

Newsletter

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- **Building a regional future**
Marcelo Bosch
- **ICTs as a tool for overcoming asymmetries in Latin American agriculture**
Mônica Rodrigues
- **“The impact of ICTs on agriculture is huge”,**
interview with Raúl Hopkins
- **Priorities and policies for ICT use in the Bolivian agricultural sector**
Víctor Vásquez Mamani
- **“To strengthen the impact of ICTs on public institutions, the end user must be established as the central objective”,**
interview with Hugo Chavarria
- **“ICT development must be focused on the small producer”,** interview with Blas Espinel
- **“Our experiences can be replicated in the region”,**
interview with Francine Brossard
- **Facts and figures**

18



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Building a regional future



Marcelo Bosch,
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As we all know, we cannot live without feeding and clothing ourselves or taking refuge from inclement weather, and we therefore need to produce increasing quantities of food, energy, and essential goods and services, from pharmaceuticals to weather forecasts to early warning services. At the same time, we are learning about climate change and becoming increasingly aware of the irreparable damage done to our planet, and we are debating plans to reverse (if possible) the most aggressive environmental processes. Agriculture, in the broadest sense, is tightly related to these issues. It has been one of the decisive factors in the biological, social and cultural evolution of humanity.

Furthermore, humans, as social organisms, cannot live without interacting with others, exchanging information, organizing, cooperating, learning, teaching and even playing. Information and communications technologies (ICTs) reinforce all the social and cultural activities of men and women around the globe and have accelerated cognitive abilities at both the individual and collective levels.

The intersection of these two ideas should be a State issue, a concern addressed in all parts of society and a critical strategic area for development and economic activity. Despite its importance, however, this juncture does not appear to be particularly well explored in Latin America and the Caribbean, as found by many studies and surveys.

Nevertheless, all countries and activities in the region have seen the rise of so-called agro-ICTs, with a range of approaches, intensities, policies and commercial strategies. The phenomenon has been studied at a large number of international events and has generated an abundant literature, mostly within the framework of rural development. Much less work has focused on ICTs for innovation or how the information revolution is transforming the generation of scientific and technological knowledge or how it is being applied to solve social, environment, or productive problems.

Agriculture is a complex system, encompassing a wide range of activities and issues: family agriculture versus large-scale agriculture, commodity production versus value added at origin, productivity versus sustainability. Think of the hundreds of food products, many of which have industrial, medicinal and cosmetic applications, and the thousands of subproducts produced by the existing production chains. Finally, add in the more general questions affecting agro-industry such as the weather, water, soils, pests, human resources, etc.

The ICT side is also becoming more complex, not only from the proliferation of disciplines and technologies but also through

its cross-linked, ubiquitous and multi-disciplinary nature. A modern harvester today is more “intelligent” than the best personal computer 30 years ago, it “knows” exactly where it is located and it can communicate with other machines. Every corner of the globe is tracked by satellite, while radar and ground stations complete the data capture that puts information “in the clouds” so it can be processed in clusters, grids and supercomputers. Some of this processed data reaches end users via electronic means and telecommunications channels that are still expanding. For some, ICTs mean accessing market prices or climate data from their cellphone; for others, the possibility of monitoring a harvest team’s work in real time; and everything in between.

Agro-ICTs, as an area of knowledge and field of action, represent a huge matrix that requires a high level of analysis and engineering to build a systemic understanding of the current state of the industry, as well as its future evolution and continual updating. This understanding will serve as the basis for preparing recommendations for integrating public policies into the system. This can only be achieved if we can:

- Develop good diagnostic methods at the national and regional levels;
- Build interdisciplinary teams for the future development of agro-ICTs;
- Expand the field of ICT application from agriculture to agro-industry;
- Identify programmes for training “hybrid” professionals (in agro-computer science, agro-electronics, agro-robotics and so on);
- Educate for the future;
- Build strong scientific and technological institutions; and
- Generate a productive space for regional innovation, taking advantage of existing institutional instruments and creating new ones.

Latin America can thus release its regional potential without duplicating efforts, in order to improve the allocation of resources, take advantage of synergies, form networks of cooperation and support the region’s necessary (but relative) technological autonomy.



