Sustainable Coffee in the Mainstream

The Case of the SUSCOF Consortium in Costa Rica

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Small and medium-sized organisations in the Costa Rican coffee sector are faced with a growing demand from overseas clients to deliver high-quality and safely produced goods and services on time, in the correct quantities and at competitive standards. Moreover, this sector is starting to encounter a wide range of international standards, which are increasingly required for access to international and regional markets.

This paper focuses on experiences in the Sustainable Coffee (SUSCOF) Project in Costa Rica, which aimed to create sustainable production systems within the coffee chain while being flexible enough to adjust to changing requirements. The Costa Rican coffee co-operatives involved have implemented environmental management systems in their coffee mills, based on the ISO 14001 norm, a notable achievement in itself. However, the key term of the ISO 14001 norms is 'continuous improvement', which implies that those who sell sustainable coffee will have to improve over and above legislative requirements.

Continuous improvement is greatly helped by generating (preferably) quantitative information on how processes are evolving and whether the stated goals are being met. This type of measurement is scarcely available in Costa Rica. Methods such as defining and measuring environmental performance indicators can be used for this purpose; ISO 14031, a guidance document of the ISO 14000 standards concerning environmental performance evaluation, has been chosen as main reference point for the creation of environmental and other performance indicators. Meanwhile, the co-operatives involved created SUSCOF RL, an organisation that sells the sustainable coffee to the European market. Some of the members are Utz Kapeh-certified, a norm for responsible coffee in the mainstream coffee sector.

- Sustainable coffee
- Costa Rica
- SUSCOF
- ISO 14001
- ISO 14031
- Co-operatives
- Case study

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1 The coffee sector in Costa Rica: the emergence of sustainability issues

THE COFFEE SECTOR IS ONE OF THE MAIN MOTORS OF ECONOMIC AND SOCIAL development in Costa Rica. Supported by elements such as political stability and enhanced by a structure of land-owning that backs small and medium-sized properties, the coffee industry took root and has become a fundamental pillar of the national economy. It began in the nineteenth century, with the first coffee exports to European countries.

Increase in the international demand for coffee beans during the 1950s, 1960s and 1970s boosted the search for greater returns per hectare. With the technological intensification of coffee farming, the returns per hectare increased strongly. Major elements of the results of this development have been: a reduction in the use of shadow in the coffee farms, the use of new coffee varieties and an intensive use of agrochemicals. However high productivity appeared to be, longer-term environmental effects were disregarded.

1.1 The negative environmental effects of coffee cultivation

More evidence of the negative environmental impact caused by the modernised cultivation of coffee lies in the intensive use of herbicides—mainly Paraquat® and Glifosato®—in the coffee plantations to control weed. Besides their toxicity, these herbicides are the 'wrongdoers' in the high level of erosion that, according to ICAFE (Instituto del Café de Costa Rica) figures (Blanco and Perera 1999), affects about 80% of the plantations in the country. Basically, such erosion takes place through the total elimination of green soil coverage (weed) over the surface of the coffee farms, this lack of coverage allowing rain to wash away the fertile layer of soil more easily.

1.2 Environmental impact inherent to the coffee milling process

Initially, the grain-milling and the sales systems were based on family-type businesses that bought the coffee grain from small producers, who would dry it out in the sun on special patios and peel it manually. As the coffee industry expanded, special private milling firms emerged. During the 1960s, co-operatives were created that organised coffee farmers as a countervailing power to the private mills. The co-operatives had mills (*beneficios*)[1] to process the coffee that the associate farmers sold to them.

The milling system was able to process sufficient amounts of coffee kernel but failed in terms of environmental impact and energy efficiency (Blanco and Perera 1999). The system entailed excessive consumption of fuels (fossil, hydroelectric and biomass fuels) and water resources. In turn, poor use of water resources generated a large amount of polluted water, containing organic particles, that was returned to the rivers proximate to the coffee mill, having a highly negative impact on the environment in the central highlands as well as in the coastal area to which the rivers flow.

