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# SOCIAL, ECONOMICAL AND ENVIRONMENTAL ISSUES OF FLORICULTURE SECTOR DEVELOPMENT IN ETHIOPIA

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## ABSTRACT

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The floriculture sector is a new agricultural industry in Ethiopia. The sector created job opportunities for thousands of people especially women and generates huge amount of foreign exchange earnings to the country. However, its social and environmental issues associated with the development of the sector are not yet well documented. The present review was therefore initiated with the objective to summarize and the sector development and document the issues raised associated with its development in the country. According to the review results the floriculture industry is suffering from insufficient infrastructure system necessary for further development of the industry which should be solved with the respective stakeholders. Moreover, the industry is accused from negative environmental and social impacts which may have negative impacts for future development of the industry. Continuous awareness trainings on health and safety issues through respective stakeholders and regular monitoring in the implementation of guidelines and roles regarding environmental protection is recommended to sustain the further improvement of the industry in Ethiopia.

**Contribution/Originality:** This paper contributes to give an insight for the potential investors of the sector and for the government to design intervention strategies for further development of the industry in the country.

## 1. INTRODUCTION

Floriculture in one of the disciplines of horticulture dealing with the commercial production and marketing of bedding plants, cut flowers, potted flowering plants, foliage plants and flower arrangements [1]. Flowers are luxurious products with high social values. Demands for these luxurious products in the international market are in increasing trend. Flowers enhance the quality of life and influence human feelings more than words or other gifts. Globalization in terms of cultural exchanges have induced people globally to use flowers as means of sharing their feelings during celebrations of weddings, Christmas, Valentine's Day, Mothers' Day, Fathers' Day, New Year, and Memorial Day. In some cases these celebrations are acquired a one-to-one pairing with types of flowers, for example roses to Valentine's Day and carnations to Mother's Day. Such increased use of flowers and ornamental plants makes marketing of flowers a lucrative business in the world market [2].

Floriculture is a relatively new business in Ethiopian horticulture industry. The development of the floriculture industry, especially that of rose production and its export has experienced unique and unexpected high speed in the last decade. The land under flower cultivation as well as the foreign exchange earnings of the country is increased dramatically. The number of flower exporting commercial farms is also increased in the last ten years. Thousands of

jobs have been created in and around these flower farms. Hence, Ethiopia is currently become the second largest flower exporter in Africa next to Kenya.

The rapid development of the floriculture industry in Ethiopia is associated with many factors. Among others geographical advantages of the country to world market, suitable environmental conditions for the production of most floricultural crops and lucrative incentive packages of the government for the development of the sector are the most important once [1].

Despite, this rapid growth and development and suitable conditions, the sector is nowadays challenged from social and environmental issues which are raised here and there by the communities in the country [3]. Moreover, the constrains of the sector are not yet reviewed and summarized in such a document which may give an insight for the potential investors of the sector and for the government to design intervention strategies for further development of the industry in the country. Although scarcity of published articles in this regards this paper reviewed governmental documents and policies and working documents with the aim to make information available for public at large and for investors in particular for ease of decision.

## **2. HISTORICAL BACKGROUND AND CURRENT STATUS OF FLORICULTURE SECTOR DEVELOPMENT**

The start of floriculture industry in Ethiopia is dated back to early 1980s, as the state owned farms like Zewai, Debere Zeit and Tibila farms have been involved for the first time in the production of cut flowers. In 1981/82 the Ethiopian Horticulture Development Agency (EHDA), a state owned enterprise, in collaboration with German Development Service (GTZ) has imported planting materials from Canary Islands, Holland and planted in State farms.

