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Supporting Ecosystem Services in Fairtrade Value Chains

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Supporting Ecosystem Services in Fairtrade Value Chains

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Contents:

Summary

This briefing examines ecosystem service projects funded by companies that specialise in the well-established Fairtrade product groups of coffee and cocoa. Ecosystem services are defined as those which support life, regulate the environment, provide products or meet cultural or aesthetic needs.

We looked at:

- why Fairtrade companies support ecosystem services
- how companies engage their suppliers to implement projects
- what impact interventions have on the communities they support

Key findings:

Companies are becoming increasingly aware of the threat to security of supply from climate change and environmental degradation, which is leading to decreasing or variable supply. The best practice initiatives reviewed for this study mostly started out as CSR programmes that supported general social and environmental projects. Now, ensuring the sustainability of the ecosystems their businesses depend on is part of their business plan. Certification of products or voluntary carbon accreditation is seen as added marketing benefits, rather than being the main drivers for investment.

Best practice approaches:

- initiatives should be closely aligned with the environmental needs and aims of producer organisations
- restoring ecological processes requires medium to long-term commitments often from an alliance of companies and producer organisations
- potential trade-offs between ecosystem services should be considered, such as the benefits of planting fast-growing species for carbon capture versus effects on biodiversity
- greater impacts and capacity to affect change can be achieved through an alliance between companies, producer organizations and development organizations
- scientific advice may be needed to assess whether the desired ecological impacts are being delivered: e.g. the assumption that reforestation restores water supply
- interventions should seek to engage with local policies that may support or hinder the overall aims

Introduction

The role of Fairtrade in promoting more stable incomes and improved well-being has been shown by a number of studies (Imhoff and Lee 2007, Murray et al 2006, Ruben et al 2008), as has the social empowerment (Bacon 2005) and improved access to markets (Murray et al 2006) that Fairtrade generates for producers and their organizations. The annex to this paper summarises findings from studies on the environmental performance of Fairtrade producers across a range of products and countries. The general conclusions are that while Fairtrade has good environmental performance in some areas e.g. reduced use of the most toxic pesticides and promotion of agroecological production practices, other aspects, such as prevention of contamination of water sources, are sometimes lacking. Nevertheless, there has not been a systematic study of how and why Fairtrade companies are investing in environmental sustainability of their producers to ensure the provision of ecosystem services.

The current study examined ecosystem service projects funded by companies that specialise in the well-established Fairtrade product groups of coffee, cocoa and tea. These commodities were selected as they were considered to be the most advanced in integrating environmental concerns in their businesses. Ecosystem services are defined as those which support life, regulate the environment, provide products or meet cultural or aesthetic needs.

Ecosystem services are defined as natural processes which

- support life, e.g. pollination, soil fertility
- regulate the environment, e.g. water supply or climate
- provide products e.g. food, timber, fibre
- meet cultural needs, e.g. nature watching, landscape aesthetics

Implementation of the study

The study addressed three overall questions:

- why Fairtrade companies support ecosystem services
- how companies engage their suppliers to implement projects
- what impact interventions have on the communities they support

An initial scouting was conducted of environmental initiatives between Fairtrade companies and producer organizations. From an initial listing of about 15 initiatives (some with the same company), we selected six companies to interview. These are companies that import, process and in some cases retail directly to consumers coffee, tea and cocoa, with at least part of their supply coming from Fairtrade certified producers.

Three of these cases were selected to study in greater depth by visiting the producers and their organizations in the country of production. The following criteria for selection were used.

i.Initiative was led by a UK or EU-based Fairtrade licensed processor or retailer who is making a direct financial contribution to the initiative

ii.Promotion of ecosystem service management that goes beyond "improving productivity," i.e. generates environmental benefits for society as a whole

iii.The environmental strategy has impacts along the value chain, i.e. not just corporate social responsibility to producers, or mitigation of climate or environment at processor/retailer level

iv.Among them the cases represent distinct approaches to providing support for the ecosystem service initiative

Country visits were made to interview the managers, field technical staff and farmers of the Fairtrade producer organizations to assess the implementation of the environmental support and the current outcomes of that support. Interviews were also conducted with other (usually development) organizations supporting the initiative.

General findings from company interviews

All companies were concerned about the impacts of environmental and climate change and were developing and implementing strategies to reduce their own impact and to support their suppliers in increasing their resilience to future changes. A summary of the interests and support by companies to ecosystem services is presented in table 1.

Company interests and concerns included:

- Better evaluation of the impacts of environmental degradation and climate change and recommendations of how to adapt.
- One company was concerned that some of the predictions for climate change impacts were over-stated; they were unsure what the level of confidence was in the predictions and thus how good a basis they were for making business decisions.
- One company that owns plantations (though not the Fairtrade part of their business) felt directly threatened by climate change and had developed and implemented strategies to recuperate environmental conditions in and around their plantations.
- More in-depth evaluation of environmental and socio-economic benefits from climate adaptation and sustainable production initiatives
- Better understanding of the demand and interest of consumers for environmentally sustainable or climate friendly products. The perception is that consumer demand for a "climate friendly" or "biodiversity friendly" product is not strong. Two companies quoted the case of the M&S carbon neutral chocolate bar – the C-neutral explanation was on the inside of the wrapper, and now the product has been withdrawn. At the same time they feel the need to pass on some of the costs of environmental investments to the customer, but this is seen as difficult in the current economic climate.
- Nevertheless, there was some interest in obtaining products with specific sustainability characteristics, e.g. complying with a specific set of criteria within a sustainability standard such as the shade grown indicators for coffee.
- As climate change affects all suppliers, how can you scale-up from pilots or projects to involve the whole business?

Table 1 Summary of interviews with companies involved in supporting ecosystem services from producers

