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How an ICT Knowledge Platform can Support Agribusiness in the Caribbean Region

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About CTA

The Technical Centre for Agricultural and Rural Cooperation (CTA) is a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the European Union (EU). Its mission is to advance food and nutritional security, increase prosperity and encourage sound natural resource management in ACP countries. It provides access to information and knowledge, facilitates policy dialogue and strengthens the capacity of agricultural and rural development institutions and communities.

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Executive summary

In the Caribbean region, tourism is an essential element of the economy, and one of the sectors with the biggest growth in the recent years. For instance, in 2014, the region received 26.3 million tourists who spent US\$29.2 billion, setting a new record for the region (Dawkins, 2015). However, to sustain this growth, the tourism sector must develop strategies to adapt to the new demands from the visitors and diversify its products from the traditional sea-sand-sun and cruise options. Many countries in the region have been exploring, since long time, potential linkages between the agri-food sector and the tourism sector.

The aim of this study is to explore the potential of how an ICT knowledge platform could support the development of the tourism-agribusiness linkages development.

Among the key findings of the research, it appears clearly that agritourism linkage is an important topic in the region, and lots of actors at the national and regional level are working towards developing the sector. Activities are currently occurring in many different areas from policy development to research to tourism. On the production side, lots of efforts are also put in place at the national level to develop information for farmers and agribusinesses. Many islands have now put in place an online market information system.

However, the organisation of agribusinesses and agribusiness information seems weak. There is not yet a global view about the various actors in the region, the production nodes and the information about the production of various commodities in different places. In the same way, there isn't a central place for businesses to find information (farmer organisations, production nodes, businesses information) that might help them make informed decisions on investment, or identify new suppliers or new customers.

A second challenge is related to certifications. There is a global agreement among the various actors on the importance for farmers and agribusinesses to get certifications to ease market access. There is clearly a niche market for organic food, who is an important element of tourist demand, and therefore an important requirement for the agritourism sector. Other certifications (global gap, ISO, food safety, etc.) are also essential for export and trade. At the moment, there seem to be an information gap about who are certified producers are, where they live and what they produce. The same gap seems to exist at the farmers' level. They are not aware of key certifications that will ease market access, and how to get technical and financial assistance to develop capacities and get certifications.

In both areas, an online ICT platform has a major role to provide services and information required by agribusinesses. This approach is supported by the specific ICT context in the region, where the penetration rate of internet (35%) and mobile (110%) is far higher than in most of developing nations. Moreover, many actors have massively invested in specific ICT tools from web sites to smartphone apps to SMS application.

The report is structured in five sections. In the first one, we present the methodology used in the study. The second section presents the findings of the various investigations, the third section presents a series of recommendations for the platform and the fourth section presents a possible action plan for the implementation. Finally, the last section presents the larger context of the agritourism sector and a possible integrated approach with other activities to develop a series of new tourism products.

This study was conducted from April to November 2015 for The Technical Centre for Agricultural and Rural Cooperation (CTA) whose mission is to advance food and nutritional security, increase prosperity and encourage sound natural resource management in ACP countries.

Introduction

Tourism diversification in the Caribbean region represents an opportunity to ensure that the benefits originating from this sector are shared with all the actors of the society, and contribute to the development of rural communities. It represents as well an opportunity to ensure resilience to external factors (e.g. 9/11 attacks in New York had a major impact on the number of US visitors) that may impact mono-sector economies.

This report develops possible avenues for an online agribusiness platform to strengthen the supply side actors (farmers, producers, transformers, traders, exporters) and provide with market intelligence along the value chains of various commodities. The development of an ICT platform might be useful for the overall agritourism development and the emergence of new tourism products.

In this report, we use the term **agritourism** to designate trade between agri-food sector actors and tourism actors (hotels, restaurants) along the tourism value chain.

