Among the loan recipients, 82% were female farmers and 22% were from disadvantaged groups.

Takeaway *No. 3*

Appreciate the business case from the farmer's perspective, because markets matter and so does net revenue

Building on INNOVATE research in Malawi and Kenya, MEDA launched a learning paper on **A Customer Centric Lens for Good Agricultural Practices** and a series of **online discussions** on leveraging farmer data to build the business case for agricultural investments by farmers. By taking a customer-centric lens to promoting Good Agricultural Practices (GAP), MEDA proposes a shift in orientation among industry actors and the need to broaden the GAP agronomic perspective ("how to grow") to include the business case centered on markets. For smallholder farmers, adopting GAP is a business investment decision, not just a behaviour change decision.[16] Changing agricultural practices requires additional resources, not just inputs, but in many cases, more labour. Markets have different specifications which determine the minimum or maximum number of GAP standards that should be implemented. This means farmers must align their production practices and their cost of production with the specifications of the markets to which they sell.

The **case study** by Agronomy Technology Limited (ATL) analyzed a non-traditional finance mechanism in Malawi, called the Chithumba Model, and demonstrated the need to segment and customize GAP training for farmers. Chithumba offers a bundled service that includes loans, inputs, GAP training and marketing services. A key finding in the study around GAP uptake revealed that although 99% of clients claimed that the GAP information was useful, only 21% adopted the full set of recommendations from the training. Women adopted GAP at a lower rate than men (15% vs. 28%). The top reason cited for not implementing the recommended GAP (by 64% of respondents) is because they are too labour intensive.

The below recommendations from the ATL case study are specific to delivering on GAP and providing a bundled service for smallholder farmers, but they are also relevant for a variety of actors in the broader agricultural sector to improve service and training delivery:

1. Investigate differences among client profiles to clarify which GAP recommendations are most attainable for specific client segments.
2. Design the training methodology to tailor relevant content to specific groups.
3. Test the effectiveness of customized GAP training, especially for women, that account for labour, cost and other household responsibility constraints.
4. Demonstrate incremental changes to farmers to achieve more significant and sustainable results.

Click to read more about ATL's experience in their lessons learned report

16. Nick Ramsing, "A Customer Centric Lens for Good Agricultural Practices," MEDA (2019): 15.

Learning Theme *No. 3*

Smallholder Household Decision Making

The third learning theme builds on the previous theme, and incorporates how decisions are made at the household level. Family units are dynamic, complex, and diverse – there are various factors such as social norms, power dynamics and market realities which impact how smallholder households make decisions, especially along competing household and farm business needs. MEDA INNOVATE is particularly interested in decision-making around **adoption of and investment in agricultural innovations**.

The decisions that smallholders make for their farms, and ultimately their families, hinge on a variety of factors related to affordability, availability of finance and required inputs (including labour), land quality, knowledge and capacity, and marketability. Other factors that influence smallholder households include time availability, level of effort, traditional practices, competing household needs and expenses. When drilled down further at different farming segments along rural farming pathways[17] observations can be made on how women and men, or women within a rural farming household, make decisions on agriculture. The following takeaways draw from the research projects that exhibited this theme, especially with a focus on women and their multiple roles and responsibilities within the family and on the farm.

17. ISF Advisors, "Pathways to Prosperity: Understanding Women's Rural Transitions & Service Needs – Gender Deep Dive," 2019: 5.

Takeaway *No. 1*

Decisions by smallholder farmers are not solely driven by revenue growth; saving time and/or money are key, especially for women

As much as the agriculture-related business decisions that smallholder farmers make are critical to designing appropriate products or services (covered in **learning theme no. 2, takeaway no. 3**), increasing net revenue is not the sole driver of how decisions are made and prioritized at the household level. Decisions, big or small, especially when there's a financial and time usage impact, ultimately reflect power dynamics among family members.

For women especially, critical dimensions such as **saving time and/or money** make certain products or behavioural changes more appealing than others. This was noted by **Bidhaa Sasa** as their business model targets and focuses on rural women who are at the bottom of the pyramid and can only afford products priced under $100. In testing the range of new agricultural tools and technologies to potentially add to their product catalogue, a key learning on the transformational nature of products was cemented for the company. In order to create demand and drive adoption for a product with good repayment rates, the product itself must be transformational for the customer such as improving living conditions or farm productivity. For women, time or money savings are also key. If the first demo or first use does not compel the customer to see the value for her or his life, there is a risk of defaulting. Products like the grain silo or hermetic storage bags are simple, yet they are valued by women customers because they protect grain from rodents, maintain the quality and shelf life of the grain, and save money from losses due to lack of storage. Over 20 months, Bidhaa Sasa sold 3,178 canvas and storage bag bundles (1 drying canvas and 4 hermetic storage bags); 73% were bought by women. The majority of grain silos (76%) were also bought by women, who collectively purchased 82 units.

