Carbon Neutral Organic Banana Project

Project K: RedLAC-CAFÉ Knowledge for Action Project

Fund:

PROFONANPE

Country:

Peru

Director:

Alberto Paniagua Villagra

Project Coordinator:

Luis Miguel Fernández Moncada

Author(s):

Luis Miguel Fernández Moncada

Date of elaboration:

23rd March, 2018

Case Study
Carbon Neutral Organic Banana Project

1. Executive summary

In a context of growing demand for environmentally friendly products[1], the proposed mechanism consists of the creation of a fund for the conservation of biodiversity and the mitigation and adaptation to climate change with resources from the production and marketing of organic bananas with the carbon neutral seal in the Piura region, in the north of Peru. The hypothesis suggests that consumers of organic bananas would be willing to pay additional prices and/or increase their purchase volumes for a differentiated banana from that currently being marketed. This new product would be an "Organic banana with the carbon neutral seal" which would be aimed at a segment of the market where consumers are aware of paying an additional price for bananas which, in addition to being certified organic, also guarantees the neutralization of greenhouse gas (GHG) emissions generated in the production and marketing processes of the fruit.

To obtain the new "Organic banana with the carbon neutral seal" product, it was necessary to follow three steps: ***Measure***, ***Reduce*** and ***Compensate*** the carbon footprint of organic bananas and then access the carbon neutral certification, which was accredited by the certifying company SGS of Peru[2]. The results of the measurement of the carbon footprint of Peruvian organic bananas showed that for every 1 Kg of organic bananas, 0.46 Kg of CO_2 eq. are generated, with the scope of the measurement calculated from the agricultural fields to the port of Paita (Piura, Peru[3]).

[1] United Nations Conference on Trade and Development - UNCTAD (2017) BANANA pp 15, Geneva.
[2] SGS is a world leader company in inspection, verification, analysis and certification. It is considered as the main worldwide reference in quality and integrity, having more than 95,000 employees and a network of more than 2,400 offices and laboratories all over the world. www.sgs.pe
[3] Main national port of the north of Peru.

This data would evidence a product of low GHG emissions when compared to the footprint generated in countries such as Costa Rica (1.35 Kg of CO_2 eq. for each 1 Kg of banana produced[4]) or Ecuador (1.27 Kg of CO_2 per 1 Kg of banana produced[5]). As for the plan to reduce GHG emissions, this suggests that actions should focus on the processes of higher generation of identified emissions such as fertilization and the management of polyethylene bags used as a protective element of the banana cluster[6]. Finally, the compensation for the non-reduced GHG emissions for 145 hectares (ha) of the organic banana crop would require the neutralization of approximately 1,300 tons of CO_2 eq., which will be compensated by the acquisition of an equal amount of carbon credits at a price of US$ 3.5 per ton. The compensation will be made with the REDD Project of the Cordillera Azul National Park (PNCAZ)[7] and the resources generated by the payment for them will contribute to the control and surveillance activities of the PNCAZ[8]. Although it is true that the aforementioned amounts were constituted in the first raising of the Environmental Fund, the sustainability of the mechanism is based not only on its conformation but on its strengthening and subsequent consolidation, processes that should be based on the need of the banana producers to compensate non-reduced GHG emissions and to maintain carbon neutral certification and thereby eventual higher prices and/or sales volumes in differentiated markets.

The mechanism is potentially replicable and not only for the cultivation of bananas, but can also be adaptable to other products such as coffee or cacao, or other commodities that have marketing channels with differentiated markets with seals such as organic (safety of food), fair trade (voluntary and fair commercial relationship between producers and consumers), Global GAP (Good Agricultural Practices), Rainforest Alliance (conservation of biodiversity and improvement of livelihoods), among others.

However, the mechanism is especially replicable in organic production systems due to the limited or null use of agrochemicals and nitrogen fertilizers, as well as in family farming contexts which consider agronomic work from family labour that are not accounted for in the calculation of the carbon footprint (ISO 14067 standard).

2. Background (context)

Agro-export agriculture takes advantage of the opportunity of a growing demand in the market for differentiated products with organic certifications, fair trade, carbon neutral, among others.

