



# Food systems and COVID-19 in Latin America and the Caribbean

## Digitalising agriculture for an inclusive transformation of rural societies

### Contents

1. Editorial	1
2. Key messages	2
3. State of digitalisation in Latin America and the Caribbean	3
4. Experiences of digitalisation in agrifood systems	9
5. Financing sources	18
6. References	19

## 1 Editorial



The digitalisation of agrifood systems has made progress; still, it remains a pending topic in the region, especially among smaller producers and traders in rural areas. It is essential to accelerate this process; digital technologies can speed up the transformation of agrifood systems into more efficient, productive, sustainable and resilient systems, since digitalisation, among other effects, can reduce transaction costs through automation and diversify markets through e-commerce, thus opening up new and better opportunities for employment and income generation.

Accelerating the digitalisation process is not an easy task. To begin with, there is an urgent need to improve the environment in which these technologies are developed and implemented. This requires a state policy that fosters dialogue and collaboration between civil organisations and the public and private sectors, with the ultimate aim of ensuring that the benefits of digitalisation reach everyone, in particular smaller producers and traders and those living in isolated rural areas.

If measures that allow for greater equity in the distribution and use of digital technologies are not implemented, they could, paradoxically, have the opposite effect and become a source of exclusion and widening inequalities.





## 2. Key messages



- Digitalisation has the potential to change the way food is produced, exchanged and consumed by automating processes, reducing costs and diversifying markets.
- Before starting the process of digitalising the agrifood sector, it is necessary to foster the pillars that support a proper digital ecosystem, namely: content development, literacy and training, infrastructure and coverage, platforms and applications ("apps") and access to devices.
- The gaps in these pillars are still large in rural areas compared to urban areas.
- If technologies are expected to be a factor of inclusion and not one of exclusion, it is essential to bridge these gaps.
- It is necessary to incorporate governance criteria to foster a political dialogue between civil society organisations and the public and private sectors to identify and reduce these gaps, especially among small producers and those living in more isolated rural areas.
- Although there are many digital platforms and applications for agrifood systems, two major difficulties remain: the lack of digital literacy and the lack of connectivity.
- A higher number of professionals and skilled users is recommended to develop and use digital technologies.
- Finally, there is a need to improve road connectivity (roads, highways) and digital connectivity (access to and speed of internet) in rural areas, especially the most isolated ones.





### 3. State of digitalisation in Latin America and the Caribbean

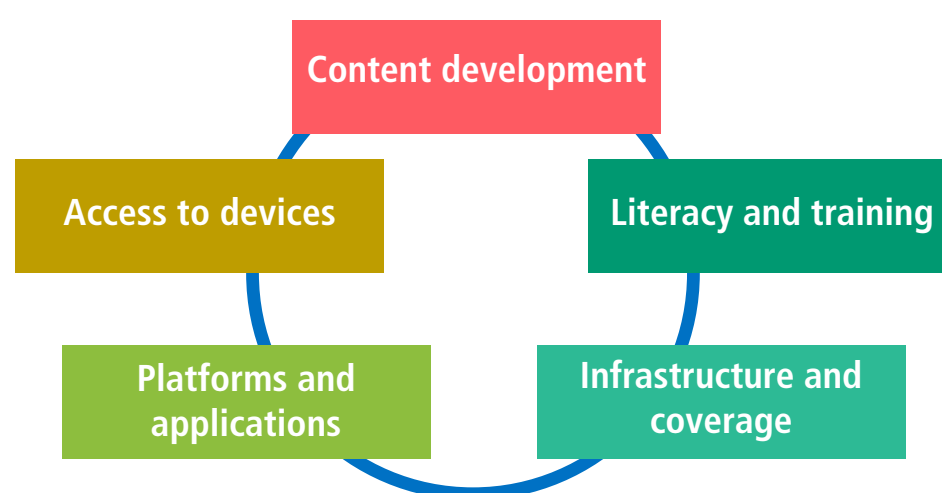


Digital technologies will play a critical role in the transformation of agrifood systems, as they are potentially capable of changing the way food is produced, exchanged and consumed, as well as fostering the efficiency, inclusiveness, productivity, sustainability and resilience, opening up new opportunities for income and employment generation in rural territories.

The benefits of digitalisation are not limited to accelerating the transformation of agrifood systems; they can also contribute to post-pandemic economic recovery in the countries (OECD, 2021).

However, digital technologies can only become an active driver of transformation in an appropriate ecosystem. Such an environment considers at least five pillars, which, when linked together, facilitate the integration and adoption of technologies that support productive development (GSMA, 2016).

Figure 1. Pillars of a digital ecosystem for productive development.



Source: Adapted from GSMA, 2016.





Technological progress is generally driven by the private sector. Consequently, it is the responsibility of the public sector and non-profit organisations to ensure that vulnerable rural households have access to the fruits of technological progress. In particular, it would be up to them to design and implement actions to bridge the digital access, usage and availability divides.

If we do not succeed in bridging these divides, there is a risk that only a few will benefit from technological development. In such a scenario, digitalisation would be a factor of exclusion rather than inclusion.

In order to address these divides, the Food and Agriculture Organization of the United Nations (FAO) has decided to launch this year the *Aldeas Digitales* (digital villages) initiative, through which a specific support package will be made available in the area of digital innovation, according to the requests and situations of the sites. The first stage will focus on rural tourism, followed by agrifood systems.

### 3.1. Content development

Content development can be defined as the design of information, services or platforms that enable the exchange, collection and dissemination of data, with the aim of solving a public problem. Therefore, these contents are generally considered as public goods, as they have characteristics of low exclusion and low competition. They are usually provided by the state and publicly funded, as they potentially benefit all members of the community and free-riding makes it difficult to charge users directly for these services (FAO, 2002).

These contents are relevant to users' decision-making; in the case of agrifood systems, content development is related to weather information, early warnings to prevent disasters, markets for agricultural and livestock goods, services or government procedures and support. However, public digital provision has generally been particularly slow in the agricultural sector (FAO, 2019).

In order to achieve a digital transformation of agrifood systems, we suggest to articulate and facilitate the implementation of some of the central concepts related to content generation, such as:

- **Hazard prevention, diagnosis and control:** Digital technologies can be used to identify a variety of hazards to agriculture, issuing timely and personalised alerts and recommendations to reduce damage and losses among farmers.
- **Forecasting, modelling and monitoring disaster risk at scale:** Advances in data storage, processing and analysis create opportunities for regional risk and disaster management.
- **Cloud-based platforms for policy and investment planning:** Multiple data sources that are available at regional or local level can be compiled, analysed and presented on GIS-based platforms. Visualisation and use should be user-friendly for the design, implementation or intensification of agricultural development programmes or the prioritisation of public investments. An example of this is the Hand-in-Hand initiative, in which innovation and transformation of agrifood systems is based on the implementation and use of a Geospatial Platform and Data Lab for statistical innovation.

