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RESEARCH REPORT

Prospects and challenges of floriculture industry in the context of agricultural transformation in Africa : Evidence from Ethiopia.

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ABSTRACT

The floriculture sector is booming in Ethiopia making the country the second largest exporter in Africa and the fifth largest supplier of flowers to the global market. The sector has turned in to among the five top foreign exchange earning commodities and also provides employment opportunity for hundreds of thousands of individuals. Despite the enormous economic advantages of the Ethiopian floriculture industry, environmental and social unsustainability are indeed growing. Mainstreaming social and environmental problems into economic sustainability is an emerging area of policy research and practice. This paper aims to answer whether the Ethiopian cut flower industry can be a positive example of sustainable agriculture and consistent with the inclusive growth and sustainable development agenda of Africa. Using the theoretical framework of sustainability along agricultural commodity chains, data are collected from farmers (growers), state experts, greenhouse workers, and consumers through in-depth interviews. The overall result reveals that the current production practices have failed to satisfy two of the main criteria for sustainability. The economic benefits of the flower industry come at the expense of farmworkers' health and safety (i.e chronic and acute health problems: adverse respiratory effect, eye irritation, permanent sight reduction, skin irritation, headache) other social issues like employment insecurity, low wages, lack of promotion, and lack of awareness of rights and codes and the environment (i.e intensive use of toxic pesticide, water and poor waste management).. Finally, this paper recommended that promoting sustainability in cut flower production requires critical consideration of agricultural technologies and identification of best practices (i.e biological control& organic farming) and strong frameworks for collaboration and mutual accountability and transparency between chain actors (the government, growers and consumers) related to safe and proper use of use of pesticide, water and social justice. It serves as a valuable resource for policy makers, farmers, investors, consumers, NGOs, experts in flower production and agribusiness and federal regulatory agencies.

1- INTRODUCTION

Agriculture remains an important sector of the African economy and the daily lives of the majority of Africans, accounting for just over 60% of jobs and ranging from 3% to almost 50% of GDP across the continent. Ethiopia is the second most populous country in Africa with a population of 97 million (World Bank, 2016). The country has achieved a remarkable and sustained economic growth over the past decade. Between 2005-06 and 2014-15, Ethiopian GDP grew by an annual average of 10.5 per cent. The major sectors, including agriculture, industry, and services (UNU-WIDER 2017). Agriculture plays an important role in Ethiopia's economy and provides livelihood for a growing population. As a whole, the agricultural sector has a share of approximately 44% of the country's GDP, 80% of the workforce and 70% of the export earnings (FAO, 2014). Despite its central role, the agriculture sector faces many new challenges such as environmental risks: climate change, drought, and water scarcity, and land degradation, low level of market integration, poor infrastructure and policy implementation.

The agricultural transformation agenda is a set of interventions that solve systemic bottlenecks within the agricultural sector to catalyze transformation from a subsistence oriented, low output agricultural sector to a high performing sector well integrated into the national economy -and to do so in an environmentally sustainable and inclusive manner. For instance, recent initiatives such as The Africa We Want: 'Agenda 2063' First Ten Year Implementation Plan(2014-2023), Feed Africa: Strategy for Agricultural transformation in Africa (2016-2025),The 2030 Agenda for Sustainable Development of the UN and Ethiopia's Agricultural Growth and Transformation Plan for 15-20 years are required to meet sustainable development goals. The process for agricultural transformation is beginning to materialize in a number of African countries. Smaller-scale transformations are operating, such as in the horticulture mainly cut flower in Kenya and Ethiopia respectively (AU, 2015; AfDF, 2016). It has been observed that the inclusion and adoption of horticulture in agricultural production is capable of transforming the nation's economy. In line with this, Ethiopia has aimed to, and aligned with, the national vision of becoming a middle income country by 2025 and the recently announced Growth and Transformation Plan (GTP I and II). To achieve these GTP goals, the government of Ethiopia has prioritized key sectors, such as agriculture and industry, as drivers to promote sustained economic growth and job creation (ATA and MOA, 2017). The Agricultural Transformation Agenda of Ethiopia is currently being developed across 30 key programmes within four strategic pillars. Environmental sustainable and inclusive growth and national food security, Increase crop and livestock production and productivity, Commercial orientation of smallholder agriculture and market development and Enhance implementation capacity are the key pillars of the transformation agenda.

In line with this, commercialization of the agriculture sector both through private sector large-scale farms and smallholder out-grower schemes were anticipated to accelerate production of exportable agricultural products such as floriculture.

The floriculture sector is booming in Ethiopia making the country the second largest exporter in Africa (next to Kenya) and the fifth largest supplier of flowers to the global market. The majority of the production is rose flowers (estimated 80%) followed by summer flower and cuttings The sector has turned in to among the five top foreign exchange earning commodities and also provides employment opportunity for hundreds of thousands of individuals (UNU-WIDER, 2017; EHPEA, 2017). Despite the enormous economic advantages of the Ethiopian floriculture industry, environmental and social unsustainability are indeed growing. It is heavily dependent on intensive use water, pesticides, chemical fertilizers and energy. Some of these activities can lead to environmental or social unsustainability. Some studies have been conducted to analyse the environmental and health effects of pesticide use in Ethiopia. However, much attention has not been paid to sustainability issue. Hence, this research attempts to answer whether the Ethiopian flower industry can be a positive example of sustainable agriculture. Using the theoretical framework of sustainable development, this paper examines the analysis through its three components: the social, the environmental and the economic. After introducing the conceptual framework and the research methodology, a detailed analysis of the economic, social and environmental issues of sustainability and policy options are presented. The final section formulates conclusions and recommendations on the perspectives for effective governance mechanisms to improve agricultural sustainability, the environment and the health and safety of green house workers.

2- THEORETICAL LITERATURE: SUSTAINABILITY ALONG THE GLOBAL CUT FLOWER CHAIN

Sustainability was the “buzz” word of the 20 th century and continues to be in to the 21 st century. There are several concepts for doing business in a more environmental, social and economic way.

