Complete Case Study: The roll-out of the methodology in the coffee value chain of Colombia

The complete case study of the roll-out of the methodology coffee global value chain in Colombia compiles all steps taken in the joint ILO-EU project on OSH in Global Supply Chains conducted in 2016-2017 with the aim of assessing drivers and constraints for OSH, and for which Colombia was one of the three target countries. This provides a real-life example on how the methodology was applied in a given country and value chain.

The research question addressed by the project was: What are the drivers and constraints for OSH improvement in Global Supply Chains? The literature review conducted during the project's inception phase revealed that most of the literature on GSCs adopts a top-down approach, starting with the global buyer and going down the supply chain. This approach created constraints at the lowest levels of supply chains due to the lack of visibility and traceability of global buyers below their tier one suppliers in sourcing countries. Therefore, most of the evidence available focuses on tier one.

The method adopted by the project was adapted from the *Market Systems for Decent Work* approach which had been traditionally used by the ILO in the framework of SME development. Adapting this approach by adding an OSH and a global component met a twofold objective: i) adopting a bottom-up approach, to ensure analysis of the situation at the bottom-end of value chains; and ii) adopting a qualitative approach to answer the research question which seeks drivers and constraints for OSH to effectively formulate intervention models. Consequently, the methodology developed and used is of a qualitative nature, which helps understand OSH trends, and the evolution of workers' and managements' experience of OSH within a particular market. It is not a methodology designed to extrapolate quantitative data. The national data on OSH and trade mentioned in the report is from secondary sources, usually national repositories.

There is evidence that working conditions, including OSH, are closely linked with employment status, which is directly influenced by the dynamics at play within the supply chain and its market system. The research methodology allowed for a better understanding of where deficits and good practices exist in terms of OSH, what drives them and possible incentives and potential areas for sustainable change (i.e. possible intervention models).

Contents

Step 1: Value Chain Selection in Colombia

1. Overview

Among the three assessed value chains (Coffee, Banana and Cut Flowers), coffee got the highest score thanks to its market position, the sector organizational structure it offers as well as its high potential for transferability of findings. It appears that OSH is an important matter in the value chain while the latter involves mainly smallholders, making the topic particularly relevant to research. The value chain counts private compliance initiatives, many of which include OSH, with little existing knowledge on their impact. The banana and cut-flower value chains counted important hazards, especially as relate to chemical use, though the availability of actors was called into question in the framework of the current peace process in Colombia and on the basis of past projects led by the ILO.

The results were discussed with the ILO Country Office for Andean Countries. The office agreed with the conclusions of the rapid assessment and confirmed that coffee was a value chain of interest for the country and had functioning collaboration platforms on the basis of which the project could work.

2. Objectives

This report was formulated within the framework of the Joint ILO-EU project to improve knowledge base and safety and health in global value chains to support G20 work on safer workplaces. It serves for the selection of an agricultural value chain in Colombia on which case studies to further research drivers and bottlenecks for OSH improvement will then be developed.

3. Methodology

In Colombia, the three major agricultural exports were assessed: banana, coffee and cut flowers. The present report was elaborated on the basis of a desk review of relevant information and publications. The present report does not pretend to be exhaustive or comprehensive of all information available on the value chains studied, rather it is organized by pre-defined criteria and is meant to support an informed decision.

4. Timeframe

Four weeks of desk review and consultation with the regional specialists in the field and relevant national stakeholders.

5. Rapid Assessment

5.1 Banana

5.1.1 Market position

Table 1. Banana Market Position

Criteria	Description of information found	Score
Importance of the sector for the local economy	Colombia is the world fourth exporter of bananas. The value of those exports is affected by fluctuant exchange rates with the dollar, as banana exports are paid in dollars, not Colombian pesos. Banana exports represented 0.4% of GDP in 2014 (i.e. 961 million USD in 2014)[1]. It is the third agricultural export of the country. Exports represent about 5% of the local production of banana[2].	4
Prospects for growth in demand	Global demand has been increasing over the past decades in volume but decreasing in value since the mid-nineties. Latin America is the lead region exporting bananas but its share in world exports is slowly decreasing[3]. Consumer demand worldwide for fair trade banana is rising. Globally, sales of Fairtrade bananas have shown continual growth since they were launched in 1999 and were multiplied by more than seven between 2002 and 2008[4]. The EU (especially Benelux, UK, Italy and Germany) and the US are the main trade partners of Colombia with over 99% of its banana exports (respectively 75 and 24 %). Colombia is the second biggest exporter of banana to the EU and the fourth exporter to the US. The EU is the biggest importer of banana in the world, banana being the third consumed fruit in the EU, the UK having the highest consumption per capita (almost 17kg/year according to Eurostat). Emerging economies do not seem to impact banana world exports, as most of them are banana producers themselves.	4
Competitiveness and profitability	Main competitors are Ecuador, the Philippines, Costa Rica, Guatemala, Dominican Republic and to a lesser extent Cameroon, Cote d'Ivoire and the producing territories that are part of the EU (i.e. Canary, Martinique, Guadeloupe)[5].	3.5

[1] http://atlas.media.mit.edu/en/profile/country/col/

[2] Espinal G. C. F. et al. 2005. *La Cadena Del Plátano En Colombia Una Mirada Global De Su Estructura Y Dinamica 1991-2005*. Ministerio de Agricultura y Desarrollo Rural, Observatorio Agrocadenas Colombia, Documento de Trabajo No. 61. Available at: http://www.asohofrucol.com.co/archivos/cadenas/platano.pdf

[3] Overview of Banana Production and Trade, FAO. Available at: http://www.fao.org/docrep/007/y5102e/y5102e04.htm

[4] Smith, S. 2010. *Fairtrade Bananas: a Global Assessment of Impact*, Institute of Development Studies, University of Sussex, UK. Final Report: April 2010. Available at: http://www.fairtrade.net/fileadmin/user_upload/content/2009/resources/2010_Fairtrade_bananas_a_global_assessment_of_impact_.pdf

[5] Eurostat 2016, available at: http://ec.europa.eu/agriculture/fruit-and-vegetables/product-reports/bananas/statistics/value_en.pdf

Criteria	Description of information found	Score
	Colombia has a unit value sold to the EU which is higher than the one of Ecuador and other central American countries (i.e. 0.65 euros per kg against 0.59 euros per kg). Still the unit cost is below the ones practiced by ACP countries (i.e. 0.70 euro per kg for Cameroon for instance). Studies show that Colombia is the banana producer in which the highest share of total product value is going to the producer[6]. Still, it is important to underline that in recent decades supermarkets entered the banana market as a major player, cutting down the market share of big fruit exporters. This entry is creating pressure on the value chain and changing to some extent production modes which were quite vertically integrated initially (major fruit companies integrated vertically the whole chain). As retailers are estimated to capture most of the product value (over a third)[7], profitability down the value chain is under pressure, contract farming has spread over the past decades and investment is low[8]. It seems that a fair proportion of plantations are Global GAP or ISO certified. Some brands like Chiquita source 100% Rainforest Alliance certified bananas. Those certifications seem more difficult to access for small holders as they are not directly linked to a price premium, a number of them turn to Fairtrade certification instead. Colombia is producing 35% of global Fairtrade banana sales. Organics are only a small fraction of Colombia's banana exports, but it is growing, mainly through the certification of medium and large fruit companies' plantations (Grupo Daabon was the only one until 2006 and since then Dole and others started)[9].	

5.1.2 Employment and Working Conditions

Table 2. Banana Employment and Working Conditions

[6] BASIC. 2015. Banana value chains in Europe and the consequences of Unfair Trading Practices.
[7] Ibid.
[8] "Los problemas fitosanitarios y los bajos niveles de inversión en el cultivo en labores como la adecuación de fincas, renovación, fertilización y drenaje, son las principales causas de pérdida competitiva en los mercados internacionales, pues han afectado seriamente la productividad de los cultivos y la calidad de la producción para exportación." (Espinal G. C. F. et al. 2005)
[9] FAO. 2008. Certification In The Value Chain For Fresh Fruits The example of banana industry. FAO Commodity Studies. Available at: http://www.fao.org/3/a-i0529e.pdf

Criteria	Description of information found	Score
Employment (importance in terms of employment, potential for growth)	The banana industry was estimated to employ directly 286,000 workers in 2005[10]. Only a part of those jobs is directly related to global value chains: estimates indicated that it gave direct employment to 39 400 people and generated around 118 200 indirect jobs in 2013[11]. Part of the labour opportunities available in this sector take the form of more or less formalized permanent jobs in plantations, at sorting and packing stages and within export companies. Another part is composed of small holders who are linked to the value chain through contract farming arrangements. Potential for growth in employment is uncertain. On the one hand, the banana industry experienced a crisis in 2013 and a number of jobs were destroyed[12]. On the other hand, as rural development is an important focus of the new peace agreements and that banana production areas will be directly affected by those provisions, this may create an opportunity for employment growth[13].	3.75
Vulnerability of employment patterns and relative quality of working conditions	The banana exporting industry in Colombia has a long history of labour right conflicts. Still, within the Latin American region, Colombia is reported to be the country where trade union rights in the banana industry are respected the most[14]. Collective bargaining agreements protect workers in the industry (addressing wages, working hours, social protection, etc.), with enforcement being stricter in certified, fully formalized large-scale plantations[15]. It seems there were reports of discrimination against women in	3.5

[10] Espinal G. C. F. et al. 2005. *La Cadena Del Plátano En Colombia Una Mirada Global De Su Estructura Y Dinamica 1991-2005*. Ministerio de Agricultura y Desarrollo Rural, Observatorio Agrocadenas Colombia, Documento de Trabajo No. 61. Available at: http://www.asohofrucol.com.co/archivos/cadenas/platano.pdf

[11] Banco de la Republica de Colombia, Centro de estudios económicos regionales. 2013. in: BASIC.2014. *Analysis of German Banana Value Chains and Impacts on Small Farmers and Workers.* Final Report, June 2014. Available at: http://www.bananalink.org.uk/sites/default/files/Germany%20bananenstudie-oxfam-englisch.pdf

[12] http://www.freshplaza.com/article/105047/Plantations-closing-due-to-Colombias-banana-crisis

[13] Desarrollo rural integral - http://www.acuerdodepaz.gov.co/acuerdos/mejores-oportunidades-para-el-campo#utm_source=MEC&utm_medium=SEM&utm_campaign=Desarrollo_Rural
https://www.theguardian.com/sustainable-business/fairtrade-partner-zone/2016/jul/19/banana-workers-are-helping-to-rebuild-a-peaceful-just-society-in-colombia
https://www.fairtrade.at/newsroom/aktuelles/details/banana-workers-for-a-peaceful-society-in-colombia-1283.html

[14] González-Pérez, María-Alejandra & McDonough, Terrence. 2007. "More than Bananas: Social responsibility Networks and labour relations in the banana industry in the Urabá Region of Colombia". In: Schmidt, V. (Ed), *Trade Union strategies towards globalization* (pp. 139-152). ILO, (Geneva).

[15] "The development of the industry during the demobilisation period in the early 1990's offered significant employment opportunities to the ex-guerilleros and their families. Their strong social identity during the civil war was the building-block for very strong trade union. Today the Sintrainagro trade union includes some 19 000 workers, representing the overwhelming majority of the permanent banana workers in the country." (BASIC, 2014).

Criteria	Description of information found	Score
	the banana industry in Latin America for decades[16]. Over the last 15 years the proportion of female workers on Latin American banana plantations has fallen by 60%, so that they now make up 10% of the workforce[17]. Working conditions and vulnerability of employment may be of another nature for small holders, with possibly some non-standard forms of employment and less protection.	
Weakness of risk management systems and mitigation mechanisms	Colombia has an extensive legislation on OSH articulated through the *Sistema General de Riesgos Laborales* which aims at coordinating the different actors involved in the prevention, mitigation and compensation of work accidents and diseases. Legal requirements as regards OSH from the Labour Code exist and apply to agriculture[18], though enforcement through inspection seems weaker in agriculture than in other sectors[19]. Collective Bargaining Agreements were not found online, still they may be an additional source of protection[20]. Some value chain specific requirements were found in the various certification schemes of the sector. Almost all schemes have specific indicators, sometimes entire sections, on OSH, focusing mainly on OSH management systems and chemical use and handling[21]. A significant part of the banana production is certified, hence the reach of those provisions may be significant as well.	3
Importance of risk factors	There are several types of risks along the value chain. On-farm work involves potential risks such as chemical exposure, risks related to tools and load handling, as well as common risks relating to contact with pests, contaminated water, etc. The below figure is a first attempt to identify main risk factors at the different stages	4.5

[16] Especially on maternity protection. It is also important to underline that exposure to some of the chemicals used in banana plantation were proven to have impact on pregnancies (miscarriages, birth defects) such as nematicide Nemagon.
[17] http://www.bananalink.org.uk/women-banana-industry
[18] Additionally, the *Plan Nacional de Salud Ocupacional 2013-2021* lays out as a clear priority the extension of the *Sistema General de Riesgos Laborales* and improved OSH to workers in the informal economy and in SMEs.
[19] 477 inspections conducted in agriculture in 2014 (representing a little more than 3% of all inspections). An estimated 38% of formally employed workers in Colombia are part of Safety and Health Committees.
[20] http://www.augura.com.co
[21] 40 schemes identified by ITC Standards Map - http://www.standardsmap.org/identify

Criteria	Description of information found	Score
	of the value chain[22] and would need to be completed by a proper risk assessment. The overall fragility of the producing regions with the presence of armed conflicts is an additional risk factor for the safety of persons, including workers in the banana industry. Disaggregated data at the value chain level was not found regarding accidents and Lost Time Accident, though some evidence may be available at the certification company level for production which is certified (this information was not found in the public domain).	

5.1.3 Environmental and Social Dimensions

Table 3. Banana Environmental and Social Dimensions

Criteria	Description of information found	Score
Potential to engage poor communities	Production for export is concentrated in the regions of the Urabá Gulf and the North East[23] in rural areas. Rural poverty headcount at national poverty lines is higher for rural population (40.3%) (and most banana workers are rural migrant workers) than total poverty headcount (27.8%)[24]. It can be inferred that an intervention to improve OSH would have the potential to impact communities that are relatively poor, especially when focusing on contract farming arrangements and displaced populations.	4.5
Positive impact of climate change	Occurrence of weather related disasters, amplified with climate change, can have a strong impact on plants such as banana, and especially on plantations if they are not part of an integrated agro-forestry system. No evidence of opportunities as relate to climate change was found.	2.5

[22] *Banana Link. 2012. "Unions here can help workers everywhere secure safe work", Hazards Magazine* issue 117, January-March 2012. Available at: http://www.hazards.org/workingworld/bananalink.htmWorld Banana Forum. Working Group 03 Labour Rights. *Diagnosis On the Labour Rights Situation in the International Banana Industry: Paper On Occupational Health And Safety*. Presentation to the 2nd World Banana Forum. Feb. 2012, (Ecuador). Available at: http://www.fao.org/fileadmin/templates/banana/documents/WGs_outputs/WG03__OHS_en.pdf

[23] "Las regiones del Golfo de Urabá y el nororiente del departamento del Magdalena, sobresalen por el grado de especialización que han alcanzado en la producción y exportación de banano y plátano con altos niveles de productividad e integración de los productores y comercializadores, entre otras razones, gracias a las ventajas comparativas de localización y calidad de los suelos con respecto a otras zonas productoras del mundo." (Espinal G. C. F. et al. 2005).

[24] World Development Indicators, the World Bank, 2015.