Meskel Flowers PLC was the first private company who engaged in the export oriented commercial flower farming in Ethiopia whereas Ethio-Flora was the second of its kind which were established in Ziway around 165 km South of Addis Ababa [4]. The two pioneer companies owned by Ethiopian investors produced summer flowers such as alliums, statics, and carnations for export to European markets and laid foundations for the current development of flower industry in the country. Based on the experiences and knowledge acquired from these farms, supported with the commitment of the Ethiopian government to develop the sector through advocating and implementing incentive mechanisms, the sector arouses the interests of the foreign investors. As a result, Golden Rose Agrofarms Ltd. owned by foreigner has entered in to the sector and started to produce roses in greenhouses, about 42 km South-West of Addis Ababa in 1999. Thus, Golden Rose is truly considered as pioneer in the introduction and uses of modern technologies in the production of roses in Ethiopia. In 2000, the company started to export roses to European market through Dutch auction [5].

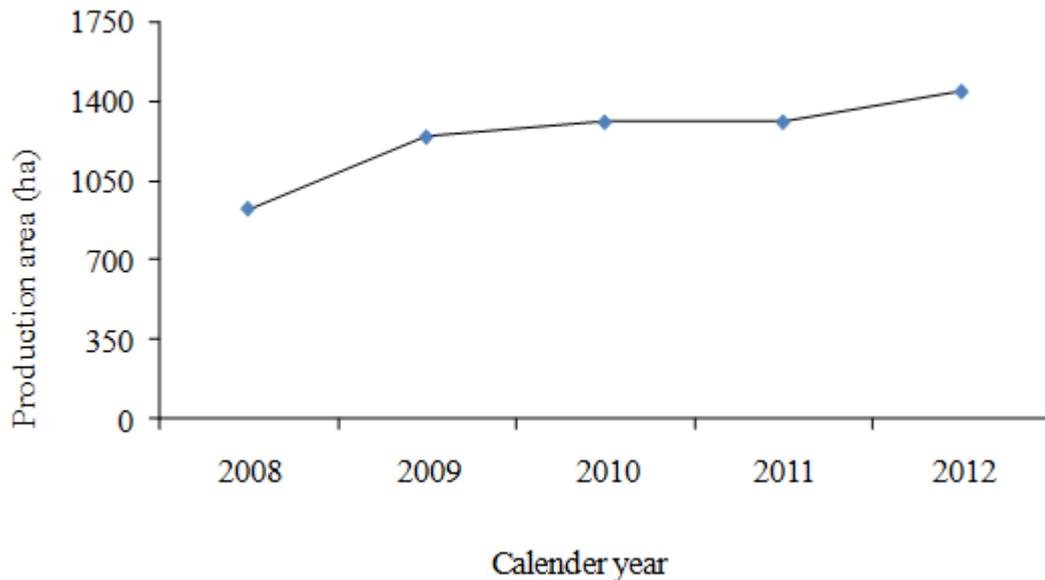
The entry of Sher-Ethiopia, a Dutch investor, in 2005 was a landmark in the Ethiopian flower industry development. The company had been engaged in flower farming business for over 15 years in Kenya with production area of 300 ha. The company leased about 500 hectares of land from the Ethiopian Government in Ziway, about 165 km South of Addis Ababa near the highway to Nairobi, Kenya. Currently, many foreign and domestic investors are engaged in floriculture industry of Ethiopia [4, 6, 7].

As export oriented floriculture sector requires infrastructure like road, electricity and qualified manpower, most of the floricultural farms in Ethiopia are concentrated in the vicinity of Addis Ababa, the capital city of Ethiopia to access Bole International Airport. Accordingly, Ziway, Debre Zeit, Sebeta, Holeta, Sululta and Sendafa are the major flower production areas of the country [8]. However recently, modern flower farms are also emerging near the capital cities of some regional states like Bahir Dar and Hawassa.

Generally Ethiopian highlands provide nearly ideal growing conditions for various floricultural crops. Currently among others cuttings of roses, chrysanthemums, poinsettia and geranium, and bouquet fillers primarily

Hypericum, Carnation, Gypsophila, Allium and Carthamus are produced in different parts of Ethiopia [9]. Cut roses however accounted about 80% of the total flower production of the country .

