Ex-post Evaluation of Project STDF/PG/116

"Development and Implementation of a Movement Control System for Cattle in Costa Rica"

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TABLE OF CONTENTS

ANNEXES:

Annex 1: Survey questionnaires
Annex 2: List of contacts
Annex 3: Analysis of survey results
Annex 4: Agenda
Annex 5: Project Fact Sheet
Annex 6: Consolidated responses from processors/exporters,
Annex 7: Consolidated responses from partners/implementers
Annex 8: Summary of replies to survey

GLOSSARY OF ACRONYMS

CORFOGA Livestock Development Corporation

CVO Operation Veterinary Certificate

FDA Food and Drug Administration

IICA Inter-American Institute for Cooperation on Agriculture

OIE World Organization for Animal Health

PVS Performance Vision and Strategy Tool

SENASA Animal Health National Service

SPS Sanitary and Phytosanitary Measures

STDF Standards and Trade Development Facility

WTO World Trade Organization

EXECUTIVE SUMMARY

This document provides an evaluation of project "Project STDF/PG/116 Development and Implementation of a Movement Control System for Cattle in Costa Rica" funded by the STDF, and implemented from March 2009 to August 2011 (final report submitted in January 2012). The main project objective was to strengthen the National Epidemiological Surveillance Program and provide the framework for a gradual and sustainable traceability program. Specifically, to develop, by improving the existing conditions, a system to register the movement of cattle throughout the country, introducing complete records for registration and identification of animals for producing farms, auctions and slaughterhouses aiming at improving food safety and quality for the benefit of local consumers and enhance access to new markets.

The evaluation methodology focused on a detailed review of the project documentation as well as other data and information available, a country field visit by the evaluator and the feedback from relevant stakeholders and project implementers through structured surveys.

The project satisfactorily addresses the movement control of cattle from farms to auctions, slaughterhouses, transport and marketing centers, strengthening animal health and the National Epidemiological Surveillance Program.

A new regulatory framework was developed, as well as an effective and sustainable, mandatory and nationwide group traceability and mobilization control and an electronic registration management system. The project started with an initial pilot phase, followed by national implementation and dissemination and training components with extensive involvement of the private sector during the entire implementation phase.

As such, it allows a quick response to epidemiological events that might occur through the mobilization control and group traceability system implanted, resulting in enhanced animal health and food quality and safety and consequently improved conditions for both local consumption and export capabilities. In addition, the system allows control of illegal cattle movement, theft, better ownership and property protection, areas not directly related to health but of great importance to industry and government.

The system is based on a multidisciplinary step by step approach and open to continuous improvement.

The long-term target, even if voluntary, is the individual traceability of the entire cattle stock from farm production to final trading, although the project was tailored to initially develop and set up only a group traceability system.

The main results achieved by the project are:

- Identification and registration of all parties involved in the beef value chain: farm production, transport and vehicles, marketing, slaughtering, auctions and cattle exhibitions;
- Animal identification with registered brands associated to registered farms;
- Records of incoming and outgoing cattle;
- Mobilization control through mobilization guides, log books and appropriate inspection check points;
- A data management system compiling, in user friendly ways, the information provided by previous steps.

In view of results seen during the evaluator´s visit and from a vast majority of the respondents to the surveys, the project was the right answer to the problem. There is generalized agreement that the project contributed to implementing group traceability, narrowing knowledge gaps, as well as increasing local capacity for surveillance and control. Under the project, an extensive number of training sessions, guides, manuals, dissemination leaflets and documents were produced, advancing local knowledge and facilitating national implementation of traceability.

The overall conclusion is that the projects aligns Costa Rica with required international safety and trading conditions for primary production, through an empowered SENASA, a knowledgeable industry and in accordance with OIE recommendations.

The project can be seen as a model for institutional cooperation and coordination of efforts. It was able to bring together different institutional capacities, put in place a very structured planning process and management team for the implementation and coordination of activities and distribution of responsibilities among partners.

It is recommended that the project continuity is assured through adequate funding, the appropriate level of qualified staff, continuous capacity building to foster even more understanding of the importance of traceability and dissemination activities to enhance its visibility.

Key lessons learned are the convenience of having a tailor-made system commensurate to the country; the foremost importance of involving constructively all actors from the design phase onwards; the necessity of a multidisciplinary approach to dispel misunderstandings; the collective use of available funds and resources and the building blocks approach to continuously improve subsequent stages of the system.

Foremost, the project is a basis to extend traceability to other products and species and a step towards the individual traceability system.

1. INTRODUCTION

1.1 Context

In recent years Costa Rica has approved several tools to regulate the development of its cattle production and processing industry, aiming at ensuring the quality and safety of its beef-related production, both for local consumers and for the export oriented industry.

Traceability allows for an adequate registration of cattle along the production, processing and marketing chain.

A well-developed system ensures that any sanitary event may be traced back and forward and appropriate measures adopted. After numerous episodes worldwide concerning foot and mouth disease and, particularly, bovine spongiform encephalopathy, amongst other sanitary events, it has justifiably become mandatory to introduce measures in the beef trade preventing these incidents. As such, traceability is an important food safety tool and an unavoidable requirement for markets worldwide.

In an evaluation of SENASA by experts of the World Organization of Animal Health (OIE) traceability was detected as an important weakness. Based on this report this project was formulated to strengthen the National Program for Epidemiological Surveillance, and to provide foundations for developing a gradual and sustainable traceability program, starting first with bovines in the primary production stage. The project is based on the general principles of traceability, as defined by the OIE.

