

# Colombia

## A business case for sustainable coffee production



July 2014

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An industry study by TechnoServe for the Sustainable Coffee Program, powered by IDH.



**Colombia is the world's second largest Arabica producer**, accounting for 15 percent of global Arabica exports. Colombia has a rich tradition of coffee production, an efficient supply chain, and a premium market for most of its coffee exports. Coffee farming remains the leading source of livelihood for rural Colombians, though its importance to the broader economy has declined in significance over the past several decades.

**95% of Colombian farms have less than 5 hectares of coffee** and account for over 70% of national production. Between 2008 and 2012, Colombia's output dropped due to adverse weather conditions and a national tree renovation program to combat coffee leaf rust. Estimates suggest that over 50% of coffee areas have been renovated so far. As these new trees start bearing, production has started to rise again and amounted to 10.9 million bags in 2013.

**Farmers' margins from coffee have been eroding.** The costs associated with key production inputs including labor and fertilizer have increased rapidly over the past decade. Rising costs have made Colombia less competitive than other Arabica origins. In 2013, for the first time the Colombian government provided direct cash subsidies to farmers and paid more than US\$ 600 million to bolster farmers' incomes. As a result, farmers are increasingly weighing the opportunity cost of coffee farming, both in terms of land and labor (time).

**Colombia's coffee sector is at cross roads** and efforts targeted at producers should focus on making farms more profitable. No single solution can address this challenge. Some farmers have opportunities to excel in specialty coffee; others may need to diversify their farm enterprises beyond coffee. However, for a large subset of the farmer population, there exist opportunities to boost yields, improve labor productivity, and reduce overall farming costs. These interventions offer the combined potential to increase farmers' net incomes by 50% and reduce the overall amount of family labor required for coffee farming.

**If this issue is not addressed, it will be difficult for certification and verification to expand.** Colombia was an early adopter of certification/verification and has a higher share of certified/verified sales than other countries surveyed by IDH. In addition, large volumes are already double-certified. However, economic constraints may limit future growth. With farmers already facing high production costs, there is resistance to the creation of new costs in the supply chain. New environmental laws, particularly regarding wastewater disposal, are likely to make compliance more difficult and costly for individual small farms in the future. Improving the profitability of farming would make it easier for farmers to absorb added sustainability costs and thus improve the business case for them to invest in sustainability.

**There is a convincing business case for private and public market actors and the government** to co-invest in these efforts in order to improve the competitiveness of the sector and to avoid the exit of coffee farmers. An ambitious program could reach potentially up to 50% of active farmers (230,000 farmers) over 10 years and increase production by 1.5 million bags. This would raise coffee export revenues by US\$ 260 million while achieving cost savings of US\$ 75 million. Implementing these opportunities would require new approaches for reaching farmers and cost the sector approximately US\$ 200 million over 10 years.

# Context

## **Global demand for sustainable coffee is rising**

The Sustainable Coffee Program represents a public/private consortium with an ambition of increasing global sustainable coffee sales from 8% to 25% by 2015. This ambitious target can be met most cost efficiently through coordinated effort on the part of stakeholders and targeted investments at different stages in the supply chain.

## **Not all countries and producers will be able to meet this demand**

Many of the world's coffee farmers will find it challenging to be verified or certified. These challenges vary by country and type of producer. In some cases, rising costs of production make it hard to absorb the additional cost of certification or verification relative to the economic benefits. In other situations, farmers are not of sufficient scale or are not aggregated in such a way that the economies can be justified.

## **Colombia was an early adopter of certification but will face challenges expanding further**

Colombia currently has the highest share of certified/verified sales of the six countries considered in this study (the study also includes Brazil, Ethiopia, Indonesia, Uganda and Vietnam) and its share is above the global average. Market actors have invested heavily in certifying or verifying their supply chains and large volumes have more than one certification/verification. The Federación Nacional de Café (FNC) is the country's largest exporter and supplier of sustainably certified / verified coffees.

## **Future growth faces several challenges**

Farmers are resistant to the creation of new costs in the supply chain. Logistical challenges make it hard to reach farms that have so far been excluded from certification or verification. New, stricter environmental laws, particularly regarding wastewater disposal, are expected to replace existing regulations soon and will make compliance more difficult and costly for individual small farms. These challenges emerge against a backdrop of rising production costs and a declining competitive advantage relative to other origins. As Colombia is a middle-income country, a rising share of its population has access to economic opportunities that are more remunerative, less risky, and less time-intensive than coffee farming.

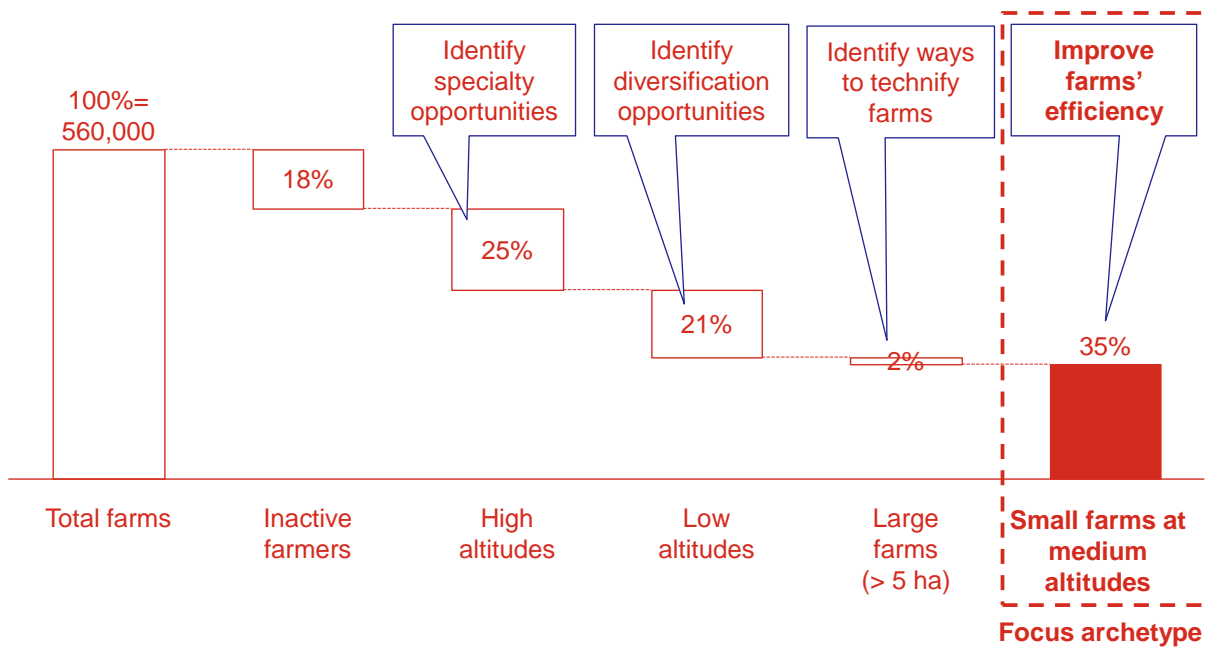
## **Different solutions for different farmer archetypes**

Colombia is a diverse country with a range of producer archetypes. Different producers will need to respond to these challenges in different ways. For instance, higher altitude farms may have opportunities to move into specialty coffee by improving quality. Lower altitude farms may face added pressure from climate change and will need support to diversify their income sources. This study will focus on the responses that are likely to impact farmers in the "mainstream" and have the greatest potential for scalability (see Exhibit 1).