The challenge with such initiatives is that they generally tend to be funded by government agencies, multilaterals or NGOs, so that once the resources run out, the continuity of the project is lost and producers are discouraged from participating in new initiatives. It is necessary to enter into a business model that makes the digitalisation process self-sustainable (Loukos and Arathoon, 2021). Therefore, public-private partnerships become more relevant for the development of this type of technology.

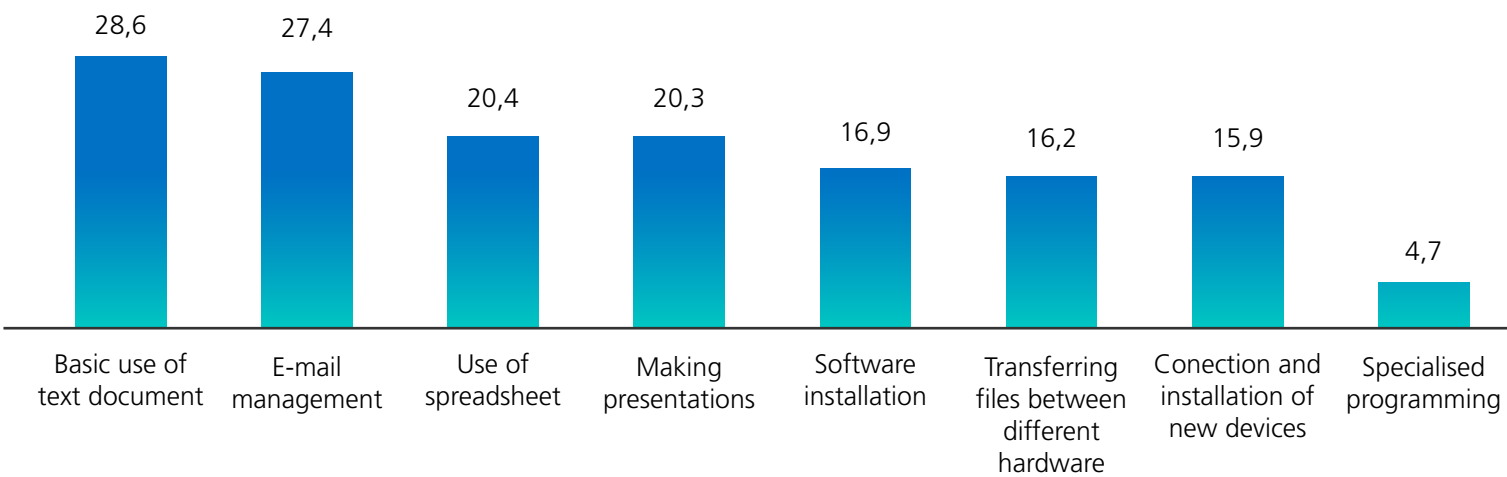
### 3.2. Digital literacy and training

The use of digital technologies requires basic literacy and numeracy, as well as special technical knowledge and skills (FAO, 2019), which need to be regularly updated in response to the rapid evolution of new technologies (ITU, 2018).

From a cognitive point of view, the digital user must know what to do, what can be used and for what purpose. In simple terms, in the analysis of digital literacy, it is not enough to quantify the number of people who can operate a smartphone and connect to the internet, but it is also necessary to take advantage of these technologies to solve public or private problems (Cruz and Aedo, 2021).

Literacy takes on a particularly relevant role in Latin America and the Caribbean, considering that since 2008, digitalisation has increased much faster than the supply of human capital trained in the use of digital technologies (Development Bank of Latin America (CAF), *et al.*, 2020).

Figure 2. People with ICT skills, by type of skills (%), 2019\*.



\*The latest available data for Jamaica and Peru are from 2017.  
Source: FAO, based on ITU, 2021.

As the difficulty in using basic technologies increases, the number of people with these skills decreases (see Figure 2). In fact, just over half of people (56 percent) only know the basic functions of text document and email.

From the above, it is urgent to make progress in the availability of trained and qualified professionals to design specific software for the rural environment. To do this, it is possible to train and promote strategies that bring digitalisation closer to the countryside, especially among the new generations (OECD, 2021).

### 3.3. Infrastructure expansion and coverage of digital services

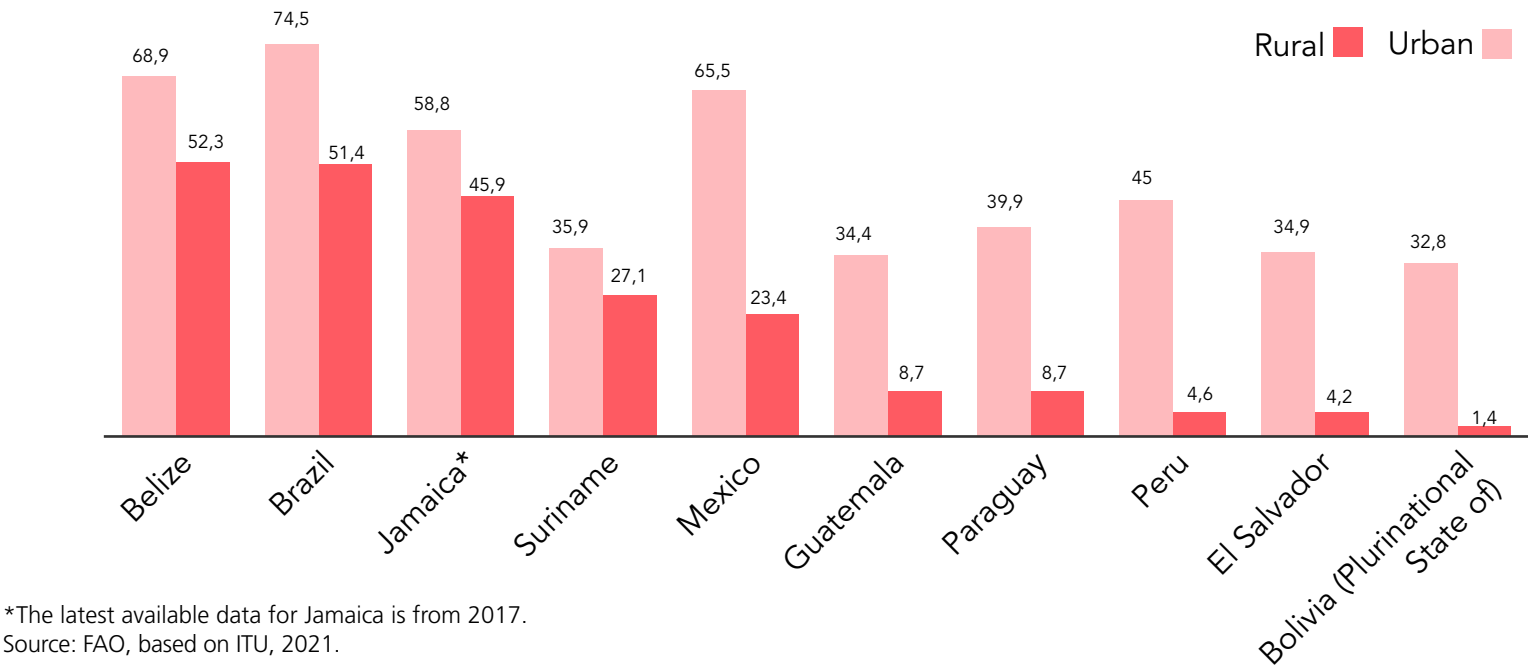
The expansion of telecommunications infrastructure allows for increased use of digital technologies among people living in the most disadvantaged or hard-to-reach areas. This is not plausible without private investment and the development and improvement of policy and regulatory frameworks (IDB, 2017).

