Closing the Gaps in GAPS:

A Preliminary Appraisal of the Measures and Costs Associated with Adopting Commonly Recognized "Good Agricultural Practices" in Three Coffee Growing Regions

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Lead Author:

Jason Potts

Supporting Authors:

Michael Opitz
Chris Wunderlich

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INTRODUCTION

With the Rio Earth Summit came an unprecedented recognition of the critical state of the environmental and social well being of the planet and the need for immediate and concerted action towards positive change at the global level. In response to the global call for the "internalization" of sustainable production and trading practices[1] consumers, producers, NGOs and industry alike have increased the intensity of efforts to improve the positive social, economic and environmental impacts of their respective economic activities. One of the principal outcomes of these efforts has been a virtual explosion in the number and range of voluntary, standards-based initiatives for defining, implementing and enforcing the application of sustainable practices in a wide variety of sectors and services. The coffee sector, in part due to its overall size and its importance to the livelihoods of more than 25 million people worldwide, has offered itself as prime breeding ground for the development and implementation of different voluntary initiatives for sustainable development.

Over the course of the past fifteen years, such initiatives have branded themselves as "best" or "leading" practices in the sector, thereby, implicitly at least, limiting themselves to niche markets. The initial growth of these initiatives in the coffee sector has been driven by the parallel growth of a high value specialty coffee market which has found added value in marketing sustainable practices as part of a new vision of "total quality" for increasingly refined and demanding consumers. More recently however, efforts have focused on instruments for promoting sustainable practices across mainstream supply chains as the course of "everyday business".[2] Whether as an opportunity to access higher value markets or as an opportunity secure market access and trading relationships within mainstream markets, producers have a growing need to be able to assess the actions and associated costs and benefits with becoming compliant with "recognized" sustainability systems.[3]

[1] Principles 8 and 16 of the Rio Declaration call for the establishment of sustainable consumption and production and the internalization of environmental costs respectively. See Rio Declaration at http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=78&ArticleID=1163

[2] Some of the most recent initiatives, such as the Common Code for the Coffee Community and Utz Certified have focused explicitly on serving mainstream markets.

[3] The definition of what constitutes "sustainable practice" is itself both a highly contested and regionally sensitive matter. Nevertheless, a number of initiatives have developed with a view to generating a degree of "market convergence" around generic definitions.

The growing demands of consumers, particularly those in mainstream markets, for "sustainable" coffees has placed growing pressures on producers to join one or another standards-based initiative in order to maintain market access and/or to establish preferential supplier status.[4] Investments into sustainable practices are an unlikely option for any coffee producer if the revenues associated with such investments do not compensate for the investments themselves. In the context of smallholder producers who face deeper infrastructural constraints in meeting sustainability requirements AND have minimal savings to invest in meeting such requirements, the growing standardization of coffee markets can even represent a threat to their very livelihoods.

The costs of adopting sustainable practices at the farm level can manifest themselves in a variety of ways. Costs may increase as a result of direct investments, increased administrative costs or reduced overall productivity associated with "sustainable" practices. Although no multi-initiative, generic studies on the full costs and benefits of such initiatives for coffee farmers exists to date,[5] there is a general recognition that some of the most important costs associated with such initiatives are linked to specific activities undertaken in making the *transition* from non-compliance to compliance with sustainability requirements.[6] Drawing from this general observation, IISD, EDE and USAID have teamed together under the guidance of the Sustainable Coffee Partnership, to undertake a preliminary investigation on the actions and costs associated with making a transition to select sustainability standards serving the mainstream coffee sector. Sine different farms will, face varying challenges in reaching compliance with different standards systems depending on their respective geographical, climatic and historical conditions, three countries which exhibit diverse production systems and organizational capacities were selected as "test cases" for assessing the gaps between existing practices and "compliant practices", as well as estimates of the costs for adopting those practices required by most mainstream sustainability initiatives.

Following an overview of the research methodology, the paper provides a description of the testing regions and the different standards programs considered for the purposes of this study. It is worth noting that due to limited resources, this project only considers standards with a specific emphasis on mainstream markets. Moreover, in an effort to get a sense of the *fundamental* challenges facing small producers across the different regions, a set of "benchmark requirements" were extracted

[4] We refer to coffee and practices required by sustainability initiatives as "sustainable" coffee and practices respectively. Since one of the underlying purposes of the research is to determine the costs of transition in adopting such systems, no assumptions are made about the *actual* sustainability of the systems referred to. Our use of quotation marks here is intended to underline the inconclusiveness of the term. For the remainder of the paper, when we refer to "sustainable coffees" or "sustainable practices" (with or without quotes), it should be understood as coffees or practices which are compliant with a given system, and NOT as necessarily indicating the "true" sustainability of the coffees or practices.

[5] The Sustainable Coffee Partnership is in the process of implementing a broader generic study under its "Committee on Sustainability Assessment"—also known as the COSA project. See www.iisd.org for more information.

[6] The transition costs associated with standards compliance are distinguished from the certification costs (the certification/verification fees associated with compliance) and the maintenance costs (ongoing costs associated with compliance).

from the core group of standards. The set of benchmark requirements is drawn from a comparison of the different standards systems (Section 6) and listed in Section 7. Section 8 of the document lists the results of the gap analysis at the field level for the case study regions. In addition to listing the gaps between benchmark requirements, this section lists the specific actions needed for each region in order to address the identified gap. In section 9 a rough estimate of the costs, based on the necessary actions for attaining compliance are listed. The paper then concludes with an analysis of additional considerations and recommendations for action among policy makers and donors.

PROJECT RESULTS

The main findings and conclusions of the report can be summarized as follows:

1. A number of actions are required across the three case study regions in order to enable standards compliance. The principal areas where action is needed relate to:

- Improved worker, financial and environmental management
- The purchase and use of protective clothing for safe chemical application
- The construction of hygienic waste treatment facilities, including the construction of adequate toilets
- The application of improved pest management techniques
- The planting of shade trees

2. The per quintal costs of compliance with a basic set of "Core Criteria" across the case study regions were found to be:

- $9.12 US for farms in the Espirtu Santo region
- $8.03 US for farms in the Cuscatlan region
- $37.51 US for farms in the Bagasa region

The main sources of these costs were related to maintenance costs (implementing preferred pest management practices, improved water quality and safer chemical application) and opportunity costs (due to the setting aside of productive land as per the requirements of standards). Although less important over the long term, the most important "initial costs" are those associated with the initial transition to compliance. These initial investment costs represent between 65% and 70% of the first year expenditures for compliance (as measured in this study).

Since the conditions of coffee production differ widely between countries and even between regions within countries, the precise details of this study cannot claim to be representative of coffee production in general. Problems in regard to major sustainability criteria differ depending on the region's geography, prevailing climatic conditions, farming and management practices as well as the general social and economic situation of producers. Furthermore, with regard to many criteria

for sustainable coffee production, there is often no consensus on how they should be measured or applied. This general context renders it impossible to give anything other than indicative measures on the actions and costs for compliance based our limited case studies.

Notwithstanding these challenges, our research does reveal several systemic obstacles facing smallholder producers in attaining compliance to sustainability standards. Based on these systemic obstacles, our report offers the following four key recommendations:

> ***Recommendation 1: The international community should make significant investment in management and financial literacy training which links good management practice to compliance with recognized practices.***
>
> ***Recommendation 2: The international community should invest directly in the facilitation of enhanced producer organization in impoverished producer regions. Such investment needs to be linked directly to management and financial literacy training.***
>
> ***Recommendation 3: The international community needs to help free the availability of affordable credit to smallholder producers committed to adopting sustainable practices by investing in "sustainable finance mechanisms".***
>
> ***Recommendation 4: The international community needs to invest in research aimed at identifying the full costs and benefits associated with the adoption of practices associated with sustainability standards.***

METHODOLOGY

The main objective of this project was to:

1. identify the gaps between existing practices and "sustainable practices" as defined by select standards initiatives
2. identify the specific actions required to close the identified gaps towards compliance
3. identify the costs associated with closing the identified gaps towards compliance and
4. provide an summary of the key challenges facing producers in making the transition to sustainable practices (as defined by the selected initiatives)

Importantly, the research was designed with a focus on concrete actions based on specified requirements and actual costs. The specific steps of the methodology for meeting the objectives were:

1. Strategic selection of the testing regions
2. Benchmarking of standards and indicators
3. Field visits by auditors
4. Producer workshops and compliance analysis
5. Cost of transition calculations

Below we consider each step of the methodology in more detail:

SELECTION OF THE TESTING REGIONS

In an effort to maximize the representativity of results across the coffee growing community with the limited resources available, three coffee growing communities were selected based on: 1. the size of the farms in the community 2. geographic characteristics, organizational infrastructure and coffee types and 3. willingness and availability of regional farmer groups to participate in the study.

Since the majority of coffee producers are smallholders and smallholders are likely to suffer the greatest challenges in meeting the demands of sustainable supply chains it was decided at the outset to focus only on the gaps facing smallholder producers.[7] A special effort was made to select a group of producer communities which displayed both: robusta and Arabica production; high and low elevation production; and differing degrees of infrastructural development.

BENCHMARKING OF STANDARDS AND INDICATORS

Since different sustainability systems vary in the depth and breadth of the practices they require, the effort to identify "systemic" gaps between existing practices and "sustainable" practices necessitated the identification of the core features required by diverse sustainability systems. Moreover, given the fact that initiatives tend to be defined in terms of the markets they serve and the fact that the growth in mainstream markets for sustainable coffees has a particularly important potential to impact the coffee sector as a whole, there was an immediate rationale for focusing on sustainability initiatives specifically targeting mainstream markets.

[7] OXFAM estimates that 70% of all coffee producers are smallholders with less than 5 hectares of land. See, for example, OXFAM GB, *The Coffee Market: A Background Study* (OXFAM, 2001), at 1.

With this in mind, the first step in the research consisted of an analysis of the different systems with significant presence in, or application to, mainstream markets—namely, Rainforest Alliance, Utz Certified, NKG Sustainability Index, SAI Platform Principles and the Common Code for the Coffee Community (4Cs). With the exception of Rainforest Alliance, each of these standards-based systems were developed with strong leadership from the mainstream sector and, as a consequence, have been readily accepted and applied in mainstream supply chains. Under the initial analysis of the different systems, criteria shared across multiple systems were extracted to establish a master list of "core" sustainability criteria. If a particular criteria was found to be present in two of the five systems, it was considered eligible as a "Benchmark Requirement" under our analysis. . The specific indicators under each theme were established as a qualitative average of the different requirements across the respective standards.

FIELD VISITS BY AUDITORS

Field auditors experienced in auditing farms for the respective standards were commissioned to visit farms using the master list as the reference point for measuring the gaps between existing practices and compliance with the baseline or core criteria identified in the master list.[8] Combined together a total of more than 2,800 farms were located within the "research area". Measurement of the actual farm conditions was conducted using sampling based on the following formula according to procedures typically applied by certification agencies in their own monitoring of farm compliance:

$$n = \sqrt{N} * 1{,}5$$

where N represents the total number of farms and n the number of farms sampled. Following this procedure, a total sample size of 120 farms was selected representing 24 farms in El Salvador, 74 farms in Uganda and 22 farms in Brazil. In all three countries, individual farms were selected randomly with adjustments to ensure representativity of social and socio-economic conditions.

Farm evaluations were undertaken according to normal procedures applied by certification agencies. These were followed by interviews with farmers using a semi-structured questionnaire including the criteria that were identified as being most important in the benchmarking of standards. The results of the individual farm visits were compiled in the form of regional baseline reports which formed the basis of identifying the actions necessary to reach compliance.

[8] Although an evidently imperfect system for determining actual costs of compliance, by adopting a common baseline of requirements, the project aimed to establish a conservative estimate of the requirements associated with transition to standards compliance.

PRODUCER WORKSHOPS AND COMPLIANCE ANALYSIS

A matching of the baseline reports and the "Master List" of core requirements for compliance with the different sustainability initiatives was conducted to produce a list of the principal gaps between existing practices and "compliant" practices. These results were presented before workshops of local producers in order to jointly identify the specific actions required to attain compliance in the specific instances. Since the possible remedies available in any given region depend fundamentally on the regional geographic, cultural and infra-structural conditions, the joint identification of remedial actions was deemed to be a critical stage of the analysis.

COST OF TRANSITION CALCULATIONS

Following the identification of both the gaps and the remedial actions for attaining "generic compliance" costs for implementing the respective actions required were estimated. To the degree possible, costs were calculated on actual costs of goods and services in the regions. In cases where the services and activities were relatively novel, pricing had to be calculated based on extrapolation from known costs and expenses. Given the overall novelty of making the transition to sustainable practices, the calculation of the costs of transition must be considered tentative at best.

DESCRIPTION OF TESTING REGIONS

Drawing from EDE's wide range of partners and ongoing activities and the interest in selecting a geographically diverse sample size of producers from the smallholder category, coffee growing communities in El Salvador, Brazil and Uganda were selected for the gap analysis. The general characteristics of the production areas covered by the research are described below.

EL SALVADOR: ACOBOQUERON AND CUSCATLAN COOPERATIVES

Total number of farms: 270

Type of coffee: 100% Arabica

Producer Organization: members of cooperatives

Productivity: 506 kg per hectare

Average farm size: 7,4 hectare

General Characteristics: The Cooperative Acoboqueron is located at the top of the San Salvador Volcano about 1200m above sea level, 20 km from San Salvador city. The cooperative of Cuscatlan is located close to the city of Cojutepeque about 500-900 m above sea level. The membership of the two cooperatives is made up almost entirely of traditional shade grown farms.

UGANDA: MASAKA DISTRICT

Total number of farms: 2400

Type of coffee: 100% Robusta

Producer Organization: Depot Committees

Productivity: 325 kg per hectare

Average farm size: 1-2 hectare

General Characteristics: The Masaka District is located in the central region of Uganda, an area heavily dependent upon coffee production as the primary source of income. The coffee farms selected for the research are located in the Bigasa Sub-county which is about 1,200 m above sea level and 300 kms from Kampala. Traditionally coffee in the region is grown in an "African Garden System" in combination with food crops under shade conditions with minimal inputs.

BRAZIL: ESPIRITO SANTO

Total number of farms: 200

Type of coffee: 40% Arabica; 60% Robusta

Producer Organization: Federação de Cafeicultores de Iúna e Irupí (FACI) in the Arabic producing area and (in formation) the Rede Agroecologica in the Robusta area

Productivity: Arabica, 840 kg per hectare Robusta, 660 kg per hectare

Average farm size: Arabica, 25-30 ha; Robusta, 15-20 ha

General Characteristics: Espirito Santo is the second largest coffee producing state in Brazil in terms of volume produced. Of its 70,000 coffee farms about 80% depend upon coffee as their primary source of income. Farms in the municipalities of Iuna, Irupi, Marechal Floriano, Domingo Martins (Arabica) and Rio Bananal, Sao Gabriel da palha, Vila Valerio and Jaguare (Robusta) were selected

for the purposes of the research. Elevations of the selected areas range from 500 to 1,100 m in the Arabica and 150 to 300 m in the Robusta areas.

STANDARDS OVERVIEW

RAINFOREST ALLIANCE

Rainforest Alliance (RA) is an internationally recognized, non-governmental conservation organization established in 1987 in New York with operations around the world. Together with the Sustainable Agriculture Network, a network of national level, Latin American conservation NGOs, RA developed its own generic standards for sustainable agriculture. The organization works on certification of products on a commodity-by-commodity basis and so far has certified bananas, cocoa, citrus, cut-flowers and coffee. Coffee is one of the leading agricultural products certified by RA. Their work for promoting sustainable coffee has gained prominence due to focused work on marketing and field training related to the uptake of RA certified coffees.[9] Although RA is building its international presence, it has predominantly focused its operations in Latin America in the past.

Rainforest Alliance certification incorporates conservation and social standards based on 9 guiding principles:

1. *Ecosystem Conservation: Agriculturists should promote the conservation and recuperation of ecosystems on and near the farm.*
2. *Wildlife Conservation: Concrete and constant measures must be taken to protect biodiversity, especially threatened and endangered species and their habitats.*
3. *Fair Treatment and Good Conditions for Workers: Agriculture should improve the well-being and standard of living for farmers, workers and their families.*
4. *Community Relations: Farms must be "good neighbors" to nearby communities and a part of the economic and social development.*

[9] Kraft Foods Inc. for example, announced a cooperative agreement with RA in 2005 to support the development of sustainable coffee production in areas in Mexico, Colombia, Brazil and Central America and, in particular, to market RA certified coffees to consumers through Kraft's customer base. RA has also recently received a major grant from the Global Environment Facility to train producers in sustainable practices aimed at promoting biodiversity in Latin America.

5. *Integrated Crop Management: Farmers must employ Integrated Crop Management and strictly control the use of any agrochemicals to protect the health and safety of workers, communities and the environment.*

6. *Complete, Integrated Management of Wastes: Farmers must have a waste management plan to Reduce, Reuse and Recycle wherever possible and properly manage all wastes.*

7. *Conservation of Water Resources: All pollution and contamination must be controlled and waterways must be protected with vegetative barriers.*

8. *Soil Conservation: Erosion must be controlled and soil health and fertility should be maintained and enriched where possible.*

9. *Planning and Monitoring: Agricultural activities should be planned, monitored and evaluated, considering economic, social and environmental aspects.*

The cost of transition to certification and certification under RA are paid by the producer. Such costs include (but are not limited too), completion of a diagnostic audit (optional), the development of an audit plan, a full certification audit, documentation costs and annual audits. Although costs vary depending on location and current state of the farm, the average cost for conducting an annual farm audit ranges between $250 and $500 per annum. In addition to paying for verification costs, RA certified farms must also pay an annual fee of $5-$7.50 per hectare.

According to estimates from within the industry premiums for Rainforest certified coffees typically range from US$ 0.10 to US$ 0.15 per pound, with occasionally higher or lower numbers being quoted. Because trading volumes are still relatively small and transactions not individually tracked, it is difficult to disaggregate certification premiums from premiums paid for quality. RA has plans to implement a basic tracking system in order to improve transparency and the understanding of the market dynamics.

UTZ CERTIFIED

The Utz Certified Code of Conduct was originally developed by a consortium of Guatemalan growers-exporters together with the Netherlands based Ahold Coffee Company. Its standards are based on the Eurepgap protocol for fresh fruits and vegetables, which were then adapted to coffee. As such, the standard uses food safety issues as a "window" for addressing other sustainability issues.

Although Utz Certified is a standard system open for certification, Utz, unlike RA, does not actually provide certification services, but rather instead relies upon independent certifiers which are accredited by Utz.

Like Eurepgap more generally, the Utz system uses an approach of differentiating between "major must", "minor must" and "recommended" practices. As with RA, Utz provides for the monitoring and evaluation of continuous improvement on all "non-obligatory" measures.

To support producers who wish to become certified, Utz maintains a database of producers seeking certification for which they look for external support. Utz also has an online database of certified producers allowing easy sourcing of certified coffees by importers and traders. Utz does not require producers to pay any annual fee for certification other than the cost of verification itself which costs between $250-$500 per annum.

In order to use the Utz trademark, buyers must pay Utz Certified $0.01 USD per lb green coffee. Buyers are also expected (but not required) to pay a "sustainability" differential. Utz Certified does not directly get involved in price negotiations but does make recommendations when coffee prices are low.[10] In order to help producers negotiate a fair premium for Utz coffee, an open database recording recent prices of transactions for Utz Certified coffee is made available to certified producers.

Estimates of premiums received by producers for Utz certified coffee range from $.03 to $.10 per pound of green coffee.

NKG SUSTAINABILITY INDEX

The NKG Sustainability Index is designed as an instrument for the assessment of coffee farms with regard to their social and environmental performance. The criteria included are based on the NKG Sustainability Standards.

The NKG Sustainability Standards represent guidelines for NKG farming operations. As a general rule, it is understood that the implementation of the NKG standards are to be implemented on a gradual basis according to economic capacity.

The NKG Sustainability Index was designed to monitor implementation of NKG Sustainability Standards, identifying areas of progress and obstacles. It addresses 10 key criteria of the NKG Sustainability Standards. For each of these criteria, farm performance is evaluated based on a set of indicators. A maximum of 10 points can be reached for each criterion.

The NKG Sustainability Assessment includes 10 criteria. Five criteria refer to environmental standards and five to social criteria. 10 points are rewarded for each of the social and environmental criteria. For compliance with sustainable social and environmental standards a farm can therefore reach 100 points, which may be rewarded with a proportionate price differential.

[10] For Arabica coffee trading at $0.70 per lb on the New York market (excluding normal quality differentials), they recommend sustainability differentials of $0,07/lb for washed and $0.04/lb for unwashed Arabica. For Robusta coffee trading at $650 per ton on the London market (excluding normal quality differentials) they recommend $100/ton for washed and $60/ton for unwashed Robusta.

The environmental and social criteria are

1. Shade and Biodiversity
2. Water Use, Conservation and Protection
3. Management of Waste and Crop by-products
4. Soil
5. Integrated Management and Energy Use
6. Child Labour and Education for children on the farm
7. Salaries
8. Health
9. Training and Work Safety
10. Living Conditions for Workers on the farm

The NKG Sustainability Index does not represent a certification tool for the NKG Sustainability standards in a conventional sense, since it neither includes all aspects of the standards, nor relies on any specific system for certification. Instead the 100-point system is designed to provide a basic reference point in order to measure performance and provide incentives towards continual improvement over time. Although no label is associated with the NKG index, it is intended as a business-to-business measure which helps buyers locate sustainable coffees as increasingly required by their customer basis. The NKG Index is designed for mainstream rather than niche markets and is still developing the framework for long term monitoring of performance across its indicators. As such there are no "formal" costs associated with NKG compliance other than the transition costs associated with adopting the practices. Similarly, no market premiums have been recorded for NKG compliant coffee.