Criteria	Description of information found	Score
Potential to avoid or limit negative impact on the environment and health of communities	The extensive cultivation of banana in Colombian plantations is an important chemical consumer, with the exception of the organic part. It requires high levels of fertilizers which found few organic alternatives and are important sources of CO2. Additionally, pesticides are also being used[25]. Water, air and soil production happen due to the use of agrochemicals at production stage. Carbon emissions related to operations in the chain are mostly concentrated within fertilizer and transportation. In certified production areas, good practices for the preservation of the environment are promoted and regularly monitored.	3.5

5.1.4 Sector Organization and Regulation

Table 4. Banana Sector Organization and Regulation

Criteria	Description of information found	Score
Level of investment in the sector	The desk review did not come across the total volume of investment in the value chain. It seems agricultural subsidy schemes in Colombia benefit particularly the fruit sub-sector (i.e. *Incentivo de Capitalización Rural*) and subsidies are also allocated where adequate phytosanitary management can be demonstrated (Colombian Agro Institute). Little on private investment was found. Still, changing trade mechanisms may provide incentives for investment[26].	3.5
Level of organization and collaboration	The sector is still relatively well integrated vertically and institutionalized through collective bargaining agreements. Though social dialogue is institutionalized (with major trade unions such as Augura or Sintrainagro and four main exporting companies), there	4

[25] CIRAD, 2012, available at: http://www.cirad.fr/en/research-operations/tropical-value-chains/banana-and-plantain/context-and-issues

[26] Geneva Agreement on Trade in Bananas: Since 2009, an agreement was established between the EU Commission, Latin American Most Favoured Nations (MFN) and the US to cut the MFN import tariff on bananas from 176 euros/tonne to 114/tonne in 2017 or 2019 at the latest. Bilateral agreement: since 2013, the EC and Colombia signed a bilateral agreement for a gradual reduction of the import duty for bananas down to 75 EUR/ton as of january 2020.
Source: European Commission DG for Agriculture and Rural Development. 2013.

Criteria	Description of information found	Score
	is an historic opposition between workers and employers in the sector. Additionally, the intervention of retailers as a growing player in recent decades changed the sector without adapting the institutional framework. Little was found on the organization and collaboration with small holders integrated in the value chain.	
Availability and capacities of stakeholders	Stakeholders' capacities are likely to be higher than in other agricultural value chains which are less vertically integrated and formalized. The desk review did not come across projects aiming specifically at addressing working conditions and more specifically OSH in the banana value chain, stakeholders are thus likely to be relatively available, with the limitation that dispersed smallholders may be difficult to reach and mobilize for the part of the chain that works under contract farming arrangements. The peace process may also interfere with stakeholders' availability.	3.5
Policy relevance / political interest	Since banana is a lead export and makes up for a significant share of rural employment, which is at the heart of the new rural development policy in the context of peace building in Colombia[27], policy relevance is high. This political interest is both an opportunity and a risk for the project as it creates a constraint on stakeholders' availability and possibly increases the political sensitiveness of interventions in the value chain. The sector expressed a particular interest for addressing OSH in the value chain during the Banana World Forum 2012[28].	4

5.1.5 Potential for Transferability

Table 5. Banana Potential for Transferability

[27] Desarrollo rural integral, available at: http://www.acuerdodepaz.gov.co/acuerdos/mejores-oportunidades-para-el-campo#utm_source=MEC&utm_medium=SEM&utm_campaign=Desarrollo_Rural

[28] The main points mentioned were that ILO convention 184 on Health and Safety in Agriculture and 187 were not ratified by Colombia, which were considered necessary for the improvement of labour conditions in the banana sector. Most union leaders of Costa Rica, Nicaragua, Colombia, Guatemala and Panama believed that their country country's government or companies were not making enough progress towards establishing policies on occupational health, however the issue should have more attention, mainly issues such as agrochemicals, aerial spraying, social security and especially diseases that are not yet recognized as occupational.

Criteria	Description of information found	Score
Commodity traded from other developing countries	A number of other developing countries are major banana exporters in Latin America and the Caribbean (Ecuador, the Philippines, Costa Rica, Guatemala, Dominican Republic, etc.) and to a lesser extent in Africa (Cameroon, Cote d'Ivoire, Ghana) where it is an important cash crop.	4.5
Transferability to other similar chains locally	No evidence was found. Other major commodities traded by Colombia grown in plantations include cut flowers, but they have distinct production processes. Since smallholders usually cultivate various crops, there is a possible spill over effect for smallholders involved in the chain.	2.5
Potential transferability through lead firms	The sector is quite vertically integrated with a few players both at national and international levels. Sustainability is a growing concern for EU and US markets. Hence, there is a possibility of transferability through lead firms, with the limitation that engaging with retailers may be more difficult than traditional fruit companies in terms of interest for responsible sourcing.	4.5

5.1.6 Final score

Table 6. Banana Final Score Matrix

	Banana		
Criteria	Score	Weight	Weighted score
1. Market position			
Importance of the value chain for the local economy	4	0.4	1.6
Prospects for growth in demand	4	0.3	1.2
Competitiveness and profitability	3.5	0.3	1.05
Sub-total I			3.85
2. Employment and working conditions			
Importance of the SC in terms of employment and job growth	3.75	0.3	1.125
Vulnerability of employment patterns and relative quality of working conditions	3.5	0.2	0.7
Weakness of risk management systems and mitigation mechanisms	3	0.2	0.6

Importance of risk factors / hazards	4.5	0.3	1.35
Sub-total II			3.775
3. Environmental and social dimensions			
Potential to engage with poor communities	4.5	0.4	1.8
Positive impact of climate change	2.5	0.2	0.5
Potential to avoid negative impact on the environment and health of local communities	3.5	0.4	1.4
Sub-total III			3.7
4. Sector organization and regulation			
Level of investment in the sector	3.5	0.2	0.7
Level of organization and collaboration	4	0.3	1.2
Availability and capacities of stakeholders	3.5	0.2	0.7
Policy relevance and political interest	4	0.3	1.2
Sub-total IV			3.8
5. Potential for transferability			
Commodity traded from other developing countries	4.5	0.4	1.8
Transferability to other similar chains locally	2.5	0.3	0.75
Potential transferability through lead firm	4.5	0.3	1.35
Sub-total V			3.9

	Banana		
	Score	Weight	Weighted score
1. Market position	3.85	0.20	0.77
2. Employment and working conditions	3.78	0.25	0.94
3. Environmental and social dimensions	3.70	0.15	0.56
4. Sector organization and regulation	3.80	0.20	0.76
5. Potential for transferability	3.90	0.10	0.39
Total (weighted I+II+III+IV+V)			3.42

5.2 Coffee

5.2.1 Market position

Table 7. Coffee Market position

Criteria	Description of information found	Score
Importance of the sector for the local economy	Colombia is the world third exporter of green coffee beans (unroasted, un-decaffeinated), mostly different kinds of Arabica. Exports of coffee declined over the past decades due to industrialization, price volatility and poor weather conditions. Still, exports of sustainable and specialty coffees increased. Coffee exports represented 0.9% of GDP in 2014 (i.e. 2.66 billion USD in 2014)[29]. It is the fourth largest export and the first agricultural export.	4.5
Prospects for growth in demand	Global demand has been increasing steadily over the past decades (with a growth level corresponding to a mature market), boosted by changing beverage consumption patterns in emerging economies. Global demand will be influenced by i) more consumers in emerging economies and ii) a change in consumption patterns in Japan, the US and the EU directed towards high quality certified specialty coffees. Consumer demand worldwide for sustainable coffees is rising by 20 to 25% yearly[30]. The US, Canada, Japan, the EU (especially Germany, Belgium) and Switzerland are the main trade partners of Colombia with over 90% of its green coffee beans exported to these destinations. Colombian coffee makes up for over 7% of the EU coffee imports. Demand boosted by emerging economies such as China and North African countries is of a different nature, including more concern for price than quality and interest in processed products such as soluble coffee. The latter is not truly a market for Colombia which focuses on quality Arabica coffee.	4.5
Competitiveness and profitability	As demand is growing for high quality specialty and sustainable coffee, Colombia is seizing this economic opportunity as its competitive advantage was built on quality coffee over the years.	4

[29] http://atlas.media.mit.edu/en/profile/country/col/

[30] Invited Paper presented at the Indonesian National Coffee Seminar 'Peran Inovasi Teknologi Kopi Menuju Green Economy Nasional', Organised by Balai Penelitian Tanaman Industri dan Penyegar (BALITRI), Bogor, 28 August, 2013.

Criteria	Description of information found	Score
	Café de Colombia enjoys a protected GI recognized all over the world which contributed to build a differentiated image for Colombian coffee rather than it being seen as just a commodity and blended with coffees from other origins. Colombian coffee growers grow Arabica coffee of superior quality and benefit from decades of research and development (*Cenicafé*) in the sector. Sustainable coffee accounted for 23% of total Colombian production in 2012[31] and almost 40 certification schemes of different nature are present in the Colombian coffee industry[32]. Main competitors on the global market are Brazil, Ethiopia, Honduras, Guatemala, Mexico, Peru, Vietnam, Indonesia, Kenya and Uganda. None of those countries experience a level of institutionalization comparable to the coffee sector in Colombia and strategies have been very different from one country to the other, with only a few countries focussed on high quality Arabica coffee. Still, low production costs in Asia and high volumes produced over the past decades have had an impact on global coffee prices. Profitability in the Colombian coffee industry is affected by increasing production costs and volatile prices on the world market. Production costs can vary dramatically based on the size and location of the farm and type of coffee the farmer is producing. Main components of production costs for coffee producers are labour, fertilizers and farm infrastructure[33]. Fertilizers costs rose sharply since 2005 globally. World coffee prices have been declining since the 1990s, with the collapse of the International Coffee Agreement, and experienced some fluctuations in recent years[34]. Similarly to production costs, coffee prices vary dramatically depending on the type of coffee traded, with highest prices paid for Colombian Milds (i.e. about 160 US Cents per pound, over double the price offered for Robusta). There are little direct linkages between the price paid by the consumer and the volatility on the global coffee market. The latter is linked to speculation, levels of production worldwide and	

[31] Federación Nacional de Cafeteros (FNC).
[32] ITC Standards Map.
[33] Pratt, L.; Rivera, L.,; Kilian, B.; Lort-Phillips, L. 2014. *Securing the long-term sustainable future of coffee value in Colombia*. INCAE Business School and Sustainable Markets Intelligence Center (CIMS), Business Association of Latin American Studies. Proceedings of the 31st Anniversary of The Business Association of Latin American Studies Annual Convention, Apr. 9-12, 2014.
[34] http://www.ico.org/documents/cy2014-15/cmr-0515-e.pdf

Criteria	Description of information found	Score
	weather conditions. This situation affects profitability for coffee growers in Colombia and their investment prospects. Still, the *Federación Nacional de Cafeteros* (FNC) made substantial efforts over the years to try and guarantee floor prices for its coffee growers. Though Colombia is at the heart of its demographic transition and youth composes most of the population, the population of coffee growers is ageing, which creates a threat to knowledge transmission in an industry based on quality and know-how. This also suggests that profitability at the bottom of the value chain is low. Certification processes have become more of a licence to operate than a differentiation factor in the global high-quality Arabica coffee market. In this process, Colombia is quite well positioned in comparison to other Latin American and Asian competitors.	

5.2.2 Employment and Working Conditions

Table 8. Coffee Employment and Working Conditions

Criteria	Description of information found	Score
Employment (importance in terms of employment, potential for growth)	The coffee industry is estimated to employ directly 640,000 workers[35]. Half a million smallholders are growing coffee, most of whom are highly reliant on coffee revenues. Coffee represents over a third of employment in agriculture in Colombia. Potential for growth is uncertain. There is a need to ensure the availability of the next generation of growers. In the past decades the local market developed to progressively stabilize and the transformation industry experienced some growth (roasters, soluble coffee plants).	4
Vulnerability of employment patterns and relative quality	Considering that over 90% of coffee production comes from smallholders, it can be inferred that non-standard forms of employment are predominant at the production stage, with independent workers, paid and unpaid family workers.	4

[35] Roldán-Pérez, A. et al. 2012. Coffee, Cooperation and Competition: A Comparative Study of Colombia and Vietnam. UNCTAD.

Criteria	Description of information found	Score
of working conditions	At the processing (mill) and transformation (roasting, grinding, soluble) stages, little evidence was found on status in employment and quality of working conditions. Considering seasonality and the necessity to process coffee quickly after harvest, long working hours and heavy work load must be involved at the mill stage several times a year (at least 2 harvests depending on the region). Those entities are likely to be formalized. Some evidence of child labour in agriculture was found. The occurrence of child labour mentioned does not seem specific to coffee production and affects predominantly poor rural areas. Little evidence on freedom of association and discrimination was found throughout the chain. Little evidence was found on wages. Anecdotal evidence suggests that coffee workers earn less than the minimum wage, depending on coffee prices and region of cultivation[36]. It seems the new entrants in the coffee growing market (i.e. from the Southern region) have less access to the services and programmes provided by FNC (mainly located in the traditional areas of coffee growing) and are relatively poorer, making them most vulnerable[37]. With respect to social security, Sarmiento (2013) finds that the coverage in the coffee sector is high in health care and very low in pensions. It seems most coffee workers receive health care support due to belonging to Sisbén (government-subsidized system) rather than the coffee contribution system, indicating high informality.	
Weakness of risk management systems and mitigation mechanisms	Colombia has an extensive legislation on OSH articulated through the *Sistema General de Riesgos Laborales* which aims at coordinating the different actors involved in the prevention, mitigation and compensation of work accidents and diseases. Legal requirements as regards OSH from the Labour Code exist and	2.5

[36] International Trade Centre. 2013. Florverde Sustainable Flowers,Echavarría, J. J.; Esguerra, P.; McAllister, D.; Robayo, C. F. 2015. Report written by the commission on coffee competitiveness in Colombia executive summary, (Bogotá). Available at: http://www.urosario.edu.co/Mision-Cafetera/Archivos/Commission-on-coffee-copetitiveness-in-Colombia-%28w/

[37] Ibid.

Criteria	Description of information found	Score
	apply to agriculture[38], though enforcement through inspection seems weaker in agriculture than in other sectors[39]. Some value chain specific requirements were found in the various certification schemes of the sector. Almost all schemes have specific indicators, sometimes entire sections, on OSH, focusing mainly on OSH management systems and chemical use and handling[40]. A significant part of the coffee production is certified, hence the reach of those provisions may be significant as well. The FNC works with three types of certification schemes at the moment: SAN-Rainforest Alliance, UTZ and Fairtrade (Flocert)[41]. All have OSH provisions and the two first ones have dedicated chapters. Additionally, the FNC collaborates closely with the relevant government authorities on OSH issues[42]. FNC also reports under the GRI LA7 on work injury occurrence for its own employees[43]. Special value chain programmes such as Nespresso AAA also include the adoption of farm management practices that include provisions on OSH[44].	
Importance of risk factors	Risk exposure is likely to be gendered, due to gendered employment patterns (while both male and female are involved in land management and coffee harvesting, women seem predominant in processing and packaging while men are predominant on land acquisition, management and trade)[45]. At the same time, this traditional repartition of role is evolving and about the third of coffee producing farms are owned by women[46]. There are several types of risks along the value chain considering it encompasses several transformation stages. On-farm work involves potential risks such as chemical exposure, risks related to	4

[38] Additionally, the *Plan Nacional de Salud Ocupacional 2013-2021* lays out as a clear priority the extension of the *Sistema General de Riesgos Laborales* and improved OSH to workers in the informal economy and in SMEs.
[39] 477 inspections conducted in agriculture in 2014 (representing a little more than 3% of all inspections). An estimated 38% of formally employed workers in Colombia are part of Safety and Health Committees.
[40] 39 schemes identified by ITC Standards Map.
[41] http://www.federaciondecafeteros.org/clientes/es/nuestro_cafe/cafes_especiales/produccion_y_calidad/
[42] http://www.federaciondecafeteros.org/algrano-fnc-es/index.php/comments/cafeteros_de_colombia_aprenden_a_prevenir_riesgos_laborales/
[43] http://www.federaciondecafeteros.org/static/files/sostenibilidad-2012-esp.pdf
[44] https://www.nestle-nespresso.com/newsandfeatures/nespresso-aaa-sustainable-quality-tm-program-a-triple-win-collaboration-between-nespresso-and-the-rainforest-alliance
[45] The North South Institute. 2014. Taller de Género del Sector Cafetero (Informe Resumen). Septiembre 2014. Available at: http://www.nsi-ins.ca/wp-content/uploads/2014/09/Coffee-Sector-Gender-Workshop_-Taller-Genero-Sector-Cafetero_Spanish-Final.pdf
[46] http://sipse.com/mundo/mujeres-cafe-colombia-duenas-fincas-cafetaleras-174633.html

Criteria	Description of information found	Score
	tools, machine and load handling, as well as common risks relating to contacts with pests, contaminated water, etc[47]. At mill stage, there are possible risks relating to loads, machine handling, heat exposure, exposure to residues and contaminated water. Other stages are less documented. The below figure is a first attempt to identify main risk factors at the different stages of the value chain and would need to be completed by a proper risk assessment. Disaggregated data at the value chain level was not found regarding accidents and Lost Time Accident, though some evidence may be available at the certification company level for certified producers (this information was not found in the public domain).	