In regard to definition authors such as (i) Willard (2012) defined sustainability as “Enough- for all-forever”-(ii) Paula et al.,(1999) defined sustainability as “Sustainability is the continuous process of obtaining the same or better living conditions, for a group of people and their successors in a given ecosystem” (iii) Petitjean (2008) defined sustainability as “Development meeting contemporary needs without jeopardizing those of future generations”(iv) Marrewijk (2003) defined sustainability as “The overall quality of life in the future, that we continuing access to natural resources, it avoid lasting environmental damage and we leave our children and grandchildren an intact ecological, social en economic system” and (v) Gullino et al., (2006) claim that the three P’s (people, planet, profit) are acute in the agricultural sector. In general sustainability as well-defined in the Report of the World Commission on Environment and Development (1987) denotes development that meets the needs of current generations without compromising the ability of future generations to meet their needs. It has elements of equity among current generations and across successive generations (Weiss, 1989). The challenges to sustainability in African agriculture are multifaceted, cross-sectoral and multidisciplinary in nature. These challenges range from social, economic, political and environmental challenges. They cut across the different sectors in the countries with a few of them being unique to a specific sector.

This paper argues that economic sustainability is inextricably linked to both environmental and social sustainability. This is demonstrated by the limits to growth. Meadows et al. (1972) posit that economies will not be sustainable if natural resources are used beyond the limits and if society continues to depend on phenomena that drove growth in the past. Nowadays the world is faced with challenges in economic, social and environmental dimensions of sustainable development. More than 1 billion people are still living in extreme poverty and income inequality within and among many countries have been rising; at the same time, unsustainable consumption and production patterns have resulted in huge economic and social costs and may endanger life on the planet. Achieving sustainable development will require global actions to deliver on the legitimate aspiration towards further economic and social progress, requiring growth and employment, and at the same time strengthening environmental protection (DESA-UN, 2013). To address the need for assessing agricultural sustainability of a global flower chain, this paper proposed a simple framework based on the three dimensions of sustainability: environment, society, and economy (see Table 2. 1)

Table 2. 1: Three pillars of sustainability: Economic, Social and Environmental

Elements of sustainability	Criteria
Economic sustainability	Income (foreign currency)
	Job creation(opportunity)
	Infrastructures(road, health care, schools)
	Market access/channels
	Mode of transport
	Standards and labeling schemes
Environmental sustainability	
Pesticide utilization	Toxicity of pesticide (WHO class I,II,II IV or U)
	Application of organic farming and /or IPM
	Absence or presence of obsolete pesticide
	Liquid and solid waste disposal mechanism
	Registration status of the pesticide
Water utilization	Water used (liters) in ha/day
	Water reuse/recycling system
	Water source from rain water Vs underground lakes rivers
	Water quality: traces of pesticides in groundwater and surface water
Social sustainability	Workers health & occupational safety (appropriateness of protective gears)
	Wages and benefits (promotion)
	Availability of work facilities: toilet, dinning, drinking water
	Labour /workers union
	Training and personal development
	Other social problem women encounter and sexual harassment, grievance etc

Source: Adapted from Marrewijk (2003); Gullino et al. (2006); Petitjean (2008), Willard (2012)

Global supply chain analysis helps as analytical tool to understand how and who will bring sustainability through its three components: the social, the environmental and the economic and assess potential contribution of different actors to sustainability. The cut flower industry is increasingly globalized. The Netherlands plays an important role in international flower trade, as the main importer (also from Ethiopia) and exporter to the different EU countries (Rabobank, 2015). The flower market is highly export-oriented; requirements from import countries concerning the quality and quantity of flowers are taken very seriously. However, pests and diseases are a serious threat to the agricultural sector in producing countries. Export production often requires further standardization in products and production methods, high quality of products, and regularity in output, which usually come together with large-scale, high capital input agriculture where chemical fertilizers and pesticides are widely used.

Within global supply chains the provision of products, services, and information is organised through formal and informal institutions (Roduner, 2007; Vellema et al., 2013). Different actors at the various levels aim at improving the performance of the entire chain but this need not be limited to economic considerations but may also include social, ethical, and environmental ones (Hvolby et al., 2007; Van Wijk et al., 2009; Drost et al., 2010). Supply chain governance involves the ability of one firm to influence the activities of other firms in the chain. Different actors may apply different governance mechanisms when addressing economic, social, ethical, and environmental issues (Mueller et al., 2009; Gimenez & Sierra, 2013; Driessen et al., 2012). Most importantly, recent studies on ethical consumerism suggest that consumers increasingly care about the characteristics of business products and processes, encompassing the importance of non-traditional and social components such as environmental protection, elimination of child labor and so on. Thus, ethical features have a substantial impact on the purchase intentions of consumers (Arafah, 2017)

3- RESEARCH METHODS

This study on the challenges of Ethiopian floriculture industry in the context of agricultural transformation takes flower farms as its main object of research. In 2016, 84 flower farms operate in different agro-ecological zones in Ethiopia. Of these, 29 farms were selected on the basis of several criteria, including the distribution among different geographical regions/clusters, the country of origin of the owner, accessibility of data, membership and consultation of Ethiopian Horticulture Producer and Exporter Association (EHPEA) and certification status of growers. In-depth interviews were conducted at 29 farms in five regions i.e., Ziway, Koka, DebreZeit, Sebeta and Holleta. The names of the farms are not included in order to respect their request for anonymity. To be able to obtain adequate information regarding farm's environmental, social and economic sustainability this study employed the qualitative approach. The approach helped the researchers to obtain information generated based on peoples experiences, perceptions and attitudes towards the flower industry.

The study combined primary and secondary data. Secondary data is data that was collected by other researchers who likely had different research objectives. Primary data were collected using structured and semi-structured questionnaires, as well as interviews with key informants and personal observations between June and August 2016. To examine the environmental aspects of flower production, 29 farm/production managers were asked about pesticide management. Survey

interviews were also carried out with 180 randomly selected pesticide sprayers (from a total of 835) and 32 harvesters to examine the occupational health and safety with respect to quality and availably of protective gears, training on safety, labour union, and experience with accidents in relation with pesticides application. Interviews were also carried out with 3 wholesalers and 48 consumers in the Netherlands to examine the influence of certification and labeling along the supply chain. And finally, three Key informant interviews were held with relevant government actors of the sector to examine their interactions with flower growers in supporting, regulating and monitoring the sector. Observations were used to enhance information for instance on the quality of the spray suite, the pesticide storage and the condition of inclinators. The data were subjected to descriptive data analysis.

4- RESULTS AND DISCUSSION

4.1. Agricultural Sustainability : a case study from the Ethiopian floriculture industry

Sustainable agriculture is generally defined as the production of food or other plant or animal products using farming techniques that protect the environment, public health, human communities, and animal welfare. Usually, sustainable agriculture integrates three main goals--environmental health, economic profitability, and social and economic equity. Mainstreaming environmental and social problems into economic sustainability is an emerging area of policy research and practice. This sub section presents a qualitative description of the embeddedness of the three variables in the Ethiopian floriculture industry.