In addition to infrastructure expansion, good signal and bandwidth continuity is needed, with efficient speeds for relatively complex content and operations, and with possibilities to transfer information, images and voice messages that are suitable for advanced business management (ECLAC, 2012).

The COVID-19 pandemic has highlighted the importance of digital technologies and connectivity. The

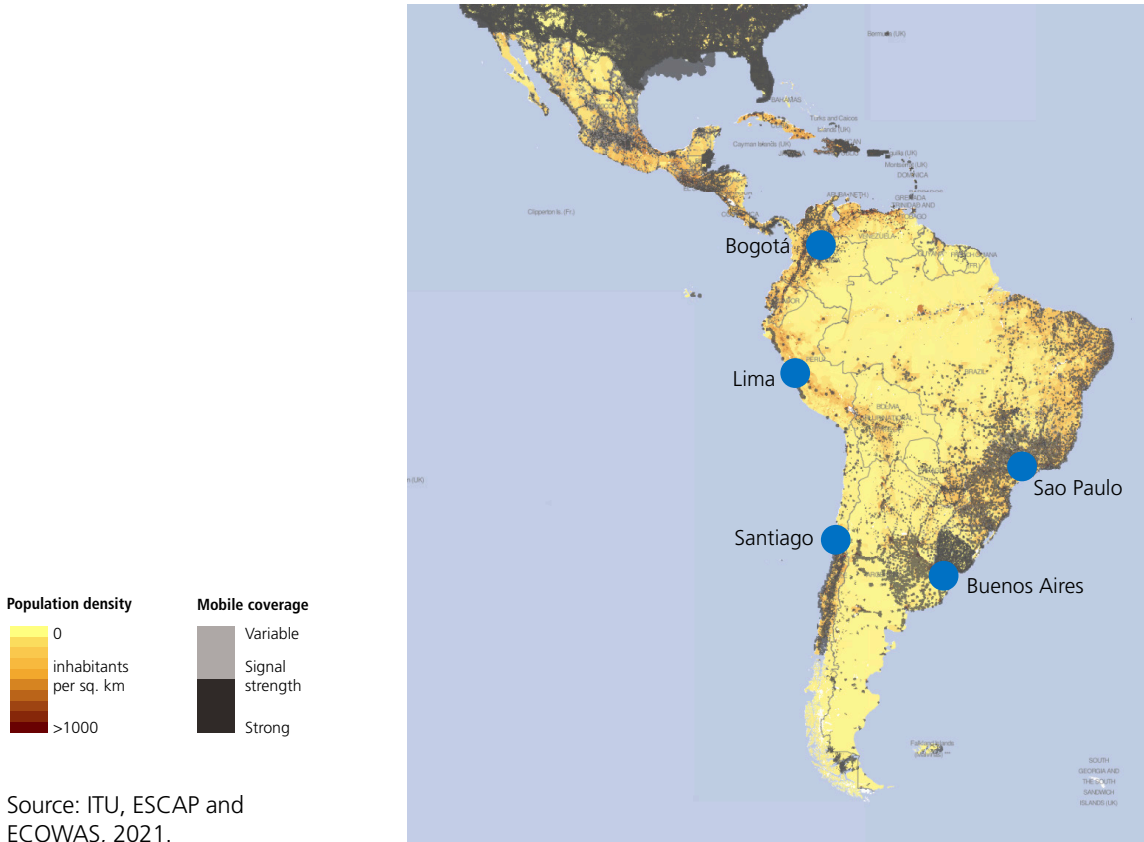
mobile industry in Latin America has seen unprecedented growth in data traffic. On average, operators reported a 25 percent increase in mobile data traffic during confinement. By the end of 2020, nearly 360 million people in the region – representing 57 percent of the population – were expected to be connected to the mobile internet. However, nearly 300 million people in the region are still unable to have access to mobile internet (GSMA, 2020).

Figure 3. Households with internet, selected countries (%), 2019.



As shown in Figure 3, household internet availability is much lower in rural areas than in urban areas (34 percent vs. 65 percent as a weighted average), which may be due to the fact that infrastructure and coverage in rural areas is scarce (see Figure 4). However, if mobile penetration in the region is analysed, it is close to 80 percent for all countries in the sample, both in rural and urban areas (ITU, 2020).

Figure 4. Population density and mobile coverage in Latin America and the Caribbean, 2021.



It is the responsibility of the public sector to encourage investments that aim to bridge the gaps between rural and urban areas, especially in the most isolated places. Investment should be in terms of infrastructure (roads, highways) and internet access and speed (in rural areas). In conclusion, countries in the region must make significant efforts to lower the costs of digital distribution and logistics (OECD, 2021).

### 3.4. Generation of IT platforms and applications

Computer platforms are defined as integrated computer systems that run certain hardware and software modules; applications, on the other hand, refer to software developed for digital devices, usually but not exclusively those running on mobile phones (Cruz and Aedo, 2021).

Many of these platforms and applications are considered club goods, because efficiency conditions may justify charging a fee for the good. The term comes from the fact that, in most clubs, members share their benefits and non-members can be excluded (FAO, 2002).

While the supply of IT platforms and applications has grown over the last decade, they are often not designed to operate at small-scale farmers' level, which is a barrier to their use (FAO, 2019).

Paradoxically, in the context of the pandemic, digitalisation has become a key driver for rural transformation, creating new opportunities for farmers by increasing the use of different platforms and applications (FAO and ECLAC, 2020).

Within agrifood systems, the links that have benefited most from the acceleration of digitalisation during the pandemic are producers and intermediaries who market their products through e-commerce platforms. A study conducted in Brazil (Embrapa, 2020) showed an increase in direct purchases from producers, through product delivery, drive-thru or take-away. This alternative has emerged as one of the new forms of sales. The use of digital media via mobile phones has undoubtedly been a great ally of short marketing circuits for fruit and vegetables, even more so than online purchases, which have also increased.