Another type of waste generated is coffee pulp, a residue that represents 41% of the total composition of the fruit, accounting for the large volume of waste (Díaz Porras 1994). The traditional way of eliminating such waste was to throw it into the rivers, constituting a major source of pollution that has caused the death of a great deal of its

1 A coffee mill is denoted by the Spanish word *beneficio*, which refers to the entire processing of the coffee cherry up to the green coffee bean. This milling process is one of de-pulping, fermenting, drying and selection.

fauna in most of these rivers. Thus, the coffee milling process as it stood could not be considered as sustainable (Blanco and Perera 1999).

1.3 Introduction of the sustainability concept

When coffee exporting started, Costa Rica established a permanent contact with the world market. Some of the coffee farmers built the first wet coffee mills not only for processing their own coffee but also for processing that acquired from other small producers. This sociotechnological change introduced a new type of relationship between the pioneers of wet coffee processing—who, besides being producers, became merchants—and the less affluent small producers (Samper and Peters 2001).

It was not until the 1920s that a strong movement arose pushing for a more equitable type of payment (Sick 1999: 27-29). Thanks to this movement, in 1933 the Instituto de Defensa del Café emerged as a regulatory agency for the coffee industry, determining the current payment system, which is made up of a monetary advance paid when the harvested coffee kernels are supplied to the coffee mills. Accounting rules determine how much of the price the mills receive for the coffee sold (the so-called 'green' beans, which are the product of the milling process) will go to the farmers.

Between 1958 and 1991, international coffee sales were regulated by international treaties that followed the principle of finding a reasonable equilibrium between the world supply and demand of coffee, assuring fair prices for the consumer and produce'. However, for the duration of the last four agreements such an equilibrium could not be achieved. On the contrary, production was higher than demand, leading at the end of the 1980s to the abolishment of the regulatory system of export quota. As a result, international coffee prices dropped to an all-time low of less than 200 cents (US$) per kilo. This decrease in price also led to changes in the consumer market since consumers gained easier access to higher-quality coffees, which were offered at relatively low prices. As a result of these developments, the Costa Rican coffee sector found itself in the mid-1990s confronted with the following situation:

1. A continuous increase in the area used for coffee cultivation
2. Increasing use of agro-chemicals
3. Increasing costs of production
4. Increasing productivity
5. Over-production of coffee worldwide
6. Decreasing market price, even below cost level
7. Changing consumer preferences

In addition to these developments, conservationists and related organisations at the beginning of the '90s promulgated a growing awareness of the environmental problems caused by coffee production. This in turn resulted in the development and implementation of strict environmental legislation focusing on reduction of water and electricity consumption. To prepare the industry for these new legal requirements, the Costa Rican coffee sector and the government agreed on a five-year action plan in 1992. With the imposition of such a plan—based on an agreement with the whole sector—free-riding and other opportunistic behaviours could be avoided. In accordance with this plan, the coffee mills implemented various technologies that significantly reduce water consumption and the consequent discharge of waste-water into rivers. These technologies included water-saving depulping equipment, recycling of the water used for depulping

and transport of coffee through the plant, processes to separate pulp and waste-water, as well as the introduction of ponds to treat the waste-water.

However, this technological approach, which focused on a one-shot modification of the production process, had inherent risks regarding the limited impact it could have on the environmental performance of the sector in the medium and long term. This is due to a number of factors.

First, the environmental impact caused by waste-water effluent is measured as an end-of-pipe problem. Currently, the Costa Rican Ministry of Health requires each coffee mill to check its waste-water effluents three times during each harvest season (late September until the beginning of March). The first check is done as soon as the harvest starts (September/October); the second one month after the peak period of the harvest, which is normally January; and the third at the end of the harvest. These have to be undertaken using independent laboratories, which check against legal requirements on BQD (<stands for?>) and BOD (biological oxygen demand). However, management is not motivated to identify the causes of any non-compliance, so that repetition of non-compliance can be expected during the following harvest.

