
SUMMARY OF SITE VISIT: COFFEE COOPERATIVE

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1 INTRODUCTION

The coffee cooperative CoopeCafira was funded in March 24, 1968, at which time it represented 195 small and medium sized coffee farmers. At present the cooperative includes 2,600 members and is the owner of different coffee plantations, a coffee mill, a supermarket, and a warehouse for agrochemical products and farm equipment required to produce coffee and other crops. The cooperative is situated in the center of a medium sized town called San Ramon, which is located approximately 80 kilometers west of San Jose. The case study is focused on the activities related to the coffee mill.

The coffee mill is situated at the border of San Ramon in a hilly area. The plant has a total production capacity of 5.6 tons of coffee and employs approximately 15 people. The mill integrates both wet and dry coffee milling process, which means that in the mill the coffee, is processed from coffee cherry (the fruit from the coffee tree) to an exportable coffee bean.

The red cherry is changed into a green-dry-bean by using large de-pulping machines, fermenting tanks, washing channels and drying facilities. Drying is done mostly in a mechanical way (using ovens and drying machines heated by firewood and cherry husks) and sometimes in a natural one (drying platforms using the sun's energy).

2 COFFEE IN COSTA RICA

Coffee has been one of the principal sectors driving development in Costa Rica since the beginning of the nineteenth century. The sector currently accounts for

approximately 15% of the country's export income, which correspond to about 3% of the world trade of *Arabica* coffee. The majority of the Costa Rican coffee farms are small to medium sized (less than 15 hectares). Costa Rica is in a leading position in the region in the use modern technology in coffee cultivation and processing. Since the 1960's, cultivation techniques have been modernized and 'traditional' coffee plants have been replaced by higher yield varieties, that resulted in higher densities per hectare, ranging from 1600 trees per hectare in 1955 to 3400 trees in 1980 (Blanco, 1999). The current intensive coffee production in Costa Rica is characterized by specific husbandry techniques, such as high-density planting, pruning, intensive use of fertilizers and pesticides, and replanting with high-yielding drought and disease resistant varieties. The intensive production and processing methods have resulted in an average production of 1,610 kg of coffee/ha, which is considerably higher than the average production in El Salvador (920 kg/ha) or Guatemala or Honduras (690 kg/ha.). Negative side effects of these production methods are the significant amounts of pesticides and fertilizers used on the plantations and the impact this has on soil erosion and water pollution as well as losses in biodiversity.

3 THE COFFEE VALUE CHAIN

Following the coffee chain, the approximately 77,000 Costa Rican farmers generally sell their coffee after harvesting as fresh cherries to small and medium sized private or co-operative coffee mills called "beneficios," of which CoopeCafira is one. Over the last decades the Costa Rican

milling process has gone through a number of important changes. After the Second World War the properties, mainly owned by German residents, were expropriated, causing a significant loss of relatively simple technology that was used for decades. However, the high coffee prices of the 1950's made it possible to import new equipment. The investments resulted in the construction of coffee mills in which both the wet and the dry process are integrated, implying that in the mills the coffee is processed from coffee cherry to the exportable coffee bean. The red cherry is transformed into a green-dry-bean by using large de-pulping machines, fermenting tanks, washing channels and drying facilities, the latter mainly being done mechanically (using ovens and drying machines warmed up by firewood and husk) though sometimes using solar energy (with drying platforms).

4 ENVIRONMENTAL ISSUES IN COFFEE MILLING

Costa Rica has 95 coffee mills located in five different coffee production areas. The total production capacity of these coffee mills is approximately 156 million kilograms of green coffee (3% of the world production of Arabica coffee). Regrettably, when designing and constructing the mills, the environmental effects and energetic efficiency were not considered important factors. Because of this, the milling process has caused (and still causes) severe environmental problems at local level. Significant environmental impacts relate to excessive consumption of energy, water, and firewood, as well as to the production of large volumes of organic waste (pulp) and highly organically polluted wastewater.