Thus, promoting the development of different applications and platforms for the transformation of agrifood systems is recommended in the following areas:

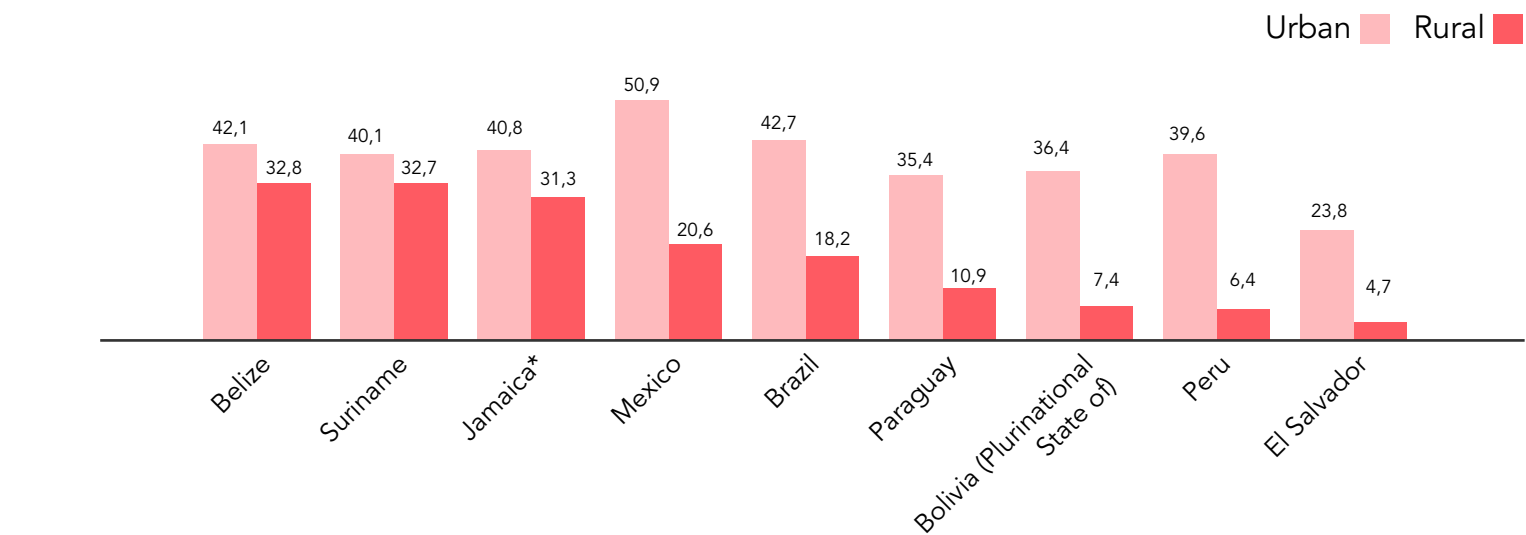
- **On-farm monitoring and advisory services:** There are four distinct technologies that can transform crop health monitoring and provide a range of additional field data to improve agriculture remotely and in near real-time: (a) internet of things sensors (remote sensing); (b) near-surface imagery (mobile imagery); (c) multispectral imagery (drones); and (d) satellite remote sensing.
- **Digital extension services:** The wide reach of mobile phones and other devices allows the delivery of highly targeted technical advice to farmers at lower cost, targeting their technical and cultural capacities and enabling two-way communication, between farmer and extensionist, and among peers.
- **Access to agricultural insurance:** Low-cost remote sensing improves data capture and analysis; it also makes the delivery of compensation to affected people easier.
- **Digital savings, credit and transfers:** "mobile money" and other peer-to-peer electronic payment mechanisms have given rise to a range of financial products targeted at unbanked and low-income customers. These mechanisms are very useful for disaster management and allow active participation in financial systems without the need for costly infrastructure and banking operations.
- **Innovative sharing economy models:** A broad digital ecosystem enables the emergence of decentralised or peer-to-peer platforms for rural services, such as sharing the use of agricultural machinery.

In this case, just like content development, it is necessary to implement appropriate policies to strengthen public-private partnerships in order to develop this type of technology.

### 3.5. Access to technological devices

The costs related to infrastructure and acquisition of digital technologies are a significant challenge in rural areas, where poverty rates are generally higher than in urban areas. Therefore, it could be assumed that smallholders are at a disadvantage in accessing certain technological devices (see Figure 5).

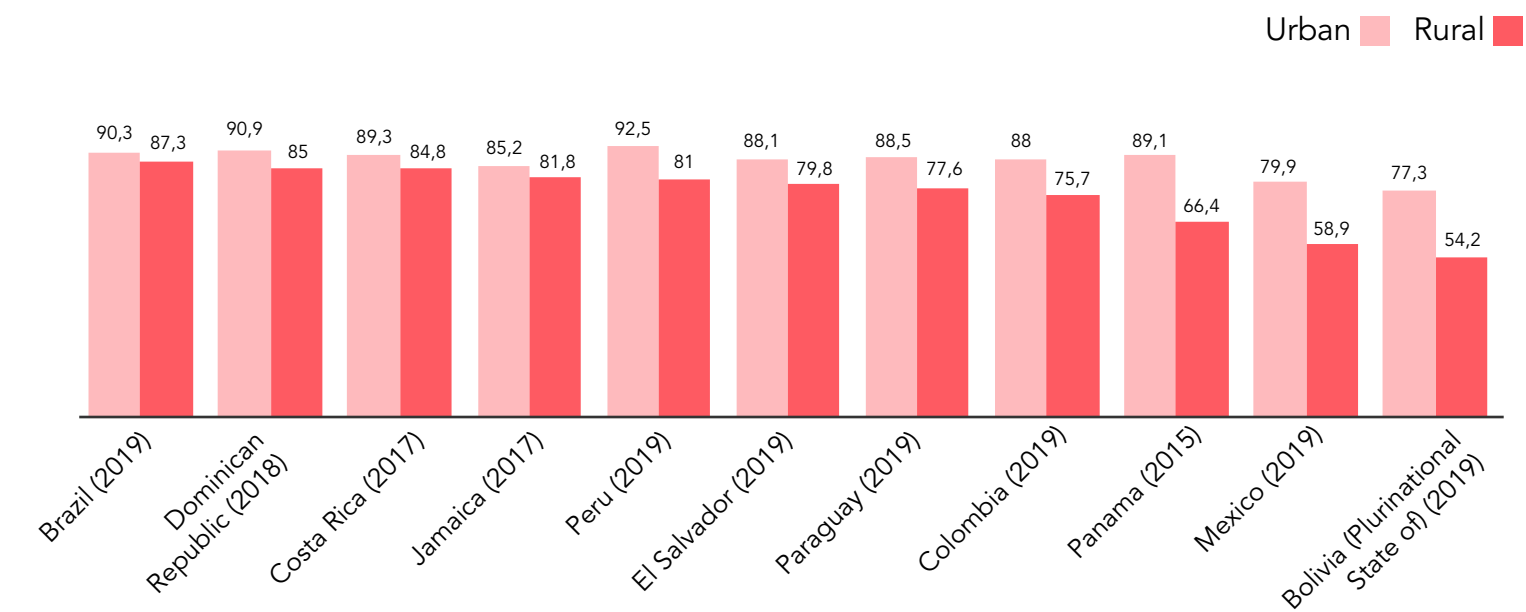
Figure 5. Rural and urban households with computers (%), 2019.



\*The latest available data for Jamaica is from 2017.  
Source: FAO, based on ITU, 2021.