5.2.3 Environmental and Social Dimensions

Table 9. Coffee Environmental and Social Dimensions

Criteria	Description of information found	Score
Potential to engage poor communities	The percentage of people in poverty conditions is higher in non-coffee agricultural areas (37.1%) than in the coffee areas (29.9%), but it is much higher in both areas than in other capital cities and metropolitan areas (14.8%). These percentages are higher in the southern regions (94% in Tolima, Huila, Nariño & Cauca) and marginal regions (91%) that have started to grow coffee more recently[48]. Additionally, coffee growers have often had little access to education[49] and there are land tenure issues[50] that make the situation of their households particularly vulnerable (i.e. little access to finance linked to the absence of collaterals). No evidence reported migrant work at production stage. Little was found at milling stage, though it seems mills are distributed within rural areas that are more accessible and connected than farms, hence with a potentially distinct socio-economic background. Roasting / grinding and soluble coffee	4.5

[47] ILO. 2004. *International Programme on the Elimination of Child Labour Safety and Health Fact Sheet Hazardous Child Labour in Agriculture, Coffee.*
[48] The *Encuesta Nacional Cafetera* provided a socio-economic panorama of coffee growers but seems outdated (https://datoscede.uniandes.edu.co/microdatos-detalle.php/152/)
[49] Only 9% of all coffee farmers in Colombia attended secondary school. (Lozano 2009)
[50] "While only a tiny percentage of ownership claims are in dispute, and virtually every farmer exerts full legal control over his land, only 36% of coffee growers have formal titles for their land (Presidencia de la República, 2012), As a consequence, farmers have difficulty securing loans, since their land cannot be readily used as collateral (see section overleaf on access to credit)". (Lawrence Pratt et al. 2014).

Criteria	Description of information found	Score
	processing companies seem to evolve in a different socio-economic environment (cities). Considering the large number of small holders and the volatile price of coffee affecting their income, it can be inferred that an intervention to improve OSH would have the potential to impact communities that are relatively poor.	
Positive impact of climate change	Changes in temperature, precipitation and sun exposure due to climate change can affect the chemical composition of coffee seeds according to recent studies (Bertrand, 2012). This is likely to affect negatively high-quality coffee growers. This is already anticipated by the FNC which, in collaboration with UNDP, is leading a programme on green commodities (biodiversity-friendly coffee), though the outcomes of this new trend and its potential as a risk mitigation strategy are still to be evaluated[51].	2.5
Potential to avoid or limit negative impact on the environment and health of communities	Little was found on the impact of the coffee industry on the environment and health of communities in Colombia specifically. Water, air and soil production can happen due to the use of chemicals at production stage. Water contamination happens at different production stages (wet processing, decaffeination, etc.) and it seems investments at mill stage are made to improve water waste management[52]. An important amount of waste is created at production stage if wet processing is used (with the seed being extracted from the fresh fruit), it can be used as compost, though no evidence was found on whether it is the practice in Colombia. Carbon emissions related to operations in the chain are mostly concentrated within fertilizer and transportation. In certified coffee production areas, good practices for the preservation of the environment are promoted and regularly monitored.	4

[51] Biswas-Tortajada A. and Biswas A. K. 2015. Sustainability in Coffee Production, Creating Shared Value Chains in Colombia. Routledge.
[52] https://www.nestle-nespresso.com/sustainability/case-studies/community-milling-in-colombia
See also: http://www.cafedecolombia.com/cci-fnc-en/index.php/comments/the_fnc_inaugurated_the_most_modern_coffee_dry_mill_in_colombia

5.2.4 Sector Organization and Regulation

Table 10. Coffee Sector Organization and Regulation

Criteria	Description of information found	Score
Level of investment in the sector	The desk review did not come across the total volume of investment in the value chain. The unique institutional framework of coffee growing and commercialization in Colombia allowed to create mechanisms to ensure a better distribution of resources between the actors of the chain. The FNC established a National Coffee Fund in the early 1940s. This fund supports the Purchase Guarantee Policy, which offers farmers a transparent minimum price for their product based on a formula that accounts for the current international market price and the exchange rate, among other factors. The Fund is financed through a 0.06% export tax on green coffee exports[53]. 16% of the coffee contribution must be destined to investments in the regions. Outside of this scheme, the FNC provides a number of services to the value chain though. In recent years the Fund accumulated a deficit as revenues no longer fund its institutional costs. Additionally, the government has provided some support in the framework of rural development policies[54]. Private investments are being made in innovation and to secure high-quality coffee value chains[55]. As for a number of food products, food safety regulations in destination countries often discourage investments in functional upgrading in developing countries as importers prefer keeping control over transformation processes (i.e. soluble, decaffeinated, ground coffee). This potential disincentive for investment is reinforced by the fact that coffee became less important than other traded products and services for the national economy over	**3.5**

[53] http://knowledge.wharton.upenn.edu/article/coffee-in-colombia-waking-up-to-an-opportunity/

[54] Lora, Meléndez y Tommasi (2013) indicate that "The Ministries of Agriculture & Rural Development and of Finance have intervened sporadically in the industry out of the FNC's institutional framework, when acting governments decided to link the coffee growers to support programs covering the agriculture sector in general or when they decide to deliver extraordinary support to coffee growers. Examples of these interventions are: Agro Ingreso Seguro (AIS), whereby support was given to coffee growers from 2006 to 2008, and the Program: Apoyo al Ingreso del Caficultor (AIC-PIC), by virtue of which a subsidy of $165,000 pesos per carga of 125 kg was given, provided that the domestic price and subsidy did not exceed the sum of $ 700,000 per carga. The FNC has been decisive in materializing the delivery of the support to coffee growers, but institutions external to FNC had imposed the rules of the game."

[55] Mc Falls R. 2016. Good Procurement Practices and SMEs in Value Chains: Nespresso AAA Sustainable Quality Program, Impact of Procurement Practices in an SME in Colombia. ILO, SME Unit.

Criteria	Description of information found	Score
	the years. Lastly it seems smallholders have limited investment capacities[56].	
Level of organization and collaboration	The sector has a unique and strong institutional framework organized around the FNC[57]. Extensive information is available on the participatory governance structure of the FNC[58] and its broad range of services to coffee growers. The value chain is highly institutionalized. In relation to the FNC, some satellite institutions and companies provide key services to the value chain and are collaborating with international buyers: *Café de Colombia* (labelling, GI), *Cenicafé* (research), *Expocafé SA* (exporter), *Fundación Manuel Mejía* (training), etc[59].	4.5
Availability and capacities of stakeholders	Stakeholders' capacities are likely to be higher than in other less institutionalized agricultural value chains. In Colombia a number of institutions are providing research and development as well as training services to the coffee value chain. For instance, *Cenicafé*[60] is a research institution specialized on Colombian coffee and the *Centros de Estudios Regionales Cafeteros y Empresariales* offer a number of services at several links of the chains[61]. The desk review did not come across projects aiming specifically at addressing working conditions and more specifically OSH in the coffee value chain, stakeholders are thus likely to be relatively available, with the limitation that dispersed smallholders may be difficult to reach and mobilize.	4

[56] "Coffee farmers in Colombia are constrained by the inability to scale up, invest or negotiate. This is compounded by considerable uncertainty in future prices and markets meaning small-scale coffee farmers in Colombia are missing out on important opportunities. Among the most critical are investments in post-harvest infrastructure (processing, drying, etc). This is essential for maximizing the number of high quality coffee beans, and is usually the most profitable investment an organized large group of small farmers can make, albeit with substantial risks, given the size of the investment." (Lawrence Prat et al. 2014).

[57] "All functions tend to be concentrated in a single institution in Colombia, the FNC, with great sectorial and national power. It is not only a trade association, but also designs national coffee policies with the government inside the *Comité Nacional de Cafeteros* (national coffee committee). It regulates exports and it completes exports (close to 35% of the national total) at the same time. Finally, it participates in the most diverse support activities: gathering/storing, transporting, certifying and international trade." (Echevarría, 2015).

[58] International Trade Centre. 2013. *Florverde Sustainable Flowers,*Echavarría, J. J.; Esguerra, P.; McAllister, D.; Robayo, C. F. 2015. Report written by the commission on coffee competitiveness in Colombia executive summary, (Bogotá), p.31.

[59] http://www.cafedecolombia.com/familia

[60] http://www.cenicafe.org/

[61] http://www.crece.org.co/crece/#oferta-de-servicios

Criteria	Description of information found	Score
Policy relevance / political interest	Since coffee makes a third of rural employment which is at the heart of the new rural development policy in the context of peace building in Colombia[62], policy relevance is high. At the same time the coffee sector is experiencing challenges (on the side of financing especially, with a lot of questioning on the impact and sustainability of sector subsidies such as the *Programa de Protección del Ingreso Cafetero* - PIC) and opportunities (on the high-quality coffee market) that are likely to require more productivity and quality, to which improved OSH can contribute. Specifically on OSH, the FNC has the improvement of the health of coffee growers as a priority in its strategic plan. This political interest accompanied by a need for reform is both an opportunity and a risk for the project as it creates a constraint on stakeholder's availability and possibly increases the political sensitiveness of interventions in the value chain.	4

5.2.5 Potential for Transferability

Table 11. Coffee Potential for Transferability

Criteria	Description of information found	Score
Commodity traded from other developing countries	Colombia is among the leaders in production and exportation of coffee. A number of other developing countries are important players as well in Asia (especially Vietnam, Indonesia), Africa and Latin America. Arabica coffee is a key cash crop for a number of low income countries in Africa (especially Kenya, Ethiopia) and central America.	5
Transferability to other similar chains locally	Other major export commodities traded by Colombia are not grown in the same areas coffee is grown and have distinct production processes, limiting spill over effects. Still, those could take place with other crop not for export cultivated by coffee growers.	2

[62] Desarrollo rural integral - http://www.acuerdodepaz.gov.co/acuerdos/mejores-oportunidades-para-el-campo#utm_source=MEC&utm_medium=SEM&utm_campaign=Desarrollo_Rural

Criteria	Description of information found	Score
Potential transferability through lead firms	It is a concern of the coffee industry, especially in Western countries, to improve the sustainability and traceability of its coffee, as product quality and image have become key competitive advantages on those markets. Buyers seem to have important traction on this segment of the market, which is the main market for Colombian coffee. Colombian milds are produced by Kenya, Tanzania, Guatemala, Mexico and India. These commodity chain networks are most likely linked since roasters often need to offset value shortages in their primary origin to another. A number of brands seem to have programmes that strongly involve their value chain in Colombia and other countries (i.e. Nespresso[63], Starbucks).	4

5.2.6 Final score

Table 12. Coffee Final Score Matrix

	Coffee		
Criteria	Score	Weight	Weighted score
1. Market position			
Importance of the value chain for the local economy	4.5	0.4	1.8
Prospects for growth in demand	4.5	0.3	1.35
Competitiveness and profitability	4	0.3	1.2
Sub-total I			4.35
2. Employment and working conditions			
Importance of the SC in terms of employment and job growth	4	0.3	1.2
Vulnerability of employment patterns and relative quality of working conditions	4	0.2	0.8
Weakness of risk management systems and mitigation mechanisms	2.5	0.2	0.5
Importance of risk factors / hazards	4	0.3	1.2
Sub-total II			3.7
3. Environmental and social dimensions			
Potential to engage with poor communities	4.5	0.4	1.8
Positive impact of climate change	2.5	0.2	0.5

[63] Mc Falls, R. 2016. *Good Procurement Practices and SMEs in Value Chains: Nespresso AAA Sustainable Quality Program, Impact of Procurement Practices in an SME in Colombia.* ILO, SME Unit.

Potential to avoid negative impact on the environment and health of local communities	4	0.4	1.6
Sub-total III			3.9
4. Sector organization and regulation			
Level of investment in the sector	3.5	0.2	0.7
Level of organization and collaboration	4.5	0.3	1.35
Availability and capacities of stakeholders	4	0.2	0.8
Policy relevance and political interest	4	0.3	1.2
Sub-total IV			4.05
5. Potential for transferability			
Commodity traded from other developing countries	5	0.4	2
Transferability to other similar chains locally	2	0.3	0.6
Potential transferability through lead firm	4	0.3	1.2
Sub-total V			3.8

	Coffee		
	Score	Weight	Weighted score
1. Market position	4.35	0.20	0.87
2. Employment and working conditions	3.70	0.25	0.93
3. Environmental and social dimensions	3.90	0.15	0.59
4. Sector organization and regulation	4.05	0.20	0.81
5. Potential for transferability	3.80	0.10	0.38
Total (weighted I+II+III+IV+V)			3.57

5.3 Cut flowers

5.3.1 Market Position

Table 13. Cut Flowers Market Position

Criteria	Description of information found	Score
Importance of the sector for the local economy	Colombia is the world second exporter of cut flowers. Over the past three decades, exports of cut flowers increased, with most of the increase going to developing countries. Cut flower exports	4

Criteria	Description of information found	Score
	represented over 0.4% of GDP in 2014 (i.e. 1.36 billion USD)[64]. It is the second agricultural export of the country.	
Prospects for growth in demand	Global demand has been increasing steadily over the past decades boosted by new technologies (improvement in packing technology, transport services, e-commerce) and emerging markets such as Russia. Global demand is forecasted to continue its growth, especially the segment of sustainably sourced flowers. The US is the main trade partner, with 75% of Colombian cut flower exports, followed by the EU, Russia and Japan. In value, roses were the primary export flower ($365 million), then carnations ($156 million) and chrysanthemums ($147 million) in 2014. Roses are the most demanded flowers and Colombia is the preferred sourcing destination of US buyers.	4.5
Competitiveness and profitability	Colombia benefits from a climate that allows to grow flowers all year round and geographical proximity and infrastructure to access the US market[65]. The sector is well organized in Colombia where investments were made since the 1980s to install the value chain, initially as a diversification strategy for small businesses, which turned into a concentrated sector with medium sized companies and investments from Dole. Those are closely connected to importers and retailers in the US, which is a key competitive advantage in comparison with new entrants[66]. Since 2005, Colombian flowers are released from custom duties to enter the EU and benefit from the ATPDEA[67] programme of the US. Main competitors include Ecuador (for the US market), Kenya and Ethiopia (for the EU market) with new entrants such as Costa Rica, Zimbabwe, Uganda, and Tanzania. Profitability is decreasing as prices are decreasing, with a global value higher than the demand (Sepulveda, 2008).	3.5

[64] http://atlas.media.mit.edu/en/profile/country/col/
[65] World Trade. 2009. *Say it with Flowers, Say it with Logistics.*
[66] Madrid, G.; Lovell, T. 2007. "Working with flowers in Colombia: The 'lucky chance'?", in: *Women's Studies International Forum*, 30 pp. 217-227.
[67] Andean Trade Promotion and Drug Eradication.