How have they engaged in ES	How respond to business plan	What kind of support	Which are best cases	What would like to learn
Taylors of Harrogate				
Reforestation/Yorkshire Rainforest project, Initially UK, then 3yr project Peru, now moving to reforestation in coffee/tea supplying areas in Kenya With suppliers supporting certification under Rainforest Alliance	Initially philanthropy - reforestation, then moved to concern on sustainability – certification Rainforest, moving to climate change and sustainability of supply, want to link reforestation more closely to supply chain	Have small grants scheme 12 per year to producer suppliers. Have supported costs of Rainforest Alliance certification and other environmental costs	Peru reforestation commitment completed, Kenya just starting Small grants – COOMPROCOM being supported for 2nd yr	How to monitor & evaluate impacts
Chocolate Halba				
Financing planting high value trees in cocoa, for sustainability and carbon sequestration – contribute to carbon neutrality	Sustainability of supply main aim; carbon neutrality secondary benefit – i.e. can sell carbon neutral chocolate – about 10%	They work with Pur Projet who administer with producer coop the reforestation, farmer gets the high value timber tree plus some small payment	Peru – ACOPGAGRO largest VCS certified 2 million trees since 2008 – with other investors Honduras 50,000 trees plus cocoa not certified Ghana 65,000 trees since last year, not certified – but needed for sustainability	Environmental benefits in terms of water, carbon, biodiversity of sun/shade cocoa
Matthew Algie				
Support for certification under Rainforest Alliance and ultimately climate module. Also supported carbon footprinting Interested in greater rewards for higher level of compliance – e.g. shade characteristics	Triple certification Fairtrade/ Organic /Rainforest Alliance to keep ahead of the competition, next step is climate friendly M&S concerned on climate	Contribute to project costs e.g. climate readiness or certification, mainly in alliance with other technical support organizations and support from retailers	Peru Cecovasa, San Juan de Oro, Triple certif, CFT, and climate module Honduras COCAFCOA triple certification + climate module, - selling for a premium	Like to know opinions of buyers/retailers How to transfer climate module to Africa How to scale up from pilots to all supply chain
Twin/Finlays/coffee				
Finlays role quality control and trading Concerned about sustainability of supply	Customer Sainsbury's keen to source from poorest countries About to launch as single source coffee Want to ensure long-term sustainable relationships	Mzuzu Malawi project funded by FRICH/DFID Twin – supported of sustainability practices	High adoption Sustainable Agriculture producers Mzuzu got funds to expand Interest Sainsbury's on environment and climate change	More info for trade on environmental impacts and how producers are responding
Finlays/Tea				
In UK reduction carbon emissions, waste etc. Overseas mainstream environ and social management as part of business case	Longer term sustainability – threat of climate change to tea – aim to adapt with microclimate management Unilever demand for Rainforest Alliance certification	Investment in supporting reforestation in landscape e.g. Mau Forest, and restoration on plantations e.g. Sri Lanka. Focussed on their own properties but with benefits to community.	Sri Lanka – forest/tree cover, soil restoration, improved microclimate, water supply Kenya Rainforest Alliance certification integrating sustainable management practices	Need real evaluation of environmental benefits Not really associated FT with environment – what are the environmental benefits?
Cafédirect				
Climate change threat to supply and members, also integrates all ES. Support to adaptation strategies, and reforestation-C project to finance adaptation	As social enterprise ES investments seen as direct benefit; mission to support producer communities Certified C in reforestation to bring in more C buyers	Reforestation communities above Cepicafe protect watershed. £55,000 payment C over 6 years. 10% goes to adaptation. Bewleys now committed to similar purchase	Peru – Cepicafe C offsetting Climate adaptation, Also adaptation processes in Mexico, Kenya & Uganda for tea and coffee producers	Lack of evaluation of Public-Private partnerships and company investments in environment Lack knowledge consumer demand for environment, biodiversity, C neutral

Business case and best practices

Details from the case studies are presented in the later sections. A synthesis of the findings and recommendations are presented below.

Business case for investment in environment

Why are companies supporting ecosystem services?

- The primary aim of companies is to ensure supply of the products their business and the farmers they buy from depend on. They perceive a threat to this supply from climate change and environmental degradation, leading to falling or variable supply.
- Their initiatives generally have stemmed from earlier CSR programmes that supported general social and environmental projects. Ensuring the sustainability of the ecosystems where their suppliers produce is now part of the business plan.
- Benefits such as certification of products (climate friendly) or purchase of voluntary carbon credits (as part of offsetting company C emissions) are seen as secondary marketing opportunities. The main benefits are seen as the standards associated with these schemes contributing to the sustainability of production and supply in the future.
- There is interest from retailers in supporting environmental sustainability or climate adaptation, but as yet this is not strongly linked to generating marketing benefits.

How companies engage their suppliers to implement projects

- In most cases, companies provide direct financing to the environmental project
- Often there is complementary funding – often from public funds
- Often the projects are managed by third parties - local or international NGOs or non-profits
- In some cases small (competitive) grants are made direct to suppliers

Best practice approaches

- Moving investment in environmental services from CSR to business risk management can provide greater benefits to the company and justify larger investments
- initiatives should be closely aligned with the environmental needs and aims of producer organisations; one way to achieve this is through competitive grants schemes open to suppliers e.g. Taylors small grants, but some orientation or advice may be required and limits the companies direct involvement in the initiative.
- Seek independent scientific advice to evaluate the potential to attain desired environmental and other benefits
- Greater impacts and capacity to affect change can be achieved through an alliance between companies, producer organizations and development organizations, the later providing specialist support
- Interventions should seek to engage with local policies that may support or hinder the overall aims
- Restoring ecological processes requires medium to long-term commitments to validate approaches and expand to a scale to have significant impact

Conclusions of impacts on ecosystem services

- Projects generally aim to restore forest ecosystems and the ecosystem services associated with them - both productive and broader environmental benefits with a primary concern to conserve water sources
- Reforestation can provide benefits of improved micro-climate, improved soils, reduced erosion, reduced peak flows of rivers, increased carbon stocks, habitat for wildlife, etc – but there can also be trade-offs between these benefits
- Farley et al (2005) reviewed 26 reforestation projects from across the world that “clearly demonstrate that reductions in runoff can be expected following afforestation of grasslands and shrublands, and may be most severe in drier regions”; this was evaluated by measuring the flow of water in rivers from reforested catchments (See Box)
- Thus, there appears to be a contradiction between the expectation (and experience?) of civil society that reforestation conserves water supplies and the scientific literature which states water supply is reduced.

Reforestation and water supplies

It is a commonly held belief that reforesting will protect or even recover water supplies from springs, rivers and streams for rural communities. However there is little scientific evidence to support this (Bruijnzeel 2004), and there are several different factors to differentiate. One is the total amount of water released from a catchment - the total water yield, another is the base flow or dry season flow – often of greatest interest to local communities who need an ensured water supply at the driest time of the year. There is some scientific evidence (and considerable anecdotal evidence from communities) that deforestation leads to higher peak flows of water in the rainy season and lower water availability in the dry season, but the total amount of water released – the water yield may be higher. However although reforestation may reduce the peak water flows, the evidence so far is that total water yield and dry season water flows decline. This is not really a surprise as trees consume (transpire) more water than scrub or grass (leading to lower dry season flow) and this needs to be balanced against their positive effect on increasing water infiltration into the soil (reducing peak flows). Farley et al (2005) studied the effects of reforestation of grasslands and scrubland from 26 cases in different countries across the world, but a large majority of the cases were reforestation with eucalyptus or pine. The study recognizes that the effects are stronger for eucalyptus, but still very significant with pine. Also, the effects may be temporal and there was some evidence that the decline in water yield lessons in plantations over 30 years old. Nevertheless, other reviews have not been able to find scientific evidence for positive effects of reforestation on dry season water flow (Bruijnzeel 2004).