Mônica Rodrigues,
Economic Affairs Officer
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ICTs as a tool for overcoming asymmetries in Latin American agriculture

Recent economic, social and technological transformations in Latin American agriculture have made the sector increasingly information intensive. With the growth of markets, the evolution of ever more complex production chain relations and technical advances in production and commercialization, farmers must handle growing volumes of data. Intangible assets are becoming more important relative to traditional physical assets, and new capacities in data management and knowledge are crucial.

In this context, information and communications technologies (ICTs) have become a powerful tool for farmers to access and organize the available knowledge. ICTs play a role in facilitating the implementation of technologies –both new and traditional– and transforming patterns of learning and interaction among producers. Despite this potential, the regional evidence shows that there are still important limitations in their diffusion and that their adoption does not, on its own, lead to overcoming the asymmetries in the agricultural sector.

The main limitations to the adoption of ICTs in agriculture appear to lie in the education levels and cultural backgrounds of rural communities, as well as a lack of motivation stemming from the farmers' perception of the scant usefulness of ICTs and their limited digital skills. Connectivity is another important obstacle, despite regional advances. Finally, there

is little impetus (such as competitive pressure or the needs of suppliers and buyers) to convert traditional systems into more ICT-intensive processes.

There is little evidence that ICTs are spontaneously generating a reduction of agricultural asymmetries in Latin America. On the contrary, the diffusion of these technologies may be opening up new gaps by reproducing the historical disparities in the sector. ICT adoption is sensitive to variables such as the location, size and income level of the operation, market access, insertion in the production chain, technological level and the age and education of the producers. Thus, while everyday ICTs, such as cellphones, are more widely diffused, the complex ICTs used in production, such as precision agriculture and traceability systems, tend to be concentrated in large operations with access to more sophisticated export markets.

To take advantage of ICTs to reverse the unequal development of agriculture, regional policies must be implemented to overcome the barriers to adoption in the most underdeveloped segments. One possible mechanism is the exchange of successful experiences between countries in the region, which share fairly similar realities in terms of the insertion of agriculture in the economy and the origin of sectoral asymmetries.

The most extensive experience in the region in terms of facilitating farmers' access to ICTs has been with telecentres and computer-supply and connectivity programmes for rural schools. Policy on its own, however, cannot guarantee access to and use of ICTs in these areas. Motivational and educational strategies aimed at overcoming resistance, demonstrating the usefulness of the technologies and developing digital skills and content are key.

With regard to virtual supply, the most common response in the region has been to implement data platforms and portals. There is also a wide range of experience with cellular messaging, early warning, mobile banking, public procedures, and so on. With regard to training, farmers have benefited from campaigns that position digital education in the context of providing connectivity and specific content for the sector.

Assuming that connectivity will be provided by national telecommunications organizations, efforts should be focused on motivating farmers to adopt ICTs in management and production. This requires a set of policies on businesses, the environment, agricultural research, extension and the promotion of production. Such policies should concentrate on ICT solutions that are technically and economically feasible and sustainable and that take into account the specific characteristics of the production systems, technological evolution and the range of interactions with the competitive, institutional and social environment.

This article is based on the results of a series of studies contracted within the framework of the ECLAC-@LIS project, which are being compiled into a book on ICT and agriculture in Latin America, scheduled for publication in the middle of this year.

Raúl Hopkins,
Rural development and
information technology expert:



“The impact of ICTs on agriculture is huge”

The consultant argues that while information and communications technology (ICTs) are not widely diffused in rural Latin America, the few existing studies show that they can provide large improvements in production management.

Based on your experience as a consultant in different countries in Latin America, what priority areas have you identified for developing projects in the region to implement ICTs in agriculture?

Three areas are fundamental. First, it is necessary to increase awareness on the importance of ICTs in agriculture, to combat the myth that ICTs are relevant in other sectors but not so much in the rural sector. In reality, the opposite is true: given the distance between producers, the timely dissemination of information is critical in agriculture. This awareness work should focus, in particular, on the sharing of successful experiences through on-site visits, publications, videos and attractive, easy-to-use web portals.