As stated in Bidhaa Sasa's **final learning report**, "*Ultimately, only technologies that really transform the user experience are worth commercialising both for the impact potential and its commercial viability*." For more lessons on this topic, you can watch the **final learning event presentation** by Bidhaa Sasa.

Takeaway *No. 2*

Agricultural innovation adoption within farming households is influenced by inter-family dynamics (roles, responsibilities and power) along with financial and time-related factors

Much research has been dedicated to understanding and improving rural women's authority in intra-household decision-making, due to positive correlations with development outcomes such as increased expenditure on household health and education, household nutrition and reproductive, maternal, neonatal and child health.[18] Furthermore, increasing joint decision-making within households has been identified as a way to transform power relations between women and men, thereby contributing to women's empowerment and improved rural livelihoods.[19]

The complex and dynamic nature of how farming households make decisions and prioritize necessary investments (farm and off-farm) is at the intersection of finance and innovation and is a cross-cutting research theme for MEDA INNOVATE, because the intersection of finance and innovation adoption is at play. INNOVATE research projects demonstrated a range of findings specific to their contexts and communities related to adoption of agricultural innovation and family relationships:

1. In **Malawi**, the Chithumba case study revealed that women were less likely to follow the recommended planting practices than men because they have fewer hours available to work in the field due to competing household responsibilities. They were also less likely to have the authority to use household income to pay for additional labour to assist them with work in their fields.

2. In **Rwanda**, World Relief's research analyzed two commonly used models for economic development targeting rural communities: Village Savings and Loans Associations (VSLA) and Farmer Field Schools (FFS). World Relief found a positive correlation between **joint decision-making between wives and husbands** and participation in both VLSAs and FFS programs. They also found a positive correlation between joint decision-making and participation in FSS when compared to the control group, after adjusting for demographics.

Click to read more about World Relief's experience in their lessons learned report

18. Mariola Acosta et al., "What does it Mean to Make a 'Joint' Decision? Unpacking Intra-household Decision Making in Agriculture: Implications for Policy and Practice," The Journal of Development Studies, (August 2019): 1.

19. Ibid.

World Relief's analysis suggests that FFS content and training may encourage women to engage their husbands in decisions that they previously made by themselves, or with someone else. Qualitative insight also validated these findings. Interviewees shared that the main impacts of joint decision-making included improved relationships, reductions in family conflict, and improved family finance management. One interviewee demonstrated a new understanding of household gender roles when they said, "There are some activities they always say that are for women, like cooking (and) taking care of children. In our house it is not the same. We help each other."

More results and findings are available in **World Relief's Final Evaluation Report**.

3. In **Peru**, I-DEV found that tara farmers' income is low enough that large loans are burdensome on the family, as they require approval and often co-investment from other family members. Many farmers already rely on loans for other essentials that are more clearly tied to household income generation such as buying cows for sale of milk and meat or raising cuy (guinea pigs) to sell to friends and family for food and breeding. Therefore, an innovation like drip irrigation (solar or not) is perceived as an expensive luxury that, while valuable, must fit into the cycles of cash receipt by farmers (e.g. after a large tara harvest, or sale of a cow) and other outstanding loans and payment schedules.

Takeaway *No. 3*

Value perception and trust, along with an understanding of social norms and insights into women's roles and realities, can enable the ag-finance sector to better serve women and families as customers

Trust is a recurring theme we often hear about in inclusive market systems development, and a necessity in achieving financial inclusion for all. All entities that serve and work with smallholder farmers play a critical role in delivering products, services and information at the right time, for the right price and using the appropriate delivery channels. However, creating loyalty and fostering trust takes time, intentionality, consistent delivery of value, and clear messaging to valued customers.