In summary, the weight of evidence is that reforestation is likely to cause declines in water yield to streams, including or even especially in the dry season, at least in the short-term of 20-30 years. There is some evidence that beyond that time, the hydrological functioning associated with the original forest start to recover. This may be because it takes this long for the water holding capacity of the soils to recover similar to a forest. How long that may take will depend on the local hydrology and the characteristics of the tree species. A partial solution could be to plant trees in agroforestry systems or boundary plantings to gain some of the positive benefits of decreased peak water flows, while minimizing increased water transpiration through having a lower tree density in the landscape, and obviously avoiding water hungry species such as eucalyptus.

Lessons for the scientific and development community

- potential trade-offs between ecosystem services should be considered, such as the benefits of planting fast-growing species for carbon capture versus increasing biodiversity
- scientific criteria are needed to assess whether the desired ecological impacts are being delivered: e.g. the assumption that reforestation restores water supply
- NGOs and scientists need to improve their communication and integrate their understanding on environmental management and its impacts

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Case study 1

Mitigating and adapting to climate change in Peru

Cafédirect climate change investments

Cafédirect is a social enterprise in which the producer organizations are partners in the business, and thus the business has a direct interest in the livelihoods and sustainability of the producers who supply it. In 2005 Cafédirect conducted a strategic environmental analysis along its value chain and saw climate change as a unifying theme that brought together the concerns of environment, its effect on the supply of products, and the lives of the producer families. At the same time the company has evaluated its carbon footprint and committed to reduce emissions by 15%. Nevertheless, Cafédirect does not perceive a real demand at present from consumers to directly support climate adaptation nor for carbon neutral products. Their aim in investing in climate adaptation and mitigation is to ensure the livelihoods and supply of quality products from the farmers in the face of the perceived threats from climate change.

In 2007 Cafédirect initiated the AdapCC project in partnership with GTZ (German Technical Cooperation) supporting coffee and tea producers in Latin America and Africa, with Cafédirect providing 52% of the funding. The main objective of the project was to develop climate adaptation strategies together with farmers and their organizations. The project worked with four cooperatives in Kenya, Peru, Mexico and Nicaragua with some 20,000 members. One of the key conclusions from this was the need to develop sustainable financing mechanisms for climate adaptation. Thus an innovative proposal was developed to finance reforestation though carbon credits to be bought by Cafédirect to offset emissions; but with part of the funds to be used to finance climate adaptation. A project to do this has been established with Cepicafe in Piura, Peru.

Cepicafe and its dependence on the environment

Cepicafe is a Fairtrade producer marketing organization with 6,600 members growing organic coffee, cocoa and sugar cane. They farm in a narrow zone between the deserts of the Peruvian Pacific coast and the cold Paramo of the Andes. It only rains four months each year, so farmers need to irrigate their crops using local river sources. These rivers arise in the Sierra de Piura about 1000 m above the coffee growing area. In recent times, fluctuations of the El Nino and La Nina have brought a continuing cycle of flooding and drought. Extreme rainfall events such as these will probably increase due to climate change.

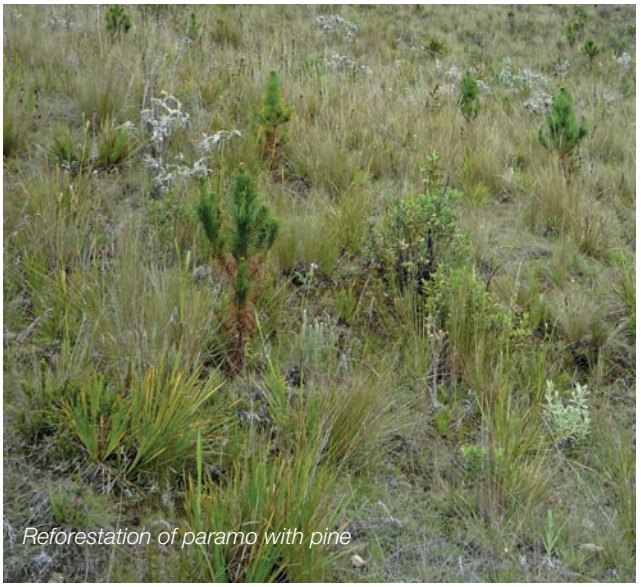
A climate adaptation/mitigation strategy for Peruvian coffee growers

With the support of the AdapCC project a plan was drawn up to increase the resilience of the coffee farms to climate change through improvements to the efficiency of irrigation systems, increase soil fertility, better control pests, reforest and diversify shade in coffee farms. Cepicafe and the NGO Progresso, designed a project to reforest the top of the water-catchment above the coffee farms with the aim of conserving the water sources used to irrigate the crops further down-stream and reduce flooding and erosion when heavy rains fall. To finance this they have sought certification under the voluntary carbon scheme, with 90% of the funds going to the reforestation and 10% to support adaptation by the coffee farmers.

Mitigation of carbon emissions through reforestation in Choco

With support from Cafédirect and other organizations, Progresso developed a proposal for a voluntary carbon certified reforestation project with the Choco community at the head of the water-catchment where the coffee producers live. The communities around Choco were interested in reforesting due to the lack of firewood and desire to produce timber for their own needs and to sell. One community had planted some pine about 20 years previously and they wished to copy this successful experience. The reforesting communities receive materials, seeds, technical assistance plus £0.20 for each tree planted. Each community has a reforestation committee that with participation from all community members decide which areas of communal land should be reforested. Planting started in 2010 with pre-financing from Cafédirect under a six year contract in which Cafédirect commits to buying up to 5092 future carbon credits worth £55,000. The following year 24 hectares (ha) were certified under the Carbon Fix standard from which they sold 3,723 carbon credits, part to Cafédirect and part to the coffee roaster Bewleys. To date, around 140 ha have been reforested of the 224 ha planned, which would generate an estimated 42,000 carbon credits over the coming 25 years.

Community forestry nursery in Choco



Reforestation of paramo with pine

What are farmers doing to adapt to climate change?

Cepicafe have used the 10% from carbon credits to leverage substantially larger funding for climate adaptation from USAID through the US fair trade company Equal Exchange. They now have over $100,000 to support renovation of coffee and increase the resilience and adaptation of the coffee farms to climate change on over 600 farms in the Canchaque district. Amongst the adaptations local farmers say that the traditional “typica” coffee variety no longer produces well under the current climate and they have been renewing areas with more productive varieties. However, in years of high rainfall leaf spot disease has caused widespread defoliation and crop loss, so farmers are changing the shade trees to include taller growing timber trees, that they think helps prevent this disease and are more appropriate for the new coffee variety. This is complemented with credit provided by Cepicafe to buy organic fertilizer and tools. Also they are investing in new more efficient sprinkler irrigation systems to plant new areas of coffee together with food crops to meet their family’s needs. Furthermore the local associations have allied with the municipalities to produce tens of thousands of trees to reforest both on their farms and in community reforestation plots.