However, when analysing the proportion of people using mobile phones in rural areas, this gap decreases considerably, possibly due to their usefulness and cost, compared to other digital devices. Phone penetration in the region is close to 80 percent.

Figure 6. Mobile phone users in rural and urban areas (%).



Source: FAO, based on ITU, 2021.

The availability of mobile phones is an opportunity for the development of digital technologies in rural areas; so, software development should be focused on the use of these devices.

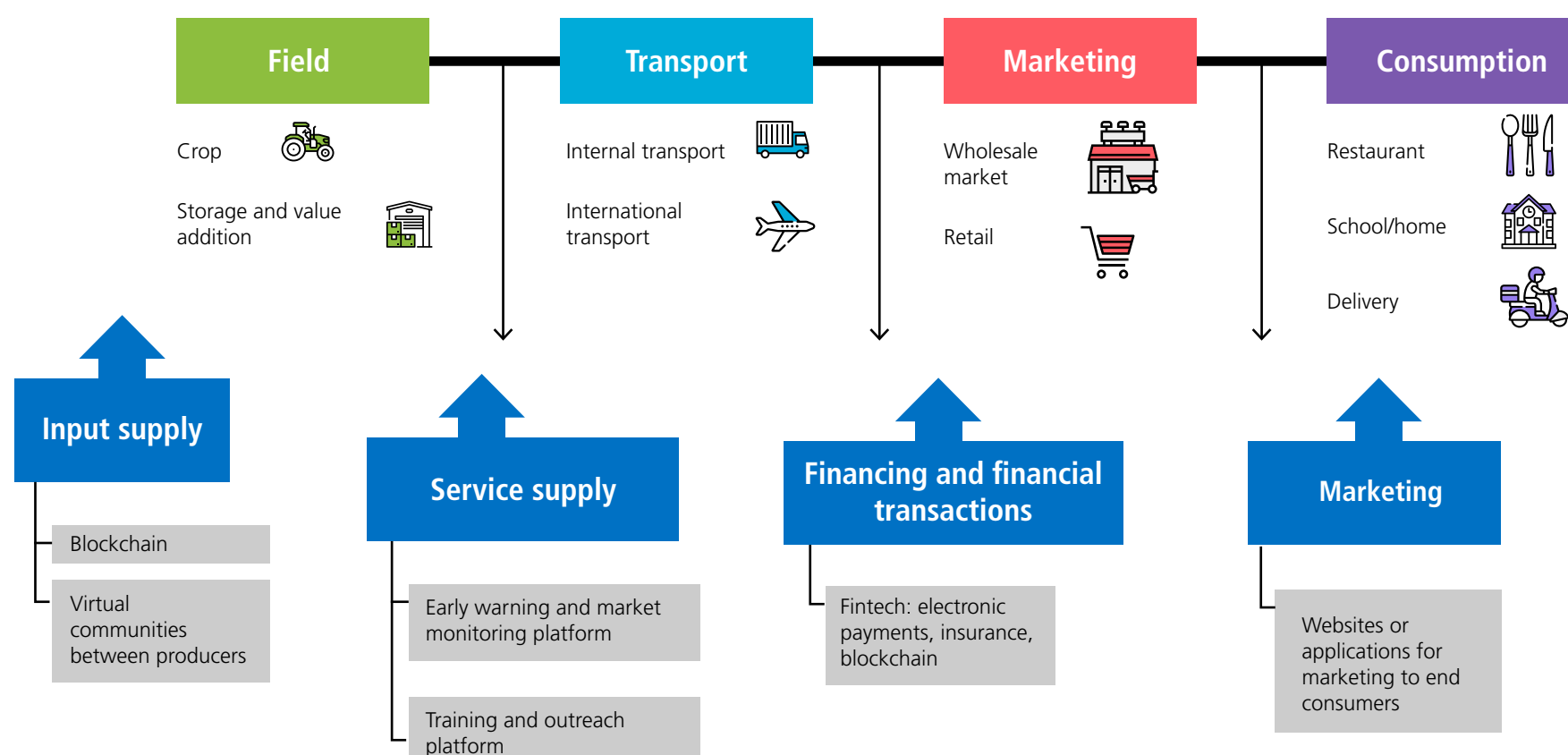


## 4. Experiences of digitalisation in agrifood systems



Digitalisation has strong potential in the development of agrifood systems, since it can be incorporated into any of the links in the value chain to make work more effective and efficient.

Figure 7. Potential for digitalisation in the agrifood value chain.



Source: Adapted from GSMA, 2016.

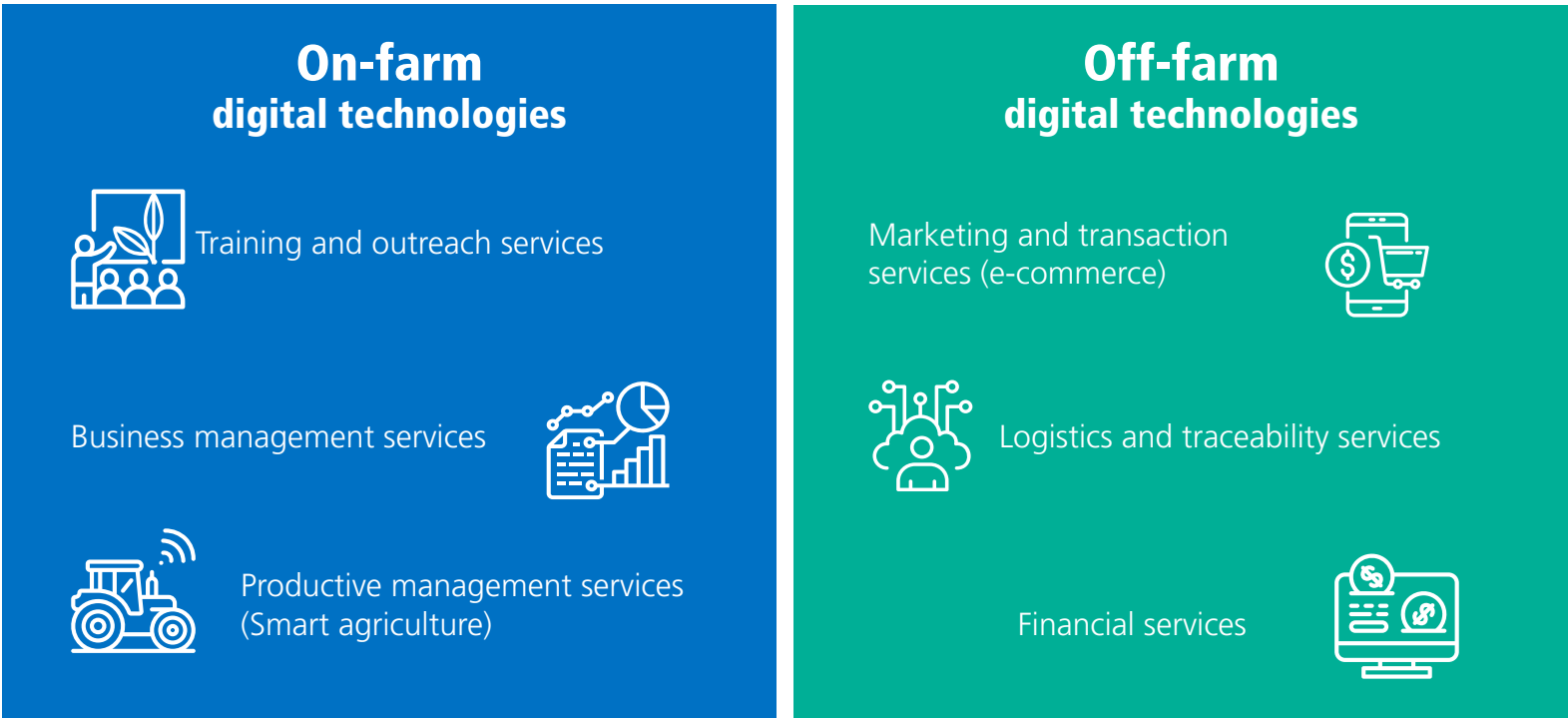
However, this bulletin focuses on digital technologies that can potentially catalyse the transformation towards more productive, sustainable and resilient agriculture and food systems, including rural economic activities associated with agriculture and territories, such as tourism, handicrafts and environmental services, among others.