The project was implemented by SENASA and IICA through a contract with the WTO/STDF. It was jointly managed by both institutions through a Project Executing Body (PEB), IICA holding the Technical Secretariat. The Representative of IICA´s Office in Costa Rica and the Head of SENASA formed the project´s Managing Committee.

Extensive contacts were, and are, maintained throughout the project with the private sector, instrumental for an adequate performance and sustainable results, as well as with other stakeholders involved, including different government agencies competent in these matters.

In addition, The Canadian International Development Agency supported and advised in training for the various stakeholders as to their roles and responsibilities.

Background information showed that identification of animal ownership dates back to 1958. The SENASA law established manners and conditions for identification of animals pointing to traceability issues. For the regulation of cattle transportation within the country, there was an executive order (N. 28432-MAG-SP year 2000) including the obligation of a sanitary guide indicating property and transportation of the animals in question, issued by police stations. As the supplied information could neither be verified nor transferred to a database, the initiative remained incomplete. There was no system for information management providing guarantee of the origin of the movement, making it difficult to maintain traceability along the chain.

Farm registration and transactions at auctions at the beginning of the project were not centralized, resulting in overlapping and record inconsistencies. Neither was the information compiled at slaughterhouses, impairing a centralized treatment of information.

In Costa Rica, according to the last livestock census (MAG-PEGB-VE/CORFOGA 2000), there were 46,640 cattle farms and 1,369,715 bovines. The country had a database with approximately 50,000 registered farms, with different update status. It was therefore necessary to homogenize, update and validate the information. As errors were detected the existing geo-reference of the farms needed to be verified and validated.

Previous to the project, some actions for epidemiological surveillance, as well as programs for the control and eradication of endemic diseases, process certification and control of entry ports to the country had been developed. However a traceability system was not yet in place, although some actions related to it had been developed.

Jointly with project implementation, a new regulatory framework regarding traceability of animals was developed, based on the 2006 SENASA law authorizing this authority to establish, regulate and implement the necessary actions for traceability. At the beginning of the project the regulatory process was not completed. In 2010 a joint commission between CORFOGA and SENASA was established to regulate the law.

2. METHODOLOGY

2.1 Objectives of the evaluation

The international consultant Dr Maya Piñeiro was selected to conduct the ex-post evaluation of the project. She is a freelance advisor to governments, private enterprises and international organizations in food safety and quality management. She has recently retired as the Senior Officer for food safety and quality for FAO at headquarters in Rome and at the Regional Office for Latin America and the Caribbean. She is independent from all the parties concerned and has no other conflicts of interests that could affect the objective conduct of the evaluation.

The structure and framework for this evaluation is based on the STDF's standard guidelines for the evaluation of projects funded by the STDF and on the OECD-DAC Principles for the Evaluation of Development Assistance.

As per the applicable terms of reference, the objective of this evaluation is to verify whether the project achieved the objectives and outputs set out in the project document in the light of STDF evaluation criteria; and identify whether the project has achieved any of the higher level objectives: measurable impact on market access; an improved domestic/regional SPS situation; poverty reduction and identification of the key lessons learned for the benefit of both recipients and donors and for future STDF program development.

The evaluation of the project was organized based on the STDF standard evaluation criteria of relevance, effectiveness, efficiency, impact, sustainability and lessons learned. From the analysis of these criteria, result a set of conclusions and recommendations.

The evaluation was conducted as a desk study and a field visit, including the following phases:

i) Detailed review of project documentation. This included a review of project reports, workshop materials, the project´s proposal and action plan, training and dissemination materials, guides, video, publications and other related documents, sent to the evaluator by the STDF Secretariat and the project coordinators, Dr Bernardo Calvo of SENASA and Dr Sacha Trelles Zárate of IICA.

ii) Gaining views/insights from relevant stakeholders and project implementers surveys. Two survey questionnaires (Annex 1) were developed in collaboration with the STDF Secretariat, based on the standard evaluation criteria. The first one (I) was distributed among partners and project implementers (23), and the second one (II) among more indirect project beneficiaries - processors and exporters (27).

To facilitate responses, both questionnaires were sent in Spanish, according to the stakeholders' mother tongue. In spite of the efforts made by the evaluator and coordinators, not all stakeholders returned the questionnaires dully completed. Eleven replies were received; while only two industries gave their opinion on the project.

The survey included relevant stakeholders selected from the partners' institutions and other independent beneficiaries, as well as processors, exporters and participants in training courses. Annex 2 presents the list of all implementers and processors/exporters to whom the questionnaires were sent. An analysis of their replies and comments is included in Annex 3. The consolidated results of the comments from these surveys are attached in Annex 6 and Annex 7.

This survey was conducted between 3 April 2013 and 20 May 2013. Two questionnaires, one encompassing 31 questions for direct beneficiaries (23) and another with 12 questions for indirect beneficiaries were sent to 50 individuals. Two reminders were sent on May 5 and 15. The questionnaire covered different areas of the project and allowed extracting opinions on its relevance, effectiveness, impact and sustainability.

iii) Project field visit. A five day visit to Costa Rica was conducted by the evaluator in coordination with project counterparts and coordinators, as per agenda attached (Annex 4). Previous to the field visit numerous conversations with project counterparts via Skype were held. During the mission extensive dialogue with coordinators and the management team, as well as detailed interviews were carried out. On site visit to farms, auction houses and slaughterhouses, registration and central data centers, official control points, police stations, road inspections, covered different provinces (Coronado, Heredia, Guapiles, San Isidro). An evaluation of purchase and administrative processes was performed. Demonstration and testing of the information management system was performed in various terminals. Meetings with cattle associations and chambers of commerce also provided valuable insights. The equipment purchased by the project such as computers, GPS, mobile control units, etc., was shown.