Customer centricity drives companies and organizations to focus on the customer and user experience (CX/UX), and can address some of these barriers to innovation adoption and use. Understanding smallholders' diverse needs and circumstances, and tailoring products and services to specific farmer segment types, is key to fostering innovation adoption. Beyond the design phase, effective marketing, which offers clear information to farmers about product benefits and costs and employs farmers' trusted channels, can foster product uptake. And finally, ensuring products adapt to customers' evolving needs and circumstances, and that these changes are communicated clearly and transparently, can support ongoing use of a product and customer loyalty by ensuring a positive customer experience over time.

Click to read more about these topics in MEDA's Learning Paper, "Digital Platforms and Customer Centricity: Fostering Adoption and Sustained Use of AgTech Solutions."

One holistic fintech solution that was studied within the INNOVATE portfolio, is the Agri-wallet, a product offered by Dodore Kenya Limited. The Agri-wallet aims to address a shortage of loans for smallholder farmers and takes an ecosystems approach to enabling different users (farmers, buyers, input suppliers) to participate and gain value from the platform. The Agri-wallet enables farmers to purchase high quality seeds, fertilizers and other necessary inputs by providing earmarked credit, transferred to a digital account. Farmers can also receive prompt and secure payment from buyers when selling their crop via the Agri-wallet.

Dodore and other agtech and fintech companies have discovered the importance of human interface to build trust around digital products. This is especially true for rural women, who often have lower levels of literacy and digital literacy. Dodore deploys a number of field agents to train farmers in-person on product benefits, costs, and use. These in-person interactions, together with a number of other touchpoints that enable them to learn from customers, help Dodore to enhance the customer experience and journey from uptake to adoption and sustained use.

Read more about Dodore's research and lessons in their final report

Learning Theme *No. 4*

Policy and Regulatory Transformation

This final learning theme on policy and regulatory transformation focuses on the opportunities for governments to pursue inclusive and innovative policies for agricultural finance, with an emphasis on smallholder farmer populations. Along with an ecosystem of actors supplying products and services to smallholder farmers, the enabling environment (including policies and regulation) must be supportive to advance finance and innovation targeted for rural households. A helpful distinction between the enabling environment and ecosystem is provided by Dalberg and the Rural and Agricultural Finance Learning Lab:[20]

- The **enabling environment** is determined by the regulatory, financial, knowledge, and digital infrastructure in any given smallholder finance context
- The **ecosystem** is composed of actors providing financial and non-financial services to smallholder farmers – and is embedded within the enabling environment

MEDA builds on these two domains with the understanding that smallholder agricultural households function in a series of interconnected 'systems' (see diagram) radiating outwards from the household unit – to agricultural market systems, community and social domains, and infrastructure and policy (or, the enabling environment).[21]

20. ISF Advisors, "Enabling environment and smallholder finance: A complex relationship," RAF Learning Lab, 2017.
21. Calvin Miller and Clara Yoon, "Fostering smallholder investment and innovation through inclusive financial services," Enterprise Development & Microfinance 31, no. 1 (April 2020).

Smallholders do not fit well under one-size-fits-all formal banking structures. Governments and their Central Banks in developing economies have traditionally attempted to alleviate perceived inadequacy of credit for agricultural production and rural transformation by using tools and policies such as highly subsidized and controlled finance (including interest rate caps) through the creation of specialized credit institutions or guarantee facilities – but not all programs or policies have been successful as planned.[22] Another challenge is increasing regulations and compliance requirements mandated by Central Banks to combat money laundering or terrorism financing, which means 'Know Your Client' (KYC) requirements have become even more stringent for financial service providers.