## **Colombia's coffee sector is at a critical juncture**

In the short-term, the Colombian government has helped farmers by providing price subsidies. However, to ensure the sector's long-term competitiveness, actors will need to adopt a longer-term strategy and co-invest in programs that address a broader set of sustainability challenges. Although this study focuses on interventions that are possible at the producer level, the sector may also consider going beyond farmer-level interventions to opportunities on the demand-side, for instance, local value addition and promotion of domestic consumption.

**Exhibit 1: The solution approach of this study focuses on active farmer in the mainstream archetype**



Source: TechnoServe analysis

# Economics of coffee production in Colombia

## Colombia's main rural employer

Colombia has a rich history of coffee production and coffee dominated Colombia's exports for decades. In recent years, oil and other extractives have replaced coffee as the country's leading export. However, coffee remains the largest employer and source of livelihood in rural areas, accounting for 30% of agricultural employment and providing income for more than 20% of Colombia's rural population.

## 95% of coffee farms less than 5 hectares of coffee

Official estimates indicate that Colombia has 560,000 coffee farms, of which approximately 100,000 farmers are inactive at the moment.<sup>1</sup> 95% of farms have less than 5 hectares of coffee (more than 50% have less than 1 ha). A generation ago, only half of Colombia's farms were smaller than 5 hectares. Farm sizes have been diminishing due to a combination of demographic and economic factors, including inheritance traditions, less favorable economics for large farms, and the entry of new, smaller farms in some areas.

## Displaced farmers due to armed conflict

The armed conflict in the 1970s to 1990s led to the displacement of many coffee farmers, especially at lower altitudes. These effects were exacerbated during the international coffee crisis of 2001-03 when ~25% of coffee farmers abandoned coffee and switched to other crops with quicker cash cycle, including coca. Although the guerilla is still present in some coffee growing regions, the conflict is in the process to subside and farmers returned to coffee.

## An efficient supply chain with quality premiums

Colombia has an efficient supply chain, with farmers receiving about 80% of the export price.<sup>2</sup> This compares well to peer producers in Latin America. All Colombian coffee is washed and typically receives a significant premium of about 20 to 25 US cents per lb above the benchmark "C" Arabica price.

## Several unique attributes

Colombia's supply chain differs from other Arabica origins in several aspects. First, harvesting occurs

year round in Colombia while other countries typically have a short, intense harvest. Second, nearly all farmers wet-mill at home and sell dry parchment; elsewhere, it is more common for farmers to sell cherry to central wet mills. Third, cooperatives have a strong presence in Colombia, accounting for ~35% of coffee sales, the highest share in Latin America. Fourth, Colombia has a purchase guarantee, offering farmers a guaranteed minimum price. In addition, Colombia has been able to establish a strong institutional framework that other countries and or sectors have tried to replicate.

## Strong institutional framework

Coffee exports are subject to a deduction of US 6 cents per lb to finance a National Coffee Fund that provides sector support services, including farmer extension, purchase guarantees, regulatory oversight and sustainability programs. These services are managed by the FNC, a non-profit organization. The FNC is also the country's largest exporter with a market share of 25% and is engaged in other business activities including coffee roasting and retail.

## Drop in coffee production

Colombia's coffee production fell by 4 million bags between 2007 and 2009 due to adverse weather (El Niño and La Niña) and a national tree renovation program, implemented by the FNC, to address leaf rust. With more than 50% of total coffee areas renovated so far (the target is to renovate 98% of total coffee areas by 2020), production is expected to rise again to pre-renovation levels. Colombia produced 10.9 million bags of coffee in 2013 and is expected to become again the 3<sup>rd</sup> largest producer globally in 2014, after Brazil and Vietnam. According to the FNC, production is expected to rise to 13 to 15 million bags by 2020.

## Flat yields

Over the last 20 years, Colombia's yields have remained nearly flat while other countries, such as Brazil, have increased yields steadily. Current yields amount to 14.1 bags per ha<sup>3</sup>, lower than in other Arabica producing countries such as Costa Rica. It is expected that the renovation program will help to increase yields post 2013.

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<sup>1</sup> As more than 100,000 farmers did not take advantage of the direct income subsidy by the government in 2013, it is assumed that these farmers are not active at the moment

<sup>2</sup> Calculated as difference between ICO and farm gate price

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<sup>3</sup> 15.5 bags for average farmer with 2ha of coffee

### High costs

In comparison to other Arabica producers, Colombian coffee farmers face high production costs, based on high input costs, in particular fertilizers. Cash costs of production are estimated to amount to US\$ 1.10 per lb on average (see Exhibit 2), although there is considerable variability among different farmer archetypes. Rising farming costs and currency appreciation have increased production costs, eroding farmers' margins (see Exhibit 3). Going forward, farmers will increasingly weigh the opportunity costs of coffee farming, both in terms of land and time (see Exhibit 4).

### Government income subsidies of more than US\$ 600 million

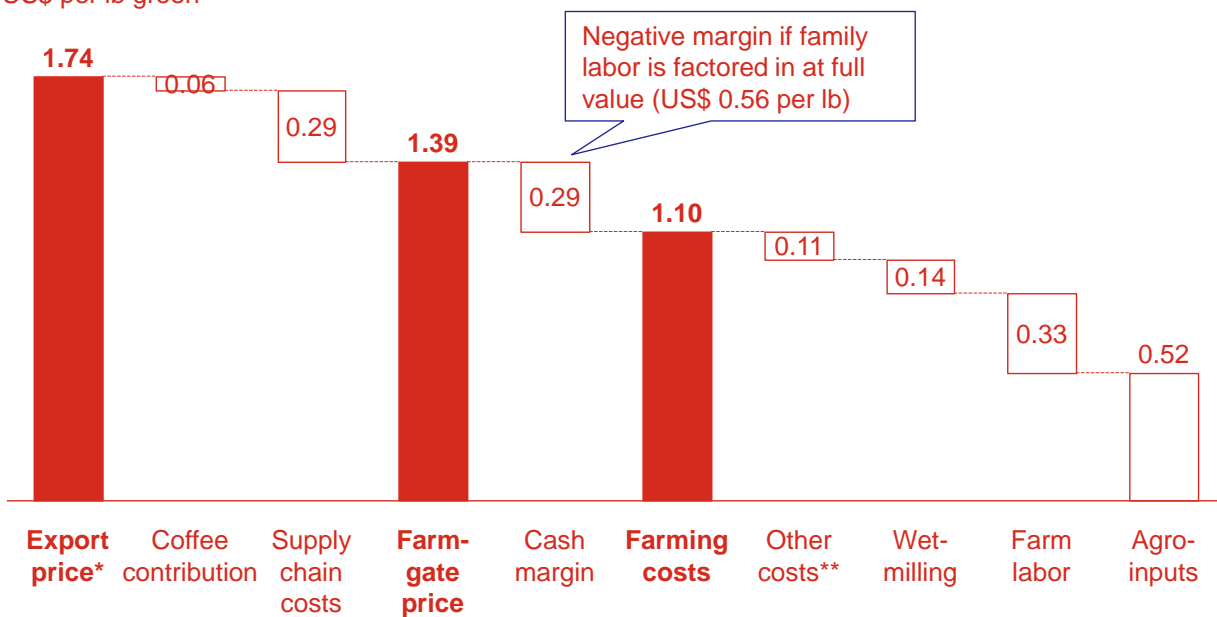
To bolster farmers' incomes, the government has offered coffee farmers a direct cash subsidy when the market falls below US\$ 1.50 (COP 700,000). This mechanism was introduced in 2013 after coffee farmers demonstrated on the streets and it is the first time that the government pays direct cash subsidy to coffee farmers. In 2013 the government paid more than US\$ 600 million (COP 1,200 billion) in income subsidies to farmers.