4.1.1. Economic contribution of the floriculture Industry

Nowadays Ethiopia has made a remarkable entry into the global floriculture market, growing from negligible export earnings to the fifth largest producer of roses. The Ethiopian government has seen the potential of the new industrial opportunities as a chance both to diversify the risk involved with reliance on a single crop and to geographically spread the benefits of the industry. In recognition of Ethiopia's significant comparative advantage in flower production (suitable agro-climate, abundant land, and cheap labour) and marketing (proximity to Europe, the largest world floriculture market), the government identified the sector as an option for export diversification through high-value crops.

Investors in floriculture exports have been granted various incentives including a five-year tax holiday, duty free imports of machinery, access to bank loans and farm lands as well as a 100 %

exemption from payment of export customs duties. Furthermore, investments in exports are exempt from income taxes if at least 50 % of the output is directly exported or if at least 75 % of the output is indirectly exported for a period of no less than five years (Getu, 2009; EHPEA,2015; Altayesh,2016;UNU-WIDER, 2017).

The objective of the government to promote floriculture exports was carried forward through the subsequent development plan (2005-06 to 2009-10), the Plan of Action for Sustainable Development and Eradication of Poverty, and the Growth and Transformation Plan (GTP I)(2010-11 to 2014-15). Ethiopia has achieved extraordinary success in flower exports, making the country a global player in the sector. The flower sector has stated to show a significant contribution to the Ethiopian export sector, beginning in the mid-2000s. Between 2002 and 2008 the number of flower farms grew about 16-fold. The value of flower exports has also increased in this period, growing about 20-fold, and reached 84 , covering about 2000 hectares. Ethiopia's current (2015-16) exports have reached about US$225 million (UNU-WIDER, 2017)(See Table 4.1)

Table 4.1: Pattern of Ethiopia's exports of cut flowers

Year	(in US$ million)
2007-08	111.26
2008-09	130.64
2009-10	158.15
2010-11	175.28
2011-12	196.97
2012-13	188.00
2013-14	195.03
2014-15	201.24
2015-16	225.32

Source: EHDA, cited in UNU-WIDER, 2017

The sector also provides employment for 180,000 workers, of whom about 80 percent is female (EHPEA, 2016). Most of the production activity in the industry is exclusively assumed by female workers while those jobs which demands exertion of muscular force are left for male workers. Female workers were found to be distributed in various sections of the farm include harvesting, grading, packing and flower arrangement. Due to the fact that women in Africa have some difficulties of having their own job it is turn out to be an important source of income and one way escaping from being dependent on family. With this role development the sector is recognizing as new engine that drives job creation and innovation.

Besides the aforementioned incentives, some of the factors behind the success of the flower sector against other agricultural commodities (eg, fruits and vegetable) are (i) regarding market access, growers can enter global auction markets for flowers if they satisfy the minimum requirements (which are relatively easy) and sell their products. However, the story is different for food items like fruits and vegetables. The market for food items requires direct sales (no auction market), which requires searching for and dealing with buyers, (ii) international stringent standards to enter markets of developed country are less stringent in the cut flower than in the food items. Hence, any export of flower should fulfil international standards, which are voluntary as compared to the mandatory standards for the food items. Examples, unlike flowers which are required for aesthetic purposes, levels of maximum and minimum pesticide residue in food items are strictly controlled. For example, 14 out of the 18 interviewed Dutch florists do not ask for certification (see also BTC 2010). (iii) Flower exports are not heavy (small volume) and hence using air transportation is viable whereas using air transportation for fruit and vegetable is costly (not feasible economically), and (iv) Flower production requires shorter time periods compared to most types of fruit. Hence, investment in the flower subsector has a shorter payback period (cost recovery) than most fruits with long gestation periods, although the flower requires higher initial investment.

There is also a critic that as a factor in attracting FDI, incentives has been the subject of many studies, but their relative pros and cons have never been clearly established. There have been some spectacular successes as well as notable failures in their role as facilitators of FDI. The main argument in support of this is that the strongest theoretical motive for financial subsidies to inward FDI tends to be external effects such as spillovers of technology and human capital, which do not follow automatically from foreign direct investment. In other words, it is not clear that FDI has an advantage over other kinds of investment. Also, the quality of the enabling environment for investment – which affects a country's ability to attract FDI, and to benefit from it – is equally important to domestic investors (Blomström,2001).

Hence, rather than proposing narrowly defined FDI policies, attractive terms to investors should be seen as part of a country's overall industrial policy and be available on equal terms to all investors, foreign as well as domestic. Generally, the World Bank recognized that investment incentives have only moderate importance in attracting FDI. For instance, tax holidays are a common form of tax incentives used by developing countries to attract FDI for a specified time period (e.g. five years). In Ethiopia, although most of the investors on floriculture already exist more than ten years, the incentive schemes designed for promotion FDI is still continuing and the government lacks commitment to discontinue incentive schemes.

4.1.2. Environmental sustainability challenges: water and pesticide utilization and waste disposal

Environmental implication of floriculture is related with the intensive use of pesticide use, water and fertilizer, waste management and energy consumption. This study focuses only on pesticide, water and waste management.

The use of pesticides has proved to be very beneficial in agriculture since they lead to improved productivity due to protection of crops from pests and diseases. However intensive use of pesticide is blamed as an environmental challenge in agriculture including in the floriculture production. Pesticides can move from the site of application via drift, volatilization, leaking, and runoff. It is estimated that often less than 0.1 percent of an applied pesticide reaches the target pest, leaving 99.9 percent as an unintended pollutant in the environment, including in soil, air, and water, or on nearby vegetation. Pesticides can also move from the site of application via drift, volatilization, reaching, and runoff (Pimentel, 1995). According to the pesticide registration and control proclamation (PRCP) No 674/2010 all pesticides that are to be introduced for use in Ethiopia must undergo the necessary registration procedures that are implemented under the MoA&NR. However, the government made an interim arrangement allowing flower growers to import unregistered pesticides which they considered essential for their farms. As a result, flower growers have been importing many different kinds of pesticides for routinized use. According to PAN UK (2007) Tamiru (2007) Vieira and Abarca (2009) Tilahun (2013) PPC/EIAR (2011) and MoA (2014) between 2007-2014 flower farms in Ethiopia have imported 96 types of insecticides and nematicides and 105 types of fungicides; of these, 37 were not officially registered in Ethiopia. For the roses alone, more than 212 types of pesticides with different active ingredients were used (Joosten, 2007; Sahle & Potting, 2013).