In the case of Peruvian organic bananas, the activity has been consolidated as one of the main export productive activities in the Piura region, and it is estimated that currently the region is home to around 9,000 ha of organic bananas. In this sense, if at the pilot level it is possible to demonstrate the economic, social and environmental viability of the proposal, it would be possible to bring carbon neutral certification closer to the 9,000 hectares, which could increase the resources raised in favour of the Environmental Fund, in addition to reducing GHG emissions. The proposal could not only be expanded in the cultivation of organic bananas, but also certification could be managed for other export products such as coffee, cacao and Andean grains like quinoa and Kiwicha.

For the development of the mechanism, Profonanpe had as its main ally, the Association of United Organic Banana Producers of Salitral (BOS SALITRAL), an organization that in addition to the commitment shown in the execution of the project, made monetary and in-kind contributions for a total amount of US$ 371,520.00.

The support of other local actors has been fundamental, among these we can mention the District Municipality of Salitral, the Sub-national Government of Piura through the Economic Development, Environment and Natural Resources departments. At the union level, acceptance of the proposal by the Technical Board of Organic Bananas and the National Banana Board has been relevant.

---

[4] Svanes E. 2013. Int J Life Cycle Asses "Carbon footprint of a Cavendish banana supply chain" https://link.springer.com/article/10.1007/s11367-013-0602-4 retrieved on July 8, 2018.

[5] Roibas L, et al. 2016. Science direct "Carbon footprint along the Ecuadorian banana supply chain: Methodological Improvements and calculation Tool" http://lcafood2014.org/papers/31.pdf retrieved on July 8, 2018.

[6] Cluster «bagging» consists in protecting the bunch with a polyethylene bag or sheath from the attack of pests and safeguarding it from sudden changes in temperature.

[7] The Cordillera Azul National Park (PNCAZ) is located between the Huallaga and Ucayali rivers, in the departments of San Martin, Loreto, Ucayali and Huanuco, with an area of 1'353,190.85 hectares. Its main objective is to protect a unique series of species, biological communities and geological formations typical of the montane and premontane forest of the Cordillera Azul. Likewise, its presence protects the headwaters of the basin that provides water to the entire adjacent area. For more information http://www.sernanp.gob.pe/cordillera-azul and www.cima.org.pe

[8] These activities are complemented with monitoring tasks carried out by the National Service of Natural Areas Protected by the Government (SERNANP) park rangers, thus contributing to maintain the «zero» deforestation rate of the PNCAZ, and avoiding the deforestation of approximately 68,000 ha in the 2008 – 2016 period, equivalent to the reduction of 16 million tons of CO_2 eq.

At the national level, the Ministry of Foreign Trade and Tourism through PROMPERU[9] made a vital contribution to the participation of the BOS Salitral Association in the BIOFACH 2018 international fair (Nuremberg, Germany), as well as the Ministry of Production in its participation in the Expoalimentaria Fair 2018 (Lima, Peru). In the same way, the Ministry of Agriculture and Irrigation through the National Programme of Agrarian Innovation (PNIA) approved the complementary financing of the "Production and differentiated commercialization of the carbon neutral organic banana in the District of Salitral, Province of Sullana, Piura Region" project by a total amount of US$ 107,013.76. Finally, the National Innovation Programme for Competitiveness and Productivity (Innovate Peru) attached to the Ministry of Production has just approved a proposal for an «Organic Banana Cluster», under a sustainable development approach, where the Project executed by Profonanpe served as a reference. The Organic Banana Cluster initiative in the Piura region will be led by the German NGO SOLIDARIDAD, with the participation of around 18 associations of organic banana producers.

3. Pilot Goals

The mechanism raises the possibility of forming an Environmental Fund based on the generation of financial resources through the differentiated marketing of organic bananas for export through the carbon neutral seal. The aforementioned differentiation would allow obtaining better prices and/or higher commercialized volumes of bananas, which would generate greater profits for the banana producers and their organizations. In this logic, a percentage of these profits will allow the formation of the above-mentioned Environmental Fund, which in turn would allow the purchase of carbon credits generated from a REDD+ project that will make possible the compensation of non-reduced GHG emissions.