The second priority area is to give a strong and decisive boost to connectivity in rural areas. Most of the studies in this area agree that the lack of connectivity continues to be the main hurdle for rural producers to take advantage of ICTs. The third priority area is skills development, with new methodologies that can identify the different characteristics and interests of the various groups that make up the Latin American rural population: youth, girls and boys and adults, as well as the various types of workers. The success of this training programme will require a close collaboration with public and private institutions working in the education sector.

What is the role of south-south cooperation in promoting ICTs in regional agriculture?

South-south cooperation is tremendously important, given the varying degrees of development in ICT use at the regional level. Some countries are highly developed in this area, while others are still taking the first steps. ECLAC has an important role to play here, since it constitutes a space for horizontal collaboration that the region's governments value and recognize. Human beings and institutions learn by comparison, so the bigger and broader this space, the greater the possibilities for learning.

To take full advantage of this space for south-south cooperation, we need to build new institutional mechanisms and work instruments. ICT development creates the opportunity for new forms of working and interacting with other people, institutions and governments that were previously unthinkable. Here, it is critical to take advantage of the various instruments of the web 2.0. The big challenge is

how to transform the spaces for cooperation created through periodic meetings into ongoing processes of interaction, in which the development of virtual spaces for collaboration on various strategic issues can be very useful.

Why is it important for governments to address the issue of connectivity through macro policies while also developing local projects?

The rural areas of Latin America and the Caribbean are widely diverse and thus require different solutions. The question of connectivity is very different in the Argentine pampa, the inter-Andean valleys or Central American agriculture. But while the geography sets limits and gives comparative advantages to certain technologies, it is also critical to take into account the idiosyncrasies and opinions of the people. More specifically, the installation of fibre-optic networks to reach small population centres in remote areas with a difficult geography (as is often the case in the Andean countries) is not always feasible, so these networks need to be complemented with satellite technologies, which is not necessary in other parts of the region.

An intelligent macro policy recognizes this diversity and benefits from the experiences at the local level. The development of local projects also makes it possible to test solutions to specific problems, which can later serve as the basis for broader solutions. It is equally important to promote a rich and creative complementarity among institutions in the public and private sectors.

What are some noteworthy examples of ICT development in regional agriculture that have the potential to be replicated in other Latin American countries?

Almost all the countries in the region have had notable experiences that offer many lessons. Some examples include the case of virtual communities in Colombia, the use of traceability in Brazil and Uruguay, advances in electronic governance in Chile, precision agriculture in Argentina, the monitoring of biodiversity in Mexico and the agricultural data systems in several countries in the region. As I mentioned earlier, one of the biggest challenges is designing new instruments that are attractive and user friendly and that promote a learning process that will benefit everyone. Any replication processes, however, must take into account the specific characteristics of local agriculture, so that they can be successfully adapted by the local producers.

Is there any information on the impact of ICT use on the agricultural sector in Latin America?

The studies are still limited, but the qualitative evidence and some individual studies suggest that the impact is huge. First, the costs of gathering information and carrying out transactions have been reduced. Before, agricultural planning and product marketing involved substantial costs and often travel for the farmers. With ICTs, they just have to make a phone call or check the Internet to find out everything they need to know. Second, ICT use is facilitating the discovery of new opportunities, new markets and new business opportunities, which are raising the income of rural producers.

Third, ICTs are enabling a broader and richer interaction among farmers who face similar difficulties. Numerous collaboration networks and business alliances are being created. A fourth impact is in training and learning processes: farmers are using web pages to explore different ways of increasing productivity and reducing the risk of pest infestations and diseases. Again, however, there is a huge disparity in these impacts. Tens of millions of farmers are still deprived of Internet access, which has become an essential right in the modern world.

Which ICTs should be given priority in the design of agricultural policy in Latin America in the coming years, and why?

The challenge of bringing connectivity to rural areas must be comprehensively addressed. Some of the Southern Cone countries have made significant advances in this area, but the task is still pending in the majority of the countries in the region. Access to connectivity is essential for obtaining the benefits of ICTs. The countries of Latin America should join forces to achieve this goal for the region as a whole in the shortest time possible.