The floriculture industry especially that of the rose production has been experienced unique and unexpected high speed in its development in the last decade in Ethiopia. The area under rose production in 2004 for instance was only about 40 ha which increased to 250 ha in 2006. The area further increased from 922 ha in 2008 to over 1440 ha in 2012 (Figure 1) and it is positioned to grow even more [4]. Similarly, the number of cut flower stems exported to various countries raised from 83 million in 2005 to 2,102 million stems in 2012.



**Figure-1.** Development of rose production area in Ethiopia

Source: Tsegaye [3]; Ethiopian Horticulture Development Agency (EHDA) [4]

### 3. ECONOMICAL AND SOCIAL CONTRIBUTIONS OF THE FLORICULTURE SECTOR IN ETHIOPIA

The global flower industry is a professional, dynamic, and highly international industry where it is dominated by south-north flows with Europe and North America housing the world's largest consumer market. During the past few decades, the flower industry has achieved significant growth rate where the Netherlands, Colombia, Kenya, Ecuador and Israel have been the leading countries. Since a few years however, Ethiopia has joined this list and become the fifth largest flower exporter in the world and second in Africa next to Kenya, while Israel's position has weakened [4, 6, 8].

According to Ethiopian Horticulture Development Agency (EHDA) [4] Ethiopia is exporting the majority of its horticultural products to over 100 market destinations throughout the world where the European market is the main destination of the Ethiopian flowers. Among others the Netherlands and Germany are the major importers of flowers produced in the county with 83.7% and 5.2% market share, respectively. Most of the flowers produced in Ethiopia are sold and distributed in FloraHoland and Rhein-Maas auctions in the Netherlands and Germany, respectively, through local representatives or agents (also called un-packers and processors). Generally, Ethiopian roses enter the European market through the sale channel presented in Figure 2. Although, the auctions have been the most important channel through which Ethiopian roses are distributed to European wholesaler and retailers, the percentages of flower exported directly to wholesalers and large retailers are also increasing recently [8].

Although the sector is new, the flower production is increased both in volume and area coverage. According to Ethiopian Horticulture Development Agency (EHDA) [4] the number of cut flower stems produced and exported to the world market increased from 83 million in 2005 to over 2102 million stems in 2012. Accordingly, the export

earnings of the sector increased from US \$ 12.6 to over US \$ 212.56 million in the same period (Figure 3) that makes the sector the fourth foreign currency generator of the country next to coffee, oilseeds and cereals [4]. Thus, the export oriented floriculture sector is now an important integral part of the country's efforts to expand and diversify export products and raise export earnings [6, 9, 10].

The economic conditions of the world in the last few years posed challenges on the flower industry worldwide where on medium and long term, a moderate annual growth of only 2 to 4% is expected in Western Europe's cut flower market. Moreover, consumer demands, and consequently trade requirements, are becoming more demanding and increasingly differentiated. The demand for sustainably produced and distributed products is also rising [8]. Moreover, it is expected that high-tech developments and ever stricter requirements for suppliers continue in the future and will determine who is allowed to participate in this vibrant business. Further development and growth of flower production in Ethiopia will therefore depend on the ability of the growers to adapt these changing requirements of the world flower market as indicated by Van der Maden, et al. [8].