All interviewed growers reported the use of pesticides that the WHO classifies as Class II (highly toxic) and III (moderately toxic). Although none of growers reported the use of Class I-pesticides, some growers nevertheless still use WHO class I active ingredients such as Dichloruos 1000G/L, Dichloruos 1000G/L, Cadusafos 100 G/L. Besides, some pesticide that entered for the flower industry are found on the WHO negative pesticide list (prohibited/unknown on the European Union Pesticide Database (EUPDB, 2015) (Table 4.2).

Table 4.2 Some imported pesticides not approved for use in the EU (import data for flower, 2014)

Trade name	Active ingredients	Environmental fate	Human health issue	WHO Class
Evisect	Thiocyclam Hydrogen Oxalte 50%	High	Skin and eye irritant	II
Ace	Acephate SP 25%	High	Endocrine disrupter, Cholinesterase inhibitor, Neurotoxicant	II
Dexon	Fenaminosulf SP 45%	High	N/A	II
Orthene	Acephate SP 70 G/KG	High	Endocrine disrupter, Cholinesterase inhibitor, Neurotoxicant	II
Rugby	Cadusafos 100 G/L	Moderate	Cholinesterase inhibitor	Ib
Orthene	Acephate170 GR/KG	High	Endocrine disrupter, Cholinesterase inhibitor, Neurotoxicant	II
Divipan	Dichloruos 1000G/L	High	Mutagen, Cholinesterase inhibitor, eurotoxicant, Skin and irritant	1b
Diazoll 60 EC	Diazinon 600GM/L	Moderate	Reproduction effects, Cholinesterase inhibitor, Neurotoxican, Respiratory tract irritant, skin irritant	II
Starchlor 100 EC	Dichloruos 1000G/L	High	Mutagen, Cholinesterase inhibitor, Neurotoxicant, Skin and eye irritant	1b
Evisect 5	Thiocyclam Hydrogen Oxalte 50%	High	Skin and irritant	II

The study shows that only 3 out of the 29 farms applying integrated pest management (IPM) as good agricultural practices. Farmers not using IMP revealed that although IPM has a positive effect on controlling spider mite (Tetranychus urticae), others pests are becoming a bigger problem, especially trips, aphids and mealy bugs. Most interviewed growers carried out on-farm trials to evaluate the efficacy of biological control in the local context.

Most farms reported that ineffectiveness, leftovers, oversupply in previous years and lower pest incidence than expected resulted in obsolete pesticide stocks. Another pesticide concern in the flower industry is unsafe management of empty pesticide containers. Empty containers are usually

burnt on the farm in an on-farm incinerator, often an old steel barrel. Farmers are burning empty pesticide containers together with damaged cloths used for spraying, cartons, boxes & plastics (see pic 1).

According to Atkure, 2011; Mengistie et al., 2015, 2016, 2017) floriculture activities produce different types of waste ranging from liquid to solid, hazardous to nonhazardous, and in effect require safe waste disposal and differentiated treatment. Empty chemical containers (fertilizers, pesticides) and their washing waters and obsolete chemicals are the major spheres of concern in addition to which other agricultural wastes such as cutoff crop parts, unused soil, and wastewater are generated in the sector. Abiy (2011) also found that chemical containers, diseased plants, residue of cut-flower Stems and plastics are some of major solid wastes. Liquid waste that cannot be reused or recycled should be collected and kept in impermeable containers or solar evaporation ponds. However, the flower farms in Ethiopia have been heavily criticized for not having adequate means of waste management systems.

The other problem facing the environment today is related to intensive use of water. Although accurate scientific data is not available, it is often said that the proximity of farms and the lack of technology about how to treat agro pesticides causes contamination of water and overuse of groundwater (Tadesse and Nigussu, 2008; Getu, 2009). The cultivation of flowers requires a great deal of water, which in tropical countries like Ethiopia comes at the expense of small-scale farmers growing other crops. Studies disclosed that the consumption of water for the production of cut flowers reached 60,000 litter/ ha/ day (Zinabu, 2003; Tenalem and Dagnachew, 2007). Greenhouses need water for irrigation, pesticide application, cooling, root-zone land preparation

and clean up (Sisay, 2007; Metaferia, 2009; Abiy, 2011; Abayneh, 2013).Besides, in Colombia, one hectare of flower uses 150,000 litres of water per week.

Unsustainable cultivation led to sinking ground water levels and dry rivers so that the supply of drinking water is no longer guaranteed in some areas like Sabana de Bogotá. Similar water problems resulting from floriculture have been reported from Kenya. A case study of the Lake Naivasha region in Kenya identified the negative impacts from flower production due to worsening environmental conditions affecting fishing, local food security and community health from water pollution and over-abstraction (Maharaj and Dorren, 1995; David, 2002; Bolo, 2007). A significant number of the foreign farms (Linsen, Abyssinia, Maranque, Karuturi, and Sher-Ethiopia) came from other African countries, including Kenya.

By the same token, environmental impact assessment (EIA) is an important tool to assess and mitigate environmental impacts and sustain the sector. None of the flower farms had performed an environmental impact assessment to reduce risks before starting their operation. The investment and other relevant laws didn't clearly require the approval of EIA report before a permit is issued to a foreign investor (Altayesh, 2016) Hence intensive and unsustainable use of water continues to be an important problem around all farms. For instance, in Ziway where large flower farms are concentrated and water from the lake is exploited, the supply of drinking water is no longer guaranteed. In 2009-2010, Alterra conducted a water quality study at three sites near a floriculture complex around Lake Ziway. They tested for 200 pesticides and found 30 with concentrations of 0.1 µg/l or higher, five of which are classified as high-risk pesticides (Jansen & Harmsen, 2011). In general, water use efficiency in irrigation is generally very low and there are major concerns regarding resource depletion and persistent conflicts over water rights in aforementioned countries. Unsustainable exploitation of groundwater may lead to unforeseen problems such as arsenic contamination of drinking water in Ethiopia and contradict with the principle of 'Blue Economy', sustainable use of water resources for economic growth.

4.1.3. Social sustainability: Workers health and occupational safety, wages and rights

According to Dinham (2008), a researcher specialised in researching the flower industry, the highly toxic pesticides used in the flower industry can have either acute or chronic effects. Pesticides can enter the body via the lungs, skin and by eating crops that contain chemical pesticides. The health risk for people working in the flower industry are eye problems, skin irritation, headaches and dizziness, breathing problems respiratory problems, miscarriages, premature births and diarrhea.

She claims that, “the main reason that flower workers risk health problems is because of inadequate personal protective equipment and inadequate pesticide application instructions”(Dinham, 2008).