**Exhibit 2: Average farming cash costs are estimated to be around US\$1.10 per lb and farmers receive ~ 80% of export price**

### Cash cost of production for average Colombian farm

US\$ per lb green

ESTIMATES



Note: Cost of production does not include costs for installation of wet milling equipment, tree renovation or financing

\*Normalized to 2012/13 average commodity prices – Arabica ICE “C” of \$1.50 but adjusted for market differentials)

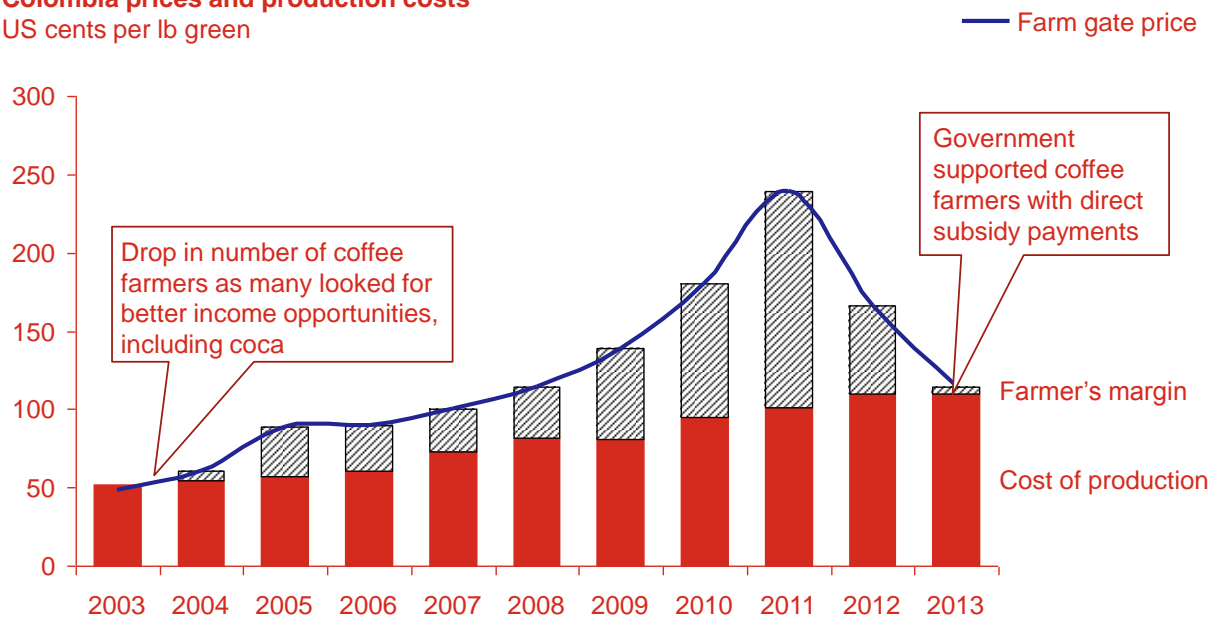
\*\* Includes farm tools, equipment, internal transport, etc.

Source: Stakeholder interviews, TechnoServe analysis

**Exhibit 3: As prices have fallen, the farmer's margin has been eroded**

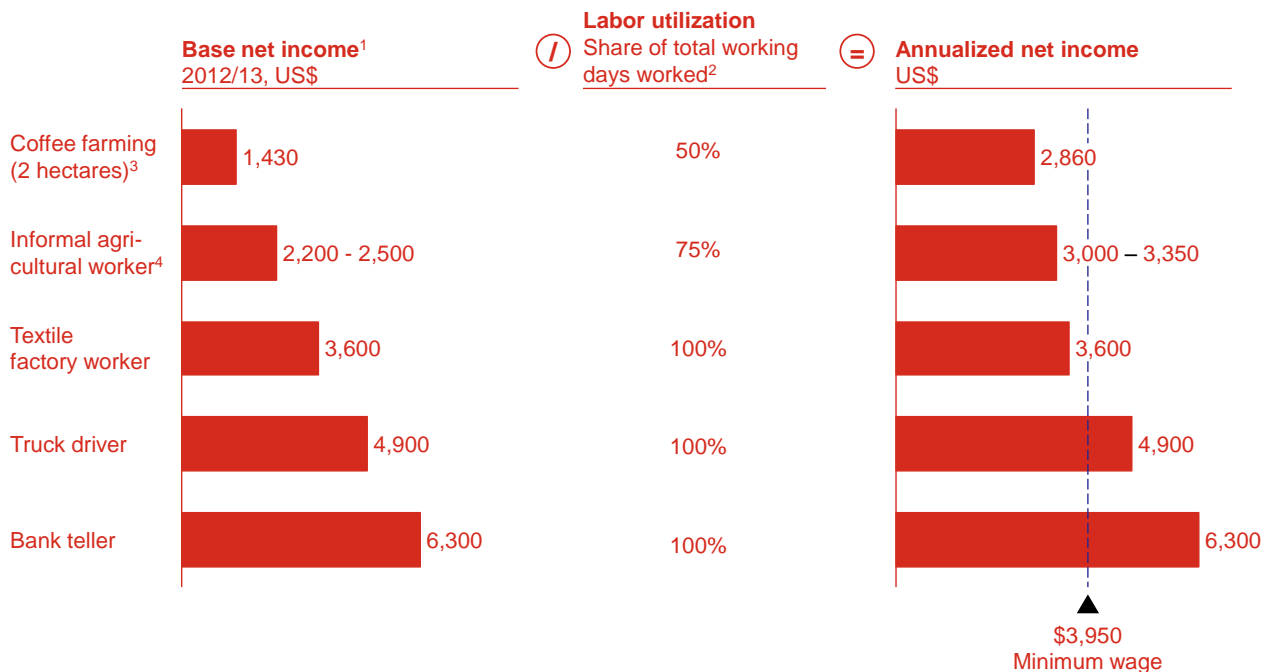
ESTIMATES

**Colombia prices and production costs\***  
US cents per lb green



\* Cash production costs  
Source: ICO, FNC, TechnoServe analysis

**Exhibit 4: Farmers will increasingly weigh the opportunity cost of coffee farming, both in terms of land and time (labor)**



1 Entry level salary  
2 Assuming 260 work days per year for office job and 300 days for agricultural workers  
3 Assuming daily rate of COP 20,000 and 220 work days per year  
4 Source: DANE, tusalario.org, stakeholder interviews, TechnoServe analysis

# Emerging sustainability trends

## A relatively high share of certified / verified coffee

Colombia's share of certified or verified exports is higher than the global average. While on a global level about 12.5% of exports are verified or certified, in Colombia about 14% of coffee exports are sold under one or more certification/verification (see Exhibit 5). The FNC is the largest single supplier of sustainable coffees, representing 6% of Colombia's total exports.

## Roughly 45% of production is under one or more certification/ verification

On the supply side, roughly 45% of production is under one or more certification/verification, with 4C accounting for the vast majority of volumes, followed by Fairtrade and UTZ. Estimates indicate that up to 50% of certified/verified production is under multiple schemes.

## Strict local laws

Colombia's social and environmental laws, in particular regarding wastewater treatment, are stricter than regulations in other coffee producing nations and go beyond the minimum criteria of most international standards (e.g., Rainforest Alliance). As international standards will defer to a higher national law if existent,

farms not complying with Colombian law cannot be certified or verified at present.