Therefore, the offer of digital services was analysed; they had to comply with the following characteristics:

- i) They enable more efficient farming, either by increasing production or reducing input use.
- ii) They improve the resilience of farmers and the public sector to natural hazards, plant pests and diseases, as well as market fluctuations.
- iii) They foster the sustainability of agricultural activities by promoting climate change adaptation strategies and a responsible and efficient use of natural resources.

These initiatives can be classified as on-farm and off-farm digital services.

Figure 8. Potential for digitalisation in the agrifood value chain.



Source: Elaborated by the authors.

Some of these experiences are presented below. In order to explore them in greater depth, representatives of the organisations carrying out these actions were interviewed. In no way should this be understood as an effort to exhaust or elaborate a comprehensive taxonomy of the universe of initiatives in this area; on the contrary, it is an effort to draw attention to a set of recent good practices in the region.

#### 4.1. On-farm technologies

**Checkmilk.**  
**Digital platform for the rating and development of dairy farmers**  
[www.checkmilk.com.br](http://www.checkmilk.com.br)  
Luís Henrichsen, CEO



**Type**  
**Productive management services (Smart agriculture)**

**Description:** Checkmilk is a digital solution aimed at developing and rating dairy farmers in good production practices. The starting point is the application of a digital checklist developed and structured on the basis of global technical references on the subject, including the *Guide to Good Practices in Dairy Farming*, published by FAO in 2013.

An application is used to monitor production practices on the farm. Non-conformities recorded in the Checkmilk platform generate an action plan to guide the producer in correcting critical points. Overall, the producer receives guidance in e-book format for better understanding and technical knowledge.

Producer rating and the implementation of good production practices directly impact animal welfare, productivity and milk quality, creating a sustainable production environment, as well as income and prosperity for the producer.



**Difficulties:** We face three main difficulties:

- i) **Shortage of trained and qualified professionals for software development through remote applications and logging.** To remedy this, it is necessary to invest in training programmers, taking market risk and hiring these professionals with much higher job offers and salaries.
- ii) **Lack of connectivity in the field.** Although our applications operate in offline mode, if there were more and better internet connections, access to results and the exchange of information and content would be faster, benefiting the qualification process of producers.
- iii) **Changes in hardware technologies and programming language are fast,** also causing difficulties, since constant updating and training of the team is needed.

**Costs:** The main costs are related to training (60 percent) and equipment (40 percent).

**Projections:** In the short term, we expect to increase the demands for digitalisation in the field. In fact, one of the effects of the pandemic has been to accelerate this process. Agriculture does not stand still, and actions must be more effective. The consumer market, increasingly selective and demanding in terms of food origin and safety, is looking for digital means to control production. It is also more selective when it comes to animal welfare and the sustainability of agricultural activity.

Producers, given their competitiveness and these market requirements, need to be updated and qualified. The agility and facilities provided by the digital environment are a considerable differentiating factor.

This is why we believe, and some evidence is already visible, that digital solutions will bring more transparency to the production system and establish new relationships between producers and the market. Skilled and "digitalised" producers will prosper and establish sustainable production processes.



## IoTrak. - IoT devices for livestock telemetry and management

[www.apsaargentina.com](http://www.apsaargentina.com)

Horacio Huergo, IoTrak Argentina

Renato Garcia, representative in Chile



Type  
Productive management

**Description:** IoTrak is a platform that integrates an ecosystem of IoT (internet of things) sensors in a livestock farm. Within the range of sensors, both collars and earrings were developed for the identification of species of productive interest (cattle, sheep, goats, horses, and so on). These devices provide geopositioning, have an accelerometer to record behavioural patterns and Bluetooth to manage proximity to the animal. The management platform makes it possible to record all the individual information on each animal, its health events (treatment, vaccinations, etc.) and control events (weighing, births, etc.). It also allows the creation of virtual pens, where animals are assigned, generating alerts if they go outside these predefined limits. These sensors are complemented by other sensors installed on the farm that record, for example, the water level in water tanks and drinking troughs. There are also sensors that measure the energy in electric fences to detect losses or faults in the fences.

These technologies applied to livestock production open up new measurement and management horizons.

An evaluation is currently being developed at the INIA experimental stations Kampenaike and Remehue, where the Chilean company Trazagestión SpA has installed collars on sheep and earrings on cattle in order to evaluate grazing behaviour in regenerative management systems, and also to learn about changes in silvopasture in the face of climate change. Projects aimed at quantifying the incidence of heat stress in beef and dairy cattle have also begun to be considered

**Difficulties:** One of the main challenges was to develop and manufacture this type of sensor in the region. To do this, we had to face challenges such as useful battery life to accompany the productive cycles of the livestock species. In the end, we were able to achieve more than two-year battery life for non-rechargeable batteries. The second challenge was to achieve the communication layer or network for these IoT sensors. In this case, we opted for LoRaWan technology, a standardised technology that achieves an average range of 10 km in rural areas. This technology does not require licenses or authorisations for its use in most countries in the region.

We believe that it is necessary to develop a business model that allows the use of this type of technology among small livestock producers in the region; this can be through shared economy, by means of cooperatives. Given the high cost of the initial investment (antenna and gateway equipment), it is necessary to work in an associative way.

**Costs:** The main costs related to the development and testing of the first devices; they were covered by the company. Also, investment was made in training the company's technicians in communications technologies.

**Projections:** We hope to deploy this technology in the region; the new challenges for livestock farming imply efficiency with lower labour costs. Achieving efficiency means implementing tools that allow measurement and management. The pandemic has added a new paradigm, which is the remote management of many farms.



