Dalberg Advisors

Rabo Foundation

Landscape of the AgTech ecosystem for Smallholder Farmers in Mexico

PUBLIC REPORT

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Context and Introduction

- In early 2023, Dalberg supported Rabo Foundation to develop a high-level profile of smallholder farmers (SHF) and map the landscape of AgTech solutions in Mexico and Colombia relevant to SHF.
- This work assessed the enabling environment for AgTech solutions (including regulatory support, start-up ecosystem, midstream infrastructure, etc.)
- The output of this document is public in an effort to benefit the ecosystem

AgTechs[1] can be classified into five categories based on their technologies and benefits for agricultural stakeholders

Overview of AgTech Categories

NON EXHAUSTIVE

	Definition	Potential impact on SHF business models	SHF challenges addressed by solutions within categories
Advisory and Information Services	Solutions that incorporate on-site data, precision agriculture technology, and external information systems to enhance farming processes, increase productivity, and improve decision-making	✓ Increase crop yield ✓ Optimize production costs ✓ Improve planning and farm management	✓ Limited information on certifications and access to technical assistance ✓ Inadequate record keeping/data collection
Market Linkages	Solutions that broaden the farmer's access to input markets (fertilizers, supplies, machinery, labor, and technical knowledge) and off-take markets (B2B, B2C, and global trade)	✓ Competitive prices for inputs and produce ✓ Higher production quality ✓ Decrease suppliers/buyers switching costs	✓ Information asymmetries on inputs' prices ✓ Information on market prices ✓ Excessive intermediaries
Supply Chain Management	Solutions that improve competitiveness of the farming operation by optimizing information flows, minimizing process inefficiencies, and increasing transparency, traceability and accountability	✓ Increase farmer's bargaining power ✓ Reduction of produce losses ✓ Stronger commercial relationships	✓ Lack of productive, storage & transport infrastructure
Financial Access	Solutions that grant and deepens the access to financial and capital markets, aiming to assure the growth and long-term sustainability of the farming operation	✓ Secures farmer's financial sustainability ✓ Improve risk mitigation capacity ✓ Broadens scaling opportunities	✓ Limited access to working capital ✓ Inadequate financial products ✓ Lack of land titles
Macro Agricultural Intelligence	Solutions that integrate diverse individual data sources across the value chain and aggregates them into articulated data pools for analysis at a sectorial, regional and country wide level	✓ Improved market knowledge ✓ Enriches policy and sector regulation ✓ Strengthens climate risk assessments	✓ Climate change (e.g., extreme weather events) & environmental issues (e.g., soil degradation)

Source: [1]CTA, The Digitalization of African Agriculture Report 2018-2019.
Notes: We consider AgTechs to be solutions that will directly be used and benefit producers. We exclude companies considered to be Biotech, Foodtech and Fintech, although we do include Ag Fintech companies, that is FinTech with a primary focus on Agriculture. For the specific definition please refer to the Annex.

Within each category there are various type of solutions that address specific activities across the agriculture value chain

AGTECH SOLUTIONS ACROSS THE VALUE CHAIN

NON EXHAUSTIVE

	Planning & Inputs	Production & Harvest	Post-Harvest	Final Distribution
Advisory and Information Services	Crop Modelling Soil Characterization	Smart Irrigation Crop Monitoring Harvest Automation	Waste Management Farm Management Software Community Platforms	Product Marketing
Market Linkages	Supplies Marketplace Land Leases Technical Knowledge	Talent/Labor Marketplace Equipment Marketplace Tele Veterinary Services	Freight Services	B2B E-commerce B2C E-commerce Global Trade
Supply Chain Management	Inventory Management Smart Contracts ERP Integrators	Traceability Technology Quality Control	Produce Life Extension Smart Storage Transport Logistics	Telematics & GPS Tracking
Financial Access	Microcredit Crowdinvesting Microinsurance	Cash Management Equipment Leasing	Ag. Credit Scoring Smart Ledgers Savings & Investments	Mobile / Digital Payments
Macro Agricultural Intelligence	Soil Characterization Knowledge Aggregation Demand Aggregation	Climate Information Services Market Intelligence Regional Production Forecast	Production Repositories Risk Management	Price Aggregators

Source: Dalberg Research; Stakeholder Interviews.

AgTechs have varied business models, generating revenue from external funding, service fees, or "impact" sales to third parties

Identified AgTech Business Models – Non-Financial Solutions

	Business Model	Description*	Revenue Streams**	Examples
1	**Free / Subsidized or Externally Funded**	AgTech provides a service the producer at zero cost, either because i) data monetization or advertisement are possible or ii) the cost is assumed by a third party (e.g., government, NGO). This models includes Non-Profits	+ Data Monetization + Advertisement + Third party financing	nuup (Non-profit that channels external funding to the development of SHF Ag. Projects)
2	**Freemium**	AgTech provides a service of limited functionality at zero costs and charges the producer for additional functionalities or hardware built for the service platform.	+ Add-Ons + Device/Hardware + Data /Ads.	agrosmart (Climate Intelligence software with build-on functionalities)
3	**Subscription Based**	AgTech provides a service that is only accessible through a subscription/license payment paid directly by producers	+ Subscription fees	KILIMO (Software platform for irrigation management)
4	**Marketplace / E-Commerce**	AgTech provides a platform that links farmers, buyers (B2B or B2C) , and other value chain actors within a single trading platform and generates revenue through membership or other fees paid by consumers (i.e., off-takers)	+ Selling Fees + Membership access + Commercial margins + Credit alternatives	frubana. (B2B E-ccomerce platform for agriculture products)
5	**Performance based funding**	AgTech provides a service to farmers that assure a social/environmental impact gain, which is rewarded financially by a third party (e.g., large companies, non-profits or others)	+ Outcome-based funding + Carbon Credits	SISTEMA.bio (Waste management solutions that comply with climate compensation needs of third parties)

Note: *There is limited information available on cooperatives being direct AgTech clients **Go-to-market strategies are listed on page 108. There are cases where farmers pay for service directly (e.g., Kilimo and Sistema.bio). There is greater level of detail on the business models in the profiles developed for 10 selected AgTechs (see annex)
Source: Dalberg Research; Stakeholder Interviews.