Second, a co-operative may cause other environmental problems that are covered by the five-year action plan, such a deforestation, soil erosion and soil pollution due to waste deposits. Third, the plan has incurred higher production costs, with the sector already having to deal with high production costs relative to other coffee-producing countries in the region. Fourth, there was no guarantee that environmental improvement would go beyond legal requirements. The five-year plan did not provide for a future-oriented management approach leading to proactive strategies that integrate economic and environmental concerns. Last, but not least, the five-year plan did not cover environmental problems on the farmland itself, although the use of agrochemicals at the farm level is a sensitive issue for overseas markets. Costa Rica was already renowned for its relatively intensive use of agrochemicals. For coffee to qualify as 'sustainable', clear improvement in this area would certainly need to be demonstrated.

In addition, the Costa Rican coffee sector has encountered the growing importance of a wide range of international standards, which are increasingly required for those who wish to achieve and maintain access to regional and international markets, such as the European Union. Examples of these are ISO 9001 and 14001, organic certification, HACCP (Hazard Analysis and Critical Control Point) and the Euro-Retailer Produce Working Group's Good Agricultural Practices. To support the coffee sector in creating new market opportunities, the Sustainable Coffee (SUSCOF) Project was developed. This project has aimed at creating sustainable production systems, taking into account the various aspects of sustainability (environment, social and economic aspects) in such a way as to be flexible enough to be able to respond effectively to present and future requirements.

2 The SUSCOF Project

The Sustainable Coffee Project (SUSCOF) is a common endeavour of the Consortium SUSCOF RL, consisting of six Costa Rican co-operatives of coffee farmers, the Dutch-based Institute for Sustainable Commodities (ISCOM) and the Costa Rican-based Centre for Technology Management (CEGESTI). The project (through different consecutive contracts) was financed by funds from the Sustainable Development Agreement between Costa Rica and The Netherlands as well as the Netherlands Ministry of Environment, along with considerable in-kind contributions from the different partners involved, such as the Ahold Coffee Company. The two smallest co-operatives also participate in the FLO

(Fairtrade Labelling Organisations International) fair-trade system, and all the co-operatives were involved in organic production and certification programmes—as they continue to do.

2.1 A chain-oriented management approach

The project is based on a chain-oriented management approach aimed at making continuous improvements to the production processes in the coffee chain. Application of such an approach to the Costa Rican coffee sector has generated a new perspective. Environmental problems were traditionally regarded as the need to overcome mainly technical problems arising from upcoming national or international regulation. The prescription of a set of machinery or methods, it was believed, would allow the coffee sector to curtail and control its environmental impacts sufficiently in order to meet regulatory requirements. However, to be able to meet market requirements and to achieve market differentiation, a change had to be made in order to arrive at integrated solutions (i.e. solutions that are preventive in nature and that are cost-effective). The environment had to be seen by the coffee producer or processor as a managerial problem from the beginning—that is, responsibility had to be accepted not only for the installation of certain prescribed inputs but also for the eventual environmental performance of the farm or company. To fulfil this responsibility, it was considered necessary to set priorities and develop verifiable improvement programmes. To substantiate this vision and to assess the environmental strengths and weaknesses of each of the six co-operative, an overview was required of all the relevant environmental effects arising from these members' coffee cultivation and milling processes. This led to six initial environmental reviews, which made it possible quickly to make recommendations as to how the most pressing environmental problems (including those concerning human health) could be addressed. Important items related to: waste-water and its purification, electricity consumption and use of firewood (Wolters and Danse 2002).

2.1.1 A need for change

Observing the state of affairs just prior to the creation of the Consortium, one could state that the co-operatives were not sufficiently prepared for meeting international environmental standards, especially if they wished to make environment a selling point. Most of them had little or no experience with management systems. Accounting practices were (and still are) subject to strict official calculation rules and therefore could not adequately support cost-based decisions. However, the six co-operatives sensed a need for change if they were to survive in the long term, beginning with 'good housekeeping' and simple improvements identified in a series of workshops on ISO 14001, <couldn't read this word> development, strategic management and the EurepGAP system of the Euro-Retailer Produce Working Group.