Criteria	Description of information found	Score
	Certification is increasingly spread in the sector, with end markets being particularly sensitive to sustainability. The sector has its own certification process, through *Florverde*. Additionally, 10 farms were fair trade certified in 2010 and Rainforest Alliance counts also ten certified farms. In this respect Colombia is quite well positioned to compete on the international market.	

5.3.2 Employment and Working Conditions

Table 14. Cut Flowers Employment and Working Conditions

Criteria	Description of information found	Score
Employment (importance in terms of employment, potential for growth)	Floral production generated 111,000 direct jobs (greenhouse jobs) and 94,000 indirect jobs (packaging and transportation) in 2013[68]. This is one of the most labour-intensive industries (i.e. sixteen workers per hectare on average) and a successful one in Colombia where concentrated economic actors have built a production base. Still, as profitability tends to go down, perspectives for growth in employment are uncertain. Indeed, the sector moves towards greater productivity and between 2006 and 2010, 20,000 jobs were lost in the value chain (UNTRAFLORES, 2013.).	**3.5**
Vulnerability of employment patterns and relative quality of working conditions	The value chain was composed of 225 companies in 2013, with seven large companies accounting for half of the sales. Work in those companies is likely to be quite formalized, and they are organized as large-scale greenhouse plantations. The majority of the workforce is made up of women, though is a lesser proportion than in sub-Saharan Africa for instance[69]. Short-term contract seems to be widespread in the industry, with less protection than full-time staff[70]. The division of labour is gendered: women tend to work in weeding, plant tying, pruning, cutting, picking, and packing	**3.5**

[68] Produce Marketing Association. 2015. *Colombia Floral Market 2015*.
[69] 65% of workers were women in 2003 according to Oxfam (less than in Kenya or Zimbabwe).
[70] Wright, C.; Madrid, G. 2007"Contesting ethical trade in Colombia's cut-flower industry: A case of cultural and economic injustice", in *Cultural Sociology* 1(2)

Criteria	Description of information found	Score
	(perceived to be low-skilled and thus typically low paid), while men generally work as supervisors, machine operators and technicians. Over the past decades, a number of cases of violation of labour rights in the flower industry emerged. An independent union of flower workers was created, UNTRAFLORES. The workflow is highly seasonal, which engenders both a number of short-term contracts but also long hours of work at peak times (Mother's Day, Valentine's day, etc.). A survey conducted in the Bogota valley indicated that 35% of workers in flower farms were subcontracted through temporary employment agencies (Sepulveda, 2008). The average cut-flower wage in the region was over six dollars an hour in 2013, which was more than the minimum wage (UNTRAFLORES, 2013).	
Weakness of risk management systems and mitigation mechanisms	Colombia has an extensive legislation on OSH articulated through the *Sistema General de Riesgos Laborales* which aims at coordinating the different actors involved in the prevention, mitigation and compensation of work accidents and diseases. Legal requirements as regards OSH from the Labour Code exist and apply to agriculture[71], though enforcement through inspection seems weaker in agriculture than in other sectors[72]. Some value chain specific requirements were found in the various certification schemes of the sector. Almost all schemes have specific indicators, sometimes entire sections, on OSH, focusing mainly on OSH management systems and chemical use and handling[73]. *Florverde* has an important focus on OSH and especially on chemical use and handling. It reports having resulted in a reduction of 28% in the use of chemical in certified companies in 2014[74]. In terms of mitigation and compensation, formal companies are supposed to register their workers to social security. Affiliated workers from the cut-flower sector represent 23% of all agricultural affiliates to the Colombian social security system	3

[71] Additionally, the *Plan Nacional de Salud Ocupacional 2013-2021* lays out as a clear priority the extension of the *Sistema General de Riesgos Laborales* and improved OSH to workers in the informal economy and in SMEs.

[72] 477 inspections conducted in agriculture in 2014 (representing a little more than 3% of all inspections). An estimated 38% of formally employed workers in Colombia are part of Safety and Health Committees. The Ministry of Labour announced that in 2013, 2,000 inspections were carried out in 5 sectors including the cut-flower industry, and 4,300 sanctions were given to various companies in those 5 sectors for the violation of labour norms, failure to pay contributions of their employees to the social security system (http://www.mintrabajo.gov.co/octubre-2013/2421-seguro-de-desempleo-y-bep-arrancan-en-diciembre-mintrabajo.html).

[73] 40 schemes identified by ITC Standards Map.

[74] http://florverde.org/the-difference/content/our-impact

Criteria	Description of information found	Score
	(Aristizabal, J. C. 2012). Still there were reports that workers who contributed were actually not properly registered (OXFAM, 2004).	
Importance of risk factors	Risk exposure is gendered, due to gendered employment patterns (see above). There are several types of risks along the value chain considering it encompasses several stages. Still, chemical exposure seems to be a particularly important hazard for workers in the sector, and there is evidence that prevention of risks related to chemical exposure, especially pesticides, is poor[75]. Cut-flowers need to be pest-free for export and are exempt of regulations on pesticide residues because they are non-edible, hence the high use of pesticide[76]. The below figure is a first attempt to identify main risk factors at the different stages of the value chain and would need to be completed by a proper risk assessment. Disaggregated data at the value chain level was not found regarding accidents and Lost Time Accident, though some evidence may be available at the certification company level for the production which is certified (this information was not found in the public domain).	4.5

5.3.3 Environmental and Social Dimensions

Table 15. Cut Flowers Environmental and Social Dimensions

Criteria	Description of information found	Score
Potential to engage poor communities	The majority of the industry is located in the regions of Bogotá, Medellín and Antioquia. Cut-flower businesses are located close to cities. Bogotá and Antioquia were amongst the 4 departments the least affected by poverty (around 28% poverty according to national poverty line in 2011). The extreme poverty rate in Antioquia was 7% in 2011 and around 2.5% in Bogotá D. C.	4

[75] Exposure to neurotoxic pesticides and reproductive hazards have been of particular concern in the floriculture industry: in 1990 a report (Restrepo, 1990) on Colombia's cut flower industry found a moderate increase in abortion, prematurity and congenital malformations among children conceived after either parent started working in floriculture.
A study on the use of pesticides in the cut-flower industry shows that in 2005, only 16.7% of the sector's companies respected the recommended delay between the use of highly chemical pesticides (category 1) and the exposure of workers, the study also finds that only 3.6% of the participating companies (all part of Asocoflores) provide a fully protective equipment to their workers. This is partly explained because of the incompatibility of the equipment with the work required. (Tolosa, J., E.; Varona, M. 2005.)

[76] Workers who transplant, prune, cut and pack flowers without protective equipment may therefore absorb dangerous pesticides through their skin.

Criteria	Description of information found	Score
	However, there are strong urban-rural disparities in this region (as in the rest of the country) and thus the statistics do not reflect the level of poverty in rural areas, where flower plantations are located[77]. Still, the cut-flower industry is an important source of employment for vulnerable women from rural areas. A research on the perception of women workers in flowers show that despite the poor working conditions, women see working in the flower-cut industry as a way to have a better work-life balance (more fixed hours than in domestic work) and more independence (individual wage) (Madrid, G.; Lovell, T. 2007). Those regions also have been affected by armed conflicts, especially around Antioquia (Geneva International Centre for Humanitarian Demining. 2013). Considering the large number of women working on low paid jobs in the industry, it can be inferred that an intervention to improve OSH would have the potential to impact communities that are relatively poor.	
Positive impact of climate change	A good portion of the agro-ecosystems of the country is vulnerable to increased aridity, soil erosion, desertification, and changes in the hydrological system. In addition, there is a greater risk of crop flooding as well as other natural events that affect agricultural production (windstorms, hailstorms, etc.) (UNDP. 2010). Still, specific impacts on the flower industry are difficult to assess, and it seems the industry has resilience strategies. Growing concerns for sustainability is more a constraint to the industry than an opportunity.	2.5
Potential to avoid or limit negative impact on the environment and health of communities	The industry is widely criticized for its levels of pollution, mainly linked to heavy use of non-organic fertilizers and pesticides. Flowers are also often shipped by air to the US at peak times, which adds to the sector's carbon footprint. The industry is also a big consumer of water (Bohm et al. 2013).	3

[77] World Development Indicators, the World Bank.

Criteria	Description of information found	Score
	It seems that growing environmental concerns impacted the industry which is making efforts in recent years to try and reduce pesticide and water consumption.	

5.3.4 Sector Organization and Regulation

Table 16. Cut Flowers Sector Organization and Regulation

Criteria	Description of information found	Score
Level of investment in the sector	The desk review did not come across the total volume of investment in the value chain. Data on the total volume of private investments was not found, though over the past decade investments were made in logistics and processes as the sector is highly concentrated. No evidence was found on access to finance on the part of the different businesses in the industry. The government of Colombia also made substantial investments in the sector. The ministry of Agriculture and Rural Development mobilised \$300,000 million pesos in 2011 for investment in the flower industry, with an additional \$40,000 million in subsidies. Additionally, tariffs on the importation of agrochemicals were removed[78]. Financial support to Asocolflores was also granted by the Ministry of Agriculture. In 2015, the Ministry invested \$8.660 in non-traditional agricultural exportations, creating 130.000 formal rural jobs[79].	4
Level of organization and collaboration	From the elements collected by the desk review, the value chain seems organized. The fact that it was capable to develop and promote its own standard (*FlorVerde*) demonstrates the capacity of coordination and collaboration in the chain. *Asocolflores* (*Asociación Colombiana de Exportadores de Flores*) is a group of businesses that represents 70% of Colombian's total cut	4

[78] http://www.cosmoagro.com/site/avanzamos/colombia-subsidios-de-nuevo-para-floricultores/
[79] http://www.minagricultura.gov.co/noticias/Paginas/minagricultura-consolida-expansion-floricultura.aspx

Criteria	Description of information found	Score
	flower exports. Around 220 out of the 600 companies in the flower industry are part of *Asocolflores.* On the workers' side, UNTRAFLORES represents the interest of workers in the industry. Additional activist groups exist such as CACTUS.	
Availability and capacities of stakeholders	Stakeholders' capacities are likely to be higher than in other agricultural value chains which receive less support. A number of projects from development agencies focused on the cut-flower value chain in Colombia over the past decade[80]. Projects reported some difficulties to access sector actors and availability issues. The desk review came across the ILO SCORE project which aimed specifically at addressing working conditions in the cut flower value chain, including OSH.	3.5
Policy relevance / political interest	Since cut-flowers make a fair share of rural employment which is at the heart of the new rural development policy in the context of peace building in Colombia[81], policy relevance is high. As mentioned, the Government of Colombia promoted the sector through investment projects and subsidies. This political interest is both an opportunity and a risk for the project as it creates a constraint on stakeholders' availability and possibly increases the political sensitiveness of interventions in the value chain.	4

5.3.5 Potential for Transferability

Table 17. Cut Flowers Potential for Transferability

Criteria	Description of information found	Score
Commodity traded from other	Cut-flowers are traded from a few other developing countries in the Americas (Ecuador, Costa Rica) but also in Africa (Kenya, Ethiopia but also Zimbabwe, Uganda, Tanzania more recently), including Low Income Countries.	5

[80] See ILO SCORE programme (http://www.ilo.ch/empent/Projects/score/lang--en/index.htm), UNDP CERF project (http://www.co.undp.org/content/colombia/es/home/operations/projects/crisis_prevention_and_recovery/proyecto-cerf-2014-y-2015.html).
[81] Desarrollo rural integral -

Criteria	Description of information found	Score
developing countries		
Transferability to other similar chains locally	No evidence was found. Other major commodities traded by Colombia are not grown with cut flowers and have distinct production processes. Possible the fresh fruit export industry working in plantations.	2
Potential transferability through lead firms	The world leaders in terms of cut-flower trade are the companies form the Netherlands where the industry is long established. Some of those major players invested in low-income countries such as Kenya and Ethiopia where they largely control the value chains, and are deeply involved in its functioning. Thus, transferability of findings to those countries through lead firms may be limited as the structure of the industry in Colombia is rather distinct. As for other fresh products, there is a possibility of transferability through lead firms (such as Dole for instance which controls a fifth of the Colombian cut-flower exports), with the limitation that engaging with retailers may be more difficult than traditional fruit companies in terms of interest for responsible sourcing.	3.5

5.3.6 Final score

Table 18. Cut Flowers Final Score Matrix

	Cut Flowers		
Criteria	Score	Weight	Weighted score
1. Market position			
Importance of the value chain for the local economy	4	0.4	1.6
Prospects for growth in demand	4.5	0.3	1.35
Competitiveness and profitability	3.5	0.3	1.05
Sub-total I			4
2. Employment and working conditions			
Importance of the SC in terms of employment and job growth	3.5	0.3	1.05

Vulnerability of employment patterns and relative quality of working conditions	3.5	0.2	0.7
Weakness of risk management systems and mitigation mechanisms	3	0.2	0.6
Importance of risk factors / hazards	4.5	0.3	1.35
Sub-total II			3.7
3. Environmental and social dimensions			
Potential to engage with poor communities	4	0.4	1.6
Positive impact of climate change	2.5	0.2	0.5
Potential to avoid negative impact on the environment and health of local communities	3	0.4	1.2
Sub-total III			3.3
4. Sector organization and regulation			
Level of investment in the sector	4	0.2	0.8
Level of organization and collaboration	4	0.3	1.2
Availability and capacities of stakeholders	3.5	0.2	0.7
Policy relevance and political interest	4	0.3	1.2
Sub-total IV			3.9
5. Potential for transferability			
Commodity traded from other developing countries	5	0.4	2
Transferability to other similar chains locally	2	0.3	0.6
Potential transferability through lead firm	3.5	0.3	1.05
Sub-total V			3.65

	Cut flowers		
	Score	Weight	Weighted score
1. Market position	4	0.20	0.80
2. Employment and working conditions	3.70	0.25	0.93
3. Environmental and social dimensions	3.30	0.15	0.50
4. Sector organization and regulation	3.90	0.20	0.78
5. Potential for transferability	3.65	0.10	0.37
Total (weighted I+II+III+IV+V)			3.37

6. Value Chain Selection

Table 19. Selection Matrix

	Banana			Coffee			Cut Flowers		
Criteria	**Score**	**Weight**	**Weighted score**	**Score**	**Weight**	**Weighted score**	**Score**	**Weight**	**Weighted score**
1. Market position									
Importance of the supply chain for the local economy	4	0.4	1.6	4.5	0.4	1.8	4	0.4	1.6
Prospects for growth in demand	4	0.3	1.2	4.5	0.3	1.35	4.5	0.3	1.35
Competitiveness and profitability	3.5	0.3	1.05	4	0.3	1.2	4.5	0.3	1.35
Sub-total I			3.85			4.35			4.3
2. Employment and working conditions									
Importance of the SC in terms of employment and job growth	3.75	0.3	1.125	4	0.3	1.2	3.5	0.3	1.05
Vulnerability of employment patterns and relative quality of working conditions	3.5	0.2	0.7	4	0.2	0.8	3.5	0.2	0.7
Weakness of risk management systems and mitigation mechanisms	3	0.2	0.6	2.5	0.2	0.5	3	0.2	0.6
Importance of risk factors / hazards	4.5	0.3	1.35	4	0.3	1.2	4.5	0.3	1.35
Sub-total II			3.775			3.7			3.7
3. Environmental and social dimensions									
Potential to engage with poor communities	4.5	0.4	1.8	4.5	0.4	1.8	4	0.4	1.6
Positive impact of climate change	2.5	0.2	0.5	2.5	0.2	0.5	2.5	0.2	0.5
Potential to avoid negative impact on the environment and health of local communities	3.5	0.4	1.4	4	0.4	1.6	3	0.4	1.2
Sub-total III			3.7			3.9			3.3
4. Sector organization and regulation									
Level of investment in the sector	3.5	0.2	0.7	3.5	0.2	0.7	4	0.2	0.8
Level of organization and collaboration	4	0.3	1.2	4.5	0.3	1.35	4	0.3	1.2
Availability and capacities of stakeholders	3.5	0.2	0.7	4	0.2	0.8	3.5	0.2	0.7
Policy relevance and political interest	4	0.3	1.2	4	0.3	1.2	4	0.3	1.2
Sub-total IV			3.8			4.05			3.9
5. Potential for transferability									
Commodity traded from other developing countries	4.5	0.4	1.8	5	0.4	2	5	0.4	2
Transferability to other similar chains locally	2.5	0.3	0.75	2	0.3	0.6	2	0.3	0.6
Potential transferability through lead firm	4.5	0.3	1.35	4	0.3	1.2	3.5	0.3	1.05
Sub-total V			3.9			3.8			3.65

	Banana			Coffee			Cut Flowers		
	Score	**Weight**	**Weighted score**	**Score**	**Weight**	**Weighted score**	**Score**	**Weight**	**Weighted score**
1. Market position	3.85	0.20	0.77	4.35	0.20	0.87	4.3	0.2	0.86
2. Employment and working conditions	3.78	0.25	0.94	3.70	0.25	0.93	3.7	0.25	0.93
3. Environmental and social dimensions	3.70	0.15	0.56	3.90	0.15	0.59	3.3	0.15	0.50
4. Sector organization and regulation	3.80	0.20	0.76	4.05	0.20	0.81	3.9	0.2	0.78
5. Potential for transferability	3.90	0.10	0.39	3.80	0.10	0.38	3.65	0.1	0.37
Total (weighted I+II+III+IV+V)			3.42			3.57			3.43

7. Conclusion

Among the three assessed value chains, coffee got the highest score thanks to its market position, the sector organizational structure it offers as well as its high potential for transferability of findings. It appears that OSH is an important matter in the value chain while the latter involves mainly smallholders, making the topic particularly relevant to research. The value chain counts private compliance initiatives, many of which include OSH, with little existing knowledge on their impact. The banana and cut-flower value chains counted important hazards, especially as relate to chemical use, though the availability of actors was called into question in the framework of the current peace process in Colombia and on the basis of past projects led by the ILO.