Pesticides can cause cancer, birth defects, reproductive and nervous system damage, and floriculture workers are exposed at numerous stages of plant growth (WHO, 2011). Worker exposure is of particular concern in greenhouses, where up to 212 different chemicals (Sahle and Potting ,2013) are used in enclosed spaces--increasing risk of exposure through the skin and by inhalation. The exposure to pesticides in developing countries is worsened by the illiteracy of the people and the lack of unaffordable and/or availability of protective clothing (Maumbe & Swinton, 2003; Hanssen et al., 2015).There are few studies or statistics found about pesticides use and over health effects in the flower industry in Ethiopia. For instance (Negatu et al., 2017) performed two cross-sectional surveys comprising different farming systems. In the first survey they studied respiratory symptoms among 1104 subjects of which 601 were occupationally exposed to pesticides (ie, 256 pesticide applicators, 345 re-entry workers) and 503 unexposed individuals. The second survey, carried out 2 years later in the same farming regions, additionally included lung function measurement and comprised a total of 387 study subjects of which 206 were occupationally exposed to pesticides (142 applicators and 64 re-entry workers) and 180 unexposed individuals. They observed increased risks for chronic cough and shortness of breath among the exposed subjects as compared with unexposed individuals in the first survey. These findings indicate an increased risk of adverse respiratory health among workers exposed to pesticides. Besides, (Amare et al., 2015) found that greenhouse workers at flower farms had higher prevalence of blocked nose than workers outside.

This study found that personal protective equipment is provided in most (67%) farms while 33% farms of workers use their own clothes and some old and torn gloves to protect themselves. Most sprayers were provided with spray suits (overalls) (71%), rubber boots (68%) respirators (62%), and impermeable gloves (57%). However, only 13% of the sprayers were provided with impermeable goggles. Some PPE items were rarely used since they hindered the speed in spraying (47%), were uncomfortable in the humid climate (53% or made it difficult to breathe properly. The survey also revealed the incidents and symptoms among the sprayers. All sprayers reported incidents of pesticide-related health symptoms including eye irritation, permanent sight reduction, skin irritation, headache, and abdominal pain after routine pesticides application. 28 year old informant stated that the flower is his source of life and cause of his death as sometimes his body is wet from chemicals’ spraying. Another informant (33 year) told how his sight had been severely impaired. From our own observation, the smell in the greenhouse

was a sign of the high levels of pesticides that workers were exposed to on a daily basis (See pic 2).

Other workers exposed to pesticides are harvesters and pack house workers who are predominantly female. All interviewed workers reported that injuries from working with scissors, skin pain and fingers pricked by thorns are common as only 28% of the workers were provided with gloves. Some workers complained that their protective clothes were not suitable because they wore torn gloves made from cotton. Social standards call for the formation of a workers' committee to negotiate with management. All growers reported to have a workers' union and 81% of the workers said they are member of such associations. These workers' unions function very differently; while some are virtually non-existent, a few others strive actively to change working conditions. Many workers from lower certified growers (72%) as well as from higher level certified farms (64%) were not satisfied with the effectiveness of the union. After putting a lot of effort in identifying problems at work (as required from workers' committee, gender committee, health and safety committee, HIV/AIDS committee among others), committee members feel discouraged when the management is not taking action. The leader of a workers' committee in one farm said it openly "they push us so much for the audit...but after a while no one remembers it."

Wage is a crucial issue and vital for workers. However, the industry is paying the workers shockingly low wages (See Zembla documentary, 2016). All (100%) respondents are dissatisfied with their wage. The majority of workers earned between 18-30 ETB (approximately $0.9-$1.5) for an 8 hour working day and 468-780 ETB (approximately $24-$40) for 208 working hours during a month. Most workers found it difficult to meet their daily needs with their inadequate salary. One of the factors behind this problem may be the government's policy to attract foreign investors by pointing at cheap labour. Some growers

developed mechanisms to allow workers to earn more, such as: allowances for transportation, no-absenteeism, a bonus for productivity and overtime at “pick seasons” such as during Valentine’s Day, Christmas, and Mother’s Day.

In sum, besides the aforementioned variables, other social issues like grievance, harassment, safety concerns about travelling home at night, sick leave, inappropriate punishment, dismissal, deductions from pay, delaying in salary payment and related problems are repeatedly mentioned in many flower farms. The results are quite similar to studies on flower producing countries (Costa Rica, Columbia, Ecuador, Kenya and Uganda). For example, a study on flower workers in Costa Rica and Columbia found out that majority of flower workers surveyed showed poisoning symptoms, including headaches, dizziness, hand-trembling and blurred vision (SSNC, 2012). Handal and Low (2009) stated that women working in the flower industry reported significantly fewer live births. Thomas (2009), citing a study by the International Labour Rights Fund (ILRF) 2008, found that more than 66 per cent of Ecuadorian flower workers were plagued by work-related health problems, including skin rashes, respiratory and eye problems. In Uganda and Kenya, as a result of poor working conditions and poor pay, workers had at different times staged strikes as a way of putting management on pressure to improve on their working conditions and salaries. For example, according to Fortune, (October 08,2017) about 4,000 workers at Sher flower farm went on a strike for delayed salary payment. The strikers threw stones at the windows of the company and damaged them. Nevertheless, key informants from EHPEA, EHDA, PHRD of MoA and most farm managers argued “the entire Ethiopian flower sector has seen substantial improvements in safety conditions. When the industry started there were many problems with worker safety, with chemicals. The farms have improved a lot. Certifications have been essential in showing the way forward, showing what protective equipment is needed”.

4.2. Obstacles, drivers and implications in producing and exporting sustainable flower: Policy issues and options

A number of solutions (policy options) have been suggested and some have been successfully implemented in the past in several countries to produce clean environment and to maintain sustainability. Each one policy options have its advantages and drawbacks. In the following sections this paper shall discuss few of policy options needing to be addressed for a sustainable flower production.