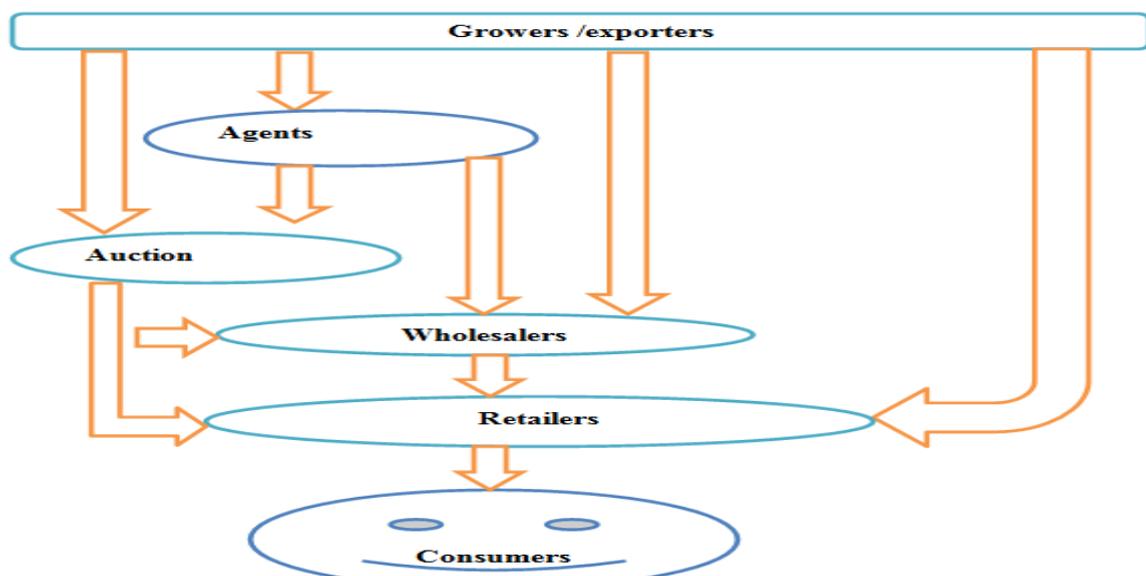


Figure-2. Sale channels of Ethiopian flowers to European market

Source: Modified after Van der Maden, et al. [8].

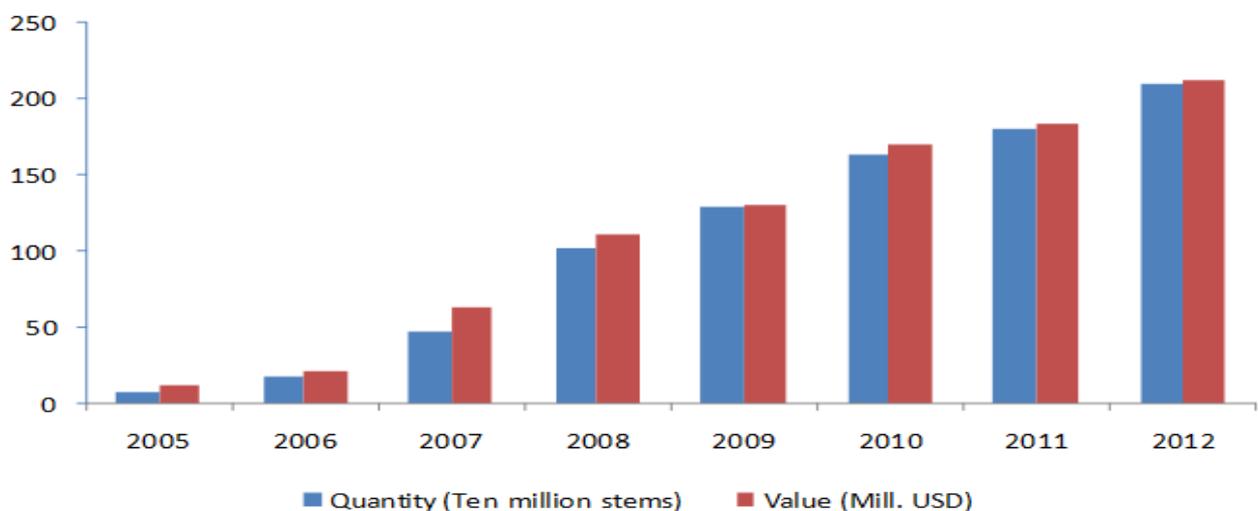


Figure-3. Development of export volume and foreign exchange earnings of flowers in Ethiopia

Source: Modified after Ethiopian Horticulture Development Agency (EHDA) [4]; Van der Maden, et al. [8]

Apart from the overall country's economic development, the floriculture industry created job opportunities for thousands of people in Ethiopia, as the sector is a labor-intensive industry. According to Ministry of Trade and Industry (MOTI) [6] the floriculture industry created job opportunities for about more than 100,000 people in the country. Of which more than 85% are women who are normally less benefited from the overall economic development of the country [6, 9] as indicated in Figure 4.