However, the methodology applied had some minor limitations in its ability to accurately determine the relevance and impacts of the project activities:

a) The fact that the project operated in different regions with diverse socio-economic realities, in parallel to other related industry and government-led initiatives and with its full national implementation still ongoing, makes a precise overall evaluation difficult.

b) A more robust number of questionnaire responses would have been desirable, (11 out of 50), in particular from the indirect beneficiaries. Even so the responses to the survey by the beneficiaries provided important insights on their perspectives, in terms of project outcomes and possible impacts.

c) Project implementers provided valuable insights to the evaluator. However, there are possibilities for biased replies as respondents may feel that their performance is being assessed, reducing their objectivity.

d) It is quite challenging to quantify the impact of SPS-related capacity building activities in terms of the higher level objectives of the STDF - country trade performance, improved overall SPS situation, poverty reduction, etc.- within the context of short-term project activities. To establish a link between the project activities and the achievement of higher order objectives of the STDF is quite difficult at this point. Some basic key indicators have been proposed by the evaluator but would need a longer period of time to better apply them (section 3.2 of this report).

3. FINDINGS AND ANALYSIS

At the onset of the project there was a consensus of the stakeholders to improve the existing procedures in the country to control mobilization of cattle and to develop a simple and low cost system based on the nation´s needs (sanitary monitoring, epidemiologic surveillance, compliance of nonconformities from major trading partners, prevention of livestock theft, etc.).

The basic principles adopted for developing the project were gradualness, sustainability and functionality according to the needs, possibilities and realities in the country.

The following analysis includes the findings gathered during the visit by the evaluator to Costa Rica and the opinions resulting from the survey, as well as information from key project documents.

The survey answers evaluate the project, as relating to its relevance, effectiveness, sustainability and impact, as successful and adequate (fully or somewhat) with no negative returns registered and few no replies. The full consolidated results of this survey are attached in Annex 6 and Annex 7. A summary of these comments is shown in Annex 8.

The project was highly successful in achieving the objectives set out in the project document to implement a mandatory and nationwide system for group traceability and mobilization control of

cattle. It is possible now to trace the origin of a group of cattle along the different points of the beef value chain: production, transformation, distribution and marketing, from any slaughterhouse in the country to the farm of origin, whether it has been marketed in auctions and the target markets.

The National Epidemiological Surveillance Program is strengthened, allowing for early alerts of sanitary events, facilitating the enforcement of appropriate corrective measures.

The project provides the framework for a gradual and sustainable individual traceability program and is a stepping stone to apply traceability to other products and animal species such as dairy products, swine, fruits, seafood and others.

Overall, the project has permitted to put order to the information and resources, now harmonized and centralized, maximizing its use with appropriate information platforms.

Throughout the project, both, multidisciplinary management and public-private involvement of the stakeholders, assured a realistic and feasible implementation.

The project was regularly evaluated and corrective measures were taken when problems were identified with the support of the private sector.

The project still needs to finish consolidating its results, in particular increase small farm registration and full nationwide animal branding. Tools for this are continuing awareness and educational campaigns for ranchers and industry coupled with strengthening police intervention capacities.

Major outputs are:

- Mandatory and nationwide group traceability system.
- Full identification and registration system for farms and slaughterhouses.
- Records for mobilization of cattle during transport and auctions.
- Mandatory and nationwide mobilization control: mobile control units, records of incoming and outgoing cattle.
- Mandatory registration of marks and branding for animal identification.
- Appropriate regulatory framework: new law empowering SENASA to establish the manner and conditions to identify the animals in order to comply with the traceability provisions for animals or animal products.
- Electronic information management system (*Mobilization System Control and Traceability of Cattle)* with locally developed software applications.
- A centralized database concentrating the information resulting from the system.
- Set the basis for the presently ongoing development of a voluntary individual cattle traceability system.
- A baseline to extend the notion of traceability to fisheries, dairy products, swine, fruits and other species and products.
- A culture of interrelationships between actors along the beef value chain.

- New prospective export markets: Japan, Russia, Singapore and eventually the European Union.
- Trained ranchers, transporters, police, judiciaries, traders.
- Raised awareness of public and private operators through dissemination activities: guides, manuals, documents, publications and video.

The following are the key findings resulting from an analysis applying STDF´s evaluation criteria.

3.1 Relevance

Was the project the right answer to the needs of the beneficiary?

The project is considered highly relevant and provided the right answer to the needs of the beneficiary for a mandatory nationwide system for group traceability and mobilization control. This results in improvements in epidemiological surveillance, facilitates actions to counter sanitary incidents and leads to improved food quality/safety, relevant both for the local and external markets.

The relevance of the project is emphasized by the positive assessments of all respondents to the surveys: 65% as very positive and 35% as positive. Suggestions for improvements advanced in the replies are duly reflected in the different chapters of this evaluation.

This relevance is evidenced by its major achievements:

Implementation of a mandatory and nationwide system for group traceability and mobilization control, that makes possible to trace the origin of a group of cattle from any auction or slaughterhouse in the country to the farm of origin.

The current system requires that all cattle movements must be associated with the necessary information to prove ownership, source and responsibility for the animals and establishing penalties for breaching these provisions.

The system allows for improvements, as required, and is the basis for the implementation of traceability systems to other species (dairy, fish, swine, sea food,) and products (fruits).

The project mobilization control and traceability system has been very relevant in strengthening the National Epidemiological Surveillance Program. It has helped to improve sanitary prevention and control activities by allowing, for example, a better understanding of the effects of vaccination campaigns, more efficient isolation practices and a clear identification of disease incidents and origin of contamination.