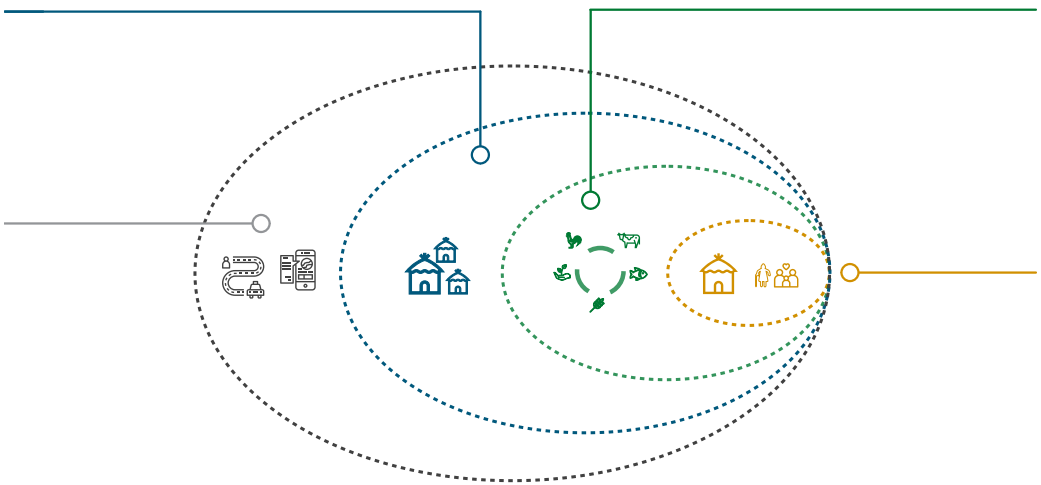
Recognizing the constraints faced by traditional banks, fintechs, agtechs, service providers, mobile network operators and others aim to address the financing gap for smallholder farmers. Such actors are not bound by the same constraints and regulations that apply to traditional financial institutions and therefore have more room to innovate. Many also apply data collected and technology used in their operations to understand their customers and are able to test products or services and get rapid feedback from customers to refine or pivot as necessary. Using lean, agile and user-centered design approaches, such companies continually iterate based on experiments and testing, with the intent to learn about clients. Rather than rely on traditional indicators of credit-worthiness, such as land titles and fixed assets, these companies are able to construct a more nuanced picture of economic activity among clients that can facilitate lending to customers who would otherwise be denied loans. With the right type of business model, smallholder farmers can therefore be proven as 'bankable clients.' MEDA's engagement with financial service providers, regional banking associations, and Central Bank representatives, revealed a few recurring challenges and opportunities for further research and action. These include (1) collateral reforms; and (2) opportunities for resilience in the face of climate change.

Household:

Creative, diverse economic entity with dynamics and complex cash flows, multiple income sources and expenses

Infrastructure and Policy:

Policies, ICT, roads, water and other infrastructure that influence and facilitate trade and access



Agriculture and Market Systems:

Access, availability and suitability of market actors, goods, services, knowledge and technology

Community and Society:

Cultural norms, beliefs and worldviews that influence decisions, behaviours and relationships

22. Calum G. Turvey, "Inclusive finance and inclusive rural transformation," IFAD 2017.

Takeaway *No. 1*

For effective collateral reforms, efforts within the enabling environment and among agricultural finance ecosystem actors must be coordinated and streamlined

Meeting conventional collateral requirements such as land or property titles is often cited as one of the main barriers for smallholders in accessing and using formal financial services. Women, who face unequal access to land and property, and are unbanked at higher rates than men, are unlikely to be able to meet formal collateral requirements for affordable or appropriate loan products for their agriculture-related financing needs. MEDA authored a learning paper on '**Experiences in Gender-Sensitive Solutions to Collateral Constraints**' taking a gender lens on how non-conventional collateral (NCC) in agricultural lending can contribute to improved access to and use of credit by smallholder farmers, especially women farmers.

As a result of perceived and actual risks of lending to smallholder farmers, credit products that do exist for smallholder agriculture require high rates of collateral, often over 200% of the value of the loan. Given limitations on property ownership and inheritance, it is particularly difficult for women to meet these collateral requirements.[23] Evidence suggests that smallholder farmers and other financially excluded groups, as well as financial institutions themselves, could greatly benefit from alternatives to conventional collateral and/or borrowing without collateral at high interest rates.

Women, even those living in poverty, often have some type of collateral, just not the kind that are generally accepted by formal lenders, often as a result of lack of a structure to secure the use of them. **Collateral registries** can serve as a public database that allows financial institutions to register security interests in movable property and mitigate the risk for customers and themselves. **However, for collateral registries to be effective, the necessary legal and regulatory frameworks that recognize them and hold parties accountable must also be in place.**

This issue of collateral as a key barrier for smallholder farmers, especially women farmers, requires reforms at the regulatory level and financial/banking sector level. To be most effective, Central Banks' collateral laws and frameworks must broaden to recognize non-conventional and alternative forms of collateral.

In the case of the pilot conducted by **CIDRE microfinance in Bolivia**, small clients, including small farmer clients, have declared that access to finance for business investments and operational expenses would not have been possible without the ability to back their loans with NCC.