COMMON CODE FOR THE COFFEE COMMUNITY - 4C

The Common Code for the Coffee Community is a market-based industry-led multi-stakeholder initiative aimed at promoting and encouraging sustainability in the mainstream green coffee chain. The initiative arose out of a public-private partnership between the German Coffee Association and the GTZ with stakeholders involved on a consultative basis throughout the project. The initiative led to the formation of the 4C Association in September 2006 with a secretariat shared between the European Coffee Federation and GTZ. Like the NKG index and Utz Certified, the 4C's is specifically designed to provide a supply of "responsible" coffee to mainstream markets.

The Common Code for the Coffee Community is structured in two main parts: a list of "Unacceptable Practices" (principles without criteria and/or indicators) but which are prohibited outright and the "Common Code Matrix", which defines the desired performance levels for different criteria. The Matrix consists of categories, principles and criteria. The categories refer to the main aspects of the production, post-harvest processing and trading of green coffee, whereas principles are positive statements that indicate the desired performance for each of the listed practices. In order to assess the performance of a Common Code Unit,[11] criteria specify the compliance with the requirements of the Principles based on a "traffic light system" illuminating the concept of continuous improvement (similar to Utz Certified). In this system red indicates that the current practice must be discontinued immediately; yellow indicates that a transition period to develop sustainable practices and the process of continuous improvement have started; and green reflects a desirable practice. The 4C matrix does not specify incentives for promoting movement along the path of continual improvement other then describing the ideal situation under the green criteria which farmers should approach over time. Within the self-assessment form it provides guiding examples is a means of indicators enabling the users' classification in accordance with the criteria of the traffic light system.

The main philosophy underlying the traffic light system approach of the 4C's is that desirable practices (green lights) can be traded for undesirable practices (red lights) with "average yellow" providing the minimum basis for a status of "4C compliance". Until now, 4C is neither a certification programme nor a label. The matrix is considered a living document subject to change with the inputs from the results from first verifications, the performance of 4C Units and pilot projects.

SUSTAINABLE AGRICULTURAL INITIATIVE PLATFORM (SAI):

The Sustainable Agriculture Initiative Platform is an association of traders, processors and manufacturers involved in mainstream agricultural supply chains. The aim of the SAI is to establish and promote sustainable practices for mainstream agricultural raw materials that can be adopted by the majority of farms serving mainstream supply chains. SAI Platform's members believe that sustainable agriculture is a long-term goal based on a continuous learning process. Its definition of sustainable agriculture is "a productive, competitive and efficient way to produce high-quality raw materials, while at the same time protecting and improving the natural environment as well as the socio-economic conditions of local communities".

The SAI platform contains 5 commodity based working groups. The working group on coffee formulates its vision as "through a market-based approach contribute to establish a common sustainability standard for coffee, guidelines for implementation, supported by appropriate indicators for monitoring and verification." The coffee working group of the SAI platform is distinguished by having representation of institutions which account for more than 50% of the world's coffee manufacturing and trading of coffee. The organization works on identifying practices for sustainable coffee production as well as developing tools and instruments that facilitate their

[11] A "Common Code Unit" is the minimum size body certifiable by the 4C's. Although no Common Code Unit's were formally established at the time of writing, it has been hypothesized that Common Code Units could range from estates, to coffee cooperatives to national trading boards.

implementation. Toward this end, the coffee working group developed its own set of standards as a basis for guiding the mainstream sector towards a gradual increase in the amount of sustainable coffees traded and consumed world-wide.

The principles and practices of the SAI platform coffee working group contain requirements on:

- Diversification
- Sustainability management and record systems
- Harvest and post-harvest treatment
- Economic performance and management
- The respect for relevant legislation and international conventions regarding social aspects
- Child/forced labour
- Health and safety
- Training and capacity building
- Biodiversity and ecosystem conservation
- Soil conservation
- Water use, conservation and protection
- Integrated crop management and appropriate use and handling of agricultural inputs
- Integrated waste and crop by-product management

SAI practices are neither a certification programme nor a label and therefore have neither any certification or verification costs associated with them. Similarly, no premiums have been recorded for "SAI compliant" coffee.

COMPARISON OF PROGRAM REQUIREMENTS

ENVIRONMENTAL DIMENSION

Environmental criteria have the longest history as criteria for sustainability. As such, it comes as no surprise that the environmental dimension tends to be the strongest overall across the five

standards systems analyzed. Among the different standards analyzed, RA has the most detailed environmental criteria.

All of the standards except for the NKG Index[12] base their environmental requirements on the design and implementation of a "farm management plan". This is a universal starting point for the implementation of the environmental component of any sustainability system. Utz Certified and RA require considerable documentation of farm practices—a feature which distinguishes them from the 4Cs, SAI Practices or NKG Index.

Utz Certified, SAI and RA each specify detailed requirements for the application and storage of agrochemicals. All of the standards except for 4Cs contain detailed requirements related to the management of soil fertility. The SAI Practices, RA and NKG each have detailed requirements with respect to the number and variety of shade trees used on farm. The 4Cs, in addition to not having any specific requirements on shade coverage, has no requirements related to chemical application or storage.

With regard to the criterion "Conservation of water resources", RA is the only one among the five standards analyzed that addresses quality of drinking water and requires periodic monitoring of its physical, chemical and biological characteristics. RA also has specific guidelines for buffer zones around natural waterways. All other Standards refer only to irrigation and processing water. Utz Certified requires an annual assessment for the risks of water pollution or contamination by irrigation/fertilization and requires a waste management plan.

The SAI Practices, Utz Certified and 4Cs, in contrast to RA and the NKG Index, specify the obligation to use renewable energies where possible.

SOCIAL DIMENSION

The Social Dimension, although widely recognized as a core variable in determining sustainability at the level of agricultural production, has proven itself far more difficult to quantify and measure. The degree of specificity which the different standards have developed in the social dimension reflects the particular difficulties associated with characterizing social performance based on generic criteria. Nevertheless, the standards considered illustrate that considerable advances have been made on this front over the past decade.

The greatest degree of overlap and consistency between the different standards programs for social criteria is found in criteria related to labour standards. All the standards considered except for the NKG Index prohibit the use forced labour. The 4Cs, Utz Certified and RA oblige producers to respect ILO conventions 29 and 105. RA provides the most detailed requirements with respect to the employment of children between 14 and 18. The SAI practices, on the other hand, stipulate that

[12] Note that the NKG Standard (as opposed to the NKG Index) actually does stipulate the need for an environmental management plan.

producers respect the Universal Declaration of Human Rights article 26 which provides for the right of everyone to have an education. Utz Certified demands evidence of "awareness raising" in cases where children do not go to primary school. Similarly, SAI and the 4Cs matrix require positive action for the "education of children" to be undertaken. SAI and NKG explicitly allow child labour as part of family work, but only if certain requirements are fulfilled (i.e. the children are not forced to work, do not work during school hours and are not exposed to hazardous work). SAI is the only standard to explicitly require literacy training for children and workers.

RA, the 4Cs and SAI Practices each specify that overtime work needs to be remunerated accordingly, while Utz Certified and the NKG index specify that practices must be in comformity with applicable national and international regulations. In the case of Utz Certified, the responsible person on the farm has to prove awareness of national regulations on employment contracts and regulations. All of the standards except NKG and the SAI Practices require written employment contracts.[13] 4C is the only standard explicitly prohibiting the trafficking of persons. This criterion is categorized as an "Unacceptable" in the 4C matrix.

Both the 4Cs and RA require proof that workers are not discriminated against while RA and the NKG Index provide detailed requirements on Occupational Health and Safety (including the requirement for training, proper safety equipment, monitoring of access to potable water, and access to medical services). Utz Certified requires a risk assessment for working conditions and a documented action plan for promoting safe and healthy working conditions as well as the presence of a person trained in First Aid on the farm premises.

RA is the only standard to provide explicit protection of freedom of association and collective bargaining but this does not extend to a protection of producer rights to form cooperatives per se. The 4Cs and NKG Index, on the other hand, emphasize the right/importance of producers to be members of producer organizations and cooperatives.

While all of the standards require the provision of basic services and living conditions for workers (eg,. specifications on the location of the housing, conditions for basic health, access to education, medical services, transportation to work and entertainment), only the 4Cs extends such requirements to include producers themselves. For 4C this indicator refers to all workers on the farm and in the case of small farmers also to their own conditions. The other standards address workers and their families but do not state explicitly producers.

ECONOMIC DIMENSION

The economic dimension of sustainability, although always regarded as being fundamental to overall sustainability, has traditionally been regarded by mainstream sustainability standareds as being "automatically determined" through market interaction. Only recently (and largely through

[13] Note that for the 4C's written contract qualify as "desirable practice' but are not in fact "required".

the growing presence of Fair Trade) have different standards systems made express attempts to stipulate specific economic criteria as part of the overall standards package they offer.

Economic sustainability, as a distinct concept, is included in the Utz Certified Code, SAI practices and the NKG Standard and Index and the 4C. However, 4C only addresses the issue in terms of availability of market information and access to credit for producers. For Utz Certified aspects of economic sustainability are part of their general procedures and implementation phase, such as support at the point of trading. SAI practices and NKG Standard and Index emphasize the importance of building producer skills in areas such as basic accounting, evaluation of their business in order to become economically viable, financial management and an understanding of their costs and benefits—but do not provide any specific instruments or means for actually meeting these objectives.[14]

The RA and the SAI Practices are the only standards to explicitly mention the contribution of sustainable practices to the economic well being of the community. The RA standard requires explicit promotion of community well being whereas the SAI Practices rely upon the (expected) indirect impact of improved economic well being of individual farmers on community well being.

The RA standard requires a management system to be in place and demands a considerable amount of documentation.

Only the 4Cs matrix and the SAI Practices make explicit reference to the provision of consistent quality as part of the standard although it is assumed that many of the technical requirements related to the different standards are likely to have impacts on quality one way or another.

The 4C Matrix and SAI practices are the only two standards that specifically mention access to market information and market transparency. However, this criterion is also dealt with by Utz Certified's general procedures and marketing services.

NKG and the SAI Practices, in contrast to the other standards, explicitly mention the need to promote diversification, but these are not listed as requirements.

Traceability is a core component of both RA and Utz, both of which are managed through the distribution of legal rights with respect to trademark claims made between supply chain actors in the market. In order to meet the traceability requirements, producers and producer organizations are required to implement detailed documentation systems for their certified coffees.

4C is the only standard that addresses equitable business relationships and lists immoral transactions in business relations as an unacceptable practice.

[14] Note that the development of such skills is not, however, a requirement of the standards, nor are any specific provisions made to actually develop such skills under these systems.

One of the key challenges in measuring the gaps between actual practices and the prescribed practices of the different standards is the general absence of clear, generally applicable indicators and/or cut-off points with respect to criteria compliance. This is, of course, due to a number of factors, not the least of which is the need for flexibility in the definition and implementation of sustainability in different geographic and cultural conditions. Other factors include a lack of resources and infrastructure for the actual monitoring and implementation of prescribed standards. Regardless, it is worth underlining that none of the existing certification programs contains a complete set of clear, comprehensive, objective and quantitatively measurable indicators equally applicable to all of the regions investigated in this study. In practice, all certification programs rely on some adaptations of their general standards by trained auditors when applying them in the field taking the specifics of the individual farm into account. All of the existing certification standards are therefore to a certain degree flexible and farms are evaluated on a case-by-case basis according to the auditor's judgment. Since this is general practice in the certification business, the approach taken for the gap analyses had to work in a similar way.[15]

In order to facilitate the measurability of current performance against the "expected performance" of the different sustainability systems serving the mainstream sector, we extracted a set of "Core Criteria for Sustainability" as determined by existing standards.

TABLE 1: FROM CODE CRITERIA AND "CORE CRITERIA"

Criteria	4C	Utz Certified	SAI	Rainforest Alliance	NKG Standards and NKG Sustainability Index

[15] The need for more exact and transparent indicators is detailed in Appendix 2.

Criteria	4C	Utz Certified	SAI	Rainforest Alliance	NKG Standards and NKG Sustainability Index
1. *Freedom of Association and Collective Bargaining* Core elements: - Right to organize and to collectively negotiate working conditions. - No discrimination against members of unions or other worker organizations.	Core elements are included * Organization means trade unions for workers + for farmer cooperatives, associations… Differentiation of workers and producers will be addressed by the indicators in respect to ILO Conventions. Make clear, that for workers this includes the right to found and to be represented by unions ("real unions"). Address indigenous organizations. Reference to ILO Convention 87 and 98	Core elements are included. Evidence that the employer supports freedom of association is a major must. The right to perform collective bargaining is required.	Core elements are included. Freedom of association and the right to collective bargaining shall be respected	Evidence must exist that the producers has facilitated or allowed right to organize. Procedures must be in place so that the working population is aware that they can complain to SAN Members. Producer must consult and inform workers about all technical or organizational changes. Reference to ILO Convention 87 and 98	Partially included. Collective bargaining is not mentioned explicitly. Reference to "core ILO standards". For small producers active participation in farmer associations is demanded.

As a general rule, a specific criteria had to be found in two or more standards in order to be considered a "core criteria". What follows is a listing of the core criteria as drawn from the in-depth analysis of the different standards found in Appendix 1:

TABLE 2: CORE CRITERIA BENCHMARK TABLE

Benchmarking Requirements	
General Criteria	***Core Elements***
Social Criteria	
1. Freedom of Association and Collective Bargaining	- Right to organize and to collectively negotiate working conditions. - Prohibition of discrimination against members of unions or other worker organizations.
2. Discrimination	- Prohibition of discrimination based on sex, religion, nationality, political affiliation, ethic group, trade unions.
3. No Trafficking of persons	
4. No Child Labour	- Children have access to education - Children have protection from risky activities.
5. No forced labor	- Forced labor is prohibited within the farms
6. Written Contracts	- Workers receive written and legally registered labor contracts
7. Working Hours	- Comply with national and international law
8. Occupational Health and Safety Conditions	- Avoid unhealthy working practices - Access to medical services - Access to potable water - Training in health and safety issues
9. Living conditions	-Permanent and temporary workers that live at the farm should have adequate living conditions with basic services.
10. Adult literacy is promoted.	- All farmers know how to read and write and have basic mathematical knowledge
Environmental Criteria	

Benchmarking Requirements	
11. Diversified shade	- Minimum number of trees and different species per hectare - Presence of native species
12. Farm diversification	- The farm is not a 100% depndent on one crop
13. Conservation of Wildlife and protection of endangered species	- Wild species and their habitats are protected -Hunting is prohibited - Cutting primary forest is forbidden
14. Use of agrochemicals	- Minimize quantity and toxicity of agrochemicals - Promotion of integrated pest management. - Prohibition of the internationally recognized "most hozardous" chemical pesticides)
15. Application of agrochemicals	-Field workers have received adequate training
16. Storage of Agrochemicals	- Specific infrastructure - Agrochemicals are stored separately from other products
17. Management of soil fertility	- Based on soil analysis - Erosion is prevented - Maintenance of soil cover
18. The use of organic matter is promoted	- Recycling of the organic materials from the farm.
19. Conservation of water resources	- Prevention of water pollution - Water is not wasted.
20. Buffer zones at natural waterways	- No crops are planted at the edge of waterways - Natural vegetation or specific kind of plants protect the natural waterways
21. Waste water management	- Waste water from all activities at the farm receives treatment

Benchmarking Requirements	
22. Waste management	- Recycling system in place - Waste reduction system in place - Material reuse where appropriate - Visual cleanliness
23. Energy Use	- Use of renewable energy
Economic Criteria	
24. Management Plan to comply with sustainable standards	- Plan and registration of activities
25. Market Information	- Access to market information - Market transparency
26. Product quality	- Refers to best agricultural practices. - Product complies with national and international export standards. - Quality of the product reduce defects - Prices reflect the quality produced
27. Traceability	- A chain of custody is implemented.
28. Equitable Relationships	- Business relationships facilitate joint action and provide a secure environment for investments".
29. Community Relationships	- Farms being managed through sustainable principles contribute to the development of their communities.
30. Economic sustainability	- Financial management at all levels (accounting) - Profitability of the business

Using the identified Core Criteria as the baseline for benchmarking "required practice" for overall standards compliance, we referred to specific indicators of the individual programs in determining specific actions required in meeting the core criteria under the different initiatives.[16]

OVERVIEW OF GAPS AND REMEDIAL ACTIONS IDENTIFIED

Using the Core Criteria as the reference point, the gaps between actual practices and "generally required" practices by the different sustainability systems were measured using two methods. On the first hand, field audits of specific farms were conducted in each of the target countries. The results of the field audits were then used as a basis for discussion and feedback with producers over the course of a day long workshop. In addition to verifying the representativity of the audits for the region as a whole, the producer workshops were designed to identify specific practices and interventions required to meet the gaps identified. This section outlines the primary gaps found in the different countries at the time the field research was conducted as well as the actions required for addressing the observed gaps.[17]

SOCIAL STANDARDS

FREEDOM OF ASSOCIATION AND COLLECTIVE BARGAINING (1)

Core elements:

- Right to organize and to collectively negotiate working conditions.
- Prohibition of discrimination against members of unions or other worker organizations.

All standards include the core elements. The 4Cs and NKG Index emphasize the right/ importance of producers to be members of producer organizations and cooperatives, while the other standards do not extend to a protection of producer rights to form cooperatives per se. RA is the only standard to provide explicit protection of freedom of association, collective bargaining and asks for complaint mechanisms. The existence of collective bargaining and complaint mechanisms is also required by the 4Cs.

[16] Since the different standards often apply different indicators, we sought "average" level indicators in determining compliance with the core criteria.

[17] Note that in the case of El Salvador no compliance check against Utz Certified was made, only the codes of RA, SAI, 4C and NKG. In Brazil and Uganda all 5 codes have been used.

In El Salvador the producers are members of the cooperatives Acoboqueron and Cuscatlán. While Acoboquerón has a good organization and enthusiasm within the cooperative, the organization level in Cuscatlán is very low. However, collective bargaining rights are guaranteed through the cooperatives and prices with the exporters can be negotiated. On the 20 participating farms of Cuscatlán, in total there are 23 permanent workers employed, none of them women and 273 temporary workers, 122 of them women. On the 13 participating farms of Acoboqueron, in total there are 28 permanent workers employed, 6 of them women and 96 temporary workers, 53 of them women. All workers are members of a workers organization ("Cooperativa de trabajadores") but they do not bargain collectively.

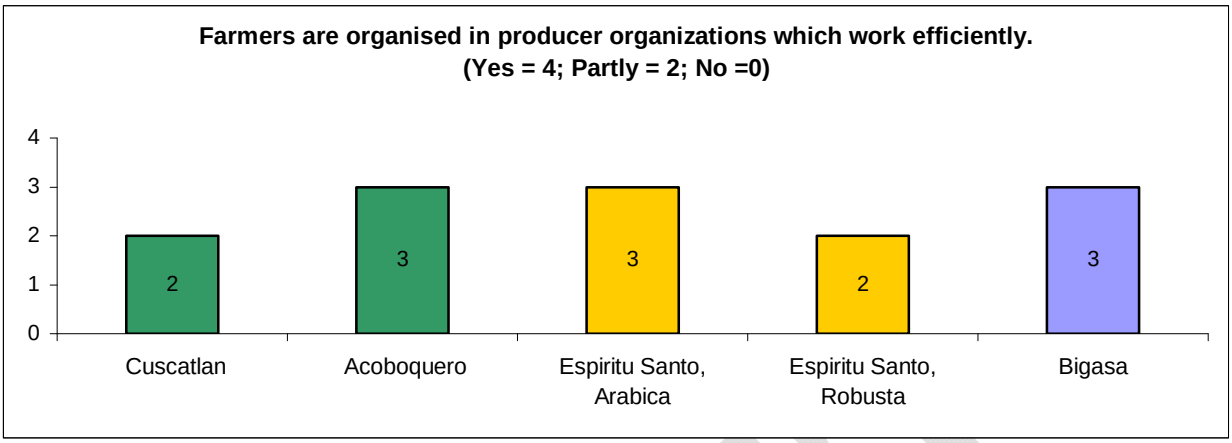
All farmers participating in the Espirito Santo area belong to one or various associations, but the level of organization is different between them. Access to the right to freedom of association is evidenced by the existence of these organizations. Through the associations farmers also have the ability to bargain collectively, but the majority do not make use of this right since they sell their green coffee to local or regional middle men. Most of the farms have no permanent workers. Coffee producers only work with family labour or with a rural partner[18], except for the harvest season, where they need to hire temporal employees. These seasonal workers however, are not part of an organization.

In Bigasa the participating smallholder farmers have been organized in farmer groups and are in the process of being organized under a Depot Committee which will put them in the position to be able to negotiate prices with exporters. Permanent workers are only employed on about 25% of the farms, while more than 50% of the participating farms use the occasional help of temporary/seasonal workers and the remaining farms only rely on family labour. The employees working regularly or temporarily on some of the farms however are not organized, since there are no active organizations representing workers in the agricultural sector. Bargaining, whether individually or collectively, is normal in rural Uganda and workers will typically negotiate the wage rate with the farmers. The wage rates are usually the same whether the work is seasonal or piece rate and consistent throughout the village/area, however may vary slightly between larger areas such as counties or districts.

For all case study areas the compliance with the core criteria does not seem to be a problem, since farmers and workers have the right to associate and bargain collectively. However, formal collective bargaining and complaint mechanisms for seasonal workers could even improve their situation.

[18] This system is based on an exchange of work among neighbouring farmers and demands a contract between the partners.