Each country has to set its own ICT priorities based on its specific characteristics and needs. For example, precision agriculture might be a top priority in some of the Southern Cone countries, given the technical characteristics and scale of production, whereas virtual communities or traceability might be much more important in the Andean countries.

Another important point is that ICT development, in and of itself, can help advance these processes of setting priorities and promoting new virtual spaces for the broad participation of people and institutions linked to the agrarian question. Organizations like ECLAC, in association with specialized institutions, have a lot to contribute in this new approach to promoting rural development, with ICT support.

“The rural areas of Latin America and the Caribbean are widely diverse and thus require different solutions”



Víctor Vásquez Mamani,
Vice-Minister of Rural and Agricultural
Development, Plurinational State of Bolivia

Priorities and policies for ICT use in the Bolivian agricultural sector

Summary of a presentation prepared for the workshop, Information and Communications Technology (ICT) and agriculture in Latin America and the Caribbean, held at ECLAC, Santiago, Chile, 18 January 2012.

Around 5.5 million hectares are zoned for agriculture and livestock in Bolivia, of which barely three million are in production. The Bolivian agricultural frontier could thus be extended without clearing any land, by simply putting to use the 2.5 million hectares of fallow or underutilized land.

Almost two thirds of the Bolivian population live in cities; the rest are found in the countryside. Agricultural production can be divided into two types: of the 740,000 total production units in the country, about 700,000 are smaller than five hectares (most of which are concentrated in the valleys and on the Andean plateau), while 3,200 production units are over 50 hectares. The small production units engage primarily in non-mechanized, organic, subsistence farming, and any surplus is sold in the domestic market. Large producers, in contrast, rely on mechanized production, produce mainly for export and have a high share of transgenic products. For example, 80% of the country's soybean production uses transgenic seeds. Another difference between the two types of agricultural producer is that the small farmers in the valleys and on the Andean plateau are subject to higher climate risks, which limits their production possibilities each season.

Based on the identification of these differences, public policies on ICT use in Bolivian agriculture have tried to address the distinct needs of producers. For example, the initial design of the website for the Ministry of Rural Development, Agriculture and the Environment had little connection with producer demands, which resulted in a low access rate. To make the site more useful, content was added that was more in line with farmers' interests, starting with risk management. In Bolivia, the municipalities and regional governments must, by law, allocate around 0.15% of their budgets to climate risk management. Information on the use of these resources was published on the Ministry's website, along with the forms and other documentation that producers need to access public assistance in this area. Traffic subsequently increased on the site, as producers were able to access more useful content and also avoid having to go to the Government office to take care of transactions and procedures that they can now do on the Internet. Another result of this initiative is that the resources allocated to climate risk management are now used more fully and more efficiently, because the producers are able to put pressure on the local governments to administer the

resources properly. Each year, the municipal governments allocate around 109 million bolivianos (about US\$15.77 million) to risk management. Before this information was published on the Ministry's website, these resources were rarely used in their entirety; in the last two years, the number of policies implemented with these resources has increased significantly.

Another area in which ICT has proven useful for agricultural producers is price monitoring. Bolivia maintains a production and markets monitoring system (*Sistema de Información a la Producción y los Mercados Nacionales*, or SISPAM), which tracks the wholesale and retail prices of agricultural products in all nine departments in the country. During the food price crisis in 2007-08, there was a tendency to hold back agricultural products to sell overseas, causing an increase in domestic prices. Using data generated by SISPAM, the Government was able to apply price bands and thus stabilize the domestic prices of food goods such as chicken, potatoes, maize and soybeans. SISPAM has since been expanded to incorporate municipal and departmental data, and at least 60 of the 320 Bolivian municipalities are now using the system to notify producers of price differences between markets, so that they can decide where to sell their products for the best price. The system thus fulfils a dual function: it informs agricultural producers of price trends in different markets, and it facilitates the implementation of a price band policy, aimed at stabilizing the domestic prices of certain food goods (that is, neither too low for producers nor too high for consumers).