The result of the measurement of the carbon footprint shows a low footprint in GHG emissions given that for every 1 Kg of organic banana produced 0.46 Kg of CO_2 eq. is generated, that is approximately the third part of the emissions generated in Costa Rica (1.35 Kg of CO_2 eq. per 1 Kg of banana) and Ecuador (1.27 Kg of CO_2 eq. per 1 Kg of banana).

Regarding the reduction of GHG emissions, a reduction plan was drawn up that takes into account the main activities and/or processes that generate GHG emissions. These are mainly focused on nitrogen fertilization with organic inputs and the adequate management of polyethylene bags.

With regard to the compensation, a non-reduced GHG emission compensation plan has been prepared, which in the short term is based on the acquisition of carbon credits from REDD+ projects that are linked to some form of conservation, and in the mid and long-term, through the Environmental Fund, to implement projects that generate carbon credits that make it possible to later offset the non-reduced emissions in the production and marketing of organic bananas in the Piura region.

In this regard, we opted for the compensation of around 2,500 tons of CO_2 eq. through the acquisition of an equal number of carbon credits from the REDD+ Project of the Cordillera Azul National Park (PNCAZ), disbursing resources in two stages, in the first stage an amount of US$ 4,404.00 and in the second stage an amount of US$ 3,000, adding up to US$ 7,404.00 that will contribute to the financial sustainability of the aforementioned National Park. The beneficiary Natural Protected Area (NPA) was chosen through an open tender process, where the PNCAZ presented the best economic proposal.

In this way, 145 hectares of organic banana crops have been certified with the carbon neutral seal, directly benefitting 213 banana producers of the Association of United Organic Banana Producers of Salitral (BOS Salitral). The certifier was SGS of Peru, a company that meets the requirements of the ISO Standards and the specific methodology used has been the ISO 14067 and PAS 2050.

In addition, a basic marketing and promotion strategy for differentiated bananas has been developed, including participation in the most important national and international food fairs such as Expoalimentaria 2018 (Lima, Peru) and Biofach 2018 (Nuremberg, Germany), the latter being the most important fair in the world of differentiated products with the organic seal. In addition, a market study for the carbon neutral organic banana was made.

The main expected result is that the Environmental Fund can be self-sustaining, being its main resource the export of carbon neutral organic bananas, for which the number of hectares of organic bananas with the carbon neutral seal and the positioning of this differentiated product should be increased in international markets.

[9] https://www.promperu.gob.pe/

4. The Process and Approach

The sequence of actions for the development of the present mechanism, at the pilot level, is based on the foundation of the «Carbon Neutrality»: Measure, reduce and compensate the carbon footprint in 145 ha of organic bananas that are led by 213 small producers of the crop, with a range of land tenure between 0.125 to 2.26 ha.

The reference unit for the measurement of the carbon footprint is 1 Kg of fresh organic bananas, which emits 0.46 kg of CO_2 eq., the scope covers the emissions produced from the agricultural fields to the port of Paita, Piura (main port of export in the northern area of Peru). The study measuring the carbon footprint was carried out by the Spanish company ABALEO SL, which used the life cycle analysis methodology based on the ISO 14067 and PAS 2050 norms, and was verified through an audit externally carried out by the certifying company SGS of Peru.

It is important to highlight the active participation of the managers, staff of the technician team of certifications and of the 213 producers belonging to the BOS Salitral Association that represent around 26.6% of the social base of the organization.

Regarding the reduction of the carbon footprint, although it is true that the activity was not implemented because the horizon of the project did not allow it, a GHG emission reduction plan could be drawn up based on the results obtained in the activity measurement. The individual consultant, Engineer Dorian Aguirre Campos, banana producers who are part of the pilot project, technical team of the BOS Association and of the Profonanpe project participated in the plan.

The compensation of the carbon footprint was for approximately 2,500 tons of CO_2 eq., with an amount of US$ 7,404.00 paid in two stages, a first payment of US$ 4,404.00 and a second one of US$ 3,000.00. Participating in this activity were the BOS Salitral Association, Profonanpe, the Centre for Conservation, Research and Management of Natural Areas - Cordillera Azul administrator of the Cordillera Azul National Park contract, the National Programme of Agrarian Innovation of the Ministry of Agriculture and Irrigation of Peru, the National Service of Natural Areas Protected by the Governement (SERNANP), among others.