## 4.2. Off-farm digital technologies

### ***Alimentos Cooperativos* (cooperative food)**

<https://alimentoscooperativos.com>

Lautaro D. Rezk



Type

**Marketing and transaction services**

**Description:** *Alimentos Cooperativos* is a national network of organisations that produce, market and consume food from family farming and cooperatives. The initiative was born in 2013 when various cooperatives joined forces with the aim of boosting the marketing of their products, based on three central concepts:

- i) fair prices, free of speculation;
- ii) quality of family farming, which also promotes agro-ecology; and
- iii) reinvestment in the development of regional economies.

Eight years later, the network brings together more than 150 family farming cooperatives in 18 provinces, more than 20 points of sale and an e-commerce system. Besides, we have developed a logistical circular area that connects the five regions of our country, where we are developing wholesale collection to improve distribution at the national level.

**Difficulties:** The main difficulties were financial and logistical. Family farming cooperatives have excellent value-added production, production and delivery capacity. We have also managed to consolidate our wholesale and retail marketing schemes. However, outside the province of Buenos Aires (the main economic and logistical centre of our country), logistics is complicated due to the lack of roads and transport connecting the different regions, which increases distribution costs. On the other hand, the lack of access to credit also generates complications that delay the growth of the network at the national level.

**Costs:** The initial costs were overcome through hard work and technical and professional knowledge that both producers and marketers already had. Besides, networking with different production, marketing and consumer cooperatives allowed us to train and exchange experiences.

**Projections:** in the next five years we expect to have fully developed our logistics area in the five regions of the country, a substantial increase in our retail consumption points and a much more sophisticated development of e-commerce at national level. We are also committed to continue strengthening our training schemes, not only within the network, but also to make them available to different organisations in our country and in Latin America.

### Virtual Mercado Borbón

[www.mercado-borbon.com](http://www.mercado-borbon.com)

Max Zamora Chaves, Director of the Executive Board



**Type**  
**Marketing and transaction services**

**Description:** Initiative of the agro-commercial cooperative Cooperborbon R. L., located in the centre of the city of San José, Costa Rica, owner of the *Mercado Borbón* facilities and composed of 150 associates and more than 5 000 people who visit it every day. The initiative relates to the design and implementation of a virtual sales tool (e-commerce) of agricultural products that serves as a bridge to reach customers who, for various reasons, cannot visit the *Mercado Borbón* facilities. The project started in November 2018; it was strategic in the commercialisation chain and strengthened the supply chain for farmers and households.

**Difficulties:** The main challenges were related to the logistics of immediate delivery of fresh produce, as well as a strategy of education and cultural change to adapt to new technologies and more demanding customers.

**Costs:** We started by partnering with a small company specialising in software and outsourcing services. We started by renting the services, but the cooperative now operates the entire process.

**Projections:** Our strategic plan is to consolidate and increase the number of products available, as well as the number of artisanal products from different cooperatives and partners. We are also implementing in the short term the wholesale segment to more specialised customers.

### AGROS

[www.agros.tech](http://www.agros.tech)

Robinson López, CEO



**Type**  
**Marketing and transaction services, and financial services**

**Description:** AGROS seeks to build a decentralised digital identity, applying precision agriculture technologies and backed on Blockchain, to help improve the solvency and credibility of individual farmers, while the existence of reliable digital information attracts fair trade buyers and global service providers (Fintech, Insurtech, Agtech, financial institutions, etc.) to rural communities.

**Challenges:** Family farming is strongly represented in rural areas, with challenges that have manifested themselves even more strongly during the pandemic. In Peru alone, 20 percent of family farmers are "active digital" users. However, most processes were digitalised, making digital exclusion synonymous with economic exclusion. This led us to create a digital identity for non-digital users, adapting to what represents the highest level of trust in the field, a person's "word". Therefore, we decided to implement voice recognition techniques allowing a farmer to use his voice to control his digital identity, and be part of this "new economy".

**Costs:** AGROS was created in 2018. The founding partners decided to invest all the capital from their previous venture, SinergiaTech, to address the various challenges of family farming, driven by a personal commitment to the countryside, being both grandchildren of farmers. They started with their own capital of USD 80 000 and, after a year of research in farming communities and productive associations, they managed to develop a first Minimum Viable Product (MVP) that generated enough impact to obtain USD 250 000 in the MIT Innovation Inclusive Challenge in 2019, which allowed the team to grow and initiate collaborations with local governments, to drive in different regions of the country and is now on track for its first round of investment.



**Projections:** The next five years will be challenging in terms of both scaling and technology. AGROS plans to close partnerships with multilateral, governmental and non-governmental institutions to boost the construction, adoption and recognition of smallholder farmers' digital identity. The goal is to reach three million farmers. To this end, we will work to make our technology increasingly adaptable to more contexts in rural areas, such as the Andean zone in our region, which represents a totally different dynamic and challenge than the coast and jungle.

**Foodchain S. A.**

[www.foodchain.farm](http://www.foodchain.farm)

David Proenza, CEO



**Type**  
**Marketing and transaction, and traceability services**

**Description:** Foodchain is a specialised digital platform for food marketing and traceability from the field to the consumer, developed under Blockchain technology and other technologies of the fourth industrial revolution, so that family farmers, small, medium and large producers can market their products directly to buyers.

This ecosystem provides producers with the mechanisms, services and products that allow transactions to take place efficiently and transparently for all parties involved, including the end consumer.

**Challenges:** Our biggest challenge is trying to bridge the digital divide with producers of all sizes; however, the percentage of producers who own a smartphone is very high, so we can use this as a tool for producers to access Foodchain and its benefits.

**Costs:** Concerning training for producers, we have had the support of some multilateral organisations with which we have signed cooperation alliances.

We have partnerships with the Inter-American Institute for Cooperation on Agriculture (IICA), the Development Bank of Latin America (CAF) and LaCChain of the Inter-American Development Bank (IDB). We are currently discussing with other multilateral entities and governments to partner with them in order to provide positive responses to producers.

**Projections:** Our growth strategy is based on making pilot plans in each country, to adapt our technology based on what the producer is already doing, so that they can use what they have already developed and are familiar with. We are currently present in six countries in Latin America, and in the process of implementation in five other countries of the region.

Our growth goal for the next five years is to operate in the entire American region and to impact the productive sector in the commercialisation and digital traceability of food at a national, regional and international level. Finally, I cannot fail to mention that our company has a positive impact on a very high percentage of the less benefited population, which produces and harvests the food we eat every day.

## EatCloud

[www.eatcloud.com](http://www.eatcloud.com)

Juan David Correa Toro, Founding partner  
and Chief Technology Officer



Type  
Traceability services

**Description:** We give your unsold food a second chance, without reputational risk, at low cost and with high impact.

Through its operation, EatCloud seeks to transform the food industry, using exponential technologies to manage unsold food, generating economic, social and environmental impact. To do this, we rely on intelligent collection and distribution of information. Our donors inform us of the goods that can be donated; the donation announcement information is sent to our ecosystem of donation managers or beneficiary organisations, using an application with intelligent criteria to find the best and most suitable beneficiary.