Among the key findings of the research, it is clear that agritourism linkage is an important topic in the region, and many actors at the regional level are working towards developing the sector. However, the organisation of agribusinesses and agribusiness seems weak. There is not yet a global view about the various actors in the region, the production nodes and the information about the production of various commodities in different places. In the same way, there isn't a central place for businesses to find information (farmer organisations, production nodes, businesses information) that might help them make informed decisions on investment, or identify new suppliers or new customers. In this context, an ICT platform can play a major role to play in that area and develop its online presence to provide services and information required by agribusinesses.

Methodology

The methodology used in this study was structured around the following element elements:

- A first phase focused on **desk research**. This phase consisted of the identification and review of studies on the tourism sector in South Pacific, on the agriculture sector, on tourism-led agribusiness and related domains and on existing knowledge platforms and ICT tools used in the region. The list of references that were reviewed is included in the annex of the report. The output of this phase allowed us to identify key stakeholders to interview, and key challenges to explore.
- The subsequent phase was dedicated to build a series of recommendations and a possible action plan that are presented in this report.

This report is intended to be served as a discussion paper to debate the potential development of a multi-actor global online platform to support tourism-agribusiness linkages in the Caribbean region.

Study findings

This section summarises the various elements that are recurrent in the list of studies reviewed as part of the desk research conducted for this report. The list of resources compiled for this study is available in Annex I.

Actors and activities

There are numerous actors that are interested in agritourism and the development of commodities value chains in the region.

From a sector perspective, the stakeholders are from the production side (farmers, farmers' organisations such as Caribbean Farmers Network, CaFAN,¹ or the Caribbean Network of Rural Women Producers, CANROP²), till the tourism side (e.g. the Caribbean Tourism Association [CTO³] or the Caribbean Hotel and Tourism Association [CHTA⁴]) including chefs (e.g. Caribbean Villa Chefs⁵). Most of these actors are well structured, and some of them are currently joining forces such as e.g. Chefs, considering forming a Caribbean Culinary Alliance.

From the geographic perspective, stakeholders are working at national (e.g. Ministries of Tourism, Ministries of Agriculture), regional (e.g. Caribbean Community Secretariat CARICOM⁶) and international actors (e.g. the Technical Centre for Agricultural and Rural Cooperation, CTA⁷ or the International Trade Centre ITC⁸).

In terms of areas of intervention, actors are working at different levels from research (e.g. Caribbean Agricultural Research and Development Institute, CARDI⁹), to policy (e.g. Inter-American Institute for Cooperation on Agriculture [IICA¹⁰]) to business development (e.g. Caribbean AgriBusiness Association [CABA¹¹]) to farmer support (e.g. the various market information systems deployed in different countries). These interventions provide various results across the region such as:

- Market Information Systems developed at various national and regional levels. This also includes other ICT and mobile services to support farmer from production to market access (CTA and CARDI, 2014a)

¹ <http://www.caribbeanfarmers.org/>

² <http://canrop.com/>

³ <http://www.onecaribbean.org/>

⁴ <http://www.caribbeanhotelandtourism.com/>

⁵ <http://www.caribbeanvillachefs.com/index.html>

⁶ <http://www.caricom.org/>

⁷ <http://www.cta.int/>

⁸ <http://www.intracen.org/>

⁹ <http://www.cardi.org/>

¹⁰ <http://www.iica.int/>

¹¹ <http://cabaregional.org/>

- Policy on agritourism being developed (Brussels Rural Development Briefings, 2015a)
- Numerous research studies on topics from tourist expectations to opportunities for farmers and agribusinesses
- Various events and forums, such as the annual Caribbean Agribusiness Forum (Brussels Rural Development Briefings, 2015b) or the recent Chefs for Development and Caribbean Culinary Alliance

The objective of this section is not to develop a complete stakeholders and activities mapping but to demonstrate that all the actors in the agri-food sectors and in the tourism sector are currently working to develop the agritourism opportunities in the Caribbean through different interventions and initiatives.