It also improved feedback on results of Good Agricultural Practices, allowing for more efficient practices and obtaining quality related payments.

The project assisted in managing, centralizing and skimming the available information, often from repeated and overlapping records leading to inconsistencies. Before the project there was no centralized national database with records dispersed between the regional and central levels or between different units of SENASA. A similar situation existed in business transactions which, even if recorded in the auction's several different information systems, allowed for mutual incompatibilities resulting in information difficult to process and to use to extract valid data. Besides, the generated data was not transmitted to SENASA, making particularly difficult to trace traded animals.

According to the country´s reality a relevant system was established, based on gradual growth and inclusiveness and careful to avoid double standards.

The project was formulated after taking into account the specific needs of the involved stakeholders (livestock farmers, cattle merchants, auctions, carriers and slaughter houses). Once the final proposal was ready, the stakeholders were consulted so final adjustments could be made.

To what extent do the needs which gave rise to the present project still exist?

The project is regarded as continuous and has the impetus to address a few partially pending needs. These needs are:

Completion of the registration of all farms and slaughterhouses even if the larger establishments, responsible for the significant share in production, are properly known to the system.

Continuous validation and updating of the information provided to keep the system properly functioning.

Analysis of the information to extract conclusions as to the situation in the country, its evolution and improvements leading to fully quantitative assessments that will be later required by trading partners and foreign sanitary services to approve exports.

Additional qualified staff to monitor the system to make it independent of the voluntary staff that has being active in these phases and to allow a normal functioning of SENASA´s other parallel activities.

A quantitative evaluation of drawbacks of the system to address those points detected as critical and to take appropriate corrective actions. These will be useful when the system is faced with evaluations and audits from foreign sanitary services.

Regular assessment of system-maintaining needs: staff, vehicles, equipment to ensure adequate availability and funding on a permanent basis commensurate with its functioning requirements.

Extend training and awareness campaigns to all farmers, transporters and police to facilitate incorporation into the system of those still outside.

Assisting farmers in joining the system with adequate information. They may require help with design, registration and obtaining their own cattle brands and irons.

3.2 Effectiveness

To what extent were the objectives achieved/are likely to be achieved? (use indicators of achievement where applicable and refined on the basis of the specific project under evaluation).

What were the major factors influencing the achievement or non-achievement of the objectives?

The project defined a set of outcomes setting strict datelines for achievement of each activity and project outcomes. The vast majority of objectives and activities were performed as proposed. The survey shows the project as a particularly effective tool to improve registration of cattle, monitor thefts, promote public – private dialogue, detect sanitary events and adopt corrective measures, amongst others.

78 % and 11 % of respondents regard the project as very or somewhat successful and adequate. In terms of the achievement of the project's overall goal, there is a generalized agreement that the project was successful and adequate.

Specifically the project's effectiveness was examined in terms of the extent at which the objectives and outputs were achieved. Its effectiveness may be evidenced by:

The *establishment of effective management teams* to jointly – by SENASA and IICA- direct and monitor the project. These are the Project Executing Body (PEB) deciding actions to take, scheduling activities and reporting, from both a technical and administrative perspective. The PEB is supported by a Technical Secretariat. A quarterly action plan was developed for programming and follow - up activities.

To render effective the project it was soon realized that *extensive educational and capacity building activities* were required for all members of the cattle productive chain: producers, transformers, transporters, distributors, auctions, enforcement authorities, etc. With the advice and support from the Canadian International Development Agency during 2008 and 2009, workshops were organized to train these stakeholders, in their individual roles and responsibilities in the execution of the project. This complemented training activities implemented with project funds.

An important output were the *technical and scientific documents produced*.

Use of *permanent technical staff* for implementation and training assured continuity.

Validation and updating procedures for registration records required *specific training* of ground staff. *Periodic evaluations*, as the information from farms, carriers, slaughterhouses auctions, etc. became available. *In-house verification of field records of production units* was done and regularly evaluated to determine progress and eventual constraints allowing for timely corrections.

All this information, once validated, was migrated to a newly created *central database.* It is very significant that the software application for the registration at offices, auctions and slaughterhouses was developed in Costa Rica, maximizing effectiveness and reducing start-up and maintenance costs.

To render more effective the project, *the private-public cooperation* was in all ways essential. An improved coverage of the registration service was considered necessary and requiring additional staffing. As yet another result of the private-public endorsement of the project this resulted in an agreement between SENASA and CORFOGA for hiring additional staff for six months at the regional level. CORFOGA paid for this staff.

Additional agreements signed with ranchers chambers and other organizations resulted in enabling more sites and an improved service, verifying new registrations or detecting inconsistencies at the field level.

Public-private dialogue was achieved through activities held during the project (coordinating committee, meeting, workshops).

To address the complex issues of the project *a stepwise pilot plan* was carried out accordingly to the schedule of activities. Its progress was monitored by an advisory group. Based on the encountered constraints, actions, nationwide strategies and even modifications to the proposed regulations were scheduled.

The effectiveness of this phase was also *monitored by outsourced assessments.* Once completed the pilot implementation, an external evaluation was conducted with additional funds from IICA, by Dr. Emilio León, to measure the project progress and to reschedule the activities to be initiated nationwide.