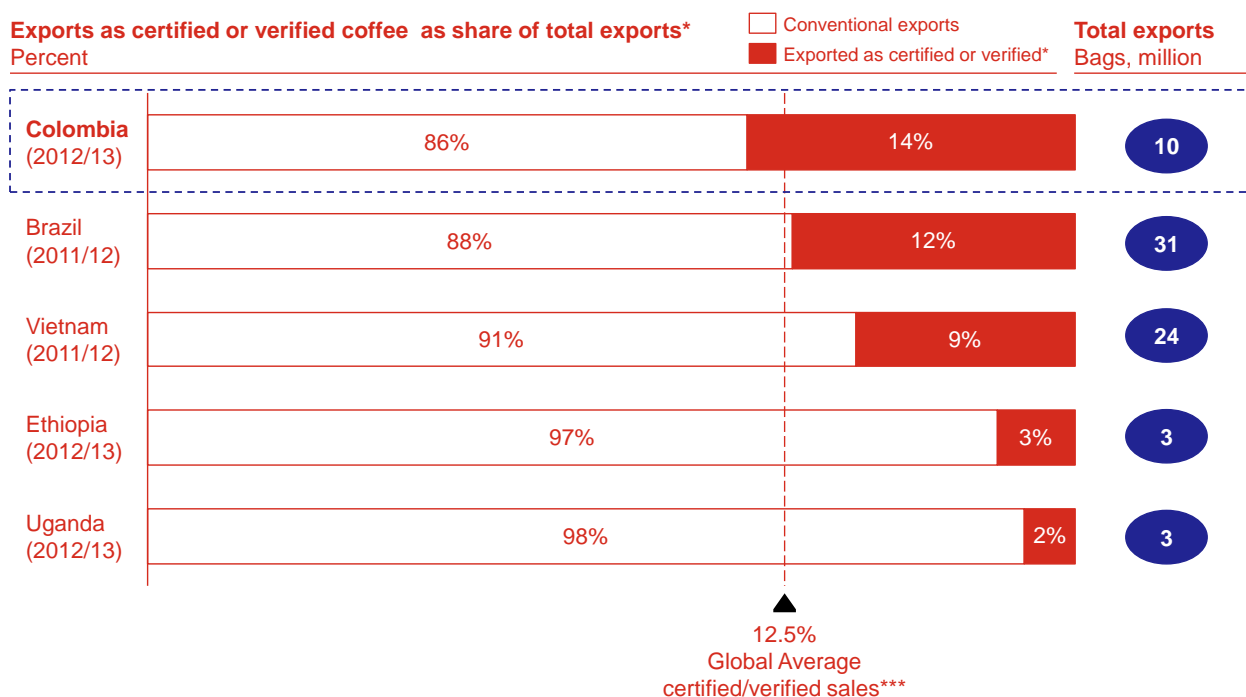
## High costs of certification/verification

Due to declining farm incomes and high costs of certification/ verification, especially for smallholder farmers, that constitute 95% of coffee farms in Colombia, farmers normally do not have the resources/capital available to make the required investments. Therefore, market actors have invested in certifying / verifying their supply chains with the expectation of price premiums to offset upfront and ongoing compliance costs.

## Bottlenecks for future growth

The economic challenges discussed above might cause Colombia to encounter bottlenecks expanding verification and certification. While the 'oversupply' of certified/verified coffee could suggest that additional supply may not be required in the short term, the sector should explore innovative and cost effective approaches that allow to increase compliance with laws and certification standards in the medium and long-term.

**Exhibit 5: About 14% of Colombia's coffee exports are either certified or verified**



\* Most recent year of available data

\*\* Based on 2013 data; Fairtrade data not available at time of publication; excludes Nespresso AAA and Starbucks C.A.F.E. Practices

Source: USDA; ICO; TCC Coffee Barometer 2012; stakeholder interviews



# Improving the business case for sustainability

Colombia's coffee farming is currently at a critical juncture and farmers face a variety of complex sustainability issues, including eroding margins and decreasing competitiveness that require different groups of farmers to respond in different ways. Farmers at higher altitudes have the opportunity to focus on specialty production, achieving higher prices through improved market access. In contrast, farmers at lower altitudes that are more vulnerable to the impact of climate change, including diseases and pest epidemics, would benefit from diversification in the long-term. Larger farms normally rely mostly on external labor and therefore have a higher cash cost structure; they therefore should explore ways to technify farming activities. Constituting the largest farmer segment in Colombia, smallholder farms at medium altitudes (between 1,200 and 1,600 m) should concentrate their efforts on improving farms' efficiency, as laid out in the solution approach below.

## Improving yields

### Potential to increase yields by 20 to 30%

Higher yields are key to more profitable farming. While yields have recently increased due to the renovation program, it is estimated that improved agronomy can boost yields by 20 to 30%<sup>4</sup>, increasing average smallholder production from currently 930 kg per ha to 1,120 – 1,200 kg per ha (see Exhibit 6). Improved agronomy practices include increased and optimized fertilization, integrated pest management, control of soil erosion, effective shade management and proper tree establishment and density. These practices are well-known and established by Cenicafe. However, the majority of farms seem not to have fully adopted these practices so that current yields are below potential.

### Improved fertilization practices

Increased fertilization application is likely to be a key driver for improving yields, considering current levels of fertilizer usage. Input application could be increased for many farms, requiring adequate models for training, distribution and financing. At the same time, additional gains can be achieved by optimizing the input usage of farmers with higher application

rates and yields, requiring innovation and additional research.

### Improved profitability

While overall farming costs would rise, mostly due to higher input costs and external labor costs<sup>5</sup>, higher yields enable farmers to lower production costs per lb by ~5% and increase their profit margin from coffee (see Exhibit 7). Farmer net incomes could increase by 30 to 50%, improving the long-term competitiveness of coffee farming and increasing farmers' capacity to invest in sustainability compliance.

### Challenges to achieving high adoption levels

Achieving the yield improvement potential requires high adoption level of best practices. However, the majority of coffee farmers are older (average age of 56 years) and therefore less likely to adopt new practices and technologies. In addition, lower skills levels of farmers and remoteness of farms can negatively impact the yield improvement potential.

### Training to increase adoption and catalyze changes

To catalyze these changes, an ambitious training program could target up to 50% of Colombia's active coffee farmers (230,000 coffee farmers) over 10 years, focusing on farmers in the mainstream archetype in the first six years and then scaling up to include other farmer archetypes.

Such a program could be implemented using a variety of training approaches. While current training approaches in Colombia normally consist of a combination of classroom training, demonstration plots and individual visits, "farmer field schools" seems to be the recommended approach for improving adoption rates, considering the potential for scalability, impact and associated costs.

Using a farmer field school approach, this program would cost approximately US\$ 200 million over 10 years (based on cost per farmer of ~US\$ 870).

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<sup>4</sup> Realistic level for smallholders though research trials show higher potential

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<sup>5</sup> Assuming constant productivity levels

### **Increase in production of 1.5 million bags and in exports of US\$ 260 million**

On a national scale, boosting yields would increase production by 1.5 million bags p.a. and export revenues by US\$ 260 million p.a. after 10 years. Over the 10-year program lifespan additional export revenues of up to US\$ 1.3 billion could be generated (see Exhibit 8).