Opportunities and challenges

The Caribbean is a highly diverse region with countries varying widely in terms of their land mass, population, levels of socio-economic development and vulnerability to external shocks. Agriculture remains the mainstay of the economy in four countries: Dominica, Dominican Republic, Guyana and Haiti. The other economies are largely services oriented, with the exception of Trinidad which is primarily energy-based.

Farms size, farming practices, market orientation, and cropping characteristics vary across the region and comprise an important number of small traditional subsistence farmers practising mixed cropping on marginal, hilly land and a small number of commercially oriented small farmers that focus on domestic markets and a small number of large commercial farms that dominate the export market.

Rural areas face challenges such as ageing farm population, non-innovative entrepreneurship, and inadequate investment by both the public and private sectors leading to rural unemployment and increased reliance on food imports.

The steady decline in competitiveness of the regional agricultural products is due to the loss of traditional preferential markets. Domestic limitations, including institutional, structural, economic and technological factors have also played a major role in the lack of productivity and competitiveness in agriculture in the region. As is the situation with agribusiness entities around the world, Caribbean producers and exporters are looking for possible ways to become competitive in traditional and niche markets.

Agribusiness-tourism linkages are perhaps one of the most promising avenues for diversification and trade growth for the agricultural sector in the Caribbean as shown by successes across countries in the region. By integrating these two economic activities agritourism also presents opportunities for stronger collaboration to address areas of vulnerability that affect both sectors, such as climate change, environmental degradation, lack of private sector finance, changes in consumer habits and spending and limited economies of scale.

High-quality food, every day of the year, is essential to hotels, lodges and resorts. Often the food purchasing bill of a tourism site is large in the context of the local economy, but surprisingly little is spent locally, even when farmers are nearby. The challenges of shifting food-sourcing to local farmers are considerable, yet if it can be done in a way that meets

commercial needs and customer tastes, this is one way in which tourism operations can significantly increase their contribution to local economic development (CTA and IICA, 2014).

The Farmers Programme initiated and supported by the Sandals Group in the Caribbean is a good example whereby a private sector entity focuses on all three categories by becoming engaged in a) channelling and creating demand for local products among its staff and customers; b) supporting the supply side to deliver quality and quantity required; and c) establishing workable communication structures between supply and demand through the Rural Agricultural Development Authority and Continuing Education Program in Agricultural Technology.

The link between local agriculture and tourism could spur the economy of the Caribbean countries, since it would open up a new market for producers and give the tourism industry access to local, high-quality products at a lower price. Linking these two productive sectors seems a natural way to boost the development of trade and businesses involving fresh and processed products, in addition to promoting greater consumption of local products.

While there are many activities, as well a series of success stories in various islands related to agritourism as above presented (CTA and IICA, 2014; Brussels Rural Development Briefings, 2015b), a series of challenges still exist and are highlighted in various documents and presentations. This section summarises these weaknesses or limitations.

The first topic relates to certifications. There is a global agreement among the various actors on the importance for farmers and agribusinesses to get certifications to ease market access. There is clearly a niche market for organic food, who is an important element of tourist demand, and therefore an important requirement for the agritourism sector. Other certifications (global gap, ISO, food safety, etc.) are also essential for export and trade. At the moment, there seem to be an information gap about who are certified producers are, where they live and what they produce. The same gap seems to exist at the farmers' level. They are not aware of key certifications that will ease market access, and how to get technical and financial assistance to develop capacities and get certifications.

The second challenge relates to information about production and production nodes. While the commodities needs of hotels are relatively well known, even in seasonality, there is no real information about which commodities is produced where and in which quantity. There aren't clear hubs in the region that are emerging as central places for certain commodities. In the same way, farmers at their level are not aware of requirements from various customers and from tourism actors in particular. They are not directly in contact with the consumers (except at local market) and they therefore take production decision, in terms of commodities, quantity and quality, based on the information they are capturing in the local market(s) they are attached to. In order to address such information gaps, numerous market information systems have been put in place in many islands. Some of these systems are trying to leverage farmer access by proposing simple access mechanism such as SMS services (e.g. NAMDEVCO in Trinidad and Tobago¹²). But these market information systems (MIS), while providing valuable information to farmers, cannot address the information gap related to tourism-sector demand, or regional/international demand. At the same time, there

¹² <http://www.namdevco.com/>

is no regional actor yet that provides market intelligence based on the analysis of the information already available on the various MIS.