2.1.2 ISO 14001 for the coffee mills

It was believed that environmental management systems (EMSs) would make a major contribution to learning and change. For this reason, it was decided to implement EMSs, according to ISO 14001 (ISO 1996), in the coffee mills of the six co-operatives. The EMS implementation started in April 1999, and since then each of the mills has been certified under ISO 14001 (and several of them have also been certified under ISO 9001 (ISO 2000) the standard for quality management). The implementation process itself had already resulted in efficiency improvements, particularly in terms of reduced use of water and less soil pollution.

2.1.3 Farm-level environmental management

A next step was to define environmental management activities at the farm level. The six co-operatives together cover an area of over 18,000 hectares of farm land, owned by approximately 9,600 farmers. ISO 14001 includes procedures pertaining to the environmental aspects of purchasing. In the case of coffee, the coffee farmers are the main suppliers to the mills. To gain an insight into the common practices of the farmers, a monitoring system based on different criteria relating to quality, environment and human health was developed. The parameters for this monitoring were derived from the 'good agricultural practices' (GAPs) that were formulated by a group of European food companies, leading to the formation of the organisation Eurep (www.eurep.org). Further implementation of the GAPs appeared to be a difficult task that could not easily be realised. Therefore, it was decided to launch a number of pilot projects within each co-operative. This resulted in the successful implementation of GAPs in more than 50 farms. Another pilot project focused on 50 farms in which organic production methods were implemented; this project was also successful.

Increasing market pressure to implement the GAPs and to achieve certification to those GAPs has helped to give the process a higher priority, and a number of the larger plantations have achieved such certification. To involve small farmers, it seems that the implementation of the GAPs should be managed by the co-operatives, as these are capable of keeping the required records for each associate farmer regarding produce sold and chemicals bought. This information will make it possible to define improvement programmes for each co-operative in order for the farmers to improve their environmental performance and to comply with requirements set down for the GAPs.

2.1.4 Direct selling to overseas clients

The management aspects of environmental care not only are operational in nature but also certainly have a significant strategic component. In particular, the application of advanced environmental technology and processes are more rewarding if these are communicated to the market with a view to increasing the sales and ensuring a better price. Originally, the sales aspect was given thought within the framework of discussions with one large roaster and retailer in the Netherlands, Ahold (www.ahold.com), which, by its interest in the SUSCOF project, helped to launch that project, becoming the main client. Over the course of time, the project has adopted a broader market approach by involving potential clients in different market segments and by building up a sales organisation at the level of the Consortium (SUSCOF RL). Since November 2002,97 producers within SUSCOF RL have been Utz Kapeh-certified—a norm for responsible coffee in the mainstream coffee sector (www.utzkapeh.org).

2.1.5 Ecological and social aspects

The SUSCOF project has concentrated mostly on the ecological sustainability aspects of coffee growing and processing; attention has been given to marketing and sales, with sustainability as a selling point. Moreover, several co-operatives have also been active in implementing a quality management system, which can be seen as making a positive contribution to the economic performance of the co-operatives.

The social aspects considered have been restricted to health and safety issues. That less work has been done on the social aspects could be justified by the fact that in Costa Rica in general the level of social attainment is relatively high (if one considers the widely available health service, accessible education and the existence of well-observed minimum wages for coffee pickers and workers in the mills). Moreover, the co-operatives involved were able to provide different social services to their members that cannot be taken as usual in coffee-producing countries (such as providing supermarkets, technical advice and financial services). In fact, the main message to the co-operatives was to make

better use of the country's high social standards in the marketing of the sustainable coffee.

2.1.6 Continuous improvements

The project represents a clear contribution to sustainable development, both from a national (Costa Rican) point of view and an international point of view (involving roasters and consumers in Europe). The activities already implemented in the project have given SUSCOF coffee an advanced position on the road towards sustainability, especially in the mainstream coffee market in the EU. Nevertheless, competition is a dynamic phenomenon. Others may follow or even adopt other, superior, methods. If the co-operatives of the SUSCOF consortium wish to keep their leading position they will need to improve themselves continuously. To monitor this, it is important to have adequate sustainability indicators in place.

2.2 Environmental indicators

From 2000–2003, the co-operatives within the SUSCOF Consortium have implemented its strategy to improve their competitive position by introducing sustainable production methods.