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AgTechs that offer financial services generate revenue through interest payments and/or access fees to finance platforms

IDENTIFIED AGTECH BUSINESS MODELS – FINANCIAL SOLUTIONS

	Business Model	Description	Revenue Streams	Examples
1	**Platform to Farmer Lending**	Platform that directly provides loans to farmers under defined and agreed conditions. Loans can be for specific (working capital, production inputs, etc.) or for general use, interest revenue is paid by producers	+ Interest revenue + Administrative fees	PRODUCEPAY (Credit and factoring solutions for producers)
2	**Partnership with established FIs**	Platform that delivers financial products to producers of a formal financial institution through an established partnership, interest revenue is paid by producers	+ Interest revenue + Commision by finance partner	Verqor (Platform that offers financing for agri-business inputs)
3	**Crowdinvesting**	Platforms that enable financing solutions for farmers through the pooling of multiples investors, revenue streams are paid for a combination of producers, cooperatives and third parties (e.g., large firms)	+ Administrative fees + % of production revenue + Advisory services for farmers	AGRAPP (Platform that connects investors with agriculture production projects)

Business models trends

- Most AgTechs integrate multiple business models into their product offering (e.g., embedding credit access within a marketplace platform)
- Most models are subscription based, license or membership, with add-ons like services, hardware, additional functionality
- Business models that integrate financial solutions to existing platforms (like Verqor or Frubana); it can be common in marketplaces/e-commerce firms
- Business models that integrate climate compensation revenue, such as Sistema.bio or Kilimo

Source: Dalberg Research; Stakeholder Interviews.

Partnering with organizations that have established relationships with SHF can be an effective scaling strategy

AgTechs Acquisition Channels and Go-To Market Strategies for SHF Outreach

\- SHF Adoption Scalability Potential +

Channel	**Direct contact to SHF**	**Joint collaboration with other AgTechs**	**Partners with an organization with a rural footprint**	**Partners with big corporations that have linkages to SHF**	**Producer Associations or Cooperatives**
	Traditional promotional mechanisms (in field salesforce or digital marketing)	Partner with existing AgTechs to access an established producer base	Establish partnerships for promotion and outreach with organizations that offer services in rural areas with significant SHF	Seek win-win agreements with private actors, that have SHF as suppliers or customers	Partner with associations that group SHF to promote tech adoption or enable word of mouth effects of tech success
Challenges	⚠ Field forces are costly for scaling under rural context	⚠ Limited networking platforms for collaboration	⚠ Entail promotion costs and sales commissions if applicable	⚠ Requires lengthy legal and commercial processes	⚠ May have inherent political dynamics or high bureaucracy
	⚠ Low digital inclusion limits online promotion	⚠ Limited AgTechs have a significant user base	⚠ Outreach effectiveness not controlled by Agtech	⚠ Access to corporations is difficult	
Example	**Kilimo** has an online academy and an infield force (1 agent per 30 users)	**Nuup** has partnered with Kilimo to reach Cuenca de Lerma farmers	**Verqor** aims to partner with agro supplies stores and "Cajas Populares"	**Extensio** partners with big organizations to deliver TA to SHF at zero cost	**Sistema Bio** partners with cooperatives to make product demos for SHF

Notes: 1) It is not so common in Mex and Col to intermediate with Agri-SMEs. Many SHF are actually trying to reduce intermediation with stakeholders dedicated to commercialization. 2) Guidelines to select cooperatives to work with in an impactful and sustainable manner include, but are not limited to: 1) being legally constituted, 2) having good governance practices in place, 3) Having established record keeping procedures

Source: Dalberg Research; Stakeholder Interviews.

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A few distinct factors support the path of AgTechs that are being successful in funding and scaling their operation

KEY SUCCESS FACTOR (KSF) OF NOTABLE AGTECHS WITH AN SHF FOCUS

NON EXHAUSTIVE

KSF	**Funding from impact investment funds through clear impact outcomes**	**Bundling services to increase product demand**	**Integration of agriculture know-how into team capabilities**	**Use of partnerships to scale user acquisition**	**Offering technical capacity building for SHF**
Overview	As VC or traditional funding is limited for AgTechs, successful funding models have relied on impact investment by making a solid impact case the backbone of its business model	Many AgTechs are opting for bundling of services, e.g., subscription fees + climate compensation to expand their revenue streams and strive for more financial sustainability	Counting with team members that have an understanding about agriculture or rural dynamics, strengthens the solution effectiveness and increases the chance of higher adoption	Leveraging on associations, retail chains in rural areas or B2B channels to access a greater pool of potential users are viable strategies to increase promotion and the chance of user acquisition	Integrating technical assistance targeting better digital literacy, improved technical knowledge and/or stronger business capabilities, improves user adoption, tool effectiveness and even user retention metrics
Example	PRODUCEPAY By promoting their finance and advisory platform aimed at small to medium-sized producers, they have secured over $300M USD from impact investors	KILIMO Kilimo's revenue stream comes from a mix of commercial margin for platform subscription, offset compensations	CurubaTech Dedicated agronomy team, that support tech development, commercial efforts and field implementation and monitoring	Extensio Partners with agroindustry actors to offer their information data solutions to their SHF suppliers	SISTEMA.bio Provides field trainings to assure correct technology usage and are promoting capacity building programs to support their offline data collection tool

Source: Dalberg Research; Stakeholder Interviews.