In the same way, at the research level, lots of studies are developed national and regional actors on specific value chains, specific commodities or specific sectors. At the moment, it is very difficult to have a global view on all the studies and information available at the regional level.

ICT context

This section describes the ICT context in the region. The info graphic on the next page summarises the overall ICT context in the region. In terms of mobile networks, the coverage in the region is particularly good, with close to 98% of the population covered by a network (Dutta *et al.*, 2013). In the same way, the penetration rate of mobile phones is one of the highest in the world, with an average above 110% (Dutta *et al.*, 2013).

In terms of internet access, the penetration is at 35% (Dutta *et al.*, 2013) which is above that of most of developing nations. All these indicators show that ICT has great potential to be a game-changing tool for the agriculture sector, the tourism sector and linkages between the two.

Recommendations and platform requirements to support agribusiness in the Caribbean region

This section develops a series of recommendations a series of proposals for the set-up of a possible online platform that can help in supporting the agribusiness in the region.

Content

Based on the study findings, we have identified a series of key information that could support targeted stakeholders and that would bring to a given community online:

- **Market Intelligence:** The core activity of agribusinesses is to buy commodities from producers and sell them (transformed or not) to other stakeholders of the value chain. In order to perform these tasks, information about prices, availability at different locations and forecasts are essentials.
- **Actors Directory:** Agribusinesses trade activities rely on suppliers and customers. One of the key roles of agribusinesses is to meet customers demand and identify appropriate suppliers to propose required products. It is therefore essential for agribusinesses to know where potential suppliers (farmers) are, and what characteristics (certifications, production, commodities, etc.) they have. In the same way, it is essential to know who potential customers are and what their requirements are (quality, quantity, seasonality, purchase requirements, packaging etc.).
- **Library:** Documentations, studies, research and similar resources are essentials for agribusiness to adapt their activities, understand regulatory constraints for e.g. exports, or to detect new opportunities.

On top of these key elements, it is clear that two other type of functionalities is usually essential for a given community online:

- **News and Events:** Knowing in real time what is happening and what is scheduled that is relevant to agribusinesses are essential elements. In the same way, offering opportunities for its members to provide news and seed information in the community is an essential functionality to support the community.
- **Discussion Forum:** A space for the community to discuss and identify challenges, concerns of future opportunities. Discussion forums are usually a critical element to understand what is important for the community and what are topics and area where it is possible to bring the voice of the community at the regional level.

Phase 1: Platform

The functionalities required on the platform can be split in two blocks:

- Usual functionalities
- Services that need a specific strategy for building/delivering the service or for its sustainability.

Concerning the first category, key functionalities are:

- **News and events service:** Usually this functionality is implemented in two different modules:
 - A module to gather information from the actors of the community: usually such module is moderated with one person on charge of validating the proposed news. In the same way, only authenticated users (users registered on the platform) are allowed to propose news and events to avoid a high volume of spam
 - A module to disseminate information after moderation. Such a module usually uses multiple channels:
 - News and events information are available on the website publicly using e.g. a calendar widget
 - They are pushed on social media (Facebook, Twitter, WhatsApp, etc.)
 - They are pushed on a dedicated RSS feed
 - They are pushed to email subscribers. Most modern CMS (e.g. WordPress, Drupal) implements connection with e.g. MailChimp¹³ for that purpose
 - SMS can be considered as well a valuable option too.
- **Discussion platform:** While technically not very difficult to implement on multiple channels (e.g. web/webinars like e-agriculture,¹⁴ email discussion like, Facebook/twitter/WhatsApp discussions, etc.), the major challenge for such platform is to bring people on board and participate in discussions. Significant time and effort is required to engage with stakeholders (Wenger-Trayner and Wenger-Trayner, 2016).
- **An enquiry service:** A general enquiry service on a new platform is a key element to put in place. Indeed, it is usually the most helpful service to collect feedback on potential features and contents people are looking for when visiting the platform, and to identify new potential members.