Establishing an irrigation system for a new coffee plantation

Experimental plot on coffee nutrition

Table 2. Comparison of the adaptation actions proposed by Cepicafe under the AdapCC project in 2010 and the actions seen in the two communities visited.

	Problem/Risk	Adaptation Solutions proposed	Actions seen during visit
1	Drought	More efficient water management (trainings on efficient water use, improvement of water distribution at communities, installation of technical irrigation systems)	Sprinkler irrigation systems being installed in one community with about 12 farmers participating to establish a new area of 6 ha of coffee mixed with trees, bananas, pulses, and some areas of pasture
2	Frostiness and fogs	Installation of coffee nurseries at farm level and renovation of coffee plantations Improved shade management Improved water management at plantation, especially from August to September Adoption of seasonal plantation management	Both communities visited had communal nurseries management by the farmers producing coffee plants and trees for planting on farm, approx 2000 coffee plants per farmer and 200 diverse trees
3	Pests and diseases	Improved pest management Shade management Manure management Installation of demo plots Training for farmers	One of the reasons given by the farmers for changing the shade species was to reduce incidence of leaf-spot, through the poor regulation of shade and overlapping shade from bananas and taller trees was still leading to areas with leaf-spot. Shade systems had been diversified with new timber and legume species, but as with the traditional Inga shade the trees were not being managed to regulate the level of shading Cepicafe is offering farmers credit to purchase guano to improve coffee production, which farmers are complementing with manure as available Demonstration/research plots of new varieties and fertilization trials have been established.
4	Erosion and landslides	Reforestation Forest protection Soil management to prevent erosion and landslides Technical irrigation systems Trainings and capacity building, demo plots	Farmers were also using part of the trees raised in the communal nurseries (about 10,000 trees in each nursery) to reforest communal areas – about 1-2 ha each this year. Some of the farms visited had implemented rock or vegetation barriers to control erosion.
5	Strong winds	Reforestation and avoided deforestation Construction of more stable housing	Most farmers had boundary plantings of trees around their coffee plantations.

What ecosystem services are being supported?

The project document "Reforestation of the Sierra Piura" that supports the Carbon Fix certification, analyses in some detail the environmental impacts of the reforestation project. Most of the reforestation areas are of semi-natural Paramo vegetation (similar to moorland) with tussock grasses and varying quantities of low growing shrubs. These were selected by the community as areas of no value to them for agriculture and of little value for grazing. About 80% of the 224 ha to be reforested are to be planted with pines (*Pinus patula* and *Pinus radiata*), the other 20% with two native trees *Alnus* spp. (a secondary forest species) and *Polylepis incana* (a dominant tree in the natural forest). The provision of environmental services is based on the estimates of the impact of this vegetation change. The following analysis is largely taken from the supporting documentation cited by the project document.

Wood production – a provisioning service

This is the most assured benefit and one that could significantly improve the livelihoods of the local communities who subsist of margin agriculture and livestock production. The main benefits will be assured firewood supply, and, if well managed, income from timber production.

Carbon sequestration – a regulating service

The project document calculates with some detail the estimated growth rates, biomass accumulation and thus increase in above ground carbon stocks that may be generated by the growth of the trees. It does not consider (in terms of carbon) the possible changes in soil carbon. Paramo soils have inherently high carbon content due to the volcanic nature of the soils and the root systems of the grasses. Studies of reforestation of paramo with

pine in Ecuador (Farley et al 2004 and Hofstede 2002) have shown that contrary to many expectations soil carbon content of paramo soils may decline when planted with pine. Whether the secondary paramo vegetation on this site has the high soil carbon stocks typical of natural paramo vegetation should be formally analysed to determine the possibility of loss of soil carbon.

Water supply for irrigation and other uses – a regulating service

One of the stated aims of the climate project overall is to conserve the water sources that provide irrigation to the coffee and cocoa crops lower down the valleys and provide water to the communities. It is a commonly held belief among civil society that to conserve water sources watersheds should be reforested; however scientific studies indicate that in the vast majority of cases reforestation reduces the water yield from a catchment (Farley et al 2005). Similarly other reviews have found no evidence that reforestation leads to improved base or dry season water flow (Bruijnzeel, 2004). Although reforestation may help increase water infiltration, the water transpired by the trees leads to an overall decline in water released to the rivers. In cloud forest conditions (such as at Choco) trees can increase the contribution of water intercepted from cloud and fog adding 5-20% more water, and the effects can be particularly significant in the dry season (Bruijnzeel 2004).

Nevertheless, there are studies from the paramo of Ecuador that show a 50% lower flow when comparing rivers arising from afforested pine compared to the paramo including importantly the base flow of the rivers (Buyteart et al 2007). In part this is also because the organic matter content and water holding capacity of the Paramo soils declined when reforested with pine (Farley et al 2004). These studies were from a wetter area, and higher altitude with natural paramo vegetation, whereas at El Choco the paramo is a secondary vegetation that has developed after deforestation and the effects may not be so marked. Nevertheless the international survey of effects of reforestation of grasslands (Farley et al 2005) concludes that the negative effects of reforestation are more severe in drier regions.

As a counter argument to this, the project document states that local farmers consider that the one area reforested in the region has greater humidity; and cited a national forestry expert who states that he considers the pine does not compete for water. Reviewing the later, the forester states that the pine would not need irrigation and thus would not compete in terms of needing supplementary water (i.e. irrigation). He also states that pine uses 6000m3 of water per ha per year, which given the local rainfall of 6000-7000 m^3 per ha per year – would indicate that the pine will use most of the actual rainfall. The opinion of this reviewer is that the potential negative impacts of the pine on water yield have been underestimated; although the 240 ha area to be planted is unlikely to significantly affect the local hydrology there is little basis to think there would be any positive effect on the quantity and reliability of water supply to the surrounding rivers – one of the original aims.

Reduction of erosion and flooding – regulating service

The other main hydrological service that is expected from reforestation is a reduction in damage from erosion and flooding during extreme rainfall events. In this case it can be expected that the root systems of the trees will promote greater water infiltration and reduce the likelihood of landslips (Bruijnzeel, 2004). Whether soil surface erosion is affected will depend on the maintenance of ground vegetation, which may be influenced by the pines. Nevertheless, it can be expected the reforestation will reduce peak flows and reduce erosion and sediment loads that contribute to flood damage in the lower catchment. Current erosion is high but probably mostly comes from the dirt roads and cuttings that have no remedial measures.