Figure-4. Women working in pack, and greenhouses

Source: Tsegaye [3]; Ethiopian Horticulture Development Agency (EHDA) [4]

#### 4. CHALLENGES OF FLORICULTURE SECTOR DEVELOPMENT IN ETHIOPIA

Although rapid growth and development, the floriculture sector in Ethiopia is facing various challenges and constraints. Among others insufficient infrastructure development, environmental, and social issues are the major one which are discussed in the following sub-sections.

##### 4.1. Challenges in Infrastructure

The export oriented floriculture industry in general demands high level of infrastructure development in a given country. Although significant improvement in the last decade, the international and domestic transportation system of Ethiopia is weak that affected the further development of floriculture industry in Ethiopia (<http://www.et.emb-japan.go.jp/>). The export of flowers to the international market is done only from Bole International Airport in Addis Ababa. Flower farms located relatively far way for Addis Ababa should drive long distance using cold trucks to access the airport which will increase the transport cost as well as reduce the vase life and increase the postharvest losses of cut flowers. Furthermore, some of the roads in the country are not as such suitable for the transport of flowers destined for world export market using cold trucks. Such unsuitable transportation systems thus push up the investment costs in general and the transportation cost of the industry in particular compared to other countries (<http://www.et.emb-japan.go.jp/>).

Moreover as the refrigeration system at airport is not sufficient enough, flowers cannot be stayed long at the airport. Each flower farm has to therefore adjust the time of harvesting to the time of departure of the flights as well as the amount to be exported to the available space.

##### 4.2. Environmental Issues Related to Floriculture Sector in Ethiopia

The negative environmental implication of floriculture industry is evolved from the intensive use of natural resources. Pollution of soil, water and air through inappropriate use of fertilizers and pesticides and poor waste disposal system are among others the main sources of negative impacts of the industry on the environment in Ethiopia.

Moreover, depletion of water resource may lead to conflict of interest between the local communities and the flower farms in the area. In this regard, the regulatory bodies of the country in cooperation with the Ethiopian Horticulture Producers and Exporters Association (EHPEA) have formulated a clear regulation which orders the

effective use of water resources to prevent such conflict of interest [9]. Consequently, most flower farms in Ethiopia use drip irrigation system which helps to conserve water resources. However, some farms are not adopting such technology which requires more attention in the enforcement of these regulations.

Another water related problem in floriculture industry is its pollution which may have negative impact on human and animal health. Flower farms use various chemicals in the form of fertilizers and pesticides which can be easily washed off and enter in to the water bodies and cause eutrophication [1]. Furthermore such chemicals may leach into groundwater and cause serious pollution. Poor disposal of wastes is the other environmental worries around the floriculture industry in Ethiopia. As cut flowers are prepared for market, a lot of wastes such as leaves containing chemical residues are produced that should be properly disposed. Poor disposal of such wastes may cause serious damages on health of people and animals as well as contaminate the environment. Although most of the farms dispose such materials properly, some farms throw waste materials simply elsewhere as indicated in Figure 5. Application of different types and amount of chemicals may causes loss in soil natural fertility. Chemicals may change diversity of microorganisms in the soil and may cause changes in the structure and pH values of the soil. Moreover, they may cause accumulation of salt in the soil which reduces the ability of the soil to sustain crop production. In this regard, researchers in Colombia indicated that the Savannah grassland was converted to a sterile land. Thus, the regulatory body and respective stakeholders should give due attention in the disposal of wastes to minimize the general negative impacts of the floriculture industry in Ethiopia.