¹³ <http://mailchimp.com/>

¹⁴ <http://e-agriculture.org/>

- **Registration** for new actors to become members of the community. Each subscription should be moderated. An account on the platform will allow members to:
 - Post news and events
 - Publish resources
 - Access and use private information (see below for more details)
- **Subscription** to news and events information
- **Analytics** to monitor evolution of usage and popular features of the platform
- **Blog engine:** Many platforms integrate a blog engine. From a technical perspective and in terms of resources, this is a very easy feature to add. However, the major challenge for blog is to have regular content update to attract attention. This feature could be easily added later when/if the community is active and when the number is sufficiently high that it is easy to get lots of content without being a workload for each individual member.

Stakeholders directory

The study highlighted the importance of information sharing about the various actors in the agribusiness sector. Potential buyers of commodities (traders, processors, exporters, etc.) have interest in being linked with farmers, knowing where they are, what they produce, which certifications/qualifications they have etc.

Based on the study output, the best possible way in terms of scalability and sustainability to address the needs of agribusiness actors is to build a business-oriented directory that list all actors that are aggregating farmers and who are potential business partners for these actors.

Information needs

In terms of information needs, each stakeholder is looking for specific information. The following elements seem to be critical:

- Organisations working with farmers,
 - Organisation description: structure, governance, vision/objectives, etc.
 - Commodities produced
 - Yearly pattern of yields (volume per month potentially available)
 - Production zones and number of farmers
 - Certifications
 - Contact information
- Agribusinesses, traders, processors
 - Organisation description: structure, etc.
 - Commodities and products sold with certification
 - Yearly pattern of yields (volume per month potentially available)
 - Delivery zone
 - Contact information
- National or regional organisations that can be helpful for agribusinesses
 - Organisation description

- Type of support/services they are providing
- Requirements and Process
- Contact information

Many of the individual actors already maintain part of this information on their own profile online (Facebook, LinkedIn, website, etc.). This information about available online profile should be stored in the directory to avoid duplication of information.

Structure and access

The information available in the directory should be accessible through various paths. People usually have different interests and will search the directory using different criteria. At least the following classification should be available:

- Per country
- Per actor type
- Per commodity

In terms of privacy, a big part of the profile information of each actor is public information that is available for marketing purpose. However, some information such as specific individuals to contact may be preferably kept private to the community (actors registered in the directory). The directory should there offer the possibility to have part of the profile private.

Implementation option

There are two main options for implementing the proposed directory:

- A virtual federated directory
- A shared physical directory

Concerning the first option, a virtual federated directory is a directory that is maintained separately by multiple owners. Each contributor maintains a sub-part, and provides links to other parts maintained by other contributors. There are many examples of such approach; for example, the very first web search engine, the World Wide Web Virtual Library,¹⁵ was built on this model. The major advantage here is to build a directory at low cost (no specific development) and quickly.

However, there are also a series a limitation with this approach. The first issue is a risk related to continuity. The data is not centralised, and therefore if one of the partners have a technical problem, or stop its activity, the data stored at this partner might be lost for the community. Then, the edition of the data is potentially problematic as each partner may have its own policy and approach for the resources it manages. The coherency of the data is also very hard to check. A given entry in the directory could easily be added at different point with incompatible information, and no easy way to run quality check. The second approach is a more traditional option, where a central repository is designed. Such approach allows the design of an efficient solution, with standardised data format (e.g. Agriprofiles [Sancho, 2015]), central access and quality check procedures. While more costly, because of software

¹⁵ <http://vlib.org/>

development and hosting requirements, such a solution is definitely more robust, more scalable and can be more easily maintain.