Biodiversity a cultural service

Almost certainly the whole area would be naturally covered by forest. According to the communities some of the area has been deforested in living memory, while other areas have been paramo as long as they remember. As stated the main vegetation is paramo, which is a semi-natural grassland, assumed to be a secondary vegetation on this site, but still with a certain floral and structural diversity including diverse species of shrubs and rosette plants. The one mature pine plantation visited had closed canopy and had no ground vegetation, only a covering of pine needles. Bird diversity in pine plantations is lower than natural forest (Hjarsen 1997), but no comparison was found with paramo. Nevertheless studies of pine plantations on paramo in Ecuador (Hofstede et 2002) indicate that often the herbaceous paramo vegetation does persist beneath the pine, and in some cases natural forest species start to establish in the understory. It would be expected that those areas planted with native species will be invaded more rapidly with native forest species than those planted with pine. The aim of the project managers is that over time more native species will be planted and after the pine plantations natural regeneration of native forest trees encouraged.

Ecosystem services associated with the adaption activities

In general the adaption activities are associated with increasing or ensuring the productivity of the coffee plantations. In terms of ecosystem services one of the most important changes relates to the use of shade. Traditionally the shade was made up of a variety of native legume trees of the genus Inga; they are being replaced with exotic timber species *Grevillea robusta* and *Acrocarpus fraxinifolia*, and in some cases the exotic legume *Erythrina poepiggiana*. Where the *Inga* is being replaced by the timber species there will be a loss of nitrogen fixation; an important service in maintaining soil fertility especially for these organic farmers. Although the rationale of the farmers is that the new shade being higher and less dense reduces the incidence of leaf spot disease, thus being more effective in this regulating service. At the same time they recognize that Grevillea competes with the coffee if planted too densely and they are changing to planting it only on the boundaries of the coffee plots. The new systems being planted maintain a high agrobiodiversity of species, but appear to have lost the native Inga trees which studies in Central America and Mexico have shown are an important group for maintaining bird biodiversity.

The other major change is the introduction of new more efficient irrigation systems. This could reduce the demand for water, except that they are being established in new areas additional to those irrigated under the traditional flood irrigation system. Thus they are effectively increasing the area under production and use of water, but at least with the benefit of increasing overall production and hopefully more stable production.

What are the lessons from Cafédirect and Cepicafe's initiative?

Reforestation financed through carbon mitigation

Establishing the reforestation project in the challenging environment of Choco is without doubt a notable success. The main impact of this project will probably be in providing a new source of income and livelihood for the communities of this area, an achievement of importance. Probably there will also be net benefits in terms of carbon sequestered by the reforestation. However the desired benefits of conserving water sources will probably not be achieved, in part because the areas chosen to reforest – the paramo - is a vegetation type that probably has better hydrological characteristics than a pine plantation. It is suggested that for future reforestation they consider planting the deforested and steeply sloping land above the coffee growing area but below the paramo (in the 1500-2500 m altitudinal range). Although this land is used for grazing and cultivation, it may be possible to plant trees in agroforestry systems or boundary planting, which could reduce peak water flows and reduced soil erosion, and greater possibility of positive effects on water yield.

Adaptation activities

In general the activities appear to be more focussed on increasing production than adaptation – though the former is also a priority. In adaptation terms some care should be taken in the selection of the timber trees being used for shade. Although both *Grevillea* and *Acrocarpus* are used as coffee shade, neither are nitrogen fixing thus it would be important to maintain some presence of *Inga* or *Erythrina*. Regardless of species choice, pruning the trees to regulate shade and competition with the coffee is an important practice. As regards the management of the leaf spot disease it should be remembered that the most important factor that promotes this disease is a high density of coffee bushes. Also pruning shade trees to avoid dense shading is important. Under the AdapCC project an adaptation strategy was developed. It is recommended that Cepicafe annually review what aspects of the strategy they have been able to implement, and identify some simple indicators (3 or 4 should be sufficient) of the impacts of adaptation.

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Case study 2

Developing an Eco-premium for environmental farmers in Nicaragua

Taylors of Harrogate's support for producer organizations

Taylors of Harrogate have a history of supporting reforestation programmes, initially in the UK, and then subsequently the Yorkshire Rainforest Project which supported reforestation and forest protection in Amazonian Peru. Currently they are starting a project with Rainforest Alliance in Rwanda and Uganda on climate smart production benefits from certification. Less known has been their small projects scheme which directly supports the producer groups that supply them in different initiatives. They finance about a dozen such projects per year, some of these have been to support environmental schemes. Although modest in the levels of funding (about £2000 each), they can have significant local impacts amongst the producers. This case study looks at how a small cooperative in Nicaragua, COOMPROCOM, has used these funds to establish an innovative programme to support regenerating the forest cover on their farms and among their communities.

Juan Pablo Rutia has planted new agroforestry plots on deforested land

An introduction to COOMPROCOM

Fifty-two farmers founded the cooperative in 2002 with support from the Cooperative League of the United States of America. From the start they had strong ecological principals and decided to certify as organic producers. Taylors of Harrogate have been their main buyer since their inception, providing better prices than most buyers but for a quality product, using an exacting organic standard and under the conditions of Fairtrade. Currently the cooperative has about 260 members, 60% of whom are certified organic. In order to meet the ecological principals of the coop they are in the process of establishing certification under Rainforest Alliance particularly for non-organic members. The first 15 farms received Rainforest Alliance certification in late 2012.

What support has Taylor's given to COOMPROCOMs environmental aims?

A part from their long-term commercial relationship COOMPROCOM received a small grant from Taylors for improving environmental management worth about £2000. This support has been offered to members as a rotating fund of up to $100 per member to buy materials for reforestation or improvements to waste water management in wet processing. Over the past 2 years 51 farmers have received support, either for materials to establish their own nursery for reforestation or nursery trees themselves. The commitment from those who receive support is they should give to others who don't have nurseries an equivalent number of trees or pay back the value into the rotating fund.

How have the farmers used these funds?

Meeting with the farmers from Rancho Grande and Payacuca they explained their interest in the environment and how they have used this support. The farmers have used the trees in three different ways:

i. To improve the protection of water sources
ii. To diversify the shade in their coffee plantations with valuable timber and fruit trees
iii. To establish new agroforestry plots in areas that have been deforested and used for agriculture or pasture

Jose Ramos has enriched his coffee with more shade trees

The members were all very clear that their aim was to restore the forest cover of their communities. Firstly through ensuring a well-developed shade in their coffee plantations, and then more generally working with their communities to reforest critical areas that protect the water sources and improve the environment. They also invested in diverting the waste water from the coffee processing away from water sources to prevent contamination, and also in one community invested in a new communal washing station that also carried the waste water away from the stream.