MEXICO

The AgTech ecosystem in Mexico is in its early stages of development and it faces challenging enabling conditions

SUMMARY OVERVIEW OF THE AGTECH ECOSYSTEM IN MEXICO

AgTech Overview	Sizing	67 AgTechs Identified | 68% Founded in Mexico	
	Funding	28 Early venture; 24 Seed stage; 15 Scale/ growth	
	SHF Focus	10 Primary Focus; 18 Segment of Interest; 28 Undetermined; 11 Excluded/N.A	
Enabling Environment	Regulation	Medium	• There are no regulatory restraints for AgTech development, but several regulatory barriers exist for delivering financial products
	Middleware Infrastructure	Low	• 40% of rural households with internet access • Limited wireless connectivity • Data assets have some quality limitations
	Investment Climate	Medium	• Strong hub for impact and VC investment but limited resources are channeled to AgTech
	Entrepreneurship	Medium	• Early-stage entrepreneurial activity lags behind LATAM peers. • R&D gap between agriculture education, research and technology

Key: Maturity of enabling environment elements High Medium Low

Source: Dalberg Research; Stakeholder Interviews; Crunchbase; Colombia AgCenter.

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The AgTech ecosystem in Mexico is nascent, we identified at least 67 with a diverse offering but most still in need of funding

AgTech Overview in Mexico

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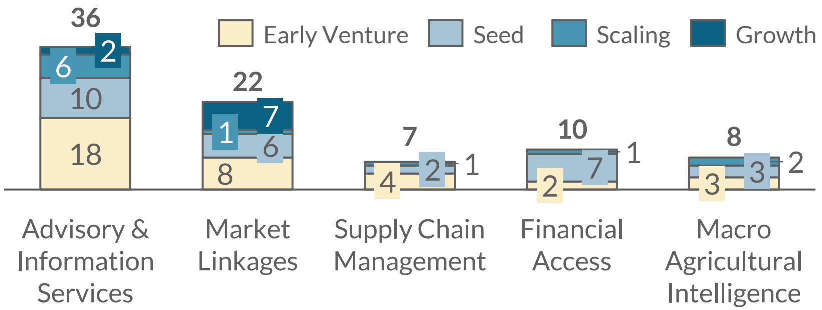
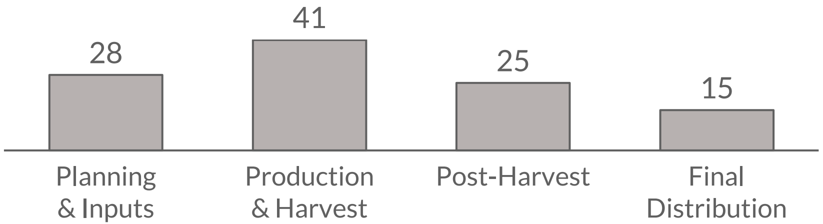
- **There are at least 67 active AgTech players[1] in Mexico**, of which half were founded since 2018. Start-up activity remains limited when compared to FinTech which added 184 startups in 2022 alone[2]
- **Most of the AgTech offering is concentrated across the Information & Advisory and Market Linkages categories**, where most relevant products are precision agriculture solutions, farm management software tools and digital marketplace services
- **72% of AgTechs are at an early venture or seed maturity stage.** Six identified AgTechs have attained a series A, B or C funding
- **Only 15% of AgTechs have a stated primary focus to serve SHF[3]**, the rest either serve them indirectly or have potential to offer a SHF specific solution

AgTech actors by category - # of actors[4]



AgTech Actors by Value Chain Focus - # of actors[4]



Source: Crunchbase; IADB; Stakeholder Interviews; Dalberg Research.
Notes: [1]Pure Biotech and Fintechs without a specific agriculture focus are not considered in the count; [2]Finnovista – Fintech Rada Mexico 2022; [3]Count takes into consideration AgTechs that directly engage with SHFs and those that collaborate with cooperatives and producer associations comprised by SHFs; [4]Count takes into consideration AgTechs overlapping in multiple categories/value chain stages.- more detail on bundled services on slide 109

Of the 67 mapped AgTechs in Mexico, most are early ventures and only do not have SHF as a primary focus