5. The Challenges

The project initially was to start its execution in the month of February 2017, however the weather phenomenon called the «Coastal El Niño» at that time generated floods both in the urban and rural areas of the northern regions of the country; the region of Piura being one of the most affected. In this context, the official start date of the project was 15th June, 2017, and was implemented for sixteen (16) months, until October 2018

One of the critical points was the limited capacity and/or knowledge in the determination of the carbon footprint of organic bananas, because in Peru there are few institutions and/or companies trained to develop this type of study in the case of products, especially when they are of agricultural origin. In this context, it was decided to carry out an international call which allowed the selection of the Spanish company ABALEO SL to be in charge of carrying out the study, having developed a work according to the expectations. Once the study was done, it had to be submitted to an external audit for a verification and it was determined that only two certification companies provide the verification service of the carbon footprint measurement: Spanish Agency for Standardization (AENOR) and SGS of Peru, the latter being the selected one that issued a favourable opinion and without observations to the study carried out by the company ABALEO SL.

Another critical point identified was the reduction of the carbon footprint of organic bananas, since the vegetative period of the banana oscillates between 10 to 12 months from the beginning of growth to fruits, considering that the methodology of measurement and/or reduction of GHG emissions is based on the «Product life cycle» and that the project horizon was 16 months, the time was insufficient to implement the GHG emissions reduction plan. However, the development of a proposal was achieved for reducing GHG emissions in the organic banana crop itself that, exposed to the project, could be implemented by the BOS Salitral Association and shared with other similar organizations.

A third critical point is linked to the compensation of the carbon footprint of bananas, which for the present case had to be compensated for all of the determined footprint, since there were no GHG emission reductions due to the reduced project horizon explained in the previous paragraph. Regarding the acquisition of carbon credits for compensation, there is a diversity on offer (both in the regulated and voluntary market), however, the difficulty lies in finding projects that are framed with the objectives of the Carbon Neutral Organic Banana Project, and the nature of the concept of the Environmental Fund linked to the conservation of biodiversity, to this are added the high prices of the unit bonds, which were higher than budgeted by the Project. In this sense, the compensation was directed to those projects that are linked to some form of conservation and whose area is faced with a growing trend of deforestation, that is, they were developing activities in the forestry sector and working with local communities. Moreover, a strong interest was expressed that they guide the distribution of profits, product of the sale, in activities of control and surveillance of the area.

“Finally, the sustainability of the proposal will be based on the differentiated market of bananas. In that sense, to the extent that the market is willing to pay better prices and/or increase its purchase volumes motivated by the carbon neutral seal, the possibilities of consolidating the mechanism will be increased and the fund raising through the Environmental Fund will be greater.”

Finally, the sustainability of the proposal will be based on the differentiated market of bananas. In that sense, to the extent that the market is willing to pay better prices and/or increase its purchase volumes motivated by the carbon neutral seal, the possibilities of consolidating the mechanism will be increased and the fund raising through the Environmental Fund will be greater. Precisely the present campaign for Peruvian organic bananas has not been one of the best, because the organic seal that differentiated it from conventional bananas produced by large companies located in the main producing countries has been threatened by a greater global supply of organic bananas. This situation would put at risk the entire banana sector in Peru, which is why it is necessary to increase the differentiation of Peruvian bananas in the world, one of the alternatives being the carbon neutral seal. The prospecting project developed a market study for carbon neutral organic bananas and facilitated the participation of the BOS Salitral Association in two international fairs: BIOFACH 2018 (Nuremberg, Germany) and Expoalimentaria 2018 (Lima, Peru), where a good acceptance and interest for the product was seen, however the positioning of the carbon neutral organic Peruvian banana should be a policy of the sector in the face of losing the competitive advantage and the good results that the organic seal has given.