The project´s effective success may be measured by these **indicators of achievement**:

- ✓ Increase in the percentage of animals traceable to farm/market/processing sites: currently being quantified.
- ✓ Number of animals with document of origin: 100% at end of project.
- ✓ Increase in percentage of registered farms: 60% of total at end of project.
- ✓ Shorter response time to sanitary incidents: within 24 h.
- ✓ Increase in precise notifications to OIE.
- ✓ Decrease in notification time to OIE: less than 24 h at end of project.
- ✓ Lower number of cattle thefts.
- ✓ Increased number of prevalence studies: two at end of project.
- ✓ Improvement in OIE evaluations: PVS up one level from 2007 to 2011.
- ✓ Decrease in non-conformities from trading partners: none in 2012 on traceability from the USA FDA.
- ✓ Market increase: Puerto Rico, Peru, Chile, Mexico and new export niche for cruise ships.
- ✓ New prospective export markets: Japan, Russia, Singapore and the European Union.

3.3 Efficiency

The efficiency of the project was measured by its timeframe, delivery of outputs and use of human and financial resources and how these contributed or hindered the achievement of results.

With these criteria, and considering what was discussed above, the project delivered as outlined in the action plan and established appropriate monitoring coordination mechanisms. Activities and outputs were delivered on time and within the approved budget in compliance with the project document. The project is regarded as very efficient.

Where the activities and outputs delivered according to the PD, on time and within the budget?

What changes, if any, were made during project implementation?

Timeframe: the project was completed within the approved timeframe.

A six months extension was approved to publish the book *"La rastreabilidad del ganado bovino: la experiencia de Costa Rica. Una decisión estratégica y sostenible"* (Traceability of Cattle: the Experience of Costa Rica. A Strategic and Sustainable Decision).

Delivery: the Project had a 100% delivery. It also delivered additional outputs such as the above mentioned publication, a promotional video, more training sessions (financed by Canadian International Development Agency) and an additional evaluation financed by IICA.

Use of financial resources: the assigned resources were fully and efficiently used. IICA´s purchasing procedures were selected, being more efficient and faster than those prescribed by government regulations. With less than USD 1.5 million, Costa Rica was able to implement a national mandatory traceability system that achieved the goals set by the country, supported by project funds, as well as private sector, SENASA and international cooperation resources.

The required software was locally developed with local human resources to reduce costs. The cost of using an externally developed software was outside the approved budget and any of the unavoidable operative issues would have required additional funding.

Efficiency is highly dependent on the performance of mobile units to follow up the application of the system. Using a reduced budget, 22 mobile units for cattle mobilization were locally designed and built. The design, development and manufacture of mobile units using local knowhow greatly lowered costs. Mobile units were given to the police in order to be located in all regions. This activity replaced the refurbishment of police stations, which could not be carried out due to the drawbacks of investing in these police stations.

Additional financial resources were secured and provided by the Canadian Institute for International Development, IICA and the Costa Rican government through SENASA. Partnerships with various organizations allowed better use of resources and leveraging additional resources to strengthen the activities of the project.

Use of human resources: efficiency was enhanced by engaging national technicians to reduce costs and foster compromise with the project. Voluntary personnel were incorporated to supplement SENASA´s staff constrained by the workload required by the project. A policy of alliances resulted in additional staff paid by the private sector for registration at slaughterhouses and auctions. Additional cost reduction was possible using personnel from Cattle and Industry Chambers for data processing at auctions and slaughterhouses.

Capacity building activities were also carried out jointly for better use of resources.

To benefit from the knowledge resulting from other projects, complementarities were agreed with the EU project *Promesafi*, to support the implementation of international SPS requirements in the fish industry.

Changes in the project: the entry into force of the Act 8799, including modifications to the regulatory framework that had been developed and agreed with all stakeholders involved and speeded up the actions that were planned under the project in nearly three months.

Was the project a cost - effective contribution to addressing the needs of the beneficiary?

The project was cost-effective in addressing the detected needs. The use of the pilot plan modality allowed cost effective trials of the project activities with subsequent adaptations before expanding it nationally. This saved financial and human resources by first implementing the project in a reduced area.

The project was executed in an initial phase where the elements were prepared for the implementation of a mobilization control and traceability system (preliminary phase), a second phase where a pilot plan was conducted in a region of the country to validate and adjust the developed tools and a third phase where the activities were extended throughout the national territory (final phase).

The pilot project was used to validate the tools and procedures of the control system for cattle mobilization allowing the start of the traceability component. The Brunca region in the southern part of the country was selected for this purpose and an alliance was established with the Southern United Ranchers Chamber (CGUS). For the pilot project an advisory group was formed, with regional ranchers chambers, livestock auctions, police and SENASA officials.

Working jointly with police forces to facilitate road control procedures for animal mobilization was very cost effective. Similarly, alliances with industry and chambers for use of human resources and facilities allowed cost effective registration.

A cost effective information management system was developed in which both web and desktop applications load information into the central database allowing comprehensive management of all information system components. The resulting database was unified with the existing SENASA databases. Old records were purged, modernized or/and harmonized among regions and industries. Office simulations were carried out to test the implementation of forms and other operational facets of the traceability program before full launch.

To maximize efficiency the information system was designed to avoid duplication of procedures related to registration of establishments, aligning the new system with the existing Veterinary Certificate (VC).

3.4 Impact

To what extent did the project contribute to higher level objectives of the STDF program such as a measurable impact on market access, improved domestic, and where applicable regional, SPS situations, and/or poverty reductions.

There is no doubt that there will be a significant impact both in local and export markets, even if is still too soon to fully evaluate it. Both markets have now assurances resulting from an improved sanitary situation, where any incident can be quickly traced back to its origin, allowing fast preventive and control actions.