AgTech Mapping by SHF Focus and Stage of Maturity - Mexico

NON EXHAUSTIVE

Stage of Maturity: – → +

SHF Focus: + → –

	Early Venture (<1M USD in funding and/or "1-10 employees")	Seed (1-5M USD in funding and/or "11-50 employees")	Scaling (5-50 MUSD in funding and/or "50-250" employees)	Growth (>50 M USD in funding and/or >250 employees)
SHF is primary focus	My Coffee Box, ECO ROOF, LITEFARM	Verqor, IncluirTec, Extensio, EthicHub	nuup, SISTEMA.bio	fairtrasa
SHF is a segment of interest	AGRIICOLA, Cultiva Capital, agroware, SUEMA, APPGRICOLA, Illucens, mercarancho.com	beyco, KILIMO	toroto, nilus, Cultivo, agrosmart, GRAIN CHAIN	PRODUCEPAY, frubana.
Undetermined focus, but applicable solutions to SHF	SINECTA, MAPSENS, agronodo, Avo exchange, Doctor Terra, AGRICOMERCIO, DTA, DAF, Perfekto, NORMAN, GRO MICH, SAVEFRUIT, ubicar, AGRARIUM 2.0	LUXELARE, loftech, Treembo, Gavé, siembro, SIDIPRO, Agroenzymas	METOS MÉXICO, INSTACROPS	Justo.mx, Agri Star, Agrofy
Focus not on SHF, and/or solutions not applicable to SHF	hispatec, DOMINIO6, smartiom Farming, Teraxio	alíma, Preemar	ARABLE	

Source: Dalberg Research; Stakeholder Interviews.

10 AgTechs have a primary focus on SHF, they provide diverse solutions from finance to precision agriculture

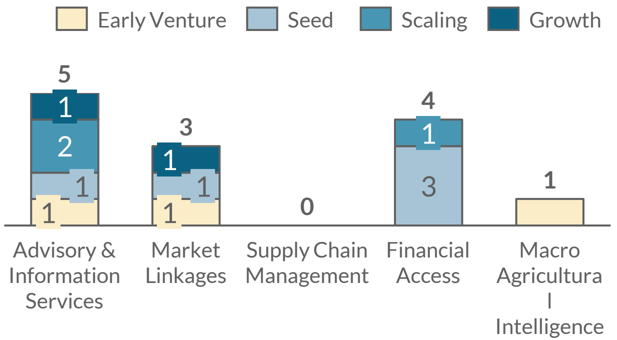
AgTech Overview in Mexico – Primary Focus on SHF

NON EXHAUSTIVE

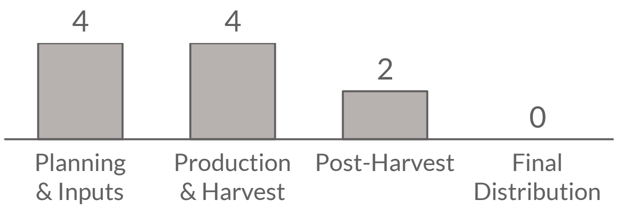
List of AgTechs with Primary Focus on SHF

AgTech	Solution	Funding	Founders
SISTEMA.bio (NO HAY DESECHOS, SOLO RECURSOS)	**Biodigestor and digital tools** for waste management	$38.2M USD – Series B	Alexander Eaton (CEO)
Verqor	**B2B Supplies marketplaces** integrating **financial credit delivery** using FIs partnerships	$ 2.6M USD – Seed	Valentina Rogacheva (Co-Founder)
EthicHub	**Crowdinvesting platform** connecting European investors with LATAM coffee SHF	$2.7M USD - Seed	Diego Pardilla (Co-Founder)
My Coffee Box	B2C marketplace for coffee grown by small producers	$35K USD - Pre-Seed	Berenice Ruiz (Co- Founder)
Extensio	Mobile platform serving SHF through climate alerts, best practices and relevant information	**Acquired** by ACCESO	Diana Popa (Founder)
ECO ROOF	Crop monitoring technology based on Iot Sensors	**Undisclosed** Early Venture	Edgar Jauregui (Co-Founder)
fairtrasa Fruitfully fair	Platform for technical knowledge, smart agriculture and market inclusion targeting SHF	**Undisclosed**	Patrick Struebi (Founder)
nuup	Non-profit that channels external funding for SHF Ag. Projects	**Undisclosed**	Maria Luis Luque (Co-founder)
IncluirTec	Credit platform that intermediates between FIs and SHF	$420K USD - Pre-Seed	David Quintero (Co- Founder)
LITEFARM	Free and open-source **farm management tool** for current and aspiring sustainable farmers	Partly funded by UBC[1]	Hannah Wittman (Founder)

AgTech actors by category - # of actors[2-3]



AgTech Actors by Value Chain Focus - # of actors[2]



Source: Crunchbase; IADB; Stakeholder Interviews; Dalberg research.

Notes: [1]Managed by the Food Sovereignity Lab at the University of Bristish Columbia; [2]Count takes into consideration AgTechs overlapping in multiple categories/value chain stages; [3] The larger proportion of SHF-focused AgTechs in the Access to Finance category reflects ecosystem efforts to address SHFs limited access to financial services. The smaller proportion of SHF-focused AgTechs in the Market Linkages space can be attributed to SHF dispersion coupled with the connectivity issues in rural areas.