23. Allison Nafziger, "Experiences in Gender-Sensitive Solutions to Collateral Constraints," MEDA, January 2020.

According to CIDRE's executives, one of the main limitations for the "non-conventional collateral type–access to finance" are the difficulties imposed by the judicial system and its limited evidence for the recovery of capital. While testing its MVP non-conventional collateral registry, CIDRE also found that risk perceptions of a loan backed with NCC may not be lower compared to that of a loan without collateral. Yet, NCC still enables clients without land or a house to be eligible for a loan. The decision to issue loans backed with NCC is also based on CIDRE's mission-driven mandate, product design and innovation, and risk appetite.

Modifying the perception of risk in a credit operation requires not only a good product design, but also a solid and reliable legal framework. This may represent an obstacle in the studied relationship between the use of NCC and access to credit.

Finally, trying to align a private initiative with a public mandate may work in theory. However, from the CIDRE experience, both agendas moved at a different pace and depended on incongruent incentives. Major reforms are needed to enhance the impact of the formal usage of NCC on access to finance in countries like Bolivia, as well as to support asset recovery for financial institutions.

Another example comes from **Pakistan Microfinance Network (PMN)**, which conducted research on warehouse receipt financing in Pakistan, and the potential relevance for smallholder farmers. By the time the **case study was launched in December 2019**, the State Bank of Pakistan (SBP) had begun to allow Financial Service Providers (FSPs) to utilize warehouse receipts as collateral, allowing FSPs to consider offering loan products to smallholders based on this type of collateral. While it's too early to assess all the outcomes that may occur as a result of these changes, this is a hopeful signal that collateral reforms and broadening the types of collateral recognized and accepted by Central banks can occur.

Takeaway *No. 2*

Building resilience to climate change for smallholder farmers requires policy, programs and partnerships to spur innovation for appropriate financial products, risk mechanisms and an inclusive nationwide climate agenda

A growing concern and challenge for producers all over the world is the increasing threat and reality of climate change. Smallholder farmers are even more vulnerable to climate change and crop failures compared to established commercial farmers. They are also less equipped with the tools, knowledge and financial capacity to build resilience to shocks and disasters. Women, who comprise nearly 50% of the agricultural labour force in developing economies, are further disadvantaged "with fewer endowments and entitlements than men, even more limited access to information and services, gender-determined household responsibilities, and increasingly heavy agricultural workloads owing to male out-migration."[24]

FAO's 2016 State of Food report states that, "without adaptation to climate change, it will not be possible to achieve food security for all and eradicate hunger, malnutrition and poverty."[25] Global efforts to adapt to climate change require policies and actions at national and regional levels to address vulnerabilities and risks, while also promoting resilient and sustainable agricultural systems.[26]

The transition to sustainable and resilient agricultural production at the smallholder farmer level requires the use of improved technologies (including climate-smart agriculture), increased availability of appropriate financial instruments, and a supportive enabling environment.

The insights and lessons from the MEDA INNOVATE research portfolio provide examples of the need for climate financing and agricultural investments to facilitate the transition to sustainable agricultural practices.[27] In the wake of climate change, there's an opportunity for policies and regulation to support and incentivize new partnership models that can support smallholders to become resilient and better equipped to mitigate climate change impacts.

Global Canopy conducted research to identify gaps and opportunities to support and scale up green and sustainable agriculture in Peru. Their **case study** (April 2019) reveals a disconnect between what farmers need (when it comes to financing) and what financial institutions offer in the market. Current lending in agriculture is limited and characterized by short payback periods, high interest rates, high collateral requirements, and lack of grace periods. The lack of incentives for FIs to enter the agricultural lending market, along with risk perceptions of

24. FAO, "The State of Food and Agriculture 2016 (SOFA): Climate change, agriculture and food security," 2016: xii.

25. Ibid, xi.

26. Ibid, xii.

27. Ibid, xvi.

producers and climate variability, are the key barriers identified by FIs. Transaction costs on small loan sizes are also too high to justify. These are common barriers cited by FIs, not only in Peru, but in many developing markets where agriculture is a significant contributor to GDP and source of income in the labour force.