**Difficulties:** One of the main difficulties is access to finance. The partners have had to take a huge personal risk with financial institutions to obtain the necessary resources to launch this type of initiative. They are constantly working to maintain the necessary flow of resources, but the process is often difficult and hard to manage. Besides, the process of articulating an ecosystem and massifying the platform has posed significant challenges, which are constantly being worked on. Another big challenge has been to use start-ups' own sources of finance, such as venture capitalists. We are constantly refining our business model to make it attractive to this type of financing source.

**Costs:** EatCloud was born as an initiative of the company Nodrizza Network S. A. Before the formal constitution of the company, Nodrizza provided the necessary economic and technical resources to launch a pilot test and, later, when the pandemic started, a country-wide operation. The entire Nodrizza team turned to EatCloud and together, we managed the technical implementation and execution of the massification activities. Along the way, the initiative has also generated resources through sales, and has received donations. Lately, we have started to incorporate venture capitalists into the resource equation to continue growing and consolidating.

**Projections:** EatCloud has always been conceived to play a leading role in the synergistic solution to two huge problems: food loss and waste (#sindesperdicio, no waste) and hunger and malnutrition (#hambrezero, zero hunger). In that vein, we have prepared for international expansion, and in five years we see ourselves operating in many countries around the world, providing a world-class solution to efficiently solve these problems. To date, we have helped to rescue more than 10 million kilograms of food, but our interest is to multiply this figure by a thousand in the next five years.



## Pula Advisors

[www.pula-advisors.com](http://www.pula-advisors.com)

Jacob Acevedo. Responsible for Partnerships with Development Agencies for Latin America and the Caribbean.



Type  
Financial services

**Description:** Pula is a technology and insurance company that develops parametric agricultural insurance tailored to smallholder farmers who are vulnerable to climate change. Using innovation, Pula makes products accessible to farmers, with a broad coverage of risks, including drought, floods, hurricanes, pests and plant diseases, among others. One of the keys to Pula's success is that it combines insurance with products or services that the farmer needs and uses, such as seeds, fertiliser or credit. Besides, thanks to the vast amount of data we collect and process, we provide digital advisory services to farmers that help them increase their productivity and resilience to climate change. Since it was founded in 2015, Pula has insured 4.5 million farmers in 13 countries in Africa, Asia and Latin America.

**Difficulties:** The main obstacle we faced in making our product offerings a reality was farmers' perception of insurance. This mistrust is based on the fact that traditional insurance is not adapted to the needs of small farmers.

To overcome this barrier, Pula decided to design its products by listening to farmers, understanding their challenges and harnessing the potential of applying technology and innovation to benefit the most vulnerable. As a result, our products manage to anticipate situations that prevent farmers from maximising their production, for example, germination failure. This is achieved with meteorological and satellite information that allows us to monitor clouds very precisely. Another key to success is comprehensive risk coverage, which we have achieved through our area-based parametric yield insurance (AYII), which effectively contributes to household resilience.

**Costs:** Realising an insurance product tailored to smallholders is a complex task. In general, it will require many actors, who are not necessarily aligned, to pull in the same direction. Governments, with their agricultural subsidy programmes; development agencies; development banks; producer associations and agricultural input manufacturers, among others, are all involved. It is in Pula's DNA to make it easier for these actors to connect.

Pula started with a small capital that enabled us to insure 100 000 farmers in 2015. To scale up our activities we have been supported by UN agencies, for example the World Food Programme (WFP) or the International Fund for Agricultural Development (IFAD). This allowed us to reach 800 000 farmers in 2018. We now work directly with governments in countries such as Malawi, Zambia and Nigeria, helping them to reduce risk in their investments in rural development.

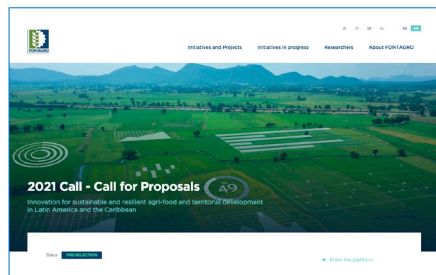
**Projections:** Globally, there are about 570 million small family farmers. In Latin America, agricultural insurance penetration remains very low, especially in the smallholder segment.

Pula's goal over the next five years is to expand its operations in Africa, Asia and Latin America, while maintaining our focus on commercially viable products that bring real resilience to smallholders. Our strategy is based on providing simple but powerful products that farmers understand and control, such as area-based parametric yield insurance. We also want to continue to innovate in digital services that increase smallholders' resilience to climate change and maximise their agricultural production and income.

## 5. Financing sources



Below, we provide some financing sources for digital innovation projects that can be oriented towards agrifood systems, so that private or public institutions can apply for fund raising to develop their ideas.

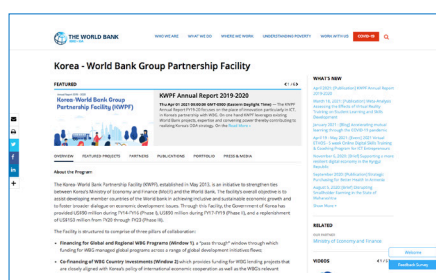


### Fontagro

2021 call for the submission of innovation projects for sustainable and resilient agrifood and territorial development in Latin America and the Caribbean.

More information at:

<https://www.fontagro.org/new/proyectos/iniciativa/5/convocatoria-2021/es#>

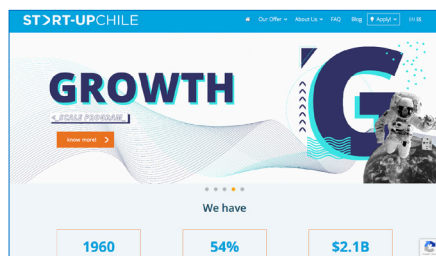


### Korea - World Bank Group Partnership Facility

The Republic of Korea will provide more than USD 5 million to assist selected emerging economies in the region to help deal with the COVID-19 pandemic and promote digital and green development projects.

More information at:

<https://www.worldbank.org/en/programs/korea-world-bank-group-partnership-facility>

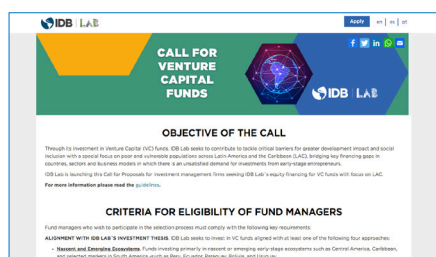


### Start-Up Chile Seed

Call for projects that propose innovative and technological solutions to boost the economic and social system and solve problems generated by COVID-19.

More information at:

<https://www.startupchile.org/es/start-up-chile-abre-convocatoria-a-seed-y-amplia-su-busqueda-a-emprendimientos-que-resuelvan-problematicas-generadas-por-el-covid-19/>



### IDB-Lab

IDB Lab is the IDB Group's innovation lab and has a call for venture capital funds with the objective of contributing to unleashing the potential of innovation to generate greater impact on development and social inclusion.

More information at:

<https://www.iadb.org/es/sectores/comercio/bienes-publicos-regionales/home>



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