Finally, an internship was held in Costa Rica and Panama to learn about new technologies and prospects for the international banana trade, concluding that with the conventional production system of bananas it will be very difficult to achieve carbon neutrality, given the high use of pesticides in its production as a means of controlling the fungus called «Sigatoka of banana».

6. Remaining challenges

The implementation of the reductions plan (technical package of low GHG emissions) could not be carried out within the timeline or horizon of the project (16 months).

Lack of knowledge of the carbon capture capacity of the organic banana plantations themselves. It is known that similar studies in Costa Rica and the Dominican Republic demonstrate significant carbon sequestration, which could offset part of the carbon footprint generated by the production and marketing of organic bananas. This would facilitate the process of reaching carbon neutrality for the thousands of banana producers and economies of scale (lower contributions but with a greater number of contributors) and would increase the collection of resources through the Environmental Fund.

It is necessary to evaluate the possibility of broadening the intervention or, in another case, of making a transfer to the actors who can continue with the challenge: Banana Technical Table, Banana National Board, Regional Government of Piura through the management departments of Natural Resources, Environment and Economic Development, among others.

> **The «First Carbon Neutral Organic Banana» of the World was certified. It was possible to compensate about 1,300 tons of CO_2 eq. with carbon credits of a natural protected area in Peru, for an amount of US$ 4,404.00 and resources of up to US$3,000.00 are available for a second acquisition of carbon credits.**

7. Results

- It was possible to measure the carbon footprint of the organic banana of the BOS Salitral Association, this is 0.46 Kg of CO_2 eq. for each Kg of organic bananas produced.
- A Plan to reduce GHG emissions in organic banana cultivation is available.
- A Greenhouse Gas Emissions Compensation Plan was prepared for non-reduced emissions.
- The «First Carbon Neutral Organic Banana» of the World was certified.
- It was possible to compensate about 1,300 tons of CO_2 eq. with carbon credits of a natural protected area in Peru, for an amount of US$ 4,404.00 and resources of up to US$ 3,000.00 are available for a second acquisition of carbon credits.
- At least 13 technicians and/or leading producers were trained in the measurement and monitoring of the carbon footprint of organic bananas, which will allow them to adequately support future verifications.
- At least 25 organizational leaders have developed capacities to exercise management positions efficiently within the BOS Salitral Association; they participated in a modular School of organizational leaders for 8 months.
- The BOS Salitral Association has a strategic plan in which the vision and mission of a sustainable production that is friendly to the environment is established.

In general, the results obtained are related to those proposed at the beginning of the project, however, and given the potential for replication and innovative character of the proposal, resources from the Agrarian Innovation Programme could be raised for an amount of US$ 107,000. In addition, in partnership with the German NGO SOLIDARITY[10], financing of S/. 2'000,000.00 (approx. US$ 606,000.00) was obtained to develop a 3-year proposal called "Strengthening the Organic Banana Cluster in the Piura Region" which will be financed with resources from the National Innovation Programme for Competitiveness and Productivity of the Ministry of Production of Peru and will have the counterpart of approximately 18 associations of organic banana producers in the Piura region. Finally, the possibility of accessing resources from the Regional Fund for Agricultural Technology - FONTAGRO[11], which is a platform composed of 15 countries of Latin America and the Caribbean, which received about 171 proposals from its member countries in the first contest, with 15 being chosen for the final stage. In the middle of October 2018 the four (4) proposals won FONTAGRO resources amounting to US$ 300,000.00 each, unfortunately our project was not selected. Through Profonanpe the scaling up of the «Fund for conservation based on the increase of prices of organic bananas through the carbon neutral seal» project in Peru and a replica of it in the Dominican Republic, since the proposal is binational in nature has been proposed.

10 https://www.solidaridadsouthamerica.org/es

11 https://www.fontagro.org/type/convocatoria-2018/

8. Benefits Observed

Availability of US$ 7,404.00 for the acquisition of approximately 2,500 tons of carbon credits generated in a REDD+ project of the Cordillera Azúl National Park ; the partial disbursements will be US$ 4,404.00 and US$ 3,000.00 respectively. These resources will be channelled through the contract administrator of the Cordillera Azul National Park, the Centre for Conservation, Research and Management of Natural Areas (CIMA) and will allow a contribution to the control and surveillance activities of the PNCAZ, which are complemented with work of monitoring carried out by park rangers from the National Service of Natural Protected Areas (SERNANP). Thus contributing to maintaining the «zero» deforestation rate of the PNCAZ, and avoiding deforestation of approximately 68,000 ha in the 2008-2016 period, which is equivalent to the reduction of 16 million tons of CO_2 eq. in the aforementioned protected natural area.