Library

Resource sharing is a key functionality for the future platform. While lots of stakeholders' web sites today include links to a series of resources that might be of interest to CABA members, there is no real library module (also known as document repository) that gathers all this information in one place.

In terms of information needs, the following categories have been identified:

- **Policy and Research Resources:** research, studies, analysis published related to the tourism-led agribusiness sector
- **Crops and transformed products information:** what available crops and transformed products are in each country, what their characteristics are, their use in recipes, etc.
- Certifications and Trade requirements
- Stories:
 - Farm and producer stories
 - Successful initiatives in the sector

The major challenge for a library module is to provide a comprehensive list of resources that grows overtime. The very first element of this strategy is to enable all members of the community to contribute to it and submit resources. The value of the library is proportional to the number of resources. From our perspective, the only way to have a valuable service is to consider the design of such a library module in cooperation with all the regional and national actors that produces research and policy documents. Designing a central repository for agriculture resources that can then be exploited by each actor on its own platform through e.g. a widget model similar to the one described for the actor repository in the previous section is the best way for all stakeholders to have a sustainable service.

Another element to increase the value of such library that it is worth considering is related to opening resources to comment. This is way to detect what are resources that are attracting visitors, as well as a way to engage discussions on specific topics. On the other hand, comment needs heavy monitoring to ensure that there is no problem.

Market intelligence service

The market intelligence service that would provide information about prices and prices trend, productions and forecast is probably the service with the highest added-value for agribusinesses and farmers. However, it is almost the most difficult to put in place. Usually the data collection process is massive and must happen at a massive scale to provide interesting results.

As the study showed, the Caribbean region is more advanced in terms of ICT and data publication that other regions and many islands have developed and put in place their national MIS like Jamaica, Trinidad and Tobago or Guyana. Lots of organisations at the national and regional levels have access to and publish information that will be relevant to such a market intelligence service.

As the first step, our recommendation is to start with a service directory that will list all the services that are already available at the regional and national level. This directory of services should be built on the same model as the library described in the previous sub-section to enable as much users as possible to contribute to new links and resources.

Phase 2: Open data and UN Blue Numbers

Bearing in mind the functionalities and services described in the previous sub-section, there are new initiatives that could offer very innovative and powerful options for the stakeholder directory, library and market intelligence services:

- Open data
- UN Blue Numbers¹⁶

Open data

As mentioned earlier in the document, open data is a concept that appears in 2009 and has its origins in the belief that data should be freely available for use and publishing without limitations or control. This fundamental idea has spread across the world and is increasing the demand for data to be made available in non-proprietary, machine-readable formats without limitations on use and reuse. Nowadays, in almost all domains from health to education, from agriculture to businesses, an incredible amount of data is available released by international organisations (e.g. World Bank, FAO, CGIAR, etc.), regional institutions (e.g. African Development Bank's Open Data Portal¹⁷), countries, and individual actors (non-governmental organisations [NGOs], etc.).

However, the impact of open data is maximised when:

- **Local reliable up-to-date near-real-time data is available.** Data is a perishable good that become rapidly useless as the time pass. If the publication happens closer to the source, when it is collected, the value is higher
- **Various data sources are mashed-up to generate new knowledge:** The value of open data does not rely on the publication but on the exploitation of the published datasets, their mash-up and the generation of new knowledge. The value comes from the transformation of datasets into actionable information with meaningful visualisation.

Open data provides also an easy way for organisations to compare, link and mix information coming from heterogeneous sources. The use of open format, and standards provide an easy way to bring together datasets and information that are generated by different parties with very different objectives and using very different tools.

The Caribbean region is at the early stage of this movement. Some countries are about to launch their national open data initiatives (Jamaica and St Lucia), and the World Bank is supporting the launch of a regional open data portal. In the next 12 months, these new portals will be up and running and a series of initiatives will be launched, focusing on capacity building, but also looking for specific use-cases to serve as shining examples.