To ensure continuous improvement, the co-operatives implemented the EMS specified in ISO 14001. However, the implemented improvements have been based on short-term plans. It was considered important to define common goals for a period of three to five years. To control the process, indicators had to be defined to measure the environmental impact caused by each separate co-operative and by the group as a whole.

2.2.1 The ISO 14031 framework

Although there are different frameworks available (such as codes of conduct and checklists of relevant issues) the ISO 14031 standard (ISO 1999), referring to environmental performance evaluation (EPE), was considered to be the best possible framework for the development of environmental performance indicators. The central feature of this standard is the definition and detailed discussion of two basic types of indicators that can be used for environmental management (ISO 1999):

- Environmental condition indicators, providing information on the local, regional, national or global condition of the environment
- Environmental performance indicators, consisting of
  - Operational performance indicators, providing information on the environmental performance of an organisation's operational activities
  - Management performance indicators, providing information on the environmental performance of an organisation's management activities

The investigation described in the following is focused on the definition of the environmental performance indicators at the farm level and at the coffee mill level. Figure 1 places the various indicators into the wider perspective of businesses and their ecological and business environments.

Applied to coffee, the operational performance indicators predominantly refer to:

- Inputs of materials, energy and services
- The supply of inputs
- The design, installation, operation and maintenance of the physical facilities and equipment

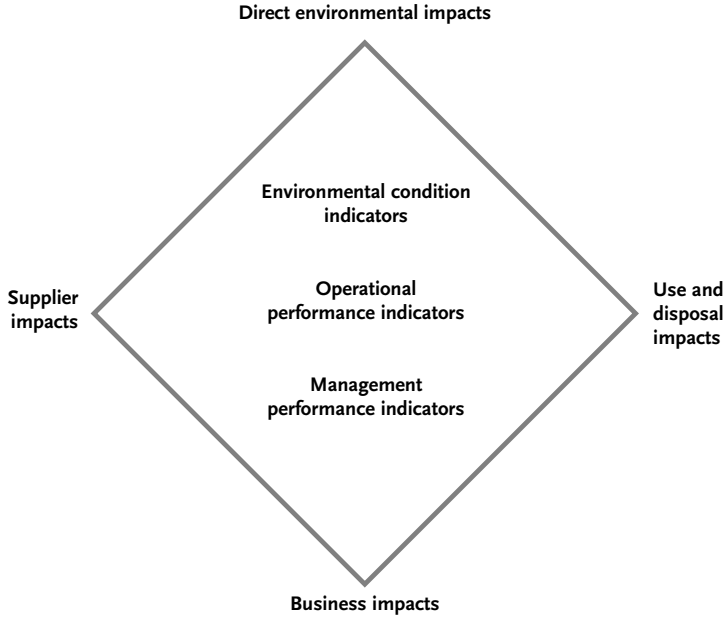

Figure 1 THE ENVIRONMENTAL PERFORMANCE EVALUATION DIAMOND
Source: Bennett and James 1998

- Outputs of products, services, waste and emissions
- The delivery of outputs

A management performance indicator provides information about management's efforts to improve its organisation's environmental performance. These include:

- Policies
- People
- Planning activities
- Practices
- Procedures

Most of the data required to measure the indicators can be obtained within each of the six co-operatives through the available registers that are part of the EMS based on ISO 14001, which each co-operative implemented in its coffee mill and which was certified at the end of the 2001/2002 harvest period (April). For the measurement of some indicators it was necessary to collect and collate data from different registers.

2.2.2 Operational performance indicators

The operational performance indicators are related to the activities of coffee production at farm level and the activities related to coffee processing at the coffee mill. Each co-operative represents a significant number of associates who are the owners of a certain number of hectares of coffee plantation.

After the harvest, the farms are prepared by fertilising the soil, replacing plants for which productivity has become too low, cutting old (shade) trees and planting new ones.

In the more mountainous areas, the terraces are checked and maintenance is carried out to avoid erosion during the rainy season (May to November). During the growing season, different types of artificial and natural fertilisers are applied to the soil, and different types of pesticides are sprayed on the plant to avoid the plants becoming infested with insects.