4.2.1. Weak law for strong industry

Institutional economics would suggest that weak state, legal and financial institutions would impede the successful pursuit (sustainability) of an active industrial policy such as floriculture (Gwartney and Lawson, 2008). However, Wijnands et al. (2007) find that, although growth in GDP-per-capita is strongly correlated with good institutions, the growth of exports in cut flowers had no correlation with the strength of institutions. A good environmental governance system is a function of policy and legal instruments which are prepared in a participatory manner and the effective application of these instruments by using strong and well-coordinated institutions. During the last decade Ethiopia developed many policies and laws that link to improving the environment. Environmental authorities are in place and many international environmental agreements have been signed. In line with this, Ethiopia has developed pesticide registration and control procedures with the framework of FAO pesticide registration, distribution and use. Therefore, the overall policy with respect to pesticide plays a key role in improving the environment, the health of growers and the surrounding community and stimulates the economic performance of the Ethiopian agricultural sector. However, there was no clear answer to the question whether the policy was implemented in an effective and sustainable way. There are gaps between the environmental commitments made and the actual implementation to improve environmental outcomes (Mengistie et al., 2015). For instance to provide institutional support for the development of the flower industry, in 2008 the government established a separate agency, the Ethiopian Horticulture Development Agency (EHDA), which is responsible for promoting, facilitating, coordinating, and supporting investment in flowers and fruits and vegetables. However, growers revealed that the agency is weak in responding to environmental and human health problems. Moreover, cut flowers have loose regulatory status in the importing countries because they are not edible crops and are exempted from regulations on pesticide residues; hence they are not inspected for residues though they carry 50 times more the amount of pesticides allowed on foods (Kargbo et al., 2010). Even at the international level regulatory standards are generally weak. Interestingly, recent study by Toumi et al., (2017) has also detected 107 active substances from all (90) samples and analysis of bouquets of cut flowers including imported from Ethiopia and sold in Belgium contain high pesticide residue levels. This failure of public governance institutions to keep pace with economic development has created a “governance deficit.”

Besides, interviewed key informants also revealed that environmental and social policies or standards (code of practices), are not implemented by many growers within the industry as per the standards provided by the Ethiopian horticulture producer explorer association (EHPEA). Industry self-regulation, the voluntary association of growers to control their collective action has been proposed as a complement to government regulation. Proponents like King and Lenox (2000) argue that the establishment of such structures may institutionalize environmental improvement, and critics suggest that without explicit sanctions, such structures will fall victim to opportunistic behavior.The interaction between growers and relevant sate actors (ministry of agriculture, ministry of environment, ministry of labours and social affairs among others al local and federal level) are operating at a very weak in the sector. For instance, the Ethiopian federal system allows the regional government to administer and control land and other natural in accordance with federal laws. However, this functionality is not working for flower farms and regional government have no autonomy to monitor the environmental and social performance of flower grows.

This study also revealed that the cut flower industry is not properly regulated by the Ethiopian government. There is (i) a lack of specific laws to regulate the sector, (ii) a lack of commitment to enforce relevant laws, while (iii) the government provides long-term credit on very generous terms (Getu, 2009; Gebreeyesus & Iizuka, 2010). In addition, according to the pesticide registration and control proclamation (PRCP) No 674/2010 all pesticides that are to be introduced for use in Ethiopia must undergo the necessary registration procedures that are implemented under the plant health regulatory directorate (PHRD) of the MoA. However, the government made an interim arrangement allowing flower growers to import unregistered pesticides which they considered essential for their farms. There is no sufficient legal regulation in Ethiopia for the provision of basic personal protection for the workforce in flower farms although at the application of toxic pesticide is very high. I also pointed out that none of the relevant state actors have conducted periodic and random inspection to pesticide stores and condition of workers to ensure compliance with statutory regulations. In general, the government's desire to attract foreign direct investment is manifested in deregulation of the sector. Therefore, shortcomings of the current approach or options or governance mechanism being implemented need for change and focus of where change needs to occur.

4.2.2. Is environmental and social certification a viable option for sustainable flower production?

Given weak state capacity and lenient environmental and social regulation in many developing countries ethical trade is an important alternative for remedying some of the negative impacts of global supply chains in the South. In all at least 20 different certification and labeling schemes social and environmental and/or standards launched world-wide in cut flower export (Riisgaard,2011, BTC,2010) such as Fair trade, Ethical Trade Initiative, MPS-ABC, MPS-SQ , Fair Flower Fair Pant, EHPEA code of practice among others (see table 3). At the moment, in Ethiopia some farms have most of these and some have none. The majority have at least one certification. The question arises whether certification can improve the sustainability of the production of flowers, and to what extent it becomes a barrier in trade. This paper reviews the different schemes with respect to their impact on trade and their effectiveness and ability to improve environmental and social conditions. Studies by Humphrey (2008) in Kenyan horticulture and Mengistie et al.,(2017) in the flower industry of Ethiopia presented support the notion that the adoption of emerging certification on standards can play a positive role by serving as a catalyst for promoting a positive image and act as reputation insurance against negative events. Certification of growers to social and environmental standards is often a requirement from buyers and since different buyers demand different standards, it is usual for growers to hold multiple certifications. Most farms that have achieved two or more certifications, they have a better and professional outlook from the outside than the farm that has not. Because it is hard to see how certifications make a visible difference in ground or reality in terms of safety for the environment and workers health. Private certification on standards may not always deliver what they promise to consumers. For instance, interviewed Dutch wholesalers revealed that to be successful, one should have "good certifications for good marketing", whereby the wholesaler's choice of certification depends on customer interest which is country specific. Similarly, majority of the interviewed Dutch consumers (48) had no idea what Fair trade certified flowers are, where the flowers come from and how they are produced. Many responded that flowers are a luxury product and not edible so they did not worry about environmental and social issues.

Table 4.3: Certification and labeling schemes on cut flower

	Aspect covered		
	Social	Environ mental	Quality
Consumer labels			
EU Ecolabel / national ecolabels (Milieukeur)			
EKO			
Fair Flowers Fair Plants (FFP)			
Fairtrade Labelling Organization (FLO), Max Havelaar			
Flower Label Programme (FLP)			
Rainforest Alliance - Flowers and Ferns			
B2B standards			
Ethical Trade Initiative (ETI)			
GLOBALGAP			
ISO 14001			
MPS family: MPS-ABC			
MPS family: MPS-SQ			
MPS family: MPS-GAP			
MPS family: MPS-Florimark			
SA8000			
Developing country initiatives			
EHPEA Code of Practice			
FlorEcuador			
FlorVerde			
KFC Code of Practice			

Source: BTC, Belgian development agency, 2010.