¹⁶ <http://www.unbluenumbers.org/>

¹⁷ <http://opendataforafrica.org/>

Concerning the market intelligence service, as presented in previous sub-section, lots of data are already available in the various MIS systems that are managed by various countries. Trinidad and Tobago is even already publishing its MIS data as open data.¹⁸ If all the countries are able to publish their data as open data too, there will be a great opportunity to put in place a service that can retrieve automatically all these datasets (current and historical information) and make analysis and visualisation to provide an innovative intelligence service to the agribusiness community. An example of a service with some similarities in another sector is the Landportal land book¹⁹ which aggregates numerous sources of open data from international, regional and country-level organisation and offer users a complete visualisation framework for them to generate the analysis they need.

Concerning the library, building a new library that will be based on open linked data technology would be a very powerful way to provide a central access point for searching various repositories already existing online. The idea would be to work with all actors in the region that are already maintaining a repository of documents, and convince them to publish their information as open data. Then a central harvester will be able to search all these repositories, and offer a powerful thematic search interface.

An example of such library service is the Land Portal Land Library²⁰ that has adopted this approach.

Possible action plan

The development of an open linked data portal on the model described requiring several steps such as:

- Identification of relevant datasets, data services, and repositories that exists and/or are needed for the service at the international, regional and country level
- Identify those who are already available as open data, the license attached to the datasets, and the mode of access
- Raise awareness on the approach with the various stakeholders, demonstrate the potential benefits, engage them in the process and convince them to publish relevant datasets on national or regional open data portals
- Identify with possible end-users interesting data mash-up and computation, and meaningful visualisations

¹⁸ <http://data.tt/>

¹⁹ <http://landportal.info/book/>

²⁰ <http://landportal.info/library>

UN Blue Numbers

UN Blue Numbers²¹ (BN) is a new initiative led by GS1²² and the International Trade Centre²³ that was announced in September 2015. The objective of the initiative is to develop a worldwide directory of farmers with their qualifications.

A Blue Number is a unique identifier on the model of GS1 Global Location Number (GLN²⁴) that identify uniquely a farmer or an agribusiness, with their details such as location and contact information, and their qualifications and certifications. Farmers and agribusinesses will be able to get a Blue Number at no cost and get a visibility in the value chain and on a UN platform.

The overall goal is to provide new tools and opportunities for all the stakeholders:

- **Farmers and Agribusinesses** can get a worldwide visibility about what they do, and the certifications and qualifications they have, providing new business opportunities.
- **Traders and Exporters** can identify new suppliers, and potentially use blue numbers as a way to implement traceability at lower cost than current technologies.
- **Governments and public agencies** can get an accurate overview on their farmers and agribusinesses population and define policies based on real data. They can also define strategy for e.g. improving food safety certification, or increasing the quality of the commodities to reach export level requirements.
- **Private and public donors** can easily identify target populations that would benefit from specific interventions and engage them in their programmes.

The Blue Number initiative is a new potential way to offer a global homogeneous directory for all actors in the agriculture value chain. It provides also a strong incentive for the owners of blue numbers to keep their profile up to date to benefit from all the opportunities they provide.

Agritourism linkages

In this section, we present the various pieces of information collected on the agritourism linkages during the research, and some possible interventions to strengthen the sector.

The development of the agritourism linkages requires a multi-sectorial approach and the involvement of all the actors:

- **Hotels and Restaurants** have a role to play and benefits to get at both side of the agritourism value chain. On the tourism side, promoting food activities and eco-tourism is a way to diversify their offer and attract new customers ready to pay a premium price for such products. Agritourism has a strong potential to be a marketing element.
- On the supply chain side, agritourism is a way to decrease import bill of various commodities. However, in order to have a reliable source of supplies at the right time, volume and quality, hotels and restaurants have to state clearly their requirements

²¹ <http://www.unbluenumbers.org/>

²² <http://www.gs1.org/>

²³ <http://www.intracen.org/>

²⁴ <http://www.gs1.org/gln>

(packaging, delivery requirements, demand and seasonality, etc.) and have to be visible to agribusinesses. In both cases, they have to be pro-active in promoting a new option for tourists, and in order to put in place a new supply chain for their commodities.