The main negative environmental impacts caused by the coffee milling process are the huge volumes of waste-water polluted with organic material, the large quantities of organic waste generated by the pulp-removal process, electricity consumption and firewood consumption.

In general, the equipment of Costa Rica's coffee mills is old, too big and ready for renewal. However, investment in new machinery is expensive, and coffee prices have been low during recent years, making it difficult to renew machines frequently. For this reason, intensive maintenance of the machines is a normal activity done during the low season, focused on trying to extend the duration of these machines as much as possible. The age and inefficiency of these machines implies also that their electricity consumption is considerable. In addition, the capacity of the mills is based on short-term peaks during the harvest season. This means that most of the time the available capacity is under-utilised. As long as the current patterns of operating continue to exist there will be high energy consumption.

The electricity of the mills is provided by a central system owned by the Costa Rican electricity company ICE (Instituto Costarricense de Electricidad). During the peak hours (10:00–14:00 and 16:00–20:00), traditional petroleum bunkers produce the electricity; during the rest of the day it comes from hydroelectric plants.

Throughout the wet milling process an average Costa Rican coffee mill is allowed to use almost 22 litres of fresh river water to clean one kilogram of coffee. Organic material coming from the de-pulping process and the fermentation process pollutes this water. Since the mid-1990s (see Section 1.3) regulation has existed that obliges the co-operatives to treat the water before its returned to the river, resulting in the creation of simple waste-water treatment systems based on a number of basins through which the polluted water passes through before it flows back to the river.

Each kilogram of de-pulped coffee produces approximately 250 grams of pulp. Before the 1990s this pulp was sent with the waste-water to the rivers nearby; this not only polluted the rivers, on which the surrounding communities depended, but also polluted the Pacific coast. Since the 1990s, the coffee mills have been separating the pulp from the beans mechanically; the pulp is then transported hydraulically or on a continuous belt to a central collection point, where it is converted into basic compost.

For the drying process, an average coffee mill consumes approximately 0.3 m^3 of firewood per kilogram of coffee, as old-fashioned wood-fired ovens are used to warm up the air for drying the coffee. The origin of this wood fuel are shade trees on the coffee plantations, cut fruit trees from other plantations or waste wood from reforestation projects. In addition to wood, the mills also burn the husk coming from the coffee bean. However, the existing equipment requires a combination of firewood and husk to create enough heat.

From the above, indicators for the following items have been defined:

- Electricity consumption
- Firewood consumption
- Volume and quality of waste-water
- Quantity of organic waste produced in the de-pulping process
- Amount of fertiliser used

- Amount of other agrochemicals used (pesticides and herbicides)
- Soil management through use of shade trees
- Management of solid waste at the farm

Definitions of indicators, and their units of measurement, are listed in Table 1.

Indicator	*Definition*	*Units of measurement*
Electricity consumption	Electricity consumption per unit of product during time-period *t* (September to September)	Kilowatts per kilogram of coffee
Firewood consumption	Firewood consumption per unit of product during time-period t (August to March)	Cubic metres of firewood per kilogram of coffee
Waste-water		
BOD	BOD per unit of waste-water	Milligrams BOD per litre of waste-water
COD	COD per unit of waste-water	Milligrams COD per litre of waste-water
Volume	Volume of river water consumed per unit of product produced	Litres of river water consumed per kilogram of coffee processed
Organic waste from the de-pulping process	Quantity of coffee pulp changed into compost and supplied to others to be used as organic fertiliser during time-period *t*	Kilograms of compost produced per kilogram of pulp generated
Fertiliser use		
Amount used	Amount of artificial fertiliser consumed per *fanega*[a] of coffee produced over time-period *t*	Kilogram/litre of fertiliser per kilogram of coffee harvested
Efficiency	Kilograms of artificial fertiliser consumed per hectare of farmland over time-period *t* as a percentage of the optimal amount of artificial fertiliser, as recommended by the Costa Rican coffee institute (ICAFE)	%

BOD = biological oxygen demand COD = chemical oxygen demand
ICAFE = Instituto del Café de Costa Rica
a A *fanega* is a typical Costa Rican coffee measure, equal to 46 kilograms of coffee.