Based on these two experiences in the use of ICT in the agricultural sector, the Government has initiated a new project: the Agro-Environmental Production Observatory, which will have several purposes. First, it will organize and publish information on sanitation and the legal certainty of land titles; second, it will generate and provide incentives for the use of a mechanism for properly managing water resources; third, it will monitor production of the ten most strategic products in the family food basket; fourth, it will monitor prices in different markets (that is, the Observatory should incorporate functions currently carried out by the SISPAM); and finally, it will coordinate the activities and functions of the different ministries, government levels (municipal, regional, departmental and central) and institutions that work for the agricultural sector. Institutional coordination should be a strategic function of the Observatory that extends to sectoral actors (small, medium and large producers) with their different technological and productive characteristics and needs.

For these ICT tools to generate the desired impacts in the agricultural sector, producers must be guaranteed

Internet access. Internet coverage is still very limited in Bolivia, and remote areas that are far from urban centres are scarcely provided with these services. To overcome these limitations, the Ministry of Education is working to provide computers to all teachers and to use the schools as centres for disseminating knowledge on ICT use in agricultural and rural areas. Similarly, with the support of several international organizations, the ICT-Bolivia Network is operating in the country and comprises 230 Internet access centres throughout the nine departments. The success of this experience stems from its broad geographic coverage. Agricultural producers now have direct contact with potential buyers, which lets them bypass brokers and in many cases obtain better prices. In the case of potatoes, for example, the consumer price was almost ten times the producer price; the difference corresponded to the brokers' margin. The direct communication between producers and consumers has reduced these margins and thus improved prices at both ends of the production chain. This experience could be recovered, deepened and/or diffused to generate an even stronger impact on the agricultural sector.

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Hugo Chavarría,
Specialist, Inter-American
Institute for Cooperation on
Agriculture (IICA), Costa Rica

“To strengthen the impact of ICTs on public institutions, the end user must be established as the central objective”

The expert holds that information and communications technology (ICT) in the agricultural sector must be centred on end users and specialists to promote real development.

What are the main strategies of IICA to support the diffusion of ICTs in agriculture in the Latin American countries?

IICA is working from several angles to promote the use of ICTs in agriculture. First, we are collaborating with public agricultural institutions to identify bottlenecks that reduce the impact of ICTs on their processes, to later build strategies for solving them. Second, we are collaborating with member countries to promote the use of ICT tools in knowledge management for innovation and technical data management that facilitates access for the different actors in the field and in production chains. Third, we are developing pilot experiences that apply ICT use to benefit mainly farmers.

How important is the modernization of agricultural institutions for addressing the new demands of the sector in terms of policies on ICT use?

It is very common for institutions that are in the first stages of developing ICTs to use the majority of their technological tools primarily in management and administrative processes, because digital agendas generally start with the promotion of ICTs for financial-accounting systems, operations systems, personnel administration systems, inventory management systems, logistics management systems, and so forth. However, any process of institutional modernization that is undertaken to strengthen the impact of ICTs in public agricultural institutions must establish the end user as the central objective.

It is critical for public agricultural institutions to understand that placing ICTs at the service of administration and management delays the impact on the institutions' end clients. Progress in the adoption of ICTs (and the impact on the end client) has been found to be greater if the early efforts at ICT provision and use in public agricultural institutions incorporate the specialists who have the most contact with end clients (extension, commercialization, education, plant and animal health, laboratory services).

What actions should be taken to promote the agricultural sector as a priority area in the digital agendas of the countries in the region?

The authorities in charge of the digital agendas must understand that incorporating ICTs under the heading of “use” or utilities in public agricultural institutions would not only increase the profitability and productivity of their economic and human resources, but also incorporate new actors in their technical assistance programmes, expand their geographic coverage area and offer products and services that are more tailored to the needs of their clientele.

It is also necessary to improve the digital literacy and data skills of the employees in these public institutions. The strategies for implementing electronic governance favour institutions in health care, education and public finances not only because these fields will have the biggest impact on the end user in the short term, but also because these institutions generally employ workers who are better qualified for using ICT tools. Furthermore, ICT projects must stop being conceived as simple pilot experiences, but rather seek sustainable, scalable solutions that benefit the majority.

How has greater ICT use affected the work in regional agricultural institutions? What are the impacts on agricultural producers?