The above results were discussed with the ILO Country Office for Andean Countries and the Ministry of Labour as well as the social partners and the National Federation of Coffee Growers. They agreed with the conclusions of the rapid assessment and confirmed that coffee was a value chain of interest for the country and had functioning collaboration platforms on the basis of which the project could work.

Step 2: Mapping of the Coffee Value Chain of Colombia

1. Overview

This research was carried out within the framework of the ILO-EU Project to improve the occupational safety and health knowledge base in global value chains in support of G20 work. The project aimed to identify constraints and incentives for improving occupational safety and health (OSH) in global value chains focusing on agricultural global value chains.

In Colombia, the value chains evaluated were bananas, coffee and flowers. According to the ILO methodology, coffee scored highest because of its market position, institutional structure and the potential for transfer of results. According to the same report, OSH appears to be an important issue in the value chain, which involves thousands of small farmers, being a relevant aspect in the research process. In addition, the chain has private compliance initiatives, many of which include OSH.

2. Objectives

The overall objective is to map the coffee value chain in the country as well as outside, taking into account international buyers, and the coffee market environment in Colombia, with a special emphasis on OSH. The mapping includes an identification of the actors in the value chain, as well as the basic work processes involved and related known risks to safety and health at different stages of production.

Specific objectives:

a) Recognise the various levels of organisation
b) Create a rapid overview of the work processes and the OSH risk factors in the value chain
c) Provide a detailed typology of actors and describe the structure and flow of the chain in logical clusters
d) Develop a vision of the scale and quantifies the value chain
e) Identify the supporting functions and provides a general overview of the market and institutional system in which the value chain is operating

3. Timeframe & Scope

The initial mapping was completed in two weeks. It is an iterative process once the field work starts (next section) where more actors may be discovered on the ground and subsequently added to the mapping.

4. Methodology

Desk review and key informant interviews realized in collaboration with research partners: the *Centro de Estudios Regionales Cafeteros y Empresariales* (CRECE) and the *Centro Agronómico Tropical de Investigación y Enseñanza* (CATIE).

5. Mapping

5.1 Market

Over 80 per cent of the coffee produced in the world is traded internationally. Its export value totals 33.4 billion US dollars while retail sales amount to around one billion US dollars (Panhuysen and Pierrot, 2014). World production is over 150 million bags, while world consumption (coffee year 2015-2016) totaled 155.7 million bags, of which 48.3 million (31 per cent) were consumed in the exporting countries and 107.5 million (69 per cent) in the importing countries. Some 50 per cent of world consumption is concentrated in six countries: United States (25 million bags per year); Brazil, the only exporting country with significant domestic consumption (20 million bags); Germany (9.3 million); Japan (7.8 million); France (6 million); and Italy (5 million) (International Coffee Organization, 2016). The European Union consumes 42.9 million bags per year. In Colombia, they consume 1.5 million bags (less than 10 per cent of its output), equivalent to 1.8 bags per head, which is just under a quarter of Brazil's, the country with the highest per capita consumption, at 4.8 kilos per head.

During the last two decades, the market has displayed, on one hand, a growing trend in the niche for lower quality coffees in countries that did not traditionally consume coffee (2.8 per cent), with a stronger dynamic than in the traditional consumer countries (0.8 per cent); and on the other, significant growth in the supply of differentiated and high-quality coffees. Within differentiated coffees, there has been a growing involvement of producers in specialty and sustainable coffees, which has led to compliance with standards that promote social, environmental and economic considerations in production. Currently, around one quarter of Colombian producers achieve a high standard of sustainability.

5.2 Product

Coffee (*Coffea*) is the most important genus of the Rubiaceae family, which includes well over 500 genera and over 6,000 species. Two of the most common species of the genus *Coffea* are currently of economic significance: *Coffea Arabica*, which is produced mainly in the temperate and high tropical zones of Latin America and North-West Africa, accounts for approximately 60 per cent of world production; and *Coffea Canephora* (or *coffea Robusta*), which is produced mainly in Asia, Brazil, East Africa and South Africa, and accounts for the remaining 40 per cent. Other species, such as *Coffea Libérica* and *Coffea Excelsa,* are marketed in limited quantities.

Coffee production requires special soil, temperature, and atmospheric precipitation as well as altitude conditions. Altitudes of between 1,200 and 1,800 metres above mean sea level, temperatures ranging between 17 and 23 degrees centigrade and an annual precipitation around 2,000 millimetres, well distributed over the year, are considered suitable. According to Arcila et al (2007), the plant begins to produce fruits on year-old shoots and reaches its maximum productivity between 6 and 8 years, depending on the variety and conditions. Its life cycle can reach up to 25 years in commercial conditions. In Colombia, various varieties of the species *Arabica* are produced, which gives a smooth drink, characteristic of the country. According to the *Colombian Coffee Growers' Federation* (*FNC*)[82], Colombian coffee has a clean taste, a mild to high acidity and body and a pronounced and full aroma. The quality features are associated with a tradition of selective, bean harvesting, with an emphasis on processing (post harvesting process by the wet method and the drying process) with subsequent grading by threshing.

[82] See Café de Columbia website

5.3 Structure of the value chain

Colombian coffee is listed in the market in the "smooth washed" category by the varieties cultivated and the characteristics of the processing. The process consists of collecting raw coffee, pulping, removing the mucilage and then washing and drying until the parchment coffee is obtained. Parchment coffee is then threshed to produce green coffee for export.

Coffee cultivation covers 940,000 hectares, along the Andean Cordillera and from the Caribbean Sea to the Amazon Forest (FNC, 2015). These hectares cover 20 of the 32 departments in 588 of the 1,122 municipalities. In all, 552,000 producers are engaged in coffee growing, with an average of 1.7 hectares of coffee cultivation per farm. In the north, the bulk of the crop is harvested in the second half of the year; in the southern region of the country, the harvest is mainly concentrated in the first half. Meanwhile, the central zone is divided into two parts, a main crop, which produces approximately two thirds of the annual crop, and a smaller, mid-crop (*cosecha traviesa* or *cosecha mitaca*).

The country produces 14 million 60 kilo bags of green coffee, and is the third ranked producer after Brazil and Vietnam. National production has increased in recent years following a comprehensive programme to renovate coffee plantations, recovering from a marked decline of production over four successive years (2009 to 2012), influenced by the combined effect of the El Nino phenomenon, the proliferation of coffee rust (Hemileia Vastatrix fungus) and the increase in the price of fertilizers. The country's coffee plantation experienced a rejuvenation (with an average shrub or tree age of 7.1 years), with greater mechanization[83] (97 per cent of plantations), and with a higher proportion of rust resistant varieties (71 per cent of the planted area).

The country exports around 12 million bags of coffee per year, which represents some 90 per cent of its production. In 2015, 12.7 million bags were exported worth US$2.788 million. The main export destination is the United States, which receives 42 per cent or the equivalent to 5.3 million bags. An average of 1.2 million bags are exported to Japan (10 per cent), followed by Germany with 1.1 million bags (9 per cent), Belgium, with 900,000 bags (7 per cent) and Canada with 800,000 bags (6 per cent).

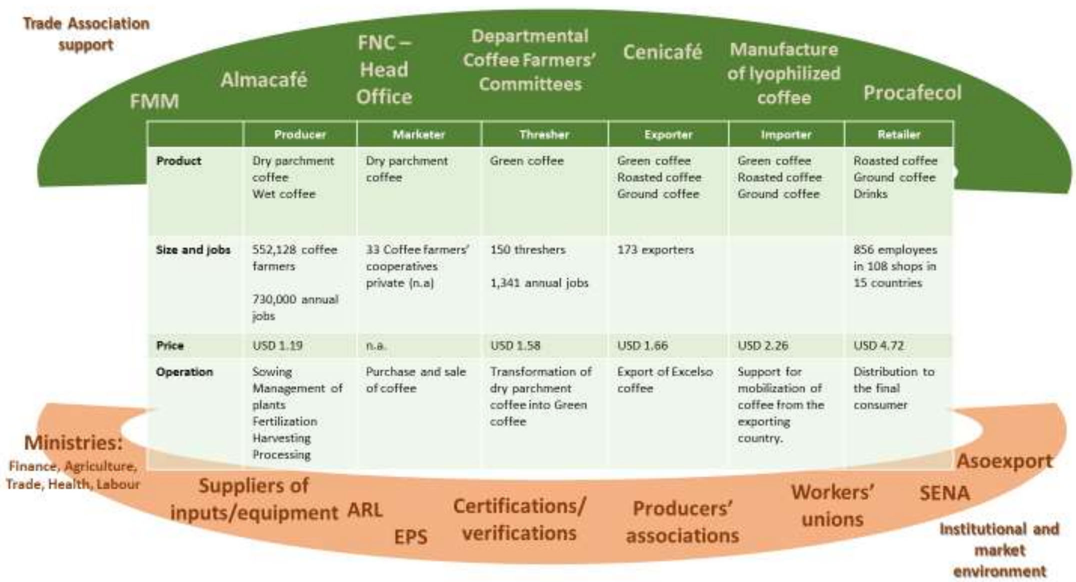
The principal form of export is green coffee (94.3 per cent), and, to a lesser extent, extract or soluble coffee (4.7 per cent). Other forms of preparation such as decaffeinated green, roasted grain and roasted and soluble, garner 1.1 per cent of export. The participation of the coffees in Voluntary Sustainable Standards (VSS) is gaining credibility in production and exports. 32 per cent of farms (out of a total of 684,000) currently produce their coffee under a sustainable production standard (FNC, 2015). Specialty coffees account for 15.2 per cent of exports, totaling 2.1 million bags in 2016. In that year, the bulk of exports were sold as conventional coffee (71.1 per cent) and the rest as processed coffee (5.8 per cent), with a smaller proportion under the label "product of Colombia" (7.2 per cent), which corresponds to approved exports, and with a different level of tolerance for defects.

[83] Mechanizing cultivation has encouraged an increased productivity of the plantations (17.7 bags of green coffee per hectare), placing the country above the average for other producers of smooth coffees, such as Central America with (12 bags per hectare - bags/ha), Peru (12 bags/ha) and Kenya (8.1 bags/ha). However, it is still well below the levels recorded in Brazil (23.9 bags/ha (for Arabica and Robusta) and Vietnam (44.7 bags/ha).

Export standards for Colombian coffee have higher levels of compliance than those required by the Green Coffee Association of New York City[84]. However, in 2016 the National Coffee Growers' Committee decided to grant some flexibility, allowing coffee with a greater tolerance of defects and smaller size, but keeping within international quality standards.[85] The amendment to the quality standards for Colombian Excelso coffee exports was intended to stimulate export, better align with international standards and improve growers' family incomes, all without putting quality at risk (FNC, 2015).

The Colombian coffee value chain relies on over 500,000 producers who produce the dry, raw coffee beans and an extensive network of domestic marketing companies consisting of 33 coffee farmers' cooperatives and numerous buyers or intermediaries,[86] 150 threshers and 173 exporters. The green coffee beans, which result from threshing go to external marketing companies, such as Excelso, or to the domestic market for use in the domestic roasting industry.

Figure 1. The coffee value chain and its institutional and market environment



Source: authors.

5.4 Rapid Overview of the Market System and Preliminary identification or risk factors for selecting key informants and workplace observation sites

Table 20. Preliminary mapping based on a desk review & Identification of risk factors

National Level	Global Level

[84] The standards of the Green Coffee Association of New York City, the governing body for the purchase and sale of Arabica coffee in the world, designated Colombian Excelso coffee bean as mesh 14/64 with a tolerance level of 5 per cent. However, internally, Colombia applied a self-imposed tolerance level of 1.5 per cent, which prevented good quality coffees being sold in international markets.

[85] These so-called "coproducts" or "secondary" products are also subject to phytosanitary and humidity controls by the sanitary authorities.

[86] Some unofficial FNC estimates consider that there could be around 1,500. Their involvement in coffee buying has been around 70 per cent, an average of 9 million bags, of which 1.3 million come from sales by coffee farmers' cooperatives.

	Transformation Process	**Coffee Tree Nursery**	**Plantation/ Farm**	**Collectors**	**Mills**	**Exporters**	**Processing**	**Distribution**
	Product	Seeding	Parchment	Intermediary	Green Beans	Intermediary	- Roasted Beans - Ground Coffee - Soluble Coffee	Packaged roasted beans, ground coffee & Soluble coffee
Market Overview	**Type & Size of actors**		611613 holdings & 511993 producers. Over 90% of coffee grown by small holders	Traders. 530 collection points from the cooperatives of *Caficultores*	Companies & Cooperatives	254 exporters of coffee in Colombia. International trading companies. Local Trading companies	Industrial roasters. Agro-food multinationals Small part of exports processed in Colombia (196 coffee roasters, 6 instant coffee plants, 2012)	Supermarkets Restaurants Cafes wholesalers Specialised franchises
Market Overview	**Supporting Industries**	Chemical production & distribution Equipment R&D (Cenicafe)	Chemical Production / Distribution Equipment Cupping services R&D (Cenicafe) Financing (FederCafe)	Transport Equipment Cooperativas de Caficultores (33)	Equipment Laboratory services Machine production / Maintenance Quality seal (FNC) AlmaCafe	Transport Custom services Port Services	Equipment Laboratory series Machine production / Maintenance R&D	Transport Equipment Advertizing
Market Overview	**Other Supporting Actors**	Ministry of Agriculture Federacion Nacional de Cafeteros (FNC) Cooperativas de caficultores (33)	Ministry of Agriculture Federacion Nacional de Cafeteros (FNC) Certification schemes Cooperativas de caficultores (33)	Ministry of transport Federacion Nacional de Cafeteros (FNC)	Ministry of Agriculture CeniCafe (R&D) Certification schemes Federacion Nacional de Cafeteros (FNC)	Certification companies (both locals and international) Auditing firms Minsitry of transport Sector association Food safety agencies	Sector association (Importers, roasters, ect.) Local Trade ministries Food safety agencies Certification companies	Entities responsible for infrastructure , trade, ect.
Risk Identification	**Operations**	Breeding Shade maintenance Spraying Storing Packing	Soil Preparation Fertilization Planting Watering Pruning Spraying Harvesting Peeling, soaking (wet method) Drying Selecting (Arabica) Packing in bags	Price negotiation Transportation Loading / Unloading	Hulling Polishing Grading Sorting Loading / Unloading Cupping	Price negotiation Transportation Loading / Unloading	Weighting Scoring Decsffeination Roasting (hot air or drum) Cooling Screening Grinding Extraction (Soluble) Packaging Storing	Transportation Loading / Unloading Grinding (if applicable) Brewing Machine maintenance Attendance to client

Main Risk Factors	Tools Handling Chemical exposure (fertilizers, pesticides)	Tools Handling Chemical exposure (fertilizers, pesticides) Machine handling (if wet process) Local handling Insect bites Contact with unsanitary water	Traffic accident Load handling	Machine handling Heat exposure Powder residues Load handling Contact with unsanitary water	Traffic accidents Load handling	Machine handling Heat / hot liquids exposure Powder residues Load handling	

Step 3: Value Chain Analysis: Assessment of Drivers and Constraints for OSH improvement in the Coffee Value Chain from Colombia

1. Overview

This research was carried out within the framework of the ILO-EU Project to improve the occupational safety and health knowledge base in global value chains in support of G20 work[87]. The project aims to identify constraints and incentives for improving occupational safety and health (OSH) in global value chains focusing on agricultural global value chains.