Traceability is a requirement in international beef trade imposed to local producers as an unavoidable condition for exports. As such, it opens doors to export markets once other parameters are equally met (prices, quotas, etc.). This project aligns Costa Rica with OIE requirements, therefore is in accordance with the WTO SPS agreement.

From the survey 78% replied that the project had a significant impact. An additional 6% considered its impact as adequate.

What real difference has the project made or is likely to have on the final beneficiaries?

The benefits for the final beneficiaries may be summarized in:

- ✓ **Food quality and safety for consumers**. As a result of the increased assurances resulting from traceability and sanitary surveillance consumers have better guarantees of the safety of the products being offered.
- ✓ Traceability may also contribute significantly to **increased quality**, as the origin of the livestock, breed, animal practices and feeding practices are now known and adequate selections can be made.
- ✓ **Trade is therefore boosted**, resulting in economic growth with benefits for those directly involved and for the associated sectors. More demand for animal feed, chemicals, veterinary drugs, packing houses and the associated cooling and freezing technologies result in more jobs, in addition to increased tax returns for the country that may be funneled to areas of interest.
- ✓ The project also promoted a **culture of working together** between all stakeholders for the advancement of the common objectives. Considering the array of opinions and interests involved this is a very significant impact.

Additionally, impacts in the following areas are significant:

In the regulatory field: a new and integrated regulatory framework. With the approval of Law 87992 in May 2010, CORFOGA and SENASA set up a commission to regulate this law and raised the convenience of seeking a regulatory framework that would integrate into a single system the existing Law 8799 "Control Act for cattle and its prevention and punishment of robbery, theft and receiving stolen goods", the requirements and regulations of traceability and mobilization controls and those that had been discussed and approved during the consultative processes of the project, so that the system to be implemented would allow the determination of the origin and ownership of all cattle to be mobilized and marketed in the country.

In increased information: Farm, owner, carrier, auction, slaughterhouse records are now available. Since the implementation of this system any cattle owned, mobilized through the public roads of the country, traded or slaughtered must be registered and licensed as such. Each farm, owner, auction, slaughterhouse, carrier is assigned a unique identification code and must carry a log of mobilizations, recording the number of guides covering the mobilization, the origin, destination and date. The mobilization guide informs on the origin and destination of the animals, number of animals to mobilize, their characteristics, responsible person, owner and carrier. Each guide has only one number and is unambiguously associated to a farm and to the farm´s responsible person through a computer application that manages the documentation and sends it to a central server. This enables the livestock auctions, slaughterhouses or roadside checkpoints to review the correspondence of the document (mobilization guide) with the declared origin, responsible person and owner of the animals.

In theft and animal identification: All cattle to be marketed or mobilized in the country must now be identified with the brand of cattle of the registered owner. The procedure of ownership change must be performed without alteration of earlier marks. Unambiguous ownership is now possible and thefts are easily identified through the traceability system installed. Also police and judiciary work in locating stolen animals is greatly facilitated.

In statistics: National statistics have been strengthened with data from the project.

In expanding to other areas: Although the registration system module was developed for the registration of establishments engaged in primary production, distribution, marketing, slaughter and sacrifice of cattle arrangements were made in order to enable, in the future, a broader cluster of activities, increasing the coverage to establishments engaged in other livestock practices and products (hides and by-products of the packing houses). Other animal species are also being registered (equine, swine) as well as fruits.

In sanitary issues: Epidemiological surveillance and monitoring has been increased together with identification of sick animals, areas to be isolated, and illegal drugs used. Sanitary databases are strengthened with information provided by those covering traceability issues. Accurate prevalence studies (i.e. Brucellosis, rabies, drug residues and cysticercosis) are now possible due to precise identification of animals, farm or processing site. The information obtained improved decision making for control of zoonotic diseases (endemic rabies), as well as saving resources by focalizing measures and better response times.

In relationships with international organizations: Improved notification of corrected incident information to OIE and response times.

In animal welfare: With the mobilization control, it is possible to control and meet animal welfare requirements related to transportation of animals. Carrier information helps with the accomplishment of the basic animal welfare measures during transport and allows access to the identity of those responsible for the cattle transportation from one setting to another (farm, slaughterhouse, auction, etc.).

In regional diffusion: The experience gained in developing and implementing the system in Costa Rica is being spread to other countries with similar processes, even in different production chains than bovine, (Bolivia, Peru, Ecuador and Honduras).

In better knowledge and awareness: Through dissemination activities, video, publication, leaflets, etc., expanding to other stakeholders not involved in the project.

In extended trade: Commerce to other countries requiring traceability is now possible. Examples mentioned during interviews and surveys are: Puerto Rico, Peru, Chile, Mexico and Russia. A new export niche has been developed for cruise ships by complying with its food safety traceability requirements.

In moving forward to individual traceability: The dairy cooperative Dos Pinos has applied further the group model developed by the project and has implemented individual traceability for its dairy cattle. As of 2013 individual traceability is mandatory for genetic registry and for imported breeding cattle. As a complement to the already initiated system, individual identification and traceability of cattle is being developed, voluntarily. The implementation of these systems fulfills the requirements for the majority of the country´s export markets and ultimately increases the competitiveness of the sector.

Others: The traceability system was used during the 2009 earthquake for locating animals, identifying losses and farm damages.

3.5 Sustainability

The sustainability of the project outcomes was considered from its origin involving all actors in the cattle producing and beef value chain. Clearly, without the contribution and active participation of local authorities, producers, firms, etc., several of the project activities would not have been possible.

In terms of the outcomes of the project, there was consensus among the survey respondents that it will be sustainable (85%). Other specific survey comments are in Annex 3.