### **Integrating the youth**

Coffee farming constitutes less and less an attractive income opportunity for younger generations who increasingly migrate to peri-urban and urban areas, leaving coffee farming in the hand of the older generation. To ensure the long-term viability of the coffee sector, increase the attractiveness of coffee farming and improve the program results, it is key to address this issue and actively involve the youth in the training program. The youth are more likely to adopt new farming practices and technology and manage farm more as a business. In addition to engaging the youth on farm level, they could be linked to employment opportunities within the coffee industry, motivating them to sustain coffee farming into the next generation.

### **Improving sector efficiencies**

#### **Modest opportunities for reducing farmers' labor requirements for harvesting and wet-milling**

As Colombia's coffee farming is already quite sophisticated, it is estimated that cost of production could be reduced only modestly through improving labor efficiency.

Coffee farming is quite labor intensive in Colombia as coffee is harvested throughout the whole year and mostly wet-milled at home. Both activities account for about 70% of total on-farm labor requirements. In order to reduce farmers' labor requirements for harvesting and wet-milling, the sector could apply approaches as laid out below that would allow farmers to save time and money (see Exhibit 9).

#### **Limited potential to improve harvesting efficiency**

Conceptually there exist several options to improve harvesting efficiency, for example by training farmers and farm workers to pick faster, using mechanical harvesting or establishing leveled terrains. However, the majority of options face implementation challenges in Colombia, such as unfavorable topography, unfavorable agro-climatic conditions and the risk to lower coffee bean quality. Therefore, these approaches are difficult to be implemented in a cost-effective way.

It is estimated that a combination of approaches, including harvesting skills, picking technology and farm

management, could deliver a 5 to 10% harvesting efficiency improvement over time.

#### **Reducing time spent on wet-milling by 50 to 70%**

Colombian farmers spend significant time on home wet milling. Implementing central wet mills would allow to significantly reduce the time spend on wet-milling, saving farmers at least 50 to 70% of labor time. This translates into time savings of 3 to 4 hours per day during the main harvest season through central milling. Though it is difficult to quantify this savings potential as the majority of home wet-milling is done by family labor and it is uncertain how farmers will value or invest this additional time (potentially could use time to substitute paid labor, take up additional income generating activities or enjoy more leisure time).

Besides improving labor productivity, central wet-mills provide additional benefits, including improved quality (by reducing processing-related defects that are common at home wet-milling) and improved consistency (by employing standardized quality controls). In addition, wet-mills lead to reduced aggregation costs, faster payment for farmers and improved environmental compliance. Central wet mills require less water through applying eco-pulping technology and simplify wastewater treatment (installation of only one system at central wet mill instead of one system at each farm). This improves compliance with laws and certification standards in a cost-effective way.

While the viability of central wet mills depends on a variety of factors, it is particularly dependent on farmer adoption levels. Moving from traditional home wet milling to central wet milling requires a significant cultural change for farmers (for example, farmers cannot store coffee anymore but need to deliver coffee on a daily basis during harvesting time). Therefore, central wet-mills will be more valuable to some farmers than to others. Farmers with insufficient wet-milling facilities, high labor opportunity costs and higher potential to improve quality are more likely to benefit from central wet mills and are expected to show higher adoption levels, in particular if concrete buyer commitments exist. On the other hand, farmers with existing home wet milling infrastructure, low labor opportunity costs and lower potential to increase quality are less likely to benefit from central wet mills and therefore adoption levels are likely to be lower. Poor road access and lacking buyer commitments place an additional challenge on the business case of central wet mills.

To make the business case work, several risks besides farmers' adoption levels need to be carefully managed, including lower farmer price negotiation power, corruption and negative environmental consequences.

As it is uncertain how farmers value the additional time saving, the financial model is questionable and needs to be carefully assessed on a case-by-case basis. However, from a sector perspective central wet mills allow to achieve significant efficiencies through time savings.

**Reduction of on-farm costs by up to 10%**

Implementing approaches to improve labor productivity for harvesting and wet-milling are expected to lead to overall labor cost savings of up to 10%. Through increasing yields and capturing efficiency gains, average production costs could potentially decrease from US\$ 1.10 per lb to US\$ 1.00 per lb (see Exhibit 10).

**Improving environmental management**

**Strict local laws**

Colombia’s environmental laws, in particular regarding wastewater treatment, are stricter than the minimum criteria of international certification standards (for example Rainforest Alliance) and regulations in other Arabica producing countries.

Smallholder farms currently struggle to make the necessary investments to meet national standards. It is estimated that only 10 to 15% of farms have adequate wastewater systems installed (mostly farms certified under Rainforest Alliance). At the same time, the government has proposed new environmental regulations that are expected to come into effect soon. These regulations are stricter than the current law and will be challenging for home wet mills to comply with, posing an additional cost burden on Colombia’s coffee farmers (see Exhibit 11).

**High costs**

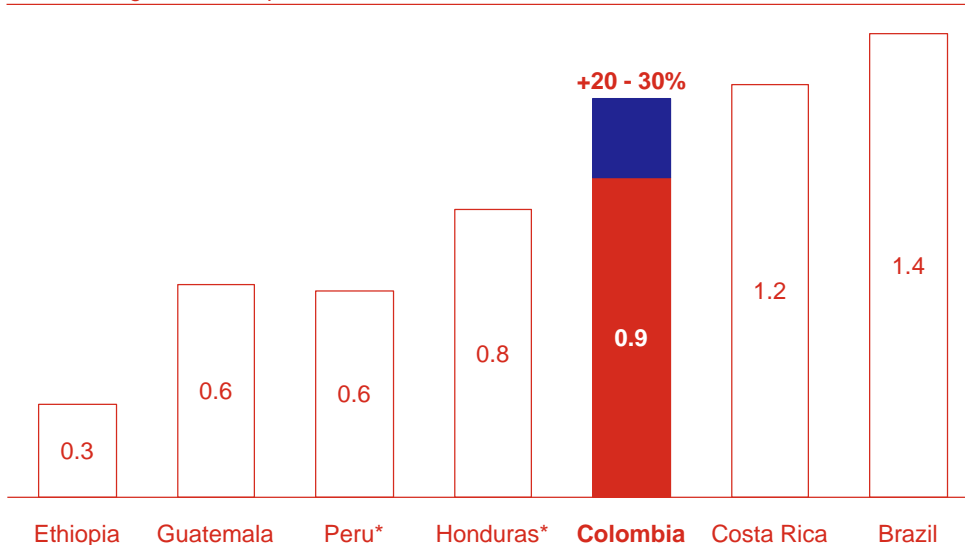
The majority of farmers do not comply with national standards as they do not have enough funds available to make the required investment. While several low-cost wastewater treatment systems exist and are implemented in various other countries, the majority of them do not meet the national standard (for example, BOD removal rate is less than 80% as required by the Colombian law). Systems that allow to fulfill national regulation normally come at high costs. For example the Modular System of Anaerobic Treatment (MSAT), developed by Cenicafé, requires an upfront investment of approximately US\$1,500 to 2,000, more than farmers earn today from coffee.

**Options to resolve this dilemma**

There exist several options to resolve this apparent dilemma that farmers currently face. The sector could support farmers in complying with environmental standards, for example through subsidizing investments in adequate wastewater treatment systems or investing in research to develop low-cost solutions. Another option would be to consider regulatory changes, relaxing existing environmental standards or providing exemption from standards for smaller farms. Alternatively the sector could promote the establishment of central wet mills. Instead of having to install numerous wastewater treatment systems at farm level, only one system needs to be installed at central wet mill level. Each farmer would only have to pay a small fee as part of the operating fee charged for usage, providing a more cost-effective way to comply with standards and making certification more feasible.

