SUSTAINABILITY IN THE COFFEE GROWING BUSINESS: COOPEDOTA AND THE PATH TOWARDS CARBON NEUTRAL COFFEE

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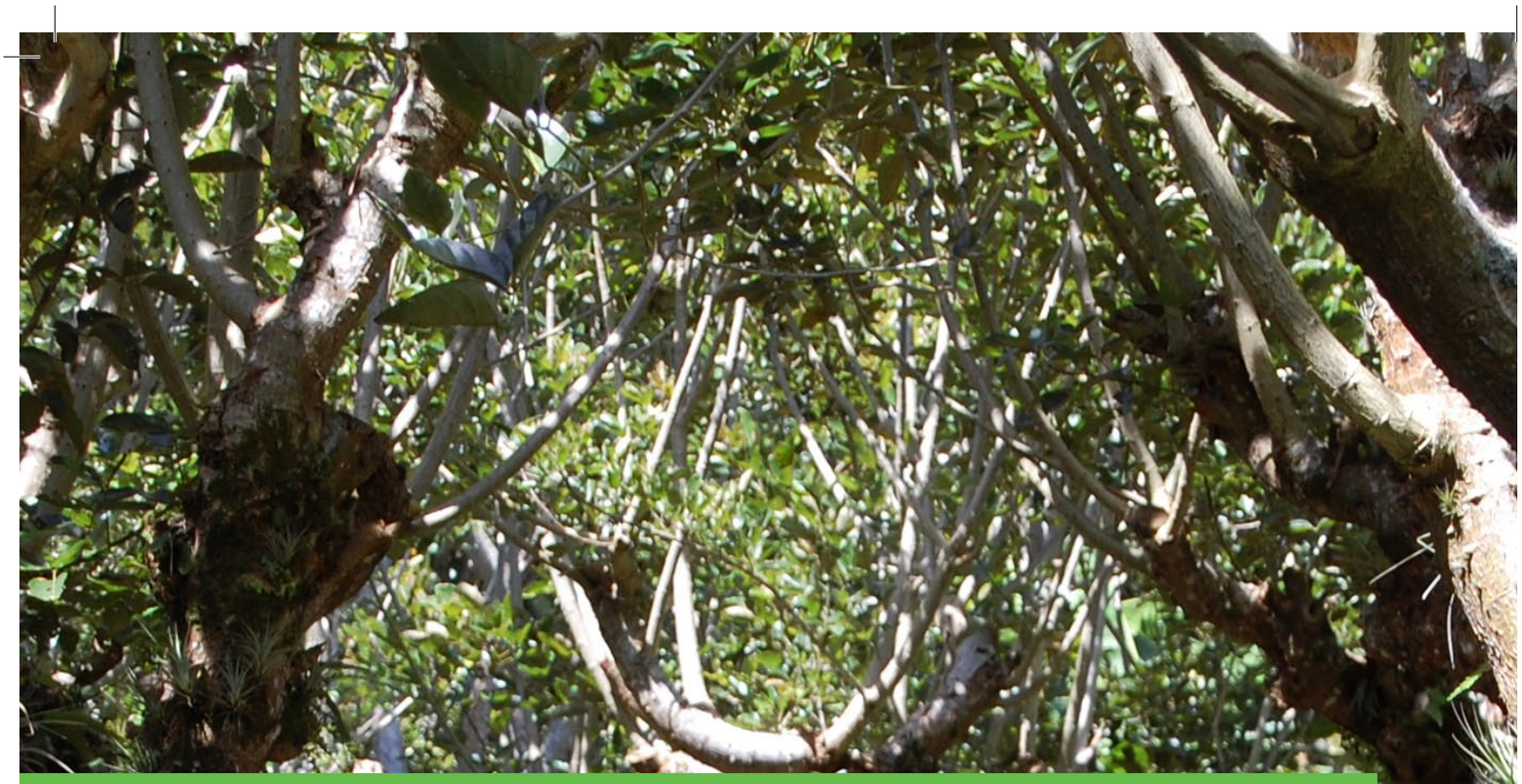

COSTA RICA

This case study was developed by Gustavo A. Jimenez, Bernard Kilian, and Luis Rivera, in collaboration with the team of Coopedota R.L. (Roberto Mata, Carolina Mata, Daniela Chacon, Daniel Ureña, Ivan Solis and Adrian Lamb) to serve as a basis for discussion with audiences interested in the subject and not as an illustration of correct or incorrect handling of an administrative situation.

↘ The research, financed by the MIF, was carried out by a team led by *Lorena Mejicanos Rios, Betsy Murray, Alejandro Escobar,* and *Georg Neumann* from MIF.

↘ Coordination Design & Edition
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TRANSFORMATION OF COFFEE CULTURE TO A SUSTAINABLE QUALITY SYSTEM COOPEDOTA R.L. CASE STUDY

Over a period of more than 15 years, the coffee cooperative Cooperativa de Caficultores de Dota, or Coopedota R.L. has made investments to increase its production quality through an efficient production system that reduces its environmental impact.

In late 2010, Coopedota's general manager, Roberto Mata, raised the idea of certifying the cooperative under the Carbon Neutral seal as a major part of the new strategy during the Assembly of Associates.