Table 1 THE SUSTAINABLE COFFEE (SUSCOF) CONSORTIUM: OPERATIONAL PERFORMANCE INDICATORS
(continued opposite)

Indicator	*Definition*	*Units of measurement*
Other agrochemical use (pesticides and herbicides)		
Amount used	Amount of pesticides and herbicides consumed per *fanega* of coffee produced during time-period *t*	Kilogram of agrochemical, per litre of water, applied per kilogram of coffee harvested
Efficiency	Amount of pesticides and herbicides consumed (kilograms of agrochemical per litre of water solvent) per hectare as a percentage of the optimal amount per hectare as recommended by the Costa Rican coffee institute (ICAFE)	Kilogram of agrochemical, per litre solvent, applied per kilogram of coffee harvested divided by agrochemical recommendation of ICAFE
Soil management through use of shade trees		
Number	Number of shade trees used per unit of farmland	Shade trees per hectare
Efficiency	Number of shade trees per hectare as a percentage of the optimal number of shade trees per hectare recommended by the Ministry of Agriculture (MAG)	Shade trees per hectare divided by optimal number of shade trees
Management of solid waste at the farm	Quantity of packaging waste from the farm as collected by the co-operative relative to the total amount of chemical packaging sold to the farmer over time-period *t* (March to March)	%

Table 1 *(continued)*

2.2.3 Management performance indicators

In addition to the operational performance indicators it was important to define management performance indicators to measure those aspects of management that influence the environmental performance of the co-operatives. In the case of the SUSCOF Consortium, the most important management performance indicators are related to the integration of monitoring and control activities at the management level to guarantee good environmental performance throughout the organisation. Also, it was important for management to maintain a good relation with the various stakeholders in the consortium, such as local government, nearby communities, clients and consumers. For this reason the management performance indicators of the Consortium are related to:

- Compliance with environmental regulations
- The execution of internal audits
- Community programmes aimed at environmental protection

- Activities to prepare for emergencies
- Investment in environmental improvements (cleaner-production solutions)
- The training of personnel in cleaner-production solutions

In Table 2 we list the definitions and units of measurement for these indicators.

Indicator	*Definition*	*Units of measurement*
Compliance with environmental regulations	Percentage of cases of regulatory non-compliance (number of cases of non-compliance per time-period *t* as a percentage of the number of relevant environmental laws and regulations)	Number and %
Internal audits	Percentage of internal audits planned per time-period *t* that are actually executed (number of audits completed per year as a percentage of the number of audits planned per year)	Number and %
Community programmes on environmental protection	Number of cases of environmental action taken at the community level during time-period *t*	Number of cases per year
Emergency preparedness	Use of emergency preparedness and response drills to demonstrate planned readiness (number of emergency drills carried out per year as a percentage of the number of emergency drills planned per year)	Number and %
Investment in environmental improvement	Number of environmental measures carried out, by category (good housekeeping, technical improvements, purchase of new equipment)	Number
Environmental instruction and training		
Trainer time	Person-hours dedicated to environmental instruction and training per employee	Person-hours per employee
Trainer time	Number of person-hours of training as a percentage of the number of total working hours	%
Scope	Number of employees involved in environmental training as a percentage of the total number of personnel	%

Table 2 THE SUSTAINABLE COFFEE (SUSCOF) CONSORTIUM: MANAGEMENT PERFORMANCE INDICATORS

2.2.4 Social indicators

In this section we give some brief information as to what social issues are deemed relevant and how they can be evaluated.[2] In general, the social indicators are quite different from the environmental indicators. Costa Rica is advanced in having a social security and educational system that benefits the whole population, including the coffee farmers and workers on farms and in mills. Moreover, the co-operatives in Costa Rica are well-developed organisations when compared with coffee producers in other regions in Latin America.