How can national governments, including the Central Bank and relevant bodies like the Ministry of Environment or Ministry of Agriculture, play a role in stimulating pilot initiatives with the audacious goal of tackling climate change and closing the financing gap for smallholder farmers? Beyond playing an active role in risk mitigation (guarantee funds for example), insights from Global Canopy suggest that there is a greater role for the government at hand:[28]

1. View the private sector as a strategic actor for agricultural development and involve the private sector in the development and design of national programs to achieve climate change targets and commitments.
2. Provide information such as reliable price data and geographical information to allow FIs to better assess risks specific to agriculture and climate change.
3. Fund elements of the climate finance agenda that cannot be financed by FIs as part of a loan product to farmers, such as technical assistance to farmers on sustainable agriculture practices, and capacity building to FIs.

Read more about Global Canopy's research and lessons in their report (En)

Read more about Global Canopy's research and lessons in their report (Es)

Another growing trend in rural agricultural finance, is the expansion of **agricultural insurance**. Where conventional collateral and formal land rights are absent, well-designed agricultural insurance can mitigate risk to unlock credit options for smallholder farmers.[29]

iDE's pilot in Nepal revealed that smallholders face increasing hazards to crops such as erratic weather, drought, flooding, and pest issues – all made worse by climate change. This creates an opportunity for insurance products to mitigate risk and losses. However, in Nepal, agricultural insurance is very nascent compared to neighboring countries like Bangladesh and India. The iDE project tested vegetable crop insurance managed by agricultural collection centers within the community, rather than a formal insurance provider. The collection centers received premiums and managed payouts, and the farmers used the agricultural loan from Muktinath Bikas Bank to pay the insurance premiums. This innovative community-managed crop insurance mechanism followed government policy, whereby crop insurance premiums can be subsidized up to 75% (covered by the project). The mechanism is now utilized in a revolving fund owned and managed by the collection centers for sustainability.

28. A Pinzon, "Redefining finance for agriculture: green agricultural credit for smallholders in Peru," Global Canopy, 2019: 20.

29. Pathways to Prosperity, 14.

Another example comes from **Krishi Utsho (KU)**, a social enterprise established by CARE Bangladesh that consists of a microfranchise network of agro input shops in the northwest and southwest regions of Bangladesh. From the 200+ Krishi Utsho shops, the INNOVATE pilot worked with 12 shop owners to embed both commercial banking and insurance services into the existing Krishi Utsho business model, with the goal of improving the financial stability and livelihoods of smallholder farmers. The pilot included a tripartite collaboration among Bank Asia Limited, Green Delta Insurance Company, and CARE Bangladesh. Of the 216 (73 women) farmers that opened a bank account with Bank Asia, 81 applied for and received a loan from the bank. Of the 81 (26 women) borrowers, 50 (10 women) farmers secured their loan under Green Delta's crop insurance policy - all of them were first holders of this type of an insurance product.

Two lessons emerged from the pilot:

1. Commercial viability for weather-based crop insurance is a challenge, due to low volumes and costly investment required to design the product and monitor weather data from different weather stations and satellite sources. At the same time, without this testing, how will insurance companies test willingness to pay or interest in such products from smallholder segments?

2. The government has established policies for banks working in rural areas, especially to serve smallholder farmers. However, there is no policy framework for insurance companies. Approvals for agricultural insurance products are not currently required, which can pose a risk of malpractice with farmers with lower financial literacy or awareness of how premiums and claim processes work with insurance products.

Click here to read a policy brief authored by CARE Bangladesh on recommendations for national strategies and policies to engage financial institutions for last mile farmers

Call to *Action*

What's Next?

The **NTF4Ag – Emerging Lessons and New Frontiers** report captures the key insights and lessons learned over the last three years with respect to INNOVATE's learning themes and overall research goal to discover the potential of non-traditional financial services to catalyze agricultural innovation adoption by women and men smallholder farmers. This report demonstrates promising potential for non-traditional finance in the smallholder finance landscape, not as a replacement of traditional financial and banking services, but as a complement and tool to fill in current gaps.

This final section identifies some of the actions that can be prioritized and undertaken now, and opportunities for further research among the diverse actors working on smallholder agricultural development and financial inclusion, as these two agendas go hand in hand.