To what extent will the benefits of the project continue after STDF funding ceases?

Do the recipients of the project have the necessary capacity to sustain the results?

The benefits of the project are understood by the vast majority of stakeholders thus assuring an important aspect for the continuity of activities and outputs produced so far by the project. Major producers are well aware of these benefits as shown by the replies to the survey and by the views collected during the evaluation mission. Besides, SENASA is fully qualified to sustain the results, it has been closely associated with all stakeholders from the onset, and is capable of providing the sustaining capacity required.

Funding will continue to be obtained from the guides fees and likely support from SENASA. The importance of commensurate funds is well understood by all.

Once positive returns result from increased trade, an additional impetus will result contributing to the interest and continuity of all actors, now wishing to fully share the benefits.

The questionnaire surveys and the field interviews show that the stakeholders regard the project as continuous with individual traceability as the long-term target, whilst at the same time concerned with securing and improving the activities under way.

What are the major factors which influenced sustainability of the project?

Was sustainability adequately considered at the project design phase?

The following are/were major factors for project sustainability:

Publicizing national regulations. It was recognized that an adequate knowledge of the legal framework, the crux of the system, was necessary to ensure its success. With the project execution, a campaign was drawn to publicize the existing national regulations; including livestock farmers, livestock carriers, farmer organizations, private companies, slaughterhouses, police, judiciary, veterinarians and others actors.

Communicating the aims and activities. An outreach and communications strategy was established and launched in order to complete the process and extend it nationwide. Awareness sessions were held with farmers, carriers, auctions, SENASA officials and the extension offices. Training and dissemination activities for ranchers continued, including carriers, police, auction and slaughterhouse workers, public prosecutors and veterinarians. As part of the communication and outreach strategy, a promotional video was shot with IICA funds and delivered to various SENASA offices for use in briefings of the traceability system.

Mobilization guides. The national enforcement of the mobilization guides and other related forms. As of 2013, the guides and related forms will have a cost for users, approved by decree, to assure sustainability.

Joint work. There was cooperation and joint work from the design phase of the project onwards. While activities were underway, a commission was set up between CORFOGA and SENASA, with participation of ranchers chambers, and representatives from the meat industry and auctions in the new regulation and its implementation.

Practical effects. With cattle theft as an important issue, any actions resulting in reducing this felony are welcomed for the associated economic and cultural significance. The Act 8799, signed by five different ministries: "Control Act for cattle and its prevention and punishment of robbery, theft and receiving stolen goods", that repeals and amends the existing regulations concerning cattle mobilization and identification, was published in the official journal and put into practice in November 2010. As this law regulates the mobilization of cattle from a property standpoint, and project STDF/PG/116 needed to establish regulations for the mobilization of cattle regarding traceability, it was necessary to include, in the regulation of law 8799, all the required elements to achieve both the goals of the law and the project. Therefore, the STDF project unified the objectives of the law with those of the traceability. It must be pointed out that this law is sustainable and self-financed by the legal provisions incorporated.

Local inputs. All IT used in the project were developed in Costa Rica. This produces databases and system more readily maintained throughout time and at reduced costs.

The factors that might influence **future sustainability** are:

- Even if provisions are in place to avoid this and is fully recognized as crucial, a lack of funding proportionate to the needs may result in a loss of momentum in the current activities or even impair them.
- Capacity building and extension work are regarded as instrumental for the sustainability of the project. Increase and continuity in capacity building activities is essential.
- Need to consolidate some of the activities (such as police inspection check points).
- Use of regular staff compatible with the aims of the project, instead of volunteers.
- The contents of several enforced legal requirements are not well understood. This requires additional visibility and training activities.

- Misunderstanding the advantages of traceability, especially amongst small producers, might refrain them from registering. Therefore, continuous training for the different stakeholders is essential.

With gradualism as an adopted building block of the project, the issue of sustainability must be regularly assessed and assured.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Overall, the conclusion of this evaluation is that this project was run very successfully and that it has widely met its objectives. The project was found to have made a real difference in implementing a mandatory and nationwide system for group traceability and mobilization control of cattle and on the awareness levels and practical day-to-day joint work of the private and official participants. This cultural change may be considered as one of the project's key results.

The project's activities and outputs were delivered as planned, on time and within the budget. The project was a cost-effective contribution to addressing the needs of the beneficiary.

It is quite evident that the government of Costa Rica has been a major driving force behind the project, supporting the industry in achieving traceability, playing an advocacy role, improving legal framework, providing training, additional funds and personnel, etc.

Furthermore, the project was pertinent, for both government authorities and industry players, as well as a stepping stone for voluntary individual traceability (launched 25 April,2013). It also is pertinent allowing expansion to other production chains (ongoing for fish and dairy), and transferring the acquired experience to other countries (Bolivia, Ecuador, Honduras and Peru).

The project showed that there are real opportunities for expanding Costa Rica's export markets once the buyers traceability requirements are complied with (China approved the system in 2013 and Puerto Rico, Peru, Russia, Mexico and Chile have approved also. The EU is working with Costa Rica on individual traceability).

The project demonstrates the importance of proper planning in terms of timeframes and of testing its practical applicability as a pilot plan from a technical and socio-economic point of view.

The project has been an excellent model of coordination and collaboration between institutions and has been seen by the local institutional partners as an excellent process of capacity enhancement for project planning and implementation.

It also provided an informal forum allowing expression and resolution of differences.

The trust developed between parties allowed tackling other related issues more openly.