A coffee plantation that meets the Eco-criteria of the cooperative

What are the expected ecosystem service impacts of this initiative?

In general a wide variety of tree species (at least 20 species) mostly native are being planted either as shade within the coffee or as separate mixed tree species agroforestry systems. These new systems are being established on previously deforested land that was previously used either for cropping or pasture.

Provisioning services: Many of the tree species are valuable timber species, or species with other uses such as cinnamon, allspice and some fruit trees. Generally they are species that may be sold to local markets. I would not expect much effect of the tree planting in the coffee as the species planted are generally not soil improving, and this kind of shade tree is generally already present.

Carbon sequestration – a regulating service

The areas being reforested with the mixed agroforestry systems are almost certainly increasing the carbon stocks in the landscape, this may also be true for the plantings in coffee plantations but to a more limited extent.

Conservation of soil and water sources – a regulating service

The increase in tree cover through reforestation should reduce soil erosion and increase water infiltration. The reforestation may reasonably be expected to reduce the impacts of extreme rainfall events by reducing over-land flow, erosion and landslips. However, as discussed later the expectation that reforestation will ensure dry season water supplies is probably over-estimated.

Biodiversity a cultural service

In my opinion possibly the most important ecological impact of this initiative is to stimulate the development of biodiverse production systems; the diversification of the tree species in the coffee and agroforesty systems should provide habitat for a broader range of species that would occur the in the natural forest vegetation, and effectively extend the range of habitat for forest species existing in the forest fragments across the landscape.

What are the lessons from Taylors and COOMPROCOM's and environmental strategy?

Although COOMPROCOM is a small cooperative, its actions are contributing to conserving and regenerating an equitable environment for all the inhabitants of the communities where its members live. The investment has been small, but its innovative use is having significant impacts, and COOMPROCOM's linking of these benefits to an internal commitment to an additional environmental premium looks to ensure those benefits to future generations. However, finding a buyer that is willing to recognize those environmental benefits would secure the system. Investments in supporting the ecosystem services from the communities where companies source their products can have substantially greater impact due to the linkage with the supply chain and the recognition of that environmental value of the product. Farmers are keenly aware of the threats to the environment, and willingness to redress the damage done. With support from their commercial allies, farmer organizations are the best placed to design and develop programmes to conserve the ecosystem services upon which their livelihoods depend. Those benefits will accrue not just to the local communities but also help ensure the supply of quality coffee produced under environmentally sound conditions to roasters and ultimately the consumers' cup.

Through providing support to their suppliers Taylors have generated considerable environmental benefits for the communities they supply from and it should help ensure the sustainability of supply in the uncertain environment of the future. However, given that the environmental conditions of their suppliers are different from country to country, specific interventions should be locally developed to address local environmental challenges. In general local organizations have a good understanding of their environmental situation and actions that could contribute to its amelioration, although specialist advice or at least oversight could be valuable to avoid unexpected consequences (see comments on reforestation and water sources). In this regard, the small-grants scheme that Taylors manages would allow this differentiation, but of course it would benefit from an increased allocation of funding, and perhaps a dedicated amount for environmentally related projects. We consider this could have a greater impact on Taylors' suppliers than centrally directed reforestation or other environmental schemes.

For COOMPROCOM care should be taken that increased shading with more trees does not adversely affect coffee production. Although the trees are productive species, they appear to have been selected without much thought on how they may be sold or marketed. Furthermore, it would be valuable for these plantings to be registered to ensure the farmers don't have problems obtaining permission to extract the timber in the future.

Case study 3

Chocolat Halba and Kuapa Kokoo: Reforesting the cocoa farms of Ghana

Chocolat Halba's environmental sustainability policy

Chocolat Halba is a Swiss chocolate company with an advanced policy to minimize its global environmental footprint; firstly it aims to reduce the emissions of greenhouse gases by 30%, a part through increased energy efficiency but mostly through buying renewable energy. The remaining 70% of their carbon footprint that they cannot eliminate they are offsetting through the purchase of carbon credits from Voluntary Carbon Standard certified reforestation. Nevertheless, this is not the most important reason for their support to reforestation in the communities from whom they buy cocoa. Their main concern is ensuring the sustainability of supply of the cocoa in a context of a changing environment that is increasingly affecting cocoa production and the livelihoods of their suppliers. They are currently supporting large-scale reforestation projects in Honduras, Peru and Ghana, their main suppliers of cocoa.

Kuapa Kokoo and the plight of cocoa farmers

Kuapa Kokoo represent 65,000 small-scale cocoa farmers in Ghana. The farmers depend on land handed to them by their parents, but the trees on the land are not theirs. Timber companies buy concessions from the government and fell the large forest trees giving shade to the cocoa. Annual deforestation in Ghana is 220 km2 per year, only 8km2 is reforested. This directly affects cocoa farmers by increasing the drought stress on the cocoa and overall increasing temperature and the severity of the dry season. Because the cocoa plantations are old, without shade and little fertilization the productivity is falling. Although Kuapa Kokoo gets paid a Fairtrade premium which is passed on to the farmers and their communities, the income from the cocoa, their only source of income, barely meets the needs of their families.

Fairtrade cocoa being bagged for sale

Pur Projet – how they help companies support the environment

Pur Projet offers Fairtrade and other socially and environmentally responsible companies, such as Chocolat Halba, a service of managing environmental investments in developing countries to inset the social and environmental benefits that the companies wish to generate, and at the same time strengthen the sustainability of their suppliers. One of the main means is through the management of reforestation projects where companies wish to improve the environmental sustainability of the communities they buy from, and potentially generate carbon credits the company can buy to offset their own emissions. They work with the producer organizations to design reforestation projects that meet the farmers needs, ensure quality trees and management, and develop a control system so that the number and growth of the trees can be monitored and provide accountability for the project. Pur Projet issue tree planting certificates against which companies pay the costs of the reforestation, Pur Projet receive about a third of the funds for their services. If the project is large enough (over half a million trees per year) they can be used as the basis for developing a carbon offset project against the voluntary carbon standard, in which case the carbon credits can be sold to any interested buyer.

Deforested plots on a cocoa farm

How are the funds used to support farmers?

The project with Kuapa Kokoo has been running for nearly two years, and they have planted about 50,000 trees in the first year and 100,000 trees in the second year. The trees are mostly native to Ghana, and are high-value timber trees that should provide important income in the future. Despite living beside trees of great stature, diversity and value, planting trees is a new experience for the farmers. The farmers receive the trees and technical assistance for free, and a small cash payment per tree planted, about 10 cents of a US dollar per tree at planting and the same amount again for two more payments over the coming 3 years if the tree survives and grows well. Nevertheless, the greater part of the funds is used for purchase of the trees and technical assistance provided by Kuapa Kokoo. An additional important benefit is that Kuapa Kokoo and Pur Projet are registering the planting of the trees with the Forestry Department, so that they will have ownership of the trees and control over whether they fell them for timber or conserve them to shade their cocoa.