For existing programs implemented by development organizations and private sector businesses

ACTIONS

- Identify and segment smallholder farmer clients
- Utilize segmentation methods[30] to uncover not only demographic data, but also behavioural data and insights among the clients you serve
- Use simple tools and approaches (for example, a simple hypothesis test form) in current activities to test your assumptions and formulate hypotheses to verify whether your programs, products or services are addressing real customer needs or pain points
- Continually identify the specific constraints, challenges, needs, and aspirations of women smallholder farmers to ensure products and customer journeys are tailored to women's realities and circumstances

For future programs or research initiatives led by researchers, companies and development organizations:

RESEARCH

- Identify and assess adoption-related factors of financial services and agricultural innovation for different women and men smallholder farming segments
- Explore the relational aspects and effects of training and capacity building on financial literacy and financial services as well as Good Agricultural Practices with respect to willingness to adopt and willingness to pay by smallholder farmers

30. Ramsing/MEDA, "A Customer Centric Lens for Good Agricultural Practices," 2019; CGAP, Customer-Centric Guide.

For policymakers and regulators:

Actions

- Assess the current policy framework and regulation that hinders or has unintended consequences of financial exclusion for smallholder farmers – especially regarding collateral requirements
- Incentivize financial service providers and other private sector actors to test, innovate and develop products and services that will reach new or unfamiliar customer segments
- Create an enabling environment that supports first movers of innovative products and approaches

RESEARCH

- Promote data collection and research to better guide the development and refinement of policies that promote financial institutions and other ecosystem actors to innovate and acquire new customers (smallholders), while adhering to compliance and reporting requirements mandated by the Central Bank

For donors and funders:

Actions

- Convene learning events and engagement opportunities among organizations receiving funds and implementing initiatives with similar target clients and development challenges
- Coordinate with and learn from other donors and funders where priorities in the smallholder finance landscape overlap, especially in similar regions and country contexts where such lessons can roll up into policy recommendations for country governments and inform future funding priorities

RESEARCH

- Compare different funding models and mechanisms most effective for contributing to development research, demonstrating value for money, and generating impact for smallholder farming families
- Require organizations receiving donor funds to embed research and learning agendas at the onset and design stage of initiatives that target improving smallholder farmer productivity, knowledge and capacity, and financial inclusion

Additional Themes

Additional themes MEDA expects to continue to be a focus for the smallholder finance landscape include: **drivers of adoption, technology disruption and last-mile delivery, and how the industry approaches and achieves economies of scale**.

- **Adoption drivers**: The adoption of anything new by smallholder customers requires a calculation of perceived value and how the proposed solution, innovation, or technology has the potential to change a farmer's life. With the surge of digital technologies, and new service delivery models that leverage partnerships to offer a service and product bundle, traditional and non-traditional providers of finance and other actors in the ecosystem must coordinate and cooperate in an ever-growing and competitive environment. In addition, further understanding is needed of what works to reconcile the supply and demand for finance and ag innovation, and what will truly drive adoption at the smallholder farmer level, based on different segments' needs, pain points and growth opportunities.

- **Technology disruption and last-mile delivery**: Building awareness and ensuring affordability are key factors for technology to be appropriate and accessible for smallholders. Understanding logistical challenges, as well as the changes required within market systems to enable last-mile supply chaings and delivery, are areas for further investigation. A focus is also needed on how women and men are perceived as potentially viable customers by financial service providers and agricultural technology companies.

- **Rethinking scale**: The concept of scale will continue to be a focal point in smallholder finance, especially as we gain better understanding of what works and does not work within the diverse, yet fragmented initiatives supporting smallholders. While INNOVATE supported 10 research projects that explored different models across three regions and eight countries, these are not representative of all the innovation taking place around the world to better serve and understand smallholder farmers. Are we seeking consolidation through a big player that offers a variety of value-added services and products that smallholders need and will buy through a super platform (think Amazon) that wipes out smaller competitors? Or, are there other models of achieving impact at scale where small and medium-size players can both coordinate and compete, offering tailor-made solutions to specific customer segments?

  Research and development actors must continue to foster innovation and advocate for policy that supports relevant local actors to achieve growth and sustainability while tackling the persistent constraints that smallholder farmers face. The challenge then lies in identifying successful initiatives, replicating their success elsewhere, and ultimately reaching scale to impact the over 1.5 billion individuals that make up smallholder families.

This report was compiled and designed to inspire readers not only to **learn from the 10 research cases** and MEDA's cross-cutting research and analysis of these projects, but also to **enable readers to re-think** how programs and policies are implemented and how products and services are designed and delivered.

With a decade left to achieve the 2030 Agenda for Sustainable Development, assuring the viability and resilience of small farmers worldwide is crucial to meeting the SDGs. With the right combination of leveraging innovative tools, technology, capital, policies and collaborative partnerships – national and global efforts can be well-positioned to support smallholder farmers to achieve dignified, stable and secure livelihoods within agriculture and beyond, for the well-being of themselves, their families and rural communities worldwide.