TABLE 3: LEVEL OF FARMER ORGANIZATION



The effectiveness and degree of producer organization provides an indication of producer access to formal representation above and beyond any actual "rights" which producers might have. This graph estimates the ability of the respective organizations across the three case study areas to deliver needed member services and indicates that rights, while being a prerequisite to representation, are not sufficient on their own to enable effective producer representation or needs fulfillment.

Actions required for *"Freedom of Association and Collective Bargaining"* compliance:

Cuscatlan:

- Sensitization on advantages of group formation is needed.

Acoboqueron: No action needed.

Espirito Santo, Arabica & Robusta: No action needed.

Bigasa:

- Set up of a complaint record for workers at level of Depot Committee.
- Inform workers about their rights through Lead Farmer.

DISCRIMINATION (2)

Core elements:

- Prohibition of discrimination related to sex, religion, nationality, political affiliation, ethic group, trade unions.

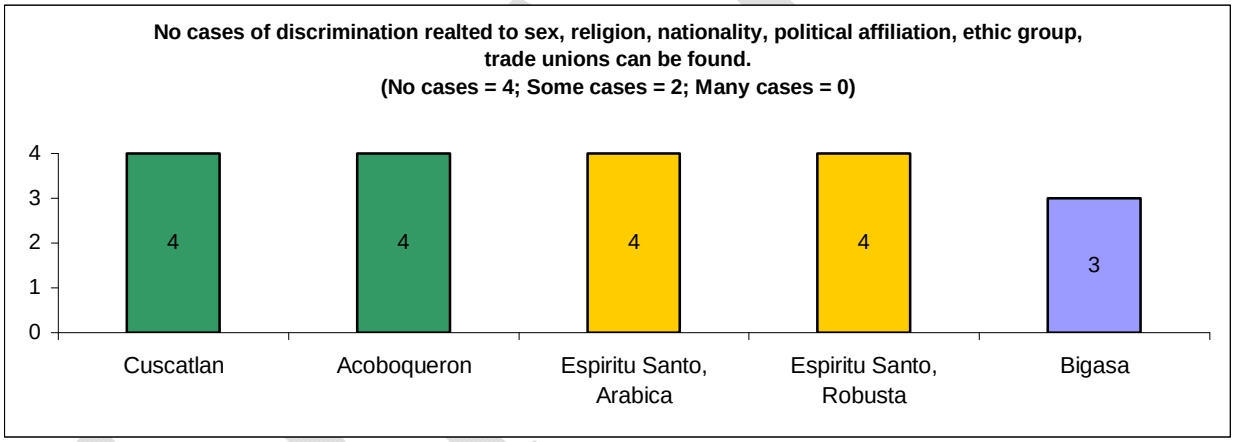
All standards include a criterion regarding discrimination with 4C and RA being most strict by requiring positive action against discrimination or proof that no discrimination takes place (i.e. it is not sufficient to only *not* have found any incidence of discrimination).

In El Salvador no discrimination was found in the two cooperatives participating in the case study area. However, neither positive action against discrimination nor clear evidence that discrimination does not take place was available to our field auditors.

In Espirito Santo no discrimination was found in the case study area and discrimination was not considered a problem by any participating farmer within our sample group. However, there is no written policy or any other proof of positive action at the farm level to prevent discrimination over the long term.

Similar to the situations in El Salvador and Brazil no evidence of discrimination was found in Bigasa, although traditionally women have a lower standing than men. However, there was no positive action against discrimination, neither was clear evidence presented proving that no discrimination is taking place.

TABLE 4: EVIDENCE OF DISCRIMINATION



This graph shows that discrimination is not an issue in any of the case study region. In none of the case study region cases of discrimination were found, but discrimination against women is still an issue in Bigasa. However, there was neither any implementation of positive action against discrimination, nor any proof for the absence of discrimination in any of the case study regions. Since non-discrimination is realized in the case study regions, the necessity to proof the prohibition of discrimination or to show positive actions does not seem to be a major issue.

Actions required for *"Discrimination"* compliance:

Cuscatlan & Acoboqueron: No action needed.

Espirito Santo, Arabica & Robusta: No action needed.

Bigasa: No action needed.

CHILD LABOUR (3)

Core elements:

- Children have access to education
- Children have protection from risky activities.

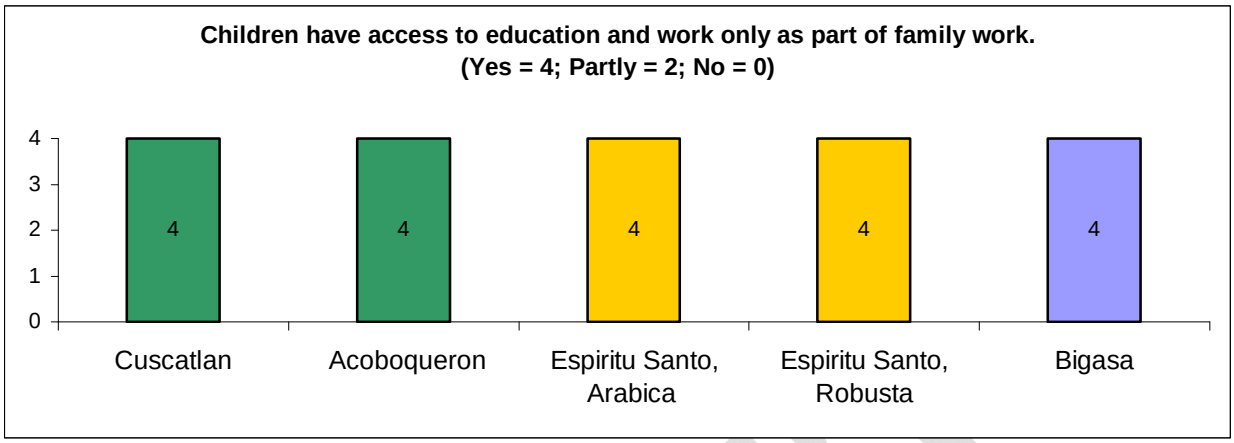
All standards include these core elements. Similar to the criteria on discrimination, the improvement of children's conditions requires positive action by 4C and SAI; also Utz Certified demands evidence of "awareness raising" in cases where children do not go to primary school. RA provides the most detailed requirements with respect to the employment of children between 14 and 18. SAI and NKG explicitly allow child labour as part of family work, but only if certain requirements are fulfilled (i.e. children are not forced to work, do not work during school hours and are not exposed to hazardous work).

In El Salvador, in both cooperatives children from even very poor families have access to schools and generally attend school until at least 3rd grade. Active efforts to improve education are not taken by the cooperatives and this is also not seen as necessary since all children attend schools. Children usually help their parents in the field, but access to schools is assured. However, there are no official health and safety regulations or policies specifically for child workers applied at the farm level.

In Brazil school attendance is obligatory through local regulations and is more or less "ensured" through free public transport provided by the school system. Accordingly, rates of attendance are above 90% for children in the Espirito Santo region. Espirito Santo also sees children helping their parents in the field. Similar to El Salvador, the absence of risky activities undertaken by children could not be demonstrated.

In Uganda the children of coffee farmers within the case study region have free access to primary education with high levels of attendance through primary school. In some cases difficulties arise since the family income is too low to pay for stationeries, books and school uniforms. Children usually help their parents in the field during peak labour demands, although this is not seen to endanger school attendance. Children are usually accompanied in the field by their parents, but exclusion of children from risky activities is not ensured. Active efforts to improve education are not taken by the farmer groups.

TABLE 5: ACCESS TO EDUCATION



This graph shows that child labor is not regarded as a problematic issue in any of the case study areas. All children have access to education and go to (primary) school. As it is usually the case on family farms, children help their parents, but such help is almost always on a temporary basis and therefore does not pose a threat to school attendance. However, none of the discussed associations can adequately demonstrate that children are not exposed to risky activities when working on family farms.

Actions required for *"Child labour"* compliance:

Cuscatlan & Acoboqueron:

- Sensitization of farmers/ parents on risky activities which should not be done by children.

Espirito Santo, Arabica & Robusta:

- Sensitization of farmers/ parents on risky activities which should not be done by children.

Bigasa:

- Sensitization of farmers/ parents on risky activities which should not be done by children.

NO FORCED LABOR (4)

Core elements:

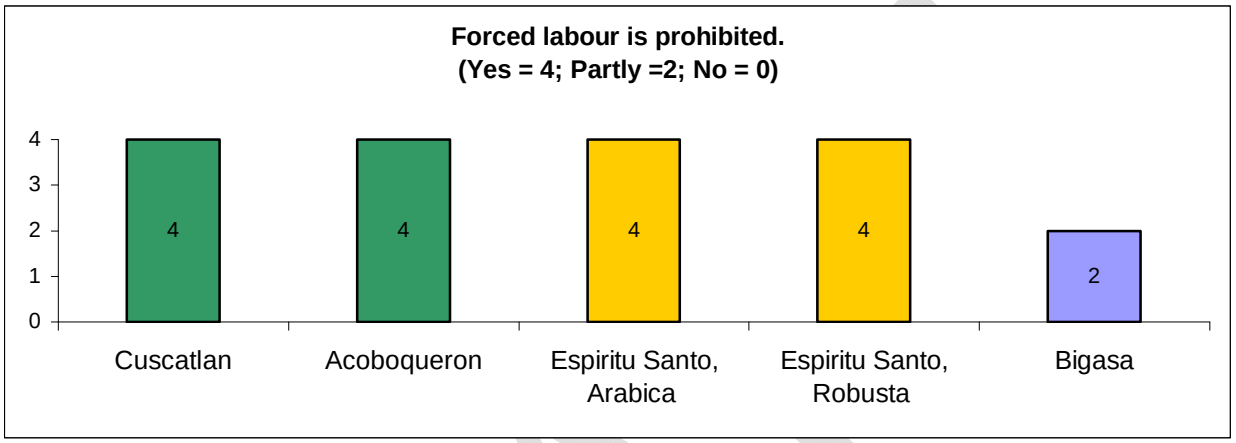
- Forced labour is prohibited within the farms.

All the standards considered except for the NKG Index prohibit the use forced labour.

In El Salvador and in Brazil, this is not an issue at all, since no forced labour exists in the case study regions. However, in Bigasa a few larger farms (less than 5% of all participating farms) employ prisoners for certain types of piece work. The employment of prisoners has been a common

practice in some parts of Uganda especially in those where labour is scarce. The farmer has to pay for the labour provided by the prisoners and only prisoners with a good track record will be selected for this work. Although this is something of a *sui generis* case in coffee production, it is expected that, in order to comply with any given standard, other than NKG, farmers would have to discontinue this practice.

TABLE 6: FORCED LABOUR



This graph shows that only in Bigasa forced labour is a problematic issue. Since forced labour is not prohibited in Uganda, farmers have to commit themselves to discontinue the practice of using prisoners' labour in order to comply with this core criterion.

Actions required for *"No forced labour"* compliance:

Cuscatlan & Acoboqueron: No action needed.

Espirito Santo, Arabica & Robusta: No action needed.

Bigasa:

- Discontinue the praxis of employing prisoners.
- Sensitization on the issue of forced labour is needed and a common commitment against forced labour shall be signed by the farmers.
- Farmer still using prisoners to work for them have to be excluded.

WRITTEN CONTRACTS (5)

Core elements:

- Workers receive written and legally registered labour contracts

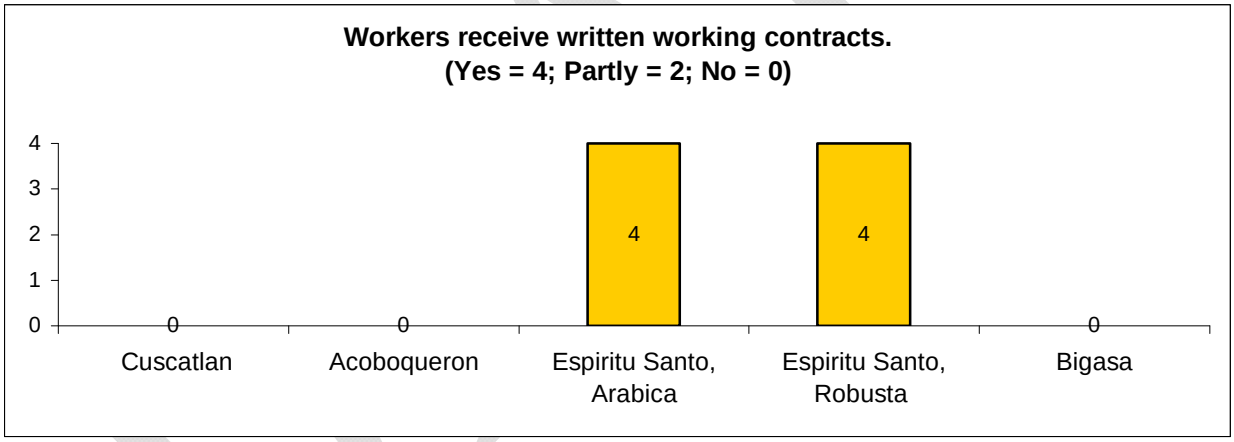
Utz Certified and RA require written employment contracts. For the 4C's written contract qualify as "desirable practice" (green criterion) but are not in fact "required" (yellow criterion). NKG and the SAI Practices do not require written employment contracts.

In El Salvador formal contracts are not common in coffee production, but according to national law oral contracts have the same legal significance as written contracts. In both cooperatives, workers are employed on oral agreements.

In Brazil the rural partner system is very common. This system is based on an exchange of work among neighbouring farmers and demands a contract between the partners. In addition there are strong syndicates of rural workers in Espirito Santo. One of the results is the document known as "carteira de trabalho". This booklet belongs to the worker and is signed by employers to ensure payments of social benefits. According to local law, smallholders who hire someone for specific tasks have to sign these cards—a practice which appeared to be respected across the farms visited.

As in El Salvador, Ugandan law requires either oral or written contracts to formalize working relations. In the Bigasa case study area no written contracts exist and oral arrangements are the common practice.

TABLE 7: PRESENCE OF WRITTEN CONTRACTS



This graph shows that only in Brazil written contracts are common in coffee production. In El Salvador and Uganda oral contracts are applied, which have officially the same legal significance. However it should be noted that while some form of legally recognized contracts exist in all of the regions studied, many of these contracts do not fully comply with local regulations with respect of the provision of worker benefits and minimum wages.

Actions required for *"Written contracts"* compliance:

Cuscatlan & Acoboqueron:

- Sensitization on the importance of written contracts.
- Training on organizational management (including the introduction of written contracts like the "working cards" in Brazil or a Code of Conduct on farmer organization level which should contain topics such as minimum wages, working hour regulations and most

importantly, a procedure for dispute mediation)

Espirito Santo, Arabica & Robsta: No action needed.

Bigasa:

- Sensitization on the importance of written contracts.
- Introducing a Code of Conduct on farmer organization (DC) level which should contain topics such as minimum wages, working hour regulations and most importantly, a procedure for dispute mediation.
- Provide a list of permanent employees on all farms at the Producer Organisation or Depot Committee level

WORKING HOURS (6)

Core elements:

- Comply with on national and international law

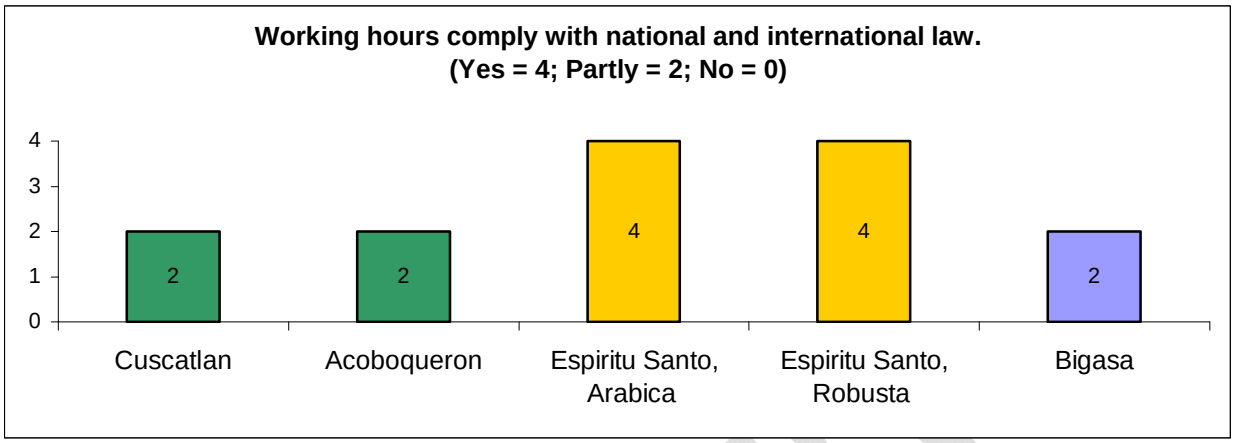
All codes state that working hours shall comply with national laws and all standards except Utz Certified require that overtime should be remunerated. RA, Utz Certified and 4C limit the number of normal working hours to 48h/week, while RA also limits the amount of overtime to a maximum of 12h per week outside the harvesting season. NKG only has an overtime criterion for large farms.

In both cooperatives in El Salvador working hours normally do not exceed the required 48/week and overtime is limited, but the cooperatives do not give guidelines to their members and working times are not recorded individually.

Due to the "carteira de trabalho" system and the rural partner system in Espirito Santo working hours are recorded and can be verified. As a general rule working time does not exceed 8h/day and the normal timetable is from 7am to 4pm with one hour for lunch break.

In Bigasa farmers and permanent employees work up to 8 hours per day, while seasonal and piece workers tend to only work during the morning hours as it becomes too hot later on the day. Hence, the maximum number of hours is usually not exceeded. Working hours are not, however, documented on any of the Bigasa farms visited.

TABLE 8: WORKING HOURS



This graph shows that only in Brazil compliance with this criterion can be achieved, since the working-card system provides a systemic means for determining working hours. Since this documentation practice is missing in El Salvador and Uganda, there is no basis for measuring compliance. In addition most of the employees are seasonal workers, who do piecework. Therefore, the number of workers and overall working schedule in particular is uncertain (and potentially vulnerable to abuse). However, workers are able to decide voluntarily how many hours they work in all case study regions and normally working hours do not exceed 8 hours/day.

Actions required for *"Working hours"* compliance:

Cuscatlan & Acoboqueron:

- Sensitization on the issue of documentation is needed.
- Training on organizational management (including the introduction of a working hour documentation system for farmers and workers).

Espirito Santo, Arabica & Robusta: No action needed.

Bigasa:

- Sensitization on the issue of documentation is needed.
- Training on organizational management (including the introduction of a working hour documentation system for farmers and workers).

OCCUPATIONAL HEALTH AND SAFETY CONDITIONS (7)

Core elements:

- Avoid unhealthy working practices
- Access to medical services
- Access to potable water

- Training in health and safety issues

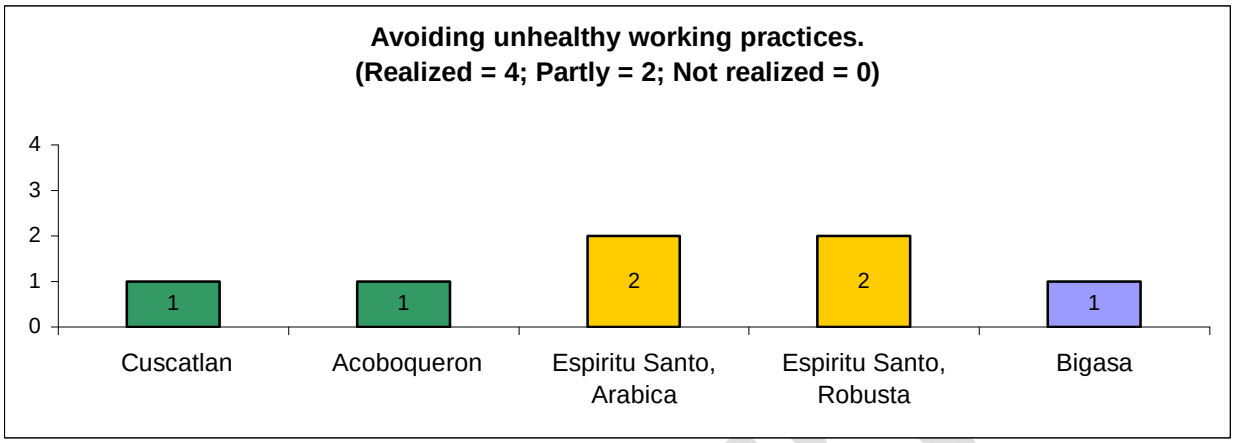
All codes include criteria on occupational health and safety conditions. The core element of unhealthy working practices includes the availability of proper safety equipment and proper storage of any agrochemicals. Utz Certified even requires a risk assessment for working conditions and a documented action plan for promoting safe and healthy working conditions as well as the presence of a person trained in First Aid on the farm premises as minor musts.

In El Salvador, for both cooperatives the appropriate agrochemical storage conditions as well as trainings and protective clothing for pesticide application are virtually non-existent. In addition on about 50% of all farms visited no potable water was readily accessible. The members of both cooperatives have access to health centers provided by the government. But complete medical services (e.g. Hospitals) are only in the main cities a considerable distance away. No policies regarding health issues had been established at the level of the cooperatives.

The farmers in Espirito Santo are all part o f an ecological network that promotes reduction of agrochemicals. However, farmers that do apply herbicides have little to no protective equipment. Under typical conditions normal work clothes are worn for the application of chemicals which are then washed with other daily wear and family clothing. Storage is better organized than in El Salvador, but agrochemicals are not always stored separately. All producers have access to water from their own farm, wells or water springs. People use a clay filter in their homes to make it potable, but no water analyses are done to verify the water quality. Farms do not have sanitary facilities on the fields, but inside the houses close-by. Medical services are available for everybody, since health centers provided by the government and hospitals are relatively near to all communities.