The proposal, which continued to be debated after the assembly, had supporters and detractors among board members. For some, the certification was simply " selling seals ", few of which generate real value for the producer and the cooperative. For others, it was necessary to make the market recognize, both nationally and internationally, the large effort that the cooperative had put in over 15 years of work, in order to improve quality and reduce its impact on the environment. This could be accomplished with a certification. Meanwhile, the general manager recognized that, in the past, certifications helped them to " sustain " prices in tough times. However, the certifications also " tied up " prices, and if they improved, the prices remained fixed.

This case study presents a general analysis of the possibilities of implementing a Carbon Neutral or Zero Carbon certification, and how to achieve it.

The key points to be evaluated focus on the options for carbon neutral certification, the characteristics of different certification companies, and how to go through the process. The main dilemma is in choosing the system by which to achieve that goal, a choice between a certification system related to the management of the Cooperative's processes, and certification that authenticates the product's carbon neutrality (gold coffee[1] and roasted coffee).

1 In Costa Rica gold coffee is called green coffee. The gold coffee is the same as the green unroasted coffee.

In addition, we examine the key elements to achieve this without ignoring the fact that product quality is essential, and is one of the main strengths that have earned the cooperative recognition both in Costa Rica and internationally. As its motto states: "Coopedota Produces the Best Coffee for the World, in Harmony with the Environment."

The MIF and the IDB have supported the coffee sector in the Latin American and Caribbean region through loans and technical cooperation grants aimed at improving competitiveness and access to better markets. This assistance has helped various organizations achieve organic, fair trade, appellation of origin, and other such certifications. However, none of these certifications addresses the issues of greenhouse gas emission reduction, energy efficiency and production of products with a lower environmental footprint, subjects in which the MIF is interested in supporting the private sector in the region. The MIF funded this case study in order that the different audiences involved in this area could learn from the experience and results of first coffee organization in the world to be certified C-neutral.

↘ LOCAL MARKET CONDITIONS

The coffee industry in Costa Rica consists of four groups of actors: Producers, Mills, Exporters and Roasters[2]. The market is regulated by the provisions of Law 2762 of June 21, 1961 and its amendments, which aims to ensure fair participation for all groups (companies, cooperatives, associations) involved in the coffee industry. Since the nineties, the share of coffee in the Gross Domestic Product (GDP) of Costa Rica has fallen from 2.3% in 1991 to 0.43% in 2010. This behavior of the industry and its contribution to the economy can be seen in Annex 2 as ICAFE[3] data. Appendix Table 3 shows the average annual international price ICO 1997-2011.

From January to December 2010, Costa Rica exported about 1.219 million sacks of coffee. The purpose of the Coffee Institute of Costa Rica (ICAFE) is to obtain the best export prices in the current coffee season (2011-2012). According to ICAFE, a Quintal (100kg) of coffee is currently being sold for an amount close to US$200, with an increasing trend. By the end of August 2010, Costa Rica exported US$320 million in coffee (ICAFE, 2011).

Furthermore, the coffee sector proposed a target for the country of exporting, the 30% of its coffee crop as a finished product with high added value, not as a feedstock, by 2020.

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2 A roaster is an individual or establishment dedicated to the roasting, grinding, or any other industrial processing of the bean, as well as marketing on a national scale.

3 Coffee Institute of Costa Rica.

↘ COFFEE PRODUCTION STRUCTURE

Coffee production basically requires an agricultural phase, a milling phase and a roasting phase. The agricultural phase of the coffee value chain includes several steps. These include: plantation management (replanting, pruning, shade control, weed and disease control, fertilization, irrigation- sometimes required in the summer[4]) and harvest. The milling phase consists of removing the pulp and washing and drying the coffee beans. At the end of the milling process, green coffee beans are obtained, ready for export or for roasting.

Milled coffee can sold in two formats. The first is ground roasted coffee, which is sold primarily to wholesalers, who are responsible for distributing it, mainly in the domestic market. The other is green unroasted beans, which is mainly exported to the large international roasters, which grind and package the coffee. Coopedota participates in both types of sales, depending on the client.

4 In the Dota region, irrigation is not present.

↘ HISTORY OF THE LOS SANTOS ZONE AND COOPEDOTA

The Los Santos Zone, located in the mountains south of the central plateau of Costa Rica, is one of the regions with the greatest tradition and history of coffee production in the country. It consists of three communities involved in the production and export of high quality "gourmet"[5] coffee: Santa Maria de Dota, San Marcos and San Pablo Tarrazú de León Cortés. This area offers climatic, geographic and social conditions that enable the production of world-renowned coffee. The cultivation of coffee is the largest source of revenue generation, both for farming families as well as for people working on harvesting it and producing the final product[6].

In the mid-90s, Coopedota R.L. began an adaptation process for its coffee production, seeking sustainable practices throughout its value chain in order to continue producing high quality coffee in an environmentally responsible manner. A historical review of the cooperative's most significant achievements is described below.

↘ SUSTAINABILITY PROGRAM AND PRODUCERS

In 1994, all the wastewater from the coffee refinement milling process was disposed into rivers without any treatment. This disturbed the community and drew the attention of the Ministry of Health, leading to an overhaul of the process, introducing a system of treatment using oxidation ponds. But this was expensive and also released unpleasant odors.

Given this scenario, the cooperative decided to use a bio-digester to process the wastewater from the coffee refinement. This equipment managed to significantly reduce the bad odors and processed the water effectively, producing by-products such as biogas and liquid fertilizer. Today, there is a sprinkler system for all the grass near the cooperative, which uses 100% of the processed wastewater, preventing groundwater and river pollution.