4.2.3. Who is driving the sustainability agenda in the cut flower industry?

Sustainable flower production is an issue nowadays for growers, however most does not have a clear understanding of sustainability. Growers can no longer afford to do nothing with sustainability. This means floricultural companies must integrate economic, ecological and social in the production chain for flowers (Hoeksema et al., 2009). Growers can also easily demonstrate the improved economic performance. But what about investments in improved environmental and social performance? Why are there so many different certification schemes in floriculture? What is the role of different stakeholders (growers, traders, buyers, financiers, certification schemes, governments, CSOs and NGOs) in improving social and environmental conditions and what is at stake? More and more governments, businesses and NGOs together develop sustainability agendas. However, due to the complexities of such agendas, the implementation is lagging behind. Looking closer at how sustainability agendas are being negotiated and implemented shows a myriad of actors trying to find common ground while at the same time advocating for their specific positions. Accordingly, this paper suggests that critical research on sustainable production and consumption might usefully focus on the configuration of relationships between different

groups of strategic and collective actors (growers, policy makers, traders, civil society organizations, consumers), and the ways in which these are mediated by the real and discursive figure of 'the consumer'. With the development of new regulatory and verification mechanisms for the safety and quality of food and agricultural products in recent years, governance in the global agrifood system is being transformed (Hatanaka et al., 2005; Oostreveer, 2007). This brief reviewed the literatures on "Bringing the State Back In"(Skocpo,1985) in Africa, Latin America and Asia and found that the roles of states in instituting comprehensive political reforms, helping to shape national economic development, and bargaining with multinational corporation. Thus, the principal actors involved in shaping sustainability of the flower industry are the government agency responsible for pesticide regulation in the Ministry of Agriculture, Health, Environment, and Work, Flower consumers and crop life representing the pesticide industry. Arguably, in this case most effective government intervention in monitoring at farm level makes pathway more important.

In addition, studies on political consumerism draws on the observation that consumer choice and the rising politics of products is an increasingly important form of governance. Sustainability is nowadays a criterion for the consumer and important for companies. The green consumer is becoming environmentally conscious and aware of workers' rights. This scenario support the inclusion of both boycotting (punishing business for unfavorable behavior) and boycotting (rewarding business for favorable behavior) measures in future. Therefore, the requirements of social and environmental sustainability are firstly transmitted by ethical consumers to businesses (Zsolnai et al., 2004), in particular to multinational corporations, that is, in many cases, producers of valuable brands, companies whose production is effectuated in countries with weak law enforcement, firms characterized by labor intensive production, businesses with a high impact on the communities where their operations are located. So, such companies contract with suppliers located in "remote" parts of the world and in emerging markets to manufacture their products. Globalization has also enabled these parts of the world to be less remote and isolated, that is, to be at reach of the media. So, activities fostered by Northern firms are more easily monitored by consumers and international associations, non-governmental organizations (NGOs), policy makers, financial markets, and civil society.

The paper reflects more generally on the ways in which all players in the global flower supply chain should feel responsible for fair social and environmental conditions and act accordingly. This can only be achieved through transparency and tractability of the entire supply chain approach. Stakeholders at all

levels have a critical role to play in strengthening transnational environmental social and economic governance. These collaborative efforts could have a major impact on developing countries in mobilizing and aggregating resources towards sustainability purpose. Interestingly, most cut flowers are grown in the south (Colombia, Ecuador, Costa Rica, Kenya, Ethiopia, Uganda, Zambia, Zimbabwe) with limited environmental laws and state have not been successful in enforcing policies. Stronger alliance with major flower producing countries, stringent environmental and social policies and best practices can be introduced and implemented without hurting overall productivity. These collaborative efforts could have a major impact on developing countries in mobilizing and aggregating resources towards sustainability purpose.

4.2.4. Who profits? Who have been benefited at present and how might the distribution of benefits change in future?

It would not be an exaggeration to say that every stakeholder involved in Ethiopian floriculture at this point has benefitted in some way. Who has benefitted the most from the growth of the floriculture is not easily quantifiable, but there are two ways in which an indication of the accrual of benefits can be gained. Firstly, one could engage in a financial assessment of the profitability of firms in each node of the global production network, or the proportion of final sales value accruing to each node. Unfortunately, this is hindered by the difficulty in obtaining financial data. The second way to assess the relative benefits of the industry for different actors is to look qualitatively at what they have gained from the industry in relation to the potential benefits if the industry had not developed in Ethiopia. Ben Taylor(2011) on his research on 'Ethiopia's growth set to bloom? A global production networks analysis of an experiment in economic liberalization' addressed the question of who profits as follow :

Firstly, labourers have taken their cash income from ranges from $1 to $2 per day, with little opportunity cost as this has occurred through a utilisation of surplus labour, which represents a huge percentage increase in their incomes and a probable increase in the food security of their households. If floriculture had not developed in the way that it did, alternative means for improving incomes and lifestyle would have been few. Secondarily, from a government perspective, benefits to this point have come primarily in the form of foreign exchange, a highly desirable feature of a new industry in a country with a severe balance of payments deficit. Besides, the government has seen employment created in rural areas and will, in future, receive significant tax income from the industry if it remains.

Thirdly, the majority of domestic investors have entered an industry in which they previously had little or no experience. They have acquired knowledge from experienced foreign investor in the industry to allow some of them to be successful. Without the introduction of foreign actors, both commercial and institutional, the industry would be unlikely to have reached critical mass, learning processes would have been slower and integration into global markets would have been more difficult. Fourthly, the infrastructural improvements including school, healthcare, road construction through CSR which, whether financed directly by the farms or by government in order to facilitate exports from the industry, have facilitated the marketing of surplus produce by smallholders, further contributing to food security. These additional investments then create further employment and contribute to poverty alleviation.

By the same token, some of the general critiques applied to floriculture in Ethiopia are relevant for African countries. (i) In terms of the direct impact on the poor, the integration of smallholders into export markets is near impossible with flowers due to their knowledge and capital intensive nature. One reason for this is that farmers in developing countries are more likely to diversify their income streams, minimising the risk of income failure at the expense of total income. (ii) Critics have noted the distribution of benefits from floriculture as favouring large and commonly foreign companies over local entrepreneurs and labourers. The industry is dominated by foreign ownership. Other studies have displayed the poor standards of worker welfare in floriculture for local labourers which, together with low wages, make commentators pessimistic about the developmental potential of floriculture (Dolan, 2007; Korovkin and Sanmiguel-Valderrama, 2007; Hale and Opondo, 2005). For example, Sher, having operated profitably in Kenya for over 20 years, relocated to Ziway, Ethiopia where they perceive the primary advantages over alternative production locations to be a secure environment and the lower labour costs – at up to 25% lower than those in Kenya (iii) Those whose land has been repossessed for lease to floricultural farms and those that have been affected negatively by the environmental impact of the industry and (iv) In relation to the direct impact of floriculture on the environment and human health if it continues to grow at its current rate.