The following alliances for implementation and additional funding should be singled out:

• Agreement between SENASA and CORFOGA for hiring eight technicians to support the pilot project activities.
• Support from the Canadian Government, through partnership with the Canadian International Development Agency through the consulting firm TDV - global, which enabled the definition of the project's communication strategy.
• Integration of 15 organizations of farmers and eight private companies for enabling 23 sites for registry and processing of documents, which together with the 9 sites of the Ministry of Agriculture and Livestock and SENASA's 27 summed a total of 59 sites.

The interest of the government is also evidenced by the additional funds provided:

Government funds: Due to the importance of the registration of establishments and the need to facilitate the process of updating data in the field, the Ministry of Agriculture and Livestock through SENASA, approved a budget of USD 50,000 for the purchase of 20 mobile devices (handheld type) that complement the development of a mobile software application for automating the data collection and record updating in the field.

IICA funds: IICA provided the Technical Secretariat of the Project Executing Body and administrative support for the project purchasing process, a promotional video, and an external evaluation by the Argentinean expert Dr. Emilio León. IICA's total contribution is estimated in USD 45,000.

4.2 Recommendations

Project specific recommendations

- Expand training to more indirect partners (police, judiciary employees, transporters, media, consumers, etc.), as part of the weakness observed are due to lack of understanding of the concepts of traceability and its management.

- Use the funds to be collected from payment of guides for maintenance of the databases developed by the project and for purchase of additional IT equipment, expanding the system and improving internet connections.

- Continue with registration efforts and identification of the reasons for not reaching 100%. As of now 60% have registered. Expand incorporation of all small farms into the system.

- Strengthen efforts for brand registration of all cattle owners as it precludes traceability. Establish brand registration facilities in other regions and not only San Jose. Continue enforcing obligatory cattle branding and brand registration.

- Finalize the move of the central datacenter to SENASA, now with a private provider.

- Increase the technical staff dedicated to the implementation of the traceability program. Continue employing permanent human resources from cattle associations and industry chambers for data processing and deployed at registration sites. Coordinate fully field staff and registration site personnel.

- Strengthen control points in number, human resources and capacities. Police forces should benefit from additional training as they are key to the system, but may become a major drawback of the system if not properly trained.

- Initiate charging fees for the Veterinary Certificate (VC).

- Develop additional tools and use further the traceability information for producing reports useful to industry, governments, academia, consumers, etc. Include an area for responding to users requests. Encourage the use of the information available in the traceability database for conducting prevalence studies.

- Continue with awareness and training campaigns to overcome resistance to change in less educated areas of society.

- Implement full connections between the slaughterhouse registry system and SENASA, to avoid work duplication, while respecting areas of confidentiality. Convince industry to adapt its IT systems to SENASA in order to be fully linked, paying their own costs.

- Increase control points and install the obligation of going to one even if not on the road used.

- Install communication among police stations and headquarters.

- Develop, once sufficient information becomes available, suitable indicators for a continuous and unambiguous follow up of the program: sanitary events detected and corrected, changes in trade resulting from the system, evolution of cattle robberies, etc.

General recommendations

- The project approved by STDF ended as the operative part started. It is recommended that similar projects end at least six months after field implementation starts.

- It is highly recommended to include a final publication as a required project output from the inception. The importance of summarizing the experience gained in a publication is of foremost importance for project dissemination, impact and sustainability.

- Disseminate widely the benefits resulting from the project achievements.

- Incorporate clear indicators of economic benefits in awareness and training activities.

- It is suggested that STDF project approval and initiation time be shortened, if possible (this project approval took one year and an additional one for funding).

- Dissemination by STDF of project results and the Costa Rica model for group traceability to other countries in the region as a feasible and successful management tool for health, trade and sanitary status.

5. LESSONS LEARNED

The following are the key lessons learned resulting from the experience gained in designing and implementing the traceability system. These lessons are regarded as valid, significant and applicable.

- Country vision. A long-term strategy assumed as a national priority allows stable objectives and strategies resilient to internal and external pressures.

- Tailor made. The traceability system was aligned with the needs and resources of Costa Rica and the requirements of international trade and individual buyers.

- Multidisciplinary. Recognizing the interactions required for a traceability system, SENASA, IICA and other public - private institutions were involved in its sustainable design and implementation, together with different professionals. Veterinarians in epidemiological surveillance and traceability programs, legal advisors, systems engineers and representatives from SENASA´s management and technical staff from IICA smoothed the design and implementation of activities in sustainable ways within the institution.

- Participative. Involvement of all stakeholders, in particular the private sector, in the design and implementation of the system facilitates its adoption and assuming responsibilities.

- Partnerships allowed for better use of resources and leveraging additional resources to strengthen the activities of the project.

- Step-by-step. This approach recognizes the significant changes that the system entails. It allows for gradual increases in complexity, starting with group traceability and aiming at individual traceability (ongoing at present).

- Complementarities. Recognizing that traceability is a tool both for animal safety and food safety officials discuss, analyze and agree with other stakeholders safety priorities within realistic timeframes.

- Using its own capacities. Reduces dependency in critical steps of the process, such as IT platforms, assuring performance and reducing costs significantly. Use of national technicians and a nationally developed software.

- International cooperation to strengthen capacities. The Project was supported by STDF, the Canadian Agency for International Development and IICA, without substitution of local capacities and taking into account the local perspective.

- Continuous improvement. The system is flexible and open to improvements. It allows for continuous feedback to allow improvements.

- Breaking paradigms. The system is innovative and has tested well-grounded concepts and principles, proposing new solutions to problems. It has resolved established internal and external, beliefs and values.

- Reporting project progress to STDF at frequent intervals, although time demanding, was considered by the coordinators to be very effective in allowing problem solving timely.