Farming family with an 18 month old tree

What the farmers hope the trees will do for them

The farmers believe that the trees planted will provide better conditions for their cocoa production through shade during the hot dry season, from leaf litter enriching the soil, and from reducing the incidence of some pests of the cocoa. As they do not have enough income to buy fertilizer to improve cocoa yields they hope the trees will help recover the productivity of the cocoa. Also they hope the trees will help recuperate the water sources around their farms and communities that have been drying up during the recent strong dry seasons.

Cocoa plantation with good shade

What are the expected ecosystem service impacts of this initiative?

The ecosystem service benefits depend on the characteristics of the tree species being planted. Three of the 5 five species are native, with the large majority being *Terminalia superba*, a high value native timber. They are being planted either as shade within or around established cocoa plantations or as separate mixed species agroforestry systems on new areas of land.

Provisioning services: The tree species are valuable timber species, and assuming the farmer's gain the rights to harvest this timber in the future is could provide a significant additional income.

Supporting services – improved soil fertility. One of the primary aims is to improve the productivity of the cocoa through improving the soil from leaf litter of shade trees. However the species chosen are not known to have specific soil improving characteristics, for example they are not legume trees (see recommendations). Although in the long term the timber trees may help improve soil fertility, these effects may take decades to develop (note that it takes legumes trees about 5 years to significantly improve soil fertility). The effects of shade per se may also be limited as the predominant species being planted are deciduous during the height of the dry season.

Carbon sequestration – a regulating service

The addition (or reintroduction) of free-growing timber trees should significantly increase standing stocks of carbon in tree biomass. Effects on soil carbon may be more limited as the cocoa already produces considerable quantities of litter, but in areas where annual cropping is being converted to agroforestry there may be gains in soil carbon.

Conservation of soil and water sources – a regulating service

At least for the areas visited the landscape is already covered with a mixed perennial vegetation of cocoa, oil palm citrus, and natural scrub growth. I would not expect that the addition of trees to this vegetation will significantly reduce soil erosion, which the existing vegetation should conserve. Only in cases where annual crops are being replaced with perennial agroforestry would some reduction in soil erosion be expected. Unfortunately the expectation of the farmers that reforestation will ensure dry season water supplies is probably over-estimated. Given the existing vegetation water infiltration rates are probably already quite good, and I see no reason why the trees planted would improve that. Likewise the albedo of the tree canopy (reflectance of the sun's energy) would not be much different from the perennial crops dominant in the area, and the main tree species being planted is deciduous in the dry season. Furthermore the water use of the trees may actually reduce the net yield of water to the ground water.

Biodiversity a cultural service

The planting of even this small range of native timber species should provide habitat for biodiversity that would occur in the natural forest vegetation, especially if the naturally occurring shade trees of other species are also maintained. The addition of tall growing tree species adds another stratum of vegetation above the cocoa re-creating a forest-like environment and being native species they should be hosts to native insect and other fauna that in turn supports bird and animal species. In the best cases these plantings could extend the range of habitat for forest species existing in the forest fragments in the landscape.

What are the lessons for supporting cocoa farmers in reforestation?

As yet the project only covers 18 village societies and about 250 farmers, out of over a thousand villages that are members. Kuapa Kokoo would like to expand the project to include villages in other regions of Ghana. Past projects have shown the value of tree planting to recover degraded lands for cocoa production through the use of legume trees which have a greater capacity to improve soil fertility, but could be combined with the timber trees in the current reforestation to generate greater benefits especially as regards improving cocoa productivity. However, probably the greatest impact of any scheme would be to give farmers the right to manage the trees on their own land. If they can obtain the rights to the trees on their land then a new culture of tree planting and management can be developed with considerable benefit to both the farmers and the environment. It may also support the supply of high quality Ghanaian cocoa, which needs the services from the trees to ensure a sustainable supply to the markets and consumers of Europe and across the world. So we can all benefit if we increase our investment in the reforestation of the cocoa lands of Ghana.

Specific recommendations for the project are as follows.

i. Given improving cocoa production is the primary aim of the farmers, Kuapa Kokoo and Chocolat Halba, I would recommend the inclusion of some tree species that have recognized capacity to improve soil fertility and cocoa production – specifically legume trees. Kuapa Kokoo have successful experience from elsewhere with planting Gliricidia as cocoa shade and achieving good productivity.

ii. Only one of the tree species planted as shade for the cocoa is evergreen which is important for reducing drought stress through the dry season. I would also recommend looking for other native timber species that are evergreen providing shade during the dry season. This would be less important for those trees planted as boundary plantings.

iii. Overall some improvement are needed in the silvicultural management, such as not planting trees under existing trees and improving the pruning of the trees to not leave leave stumps of the branches on the trunk which may later cause damage to the main stem. The pruning is very difficult to do with a cutlass which is all the farmers have, the alternative would be to supply farmers with pruners and pruning saws, but this is an expensive undertaking if quality tools are to be supplied.

iv. Currently the farmers are supplied with the nursery seedlings which are bought from commercial nurseries and transported to the communities. If the farmers were trained (or may be one or two farmers from each community) to produce and manage their own nurseries this value would be transferred to the community and there would be greater economic gain for the farmers. This would take the process of developing a tree planting culture among the communities a step further, and empower them to manage the tree and timber resources on their land.

v. In the longer term (10-15 years), with the development of significant timber resources in their farmers fields, Kuapa Kokoo should consider how to collectively negotiate the timber extraction and processing so that their members obtain greater value for the timber on their land.

Annex

The environmental performance and impacts of Fairtrade producers

Studies of the impacts of Fairtrade have concentrated on the social and economic factors that are the core of this certification. Nevertheless Fairtrade has always included environmental criteria and these criteria were strengthened from 2011. Several studies have made qualitative evaluations on the environmental performance of Fairtrade producers and by extrapolation the environmental impacts of Fairtrade; these have been summarised in Nelson and Pound (2010), Chan and Pound (2009), and Blackman and Rivera (2010). This document integrates the conclusions of these reviews with two new quantitative studies still in the process of publication (Soto 2012, and Haggar et al in prep).