2. Objectives

The analysis will complete the mapping with an in-depth analysis of the dynamics at play in the supply chain and its institutional and policy framework. It will also identify main risks to safety and health of workers along the chain and areas of performance and compliance issues and their root causes.

i) Identify key qualitative and quantitative indicators (time, costs, value addition, productivity and profit distribution) within the supply chain,
ii) Assess firm performance and job quality, and identify underlying causes of underperformance on OSH (within the business models of the chain and / or due to policy or institutional gaps), identify linkages, power relationships and value chain governance,
iii) Identify main safety and health risks for each type of actor in the value chain as well as prevention, promotion, protection and compensation practices at each step of the production process,
iv) Assess the role of key supporting functions and rules, how they may be linked to supply chain constraints and identify gaps and opportunities (i.e. political or institutional interest in working on issues that have consequences on OSH outcomes in the supply chain).

3. Timeframe

In Colombia, the field research (interviews, focus groups, workplace observations) took place from January to April 2017.

4. Methodology

The qualitative interviews, focus groups and workplace observations were built around observation checklists and interview and focus group guides for each specific value chain and type of actor interviewed (i.e. workers of different contractual and job arrangements, and management, at each stage of the chain). Those instruments were adapted from the *Market Systems for Decent Work* approach, the different instruments of the ILO on OSH and particularly OSH in agriculture,[88] and were further refined with the support of the Cardiff Work Environment Research Centre (CWERC). The research protocol provided for

[87] www.ilo.org/osh-gsc
[88] In particular the Work Improvement in Neighbourhood Development (WIND) methodology as well as the ILO Code of Practice on Safety and Health in Agriculture (ILO 2014).

interviewing workers outside of the workplace as much as possible. In each country, the project worked with an inter-disciplinary research team, composed of local and international researchers.

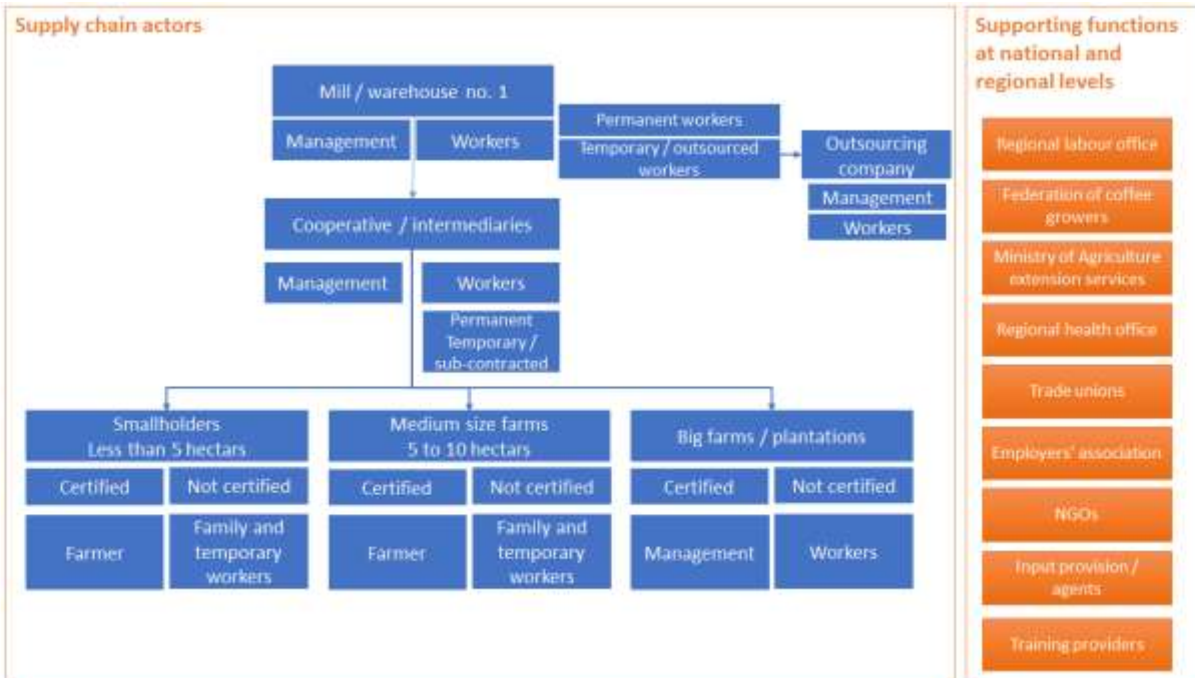
When relevant, the research was conducted in several regions where conditions were deemed to be different and thus geographical location impacted employment and market patterns. In Colombia, the field research focused on three regions: Caldas, Huila and Nariño. The rational for this choice was to select regions that had a different historical relation with coffee production (some very lengthy, others more recent). Two major coffee producing regions were selected on this basis, as well as a third region with less production, more recent, and which experienced higher degrees of conflicts.[89]

In each geographical location, a typology of value chain actors was determined on the basis of the literature review and preliminary interviews of key actors, each "type" or cluster of actor was observed and interviewed, and a sufficient number of each type was included so as to ensure triangulation. Observation time varied widely depending on the size of the companies / farms visited and complexity of production processes. Interviews required one and a half to two hours and more time was needed for focus groups. Interview guides covered a range of topics: market position, socio-economic situation, contractual status, training level and training received, work processes, risk factors, OSH awareness, practices and outcomes, buyers' requirements, regulatory requirements, support functions and received support, among others. In additional to value chain actors, supporting functions and regulatory environments were included in the interviews, with a specific interview guide.

In Colombia, the field research (interviews, focus groups, workplace observations) took place from January to April 2017, and the consultations with value chain actors and their supporting functions on the basis of the results occurred in July and August 2017 (see Step 4). About 120 interviews were conducted in Colombia, accounting for focus groups as well. Mills and stock management warehouses were clustered based on type of ownership (linked to the national federation of coffee growers and cooperatives or not). On that basis, the figure below provides an overview of the typology used for the field research below mill level.

[89] In the context of the recent peace agreement and the subsequent focus on rural development in the conflict-affected areas it seemed particularly appropriate to take this factor into account.

Figure 2. Overview of typology used in Colombia below mill level



Source: authors.

In addition to the above-mentioned interviews, focus groups and workplace observations in the field, research was also conducted on different types of global buyers (i.e. traders, agro-food companies, retailers, and other types of companies) and private compliance initiatives (PCIs). Over 50 in–depth interviews were conducted from February to July 2017.

5. Analysis results

The full report on the drivers and constraints for OSH improvement in the coffee value chain from Colombia was published in November 2017 and is available in two languages:

- English – Garcia, Zarate, Tessier and Guerrero, A case study of drivers and constraints for OSH in the coffee global value chain from three producing regions of Colombia, in Tessier et al. 2017. Food and agriculture global value chains: Drivers and constraints for occupational safety and health improvement - Volume Two - Three case studies. ILO: Geneva. Available at: http://www.ilo.org/safework/projects/WCMS_593288/lang--en/index.htm [consulted 15 June 2018]
- Spanish – Garcia, Zarate, Tessier and Guerrero. 2017. Incentivos y limitaciones para la SST en la cadena mundial de valor del café de tres regiones productoras de Colombia. ILO: Geneva. Available at: http://www.ilo.org/safework/projects/WCMS_613338/lang--en/index.htm [consulted 15 June 2018]

The below is an executive summary of the results.

CASE STUDY NO.1 - User Guide - Complete Case Study The roll-out of the methodology in the coffee value chain of Colombia

Colombia is the third coffee producer and exporter in the world after Brazil and Vietnam. As a whole, the different production steps generate around 743,000 direct jobs in Colombia. Within the first step alone (coffee growing), 730,000 jobs are generated annually, with a peak during coffee harvest. 69.4% of these jobs are filled by coffee growers themselves and members of their household. Most of the employment generated is informal, regardless of the size of the farm. The temporary nature of coffee harvesting plays a restrictive role in the hiring of workers under formal contracts, especially in regions where the labour market for salaried work is poorly developed.

Drivers and constraints for OSH improvement

A set of factors drive and constrain the adoption of safe work practices in the coffee value chain from Colombia:

- Institutionalisation: Established in 1927, the National Federation of Coffee Growers (FNC) is made up of 33 cooperatives of coffee growers. It is partly financed by the coffee export tax, and it has a network of rural extension workers throughout the country. Through its centralized and decentralized presence, the FNC disseminates and promotes its strategy for the improvement of OSH in coffee farms.
- New market trends: A market segment has recently emerged mainly from high-income countries whereby consumers and buyers are willing to pay higher prices in exchange for the responsible production of coffee relating to specific social and labour conditions.
- Legal framework and institutional capacities of the Ministry of Labour: A new regulation on OSH influenced the public and private sectors to join forces in preparing the value chain to comply with new requirements. Still, the resources of labour offices in the regions, especially in rural areas, are rather limited for them to perform their OSH functions.
- Social protection system: It is worth noting the existence of contributory and non-contributory social protection programs that play both a preventive and compensatory role. The legal framework for the social protection system is extensive, but effective access to these benefits and health services remains limited in rural areas.
- Regional perspectives: Some institutions at the regional level have made progress in promoting OSH in coffee-growing regions, although they have been disconnected from initiatives at the central level which limits their dissemination from one region to another. Supporting institutions in the regions, and particularly in remote areas, often do not reach coffee growers and their workers. Temporary rural workers in general are not organized in associations or unions.

Opportunities for the promotion of OSH

Though it represents most of the employment generated in the value chain, employment at the production stage is, in its large majority, informal. At the coffee growing stage, coffee producers and their workers are exposed to various occupational hazards. According to the information collected by the FNC and the Ministry of Labour in a joint survey on the main occupational hazards on coffee farms, the following hazards were identified (in order of importance): biomechanical (repetitive movements of hands and arms, rotation of the trunk), environmental (natural disasters), sanitary (access to drinking water), biological (snake bites) and chemical (application of agro-chemicals). The accident/ill health rate is highest during coffee bean harvest, soil cultivation and management of weeds. The management, prevention and mitigation of OSH risks is in its infancy in rural areas, especially in remote areas. Relatively few coffee growers, most of whom are certified under private compliance initiatives, have access to information on how to improve their preventive practices. This means coffee growers, especially in small and medium-sized farms, as well as their families and their workers, are disconnected from services that could support them to identify hazards and implement preventive measures. The same is true for workers on larger farms either temporarily contracted for the harvest or subcontracted for the application of agro-chemicals, who may have little access to training, information, and compensation due to their status in employment. Barriers of access to occupational and general health services persist due to geographical location as well as the economic situation of coffee growers and their workers.

The employment generated in the commercialization, threshing and export stages is formal: it is characterised by written contracts, their pay is based on legal provisions and workers are affiliated to contributory social security systems. At the threshing stage, the main OSH hazards are lifting heavy loads, exposure to airborne particles, noise and machinery hazards such as unguarded machines. Exposure to airborne particles is controlled to different degrees depending on the technology and investments made in prevention. Some threshers have advanced extraction systems, but in some instances they are not present. Some companies have advanced OSH management systems, as their location in urban areas eases access to prevention and promotion services, as well as training for their staff. Along with OSH management systems, companies often have focal points responsible for safety and health, with a dedicated budget facilitating the reduction and elimination of risks, and a monitoring system of accidents and ill health and their cause. These formalized companies, due to their affiliation to the social insurance system, have access to prevention services (diagnosis, advice, promotional material) provided by the employment injury insurance scheme. At the level of the threshers, progress in terms of OSH finds limitations as it regards to sub-contracted workers, who are mostly exposed to manual handling hazards associated with the loading and unloading of the bags of green coffee.

Entry points for intervention

Efforts to improve OSH in the value chain could focus on the profiles of workers identified as particularly vulnerable: small coffee farmers, their families and their temporary workers, as well as temporary harvesters and sub-contracted workers applying agro-chemicals in medium and big farms. This process requires the mobilization of existing good practices in the value chain, and the participation and coordination of numerous actors along the value chain and its institutional environment. The experience accumulated in coffee could be useful to other rural value chains in Colombia, as part of the Government's ambitious rural development agenda, as well as to other coffee-producing countries around the globe.

Step 4: Intervention Design: example in the coffee value chain of Colombia

1. Overview

This research was carried out within the framework of the ILO-EU Project to improve the occupational safety and health knowledge base in global value chains in support of G20 work[90]. The project aims to identify constraints and incentives for improving occupational safety and health (OSH) in global value chains focusing on agricultural global value chains.

On the basis of the information gathered through both steps 2 and 3, intervention models are formulated. Intervention models are the set of interventions or actions that can effectively improve OSH outcomes (the health and safety of workers) in the supply chain. Intervention models are a set of interventions for which both a need and an opportunity emerged within steps 2 and 3.

2. Objective

The objective is to build jointly with stakeholders the right mix of public and private interventions that is likely to result in the improvement of OSH outcomes, including:

I. Obtaining a concrete vision of the willingness of policy makers to address implementation gaps of existing laws, regulation and policies affecting OSH outcomes in a supply chain;
II. Identify channels to support each different stages of the supply chain (business service providers, public services present on the ground, sectoral organizations, cooperatives, inputs providers, etc.);
III. Identify areas of improvement for which there are existing or potential incentives for change and areas for which an external or public intervention and funding are likely to be needed.

3. Timeframe & Scope

The consultations with value chain actors and their supporting functions on the basis of the results occurred in July and August 2017.

4. Methodology

One single intervention is unlikely to have such an impact, hence intervention models that likely combine a mix of policy and market interventions are key. This step was conducted through a round of wide consultation workshops with stakeholders in Colombia where the results of the analysis were presented and the construction of interventions was facilitated. In doing so, specific attention was paid to the following elements coming from the analysis:

- Concrete vision of <u>implementation gaps</u> of existing laws, regulation and policies on OSH in a sector.
- Typology of actors and <u>vulnerability profile</u> for each – can help policy makers <u>prioritize</u> their support.

[90] www.ilo.org/osh-gsc

- Identification of channels to support actors, especially the smallest ones (business service providers, public services present on the ground, sectoral organizations, cooperatives, inputs providers, etc.).
- Identification of areas of improvement for which there are existing / potential incentives for change and areas for which an external / public intervention / funding is likely to be needed.