In the 1990s the growing awareness of the environmental problems caused by the coffee production as articu-

lated by conservationists and their organizations - resulted in strict environmental legislation. To prepare the sector for the legal requirements they had to comply with, the Costa Rican coffee sector and governmental bodies agreed on a five-year action plan in 1992. By imposing such a plan - based on an agreement with the entire sector - free riding and other opportunistic effects could be avoided. In accordance with this plan, the coffee mills have implemented different technical devices that greatly reduce the mills' consumption of water and the consequent discharge of wastewater into the rivers. These included water-saving depulping equipment, recycling processes of the water used for depulping and transport of coffee through the plant, processes to separate pulp and wastewater as well as ponds to treat the wastewater.

5 ENVIRONMENTAL PERFORMANCE AND COMPLIANCE ISSUES

In spite of important gains, this one-time technical adjustment of the production process is not a sufficient solution for the long term.

- There may be a positive effect measured at the level of river basins but at the level of the individual cooperative there is no evidence that the required equipment is in place and is adequately used. However, the Ministry of Health requires each coffee mill to check its water effluents three times through independent laboratories to verify if the samples meet the legal requirements for Chemical Oxygen Demand (COD) and Biological Oxygen Demand (BOD).
- A cooperative may cause other environmental problems, which have not been covered by the five-year action plan, such as deforestation, soil erosion and soil pollution due to waste deposits.

- The plan caused higher production costs due to the requirement to create wastewater treatment systems and the management of waste flows generated by the de-pulping process, while the sector already suffered from higher production costs in comparison to other coffee producing countries in the region.
- It is not guaranteed that by means of the current continuous improvement program that companies will reach legally mandated levels of compliance nor go beyond those levels.
- The five-year plan does not provide for a future-oriented management approach leading to proactive strategies that integrate economic and environmental interests.
- Last but not least, the five-year plan leaves out what happens during cultivation while the use of agrochemicals at the farms represents a sensitive issue in the overseas markets. Costa Rica is known for its very intensive use of agrochemicals. A sustainable coffee would certainly need a clear and demonstrable improvement record in this area.

6 RESPONSE TO ENVIRONMENTAL AND COMPETITIVE NECESSITIES

To remedy the above-mentioned weaknesses and to be able to improve the competitive position of Costa Rican coffee in the international coffee market by producing a sustainable coffee, the Sustainable Coffee (SUSCOF) consortium was established in 1999 consisting of 6 coffee cooperatives, including CoopeCafira. The consortium works based on a chain-oriented management approach, which is aimed at reaching continuous improvements in the subsequent production, processes of the coffee chain. ISO 14001 was made a central tool to facilitate and drive learning, change and voluntary compliance— particularly for organizations at

the beginning of launching a program of continuously improving the quality and environmental record of its processes and products.

For this reason, each of the six cooperative coffee mills established management systems (EMS) based on the ISO 14001 norms. The system of Cafira was certified immediately following the 2000-2001 harvests. Internal control over environmental impacts is expected to improve significantly. However, it is too soon to evaluate performance results, or effects on the competitive position of the cooperatives.

7 DISCUSSION QUESTIONS AND ISSUES

- The decision on the part of the government to enter into the plan with the entire industry was a difficult one. It effectively meant gave coffee mills permission to reach legally established goals on a much slower time horizon than that stipulated in the legislation. The decision was made based on the conclusion that more environmental improvement could be made by getting the entire sector to work together, rather than taken direct enforcement action. What are the pros and cons of this type of strategy, for this sector and others?
- It is not clear whether the markets for coffee will be willing to reward the mills for ISO 14001 certified production processes. How critical is this recognition (via higher prices, or simply preferring to buy their coffee over others that are not certified) to the currently certified plants, and the sector in general? Would acceptance in the market make an important difference in achieving the more stringent legally established goals?