Summary of past reviews

The reviews agree that the main impacts appear to be in supporting the application of sustainable or agroecological production practices. Blackman and Rivera (2010) found case studies with improved environmental performance on Fairtrade banana farms (Melo and Wolfe 2007), but found no evidence among quantitative studies of better environmental performance of Fairtrade coffee farms. Nevertheless Chan and Pound (2009) amongst six studies of Fairtrade production that included qualitative environmental factors found evidence of benefits in terms of reduced use of chemical pesticides, improved conservation of biodiversity, reduced use of water resources and increased use of organic fertilizer. Similarly Nelson and Pound (2009) reviewed 33 studies (different from those in Chan and Pound 2009) and found qualitative evidence for application of good environmental practices including treatment of waste water, reduced use of agrochemicals and support to conversion to organic production. Pound and Phiri (2011) also found that Fairtrade producers in Malawi were reducing use of agrochemicals, increasing use of manure and applying agroforestry systems. Although in some cases the restrictions on use of agrochemicals was claimed to be creating hardship or lowering production (Utting-Chamorro 2005, and Nelson and Smith 2011). Perhaps the most important factor presented was that the security of Fairtrade enabled producers to invest in organic production, or remain in low-input production, and not convert to more intensive less environmental production practices or crops (Jaffee 2008 in Pound and Nelson 2009). Also there were various cases of the Fairtrade premium being used to invest in environmental or conservation activities including technical support for conversion to organic or application of agroecological practices (Nelson and Pound 2009) and paying for reforestation (Pound and Phiri 2011)

From these summaries, the most important environmental characteristics of Fairtrade farmers are:

- Reduced use of pesticides and other agrochemicals
- Greater investment in organic production
- Increased use of animal and plant waste as organic fertilizer
- Improved management of waste water
- Investment in reforestation and agroforestry

Environmental performance of certified coffee producers in Costa Rica and Nicaragua

Two recent large scale studies have been conducted using the Committee for Sustainability Assessment (COSA) methodology (Giovannucci & Potts, 2008) interviewing 226 coffee farms in Costa Rica (226 farms) and Nicaragua (276 farms) divided between Fairtrade, Organic, Rainforest Alliance, Utz Certified, C.A.F.E Practices and conventional farms (Soto 2012 and Haggar et al in prep). The method includes a number of environmental variables which are evaluated by a combination of farmer interview and field inspection. In the table below I summarise the preliminary results of the relative performance of Fairtrade producers compared to conventional and other certifications for the main variables. As the two studies analyzed the data in distinct fashions the statement of the results are different (Table 3).

Table 3. Environmental performance of certifications on coffee farms in Costa Rica and Nicaragua.

Environmental Criteria	Costa Rica	Nicaragua
Soil Management		
Soil conservation	Fairtrade was better than conventional but Rainforest Alliance performed best	Soil conservation practices were closely associated with Fairtrade and Utz
Soil erosion	Not analysed	Fairtrade not different from conventional, organic lowest
Use of organic fertilizers	Fairtrade greater than conventional, Organic highest use	Closely associated with Fairtrade, Rainforest Alliance, Organic and Utz
Water management		
Conservation and reduction of water use	Fairtrade was better than conventional but Rainforest Alliance performed best	Lacking in Fairtrade and conventional, but practices associated with Rainforest Alliance, Utz and C.A.F.E. Practices
Avoid agrochemical contamination	Fairtrade similar to conventional, Rainforest Alliance best	Good management associated Fairtrade, not with other certifications
Treatment of waste water	Fairtrade worse than conventional, Organic best	Lack of treatment by Fairtrade; good treatment by Rainforest Alliance, Utz and C.A.F.E Practices
Shade tree system		
Tree diversity	Not analysed	Fairtrade, Organic and Utz highest tree diversity
Number of tree strata	Not analysed	Fairtrade, Rainforest and Utz have 3 strata of trees
Carbon stocks in trees	Not analysed	Fairtrade similar to conventional, highest stocks Rainforest and Utz
Environmental management plan	Fairtrade better than conventional, Utz was the best	Not analysed

What is immediately obvious is that although the results are from adjacent countries the relative performance of the certifications can be totally opposite in the two countries. Nevertheless there are certain tendencies. Fairtrade in general has better soil management than conventional farms, although other certifications may perform better in some areas. Reducing use and contamination of water sources however is still lacking on Fairtrade farms, a part from managing agrochemical contamination in Nicaragua. In terms of the biodiversity potential of the shade systems in Nicaragua Fairtrade, farms have good performance, but this doesn't translate to high carbon stocks (which greatly depend on the presence of large trees). Analysis of the carbon footprint using the COSA survey data of farmers in Nicaragua (Attarzadeh and Noponen, 2010) found that the organic-Fairtrade farmers had the lowest agronomic carbon footprint (50gCO^2e per kg coffee cherries for organic farmers versus 130g CO^2e per kg coffee cherries for conventional farmers, both farmers less than 5ha), while Rainforest Alliance certified farmers had a similar agronomic carbon footprint to other large-scale producers (about 200g CO^2e per kg coffee

cherries, farms 25-100 ha). Another study in Nicaragua (Haggar et al 2012) indicated that more developed and diverse shade systems are associated with small-scale farmers typical of organic and Fairtrade producers. Similarly Quispe (2007) comparing farms with different certification in Costa Rica found that Fairtrade certified farms had higher shade levels and greater tree diversity, although they were also found at lower altitude than other farms, which would tend to favour more use of shade.

Interviews with Fairtrade cooperatives in Nicaragua, Guatemala and Peru have indicated that FLO-CERT inspections regularly ask for environmental management plans at the level of the producer organization, and on-farm ask about the use of pesticides and in some cases management of waste water. In Nicaragua coops reported they were being asked to monitor water use to show reductions in use, and conduct soil analyses to support the levels of fertilize use. These were seen as responses to the strengthening of the environmental standards in FLO since 2011. However no cooperatives reported being asked to report on biodiversity conservation, even though some had farms within protected areas which according to the new standards will require the development of a biodiversity plan.

Conclusions

Fairtrade producer organizations tend to promote agroecological or organic production practices, and Fairtrade farmers use less high toxic pesticides. Although the FLO verification is putting increased emphasis on non-contamination of water sources, as are most producer organizations, there is still need for considerable improvements on many farms. In general the small-scale farmers who associate with FLO have greater agrobiodiversity in their production systems, but not particularly as a result of being Fairtrade certified. Nevertheless, several Fairtrade producer organizations use part of the Fairtrade premium to finance reforestation or other conservation practices.

The revision of the FLO environmental standards since 2011 should provide an opportunity for strengthening the impact of Faitrade on the environment; on the one hand recognizing the positive environmental aspects of many Fairtrade farms, e.g. in agrobiodiversity, and on the other reinforcing areas that need improvement on some farms such as good management of water sources. Documenting these changes would enable FLO to make stronger claims as regards the environmental benefits associated with Fairtrade, to complement the social and economic empowerment benefits that are more widely recognized.

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