While there is diversity in terms of AgTechs solutions, there is some concentration on advisory services and market linkages

AgTech Mapping by Solutions Across the Ag. Value Chain - Mexico

NON EXHAUSTIVE

Value Chain Stages

AgTech Categories	Planning & Inputs	Production & Harvest	Post-Harvest	Final Distribution
Advisory and Information Services	Doctor Terra, toroto	Instacrops, toroto, nuup, Luxelare, Kilimo, SIMA	Agriicola, nuup, Sistema.bio	
Market Linkages	Agricomercio, mercarancho.com, Verqor	mercarancho.com		beyco, ProducePay, frubana.
Supply Chain Management		beyco, Grain Chain	Grain Chain, SaveFruit	
Financial Access	ProducePay, Verqor	ProducePay, Luxelare, EthicHub	EthicHub	- **Fintechs** can indirectly be offering financial access solutions to SHF
Macro Agricultural Intelligence	agrosmart, toroto	Eco Roof, SIMA, Metos México		

No AgTech Activity[1] → *Significant AgTech Activity[1]*

Source: Dalberg Research; Crunchbase; Stakeholder Interviews.
Notes: [1]AgTech activity scale considers both the number of AgTechs within each cluster and a weighted maturity stage of companies within the cluster.

Half of AgTech activity involves Advisory & Information Services, with some prominent players having a primary focus on SHF

Advisory and Information Services

Overview

- There are **at least 24 AgTech** organizations providing advisory & information services
- At least 16 AgTechs are developing **precision agriculture** solutions, while at least 7 are developing multiple **farm management software**
- Some AgTechs in this space are also developing innovative models in **waste management and technical knowledge dissemination**

Relevant Actors

NON EXHAUSTIVE

Player	Overview	Solutions	SHF Focus
Sistema.bio	• Based in Mexico • **Privately funded, raised over $40M USD**	• **Biodigestor and digital tools** for waste management and energy efficiency • **Carbon credits** for third party holding climate commitments	• **Primary focus on SHF**, the solution is used by SHF, +50,000 families in LATAM and Africa already affiliated
Kilimo	• Based in Argentina with operation in Mexico • Seed Stage with $**1.6 M of raised capital**	• **Remote Smart Irrigation** systems that improve watering strategies based on soil and climate readings	• **SHF is a segment of interest**, some projects involve SHF and have a direct impact on their wellbeing
Instacrops	• Based in Chile with operation in Mexico • Series A - **$3 M raised and $2M in anual sales**	• **Digital advisory platform** based in AI and satellite technology for crop monitoring, pest control, fertilizer optimization and water irrigation	• **Undetermined focus**, of the +300 existing users, an undisclosed share have less than 1 Ha.
Agriicola	• Based in Mexico • **Early venture** with pre-seed capital	• **Farm management software** that supports production monitoring and general business analytics	• **Undetermined focus**, claims to test its platform with +200 farmers in the state of Michoacan

AgTech Solutions Across the Value Chain

Planning & Inputs	Production & Harvest	Post-Harvest	Final Distribution
Crop Modelling	Smart Irrigation	Waste Managament	Product Marketing
Soil Characterization	Crop Monitoring	Farm Management Software	
	Harvest Automation	Community Platforms	

Significant AgTech Activity

No AgTech Activity

Source: Crunchbase; IADB; Stakeholder Interviews; Dalberg Research.

Within market linkages, B2B e-commerce solutions have attracted strong interest from investors

Market Linkages

Overview

- There are **at least 10 AgTech** organizations providing market linkages solutions
- **Supplies marketplaces and B2B e-commerce** models connecting final consumer to the farmer directly are dominant in this space

Relevant Actors

NON EXHAUSTIVE

Player	Overview	Solutions	SHF Focus
mercarancho.com	• Based in Mexico • **Undisclosed Pre-Seed**	• **Marketplace** for agribusiness inputs **(fertilizers, machinery, labor, etc.)**, technical assistance and livestock	• **SHF is segment of interest**, states its mission is to bring technical development to agriculture communities
Jüsto	• Based in Mexico • **Series B – raised** $244M **USD**	• **B2C E-commerce** that minimizes the grocery supply chain between production and final consumption	• **Undetermined Focus,** claims to work directly with producers but without specific characterization
nilus	• Based in the Argentina with operations in Mexico • **Series A – raised $7.3M USD**	• **B2C platform** that enables low-income communities to collectively purchase food from producers	• **SHF is segment of interest,** has connected SHF producers to its platform
AGRICOMERCIO	• Based in Mexico • **Early Venture, undisclosed**	• **One-stop shop marketplace** for inputs, machinery, labor and produce	• **Undetermined focus**, but platform viable for SHF usage

AgTech Solutions Across the Value Chain

Planning & Inputs	Production & Harvest	Post-Harvest	Final Distribution
Supplies Marketplace	Talent/Labour Marketplace	Freight Services	B2B E-commerce
Land Leases	Equipment Marketplace		B2C E-commerce
Technical Knowledge	Tele Veterinary Services		Global Trade

Significant AgTech Activity

No AgTech Activity

Source: Crunchbase; IADB; Stakeholder Interviews; Dalberg Research.
Notes: [1]Companies may have solutions across multiple AgTech categories.