Since ICTs have only recently been incorporated in public agricultural institutions in Latin America and the Caribbean, there only a few cases that have produced concrete, measurable positive results. Furthermore, it is difficult to observe concrete results because many of the initiatives lack homogeneity and sustainability over time. In the region, the only measure I am aware of is the perception instruments that were used in workshops organized by IICA to characterize access to ICTs and their use and impact in

“One of the main investments should be to develop a digital literacy policy for all employees in public institutions”

public agricultural institutions in Uruguay, Costa Rica and Paraguay. Workshop participants from these three countries identified the following impacts:

Uruguay has the best perception of the current impact of ICTs in public agricultural institutions. Participants felt that thanks to ICT use, these institutions have managed to expand (albeit slightly) the geographic coverage area of their products and services, reduce (also slightly) the time and cost of internal management processes and increase the quantity and quality of the products and services they offer.

In Costa Rica, the general perception is that the initiatives implemented by the public agricultural institutions have not yet produced many positive results, although it does seem that the quantity and quality of the products and services offered has increased slightly, thanks to the use of ICTs.

In Paraguay, the perception is that the little ICT use in these institutions has not translated into increases in the coverage area or the quantity and quality of the products offered. Rather, they feel that these technologies have caused an increase in the costs and time involved in internal management processes.

In the coming years, what ICT investments should be given priority so that the regional agricultural institutions can offer farmers a better service?

Based on the study that we carried out in Uruguay, Costa Rica and Paraguay, we can conclude that the lack of investment in ICT tools (hardware, software, intranet, web, cellphones, etc.) is not the main cause of the digital lag in public agricultural institutions in Latin America and the Caribbean. The perception of a low impact is due to the fact that in the initial stages, ICTs are mainly used in the management and administration of the central institution and are not directly incorporated into the activities of the institutions that provide services to the agricultural sector.

Consequently, the first investment that is necessary to increase the impact of ICTs on end users is to increase access and use in the public institutions that provide services to the agricultural sector. The specialists in these institutions have more potential to use the ICTs in knowledge generation and to provide it to their clients when and how they need it.

Another factor that limits the impact of ICTs on the end user is the lack of digital literacy among many administrators and specialists in public institutions. The lack of an institutional policy of digital literacy and knowledge management (or the lack of technical and economic resources) is one of the main limitations on ICT use.

Thus, one of the main investments should be to develop a digital literacy policy for all employees in public agricultural institutions, including a plan for implementation, follow-up and assessment. It is also necessary to design an incentives proposal to encourage staff training and promote systems that use performance and responsibility evaluations to determine personnel skills.

“ICT development must be focused on the small producer”



Blas Espinel,
General Coordinator, MAGAP
Information System, Ecuador

The representative of the Ecuadorian Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP), provides an overview of the country's efforts to improve agricultural production and management through information and communications technology (ICT).

What is the “El Ordeño” project and what is its role in promoting ICTs in the agricultural sector?

The “El Ordeño” project is a milk producers' platform that works as a virtual bank for producers in the chain. Participating producers have a card that is credited within a few days of product delivery, and they can use that credit to make purchases in associated businesses. This system has significantly reduced the time it takes for these resources to be made available to the producers. However, the pilot programme has had problems with Internet coverage in the sector. The project's role in promoting ICTs lies in demonstrating the association between getting involved in ICT projects and seeing the benefits for project members.

How can large-scale ICT training reduce the asymmetries among agricultural producers? What has the experience been in MAGAP?

The Ministry of Telecommunications hopes to use its infocentres to reach the agricultural sectors that have thus far benefited the least from Internet use. MAGAP should take advantage of this campaign by using the infocentres to bring our products to the farmers and to help them take advantage of ICTs in order to track prices, learn the news, communicate with each other and so on, thus reducing asymmetries. At the same time, the 2010 statistics from the National Statistics and Census Institute (INEC) indicate that only 15% of the rural population used the Internet in the last six months, 22% used a computer and 65% used a cellphone. We are therefore trying to promote diffusion through SMS text messaging.

What are the priority projects in Ecuador in terms of diffusing ICTs in the agricultural sector over the coming years?