5- CONCLUSIONS AND RECOMMENDATIONS

Production of cut flowers has grown to a major business in many African countries. This sector has been identified as one of the industries with an opportunity to grow and contribute positively to the agricultural transformation and economy of Ethiopia. The rapid expansion of the Ethiopian cut flower industry has made a profound impact on income and the lives of hundreds of thousands of people. Although it is a newly emerged sector in Ethiopia, it achieved a remarkable development and pushed the country to become second exporter of flower in Africa next to Kenya. It is likely to be doubled for the next few years. The government plays a vital role for this development through promoting favorable investment conditions to FDI. Besides, labour and land availability, agro climatic advantage and geographical proximity to the European market are additional triggering factors which contribute for booming of the sector. Overall, investment on cut flowers makes a considerable contribution towards economic growth & development in Ethiopia and that the country should seek to further its expansion.

To come back to the initial question of this paper, it can be concluded that achieving a balance between economic, social and environmental is one of the greatest challenges to operationalising the concept of agricultural sustainability in the production of Ethiopian flower industry. The three pillar concept of sustainable agricultural development (plant, people and profit) has proved to be a useful analytical tool for exploring the prospects and challenges of Ethiopian floriculture industry in the context of agricultural transformation. This finding tends to contradict 'the aspirations , goals and priority areas of Agenda 2063' of Africa for Inclusive Growth and Sustainable Development and the 2030 Agenda for Sustainable Development of the United Nations. The environmental and social aspects of intense flower cultivation are often neglected. Environmental issues such as intensive use of chemical pesticides and water among others have been implicated as factors that pose a great challenge to the future of the industry. The flower industry uses toxic chemicals. Some of them have potential to cause serious harm to human health (sprayers, harvesters and other workers in the greenhouse). The environmental and health risks associated with a particular pesticide are a function of the degree of (un) safe selection and use. The full extent of the health impact of pesticides in developing countries is impossible to calculate because of the lack of data, medical centres, and monitoring. Action in response to threats of chemical pesticide use on human health and environmental damage should not be delayed because of the lack of full scientific certainty. Critics also growing in terms of the direct impact on the poor, the integration of smallholders into export

markets are near impossible with flowers due to their knowledge and capital intensive nature and the distribution of benefits from floriculture as favouring large and commonly foreign companies over local investors and labourers and incentives on promoting FDI. Moreover, sustainability initiatives have proliferated in cut flower industry in recent years to address social and environmental issues. However, instead of safeguarding the environment and workers safety, certification on standards has been used as non-tariff trade barriers. Therefore, certification is debated controversial in non-food items like the cut flower.

A sustainable agriculture is one that, over the long term, enhances environmental quality and the resource base on which agriculture depends, provides for basic human food needs, is economically viable, and enhances the quality of life for society as a whole. This is demonstrated by the 'limits to growth'. Meadows et al. (1972) posit that economies will not be sustainable if natural resources are used beyond the limits and if society continues to depend on phenomena that drove growth in the past. The mostly used farming system in the world and in Ethiopia is conventional agriculture. Conventional agriculture developed along with the green revolution period. The typical characteristics of conventional farming are the dependence on the use of advanced technology, such as the utilization of synthetic pesticides and fertilizers. Although this type farming system gives a high output in the beginning, the yield of several crops get stabilized or slows down due to a decline in ecological functioning. Especially the reduction of water and soil quality and the increase in environmental pollution will result in a smaller yield during time. This type of farming system is considered as unsustainable due to many reasons. Protecting the local environment and workers health and safety are essential to ensure sustainability of the flower industry. Thus it needs to transform from the existing (conventional) framing to organic and environmental friendly farming. Unless, floriculture industry might, to a significant degree and become a threat to the human health and environment unless the activities of the industry are well managed, supervised and subjected to an effective regulatory system.

Finally, a vibrant, sustainable and resilient agriculture sector is vital for Africa's economic future. Indeed, agriculture remains central to Africa's economies. The future of Africa's agriculture is influenced by a host of new drivers including changing demographics and perceptions of agriculture, climate change, growing fear of global food insecurity, and technology innovations. A number of responses have already emerged as a result, indicating new directions : a concerted effort towards green revolution; Africa as a potential solution to future global food crises; increasing interest in African

agriculture from the emerging global South; a search for new farming models; and an emerging agro processing industry. These developments are likely to transform African agriculture and indeed Africa itself though this transformation will depend on the policy environment that arises in response to these new drivers (Kariuki,2011).This leads to the following recommendations for improving environmental and workers safety and Sustainability of the sector .(i) comprehensive environment Impact assessment (EIA) of the flower industry be carried out by the government and other regulatory bodies, (ii)the Ministry of Social & labour affair and ILO should address the issue of workers safety and health in the flower farms to enforce the labour laws. (iii) The Ethiopian Horticulture Producer Export Association (EHPEA) should explore the possibility of exporting organic flowers to European and other markets to expand organic flower growing in Ethiopia. Many successful methods of non-chemical pest control, or reduced use of chemicals, are practiced, including organic agriculture, integrated pest management, and other agroecological approaches.(iv) the European Regulation on Maximum Residue Limits (MRLS) could be extended to the control of pesticide residues on flowers and MRLs could be set up for flowers to decrease the risk of pesticides on works health and environment of producing countries like Ethiopia, (v) Strong labor/workers union put pressures on growers to improve social sustainability (safe working condition, living wages, freedom of association,(vi) the state regulatory system has revealed an inability in controlling importation of chemicals pesticides toxic to the environment and workers for higher risks. The government's political commitment in this regard has never been observed in the floriculture industries, where there is no supervision or monitoring at all. It requires for a strong political commitment from governments to be responsive and to secure agricultural, environmental & social sustainability,(vi) Comprehensive human and institutional capacity-building measures, such as training, education, awareness raising, facilitating access to information and conducting regular surveillance and monitoring activities by NGOs, (vii) Promoting local investors and/or diasporas with the same incentives schemes for foreign investors, through public-public and public-private or private -private partnership and cooperation as a case may be. Multistakeholder platforms at the national level may also be set up to facilitate inclusive discussions on agricultural investment. Finally, it would be useful to conduct a comparative study of the floriculture industries in Ethiopia and Ecuador. As documented elsewhere in this study, the switch from Kenyan production to Ethiopian production broadly mirrored the switch some years earlier from Colombian to Ecuadorian production, with many similar conditions apparently influential in the relocation decisions. It could, therefore, provide an interesting indication for the future of the Ethiopian industry to examine the current situation in Ecuadorian floriculture and the changes that have taken place since the early, rapid growth of the industry.

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