Furthermore, on the topic of energy, the drying ovens were a focus of high fuel consumption, which was causing great inconveniences, both economic and environmental, for the cooperative and the community. In 1998 about 8,000 cubic meters of wood were used in the drying ovens. Given this reality, a comprehensive solution was sought for the problem. It was necessary to have a reliable, low-cost power source for the ovens, without interfering with the drinking water supply in the Santa Maria area.

To that end, and after much discussion, in conjunction with Bioflame, a British company specialized in the construction of furnaces, a furnace was built that uses coffee husks[7] as fuel. Additionally, improvements were made to existing furnaces that allowed for the substitution of this waste for firewood. Currently, only about 800 cubic meters of wood are used, since 95% of the firewood was replaced by coffee husks and wood chips, automating the drying process and increasing its efficiency by 90%.

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5 Coffee of excellent quality, aroma and taste, from a specific variety of plant and processed under standard or specific conditions.

6 The harvest is from November to February, and the altitude of the area ranges from 1,200 to 1,800 meters. The local coffee is known as Café Tarrazú. According to the sample used in the coffee census (INEC and ICAFE, 2007) conducted in the cantons of interest, approximately 31% of persons belonging to coffee households are engaged in work within the coffee plantation (34% in Tarrazú, 28% and 34% in Dota Leon Cortes). There are also indirect jobs directly related to the activity.

7 Broza: waste from the coffee refinement process. This product is part of the coffee husk and occurs in large quantities in each harvest. The most common practice was to throw it in the river or let it decompose, thus producing odors.

In the late nineties, there was a serious problem with other organic solid wastes generated in the coffee milling process, as it was not receiving any treatment. Many of these wastes were donated to partners for use as bio-fertilizers, but these lacked adequate management. The waste caused more of a problem than a benefit for partners when delivered without any processing[8]. Therefore, the cooperative decided to collect this waste and produce its own compost and vermicompost[9], so that, for each harvest, the cooperative could produce quality compost for its members and replace, in part, the use of nitrogen fertilizers . Currently these wastes are part of the products offered by thecooperative, at a cost of US$2 per kilo.

In 2002, a program to reduce water consumption was introduced, which, through a successful process of metering the consumption and re-circulation of water in all processes, reduced by 80% the clean water used per bushel[10]; it went from using 1m^3 per processed bushel to 0.2 m^3, which made the wastewater treatment easier.

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8 There were no procedures or training for the proper management of waste.

9 Organic fertilizer made from organic waste, processed using specialized worms, which consume this garbage and produce high quality fertilizer.

10 Bushel is a volumetric measure traditionally used in Costa Rica, to measure volumes of coffee. 1 bushel is about 254 kilograms. Other conventional conversion factors in Costa Rica for coffee are lb pound (1 lb = 454 grams), bushel (1 fan = 258.06 kg of coffee cherries), qq quintal (1 qq = 46 kg of green coffee). Source: CATIE, ICAFE (2009).

Another significant advance was the cooperative's reduction in electricity consumption at harvest time. By 2004, it used 8kWh per bushel processed, and through studies of loads and consumption distribution, the installation of a micro-processor that uses biogas from the biodigestor, and the implementation of an energy management program, decreased the electricity consumption per bushel processed by 40%. At present, the energy consumption is 3.3 kWh per bushel.

Given these advances, the cooperative felt the need to launch a recycling project. In 2005, it started a small recycling program within the company, in which all the waste generated by the operation was disposed of responsibly. In order to do this, Coopedota, in agreement with the Municipality of Dota, built the first recycling center in the area. This was done not only to recycle the company's own products, but to extend the project throughout the community, as it is in one of the few counties nationwide where recycling is mandatory. Today it is estimated that 40% of waste from the community is being recycled and treated appropriately.

From 2005 to date, the company has developed innovative projects to generate alternative fuels. One example is the production of ethanol, which is expected to reach production of at least 150 liters/day during the next harvest. This initiative is part of the changes and transformations that the water treatment project has undergone with the bio-digester. Before the wastewater is passed to the bio-digestor, the sugars are extracted and passed through a distillation tower, thus obtaining ethanol fuel (95% pure). This input is used in a mixture with other hydrocarbons for internal uses of the cooperative.

The latest project of the cooperative is the gasifier, which gets its energy from disposable biomass produced by the cooperative. This project is expected to generate 50kWh using the biomass combustion generated during the coffee process, thus reducing its electric bills and greenhouse gas emissions.

At present, the business has 800 coffee producers as associates. But, of this number, only 25% of partners are directly and fully involved in such programs, as this is a voluntary number, (they are individuals). Although there is this difference between producers, all are trained in order to certify the minimum quality standards, so that the cooperative will ensure the best possible coffee berries.

All initiatives implemented are part of the "Sustainability Program" portfolio, whose main function is to give viability and sustainability to the cooperative's management and to engage the community. More details of the program can be seen in Annex 4, 5 and 6.

↘ CARBON NEUTRAL GOAL

The Government of Costa Rica, in 2007, established a strategic plan to reduce emissions of greenhouse gases in the country, seeking to establish itself as a low-carbon emissions economy and become the first carbon neutral nation by 2021. This initiative marked an important point for companies like Coopedota, which have been working for years to reduce their impact on the environment. This proposal led to the initiation of discussions on how to ensure that these efforts were recognized internationally and might increase the competitiveness of the organization under such practices.