The first project is a programme called SIGITERRAS, which has three parts. The first is the implementation of the National Rural Land Information Management System. This component

includes preparing the digital cartography in each canton on a scale of 1:50,000 and applying the rural property assessment model previously developed and applied in the Rural Land Administration and Regularization Programme. The second part is the regularization of land titles in each canton, which will be carried out through land survey campaigns and investigation of every single property in each canton. The third part corresponds to developing strategic uses for the Information Management System, on the basis of which the programme will develop mechanisms for facilitating the transfer of the generated data from a central node.

Another project is the National Agricultural, Livestock, Aquaculture and Fisheries System (SINAGAP). The general objective is to provide timely, methodologically correct data that can promote land-use planning and the growth of agro-production, thereby contributing to decision-making in these sectors.

The third project combines the National Data System on Foot-and-Mouth Disease in Ecuador (SIFAE) and the National Data System on Animal Traceability (SITA). They were created with support from IICA, and the next step is to grow and develop new modules.

Has the increased Internet use by producers generated positive impacts on Ecuadorian agriculture?

The positive impact of ICTs is centred at the level of the enterprise: software-based automation and control, the use of private connection to make up for the lack of Internet coverage in rural areas, the use of IP telephony and biometric controls. Specialized publications and association websites are another positive impact.

Which ICTs have the most potential for generating positive impacts on the sector, but which are not yet fully developed in Ecuador?

ICT development in agriculture should focus on the small producer. We have to find a solution to the lack of Internet coverage in rural areas, as well as the coverage of cellular telephony operators in the rural sector. Therefore, the ICTs with the greatest potential for the sector are SMS text messaging, given the existing penetration of cellphones, and the Internet, since it generates multiple products, including virtual communities.



“Our experiences can be replicated in the region”

The specialist details initiatives by Chilean authorities to provide Internet access in rural areas and give farmers the digital tools to improve productivity.

Right now, what are the priority projects in Chile in terms of diffusing ICTs in the agricultural sector, and how can these be replicated in other countries in the region?

Chile is currently developing the most important digital connectivity project at the national level: “Todo Chile Comunicado” (All Chile Connected). Financed by the Under-Secretary of Telecommunications (SUBTEL) and implemented by the ENTEL telephone company, the project will give three million Chileans in isolated sectors the benefits of connectivity, by expanding Internet coverage in rural areas from 11% to 90% in 2012.

Another important project is the creation of the Agro-Climate Network, developed by the Fruit Industry Development Foundation, the Meteorological Directorate of Chile and the Agricultural Research Institute. The project has involved acquiring new agro-meteorological stations to improve the network’s coverage and technology. Separately, the Office of Agrarian Policies and Research (ODEPA) has been working on a price data delivery service using cellphone text messages. Another highlight is the digital library developed by the Agrarian Innovation Foundation (FIA), which is accessed free of charge over the web and, in the near future, by cellphone. One project that has become an international benchmark is “Yo Agricultor” (I, Farmer), developed by FIA in conjunction with the Inter-American Development Bank (IDB). The project looks for ICT solutions to improve access to and use of key information for decision-making by producers in different regions and specific production clusters.

There is also the Territorial Information System (SIT) developed by the Natural Resource Information Centre. This project consists in establishing rural community information systems, using free software, which started out in highly rural communities with high poverty indices. Today, 100 participating communities have implemented a rural SIT, which gives users access to a basic geographic data system with levels of georeferenced data on soils, climate, water, fruit registries and property lines, all processed into an easy-to-understand visual presentation.

All of these experiences can be replicated in the region, since the methodologies and tools are adaptable. However, any efforts in this direction must take into account sectoral realities and rural digital development policies.

Why is it important to simultaneously develop policies on the development of rural connectivity, digital training and content supply?

What I have seen in ten years of working in this area is that in order to make any real inroads in ICT in rural communities, we have to combine three axes: digital connectivity, content development and digital training. Overcoming digital poverty in rural areas is an urgent challenge that has become an area of particular concern for the Chilean government. Consequently, the Ministry of Agriculture created the ICT Committee to open a space for dialogue among the different institutions within the ministry. The aim is to promote and widely distribute these technologies in the rural world so as to establish in the country a networked agricultural sector, connected both internally and with the world, with access to useful, timely and innovative information. Most importantly, it must be available to all producers in the sector, so that they have more and better tools with which to compete.