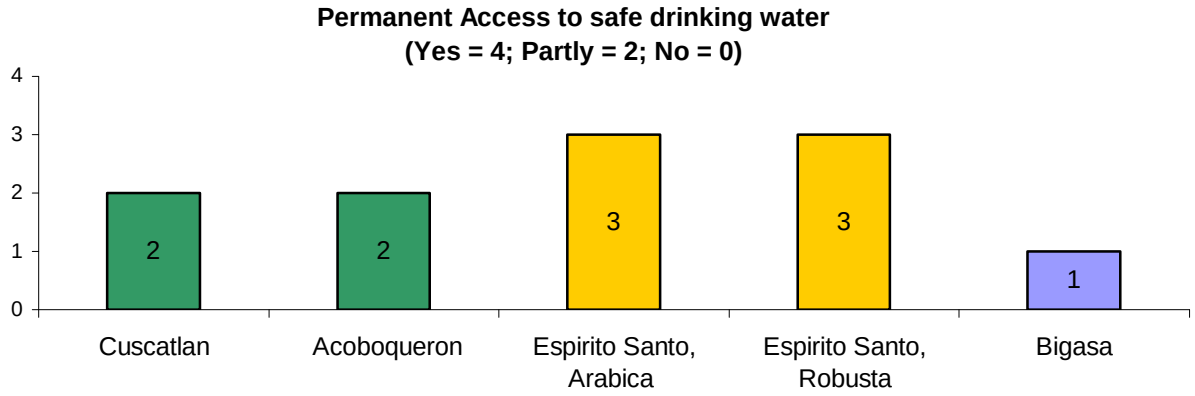
In Bigasa, storage of chemicals is also a major issue. Even though about 30% of the farmers store the chemicals separately, none of those visited had an appropriate store room on the farm; nor were there “dedicated safe spaces” designed for agrochemicals. The absence of proper protection equipment is also a pervasive problem with about 50% of the farmers visited having no specialized equipment other than gumboots. The farmers usually fetch their water in tanks, from communal wells or boreholes. Supply of safe water is not guaranteed by these kinds of water sources in rural Ugandan settings. Pit latrines serve as sanitation facilities in the living areas which do not comply with basic hygiene requirements of most of the standards. Moreover, in Bigasa there is only a medical assistant with the nearest full clinic being in Masaka, which implies a limited access to medical services for the Bigasa farmers. However, trainings on health and sanitation issues as well as HIV/AIDS have been conducted for some farmers selected as peer educators.

TABLE 9: HEALTH AND SAFETY PRACTICES



Compliance with core elements of occupational health and safety requirements regarding healthy working practices is highly problematic for all of the case study region, since appropriate protection equipment for applying chemicals is missing (criterion 13).In Bigasa and for the cooperatives in El Salvador access to potable water is also an additional problem area (next chart).

TABLE 10: ACCESS TO DRINKING WATER



As noted above, there are considerable differences between the case study regions concerning access to safe water. Since in all case study areas most of the producers live on the farms, working condition directly overlap with living conditions for the farmers (criterion 8).

Actions required for *"Occupational Health and Safety Conditions"* compliance:

Cuscatlan & Acoboqueron:

- Action against unhealthy work conditions regarding chemical use is needed (further details criteria 13 &14).
- Access to potable water has to be improved (e.g. through rain-water-harvest systems or water-purification techniques).

- Trainings on basic hygiene (and HIV/AIDS) shall be conducted.
- A health policy can be implemented on cooperative level including a supporting/ insuring systems for members in case of sickness.
- Better access to health services and water sources shall be implemented with support of local or national government or donors.

Espirito Santo, Arabica & Robusta:

- Action against unhealthy work conditions regarding chemical use is needed (further details criteria 13 &14).
- Trainings on basic hygiene (and HIV/AIDS) shall be conducted.
- A health policy can be implemented on cooperative level including a supporting/ insuring systems for members in case of sickness.
- Conduct analysis of drinking water quality.

Bigasa:

- Action against unhealthy work conditions regarding chemical use is needed (further details criteria 13 &14).
- Access to potable water has to be improved (e.g. through rain-water-harvest systems or water-purification techniques).
- Trainings on basic hygiene, health and sanitation issues (and HIV/AIDS) shall be conducted, including community development.
- Conduct a First Aid Training

GENERAL LIVING CONDITIONS (8)

Core elements:

- Permanent and temporary workers that live at the farm should have adequate living conditions with basic services.

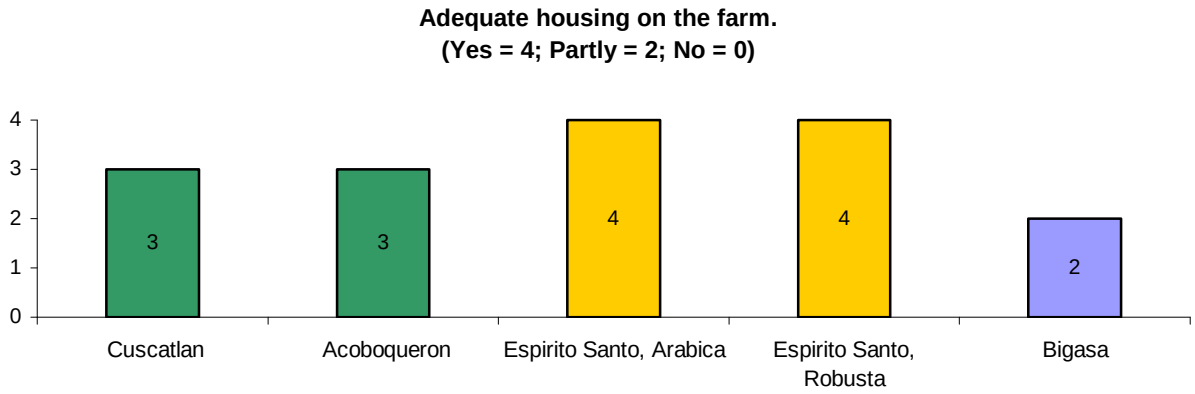
While all of the standards require the provision of basic services and living conditions for workers (e.g. specifications on the location of the housing, conditions for basic health, access to education, medical services, transportation to work and entertainment), only the 4Cs extends such requirements to include producers themselves.

In El Salvador, both cooperatives have difficulty to support improved housing of members, due to low coffee prices. Consequently, about half of the participating farms farmers and workers live in poor conditions with limited access to potable water (especially in Acoboqueron). Living areas on the farms do not have sufficiently well defined borders to the production area. In addition the issue of food security is one of the key problems in the area, especially for members of the cooperative Cuscatlan.

In comparison to El Salvador, the situation in Espirito Santo is much better, both for farmers and workers. Farmers live in nice houses with the basic services and most of them have a car, a small truck or a motorcycle. Also farms that provide housing facilities for the rural partner or have one or two families living at the farm, generally offer decent living conditions in terms of infrastructure and basic services. Moreover, the communities in the Espirito Santo case study areas have access to public transport at least once or twice a day.

Similar to El Salvador general living conditions in Bigasa are poor. In this region farmers rely upon coffee for between 40%-70% of their income. During low coffee prices, farmers can suffer severe economic problems and are often unable to work effectively on the improvement of their living conditions due to the demands upon them for mere survival. All producers in the case study area live without electricity; proper access to potable water and hygienic facilities are lacking. However, farmers are able to provide temporary employees with food. The wages paid to the temporary workers are generally regarded as sufficient to provide for basic housing, but this housing is generally substandard as is the norm across the region more generally.

TABLE 11: HOUSING



Hence, the comparison of the different case study regions shows that the term "adequate" is rather ambiguous and allows for greatly varying interpretations of the same situation. *HOWEVER, ONLY THE SITUATION IN ESPIRITO SANTO SUGGESTS POTENTIAL COMPLIANCE WITH THE CORE ELEMENTS OF GENERAL LIVING REQUIREMENTS.* Neither the cooperatives in El Salvador nor the farms in Bigasa can be considered to meet compliance requirements.

Actions required for *"General living conditions"* compliance:

Cuscatlan:

- Improve sanitation conditions.
- External support in cases of food shortage would be needed.

Acoboqueron:

- Improve sanitation conditions.

Espirito Santo, Arabica & Robusta: No action needed

Bigasa:

- Need for the collection of information on correct pit latrine maintenance and downfalls of the current system (i.e. from organizations such as WHO)
- External support to improve the sanitation conditions would be needed

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ADULT LITERACY IS PROMOTED (9)

Core elements:

- All farmers know how to read and write and have basic mathematical knowledge

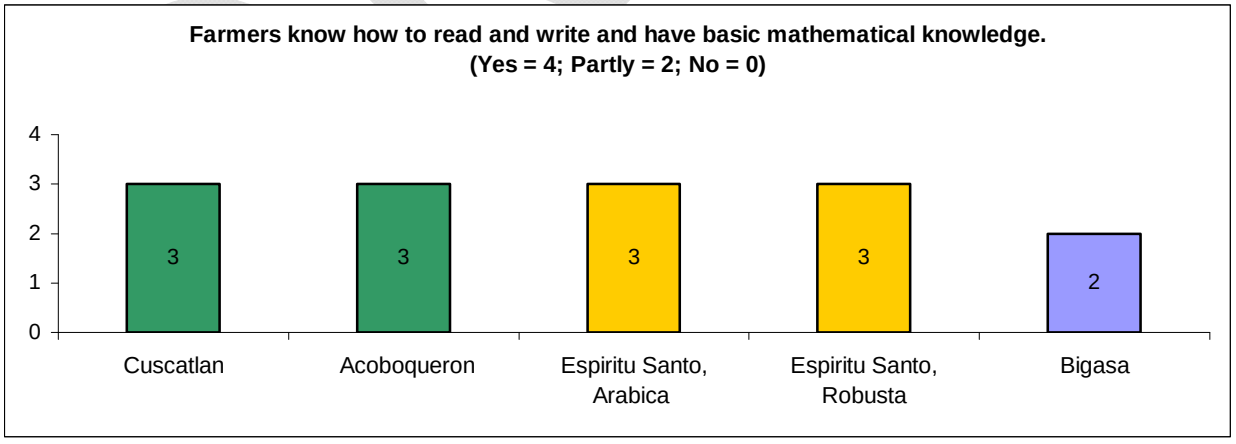
All standards include this criterion at least partly, but SAI is the only standard to explicitly require literacy training for children and workers.

In El Salvador all farmers know how to read and write, but higher education is not very common.

Similarly in Espirito Santo, just that most of the people even did not finish primary school and only very few producers have higher education. However, farmers and workers have basic skills.

In Bigasa, most of the participating farmers were able to read and write; about 10-20% are illiterate. Additional about 40% of the seasonal workers are illiterate (with illiteracy being higher among women).

TABLE 12: ADULT LITERACY



In none of the case study areas is adult literacy explicitly promoted. However, for the cooperatives in El Salvadore and for the farmers in Espirito Santo compliance with this criterion, does not appear to be a major issue, since everybody knows how to read and write. For Bigasa compliance is more problematic if the situation of workers is considered as well. In all case study areas higher

education is not common among farmers, therefore most of them have only very basic mathematical knowledge.

Actions required for *"Adult literacy is promoted"* compliance:

Cuscatlan & Acoboqueron:

- Trainings on basic accounting are needed (chart 27).

Espirito Santo, Arabica & Robusta:

- Higher education shall be promoted among farmers.
- Trainings on basic accounting are needed (chart 27).
- Educational programs for elderly people.

Bigasa:

- Primary education has to be promoted among workers.
- Conduct Literacy courses, which should address especially women.
- Trainings on basic accounting are needed (chart 27).

ENVIRONMENTAL STANDARDS

DIVERSIFIED SHADE (10)

Core elements:

- Minimum number of trees and different species per hectare
- Presence of native species

The SAI Practices, RA and NKG each have detailed requirements with respect to the number and variety of shade trees used on farm. RA has the strictest indicator stating that there must be at least 70 trees/hectare and among them 12 native species. The 4Cs does not include this criterion, while Utz Certified only refers to the presence of native trees.

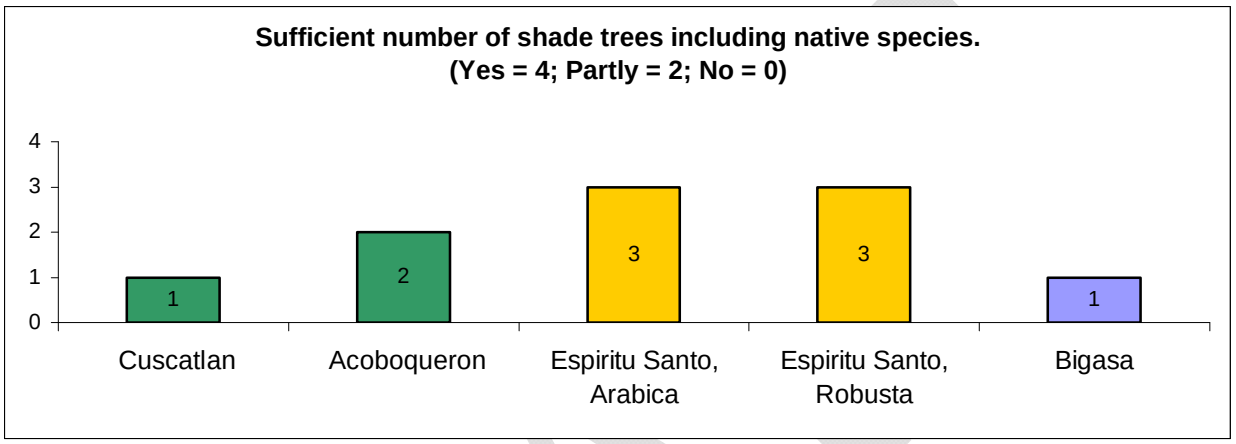
In El Salvador 90% of the farms of Acoboqueron and Cuscatlán use shade at a density of over 100 trees ha^{-1} and on all farms in the sample there were at least 70 trees/hectare, about 25% of the farms (mainly in Cuscatlán) use so much shade that it reportedly affects yield levels in a negative manner. Across both cooperatives approximately 70% of the farms have less than 12 species of tress per hectare rendering diversity below RA requirements.

Coffee in Espíritu Santo is produced 100% without shade. To compensate for the absence of shade a number of farmers have established ecological compensation zones on their farm, a few even have up to 40-50% of their total acreage dedicated to compensation zones. Approximately 70% of farms comply with local legal requirement of establishing 20% of farm land as reserve areas, however, very few of them, are officially registered as such (which may suggest that the compensation zones

are temporary in nature). Contrary to other countries, such as those in Africa, the size of farms does, in most cases, permit setting aside land for this purpose.

On all farms in Bigasa there are shade trees, but the number varies from 4 trees/acre up to 30 trees/acre. Only about 20% of the farms have enough shade trees (more than 28 trees/acre) using local species. Where this is the case, diversity (eg. more than 12 species) is generally not an issue.

TABLE 13: SHADE LEVELS



Compliance with this criterion includes some challenges for all case study areas. In Bigasa the number of shade trees is not sufficient, while in El Salvador too many shade trees affect the yield negatively. In the case of Espirito Santo the practice of creating compensation zones in sun grown coffee regions, is laudable but needs further investigation to determine the longevity and long term sustainability of these zones.

Actions required for *"Diversified shade"* compliance:

Cuscatlan:

- Increase the number of native trees among the shade trees.
- Further training on shade tree pruning as part of ongoing technical assistance.
- Reduce the number of shade trees.

Acoboqueron:

- Increase the number of native trees among the shade trees.
- Further training on shade tree pruning as part of ongoing technical assistance.

Espirito Santo, Arabica & Robusta:

- Further investigation of the practice of creating compensation zones to determine the full economic implications of such practices (in particular, on general well being). External support is needed.
- Reduction of productive area.

- Planting of shade trees.

Bigasa:

- Plant shade trees/ support the planting of shade trees.
- Sensitization on the importance of an adequate number of shade trees for a better yield.

CONSERVATION OF WILDLIFE AND ENDANGERED SPECIES (11)

Core elements:

- Wild species and their habitats are protected
- Hunting is prohibited
- Cutting primary forest is forbidden

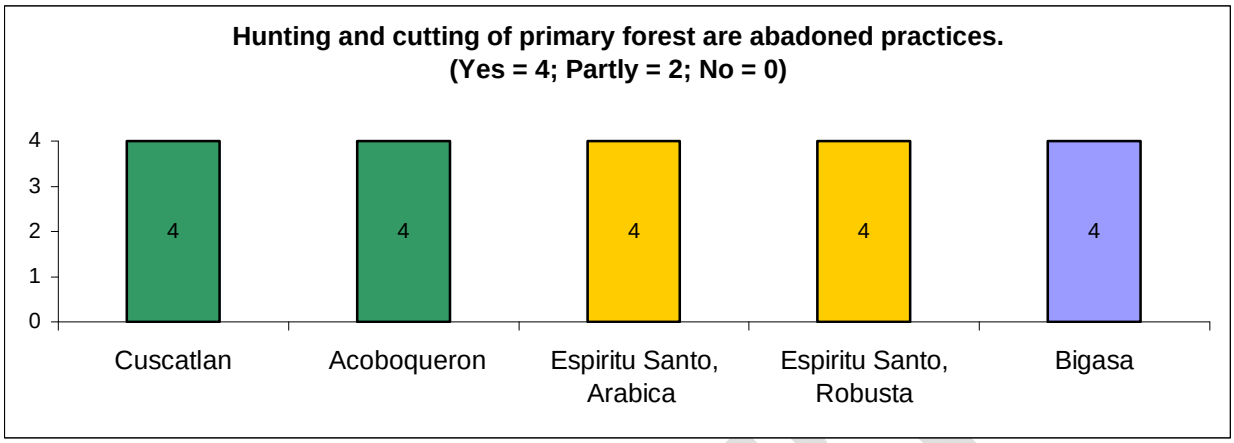
All codes focus to some extent on this criterion with the RA being most detailed, because it states that reforestation and recovery of natural ecosystems should take place. Also the 4Cs require active protection of wildlife and a strategy for cooperation of actors along the chain to enhance this protection.

In both areas in El Salvador no hunting takes place and ecologically degraded areas are not present. Generally, the fact that all farms observed were under shade cover resulted in a lower level threat to local forests and wildlife and other non-forest activities. In addition good conservation practices are observable, since all coffee farms are under shade and coffee trees are the main source of forests in El Salvador, but the farms neither have protected areas nor apply explicitly conservation practices. Although the coffee plantations from both cooperatives are the natural habitats for many wild species, the creation of biological corridors has not been planned and promoted within the farms of the two cooperatives.

Also in Espirito Santo good conservation practices were observed. A number of the farms have biological reserves, but some farms have to expand the acreage of ecological compensation zones. Farmers displayed knowledge about the wildlife in their properties and appear to respect it. There were no reports of poaching being a problem in the area.

The same is true for Bigasa, good conservation practices are in place, all coffee farms are under shade and this forms the main source of forest in Bigasa Sub County as there are no primary forests in the area. No hunting exists in the region. However, the creation of biological corridors has not been planned and promoted within the farms and no explicit conservation practices were observed.

TABLE 14: HUNTING AND FORESTRY MANAGEMENT PRACTICES



While all three case study areas do not seem to have any major issues to comply with the core criteria. Further requirements related to formal conservation planning would require the establishment of formal planning systems and, potentially, biological corridors.

Actions required for *"Conservation of wildlife and endangered species"* compliance:

Cuscatlan & Acoboqueron:

- Putting up signs.
- Maintenance of existing protections standards and the Internal Control System.
- Inventory of plants and trees.

Espirito Santo, Arabica & Robusta:

- Establish sign posts and surveillance.

Bigasa: No action needed.

USE OF AGROCHEMICALS (12)

Core elements:

- Minimize quantity and toxicity of agrochemicals
- Promotion of integrated pest management.
- Prohibition of the internationally recognized "most hozardous" chemical pesticides

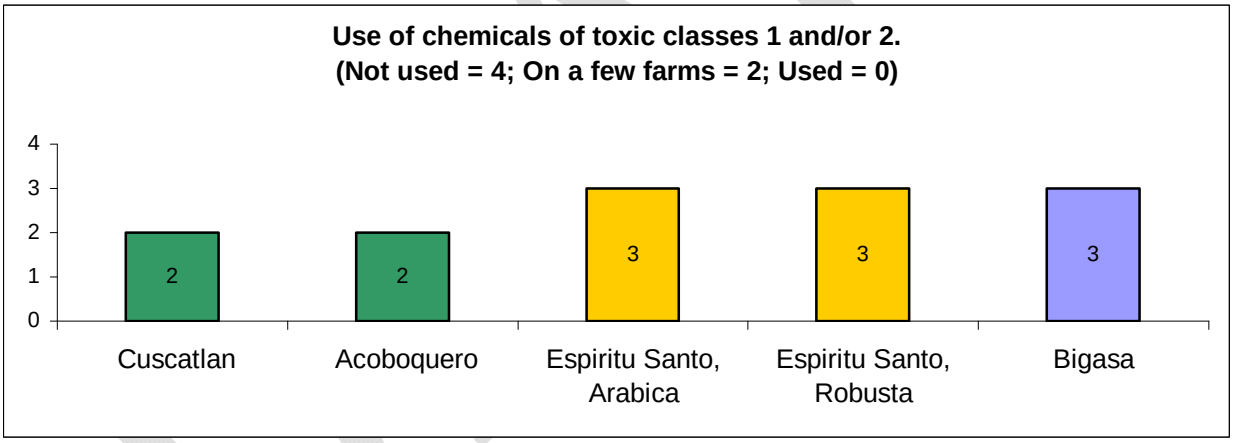
All standards include this criterion. RA and NKG refer specifically to pesticides class 1 and 2, while RA and SAI require of justification of chemical use. Documented reduction of chemical use and a plan to implement IPM techniques are requirements of the 4Cs and Utz Certified.