5. Consultations

Agenda of the consultations

Several rounds of consultations were conducted with stakeholders to ensure that each of them had a voice and could contribute to the design of intervention models. The typical agenda used for those consultations was as follows.

Table 21. Agenda of the consultations

09:00	Reception and presentation of the workshop
09:30	**Session 1 - Profiles of vulnerability to occupational risks in the coffee value chain** *Presentation of the results of the investigation*
10:30	Break
11:00	*Group discussion on the identification of incentives and limitations for improving OSH in the value chain and its institutional environment*
12:30	Lunch
14:00	**Session 2 - Vision and identification of ways to change** *Methodology of development of intervention models and examples of several countries*
15:15	Break
15:30	*Group discussion on possible interventions to improve safety and health in the coffee value chain and to capitalize on good practices in other chains*
16:30	Restitution and discussion in plenary Conclusion and next steps

Facilitation of the consultations

The profiles of employment identified as particularly vulnerable to OSH risk factors and on which the second part of the workshop focused on were:

- At the production stage of the value chain: (i) small producers, (ii) family workers, and (iii) temporary workers or subcontracted workers on farms, especially pickers and workers specialized in fumigation with agrochemicals.
- At the threshing and storage stages, workers engaged in providing subcontract loading and unloading services of coffee, mainly in threshing plants and warehouses.

Consult the material used during the consultations as well as the proceedings:

http://www.ilo.org/safework/events/WCMS_634334/lang--es/index.htm

Conclusions and recommended intervention model

Improving occupational safety and health in the coffee value chain in Colombia

To improve OSH of the most vulnerable workers identified in the profiles of vulnerability to occupational risks, several types of intervention can be envisaged, involving various actors in the value chain.

The limitations faced by the smallest actors in accessing information and training on the new OSH legislation could be remedied by the intervention of the rural extension services, of both the FNC and exporters/responsible buying programmes. The key is to mobilize forces on the ground around this subject. In this respect, the FNC has developed an informational package adapted to the reality of coffee growing, which it plans to pilot at the beginning of 2018. The evaluation of this pilot will be crucial in further adapting the material and mobilizing the implementation plan at the national level. This will help identify appropriate tools to disseminate information on the law and suggestions on how to comply with it. This process could serve as the basis for development in other rural chains in the future. On the largest farms, which could have the economic capacity, providing appropriate training services could also be evaluated and improved so that farm managers or administrators can be given targeted training.

In addition to training, to improve sustainable practices, both small and large farm owners have a responsibility to include improvement of OSH practices in their good farming practices, which in turn translates into productivity and access to certificated markets. In this process, it would help to carry out a study of the economic logic accepted by producers in adopting good OSH practices and their dissemination. This work requires piloting of OSH interventions, evaluation of their impact in terms of productivity, costs, and access to incomes, services or other enhanced benefits. This process requires a strategy to better disseminate information, not only through traditional OSH channels, but also through support services for business management in the coffee-growing sector.

Companies, especially the largest, which operate in the domestic marketing, threshing and storage stages in the value chain, have advanced OSH management systems and procedures and trained personnel. It might be that a programme to standardize experiences and validate the knowledge could be shared, so that these entities can share their knowledge with smaller entities in their supply chain. Particular attention should be paid to management of sub-contracting and existing obligations and strategies for protection of sub-contracted workers. With regard to sub-contracting farmworkers specialized in the application of agrochemicals, the information could be improved to give an idea of the number of workers and level of training, socioeconomic conditions and contractual relationship. This information would be useful in designing protection measures and monitoring occupational health.

Considering the limited availability of labour for harvesting, a strategy for attracting workers could be developed at the coffee sector level. This strategy would have to consider wellbeing at work and social protection coverage as key elements to compete with other sectors and migration to urban areas. This strategy could be inspired by initiatives that already exist in the sector to extend social protection coverage. For example, in 2014, the FNC found that 18,350 coffee farmers were eligible to access the BEPS programme, so it initiated a process of training for its extension workers to promote its dissemination to coffee farmers and their families. An initiative was found in the municipality of Aguadas, Valda, in which Nespresso, on identifying that the majority of coffee farmers belonging to the AAA programme did not have old age protection schemes, formed a partnership with the Ministry of Labour. It now contributes to Colpensiones (the entity that administers the BEPS programme's resources) the social premium it obtains on selling its coffee under the Fairtrade initiative.

To measure the evolution of wellbeing in the value chain, especially for coffee farmers and their workers, the National Survey of Occupational Safety and Health in the Rural Sector, initiated by the Ministry of Labour and the FNC, could be conducted at regular intervals. The following phase of the survey could include additional indicators to identify and measure risks, following the categories adopted by the 16th International Conference of Labour Statisticians (1998)[91] and indicators of wellbeing.

As mentioned, the legal framework of occupational safety and health in Colombia is well developed. Strategic reflection on the services and capacities which need to be strengthened in the rural sphere could help to fulfil the legislator's intention that wellbeing at work should improve for all, including rural workers. In particular, the following activities could be considered:

- In-depth analysis of the legal framework to identify gaps in the current legislation or its relevance to rural reality, specifically the coffee sector, with the objective of evaluating whether it would be appropriate to propose a revision of the decree on minimum standards recently approved by the Ministry of Labour.
- Mapping support services which are present in the country's regions and feasibility of extending them to the rural environment. Accessibility of occupational health services was a crucial point mentioned by coffee farmers, especially in the context of implementing the new legislation, which provides for an annual medical exam. A feasibility project on its implementation could accompany the progressive application of the new legislation, as well as that for manuals and other tools for disseminating information adapted to the rural sector.
- A study on coverage options for independent and temporary workers, which takes account of incentives for affiliation to existing social protection schemes, and which are compatible with their specific contractual situation, especially in terms of incapacity, disability and death. This work could take place in the framework of the proposals by the ILO on extension of coverage of social protection to the rural sector. A starting point for evaluating the adjustments that could be made in a useful and informed manner, with a view to extending coverage to the rural environment, is the potential progress around the proposal to include coverage of independent workers in the

[91] - Indicators of results: number of occupational injuries and diseases, number of workers affected and number of working days lost;
- Indicators of capacity and competence: number of inspectors or health professionals concerned with occupational safety and health;
- Indicators of activities: number of days of training, number of inspections.

occupational risks scheme in the legislation, as well as adjustments that could be made to the coverage of the *Programa Microseguros*;

- Consideration could also be given to a mechanism to coordinate existing OSH services at the local level, especially to facilitate extension efforts by each service and to share knowledge generated.

Potential to transmit experience in the Colombian coffee chain to other chains.

The experience of the coffee sector has reached a point where it could serve the development of other supply chains. The emphasis placed on the peace process on rural development agenda is an important space for the promotion of good practices to strengthen decent conditions of work.

The Peace Agreement signed with the FARC Guerrilla places an important rural emphasis on government policies in Colombia. This is an opportunity to improve conditions of work in the rural environment, and combine it, among other things, with a strategy for commercial competitiveness.

In addition, the agreement envisions in its recommendations two fundamental initiatives to fill gaps identified in relation to the protection system and the labour inspection function:

(i) Formulation of a progressive social protection plan and guarantee of rural workers' rights,
(ii) Strengthening of the static labour inspection system and creation of a mobile inspection system in rural areas, which allows workers to advance and exercise their rights at work and properly resolve labour disputes.

This context creates opportunities for exchange and for a spread of goods practices related to OSH in rural value chains. Consideration might be given to mechanisms for the transmission of the coffee sector experience to other rural chains in Colombia that have many small producers. Particularly in terms of organization of producers, rural extension services which train in OSH, link producers to existing social protection mechanisms. It also connects institutional dialogue with government support functions, capitalization of sustainable policies and VSS to strengthen access and living standards of small producers, and the creation of a competitive global value chain. In relation to the second point mentioned above, identification of hazards and provision of control measures, the technical advice function of the inspectorate could be reinforced, especially with dedicated and trained human resources.

Moreover, the experience generated in the coffee chain in Colombia could benefit coffee supply chains in other producer countries. The international buyers consulted have a positive perception of the implementation of OSH in Colombia in comparison with other countries from which they buy. This is proof that the conditions of work of in the value chain are recognized in the market. The scope of certification and responsible supply policies is greater in Colombia than in the other countries studied. The experience of the actors in terms of verifying farm compliance to OSH is more advanced in Colombia than in other countries in the project. Understanding of the requirement of the OSH legislation, which is also widespread in Colombia, is greater among the producers interviewed in comparison with producers in other supply chains.

The institutional arrangement in Colombia is quite specific compared with the other two value chains. Collection of export tax has had a certain redistributive effect towards the lower levels of the value chain. This arrangement has built up a network of extension workers at the rural level. This is of crucial importance for OSH, as this network plays a key role in the adoption of good farming practices, and has led to the dissemination of safer productive processes.

The experiences and tools relating to OSH mentioned here apply at various levels. Examples include the collaboration with the Ministry of Labour on a national survey of OSH in coffee growing, the collaboration around collection of agrochemical containers which has a good legal basis, the training tools and risk identification booklets for coffee farms developed by the FNC, buyers who contribute to affiliation to social protection schemes and buyers who help finance protective equipment and training.

Bibliography and resources

Al Grano. 2014. *Cafeteros de Colombia aprenden a prevenir riesgos laborales*. [Online]. Available at: http://www.federaciondecafeteros.org/algrano-fnc-es/index.php/comments/cafeteros_de_colombia_aprenden_a_prevenir_riesgos_laborales/

Aristizabal, J. C. 2012. *Riesgos laborales y el agro colombiano*, Revista FASECOLDA. Available at: http://www.fasecolda.com/files/1814/4909/2479/Aristizabal._2012._Riesgos_laborales_y_el_agro_colombiano.pdf

Asocolflores. [Online] Available at: https://asocolflores.org/

Ayala S., M. 2005. *Ecuador demandaría a Colombia por subsidios a flores y bananos*, El Tiempo. Available at: http://www.eltiempo.com/archivo/documento/MAM-1682303

Banana Link. 2012. Unions here can help workers everywhere secure safe work, Hazards Magazine, Issue 117, January-March 2012. Available at: http://www.hazards.org/workingworld/bananalink.htm

Banana Link. 2014. *Banana Value Chains in the EU* [Online] Available at: http://www.bananalink.org.uk/banana-value-chains-eu

Banana Link. 2014. *Bananas Lend Stability in Post-Conflict Colombia* [Online] Available at: http://www.bananalink.org.uk/bananas-lend-stability-post-conflict-colombia

Banana Link. 2014. *Bananas Lend Stability in Post-Conflict Colombia* [Online] Available at: http://www.bananalink.org.uk/bananas-lend-stability-post-conflict-colombia

Banana Link. 2014. *Environmental Problems* [Online] Available at: http://www.bananalink.org.uk/environmental-problems

Banana Link. 2014. *Fairtrade banana crisis brewing in Colombia* [Online] Available at: http://www.bananalink.org.uk/fairtrade-banana-crisis-brewing-colombia

Baquero Melo, J. 2014. *Value Chains and Global Inequalities: Plantain, Contract Farming, and Vulnerability of the Small-Scale Farmers in Colombia (Discussion Paper),* Institute for Latin American Studies, Freie Universitat, (Berlin). Available at: https://mpra.ub.uni-muenchen.de/58983/

Beer, J., C. Harvey, M. Ibrahim, et al. 2003. *Servicios Ambientales de los Sistemas Agroforestales,* Agroforesteriaen las Americas, 10, No. 37–38: 80-87. Available at: https://www.researchgate.net/publication/228916276_Servicios_ambientales_de_los_sistemas_agroforestales

Biswas-Tortajada, A.; Biswas, A.K. 2015. *Sustainability in Coffee Production: Creating Shared Value Chains in Colombia*.

Bitzer, V.; Francken, M.; Glasbergen, P. . 2008. *Intersectoral partnerships for a sustainable coffee chain: Really addressing sustainability or just picking (coffee) cherries?,* in: *ScienceDirect - Global Environmental Change*, 18, pp. 271–284. Available at: https://www.infona.pl/resource/bwmeta1.element.elsevier-394f03ed-7b4f-39fd-a45e-f4d19ea10560

Bureau for Appraisal of Social Impacts for Citizen Information (BASIC). 2014. *Analysis of German Banana Value Chains and Impacts on Small Farmers and Workers,* Final Report. Available at: https://lebasic.com/wp-content/uploads/2015/11/BASIC_German-Banana-Value-Chain-Study_Final.pdf

Café de Colombia. [Online] Available at: http://www.cafedecolombia.com/familia

CeniCafe. [Online] Available at: http://www.cenicafe.org/

Centers for Disease Control and Prevention (CDC). 2013. *Obliterative Bronchiolitis in Workers in a Coffee-Processing Facility, Texas, 2008–2012*. Atlanta. Available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6216a3.htm

CGIAR. 2015. *Colombia Committed to Climate-Smart Agriculture* [Online] Available at: https://ccafs.cgiar.org/blog/colombia-committed-climate-smart-agriculture#.V-Tdhvl97cs

Cosmoagro. 2011. *Colombia: Subsidios de nuevo para floricultores* [Online] Available at: http://www.cosmoagro.com/site/avanzamos/colombia-subsidios-de-nuevo-para-floricultores/

CRECE. [Online] Available at: http://www.crece.org.co/crece/#oferta-de-servicios

Chomsky, A. 2007. *Globalization, Labor, and Violence in Colombia's Banana Zone*, Salem State College

Doom, J. 2011. *World's Top 10 Coffee-Producing Countries in 2010-2011*, Bloomberg. Available at: https://www.bloomberg.com/news/articles/2011-08-19/world-s-top-10-coffee-producing-countries-in-2010-2011-table-

EIA. 2016. *Colombia* [Online] Available at: https://www.eia.gov/beta/international/analysis.cfm?iso=COL

El País. 2015. *¿Qué tanto se subsidia el agro colombiano?,* July 5. Available at : http://www.elpais.com.co/economia/que-tanto-se-subsidia-el-agro-colombiano.html

Espinal G. C. F. et al. 2005. *La Cadena Del Plátano En Colombia Una Mirada Global De Su Estructura Y Dinamica 1991-2005*. Ministerio de Agricultura y Desarrollo Rural, Observatorio Agrocadenas Colombia, Documento de Trabajo No. 61. Available at: http://www.asohofrucol.com.co/archivos/cadenas/platano.pdf

European Commission, 2013. *Bananas other than Plantains trade report.* Directorate-General for Agriculture and Rural Development. Available at: https://ec.europa.eu/agriculture/sites/agriculture/files/bananas/fact-sheet_en.pdf

European Commission, 2013. *Marketing Standards for Fresh Bananas* [Online] Available at: http://trade.ec.europa.eu/doclib/docs/2013/may/tradoc_151270.pdf

European Commission, Eurostat. 2016. *Banana Supplies in the EU* [Online] Available at: http://ec.europa.eu/agriculture/fruit-and-vegetables/product-reports/bananas/statistics/supply_en.pdf

European Commission. 2016. *Report From the Commission to the European Parliament and the Council on Unfair Business-To-Business Trading Practices In The Food Supply Chain,* Brussels, 29.1.2016 COM(2016) 32. Available at: http://www.europarl.europa.eu/RegData/etudes/STUD/2015/563438/IPOL_STU(2015)563438_EN.pdf

Federacion de Cafeteros. [Online] Available at: http://www.federaciondecafeteros.org

Federación Nacional de Cafeteros de Colombia (FNC). n.d. *Our coffee* [Online]. Available at: http://www.federaciondecafeteros.org/particulares/en/nuestro_cafe

Federación Nacional de Cafeteros de Colombia (FNC). *Tabla Precio Interno de Referencia para la Compra de Café Pergamino Seco por Carga de 125 Kr.* Available at: http://www.federaciondecafeteros.org/static/files/precio_cafe.pdf

Finagro. 2013. *El Banano en el Mundo.* Available at: https://www.finagro.com.co/sites/default/files/node/info_sect/image/banano.docx