Has the increased Internet use by producers generated positive impacts on Chilean agriculture?

It is very early to talk about measurable impacts, given that very few ICT projects have indicators that can be used to measure their impact. There have been important achievements, however, such as the reduction of transaction costs simply through savings on transportation to quote agricultural inputs.

How do you see ICT development in Chilean agriculture?

There are several initiatives that will promote greater ICT use to improve sectoral productivity and competitiveness. For instance, the digital development policies of SUBTEL started out by offering a subsidy for the supply of connectivity and will next take aim at demand. This is reflected in a new SUBTEL contest in March 2012 aimed at promoting connectivity in schools throughout Chile.

Advances being made in terms of cellphone use are also promising, given that 95% of farmers own a cellphone. Efforts should thus be made to improve cellphone applications and bring down the cost of text messaging. The current progress in digital connectivity represents a tremendous opportunity to give agricultural producers access to network information and knowledge platforms, which will help them discover opportunities for diversification and innovation and thus lead to higher-value production.

Facts and figures

The radio continues to be the most common ICT in rural households in Latin America

The radio and, in second place, the television are the most commonly used ICTs in rural households in Latin America. At the other extreme, Internet access is especially limited in these households: the access rate is less than 5% in almost all countries –with the exception of Mexico (6.3%) and Uruguay (9.2%)– and almost non-existent in Bolivia, Nicaragua, El Salvador, Peru and Colombia. With the exception of Uruguay, the rural population primarily accesses the Internet outside the home, mostly at work or, in the Central American countries, at public access centres. In general, rural inhabitants in Latin America have fewer opportunities to use the Internet than their urban counterparts, whether at home or in telecentres, cybercafés, schools or the homes of friends or relatives.

Cellphone use creates new possibilities for connection in rural households and agricultural businesses

According to the International Telecommunications Union (ITU), the use of cellular telephones has grown faster than fixed-line telephones in developing countries. The available data for Latin America confirm these trends, especially for rural areas. Cellphone penetration in Latin American rural households has helped close the digital gap with urban areas, which has not been the case with other ICTs, including fixed-line phones and the Internet. In the case of cellphones, the gap with urban areas is almost non-existent in Chile, El Salvador, Paraguay and Uruguay. This pattern of diffusion creates new possibilities for Internet access in rural areas of Latin America, considering that cellphones are increasingly used for this purpose. In Costa Rica, Uruguay and Mexico, 10% of rural households already access the Internet on their cellphones. While these figures do not directly refer to agricultural businesses, such trends do have an impact on the agricultural sector since many rural households engage in agriculture as one of their main economic activities.

The use of various ICT devices maximizes the delivery of key information to agricultural producers

Given the strong presence of the more traditional ICTs, like the radio, in rural households, many projects in the region have been designed to combine both traditional and advanced ICTs, thereby maximizing the number of potential users. For example, many projects combine Internet use, information gathering based on digital sensors and georeferencing, contact with key informants, and diffusion via the radio or cellphones. This use of a variety of diffusion mechanisms allows the greatest number of agricultural producers in remote areas to have access to information on prices in regional markets, weather forecasts, planting and harvesting conditions and pest infestations. These producers can also find out about the allocation of public resources, and they can follow the implementation of policies that might benefit them. Impact studies show that the results of this type of project can be significant, especially in the poorest segment of the rural population, comprised mainly of agricultural families. In some cases, the result is an increase in income stemming from higher sales prices, a reduction in losses due to extreme climatic conditions and a greater and more efficient allocation of public resources to rural areas.

@LIS2 (Alliance for the Information Society, phase 2) is a European Commission programme that supports the development of a sustainable, competitive, innovative and inclusive information society and co finances three projects: ECLAC @LIS2, RedClara and Regulatel.

ECLAC @LIS2, executed by ECLAC, seeks to continue to promote and, at the same time, improve and expand the dialogue and experiences on the information society in Latin America, as well as strengthen political, technical and social ties between the region and Europe in this area.

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