Although many farms have not applied chemicals within the last 3 or 4 years in the case study area in El Salvador, about 20% of the members of both cooperatives occasionally use low quantities of toxicity class 1 and 2 agrochemicals (e.g. Paraquat/Gramoxone 20 SL, Folidol 48 EC, Endosulfan 35 EC, Lannate 90 PS, Monarca 12 SC, Foley 2 DP). Since there is much diversity in the farms, natural pest's enemies are part of the system. However, there is no documented evidence of applications and no proof of the promotion of IPM. Also records showing the use of pesticides and the justifications of applications were persistently absent.

Similar to El Salvador, pesticide use in Espirito Santo is limited to a few farms. The majority of the farmers do not use insecticides or fungicides and therefore rely on cultural and biological control. Few of them use herbicides. The Arabica producers use more agrochemicals than the Robusta producers, but there is no evidence that products of class 1 and 2 toxicity are used. The fact that no records are kept, however, makes it impossible to determine conclusively that this is the case.

For Bigasa, the use of biocides is limited to herbicides (e.g. Glyphosate) which were found on about 70% of the participating farms. All of the sample farms were found to apply natural pesticides as well, but once again no documentation records exist. Finally, there are no records showing the promotion or proof of implementation of integrated pest management practices.

TABLE 15: AGROCHEMICAL USE



This graph shows that in none of the cases study regions the use of agrochemicals of the toxic classes 1 and/or 2 can excluded, since in none of the regions farmers kept records on the chemicals used. In the few cases where products of toxicity class 1 and/or 2 are applied occasionally (as in 20% of the cases in El Salvador) a major compliance problem with the core criteria exists. However, for all three case study regions the most problematic issue is documentation of practices and the justification of occasional chemical use.

Actions required for *"Use of agrochemicals"* compliance:

Cuscatlan & Acoboqueron:

- Training on record keeping of the use of agrochemicals is needed.
- Training/ promotion of appropriate IPM is needed.

- Training/ information on banned substances is needed.

Espirito Santo, Arabica & Robusta:

- Training on record keeping of the use of agrochemicals is needed.
- Training/ promotion of appropriate IPM is needed.
- Training/ information on banned substances is needed.

Bigasa:

- Farmers will be trained on safe handling, doses and safe storage of agrochemicals.
- Training on record keeping of the use of agrochemicals is needed.
- Training/ promotion of appropriate IPM is needed.
- Training/ information on banned substances is needed.

APPLICATION OF AGROCHEMICALS (13)

Core element:

- Field workers have received adequate training

NKG does not have this criterion included, and the 4Cs just refers to general training for workers on agricultural skills, RA being the most detailed requiring documented trainings. SAI requires the health of workers to be protected and Utz Certified annual health checks for workers undertaking crop protection product applications. RA and Utz Certified explicitly require adequate equipment.

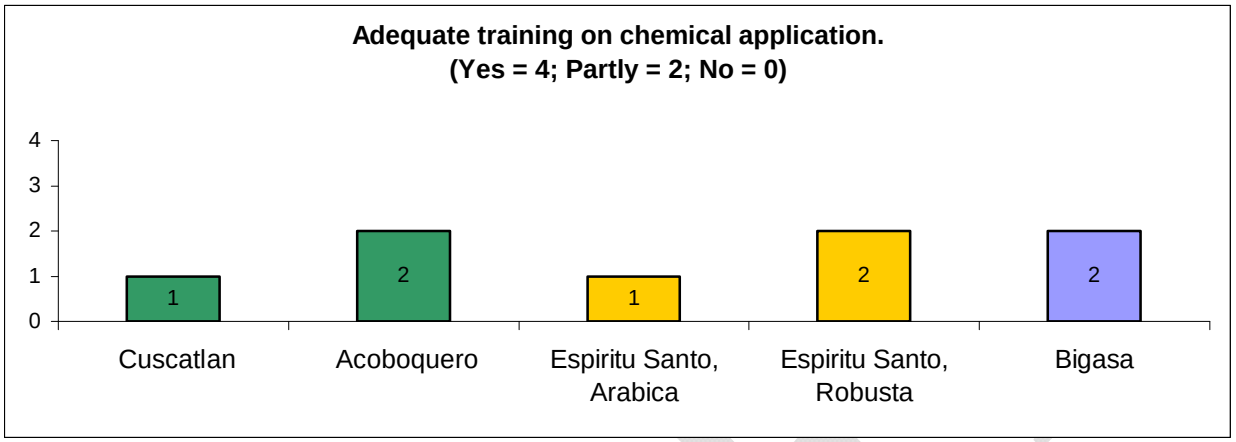
In El Salvador in both cooperatives farmers that use chemicals do not have adequate protection equipment, although they know it's important to wear protection clothes. Even regarding farmers that have parts of the equipment, boots, gloves or masks are missing. There are also no proper cleaning facilities after chemical application for the workers on about 45% of the farms in Acoboqueron and on about 20% in Cuscatlan. In addition, workers applying agrochemicals are not sufficiently trained and did not undergo any medical examinations.

In Espirito Santo the farms that do apply pesticide (mostly herbicide) do not use adequate protective clothing, nor is there evidence that workers have received adequate training. As protection equipment, people use boots and gloves and maybe a mask, but it is common practice in the region to wear normal work clothes for the application of chemicals. Another important challenge in this region is the improper and excessive application of pesticides which are commonly treated like fertilizer in their application.

Similarly, in Bigasa both trainings and protective clothing are not sufficient. Even though about 50% of the participating farmers have gumboots; overalls, gloves and masks are usually missing. In

addition, about 15% of the farmers lack basic knowledge about the dangers and proper application of agrochemicals.

TABLE 16: AGROCHEMICAL TRAINING



In all three case study regions there is a lack of training for workers and farmers applying agrochemicals. In Cuscatlan the situation is worse because of the poor organisational structure and for the Arabica production in Espiritu Santo pesticides are applied too excessively. In the other case study regions trainings have been conducted but many farmers still lack knowledge on proper application. However, the major problem is the lacking of protection equipment. Even farmers who received training on proper application are not able to implement their knowledge. Also health checks are missing in all regions.

Actions required for *"Application of agrochemicals"* compliance:

Cuscatlan & Acoboqueron:

- Sensitization on dangers of agrochemicals is needed.
- Training on appropriate application of agrochemicals is needed.
- Access to appropriate protection equipment has to be improved (e.g. through renting/ selling it at the farmer organization).
- Access to appropriate washing facilities has to be improved.
- Promotion of the use of broca traps.

Espirito Santo, Arabica & Robusta:

- Sensitization on dangers of agrochemicals is needed.
- Training on appropriate application of agrochemicals is needed.
- Access to appropriate protection equipment has to be improved (e.g. through renting/ selling it at the farmer organization).
- Promotion of the use of broca traps.

Bigasa:

- Sensitization on dangers of agrochemicals is needed.
- Training on appropriate application of agrochemicals is needed.
- Access to appropriate protection equipment has to be improved (e.g. through renting/ selling it at the farmer organization)

STORAGE OF AGROCHEMICALS (14)

Core elements:

- Specific infrastructure
- Agrochemicals are stored separately from other products

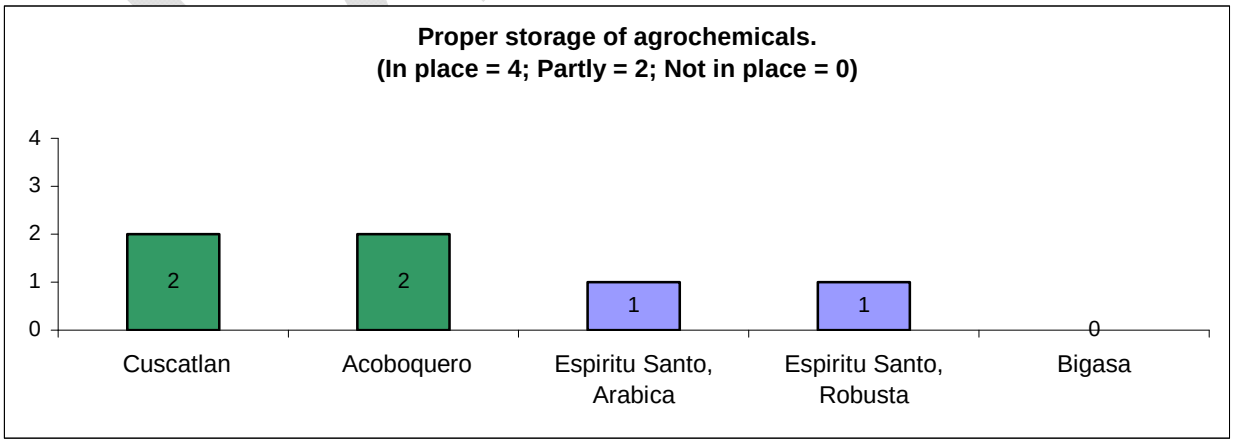
All standards, except the 4Cs include this criterion. Utz Certified and RA each specify detailed requirements for the application and storage of agrochemicals. SAI and NKG allow a very flexible interpretation, stating that storage should be separate and adequate respectively.

Over 40% of the member farms in Acoboqueron and Cuscatlán do not have dedicated storage space. Also, out of the farmers having a storage place, about 40% do not follow required safe measures, such as, for example, having storage rooms locked.

The situation in Espirito Santo is very similar to the conditions found in El Salvador. Storage conditions are neither separate nor secure, and do not comply with basic safe storage requirements (eg. chemicals stored alongside inflammable products).

In Bigasa farmers commonly store chemicals within the household premises. The common "storage container" for farmers in Bigasa is a plastic bag which can be found in any room—even in the bedroom at times.

TABLE 17: STORAGE OF AGROCHEMICALS



Compliance with this core criterion is a problematic issue for all case study areas. While there are

no separate storing facilities in Bigasa, most of the farmers in El Salvador have at least separate storing facilities even they do not comply with required safety conditions. However, in all case study region action is needed to improve the situation.

Actions required for *"Storage of agrochemicals"* compliance:

Cuscatlan & Acoboqueron:

- Promotion of just in time logistics and improvement of the accessibility of agrochemicals.
- Introducing techniques to build storage facilities with local materials.
- Sensitization of the dangers of impropriate storage of agrochemicals.

Espirito Santo, Arabica & Robusta:

- Promotion of just in time logistics and improvement of the accessibility of agrochemicals.
- Introducing techniques to build storage facilities with local materials.
- Sensitization of the dangers of impropriate storage of agrochemicals.

Bigasa:

- Promotion of just in time logistics and improvement of the accessibility of agrochemicals.
- Establishment of Storage for Agrochemicals (e.g. introducing techniques to build storage facilities with local materials).
- Sensitization of the dangers of impropriate storage of agrochemicals.

MANAGEMENT OF SOIL FERTILITY (15)

Core elements:

- Based on soil analysis
- Erosion is prevented
- Maintenance of soil cover

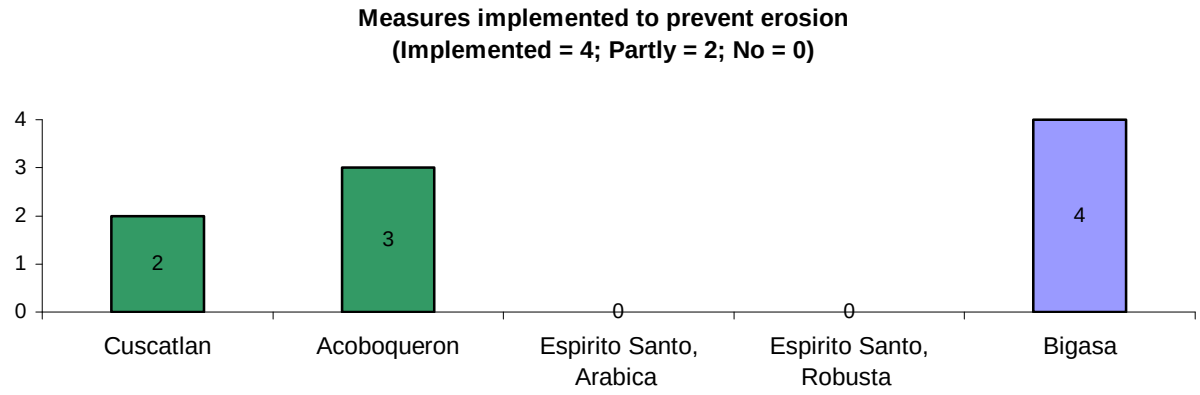
All of the standards contain some requirements related to the management of soil fertility. The 4Cs criteria are less detailed and only require a soil management system. RA, on the other hand, emphasizes erosion control and conservation of fertility, but does not specifically indicate the need to use soil analysis.

None of the farms sampled at either of the cooperatives in El Salvador apply herbicides. Instead the soil is covered with mulch (from dead tree leaves) or by natural vegetation. Weed control is done in a mechanical way with a machete, which also increases the amount of organic matter. Implementation of erosion barriers is a very common practice. On over 90% of the observed farms, there were some measures to prevent erosion in place. In addition, fertilization is done according to soil analysis, but only about 10% of the farmers apply fertilizer according to a fertilization program.

In Espirito Santo most of the farms lack soil covers, especially in the coffee parcels, even though only a few farms apply herbicides. Erosion is a serious concern, since there are no mechanisms to prevent erosion implemented in the area. As a cultural fact, farmers are accustomed to "cleaning" the soil with their working tools, without being aware that they may be exposing their farms to erosion through such procedures. All of the farms observed had undertaken soil analysis and chemical fertilizer is applied at least once a year.

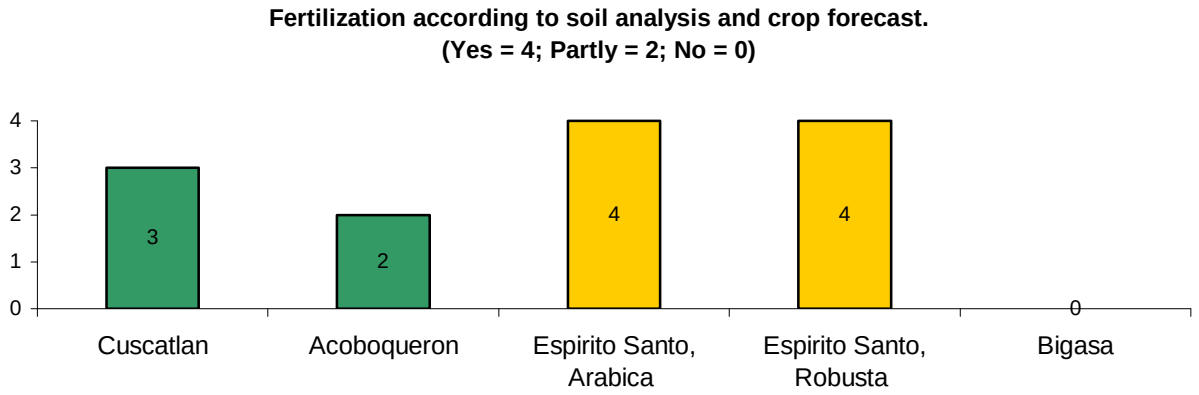
Even though there is a good soil cover in the farms through mulching and good implementation of erosion barriers (trenches) in Bigasa, farmers face other problems regarding soil management. For example, neither soil analyses nor soil management plans are utilized in the region. The use of chemical fertilizer is not common in Bigasa, primarily because farmers generally cannot afford it--only 15% of the farmers use chemical fertilizer (e.g. Urea). However, organic fertilizer is used frequently by over 70% of the farmers, mainly as manure from own cattle.

TABLE 18: SOIL EROSION



Erosion control is best implemented in Bigasa, and missing completely in Espirito Santo. On the other hand, in Bigasa, no soil analyses and no crop forecasts are done by the farmers, while in Espirito Santo soil analysis is a common practice of the producers.

TABLE 19: STRATEGIC SOIL FERTILIZATION



Therefore, only the cooperatives in El Salvador do not face major challenges regarding compliance with all requirements of this criterion. However, in all case study regions improvement is needed.

Actions required for *"Management of soil fertility"* compliance:

Cuscatlan & Acoboqueron:

- Training on sustainable soil management is needed.
- Repetition of soil and leaf analyses.

Espirito Santo, Arabica & Robusta:

- Training and sensitization of soil erosion control is needed.

Bigasa:

- Training on sustainable soil management is needed.

THE USE OF ORGANIC MATTER IS PROMOTED (16)

Core element:

- Recycling of the organic materials from the farm.

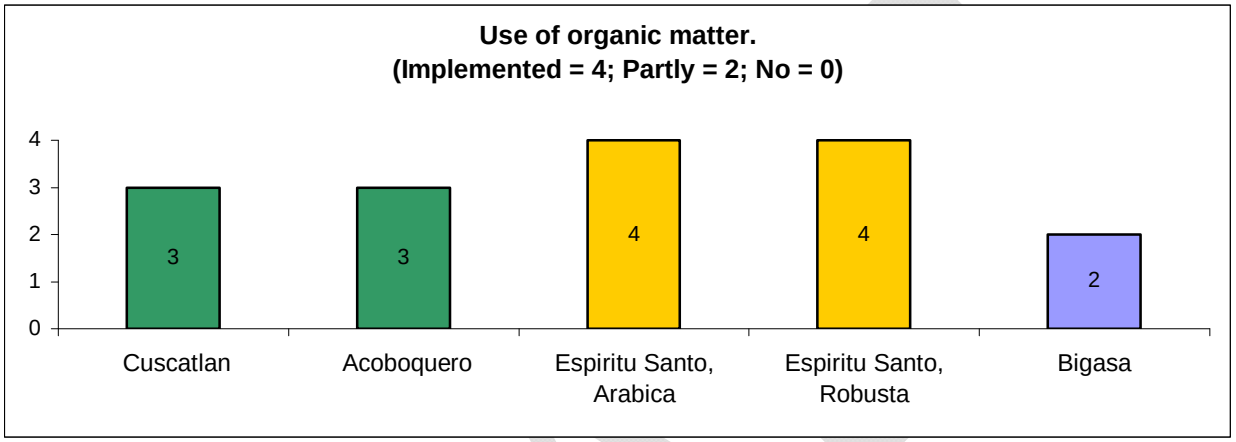
All standards include this criterion and emphasize on the promotion of organic matter.

The criterion of recycling of coffee pulp does not apply to the producers from the two El Salvadorian cooperatives as they sell cherry coffee that is pulped in a location distant to the production areas. Hence, pulp is not recycled nor is its use promoted amongst the members of the cooperatives. However, shade trees provide a reasonable degree of organic matter on the farm floor.

In Espirito Santo all farms apply composted coffee pulp after harvest, and high planting densities ensure reasonable soil cover from litter fall within the plantation.

In Bigasa dry processing pulp is generally not recycled and the application of organic matter is uncommon. Furthermore, the use of organic matter is not formally promoted at the institutional level in this region.

TABLE 20: USE OF ORGANIC MATTER



While compliance with this core criterion does not seem to be a major issue for either Espirito Santo or the cooperatives in El Salvador, in the Bigasa region, the absence of use of organic matter is problematic. Promotion of the use of organic matter could be intensified in all case study regions.

Actions required for *"The use of organic matter is promoted"* compliance:

Cuscatlan & Acoboqueron::

- Promotion of the use of organic matter (e.g. redistribution and reuse of the pulp).

Espirito Santo, Arabica & Robusta: No action needed.

Bigasa:

- Promotion of the use of organic matter besides pulp (e.g. mulching).
- Proper mulching, pruning and weeding is needed.

CONSERVATION OF WATER RESOURCES AND PROTECTION WITH BUFFER ZONES AT NATURAL WATERWAYS (17 + 18)

Core elements:

- Prevention of water pollution

- Water is not wasted.
- No crops are planted at the edge of waterways
- Natural vegetation or specific kind of plants protect the natural waterways

RA and NKG have specific guidelines for buffer zones around natural waterways. SAI and Utz Certified include this criterion but not in specific criteria, while the 4Cs refers only to water conservation practices.

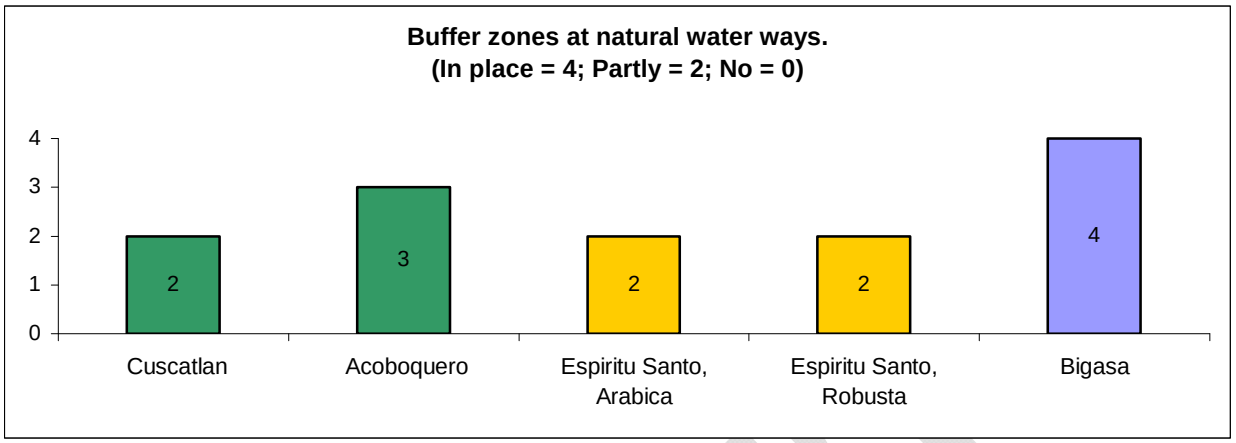
For the two cooperatives in El Salvador the situation differs, since the area of Acoboquerón has traditionally been a region with almost no natural water resources. There are only very few natural waterways, which have water 2-3 months per year. These are protected with buffer zones on about 90% of the farms. In Cuscatlán buffer zones along the entire waterway through the farm exist in about 70% of the farms (some more than 5 meters and some with less); only on 5% of the farms' waterways are there no buffer zones whatsoever. However, buffer zones are often polluted with household waste across farms serving both cooperatives in El Salvador.