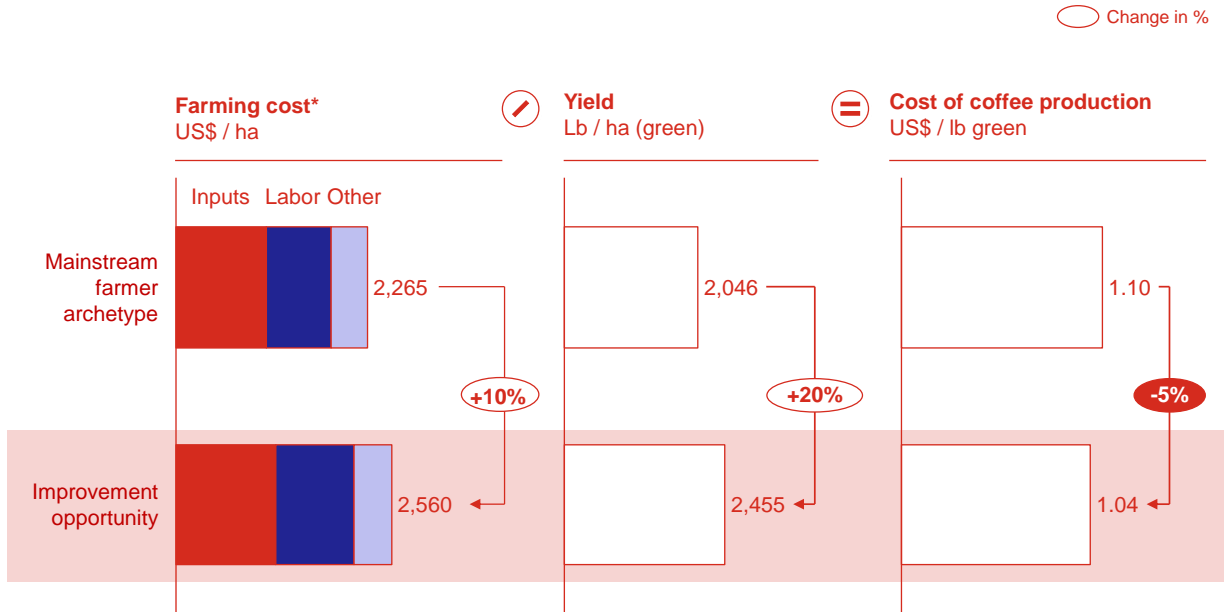
**Exhibit 6: Improved agronomy can boost yields by 20 to 30%**

**Average coffee farm yields (Arabica)**  
Metric tons green coffee per ha



\* Drop of yield in recent years due to leaf rust  
Source: ICO (production volume), national coffee associations and stakeholder interviews for coffee area information

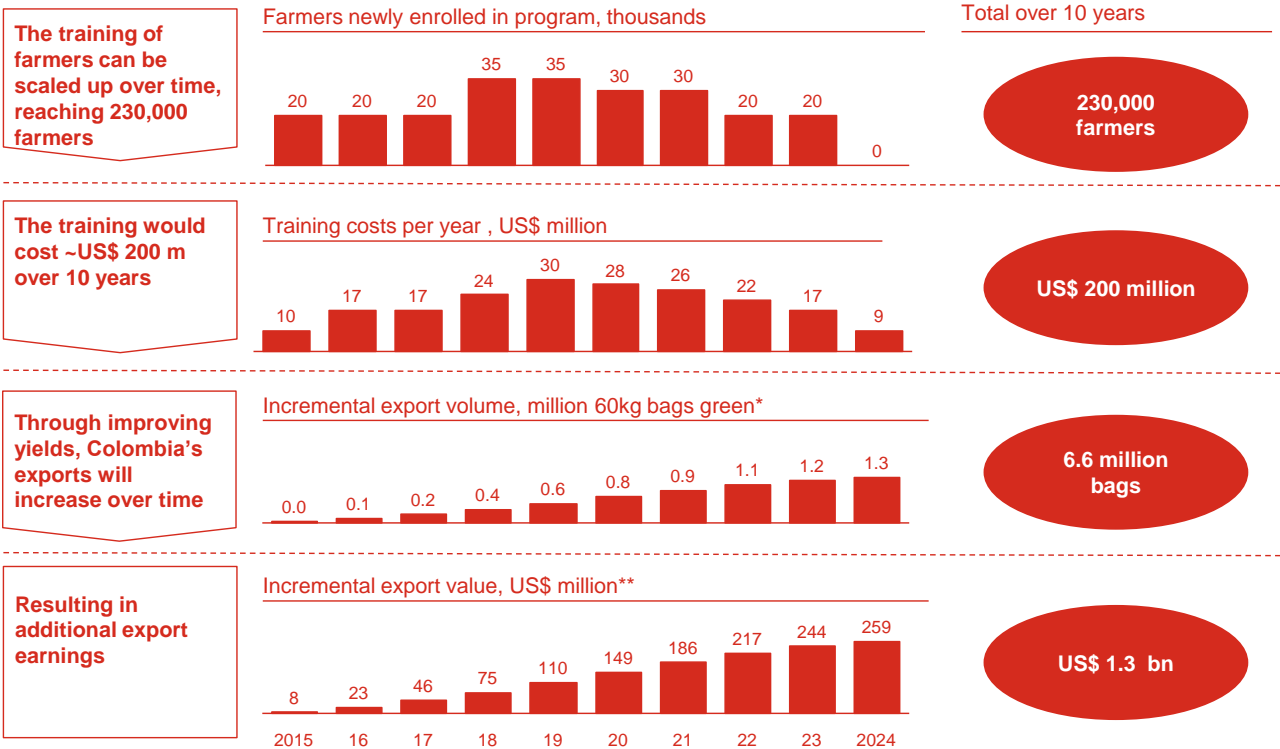
**Exhibit 7: Higher yields would enable farmers to increase their profit margin from coffee by 5%**



Note: Assuming 20% yield increase; higher fertilizer and other input costs, same labor productivity  
 \* Cash farming costs  
 Source: Stakeholder interviews; industry report analyses, TechnoServe analysis

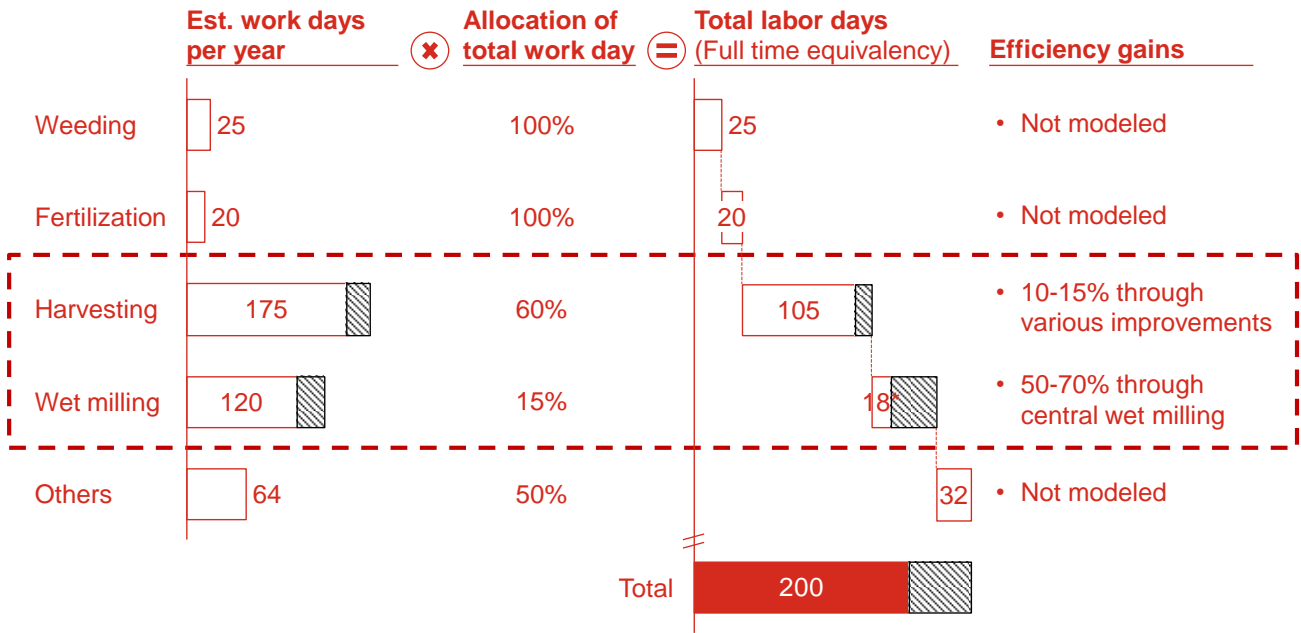
**Exhibit 8: Overall, the program could generate additional export earnings of US\$ 1.3bn over 10 years**