- **Chefs** are an essential element in the value chain, as they are the one who select the commodities they will put in their menu. One of the challenges of agritourism is for chef to use the local crops that are specific to the region, in order to provide a unique experience to customers but also to develop the demand for commodities grown locally.
- **Farmers and Agribusinesses** can be one of main beneficiaries of agritourism. The development of the sector offers new opportunities to sell commodities and products locally or regionally, and takes advantage of the annual 40+million tourists visiting the region. However, they have to adapt to the requirements of the hotels and restaurants in terms of commodities, quality, volume, seasonality and certification.
- **Public authorities** have a major role to play in bootstrapping the overall process and provide incentives through policy. Agritourism is an opportunity for all the countries in the region to decrease their import bill in terms of agricultural product, and to use the tourism sector for rural development and for agriculture development.

As the research showed in the third section of this document, there are numerous activities currently being developed in the Caribbean region. Chefs are getting structured, a dedicated policy is being shaped, and various “farm-to-fork” success stories are appearing in various islands. At the same time, market research indicates that there is a growing demand from tourists to get a more authentic experience with foods, local culture and responsible tourism that benefits local communities.

As the various events organised by CTA on this topic show, lots of actors across the board are aware of the potential of the sector and are actively engaging to develop it. However, at the moment, there isn't a central place that links the various communities together, enable people interested in the sector to find resources and information, and promote for tourists, actors (hotels and restaurant) that are putting agritourism at the hearth of their offer. A dedicated ICT platform for agritourism may be a way to provide more visibility to the movement, provide an easier way for the various actors to coordinate their actions and identify suppliers and buyers, and provide a way for tourists to identify places and activities that may attract them. Such a platform as a broader scope than CABA and should be the result of a joint initiative between all major regional and national actors.

In the same way, in order to promote further the concept of agritourism, a more global action targeting major international tourism actors, in particular online actors such as TripAdvisor, booking.com, hotels.com, etc., for the definition of a new label and/or a new evaluation criteria related to agritourism may leverage the demand for such approaches.

Conclusion

The aim of the study presented in this report was to investigate on how an ICT platform in the Caribbean region can support agribusinesses. Among the key findings of the research, it is clear that agritourism linkage is an important topic in the region, and lots of actors at the regional level are working towards developing the sector. Activities are currently occurring at many different levels from policy to research to tourism. On the production side, lots of efforts are also put in place at the national level to develop information for farmers and agribusinesses. Many islands have now put in place an online MIS.

However, the organisation of agribusinesses and agribusiness information seems weak. There is not yet a global view about the various actors in the region, the production nodes and the information about the production of various commodities in different places. In the same way, there isn't a central place for businesses to find information (farmer organisations, production nodes, businesses information) that might help them make informed decisions on investment, or identify new suppliers or new customers. In this context, an ICT platform can play a major role to play in that area and develop its online presence to provide services and information required by agribusinesses.

A first recommendation is to start developing content and services using traditional technologies as a first step. In order to ensure sustainability of the services, major functionalities such as a directory of actors and a library should be designed for a decentralised usage and contribution to enable multiple stakeholders to contribute.

In a second phase, new emerging opportunities, open data and blue numbers, will offer to this platform new ways to implement more innovative services on market intelligence and on a central farmer directory.

Finally, there is also a need for a central place to promote agritourism, link all actors together and provide a central place to promote new offers and products to tourists. Such a platform should be a joint initiative of different actors representing the major stakeholders (tourism sector, hotels and restaurants, chefs, agribusinesses and producers).

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