Public funds from the Peruvian State have been obtained for banana activity under a sustainable development approach through the National Agrarian Innovation Programme (PNIA) and the National Innovation Programme for Competitiveness and Productivity (INNÓVATE PERÚ).

On the other hand, based on the experience of the initiative developed by Profonanpe, the proposal entitled «Strengthening the value chain of organic bananas under the principles of sustainable family agriculture adapted to the climate in Peru and the Dominican Republic» was presented to the call of FONTAGRO 2018 named «Escalation of Innovations for the improvement of family farming in Latin America and the Caribbean». This international platform could allow access to additional resources for US$ 300,000.00 to consolidate and expand the scope of the proposal at an international level (Peru and the Dominican Republic).

On the other hand, the differentiation of the carbon neutral seal in the bananas produced by the BOS Salitral Association has made it possible to be considered by different public and/or private institutions in its different programmes and/or projects, thus the carbon neutral seal was a decisive element for direct support in the participation of BIOFACH 2018 (Nuremberg, Germany) where PROMPERÚ facilitated the stand and its decoration. On the other hand, the Ministry of Production has considered the participation of the BOS Salitral Association in the 2018 edition of the Expoalimentaria fair (Lima, Peru). In the same way, the National Agrarian Innovation Programme (PNIA) of the Ministry of Agriculture and Irrigation destined about US$ 107,000 for the implementation of an innovation project complementary to the project implemented by Profonanpe.

The mechanism has aroused the interest of the Ministries of Agriculture and Environment in Peru, considering its potential, since in the Piura region there are about 9,000 hectares with banana cultivation and the vast majority with organic certification or in process of obtaining it. The mechanism is feasible for replication and, if it is considered that there are approximately 8.69 tons of CO_2 eq. emitted by each hectare of a banana crop, 9,000 hectares emit approximately 78,210.00 tons of CO2 eq., generated in the regional production of organic bananas and, if it is considered that the carbon credits in the Peruvian market on average border between US$ 3 to 3.5, this would mean around US$ 273,735.00 would be required to neutralize the emissions of the banana sector in Peru.

9.Lessons Learned

The production systems of organic agriculture have a greater possibility of implementing a similar mechanism at the expense of conventional production systems. In the first case the carbon footprint will be lower than in the second case and this will enable greater possibilities to neutralize emissions to lower costs.

Expert professionals should be hired on issues such as measuring the carbon footprint, because the professionals that offer these services are limited. The same goes for certifying companies where only a few provide the carbon footprint verification service and the carbon neutral certification.

It should be understood that the "Scope of the study" should be related to the processes that are generated by the BOS Salitral Association, it is not advisable to assume the footprint of processes that correspond to other actors in the value chain of organic bananas.

Countries of traditional conventional agriculture, will hardly be able to get to produce products with the "Carbon Neutral " seal because the carbon footprint will be so high that compensating it will be economically unfeasible.

The proposal is an excellent opportunity for small farmers to implement family farming, since as long as the work of conducting the crop is carried out with family labour, GHG emissions are not accounted for in the carbon footprint of the product.

Collection and packaging for exportation process at BOS Salitral

Credit: Laura Machicao / Profonanpe


PREMIUM ORGANIC BANANAS
Handle with care
Keep at 14°C or 58°F
FAIRTRADE
MAX HAVELAAR
ORGANIC

Local Training

Credit: Luis Miguel Fernández

Participation at BIOFACH 2018

Credit: Luis Miguel Fernández

Participation at EXPOALIMENTARIA 2018

Credit: Luis Miguel Fernández

Launch of Carbon Neutral Organic Banana in Piura

Credit: Laura Machicao / Profonanpe


RedLAC


café