ESTIMATES



\* Assuming yield improvement of 200kg/ha to be achieved over 3 years; not including impact of renovation program  
 \*\* Assuming price of US\$ 1.50/lb  
 Source: TechnoServe analysis

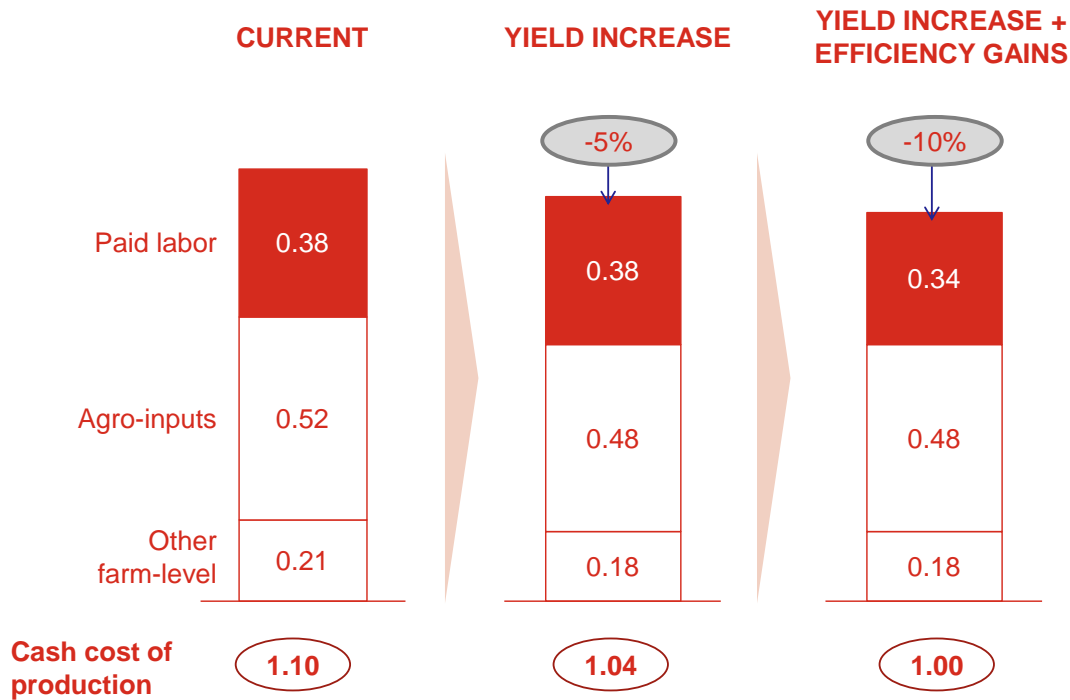
**Exhibit 9: There are opportunities to reduce farmers' labor requirements**



\* Home wet-milling time replaced with cherry transport time; during main crop, assumes 1.5 hrs for 60 days; during *mitaca*, assumes 1 hr for 60 days  
 NOTE: Modeled on 2 ha farm with 5,000 trees per ha and yield of 850 kg/ha green  
 Source: CRECE, interviews, TechnoServe analysis

**Exhibit 10: Overall, on-farm costs could be reduced by 10%**

**Average on-farm costs for mainstream archetypes\***  
 US\$ per lb green



\* Including cash and non-cash costs  
 Source: Interviews; TechnoServe analysis

**Exhibit 11: New wastewater regulations will be challenging for home wet mills to comply with**

Challenging for home wet mills to meet without significant changes\*

Parameter	Existing regulation	New regulation
Biochemical oxygen demand (BOD <sub>5</sub> )	Removal > 80%	50 mg/l
Chemical oxygen demand (COD)	NA	200 mg/l
Total Suspended Solids (TSS)	Removal > 80%	50 mg/l
Sedimentable solids (SS)	10 ml/l	1 ml/l
Methylene blue active substances	NA	4 mg/l
Fats & oils	Removal > 80%	20 mg/l
Phenols	0.2 mg/l	0.1 mg/l
Nitrogen (N)	NA	10 mg/l
Phosphorus (P)	NA	2 mg/l
Cadmium (C)	0.1 mg/l	0.01 mg/l
Lead (Pb)	0.5 mg/l	0.1 mg/l
Color (Pt-Co units)	NA	50
PH	5.0 - 9.0	6.0 - 8.0
Temperature differential (°C)	< 40°C	< 3°C
Fecal coliform	NA	Reduce by 2 logarithmic units

\* Other wastewater indicators are not likely to be influenced by coffee wet-milling activities  
 Source: Colombia government regulations

# A strategy for co-investing in sustainability

## Private-public co-investments to finance program

An ambitious program could reach up to 230,000 farmers (50% of active farmers) over 10 years and would cost approximately US\$ 200 million, requiring co-investments from private and public actors to finance the program.

The private sector could benefit from the program through higher availability of high quality coffee and cost savings for technical assistance/ certification programs. For the government, returns include higher incomes for farmers, ability to reduce subsidy payments and compliance with environmental standards. Farmers are less likely to be part of the financing solution as they have little discretionary income available and are already charged a coffee contribution<sup>6</sup> of US 6 cents per lb exported.

## Tap into existing sources of sector funding

The Colombian coffee sector already receives funding from several sources that could be tapped into in order to finance parts of the program. Over the next years, the National Coffee Fund is expected to generate an income of at least US\$ 850 million from the coffee contribution<sup>7</sup> on existing production and yield increases of the renovation program. Incremental coffee contribution from impact of program will amount to approximately US\$ 53 million. In addition, the government supports the coffee sector with short-term income subsidies that only in 2013 amounted to US\$ 600 million.

While parts of the program could potentially be financing by re-allocating existing sector funding, others could be financed through a more efficient supply chain and additional contributions from private sector agents, such as roasters or exporters.

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<sup>6</sup> Deduction that farmers have to pay on coffee exported

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<sup>7</sup> Deduction of US 6 cent per lbn that farmers have to pay on all coffee exported

# A path going forward

## Improving long-term competitiveness

The competitiveness of Colombia's coffee sector has been declining over the last years, raising questions about the sector's long-term viability in comparison to other Arabica producers. While the nationwide renovation program has been successful in reviving production levels, Colombia's coffee farmer face increasing cost of production, declining margins and increasing opportunity costs.