FlorVerde Sustainable Flowers. 2013. *Florverde Standards for Sustainable Flowers and Ornamentals Production*, 6.0. Available at: http://www.unionfleurs.org/docs/Keynotes/Equivalence_between_Florverde_Sustainable_Flowers_and_GLOBALG.A.P.pdf

Gobierno de Colombia, MinSalud. n/a. *Lo que Debe Saber Sobre Riesgos Laborales* [Online] Available at: https://www.minsalud.gov.co/proteccionsocial/RiesgosLaborales/Paginas/preguntas-frecuentes.aspx

Gobierno de Colombia. 2015. *Apoyo del MinAgricultura consolida expansión de la floricultura en el mundo.* Ministry of Agriculture [Online] Available at: http://www.minagricultura.gov.co/noticias/Paginas/minagricultura-consolida-expansion-floricultura.aspx

Gobierno de Columbia. 2016. *Apoyo del MinAgricultura consolida expansión de la floricultura en el mundo*. Ministry of Agriculture. [Online] Available at : http://www.minagricultura.gov.co/noticias/Paginas/minagricultura-consolida-expansion-floricultura.aspx

Gobierno de Columbia. 2016. *Exportadores de frutas, prendas de vestir y cosméticos, entre otros, con guía sobre cómo venderle a la Unión Europea* [Online] Available at: http://www.mincit.gov.co/publicaciones.php?id=36364

Hudson, R.A. 2010. *Colombia: A country Study*. 5th ed. Washington D.C. Available at: https://www.loc.gov/rr/frd/cs/pdf/CS_Colombia.pdf

ILO. 2008. *Global agri-food chains: Employment and social issues in fresh fruit and vegetables,* Employment Sector, Employment Working Paper No. 20. Available at: http://www.ilo.org/employment/Whatwedo/Publications/working-papers/WCMS_105107/lang--en/index.htm

ILO. *NATLEX: Colombia.* [Online] Available at : http://www.ilo.org/dyn/natlex/natlex4.listResults?p_lang=en&p_country=COL&p_classification=14

ILO. *Occupational safety and health country profile: Colombia.* [Online] Available at : http://www.ilo.org/safework/countries/americas/colombia/lang--en/index.htm

Interagency Framework Team for Preventive Action. 2012. *Land and Conflict: Toolkit and Guidance for Preventing and Managing land and Natural Resources Conflict.* Available at: http://www.un.org/en/land-natural-resources-conflict/pdfs/Resource%20Rich%20Economies.pdf

International Coffee Organization (ICO). 2014. *World Coffee Trade (1963 – 2013): A Review of the Markets, Challenges and Opportunities Facing the Sector*. Available at: http://www.ico.org/show_news.asp?id=361

International Labour Organization (ILO). 2004. *Fact Sheet Hazardous Child Labour in Agriculture: Coffee*. International Programme on the Elimination of Child Labour Safety and Health, Geneva. Available at: http://www.ilo.org/ipec/Informationresources/WCMS_IPEC_PUB_5708/lang--en/index.htm

International Trade Centre. 2013. *Florverde Sustainable Flowers,* Echavarría, J. J.; Esguerra, P.; McAllister, D.; Robayo, C. F. 2015. Report written by the commission on coffee competitiveness in Colombia executive summary, (Bogotá).

Laderach, P.; Lundy, M.; Jarvis, A.; Ramirez, R.; Perez Portilla, E.; Schepp, K.; Etzinger, A. 2011. *Predicted Impact of Climate Change on Coffee Supply Chains,* The Economic, Social and Political Elements of Climate Change. Berlin. Available at: http://agrilife.org/worldcoffee/files/2011/07/Impact-of-climate-change-on-coffee-supply-chains.pdf

Lescot, T. 2012. *Carbon Footprint Analysis in Banana Production*, CIRAD, Second Conference of the World Banana Forum, Guayaquil, Ecuador-February 28-29, 2012. Available at: http://www.fao.org/3/a-br129e.pdf

Londoño-Avila, A.; Robledo-Ardila, C. 2014. *International Standard Certifications and Export Performance Of Top Four Colombian Banana Exporters*, Revista Ciencias Estratégicas, 22(31) pp. 33-59, Medellín. Available at: https://revistas.upb.edu.co/index.php/cienciasestrategicas/article/viewFile/2899/2544

Macdonald, K. 2007. *Globalising justice within coffee supply chains? Fair Trade, Starbucks and the transformation of supply chain governance*, Third World Quarterly, 28, pp. 793–812. Available at: https://www.tandfonline.com/doi/abs/10.1080/01436590701336663

Madrid, G.; Lovell, T. 2007. *Working with flowers in Colombia: The 'lucky chance'?,* Women's Studies International Forum, 30 pp. 217-227. Available at: http://fulltext.study/download/376615.pdf

Make Fruit Fair. 2015. *Banana value chains in Europe and the consequences of Unfair Trading Practice,* Make Fruit Fair Campaign. Available at: http://www.makefruitfair.org/wp-content/uploads/2015/11/banana_value_chain_research_FINAL_WEB.pdf

Mc Falls R. 2016. *Good Procurement Practices and SMEs in Supply Chains: Nespresso AAA Sustainable Quality Program, Impact of Procurement Practices in an SME in Colombia*. ILO, SME Unit. Available at: http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---ifp_seed/documents/publication/wcms_486227.pdf

McQuaid, J. 2011. *The Secrets Behind Your Flowers*, Smithsonian Magazine. Available at: http://www.smithsonianmag.com/people-places/the-secrets-behind-your-flowers-53128/?no-ist

Mejía, J. L. et al. 2007. *Evaluación de la Degradación Ambiental de Materiales Termoplásticos Empleados en Labores Agrícolas en el Cultivo de Banano en Colombia*, Grupo de Investigación sobre Nuevos Materiales, Universidad Pontificia Bolivariana. Available at: http://www.scielo.br/pdf/po/v17n3/04.pdf

Ministerio de Salud (MinSalud). 2008. *Plan Nacional de Salud Ocupacional 2008-2012l.* Available at: https://www.minsalud.gov.co/Documentos%20y%20Publicaciones/Plan%20nacional%20de%20salud%20ocupacional.pdf

Ministerio del Trabajo (MinTrabajo). 2013a. *Plan nacional de Seguridad y Salud en el Trabajo 2013-2021.* Available at: http://www.mintrabajo.gov.co/relaciones-laborales/riesgos-laborales/plan-nacional-de-seguridad-y-salud-en-el-trabajo-2013-2021

Ministerio del Trabajo. 2013b. *Indicadores del Sistema General de Riesgos Laborales.* Available at : http://fondoriesgoslaborales.gov.co/documents/infoestadistica/2013/Indicadores_SGRL_porARL_sem1_2013(1).pdf

Ministerio del Trabajo. 2014. *Plan Nacional de Condiciones de Seguridad z Salud en el Trabajo 2013 – 2021*, Bogotá. Available at: http://www.oiss.org/IMG/pdf/PlanNacionalDeSeguridadySaludEnElTrabajo.pdf

Naidoo, S.; Pardo, C.; Theim Jensen, C. 2013. *Mine Action and Land Issues in Colombia*, Geneva International Centre for Humanitarian Demining. Available at: https://www.gichd.org/resources/publications/detail/publication/mine-action-and-land-issues-in-colombia/#.Ws4A5ohuZPY

Onofre, S. 2010. *Land and Violence in Colombia: This Land is Our Land*, The Economist, Sep. 16 2010. Available at: http://www.economist.com/node/17043061/print

Oxfam. 2004. *Trading Away Our Rights: Women Working in Global Supply Chains,* Make Trade Fair campaign, Executive Summary, Apr. 2004. Available at: https://policy-practice.oxfam.org.uk/publications/trading-away-our-rights-women-working-in-global-supply-chains-112405

Pesticide Action Network. 2002. *Floriculture: Pesticides, Worker Health & Codes of Conduct* [Online] Available at: http://www.panna.org/legacy/panups/panup_20020612.dv.html

Ponte, S. 2002. The '*Latte Revolution'? Regulation, Markets and Consumption in the Global Coffee Chain,* World Development, 30, pp. 1099–1122. Available at: http://my2.ewb.ca/site_media/static/attachments/threadedcomments_threadedcomment/42867/The%20Latte%20Revolution%20-%20Regulation%20markets%20and%20consumption%20in%20the%20global%20coffee%20chain.pdf

Pour la Science. 2011. *Le bananier, un Enjeu Mondial* [Online] Available at : http://www.pourlascience.fr/ewb_pages/a/article-le-bananier-un-enjeu-mondial-26439.php

Pratt, L.; Rivera, L.,; Kilian, B.; Lort-Phillips, L. 2014. *Securing the long-term sustainable future of coffee supply in Colombia,* Sustainable Markets Intelligence Center (CIMS) and INCAE Business School, Business Association of Latin American Studies. Proceedings of the 31st Anniversary of the Business Association of Latin American Studies Annual Convention, Apr. 9-12, 2014. Available at: http://www.balas.org/BALAS_2014_proceedings/data/documents/p713016.pdf

Produce Marketing Association. 2015. *Colombia Floral Market 201*. Available at: http://www.pma.com/content/articles/2015/02/consumer-trends-impacting-the-floral-industry

Quesada A., V., H. 2013. *What Can We Learn from the Banana Experience in Colombia? Study of Industrial Relations on Fairtrade Certified Farms in the Urabá Region*, Fairtrade International. Available at: https://www.cdtm75.org/spip.php?page=notice&id_cequitnotice=889

Quiñones-Ruiz, X.F.; Penker, M.; Vogl, C.R.; Samper-Gartner, L.F. 2015. "Can origin labels re-shape relationships along international supply chains? – The case of Café de Colombia", in: *International Journal of the Commons*, 9, p. 416. Available at: https://www.thecommonsjournal.org/articles/10.18352/ijc.529/

Rainforest Alliance. *Sustainable Flowers and Ferns in Bloom*. Available at: http://www.rainforest-alliance.org/sites/default/files/uploads/3/flowers_ferns_en_hz_may08.pdf

Richardson, C. 2014. *Love Hurts. Roses are red, but not so green*, Alternatives Journal, 40(1)

Roldán-Pérez, A. et al. 2012. *Coffee, Cooperation and Competition: A Comparative Study of Colombia and Vietnam*. Available at: http://www.eafit.edu.co/centros/asia-pacifico3/Documents/Coffee_Cooperation_and_Competition.pdf

Schmidt, V. 2007. *Trade Union Responses to Globalization: a review by the Global Union Research Network,* International Labour Organization, Global Union Research Network, (Geneva). Available at: http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/publication/wcms_088078.pdf

Sepulveda. 2008. *Informe Sobre la Floricultura Colombiana 2008,* Corporación Cactus, Bogotá. Available at: https://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?referer=https://www.google.ch/&httpsredir=1&article=1837&context=globaldocs

Smith, S. 2010*. Fairtrade Bananas: a Global Assessment of Impact*, Institute of Development Studies, University of Sussex, UK. Final Report: April 2010. Available at: http://www.fairtrade.net/fileadmin/user_upload/content/2009/resources/2010_Fairtrade_bananas_a_global_assessment_of_impact_.pdf

Tenenbaum, D. 2002. "Would a Rose not Smell as Sweet?", in: *Environmental Health Perspective*, 110(5). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240850/pdf/ehp0110-a00240.pdf

The North South Institute. 2014. *Taller de Género del Sector Cafetero* (Informe Resumen). Sep. 2014. Available at: http://www.nsi-ins.ca/wp-content/uploads/2014/09/Coffee-Sector-Gender-Workshop_-Taller-Genero-Sector-Cafetero_Spanish-Final.pdf

The Observatory of Economic Complexity. 2014. *Where does Colombia export Cut Flowers to?* [Online] Available at: http://atlas.media.mit.edu/en/visualize/tree_map/hs92/export/col/show/0603/2014/

The Observatory of Economic Complexity. 2014. *Where does Colombia export Cut Flowers to?* [Online] Available at: http://atlas.media.mit.edu/en/visualize/tree_map/hs92/export/col/show/0603/2014/

The Observatory of Economic Complexity. n/a. *Where does Colombia export Bananas to?* [Online] Available at : http://atlas.media.mit.edu/en/visualize/tree_map/hs92/export/col/show/0803/2014/

The World Bank. 2006. *Colombia: Integrated National Adaptation Program Project* [Online] Available at: http://www.worldbank.org/projects/P083075/colombia-integrated-national-adaptation-program?lang=en

The World Bank. 2014. *Forest Conservation and Sustainability in the Heart of the Colombian Amazon Project* [Online] Available at: http://www.worldbank.org/projects/P144271?lang=en

The World Bank. 2015. C*olombia: Poverty Headcount Ratio at National Poverty Lines (% of population)* [Online] Available at: http://data.worldbank.org/indicator/SI.POV.NAHC?locations=CO

The World Bank. 2015. *Strengthening Capacity on Good Environmental Practices in Commercial Reforestation in the Magdalena Bajo Seco CDM Project* [Online] Available at: http://www.worldbank.org/projects/P151568?lang=en

The World Bank. *Colombia: Country at a Glance* [Online]. Available at: http://www.worldbank.org/en/country/colombia

Tolosa, J.E.; Varona, M. et al. 2005. *Descripción del uso y manejo de plaguicidas en las empresas de flores afiliadas a Asocolflores,* Biomédica, 25 pp. 377-89. Available at: https://www.revistabiomedica.org/index.php/biomedica/article/download/1362/1477

UNDP Colombia. *Proyecto CERF 2014 y 2015* [Online] Available at: http://www.co.undp.org/content/colombia/es/home/operations/projects/crisis_prevention_and_recovery/proyecto-cerf-2014-y-2015.html

Unión Nacional de Trabajadores de las Flores (Untraflores) – Corporación para la Defensa de los Derechos laborales y de la Mujer Trabajadora (CorpoLabor). 2013*. Informe: Situación de los Trabajadores de las Flores en Colombia*, Executive Summary, available at: http://www.untraflores.org/index.php/75-documentos/dossier/406-executive-summary

United Nations Comtrade. *Colombia* [Online] Available at : http://comtrade.un.org/db/dqBasicQueryResults.aspx?px=HS&cc=0803&r=170&p=0&rg=2&y=2015&so=8

United Nations Development Programme (UNDP). 2010. *Mainstreaming Climate Change in Colombia: Screening for risks and opportunity.* Available at: http://www.undp.org/content/dam/aplaws/publication/en/publications/environment-energy/www-ee-library/climate-change/mainstreaming-climate-change-in-colombia/CC%20risk%20Mainstreaming%20Climate%20Change%20in%20Colombia-EN.pdf

Watkins, K. 2001. *Deadly Blooms*, The Guardian, Aug. 29 2001. Available at: https://www.theguardian.com/society/2001/aug/29/guardiansocietysupplement5

World Banana Forum (WBF). 2012. *Diagnosis on the Labour Rights Situation in the International Banana Industry: Paper on Occupational Health and Safety*, Working Group 03 Labour Rights Presentation to the 2nd World Banana Forum, Feb. 2012 (Ecuador.) Available at: http://www.fao.org/fileadmin/templates/banana/documents/WGs_outputs/WG03__OHS_en.pdf

Wright, C.; Madrid, G. 2007. "Contesting ethical trade in Colombia's cut-flower industry: A case of cultural and economic injustice", in *Cultural Sociology* 1(2). Available at: http://www2.warwick.ac.uk/fac/soc/sociology/staff/wrightc/research/publications/cut_flower_paper.pdf

Zembrano Solarte, A. M. 2013. *El Sistema General de Riesgos Laborales en Colombia: Una mirada a las locomotoras de la economía desde la perspectiva de los riesgos laborales*, Fasecolda, Apr. 2013. Available at: http://www.fasecolda.com/files/2813/9101/0320/parte_i.captulo_5_el_sistema_general_de_riesgos_laborales_en_colombia.pdf