However, this trend toward producing in a more eco-efficient[11] way was not only found in Costa Rica, but also globally. Today's global market demands regarding coffee quality and sustainability, both economic and environmental, are a reality. The demand is not only for

11 Creating value and wealth for an organization or country, without degrading the environment, but rather to establish synergies between the resources available and the product or service provided through a plan with minimal impact to the natural environment.

gourmet coffee, but also for the highest production standards, with emphasis on environmental protection. Certifications like Rainforest Alliance are used by Coopedota, given the demand for their buyers to be certain that the company follows best practices in processing its coffee. The company has had experience with other certifications, as seen in Annexes 7 and 8.

↘ CARBON NEUTRAL CERTIFICATION

Given the interest of the Cooperative to be certified, a request was made to several companies to provide it information on the steps to completing the process. In summary, the following steps should be carried out:

- Determine the amount of coffee to be certified.
- Collect the data required by the certifying body.
- Quantify the carbon footprint.
- Develop a plan to monitor, verify and validate the measurements and carbon reductions and, in turn, have clear lines of action to commit to carbon neutrality.
- Input offset credits approved.
- Document every step and make it publicly available.
- Validate and declare achieving carbon neutrality.

Annex 1 shows the analysis carried out by Coopedota when choosing a certifying body.

↘ INNOVATE TO CREATE

To try to establish a clear and consistent framework, Roberto and his team conducted a study of the products that had certifications similar to what they wanted to achieve in Coopedota. In this context, Adrian, the project coordinator and a team member, found the report "The State of Sustainability Initiatives Review 2010: Sustainability and Transparency," prepared by the International Institute for Sustainable Development (IISD) and the International Institute for Environment and Development (IIED), which he shared with the team in order to have a basis for comparative discussion.

This study compares characteristics and provides market trends for ten "voluntary sustainability initiatives" in the forestry, coffee, tea, cocoa and banana sectors. These include coffee certification systems such as Rainforest Alliance, Utz Certified, Organic, and Fair Trade. The review reports that, since 2009, 8% of world coffee exports were sustainable. The document indicates, however, that the provision of sustainable coffee is actually 17% of world production. But the report indicates an important limitation: "Due to a variety of factors related to variations in quality, demand and certification verification, and marketing costs associated with certified coffee or similar products, it is estimated that more sustainable coffee[12] is actually produced than is sold as such."

12 This refers to a finished agricultural product that is as efficient as possible in field production and in manufacturing, in which the use of economic, environmental and energy resources is moderate.

This situation is not new and those who are interested in it have been concerned for some time about sustainable coffee options and associated products. This is because, at least in the context of large multinational coffee roasters like Kraft and Nestle, there is no increase in the amount of sustainably grown coffee they buy. Consumers bear part of the responsibility of having more sustainable products is, and must to be willing to seek out and pay for the coffee and other such agricultural commodities, and to lower their standards in order to have more variety. This is explained in the previously mentioned report.

According to the report, just the act of producing sustainable coffee has a positive impact on the growth of communities. However, access to markets seeking this type of product, without a certification seal or validation, is impractical.

Also, according to information presented on the market share during the last five years, coffee and other agricultural products that are covered by some kind of sustainability seal , had a relatively higher rate of annual growth in revenue over similar unsealed products.

However, according to Coopedota's experience, certifications as such are no substitute for quality, nor does a certification itself bring quality and more customers overnight. Thus, the equation of quality plus added value does not always equal certification, but certifications do provide the opportunity to access new markets.

↘ INVESTMENT IN CERTIFICATIONS

Between 2008 and 2009, the cooperative invested in several different certifications, as is detailed in Annexes 7 and 8. They invested a total of US$14,800 in certificates, plus another US$11.545 in time and costs associated with hours spent by staff to comply with these certifications.

Roberto and his team, after soliciting several quotes and establishing a base budget, determined that for carbon neutral certification the company would have to invest about US$48.152, plus the cost of staff time, as seen in Annexes 9 and 10. Additionally, the costs of next year's certification review must be taken into account.

↘ LESSONS LEARNED

In each of the certifications obtained by Coopedota, a learning curve has been established, which has allowed us to develop certain criteria to qualify the good and bad aspects of each of the certificates. In general, the good aspects can be listed under three specific issues.

ORGANIZATION AND PROCESSES

» Certifications put processes in order, leaving clear and consistent evidence of production processes as well as enabling a quantitative and qualitative system of changes for the betterment of the enterprise. In short, it lets them check their processes, sort, document, and improve and increase efficiency in the production chain. This has been the experience of the cooperative.

- The major certifications that Coopedota has offer a guarantee to customers that the cooperative's products and processes are based on three pillars: quality, environmental responsibility and social responsibility.
- Innovation, diversification and extension of projects for cleaner and more efficient production are a real benefit to the cooperative. The challenge is to do it in a way that produces even more tangible results for farmers with better prices for their crops and increased skills.
- The evidence collected through the cooperative's coffee certification experience clearly shows that having some degree of certification allows for better cost management, which brings savings in most production processes. This is one of the major incentives to consider in applying for another certification. This was evident when the gasifier was built for the micro-processor, because it does not use wood or any other energy source than waste biomass from the cooperative, producing savings between 20% and 30 % on the cooperative's electric bill. This gasifier was considered in the last review that the company underwent for one of its certifiers, as an example of continuous improvement, and counted toward the score for renewing the seal.