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Although limited, Supply Chain Management (SPM) AgTechs are already developing varied solutions across the value chain

Supply Chain Management

Overview

- At least 4 AgTechs were identified that offer SPM solutions with a focus on agriculture services
- There are nascent initiatives that explore blockchain technology to improve traceability and transparency across the value chain
- There are at least +200 startups in the SPM landscape in Mexico, although they don't have a focus on agriculture, they may act as future enablers of solutions in this space

Relevant Actors

NON EXHAUSTIVE

Player	Overview	Solutions	SHF Focus
beyco	• Based in The Netherlands with operation in Mexico • Venture by **Progreso Foundation**	• **Trading platform based on Blockchain** that provides traceability solutions for coffee and cocoa producers	• **SHF is segment of interest**, , they target cooperatives, associations or medium enterprises
GRAIN CHAIN	• Based in the USA with operation in Mexico **Series A - Raised +$30M US**	• SaaS[2] for **Logistics support and inventory management** • **Blockchain solutions** to improve product traceability	• **SHF is a segment of interest** for their operation, they have +870 farmers in Mexico who use the tool
SAVEFRUIT	• **Based in Mexico** • **Pre-seed capital of $30,000 US**	• **Post-harvest technologies** in food conservation to extend the lifetime of tropical fruits and berries	• **Undermined SHF Focus**, but having a low-cost implementation it can serve SHF, specially for export-oriented crops

AgTech Solutions Across the Value Chain

Planning & Inputs	Production & Harvest	Post-Harvest	Final Distribution
Inventory Management	Tracebility Technology	Food Processing & Packaging	Telematics & GPS Tracking
Smart Contracts	Quality Control	Smart Storage	
ERP Integrators		Transport Logistics	

Significant AgTech Activity

No AgTech Activity

Source: Crunchbase; IADB; Stakeholder Interviews; Dalberg Research.
Notes: [1]Companies may have solutions across multiple AgTech categories; [2]Software as a Service.

Financial Access AgTechs are limited, but there are promising actors that are successfully integrating digital finance

Financial Access

Overview

- There are at least **6 AgTech** with a specific financial focus for agriculture
- **Product development is scattered** across easing credit lines and matching investors with projects
- There are **over 650 Fintechs in Mexico**, some offering products for the **unbanked population**,

RELEVANT ACTORS

NON EXHAUSTIVE

Player	Overview	Solutions	SHF Focus
Verqor	• Based in Mexico • **Seed capital of $2.6 M US**	• B2B Supplies marketplaces integrating financial credit delivery through FIs partnerships	• **Primary Focus on SHF**, **+5K farmers** received a credit for the first time through Verqor
EthicHub	• Based in Spain and Mexico • **Seed Capital of $1.3 M US**	• **Crowdinvesting platform** connecting European investors with LATAM small and medium coffee producers	• **Primary focus on SHF**, base intervention at a community level, granted access to 21 coffee farming communities
PRODUCEPAY	• Based in the USA with operations in Mexico • **Privately funded - $343 M USD of raised capital**	• Offers a **wide range of financial products at pre harvest (loans from 20K to 20M USD)** and during **production** stages	• **SHF is segment of interest, +$700 M in loans** granted to famers across LATAM, no disclosure of SHF
Gavé	• Based in Mexico • **Seed Capital of $+1M US**	• **Crowdinvesting** platform that pools resources to finance **agave** production	• **Not serving SHF**, solution focus on medium size farmlands

AGTECH SOLUTIONS ACROSS THE VALUE CHAIN

Planning & Inputs	Production & Harvest	Post-Harvest	Final Distribution
Microcredit	Cash Management	Ag. Credit Scoring	Mobile / Digital Payments
Crowdinvesting	Microinsurance	Smart Ledgers	*Mostly offered by fintechs indirectly to the agriculture sector*
Crowdsourcing	Equipment Leasing	Savings & Investments	

Significant AgTech Activity

No AgTech Activity

Source: Crunchbase; IADB; Stakeholder Interviews; Dalberg Research.
Notes: [1]Companies may have solutions across multiple AgTech categories.

In addition, there are multiple FinTechs targeting the unbanked population in Mexico but with limited offering for SHF clients

EXAMPLES OF FINTECHS WITH RELEVANT OFFERINGS FOR THE UNBANKED POPULATION

NON EXHAUSTIVE

1 COVALTO | Growth Stage +$500M USD raised

- Started as the Fintech CrediiJusto and acquired Banco Finterra, a **regulated bank with a SME and Agro focus**
- **Started with an equipment lease business** for SMEs, and now has a multi product digital portfolio
- Has **+7,000 SMEs** as clients, **some in the agroindustry**

2 aplazo | Scaling +$42M USD raised

- **Developed a Buy-Now-Pay-Later** service that **enables consumers without credit history** to finance various purchases in retail and online Point of Sales
- **30% credit approval for customer without credit history**, most are required to be familiar with digital interfaces

3 kueski | Growth Stage +$300M USD raised

- **Digital payments and microcredit platform** that now operates a regulated financial institution
- Claims to have **innovative credit scoring technology** that enables financial inclusion – **50% of clients received their first financial credit** through its platform
- Has disbursed **+10M loans** in all LATAM

4 FONDEADORA | Scaling +$33M USD raised

- **Neo bank** that offers banking and payments solutions through a **fully digital interface**
- It **simplifies account opening processes** and does not charge industry-standard administrative fees
- Has reached more **than 400k account opening with +$20M** USD in **monthly transactions**

Source: Crunchbase; Dalberg Research.