Most farms in Espirito Santo have water springs or waterways but not all are protected with buffer zones. Farmers are conscious that waterways should be protected, but implementation of this awareness is highly inconsistent.

In Bigasa fields are not adjacent to waterways and where they are there is sufficient natural vegetation to create a buffer between the field and the waterway (natural buffers of about 20m on both sides of the waterway).

Since the case study regions cover Arabica and Robusta regions, both wet and dry processing techniques are common giving rise to highly variable water use rates. However, water is a limited resource in all case study regions and farmers generally take care in the amount of water used. Even though water pollution is not a major issue in the three case study regions, treatment of waste water is not sufficient (chart 20).

TABLE 21: PRESENCE OF BUFFER ZONES



In Bigasa compliance with the core elements of the criterion regarding buffer zones does not appear to be a problem. For the farmers in Espirito Santo and the members of the cooperatives in El Salvador the pollution of the buffer zones is the major problem.

Actions required for *"Conservation of water resources and protection with buffer zones at natural waterways"* compliance:

Cuscatlan & Acoboqueron:

- Sensitization on the importance of keeping buffer zones clean is needed.
- Alternative waste disposal opportunities shall be promoted.

Espirito Santo, Arabica & Robusta:

- Sensitization on the importance of keeping buffer zones clean is needed.
- Establishment of buffer zones.

Bigasa: No action needed.

WASTE WATER MANAGEMENT (19)

Core element:

- Waste water from all activities at the farm receives treatment

All standards require some treatment of irrigation and processing water. While NKG and Utz Certified only refer to waste water from coffee processing the other codes also focus on household waste water. RA also addresses the quality of drinking water and requires periodic monitoring of its physical, chemical and biological characteristics. Utz Certified requires an annual assessment for the risks of water pollution or contamination by irrigation/fertilization.

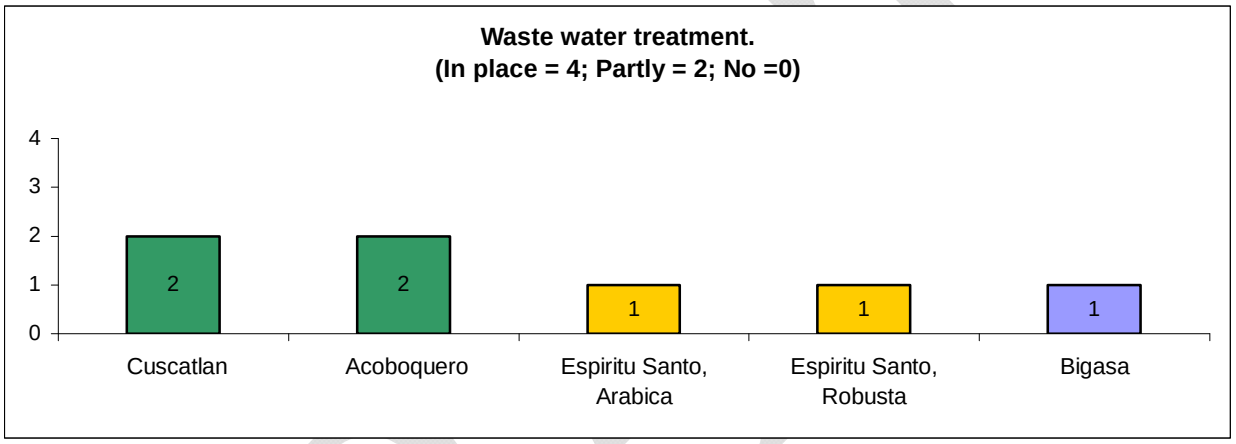
Across farms in both cooperatives in El Salvador untreated household waste water is regularly discharged into the fields and streams. In addition farmers do not have septic tanks but rather use

pit toilets. Coffee processing waste water is, however, treated, since the local processing plant has an operational waste water management system.

Espirito Santo faces similar constraints with untreated household waste water discharge. Waste water from the kitchen, sanitary facilities or washing activities go directly into waterways in many farms.

The situation in Bigasa is similar, only that for the dry coffee processing no water is needed. Due to lack of access to potable water, the usage of water per family is very low. Waste water is not well managed as it is poured onto the farm and farmers have traditional pit toilets without septic tanks.

TABLE 22: WASTE WATER MANAGEMENT



All case study regions face the same problems in complying with this criterion. In El Salvador adequate waste water treatment is partly in place since waste water from the processing is treated. Even no badly polluted waste water is produced by the households in all case study regions, adequate treatment of household waste water is missing.

Actions required for *"Waste water management"* compliance:

Cuscatlan & Acoboqueron:

- Promotion of low-tech household sewage treatment systems inclusive training.

Espirito Santo, Arabica:

- Introduction of treatment methods of the water used for coffee processing.
- Promotion of low-tech household sewage treatment systems inclusive training.

Espirito Santo, Robusta:

- Promotion of low-tech household sewage treatment systems inclusive training.

Bigasa:

- Promotion of low-tech household sewage treatment systems inclusive training.

WASTE MANAGEMENT (20)

Core elements:

- Recycling system in place
- Waste reduction system in place
- Material reuse where appropriate
- Visual cleanliness

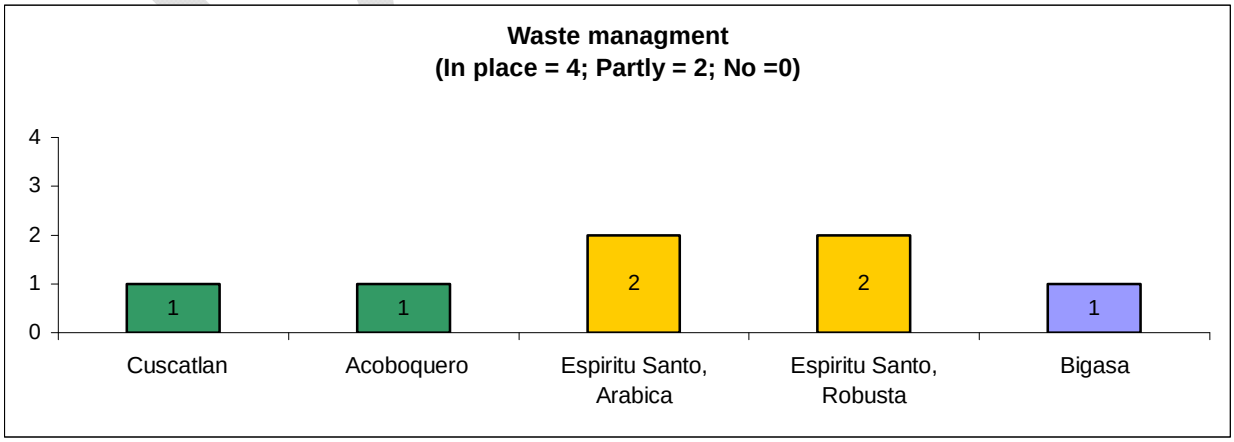
While all standards specify some requirement on waste management, the different standards vary considerably in the nature of those requirements. More specifically, RA and NKG emphasize visual cleanliness, while the SAI prohibits the practice of waste burning. RA additionally requires the implementation of a recycling system for non-biodegradable waste.

Members of both cooperatives in El Salvador have no waste management or recycling systems in place. Inorganic waste is either burned or buried. Waste is also visible at the farms making compliance with the visual cleanliness criterion unlikely in most farms.

In Espirito Santo the farms either have access to municipal waste collection or burn their waste. As such, visual cleanliness is not a problem in this region. However, there is no recycling program on, or available to, the Espirito Santo farms visited.

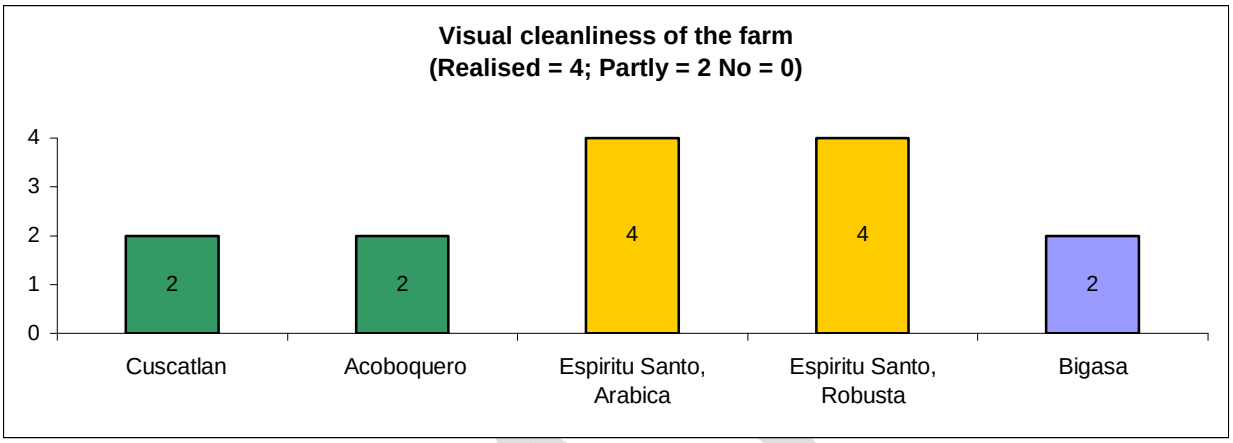
Waste management in Bigasa is very limited. About 80% of the farmers burn their inorganic waste, the others have pits and burry it. There is no garbage collection by the government in the area. Visual cleanliness is moderate and programs to reduce waste and promote re-use and recycling of waste do not exist. .

TABLE 23:WASTE MANAGEMENT



It is evident that the poorer the area, the harder it is to comply with this criterion. Espirito Santo has a communal waste collection in some areas, while in Uganda waste management is the farmer's sole responsibility. However, in all case study areas, the practice of waste burning is still common and recycling systems are missing.

TABLE 24: VISUAL CLEANLINESS OF FARM



In Espirito Santo compliance with the core element of visual cleanliness is not considered to be a problematic issue, since visual cleanliness is realized on all farms. In Bigasa and EL Salvador sensitization is needed to comply with this criterion.

Actions required for *"Waste management"* compliance:

Cuscatlan & Acoboqueron:

- Implementation of a recycling program/ compost system.
- Separate collection of toxic waste.
- Sensitization on visual cleanliness is needed.

Espirito Santo, Arabica & Robusta:

- Implementation of a recycling program/ compost system.
- Separate collection of toxic waste.

Bigasa:

- Implementation of a recycling program/ compost system.
- Separate collection of toxic waste.
- Sensitization on visual cleanliness is needed.

Core element:

- Use of renewable energy

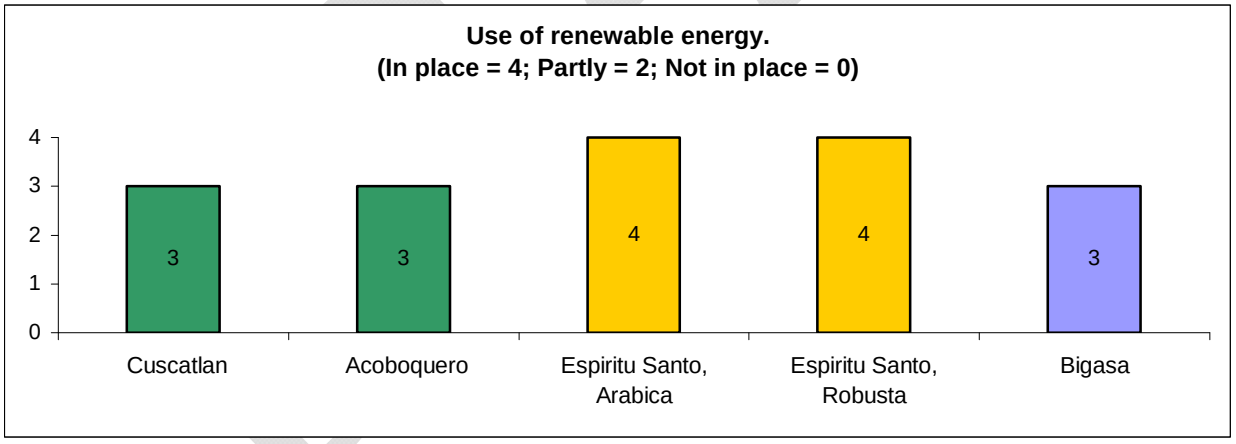
SAI, Utz Certified and the 4Cs specify the obligation to use renewable energies where possible, while RA and the NKG Index do not include this criterion.

The two El Salvadorian regions have access to electricity but only Cuscatlán has sporadic access to communication services. The wood from pruning of coffee and shade trees is generally sufficient to meet household needs. As such, there is no real need to remove trees for personal use.

Also in Espirito Santo members use prunings from coffee for cooking rather than felling trees for this purpose. Both regions have access to electricity and most of the communities have access to communication services. Many farmers take advantage of the solar energy to dry the coffee, but some associations have access to mechanical dryers that use coffee discards as fuel as well.

In Bigasa farmers use pruned wood from coffee, shade trees or communal swamps for cooking rather than felling trees for this purpose. In contrast to the cooperatives in El Salvador and Espirito Santo, farmers do not have access to electricity. However coffee is traditionally only sun-dried.

TABLE 25: USE OF RENEWABLE ENERGY



Compliance with all standards does not seem to be a major issue for all case study regions, since renewable energy is the main source. However, promotion of energy saving techniques could be intensified.

Actions required for *"Energy use"* compliance:

Cuscatlan & Acoboqueron: No action needed.

Espirito Santo, Arabica & Robusta: No action needed.

Bigasa: No action needed.

ECONOMIC STANDARDS

MANAGEMENT PLAN TO COMPLY WITH SUSTAINABLE STANDARDS (22)

Core element:

- Plan and registration of activities

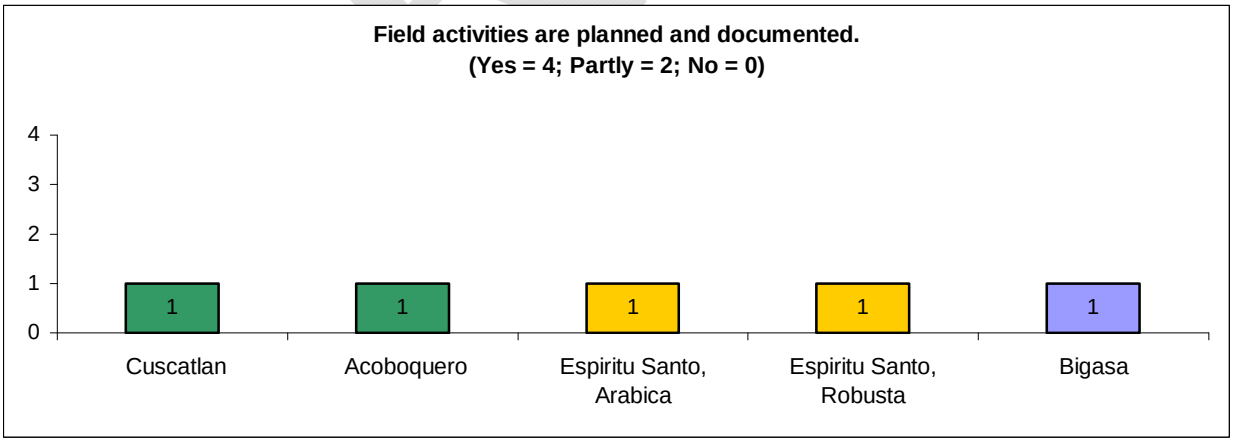
All of the standards except for the NKG Index include the design and implementation of a "farm management plan". While the 4Cs requires a management plan to be applied by all actors in the supply chain, Utz Certified and RA require substantially more documentation of farm practices.

In the cooperatives in El Salvador there are no management plans with respect to any of the core issues identified in the sustainability standards at present.

None of the farmers observed in Espirito Santo had management plans on any of the relevant sustainability issues to standards compliance.

In Bigasa, a few farmers have implemented rudimentary management plans, but none of these is currently sufficient for compliance with any specific standard.

TABLE 26: DOCUMENTATION AND PLANNING OF FIELD ACTIVITIES



None of the case study regions is in compliance with this criterion at present. Even many farmers plan their field activities, most of them do not have any written documentation systems or adequate management plans.

Actions required for *"Management Plan to comply with sustainable standards"* compliance:

Cuscatlan & Acoboqueron::

- Implementation of a management plan and records of activities. Special focus needed on debt restructuring.
- Training on drafting basic management plans.
- Sensitization on the advantages of a written documentation system and a management plan.
- Elaboration of management handbooks for farm management.

Espirito Santo, Arabica & Robusta:

- Training on drafting basic management plans.
- Sensitization on the advantages of a written documentation system and a management plan.

Bigasa:

- Training on drafting basic management plans.
- Sensitization on the advantages of a written documentation system and a management plan.

MARKET INFORMATION (23)

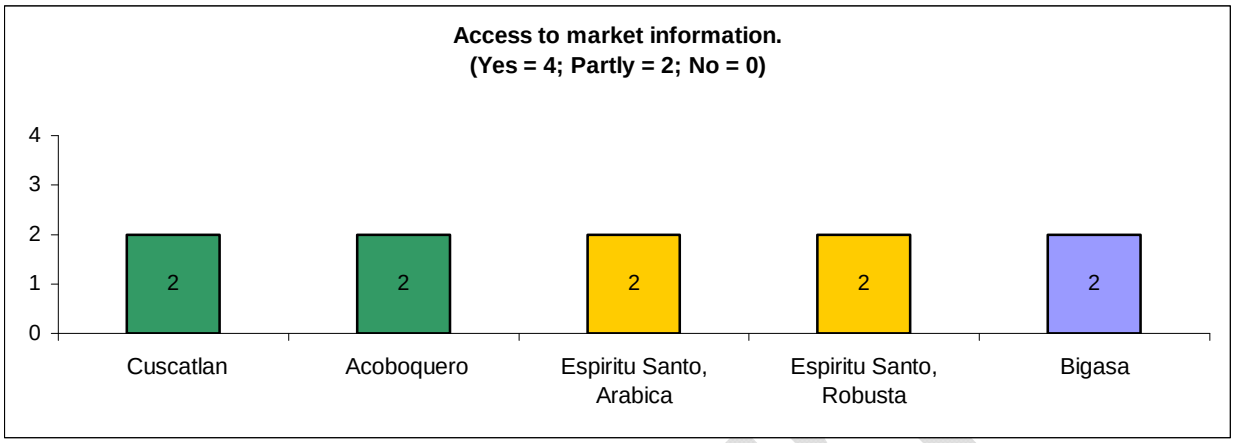
Core elements:

- Access to market information
- Market transparency

Although the 4Cs and SAI are the only two standards to include this criterion as a requirement. the issue is dealt with explicitly by Utz Certified's general procedures and marketing services.

The main sources for market information for farmers in all case study regions are exporters and middlemen. In Uganda the radio also serves as an information source for market prices.

TABLE 27: ACCESS TO MARKET INFORMATION



In order to comply with this criterion in all case study regions, easier and more reliable access to market information would need to be made available, possibly via the farmer associations, which could also help ensure market transparency.

Actions required for *"Market Information"* compliance:

Cuscatlan & Acoboqueron:

- Farmer organisation should implement an information system.
- Local, national and international coffee prices should be made accessible to all farmers.

Espirito Santo, Arabica & Robusta:

- Farmer organisation should implement an information system.
- Local, national and international coffee prices should be made accessible to all farmers.

Bigasa:

- Farmer organisation should implement an information system.
- Local, national and international coffee prices should be made accessible to all farmers.

PRODUCT QUALITY (24)

Core elements:

- Refers to best agricultural practices.
- Product complies with national and international export standards.

- Quality of the product reduce defects
- Prices reflect the quality produced

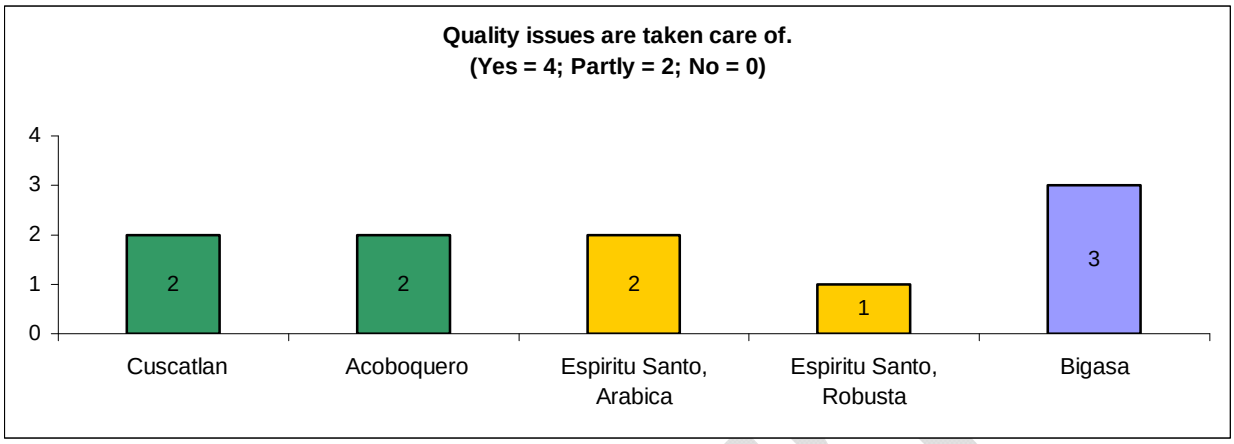
Only the 4Cs matrix and SAI make explicit reference to this criterion. However, quality aspects are part of Utz Certified's system procedure and covered through numerous technical requirements and recommendation.