SALES

- As part of the certification it has been able to sustain a differential in selling prices in times of crisis, where the extra premium per quintal has been between US$5 and US$10.
- Something that the cooperative expects is that with the carbon neutral certification, their price differentials in the market will not be affected, but rather remain as at present or, in the next harvest, improve the price per quintal (see Annex 11).
- It is important to note that the cooperative has won several bids by having certifications that prove their good practices.

CUSTOMERS

- Something that the cooperative knows, besides how to make good coffee, is its customers. It understands what their preferences are, what they want, and what they expect from a good coffee as a final product. For this, the company differentiates between two types of customers: a) Those who know the subject and are not concerned about the price, provided they have the confidence that a product is certified, who represent less than 40% of total sales company; b) Those who do not look at the price, but at the quality of the product.
- For both types of customer, the product has a common denominator: the coffee must always be of excellent quality at a fair price[13]. Thus, certification per se cannot be synonymous with price increases. Without a good justification, just having a certification should not increase prices.

13 Fair trade and price is an alternative way of trading goods promoted by NGOs, the United Nations (UN) and other social and political movements that promote voluntary and fair trading relationships between producers and consumers

↘ THE LESS POSITIVE SIDE OF CERTIFICATION

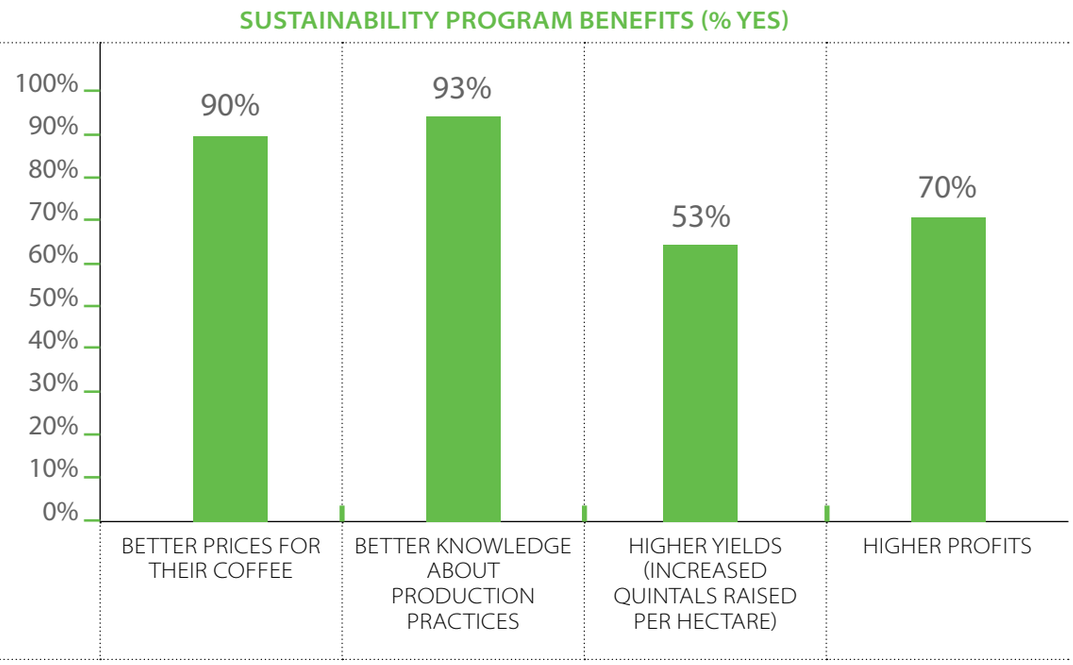
Noting the less positive side of certifications, the following can be listed:

- Some of the certifications involve bureaucratic processes which do not make the process of obtaining them easy.
- Certification costs remain high, which increases the cost of production.
- Entering into a certification process does not mean an increase in quality.
- It is not sure that the market would ultimately recognize the effort. Therefore, the company makes a bet when they choose to be certified, because the hoped-for price may not always meet the expectations raised. A strategic outreach campaign is also required to draw attention in the overall market.
- Many of the certifications obtained are part of a client's request, who ultimately become frequent buyers with long-term relationships. However, this does not guarantee the safe purchase of all crops.

↘ IMPACT ON PRODUCERS AND THE COMMUNITY

As part of the analysis, the Coopedota task force surveyed its partners. They did this in order to probe the impact the program has had in recent years, to see how they would react to being notified about the possibility of entering a new certification process. The results on the benefits obtained so far are shown below:

↘ SERIES 1



Source: Authors based on field survey.

Note: Sample N = 80 producers.

Overall, it appears that the survey gives a nod to the sustainability program conducted so far. But Daniela, finance manager of the cooperative, asked the following questions during the team meeting: Is the certification really an extra benefit for the cooperative and its members? Will it retain the profits earned to date or, instead, will it be a financial burden to the business?

↘ THE FUTURE

As a central purpose, Roberto and his team want to know if it is possible to establish a certified business model that is sustainable and recognized as low-emission, that co-exists with the conventional business model of non-certified coffee (and which seeks to provide a balance between price, quality and environmental responsibility).