AgTechs on the macro ag. intelligence space offer novel climate solutions, complementing the existing pool of open public data

Macro Agricultural Intelligence

Overview

- There are at least 4 AgTechs involved, directly or indirectly, in developing solutions that support macro agricultural intelligence for farmers and decision-makers
- All have developed tools that provide access to satellite technology for weather monitoring and forecasting
- The Mexican Government has open data sources on multiples agriculture variables

RELEVANT ACTORS

NON EXHAUSTIVE

Player	Overview	Solutions	SHF Focus
toroto	• **Based in Mexico** • **Privately owned**	• Multiple data collection technologies to guide carbon-neutralizing interventions	• **SHF is a segment of interest**, they have developed multiple projects that impact SHF communities in Mexico
SIMA	• Based in Argentina with focus in Mexico • **Seed Extension** +$2 MUSD	• Crop Monitoring and **weather forecasting** that leverage on satellite technology	• **Undetermined focus**, have worked with large corporations to deliver rural solutions at scale
METOS® MÉXICO	• Based in Austria with operation in Mexico • **Privately owned**	• **Weather forecasting services** and soil characterization satellite backed technology	• **Undetermined focus**, SHF and state agencies can leverage on existing solutions

Main Open Data Sources on Agriculture and Environment in Mexico

- **SADER / SIAP** (Production, Prices, Rural wellbeing, environment among multiple variables in the agricultural landscape)
- **SEMARNAT** (Land tenure and characterization, soil studies, Natural capital, and forestry related data)
- **SENSAICA** (Trade and traceability data of agricultural production)
- **CONAGUA/ INECC** (Weather, water and climate change data)

AGTECH SOLUTIONS ACROSS THE VALUE CHAIN

Planning & Inputs	Production & Harvest	Post-Harvest	Final Distribution
Soil Characterization	Climate/Weather Forecasting	Production Repositories	Price Aggregators
Knowledge Aggregation	Market Intelligence	Risk Management	
Demand Forecasting	Regional Production Forecasts	Land Property Rights	

Significant AgTech Activity

No AgTech Activity

Source: Crunchbase; IADB; Stakeholder Interviews; Dalberg Research.

Growing ventures and business model innovation signal potential growth in Mexico's nascent AgTech ecosystems

KEY TRENDS FOR AGTECH DEVELOPMENT IN MEXICO

	Trend	Overview
1	**Emerging clusters of high-impact solutions**	A growing pipeline of AgTech is observed in i) **precision agriculture** (apgricola), ii) **marketplaces for inputs** (mercarancho.com) and **off-take markets** (Frubana), and iii) **farm management software** (Agriicola and Smartiom[1])
2	**Emerging viable business models primarily addressing SHF needs**	**10 AgTechs have SHF as a primary focus**. Initiatives like Ethic Hub, or Sistema Bio Bolsa, have proven a viable business model with scalable revenue and impact potential
3	**High interest of investors towards models with ESG/ climate outcomes**	Models like **Toroto or Kilimo**, **raised capital** successfully by **leveraging climate-oriented solutions** and opening revenue streams from third-party demand for climate compensation actions

What stakeholders are saying

Building a solid impact case has enabled us to obtain funding through impact investment funds

-AgTech

There is huge potential for AgTechs in the region to develop carbon markets and respond to growing need of carbon negative countries in the northern hemisphere

-AgTech

We have found with financial partners a win-win solution, they find a new distribution channel through our platform, and we obtain credit to fund our customer's purchases while also receiving a fixed commission for each disbursement

-AgTech

Source: Dalberg Research; Stakeholder Interviews.

Notes: [1]Smartiom is a farm management software that provides farmers with a tracking and control system for key crop indicators. This system allows farmers to conserve water and energy while improving crop yield and reducing equipment maintenance and labor costs. Smartiom was launched in 2018 in Mexico City, is at an Early Venture stage and does not have a focus on SHF.

International AgTech expansion, and bundled solutions contribute to the AgTech ecosystem scaling in Mexico

KEY TRENDS FOR AGTECH DEVELOPMENT IN MEXICO

	Trend	Overview
4	**Open partnerships with FIs to integrate financial products to AgTech solutions**	AgTechs like **Verqor and Ventup integrate financial products of formal financial institutions** within their AgTech platform, many times they provide financial access for the first time to SHF producers
5	**International AgTechs expanding into Mexico**	Multiple **AgTechs from international origin** (Kilimo, Instacrops, etc.) are **expanding into Mexico,** validating market demand for AgTech. While interviewees did not mention a specific barrier to expand to Mexico, they did mention that the challenge in Mexico is that SHF rely less on technology than SHF in other LATAM countries (e.g., Perú, Chile and Argentina) and are spread more across large extensions of land. Both challenges can hinder the adoption of AgTech
6	**Bundled services/products increase demand while diversify revenue streams**	Some AgTechs such as Beyco and Agrofy bundle services and products to their existing models allowing users to find multiple solutions throughout the value chain in one place

What stakeholders are saying

> We found in our ecosystem in Argentina, a more sophisticated producer, better agronomy talent and funding that supported our business model and allow us to expand to Mexico
>
> -AgTech

> The most successful AgTech cases we've invested in across the globe, and particularly in SubSaharan Africa, are the ones that combine market access and/or financial access with advisory. The former models allow them to obtain revenue, whereas the latter impacts directly SHF productivity
>
> -Funder

Source: Dalberg Research; Stakeholder Interviews.