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Annex *No. 1*

Prototype & Hypothesis Testing Form

Project Title …….. **Project Lead** ……..

Context			
Who is the Customer?			
What is the Customer's Problem?			
Testable Hypothesis What is the proposed Idea/Solution?			
Learning Goal What are we trying to learn? What is the top priority?			
Assumptions What would have to be true?			
Success Criteria: Metrics How to measure "success"? What metrics (Qual / Quant)? Targets?		**Reject Condition** *If X happens, hypothesis is false*	**Fail Condition** *If X happens, stop because experiment is broken*
Project / Test Plan Summary of project implementation plan. How will you collect data? How will you know what is/isn't working?			
Time Box Can we get data faster?	**Start Date:**	**End Date:**	
Result Key Findings & Observations Anything unexpected?			
Learning			
Next Steps Pivot or Move Forward? Create another experiment?			

Annex *No. 2*

INNOVATE Learning Series Resources

Publications by: MEDA

- Starting Small: Pathways to Customer Centricity • Jan 2019
- A Customer Centric Lens for Good Agricultural Practices • Sept 2019
- Experiences in Gender-Sensitive Solutions to Collateral Constraints • Jan 2020
- Digital Platforms and Customer Centricity: Fostering Adoption and Sustained Use of AgTech Solutions • Mar 2020
- Summary Brief: The Chithumba Model for Smallholders in Malawi • Dec 2019
- Summary Brief: Redefining Finance for Agriculture in Peru • Dec 2019
- Summary Brief: Lessons on Mobile Money and PAYG Innovation for AgTech Adoption by Smallholder Farmers in Peru • Feb 2020

Publications by: INNOVATE Partners

- Redefining finance for agriculture: green agricultural credit for smallholders in Peru (En)
  April 2019 • Global Canopy
- Redefiniendo el financiamiento para la agricultura: crédito agrícola verde para pequeños productores del Perú (Es)
  Abril 2019 • Global Canopy
- A Case Study of the Chithumba Model – A non-traditional finance mechanism to improve access to farm inputs in Malawi
  Jul 2019 • Agronomy Technology Limited
- Non-Conventional Collaterals to Leverage Innovation Capital for Smallholder Farmers In Bolivia
  Oct 2019 • CIDRE IFD
- Warehouse Receipt Financing: Tackling the Financial Needs of Smallholder Farmers in Pakistan
  Nov 2019 • Pakistan Microfinance Network
- Mobile Money and PAYG Innovation to Scale AgTech Adoption in Smallholder Value Chains
  Nov 2019 • I-DEV International
- Non-Traditional Financial Services for Smallholder Farmers in Nepal
  Dec 2019 • iDE Nepal
- Product Testing and Diversification of Bidhaa Sasa's Range of Products Sold on Credit
  Mar 2020 • Bidhaa Sasa
- Policy Brief: Engagement of Financial Institutions for Smallholder Farmers
  April 2020 • CARE Bangladesh
- A Case Study of World Relief's Agriculture for Life and Savings for Life in Rwanda
  April 2020 • World Relief

Recaps of Events and Webinars:

2019

- **JUN** — Blog: Experimentation in Smallholder Agriculture
- **AUG** — Blog: Measuring What Matters in Smallholder Agriculture
- **SEPT** — Webinar: A Customer-Centric Lens for Good Agricultural Practices
  View: Presentation Slides • Recording
  Side Event (Nairobi): Learning Journeys of Smallholder Finance and Innovation Adoption
- **NOV** — Blog: Smallholders as Customers, Not Pupils
  Side Event (New Delhi) at the 6th World Congress on Rural and Agricultural Finance
- **JAN** — Bonfire Chat: Using Data to Better Understand Smallholder Farmers
  View: Presentation Slides • Recording
- **FEB** — Interview: A Farmer-Centric Bank in Nepal

2020

- **MAR** — NTF4Ag Livestream Recordings
  View Recordings: Day 1 • Day 2

Videos by MEDA INNOVATE and Partners

MEDA INNOVATE: NTF4Ag - Emerging Lessons and Frontiers

iDE Nepal: Developing Collection Center Financial Services in Nepal

CARE Bangladesh:

- Insurance Journey Map
- Loan Journey Map
- Organization Journey Map