Earlier, at a meeting with members of the Assembly, Roberto received some of the same concerns regarding the implications of how that certification would affect the quality of the coffee, and what is the real cost of entering or not entering into carbon neutral certification.

The cooperative team agreed that strategically, they need to achieve market recognition for the effort required to reach and maintain certification as carbon neutral coffee producers.

ANNEXES

ANNEX 1

COOPEDOTA: ANALYSIS OF COMPANIES CERTIFYING FOR CARBON NEUTRALITY, 2011

CRITERIA: MORE IMPORTANT < < < < < < < < < < < < < < **LESS IMPORTANT**

PLACE	CERTIFIER	BRAND AND CREDIBILITY	EXPERIENCE WITH PAS 2060	FOCUS ON REDUCING EMISSIONS	COST	EXPERIENCE WITH THE COFFEE SECTOR	CUSTOMER SERVICE
1	Carbon Clear	Good	Good	Good	Good	Bad	Good
2	Carbon Neutral Company	Good	Bad	Good	Bad	Good	Good
3	Rain Forest	Good	Bad	Bad	Good	Good	Good
4	Carbon Trust	Good	Bad	Good	Good	Bad	Bad
5	carboNZero	Regular	Good	Good	Bad	Bad	Good
6	Carbon Free Certification	Regular	Bad	Regular	Good	Good	Regular
7	Green Solutions Argentina	Bad	Bad	Bad	Regular	Good	Good
8	NoCO2 Verus Certification Program	Bad	Bad	Regular	Good	Good	Regular
9	Carbon Neutral	Bad	Bad	Regular	Bad	Bad	Regular
10	TÜV SÜD America Inc.	Not enough information	Good	Not enough information	Not enough information	Bad	Bad

Source: Coopedota R.L.

ANNEX 2

COSTA RICA: SHARE OF COFFEE IN GDP, 1991-2011

AMOUNTS IN MILLIONS OF COLONES 1991

YEAR	GDP TOTAL	VALUE ADDED COFFEE	COFFEE PARTICIPATION IN GDP
1991	876,910.60	20,043.34	2.29%
1992	957,165.60	17,295.58	1.81%
1993	1,028,126.80	19,377.70	1.88%
1994	1,076,753.10	15,856.06	1.47%
1995	1,118,971.30	19,429.47	1.74%
1996	1,128,892.00	14,787.44	1.31%
1997	1,191,863.70	17,303.79	1.45%
1998	1,291,954.60	17,193.21	1.33%
1999	1,398,181.60	18,621.57	1.33%
2000	1,423,360.50	18,643.44	1.31%
2001	1,438,681.50	17,899.89	1.24%
2002	1,480,434.70	14,913.38	1.01%
2003	1,575,249.30	16,076.02	1.02%
2004	1,642,346.40	12,189.87	0.74%
2005	1,739,021.04	12,552.36	0.72%
2006	1,891,700.77	10,906.40	0.58%
2007	2,042,033.14	12,185.00	0.60%
2008	2,099,560.40	10,808.80	0.51%
2009	2,077,226.69	9,413.60	0.45%
2010	2,161,135,73	9,265.10	0.43%

Source: Central Bank of Costa Rica

ANNEX 3

ANNUAL AVERAGE OF THE COFFEE PRICE COMPOUND INDICATOR (ICO 1991-2011)

PRICES IN US$/QQ

CIVIL YEAR	BRAZILIAN NATURALS	COLOMBIAN MILDS	OTHER MILDS	ROBUSTA	ICO COMPOSITE INDICATOR
1991	72.91	89.76	84.98	48.62	66.80
1992	56.49	67.97	64.04	42.66	53.35
1993	66.58	75.79	70.76	52.50	61.63
1994	143.24	157.27	150.04	118.87	134.45
1995	145.95	158.33	151.15	125.68	138.42
1996	119.77	131.23	122.21	81.92	102.07
1997	166.80	198.92	189.06	78.75	133.91
1998	121.81	142.83	135.23	82.67	108.95
1999	88.84	116.45	103.90	67.53	85.71
2000	79.86	102.60	87.07	41.41	64.24
2001	50.70	72.05	62.28	27.54	45.59
2002	45.23	64.90	61.52	30.01	47.74
2003	50.31	65.33	64.20	36.95	51.90
2004	68.97	81.44	80.47	35.99	62.15
2005	102.29	115.73	114.86	50.55	89.36
2006	103.92	116.80	114.40	67.55	95.75
2007	111.79	125.57	123.55	86.60	107.68
2008	126.59	144.32	139.78	105.28	124.25
2009	115.33	177.43	143.84	74.58	115.67
2010	153.68	225.46	195.96	78.74	147.24
2011*	253.40	296.68	284.99	114.31	218.75