In El Salvador the producers have not renovated their plantations for some time, due to low coffee prices. In Acoboquerón most of the trees are between 35-50 years old (some even 60) and in Cuscatlán the coffee trees are between 15 and 25 years old. Farms require investment in fertilization and shade maintenance--in some cases there is even too much shade for efficient coffee production. There is, however, a growing awareness of the importance of product quality among the El Salvadoran case study cooperatives.

In Espitito Santo the average age of coffee trees is between 7 and 10 years. Most farmers buy seedlings from private business but only about 60% of the plants come from a registered operation, where the quality is controlled. Pruning is a very common practice. However, coffee quality management is poor at present. A high percentage of the fruits are picked green (20-30% in Arabica coffee areas and 80-90% in the Robusta coffee region), and there are also farmers that let the coffee sit in their bags for as much as 3 days before having it processed. Others were observed to leave coffee in the process of drying exposed to rain. Farmers also practice coffee drying on the ground as only about 50% of them have access to concrete drying patios. Due to capacity limitations drying layers are frequently kept too thick to allow uniform drying results and is vulnerable to developing sticky and/or mouldy tastes.

In Bigasa the observed farms take product quality into account and are aware of it. Many have attended trainings in order to decrease defects and improve product quality. There is, however, still need for inputs in terms of tarpaulins, fertilizers, herbicides and seedlings. In addition, further training on best agricultural practices for product quality is still needed. Most farmers are of the opinion that the quality of the coffee they produce is not rewarded by the price which creates a disincentive to quality improvements.

TABLE 28: ATTENTION TO QUALITY ISSUES



This graph shows that product quality can be improved in all regions by more sensitization and trainings. Many farmers are aware oft quality issues but do put the required actions into practice. In Bigasa quality has been improved through straight quality conditions which led to a higher price in the region.

Actions required for *"Product quality"* compliance:

Cuscatlan & Acoboqueron:

- Sensitization on quality issues and training on quality improvement (e.g. shade management).

Espirito Santo, Arabica & Robusta:

- Sensitization on quality issues and training on quality improvement (e.g. picking).

Bigasa:

- Sensitization on quality issues and training on quality improvement (e.g. pruning).
- Providing necessary equipment to improve the quality (e.g. tarpaulins for drying)

ECONOMIC SUSTAINABILITY (25)

Core elements:

- Financial management at all levels (accounting)
- Profitability of the business

Utz Certified, SAI, NKG and the 4Cs include some requirements related to economic sustainability. While 4Cs, SAI and NKG require basic accounting skills, this is not required by Utz Certified or RA. The 4Cs also addresses the issue in terms of availability of market information and access to credit

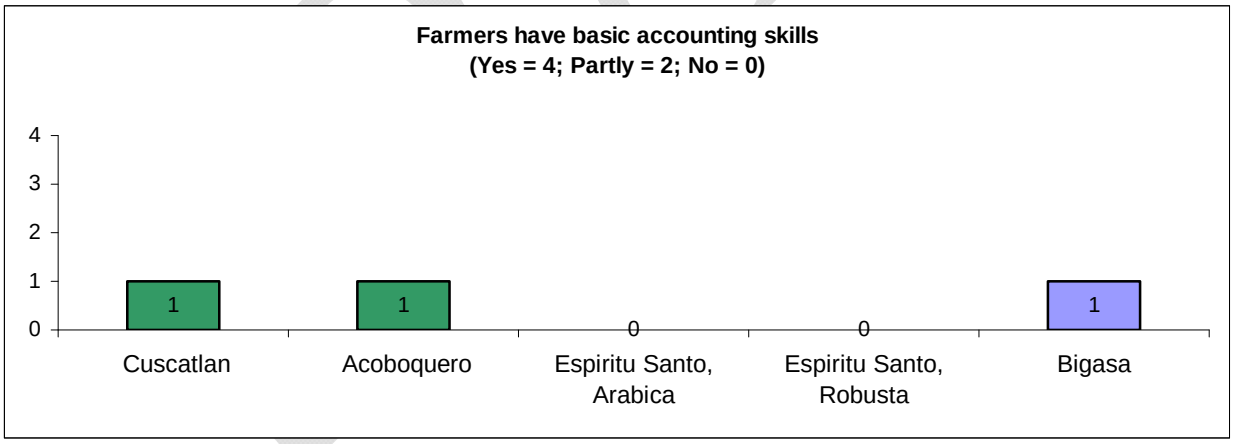
for producers. SAI and NKG emphasize the importance of building producer skills in relevant topics. For Utz Certified, aspects of economic sustainability are part of their general procedures and implementation phase.

In El Salvador, it is common for prices of green coffee to not cover production costs during low coffee price cycles. In the case of Acoboqueron, even though this cooperative had better prices; the income was not enough to cover the high labour costs. The farmers of Cuscatlán hardly invested in their coffee farms, so they did not loose as much money. For members of both cooperatives access to credit is relatively available through banks and processing plants. This is partly due to a government program which provides a loan guarantee of $25 per hundredweight (cwt) to cover coffee maintenance and harvesting costs. The cooperative of Acoboquerón has as an internal policy to work without credit however; Cuscatlán has given loans to their members. However, only about 12% of the smallholders have basic accounting skills and over 30% lack knowledge about their real costs and profits.

In Espirito Santo farmers have very limited access to credit. There are only a few storage facilities available in the region, which establishes strong incentives for quick sales. For most of the coffee producers the only market information available, is the price that the middle men are paying. Few smallholders know about their real costs and profits. Most of them are not able to do basic accounting.

In Bigasa the farmers do not have any access to credit facilities. They also lack the tools and literacy to make effective cost-profit analyses.

TABLE 29: FARMER ACCOUNTING SKILLS



This graph shows that basic accounting skills are missing in all case study regions. Financial management and long-term planning are not possible for many farmers. Training on these issues, improving the access to saving and credit facilities and promoting diversification are actions to improve the economic sustainability of the farmers in all regions.

Actions required for *"Economic sustainability"* compliance:

Cuscatlan & Acoboqueron:

- Introduce farm data recording and analysis tools.
- Trainings on basic accountability have to be conducted, to enable farmers to know and manage their economic information.
- Introduce a saving system to the farmers that they can get easier access to credits if coffee prices are low.
- Training on credit and savings for selected cooperative members shall be conducted to assure the accountability of the Cooperative.

Espirito Santo, Arabica & Robusta:

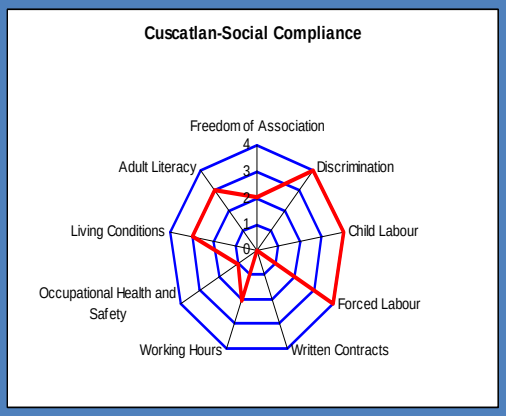
- Introduce analysis of costs and profits at farmer level.
- Trainings on basic accountability have to be conducted, to enable farmers to know and manage their economic information.
- Diversification can be promoted, since there is very good production potential for e.g. kaki fruit, bananas, oranges and tangerines.
- Introduce a credit and savings system for the farmers (e.g. in cooperation with a microfinance institute).

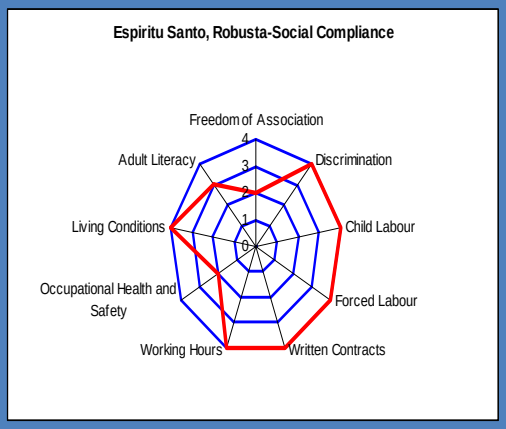
Bigasa:

- Trainings on basic accountability have to be conducted, to enable farmers to know and manage their economic information.
- Introduce a credit and savings system for the farmers (e.g. in cooperation with a microfinance institute).

DISCUSSION AND ANALYSIS

Gaps in Compliance with Social Criteria across the Three Case Study Regions





The preceding section provides an overview of the main areas of action needed for smallholder producers in our three case study regions to become fully compliant with a "core" set of sustainability criteria as defined by the most common mainstream standards applied to the coffee sector. Our overview has revealed that full compliance for small holders along core elements in our case study regions is not something which can be taken for granted but rather involves a process of ongoing farm level adaptations and additions. On the whole, significant changes in operations and infrastructural investment are required for farms to transition towards full compliance. Although the common practice among standards bodies of "accepting" farms into their respective systems based on a plan of continual improvement towards eventual "full compliance" can help to reduce the immediate burden faced by smallholder producers, it is also clear that the adoption of "sustainable practices" requires a significant investment in time and resources for most smallholder farms. Moreover, our observations reveal several areas of "systemic" need for change in order to enable compliance with recognized requirements across the three case study regions.

The main areas of convergence across the three regions can be summarized as follows:

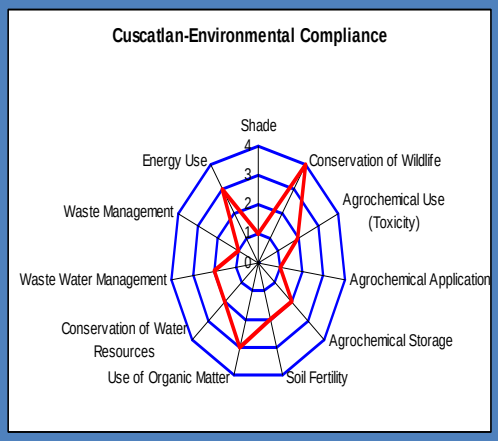
GAPS IN MEETING SOCIAL CRITERIA:

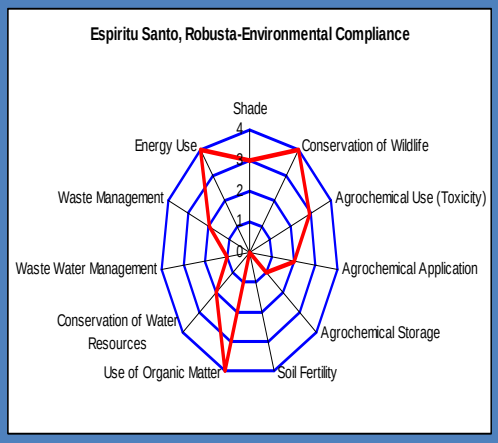
Freedom of association: Several of the standards require "documentation" of the right to associate. Producers across the three regions had no documentation to demonstrate freedom of association for employees. Given that the case study regions consisted primarily of small farmers, the issue of "worker organizations" is probably less of an issue for farmers and more of an issue for local government to manage and document.

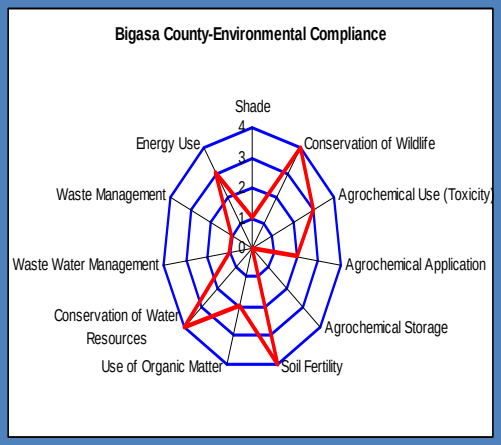
Adult literacy: All of the regions demonstrated relatively low rates of adult literacy. The actions required to rectify this problem include the provision of classes or schools for workers and their children. The availability of, and incentives for attending, local

community schools must be a key element of a larger strategy to improve adult literacy rates. No incentives for improving adult literacy were observed in any of the case study regions.

Gaps in Compliance with Environmental Criteria across the Three Case Study Regions







Occupational health and safety: There is a persistent absence of knowledge and training with respect to basic safety practices across all of the case study regions. There is also a persistent absence of protective equipment on farms applying agro-chemicals.

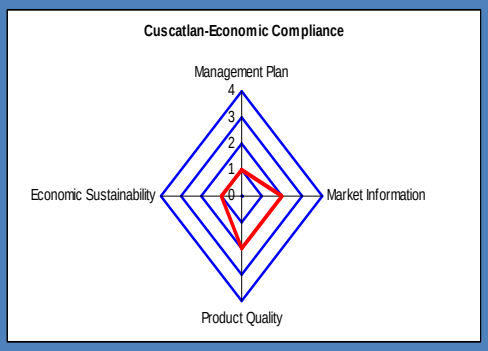
Written contracts: The Espiritu Santo region uses a system of worker permits and contracts which meets requirements associated with written contracts for workers. However none of the farms in the other two regions demonstrated any practice of using written contracts—a situation which almost certainly reflects the majority of the majority of small coffee producers around the world. In El Salvador and Uganda, there is a systemic gap in the community infra-structure for the promotion, monitoring and enforcement of such contracts which makes for an unlikely context for the proliferation of written contracts. As such, actions both at the farm level (in providing contracts) and the community level (in managing such contracts) are required.

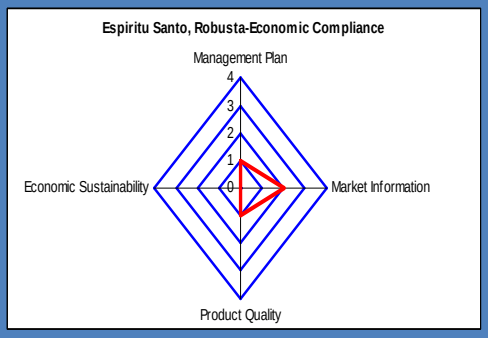
Working hours: Although no evidence of persistent "overworking" of employees was observed or reported, the complete absence of worker documentation in the El Salvadoran and Ugandan producer regions gives rise to a persistent "compliance problem" which needs to be rectified in order to demonstrate appropriate working conditions more generally.

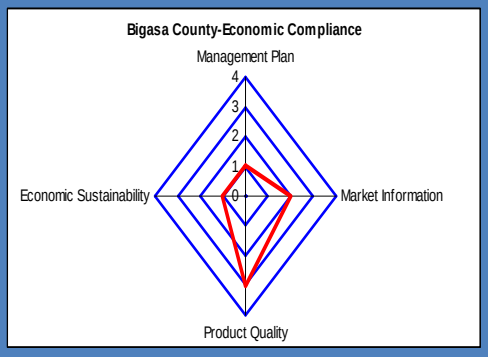
GAPS IN MEETING ENVIRONMENTAL CRITERIA

Waste management: Typically no formal collection system, many farmers burn their own garbage. No systemic means for separating or collecting toxic waste and/or recycling. The successful implementation of such practices only partially depends upon the willingness of farmers to implement such systems

Gaps in Compliance with Economic Criteria across the Three Case Study Regions







which also fundamentally requires the existence of the appropriate local infrastructure.

Waste water management: Household water waste typically is untreated. Most coffee farms do not have adequate treatment systems in place and represent a "threat" to the environmental integrity of local waterways. Low tech treatment systems represent a significant farm level infrastructural investment linked to standards compliance.

Agro-chemical use: In the case study areas, most of the farms do not rely significantly on agro-chemicals. In this sense, agrochemical use does not pose significant sustainability challenges as a whole. Nevertheless, some pesticides are used. Moreover, there is some evidence of the use of prohibited "Class 1 and Class 2" chemicals. The principal area for improvement for ensuring compliance under this heading entails more rigorous documentation of agrochemical use and training of appropriate use.

Agro-chemical application: Of those farms that do apply agro-chemicals, virtually none of them had adequate protective equipment. Of those farms which do have equipment, it was invariably incomplete.

Agro-chemical storage: Virtually none of the farming systems reviewed had adequate chemical storage facilities. In many cases chemicals are even stored in living quarters. Typically adequate storage would entail the construction of new dwellings at a considerable expense.

Shade Cover: None of the regions observed had "adequate" shade cover to comply with the main standards requiring shade cover as a condition. Typically, the establishment of appropriate shade cover would entail the planting of shade trees and the corresponding adjustment of farming practices to match shade conditions.

Management plan: Virtually none of the smallholder farms visited exhibited any form of business management plan for their farm level activities. The absence of any ongoing or long term planning places farms in a systemic position of vulnerability while rendering it extremely difficult to take advantage of new or existing market opportunities. Training and systems implementation are the main actions required for meeting this set of criteria.

Economic sustainability (flexibility): The overall economic sustainability of the farms across the three regions is weak. A considerable portion of the economic vulnerability of the farms in the case study areas can be attributed to the persistent absence of awareness of the precise economic costs and benefits associated with the coffee producing activities. There is a very basic need for improved record keeping and the integration of this into more explicit management strategies across all of the observed regions. In some cases, it probably does not make economic sense under existing conditions to continue producing coffee, but ascertaining this completely depends upon a better understanding of the full costs of production than currently available to the majority of farms observed.

SYSTEMIC ACTIONS NECESSARY FOR STANDARDS COMPLIANCE

Based on the areas of need observed across the three growing regions, the following basic actions form a foundation for building compliance with recognized sustainability standards. Although the precise needs will vary from farm to farm, region to region and certification system to certification system, the prevalence of the need for these actions across the three sample regions suggests a systemic need for action in these areas across smallholder producers on a larger scale.

TABLE 30: PRINCIPAL ACTIONS AND AGENTS FOR COMPLIANCE

Principal Actions and Implementing Agents for Meeting Basic Sustainability Requirements	
Social Criteria	
Action Required	**Implementing Agents**
1. Worker and managerial training on resposible working conditions	Extensionists (provided by traders, national coffee authorities, producer organizations or international aid); Farm owners
2. Implementation of basic worker documentation systems at farm level	Farm owners
3. Establishment of community or regional documentation and framework	Local government

Environmental Criteria	
Action Required	**Implementing Agents**
1. Installation of on farm waste management systems (for separation of toxic waste and recycling)	Farm owner
2. Installation of off farm waste management systems (for separation of toxic waste and recycling)	Local government, producer organizations
3. Installation of household waste-water treatment system	Farm owner, local government, international aid
4. Worker and managerial training on safe agrochemical use	Extensionists; farm owner
5. Documentation of agrochemical use	Farm owner
6. Purchase of protective equipment	Farm owner
7. Installation of agrochemical storage facilities	Farm owner
8. Planting of shade trees	Farm owner, extensionists
Economic Criteria	
Action Required	**Implementing Agents**
1. Implementation of a financial management plan and record keeping	Farm owner
2. Manager training on financial literacy and risk management	Producer organization, international aid, local and international banks, extensionst

COSTS RELATED TO THE IMPLEMENTATION OF STANDARDS

A central concern for producers, and other actors along the supply chain implicated in securing producer compliance, are the costs associated with reaching a fully compliant state. Notwithstanding the rapid growth in the number of systems both across the niche and mainstream markets over the past decade, knowledge about the costs of becoming and maintaining compliance with respect to one system or another remain highly uncertain at best. Given the importance of this question, we undertook a rudimentary analysis of the costs associated with attaining compliance to the "Core Criteria" across different standards. Before considering the nature and results of our analysis, however, a few caveats are in order.

First, given that our analysis revolves around the set of Core Criteria, and not any particular standard *per se*, the results of our analysis can *in no way* be said to be indicative of compliance costs with any particular standard. The additional variety between farming systems and conditions gives this caveat even greater saliency. Having said this, by seeking to calculate the costs of compliance with our set of baseline Core Criteria, a relatively accurate *baseline* for the costs of compliance across producer settings is not an unreasonable expectation.

Second, any measurement of the *costs of compliance* in the absence of corresponding measurements on the yield and quality impacts provides an incomplete indication of the economic viability of any given system and therefore must not be used to draw conclusions about the economic desirability of one system or another. Systems with higher costs may be accompanied by practices which also raise quality and/or yield which offset these costs. Since no attempt has been made within the context of this study to measure the economic *benefits* of standards implementation, these results must be considered accordingly.[19]

Taking these initial notes of caution as our starting point, we undertook a cost accounting of undertaking the essential activities required to attain compliance with the Core Criteria on a region-by-region basis. In order to do so, the following assumptions regarding the farm size and productivity were made:

- El Salvador: 1.75 ha farm size, coffee (Arabica) and other crops (fruits), yield 690 kg/ha green coffee, member of cooperative (formal organization for coffee marketing, input supply and provision of credit), chiefly family labour, family size 8 persons.
- Uganda: 0.625 ha farm size, coffee (Robusta) and other crops (staple food, fruits), yield 300 kg/ha Kiboko or 150 kg/ha green coffee, member of a Depot Committee (formal structure for bulk marketing and input supply established by the project), family labour, family size 12 persons.
- Brazil: 10 ha farm size, coffee (Arabica), yield 1,200 kg/ha green coffee, member of an association (informal organization; no commercial operations), family and hired labour, family size 5 persons.

Based on these assumptions, the costs of compliance were calculated for farms based on grouping of 2000 producers. Table 31 below provides the results of our analysis.