Challenges faced by Mexican AgTechs include limited funding, rural population fragmentation, and restricted knowledge access

MAIN CHALLENGES FOR AGTECH DEVELOPMENT IN MEXICO

Specific for AgTechs

#	Challenge	Overview
1	**Limited funding for accelerating and scaling**	• **8 of 12 AgTechs in Mexico at a scaling or growth stage, are of foreign origin** with capital raised outside of Mexico • There is **interest in international impact investment funds** for AgTech in Mexico (Bid Lab, Mercy Corps Ventures, Magma Partners, Chroma Impact) • **VC funding remains limited** for AgTech in Mexico, higher risk perceived in AgTech business models
2	**Difficult and costly user acquisition due to dispersion of rural producers**	• Many **AgTechs can't rely on traditional promotion mechanisms** for user acquisition, for instance **Kilimo depends on an in-field commercial and post service team, which** represent higher acquisition costs • **Low connectivity in rural areas** mean additional offline methods are needed to support scaling
3	**Untapped utilization of agricultural Know-How**	• AgTechs **may not access technical know-how** that often is developed by academics or research centers

What stakeholders are saying

> AgTechs don´t find traditional or VC funding, as they often don´t find their models scalable
>
> -Accelerator

> Due to the rural context, we found that SHF affiliation to our service was scalable through partnerships with the corporate sector or cooperatives, but these tend to be difficult to access as the business class in Mexico is somewhat closed, and if they open the doors you need to navigate a lengthy and complex process to establish an alliance
>
> -AgTech Organization

> We need integration of agricultural technical knowledge with technological knowledge. This connection is missing between these two groups of people
>
> -AgTech Expert

Source: Dalberg Research; Stakeholder Interviews.

Rabo Foundation Dalberg

Data limitations, entrepreneurship concentration and limited HCD principles integration impact AgTech development in Mexico

Main Challenges for AgTech Development in Mexico

#	Challenge	Overview
		Specific for AgTechs
4	**Public sector data limitations**	• While **some sector public data sets may have quality issues**, they are still often **underutilized or disregarded**, leading many AgTechs to depend on external providers – private sector companies or apps that provide more detailed information that is useful for the agricultural activity-(e.g., Meteoblue or Rossbach de México)
5	**Entrepreneurship concentration in higher social classes**	• Entrepreneurial success is more likely among individuals with high socio-economic backgrounds and with graduate and international education
6	**Limited integration of human-centered-design (HCD) principles in product/service development**	• There are few AgTechs in Mexico who integrate HCD principles on their solutions development. For example, Extensio has developed a user-friendly platform that ensures easy access to information for farmers, with convenient delivery even on basic mobile phones

What stakeholders are saying

> The tools that can have the most impact for SHFs are not very sophisticated things. Many of the AgTechs that attract investment are pushed into the markets and do not come from the needs of the producers.
> -AgTech Expert

> For me, the biggest challenge is to build trust. There is a certain level of friction from farmers
> -AgTech Organization

> One of the barriers for technology to reach is the terrible level of connectivity. The level of frustration is terrible
> -AgTech Expert

> There is a need to strengthen the ecosystem among AgTechs. They need to be more open to forming alliances and growing together
> -AgTech Organization

Source: Dalberg Research; Stakeholder Interviews.

Additionally, there are significant barriers for users and the ecosystem that further hinders AgTech growth

MAIN CHALLENGES FOR AGTECH DEVELOPMENT IN MEXICO

#	Challenge	Overview
	Specific for AgTech User	
7	**Barriers to Product-User Fit**	• Most farmers have **low levels of education** (15% none and 57% basic) as well as little ICT knowledge and access, limiting capabilities to use technology
8	**Risk aversion of farmers towards innovation and change**	• Established relationship of farmers with distributors or input sellers, can create a **barrier for switching** to other alternatives that AgTechs offer • **Communicating AgTech benefits** to farmers can be **difficult, especially due to age** (46% over 60 years)
	Specific for the Ecosystem	
9	**Low connectivity infrastructure in rural areas**	• **Only 40% of rural population has access to internet** • Despite Mexico's 97% mobile-cellular network coverage, there are quality issues
10	**Lack of government support**	• **Regulations do not hinder AgTech operations**, but the main gap is financing policies or initiatives for SHF
11	**Weak networking of Stakeholders**	• **There is no integrator or actor that coordinates**, studies and facilitates collaboration among AgTech stakeholders

What stakeholders are saying

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> -AgTech Expert

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> There is a need to strengthen the ecosystem among AgTechs. They need to be more open to forming alliances and growing together
> -AgTech Organization

Source: Dalberg Research; Stakeholder Interviews.

Annex

This report was informed by desk research and 20+ interviews with relevant organizations and AgTech experts

MAIN REPORTS/SOURCES CONSULTED

- Agricultural Policy Monitoring and Evaluation (OECD)
- AgTech Ecosystem Mapping in Spanish-speaking Latin America and the Caribbean (Brixton Ventures Lab)
- Colombian National Agricultural Census (DANE)
- Colombian National Agricultural Financing Fund – statistics (FINAGRO)
- Crunchbase
- Financial inclusion report – Colombia (Banca de las Oportunidades)
- FinTech Radar (Finnovista)
- Food and Agriculture Organization Statistics (FAO)
- Global Findex Statistics (World Bank)
- Landscape of the AgTech Ecosystem for SHF in Latin America and the Caribbean (IADB)
- Mexican National Agricultural Survey (INEGI/SADER)
- Mexican National Survey on ICT Access and Use (INEGI)
- Mexican Agrifood Landscape (SADER/SIAP)

Among other agriculture / AgTech related sources and reports

STAKEHOLDERS ENGAGED

AgTechs

AGRAPP, capeltic nuestro café, cropster, Cultivo, CurubaTech, Extensio, frubana., KILIMO, LITEFARM, nuup, Verqor

Funders

MERCY CORPS VENTURES, THE YIELD LAB

Accelerators

agcenter Hub agrifoodtech, MASSCHALLENGE, BRIXTON VENTURES LAB.

RF team

Rabo Foundation