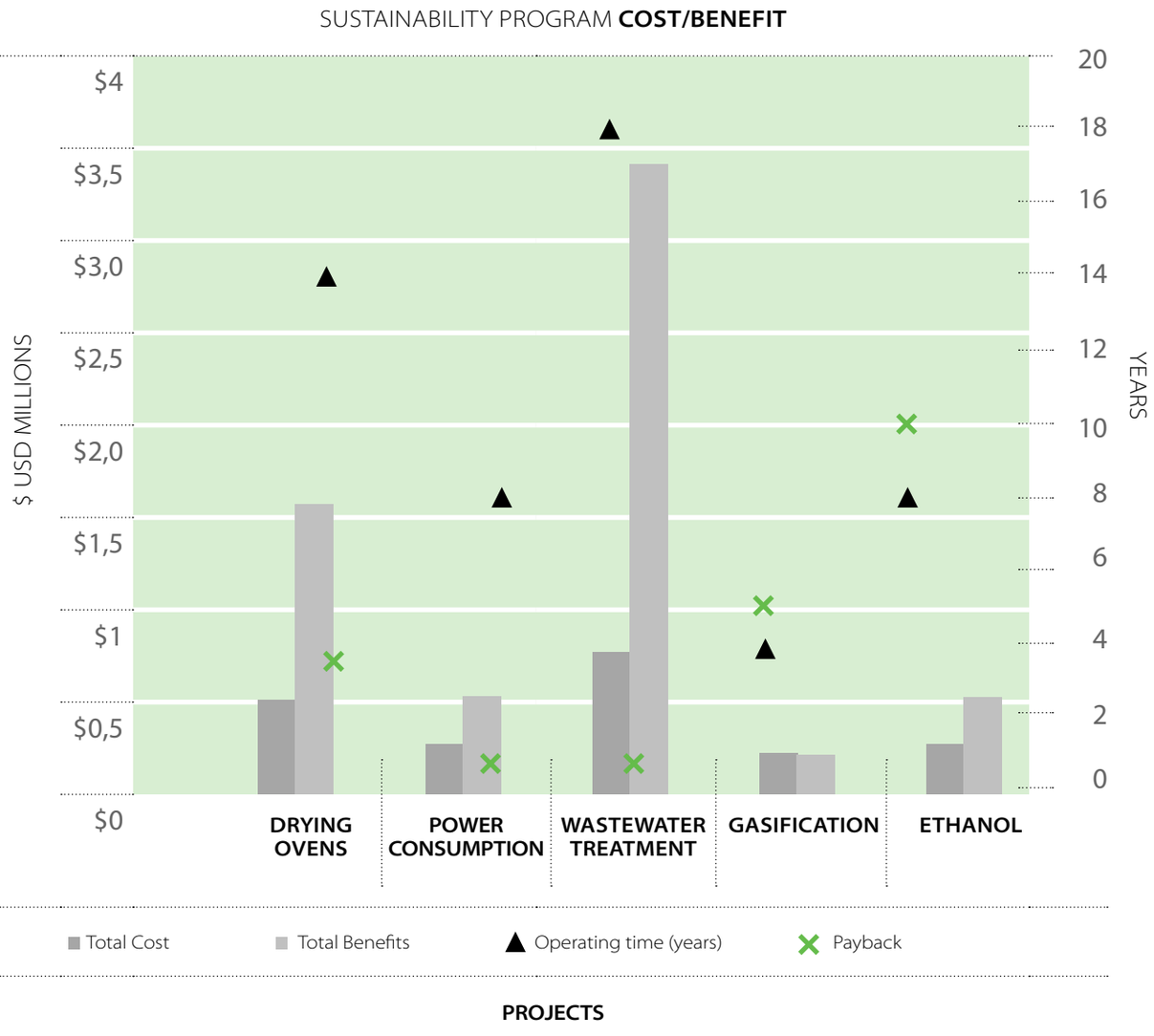
Source: ICAFE and International Coffee Organization (ICO), 2012

*/Average for the first six months of the year

Notes: Traditional classification in groups of Natural Brazilian exporting countries: Brazil, Ethiopia and Paraguay; Colombian Milds: Colombia, Kenya and Tanzania; Other Mild: Bolivia, Burundi, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Haiti, Honduras, India, Jamaica, Malawi, Mexico, Nicaragua, Panama, Papua New Guinea, Peru, Dominican Republic, Rwanda, Venezuela, Zambia and Zimbabwe; Robusta: Angola, Democratic Republic of Congo, Ghana, Guinea, Indonesia, Liberia, Nigeria, OAMCAF (Members: Benin, Cameroon, Central African Republic, Republic of Congo, Ivory Coast, Equatorial Guinea, Gabon, Madagascar and Togo), Philippines, Sierra Leone, Sri Lanka, Thailand, Trinidad and Tobago, Uganda and Vietnam.

ANNEX 4

COOPEDOTA: INITIATIVES OF IMPROVEMENT AND CHANGE AT THE ENVIRONMENTAL LEVEL



Source: Compiled by the authors using data from Coopedota 2012.