Factors that tend to threaten Costa Rica's 'social capital' are:

- The current severe crisis in the world coffee market as signified by very low prices, threatening the relatively high standard of living and social security in Costa Rica
- The large number of Nicaraguans that have migrated (either on a seasonal or a permanent basis) to Costa Rica, tending to create a social divide in the country
- Increasing globalisation, which tends to intensify international competition (requiring the development of new market approaches) and puts the Costa Rican welfare state under pressure

Different groups of people can be distinguished when looking at the social situation in the Costa Rican coffee sector: farmers, permanent workers on the (bigger) farms, seasonal workers (during harvest time) and permanent and temporary workers in the co-operatives, both as staff and those working in the mills. Areas requiring special attention are the position of the migrant workers (from Nicaragua), the position of children and the position of women.

There will be a need to distinguish between internal social and labour indicators, to be used as tools to set targets and evaluate performance, and external indicators, to be used as educational and promotional tools for coffee buyers and consumers. This is because of the relatively high level of performance, over a range of indicators, of the Costa Rican co-operatives examined in comparison with coffee producers in other countries in the region. It also points to the need to report on certain key social justice issues, even though they are not considered to be problems in the SUSCOF Consortium situation.

Issues that have been looked into are:

- Organisational aspects within the co-operatives (participation of members in decision-making)
- Economic benefits of the co-operatives, including issues regarding payments of fair prices and decent wages
- Access to public services and to services provided by the co-operatives (such as advice, loans)
- Labour issues on the farms (such as payment, food, lodging)
- Health and occupational safety

2 Information used for analysing the social aspects derives from interviews carried out by Sasha Courville (2001) and a subsequent survey among farmers and staff of the cooperatives by Kenor Ruiz (2001).

3 General conclusions

This paper has examined a range of issues related to how an integrated environmental management system could be a positive option for coffee co-operatives in countries such as Costa Rica, to improve access to the European mainstream coffee market. It has drawn on the experiences of the SUSCOF Consortium of six coffee co-operatives in Costa Rica, which are currently using a set of environmental and social indicators within their ISO 14001-certified wet and dry coffee processing plants, called *beneficios*, and their (partly EurepGAP-certified) coffee farms.

The usefulness of existing corporate social and environmental responsibility tools can be highlighted. First, while the choice of these tools will be at least partially determined by market access requirements, it is also important to work with tools that fit well into the corporate context and meet the organisation's objectives. It is also important to understand that no single tool will meet all sustainability requirements so that complementary management support may be needed. For instance, while GAPs are useful in addressing the use and reduction of agrochemicals, they do not reflect other social justice issues that are of concern to the SUSCOF co-operatives and to end consumers in Europe and North America. A further key result is that the only way to make GAP certification cost-effective for small and medium-scale producers is through a collective system of administration and control run by the co-operatives. The costs of certification for individual farms (except for large ones) would be strongly prohibitive.

ISO 14001 can be an effective tool in the implementation of environmental management systems. However, without concrete targets and sustainability indicators that measure performance against these targets, it is a rather poor vehicle for external communication. ISO 14001 can be an effective framework for driving real change through its core concept, i.e. continuous improvement. However, this requires a complementary framework of measurement and monitoring such as the previously discussed set of sustainability indicators based on ISO 14031. For small co-operatives it may be even recommended to implement ISO 14031 only.

Also, in the context of agricultural systems, if sustainability is to be achieved at the farm level the farmers themselves need to be involved at all levels of the process, from the choice of sustainability indicators, to the gathering of information, right through to participation in decision-making structures that oversee the implementation of the management systems. This, however, was complicated by the large numbers of farmers involved in the SUSCOF Consortium and the fact that farmers usually act as independent managers. Strong co-ordination is required to ensure that farmers actively participate in the implementation of project activities and that the results are meaningful to them in the context of their day-to-day work.

Finally, as has been expressed in this paper, the general social situation in Costa Rica is favourable and could be used as a selling point: buying Costa Rican coffee means buying a product that meets social standards and helps to sustain those benefits. The most positive options emerging from the coffee crisis is indeed the development of a marketing strategy that is based on economic, ecological and social sustainability and a high-quality product. The SUSCOF Consortium represents an inspiring initiative in this area, even though it will require a great deal of vision and perseverance to develop these first steps into a durable policy of continuous improvement.

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