The business case recommendations would lead to reduction in production costs by up to 10%, improving farmers' profitability and potentially increasing their net income by more than 50% (see Exhibit 12). This would allow to improve coffee farming's competitiveness relative to other options (see Exhibit 13) and increase the attractiveness of farmers' investments in sustainability compliance.

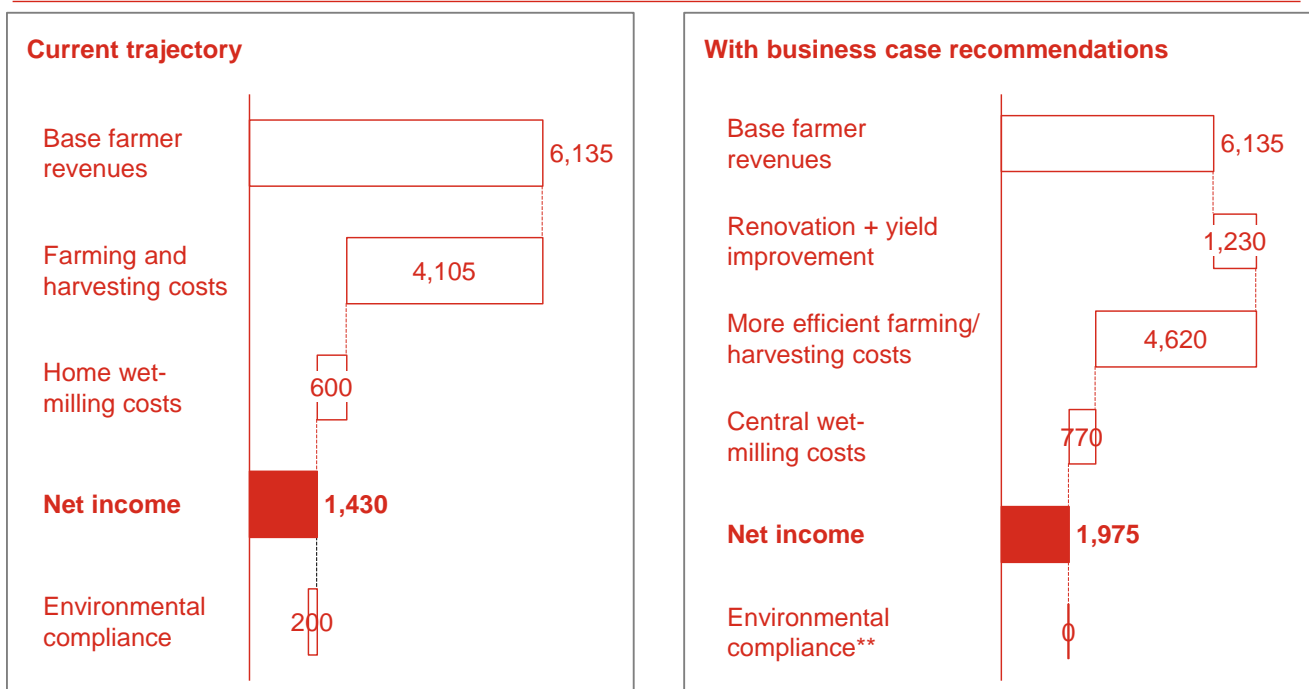
## Capturing demand-side opportunities

While the business case recommendations could lead to a decrease in production costs, the business case analysis has also revealed that there is limited potential to reduce production costs as coffee farming is already quite sophisticated.

Eroding profitability margins and increasing attractiveness of alternative income opportunities put increasing pressure on the coffee sector. It is critical for the sector to ensure that coffee farming constitutes an attractive long-term source of income for Colombian farmers to avoid that coffee move slowly out of coffee. Therefore, the sector may not only consider supply-side intervention but could also assess demand-side opportunities that allow to improve farmers' incomes, such as value addition activities (e.g., roasting), coffee tourism or increased domestic consumption.

**Exhibit 12: Business case recommendations allow farmers to increase their net income by more than 50%**

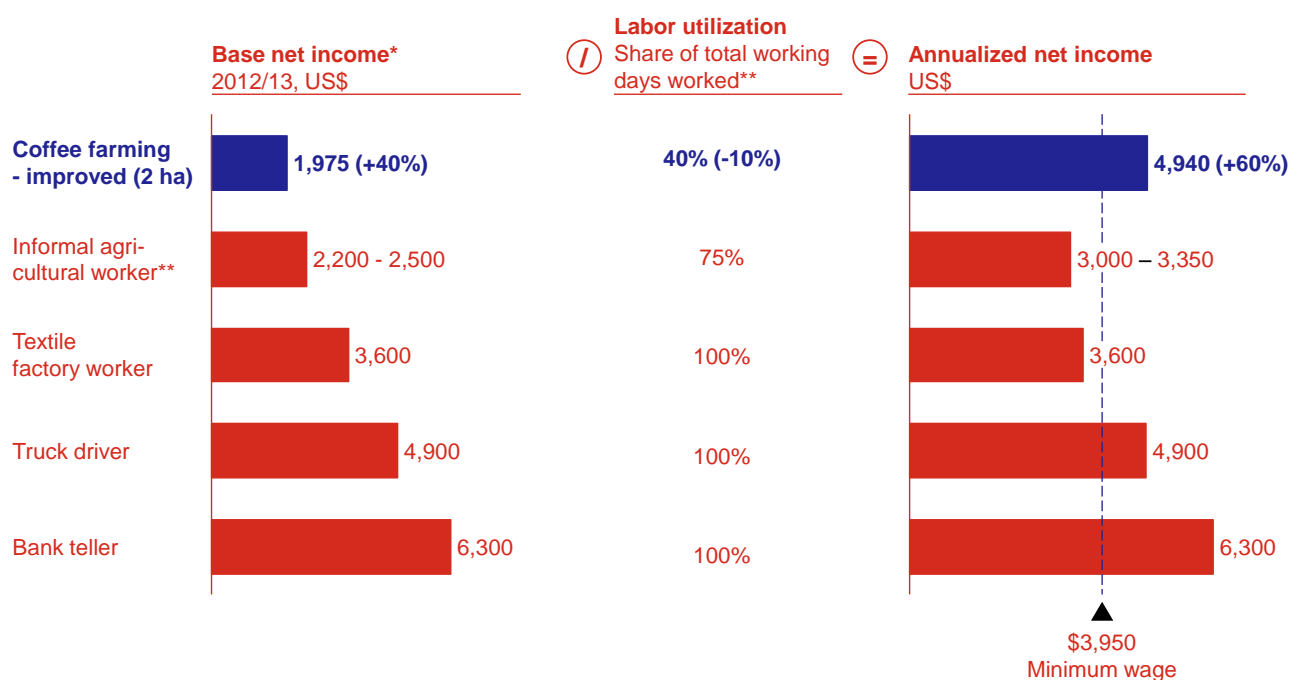
### Overall farmer cost/benefit of the recommended approaches, post 2024 US\$ (per crop year)



\* Assumption that installation costs for MSTA are depreciated over 10 years  
 \*\* No additional costs for environmental compliance; already included in wet milling fee charged by central wet mill  
 Source: TechnoServe analysis



**Exhibit 13: Business case recommendations improve coffee farming's competitiveness relative to other options**



\* Entry level salary  
 \*\* Assuming 260 work days per year for office job and 300 days for agricultural workers  
 \*\* Assuming daily rate of COP 20,000 and 220 work days per year  
 Source: DANE, tusalario.org, stakeholder interviews, TechnoServe analysis

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