ANNEX 5

DETAIL OF SUSTAINABILITY PROGRAM PROJECTS

PROJECTS	PAST PRACTICES	TRIGGER	IMPROVEMENTS MADE	RESULTS	STRATEGIC ALLIANCES
DRYING	100% wood drying using 7000/8000 m^3 per harvest which represents 25 to 30 Hect. forest	Dota Canton is surrounded by national park and forest reserve, which makes available wood both scarce and costly, additionally, the coffee husks present an opportunity to leverage a byproduct of coffee	Husks and chaff were used as biomass fuel for 95% of drying, which made it possible to automate the entire drying process. Efficiency was increased from 50% to 90%, and it also went to consume or working with 10% of wood, which represented 750-1.000m3	95% of drying fueled by husks	John Gordon currently "Bioflame"
POWER CONSUMPTION	Use of 7.4 kW per bushel processed	High rates of electricity consumption per bushel processed. The equipment used was outdated and inefficient	Development of " Energy Savings Management Program." Installing the microprocessor to process small amounts. A study of all consumption and electrical installations was conducted at a general level. Rate changes or new way of working. Purchase of more efficient and modern engines	50% reduction of energy consumption per bushel processed	Bun-ca Project Peer
WASTEWATER TREATMENT	Dumping 100% of water to tributary or Pirrís River	Need for proper treatment of coffee process's wastewater, according to regulation-30221-S. Later, to avoid unpleasant odors, high costs and discharges into the the river it was decided to implement a new system known as fertigation	Initially water was discharged into the river causing a high degree of contamination, then a lagoon system for water treatment was installed, which still had a high degree of waste and odor problems. Later, an irrigation system using stargrass which eliminates all discharges	100% reduction of discharges to the river	Ministry of Health, CPT Dota and ICAFE
GASIFICATION	The husk was given away to farmers and was even bounced	Automating the furnace system created a significant excess of husk so they decided to use this biomass material and experiment with creating the first husk based gasifier	A husk based gasifier was constructed to produce electrical energy to be used in the microprocessor. At present time it is undergoing final adjustments for the connection		ICAFE, SICA Alianza and Energía
ETHANOL	The wastewaters were going to the liquid fertilizer system	Reducing the amount of sugars disposed into the river and using ethanol in biofuel, whether for vehicle use or to generate electricity	A distilling plant was constructed which, in recent tests, has managed to produce 150 liters per day of ethanol with a concentration of 95% alcohol. So far it has not been used as fuel for vehicles, but testing will take place on how it may be combined and used in company vehicles	Obtaining ethanol with 95% alcohol. The process must be automated to increase production	CIAT

Source: Compiled by the authors using data from Coopedota 2012.

ANNEX 6

GRANTS AND FINANCING FOR SUSTAINABILITY PROGRAM PROJECTS (US$)

PROJECT	2002	2008	2009	2010	TOTAL
GASIFICATION →		-	23,009.41	29,203.97	52,213.39
ETHANOL →		41,371.78	14,369.90	24,312.74	80,054.43
ORGANIC FERTILIZER →				47,197.53	47,197.54
OVENS →	308,928.78				308,928.78

Source: Department of Finance, 2012. Coopedota RL. 2012

Note: Money received for the manufacture of drying area (furnaces) and carbon neutrality is in the form of loans. The first for US$297,500 (November 2002; tc 373.96) for a term of four years with repayments every six months for a total of US$37.187.5, plus interest, 5.01% interest rate annually. The second for US$100,000.

ANNEX 7

COSTS OF CERTIFICATIONS

CERTIFICATION	2008 DOLLARS		2009 DOLLARS
FLO -CERT →	709.41		4,350.17
RAIN FOREST →	2,809.10		4,292
CAFE PRACTICES →			2,674
TOTAL	**3,518.51**		**11,316.17**

Source: Department of Finance, Coopedota RL.

ANNEX 8

INTERNAL COSTS OF LABOR (US$)

CERTIFICATIONS	WORKING HOURS	2011 COST PER HOUR	TOTAL	WORKING HOURS	2012 COST PER HOUR	TOTAL
RAIN FOREST →	948	4.51	4,277.41	948	4.06	3,848.45
FAIR TRADE →	948	4.51	4,277.41	948	4.06	3,848.45
CAFE PRACTICE →	948	4.51	4,277.41	948	4.06	3,84.45
TOTALES	**2.84**	**4.51**	**12.832,2**	**2.84**	**4.06**	**11,545.36**

Source: Department of Finance, Coopedota RL.

ANNEX 9

INTERNAL COST BUDGET OF COOPEDOTA FOR CARBON NEUTRAL CERTIFICATION (US$)

INTERNAL COSTS	CERTIFICATION YEAR 2011	CERTIFICATION REVIEW YEAR 2012
TRAVEL AND PER DIEM	2,105.0	
LABOR	8,700.0	2,000.0
OTHER EXPENSES	150.0	
COOPEDOTA'S WORKFORCE	8,203.2	1,871.6
TOTAL	**19,158.2**	**3,871.6**

Source: Department of Finance, Coopedota RL.

ANNEX 10

BUDGET FOR EXTERNAL COSTS FOR CARBON NEUTRAL CERTIFICATION (US$)

EXTERNAL COSTS	CERTIFICATION YEAR 2011	CERTIFICATION REVIEW YEAR 2012
CERTIFICATION (AUDIT)	15,000	4,050
CARBON CREDITS	9,400	8,442
PROFESSIONAL SERVICES	4,600	
TOTAL	**29,000**	**12,492**

Source: Department of Finance, Coopedota RL.

Note: For the year 2012 10,500 bushels (500 roasted and 10,000 unroasted) were certified as carbon neutral

ANNEX 11

PROJECTED SALES (2011-2012)

CERTIFICATION	QUINTALS SOLD	% TOTAL RECEIPT	PRICE DIFFERENTIAL
CARBONO NEUTRO	555.00	1.02%	+5
CAFE PRACTICE	14,437.50	26.62%	
RAIN FOREST	6,975.65	12.86%	+10
FAIR TRADE	225.00	0.41%	+12

* In 2011-2012 54,243.76 bushels harvested

Source: Compiled by the authors using data from Coopedota 2012.

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