In considering the results of our analysis a brief review of what costs were calculated and how is in order. At a broad level the costs associated with standards compliance can be broken into three categories: *Transition Costs, Certification Costs, Maintenance Costs and Opportunity Costs.* Transition costs, in turn, can be divided into three sub-categories: *Training Costs, Capital Investment Costs and Management System Implementation Costs.* Below we describe the respective sources of costs in more detail:

1. Transition Costs:

[19] For detail on a the full sustainability impacts of sustainability standards, please see the "Committee on Sustainability Assessment" Website at http://www.iisd.org/standards/cosa.asp

Any and all one time fixed investment costs required specifically to attain standards compliance. Transition costs are principally made up of:

> *1.1 Training Costs:* The vast majority of the actions needed to attain basic compliance with core sustainability requirements involve the adoption on new management systems. In order to promote efficiency in the adoption of such systems, some sort of training is required in most cases. As a practical matter it is unlikely that individual farmers can be expected to cover the costs of such training. As such, alternative means for training delivery need to be sought—such as through producer organization, national extension plans or international aid.
>
> *1.2. Capital Investment Costs*: Several of the requirements for compliance imply additional investment in farm infrastructure (eg. Storage facilities or shade trees). Given that one of the main reasons chemical use is low in the regions studied is due to low savings, it seems unlikely that farmers will be able to bear the costs of such investments unilaterally at the outset. Either credit and/or a pooling of individual farm investments (through producer organizations) is likely to be a pre-requisite.
>
> *1.3. Management System Implementation Costs:* In addition to training and material investments, management systems need to be designed and implemented. Most of the management system costs are associated with the documentation and management of criteria fulfillment. Due to the high level of costs associated with these activities, producer organization is usually a prerequisite to being able to enter into one or another "sustainable market" (as designated by compliance with one or another sustainability standard). Producer organizations are usually required to implement the sophisticated Internal Control Systems required to demonstrate compliance. Even where farmers are organized, however, compliance will inevitably require some level of investment at the farm level as well to ensure the appropriate documentation is gathered at the field level.

In addition to transition costs, farms seeking to maintain compliance with sustainability standards over time can expect to be faced with:

2. Certification Costs and Fees: In order to retain "recognized status" within one or another program, participating farms will typically need to demonstrate their compliance on a regular basis. In addition to the development of record keeping systems which enable them to report on their activities, farms will typically have to pay for auditing or verification procedures carried out on their farm. Moreover, some of the certification systems, such as Rainforest Alliance, require producers to pay a volume or area-based "certification fee". In cases where certification systems charge traders or roasters, it is possible that producers may still face these "costs" through reduced prices for their products.

3. Ongoing Maintenance Costs: The ongoing management of "compliancy systems" (record keeping, reporting, organization of inspections and other activities), recurrent investments in protective clothing, for agrochemical use or instruments for integrated pest management, are examples of ongoing "additional" costs which will be borne by producers seeking to maintain their compliant status over time.

4. *Opportunity Costs:* Some of the practices associated with standards compliance, such as the creation of buffer zones along water ways and the setting aside of productive land to establish

"compensation zones" as a replacement shade coverage, imply reduced or lost benefits due to forfeiture of use for other "productive" means. A full cost accounting needs to include the costs associated with such practices.

In our efforts to assess the costs of compliance with our baseline Core Criteria, certain limitations on the data collection made it impossible to obtain "full cost" accounting of compliance costs. In particular, costs associated with the implementation of management systems (a transition cost) and maintenance of management systems (a maintenance cost) were impossible to estimate due to the extreme diversity depending on the individual farm system and corresponding level of producer organization. At the same time, only a range for "certification costs" could be provided since these costs vary from scheme to scheme. On this basis, our calculated costs should be considered as giving a description of the low-end of the scale of possible costs.

COST CALCULATIONS AND OBSERVATIONS

Table 31[20] below provides a summary of our cost calculations based on the parameters described in the preceding section. The estimated total annual per quinal costs of maintaining compliance with the Core Criteria at the Espirtu Santo, Cuscatlan and Bigasa case study areas are $9.12, $8.00 and $35.72 USD respectively. Below we provide a very brief explanation of principal sources of "cost" with respect to each region.

TABLE 31: ESTIMATED COSTS FOR COMPLIANCE WITH CORE CRITERIA

Case Study Region	Espiritu Santo	Cuscatlan	Bigasa
Average Farm Farm Size (ha)	10.00	1.75	0.35
Average Total Production (kgs)	12000.00	1200.00	150.00
Annual Maintenance Cost (USD)	175.00	126.00	88.50
Annual Opportunity Cost (USD)	2160.00	45.00	0.00
Transition Cost--Capital Investment (USD)	415.00	372.00	258.30
Transition Cost-Training (USD) [21]	29.18	26.80	21.60
Total Cost—Year 1—without opportunity cost (USD)	**619.18**	**524.80**	**368.40**
Total Cost--Year 1—with opportunity cost (USD)	**2779.18**	**569.80**	**368.40**
Total Annual Depreciated Cost (USD)	**2379.42**	**210.88**	**135.93**

[20] Appendix 3 provides more detail on the specific costs taken into account for the cost calculation

[21] Based on a farmer grouping of 2000 farmers.

Annual Depreciated Cost-without opportunity cost (per Quintal)	**0.84**	**6.32**	**35.72**
Annual Depreciated Cost per Quintal-including opportunity cost (per Quintal)	**9.12**	**8.03**	**35.72**

ANNUAL MAINTENANCE COSTS

The Annual Maintenance Costs are annual recurrent costs associated with standards compliance. In the case study regions, the principal sources of annual recurrent costs for maintaining compliance were associated with water analysis and purification, the purchase of protective clothing for chemical application, costs associated with non-chemical pest treatment/soil management techniques (purchase of broca traps in Brazil and El Salvador; mulching and manuring activities in Uganda). Importantly these costs do not include the management costs associated with standards compliance. Although these costs vary depending on the size of the farm and nature of the sustainability initiative, they can be significant and should not be underestimated in importance. The annual maintenance costs associated with the Espiritu Santo, Cuscatlan and Bigasa regions respectively are $175, $125 and $88.5 USD. The difference in these totals can largely be explained by the difference in farm size and production volumes in the respective growing regions. Although the annual maintenance costs in those regions with lower per farm production levels are lower than those in the regions with larger farms, the *per quintal* annual maintenance costs are significantly higher in Bigasa (at $27 USD per quintal) than those in Espiritu Santo (at $.67 per quintal). The reason for this is due to the fact that many of the compliance costs, such as water and soil analysis and the purchase of protective equipment are fixed costs which can be spread across greater production than that found on the smaller farms. This suggests that significant savings could be had through "group compliance" measures, whereby farms share some of these fixed costs across their farms (eg. such as sharing protective equipment and water analysis costs)

ANNUAL OPPORTUNITY COSTS

The opportunity costs associated with Core Criteria compliance are principally associated with forgone production associated with setting land aside in accordance with the preservation of local environmental integrity.[22] The opportunity costs in any given case region were measured on the basis of "existing" production practices in the respective regions.[23] As such, the opportunity costs

[22] It is important to note that we have not made any attempt to calculate the "opportunity cost" associated with the "transition cost" investments (eg. forgone interest on investment).

[23] More specifically, no attempt was made to calculate the "opportunity cost" associated with traditional (existing) shade production systems (in El Salvador) as compared with production under sun conditions.

associated with compliance varied significantly across the three case study regions. The Espiritu Santo region, by far, experiences the most significant opportunity costs (at $216 US per hectare) by virtue of its having to set aside compensation zones in order to promote natural biodiversity within the context of a full sun production system. The Cuscatlan region, on the other hand, faces far lower, but still important opportunity costs (at $25 US per hectare) associated with the installation of buffer zones along waterways. The Bigasa region, with a natural shade production system and limited waterways, on the other hand, faces insignificant opportunity costs as a result of compliance.

The variance in opportunity costs across the regions, besides being a function of how the local existing practices compare with the required practices by sustainability standards, reveals a positive correlation between farm per hectare productivity and the opportunity costs associated with standards compliance. In short, those farms which have adopted more technically intensive (sun) farming techniques can be expected to face the most important opportunity costs in maintaining standards compliance, whereas those with more traditional shade systems can expect to face lower opportunity costs.

CAPITAL INVESTMENT COSTS

Capital investment costs describe longer term fixed investments which need to be made in order to secure compliance with the sustainability standards. The principal capital investments required for compliance across the case study regions were improvements in toilet and waste water treatment facilities, agrochemical storage facilities, safety signage, and shade tree planting. The total and individual costs across the three regions reveals a similar pattern to maintenance costs of compliance with the capital investment costs per hectare rapidly rising inversely to farm size/productivity. More specifically, capital investment costs at Espiritu Santo are estimated $415 US per farm or $41 per hectare while those Bigasa are estimated at $258 per farm or $750 per hectare. This reflects the fact that capital investments such as toilet construction or storage facility construction are fixed costs which do not vary with production levels but rather arise at the level of each individual farm no matter what the size.

Although capital investment costs are significantly lower than annual maintenance costs associated with standards compliance when depreciated over their average lifespan (estimated at 10 years in our calculations), the fact that they are fixed costs which must be invested up front, makes them a particularly important burden for smaller producers who typically lack any savings. In terms of "first year cost expenditures" (not including opportunity costs), capital investment costs represent more than 50% of the total initial costs in becoming standards compliant. This fact suggest that the successful transition of smallholder farmers to certified systems of production will fundamentally depend upon access to reasonable credit which can permit such investments.

TRAINING COSTS

One of the key areas of "change" which sustainability standards require are changes in management practices and systems. While our calculations have not made any attempt to calculate the costs (or costs savings) associated with the adoption of such systems per se, we did undertake a rough

Additional Costs for a "Full Cost" Calculation

Although not possible within the context of this study, a calculation of full-cost accounting would also include, costs associated with the development and implementation of management systems required for monitoring and reporting as well as direct costs associated with certification itself.

Although we provide no estimate of the management costs, in the case of a producer group of 2000 farms, one can expect to employ at least one full time person to deal with basic management requirements associated with certification. To this, one must also add the farm level monitoring and reporting activities. Further details on rough estimates of such costs can be found in Appendix 3.

With respect to certification costs, some of the standards initiatives (such as Rainforest Alliance and Utz Certified) require annual inspections which can cost between $250 and $500 US per annum. Added to these costs are direct certification fees. In the case of the initiatives studied in our research, only Rainforest Alliance charges certification fees to producers (between $5 and $7 per hectare). Other initiatives, however, charge certification fees to traders or roasters which *may* have an impact on prices paid to producers.

estimate of the *training* costs associated with enabling the require knowledge transfer for the implementation of such systems across the three regions.

The principal sources of costs associated with management training across the regions are roughly the same with expenses going to staff to train on the following management issues: occupational health and safety, waste management, accounting and literacy training and pest management training. Given the need for the appropriate infrastructure and staff for training delivery, our calculations were made on the assumption that any given training system would be delivered (and costs distributed) across a group of 2000 farms. Although per farm costs are slightly higher in the Espiritu Santo region (at $29 US) than in the Bigasa region (at $21 US), the per hectare or per quintal cost of training delivery is far more costly in the Bigasa region.

As with the capital investment costs, the training costs, are far less than annual maintenance costs and yet nevertheless represent a major obstacle to standards adoption since they entail significant up front fixed costs and high levels of producer organization (for their efficient delivery). Given this context any effort aimed at strategically promoting smallholder access to sustainable markets must place a high priority on enabling the efficient delivery of training—a fact which simultaneously implies an emphasis on facilitating improved "producer organization" or "shared management".

TOTAL COSTS

As already noted, our calculation of "total costs" does *not* include the costs (or benefits) of either implementing or maintaining new management systems. Nor do our total costs include the direct fees associated with most standards systems. As such, these numbers should be considered as a "conservative" estimate of the costs associated with standards compliance. At the same time, it should also be noted that *actual* compliance costs could be significantly lower in any individual case if a particular farm does not have a practice or intention of applying any agrochemical products (since this implies considerably reduced maintenance and investment expenditures). As such, our estimates remain nothing more than estimates, however, they do provide a rough indication of the costs associate with the adoption of

basic practices stipulated by standards across the three case study regions.

"Total Cost—Year 1" in Table 31 provides the total first year investments required to enable full transition/compliance to the Core Criteria across the three regions. In terms of direct first year expenditures (eg. Without considering opportunity costs), total first year costs are estimated at $619 US for Espiritu Santo farms; $524 US for Cuscatlan farms and $368 for Bigasa farms. As already noted the vast majority of the first year expenses (between 65% and 70% of total first year expenditures) are associated with capital investments. In the case where opportunity costs are taken into account, the lost revenues from loss of productive land can be as or more important than fixed investment costs—but only in regions where high productivity exists and is subject to non-shade production practices (eg. Espiritu Santo in our case study). The Total Annual Depreciated Cost provides the annual total farm cost for maintaining compliance with the transistion (training and investment) costs depreciated oer a ten year period. The Total Annual Depreciated Cost provides the basis for calculating the per quintal cost, which is calculated both with and without the opportunity cost (eg. In term of "total costs" and "actual expenditures" respectively).

Using the Annual Depreciated Cost per Quintal (including opportunity cost) as the general measure of full costs towards compliance, it become apparent that the Espiritu Santo and Cuscatlan farmers experience roughly similar compliance costs (at $9.12 and $8.03 US respectively). The per quintal costs of compliance for Bigasa farmers, on the other hand, stands out strikingly at $35.72 US. The explanation for this is almost entirely due to the fact that many of the investment and maintenance costs associated with compliance are incurred on a "per farm" basis irrespective of the production levels. The extremely low per farm production levels in Bigasa, therefore, make the cost of compliance extremely high. Following this same logic, the annual compliance costs for Espiritu Santo farmers would be far less than either of the other two case regions on a per quintal basis. The higher opportunity costs (as a result of the sun-based production system) however operate as a compensating factor on these reduced costs—ultimately rendering the per quintal price of compliance slightly higher than that expected for Cuscatlan farmers.

Although our figures have attempted to reflect "real" costs, associated with formal standards compliance, many of these costs may, in fact, not be borne directly by producers seeking compliance for the following reasons:

1. The standards bodies themselves may apply a policy of "flexible implementation", allowing farmers to claim compliance with lower level practices within the context of a continual improvement plan—although such plans do, presumably, foresee full compliance over time.

2. Many of the costs associated with "compliance" are related to chemical use. But many of the smallholder farms in the regions studied, apply little to no agro-chemicals. To the extent that this is the case, considerable savings could be had by such farms in eliminating chemical use altogether, or sharing chemical use equipment and storage facilities.

3. Although opportunity costs are calculable in terms of lost revenue, it is typically the case that most important opportunity costs (those in the form of compensation zones) were "previously" non-productive lands owned by farmers. In such cases, the "transition" to compliance implies no direct cost.

CONCLUSIONS AND RECOMMENDATIONS

Our research in three high distinct small holder producer regions has demonstrated that the actual actions required for attaining a basic level of compliance with recognized sustainable practices are quite similar across different regions. These can broadly be summarized as:

Farmer and Worker Training: The vast majority of the actions needed to attain basic compliance with core sustainability requirements involve the adoption on new management systems. In order to promote efficiency in the adoption of such systems, some sort of training is required in most cases both at the farmer and worker levels. Although farmers can manage worker training, the capacity to do so, depends upon initial training at the farmer level.

Equipment, Property and Building Investments: Several of the requirements for compliance imply additional investment in farm infrastructure. The most recurrent and significant examples where a need for material investment in buildings and equipment were: 1. Construction of storage facilities for chemicals 2. Building appropriate waste disposal facilities 3. Planting of shade trees.

Management System Implementation: Compliance with sustainability criteria is fundamentally built on the development of monitoring and evaluation systems for *demonstrating compliance*. Virtually no "non-certified" farms have appropriate monitoring and evaluation systems in place prior to certification and therefore need to develop and implement these systems as part of their becoming "recognized" as sustainable.

And while the actions for compliance were observed to display considerable similarity, the per unit costs associated with compliance varied considerably across the regions. The principal observations regarding the cost of compliance can be summarized as follows:

Per unit opportunity costs vary inversely to productivity: Farms with higher levels of productivity will face higher opportunity costs associated with foregone revenues due to land designated as "non-productive" for biodiversity or conservation purposes. This is a direct result of the higher productivity of land, but can also be a result of the need to set aside more land due to the "practices" which enable higher production (eg. Sun production)

Per unit compliance costs increase as farmer size/productivity decreases: Many if not most of the expenses associated with enabling compliance are not a function of the volumes produced but rather are more or less constant across smallholder farms (eg. Building of toilets, waste management facilities, storage facilities). In this context, the per unit cost of compliance will be far less for larger producers than smaller producers.

Transition costs constitute a significant barrier to entry for smallholder producers: Although transition costs only account for a small portion of total annual compliance costs when depreciated over time (between 5% and 20%) they account for a significant portion of first year establishment costs (65%-70%). The need for up-front investment in making the transition to sustainable practices presents a significant obstacle to producers with little or no savings.

Based on our observations, there is clearly a deep need for investments directly aimed at enabling smallholder participation in sustainable markets if such markets are to be considered truly sustainable. Since the Rio Earth Summit, sustainable development has been fundamentally been defined in terms of ensuring that those most in need have the resources necessary for sustainable livelihoods. As such, any strategic approach to the promotion of sustainable production and trade within the coffee sector needs to take special care in ensuring that those most in need, namely the smallest producers, are not systemically disadvantaged by such efforts.

In order to help ensure that standards-based supply chain initiatives are indeed in line with these broader objectives, the international community, both in the form of stakeholders along the supply chain and in the form of policy makers, needs to take pointed action at enabling the capacity of smallholders to attain compliance in order to avoid the eventual exclusion of smallholders from sustainable markets. To the extent that many of the investments required for "sustainable production" can be spread across larger production units than those maintained by individual farms, there is a need to seek ways of spreading the costs of compliance across smallholder farmers. With this in mind, and drawing from our observations, we offer the following key recommendations:

Recommendation 1: The international community should make significant investment in management and financial literacy training which links good management practice to compliance with recognized practices.

Sustainable practice is fundamentally about the adoption of "good management practice". Although this is already widely recognized, the urgency for investing in improved management practices across smallholder farmers has grown dramatically as such farmers face not only social and environmental challenges in light of traditional practice, but outright exclusion from the market and, with it, a direct threat to producer livelihood. The investment required to enable a "smooth transition" of smallholder farms into sustainable production systems is closely related to the development of the underlying infrastructure to enable basic hygiene and quality of conditions and is directly linked to fulfillment of the Millennium Development Goals.[24]

Recommendation 2: The international community should invest directly in the facilitation of enhanced producer organization in impoverished producer regions. Such investment needs to be linked directly to management and financial literacy training.

The majority of the world's coffee producers are unorganized smallholders. Our analysis has confirmed the systemic disadvantaged faced by such smallholders in the context of increasing requirements linked to "sustainable practice". Given that the principal reason smallholders face higher costs than larger farmers is due to the inability of the former to spread their "compliance investments" over the optimal level of productive capacity. The facilitation of enhanced producer organization provides a key vehicle for enabling producers to share fixed costs of compliance thereby reducing per unit compliance costs overall. The ability of producer organizations to

[24] In light of this need the Sustainable Coffee Partnership has played a leading role in the establishment of the Sustainable Coffee Assistance Network—a multi-institutional initiative aimed at establishing and implementing a generic program of technical assistance for sustainable management at the producer and organization level of commodity producers committed to sustainable practices. See http://www.iisd.org/markets/tech/scan.asp for more information.

achieve this objective effectively is directly linked to the management capacity of the organization. As such, specific attention needs to be given to the ensuring that new organizations are equipped with management skills appropriate to participation in standards-based markets from the start.

Recommendation 3: The international community needs to help free the availability of affordable credit to smallholder producers committed to adopting sustainable practices by investing in "sustainable finance mechanisms".

Long term access to credit for smallholder farmers ultimately depends upon building the credit worthiness of producers. Although the processes associated with standards compliance can carry producers a significant part of the way towards increased credit-worthiness, the initial investments towards such a change requires the investment of public funds at preferential rates to help stimulate the positive lending to producers committed to adopting sustainable practices. The US Development Credit Authority as well as the Dutch Sustainable Agriculture Guarantee Facility represent two innovative instruments for reducing the cost of creditors in delivering credit to sustainable producers by sharing risk between private and public capital. There is a need for a ramping up of similar mechanisms with a direct link to the adoption of sustainable practices.[25]

Recommendation 4: The international community needs to invest in research aimed at identifying the full costs and benefits associated with the adoption of practices associated with sustainability standards.

Our analysis has provided a summary indication of the costs associated with the adoption of "recognized" sustainable practices. However, in order to enable more strategic decision making with respect to such initiatives, both by producers, producer governments and the international community at large, there is an urgent need for a more balanced investigation into the costs and benefits associated with such initiatives. Given the size of the challenge, and the time lag between investment and benefits, it is critical that such measures be based on a time series approach and not rely solely on one-time snapshot measures.[26]

[25] In light of this need the Sustainable Coffee Partnership has played a leading role in the promotion of the Finance Alliance for Sustainable Trade (FAST). Among other things, FAST aims to stimulate the development of guarantee fund available to lenders lending to sustainable farmers. See http://www.fastinternational.org/ for more information.

[26] In light of this need the Sustainable Coffee Partnership has played the role of lead facilitator of the Committee on Sustainability Assessment (COSA) Project. COSA is in the process of applying a multi-criteria analysis approach to the assessment of the impacts of major sustainability initiatives in the coffee sector across the three main coffee growing regions of the world. See http://www.iisd.org/standards/cosa.asp for more information.