Figure-5. Poor disposal of wastes from floriculture farms in Ethiopia

Source: Getu [1]

Inappropriate handling of agricultural chemicals in the storage and during preparation and their application is the other environmental issue associated with floriculture industry in Ethiopia. Each agricultural chemical particularly pesticides have specific guideline how to store, prepare, apply and dispose them safely which should be followed by every farms.

Continuous trainings that aim awareness creations are therefore paramount important in the management of agricultural chemicals, especially that of pesticides. Moreover provision of the lists of banned pesticides and their import control through the responsible stakeholders is a serious issue in Ethiopian floriculture industry. In recent times, some improvements in this regard are observed through the efforts made by Agrisher PLC, importer of agricultural chemicals, by providing information on management of agricultural chemicals in Ethiopia. However, there is still a serious need in the establishment of thorough information-sharing system in this issue between the government and each and every private enterprise engaged in the floriculture sector (<http://www.et.emb-japan.go.jp/>).

Air pollution is another environmental issue in which the floriculture industry is accused of. The major contributors are pesticides which are intensively used in the sector. According to Getu [1] while 0.1% of the

applied pesticides are estimated to attain their intended goal 99.9% leave as an air pollutant due to their highly volatility nature. Therefore, pesticides applied in flower farms add significant contribution to global warming and pollute the atmospheric air. Such chemicals are seriously dangerous especially if the farms are close to the residential areas. In this regard research results of [Uganda Workers' Education Association \(UWEA\) \[11\]](#) in Ugandan floriculture industries indicated that there were complains of communities living near the flower farms due to bad smell when chemical spraying is going on. Furthermore, it was reported that bees necessary for crop pollination have been disappeared due to chemical spraying and thus poor crop yields in the surroundings. To alleviate such problems advised in their observation to keep the flower farms at a distance of 1000 m from the residential areas and to leave about 20% of the total land for green areas and fences.

Similarly, greenhouses of some flowers farms in the Ethiopia are also constructed very close to the residential areas as indicated in Figure 6 in Ethiopia. According to the report of [Fatuma \[10\]](#) complains of the nearby communities as pungent and irritating smell is coming from the farms especially while chemical sprayings were going on in greenhouses of some farms in Ethiopia. Moreover, the local communities complained general discomfort, headaches and pains from the smell. Especially people with asthmatic problems were highly suffering for the situation. Therefore, keeping some distances between floricultural farms and residential areas is vital to protect the community from the bad smell arising from pesticide application in Ethiopian flower industry as recommended by [Fatuma \[10\]](#).



**Figure-6.** Greenhouses constructed near the residential area in Ethiopia

Other very important and serious issue regarding to pesticide is the import and use of non-permitted pesticides in Ethiopian floriculture sector that needs due attention of regulatory body of the country and other respective stakeholders. According to the reports of about 19 of the 105 fungicides imported were not registered in MPS-code list.

To prevent the problems mentioned above a number of proclamations and several rules were passed through the respective regulatory bodies and the Ethiopian Horticulture Producer and Exporter Association. The Code of Practice prepared and implemented by the association also helps to reduce the environmental impacts of the industry and thus helps to sustain flower production in the country [\[9\]](#). Due attention should be however given to the implementation of this Code of Practice. Although Environmental Impact Assessment (EIA) is prepared and mitigation strategies are designed by every investors their implementations are mostly lacking. Generally, enforcement of proclamations, guidelines and EIA help to reduce the negative environmental impacts of the floriculture sector that should be given due attention by respective regulatory body, the EHPEA and each individual participated in the sector.

#### 4.3. Social Issues Related to Floriculture Sector in Ethiopia

Land cover change is one of the issues raised by the communities due to expansion of floriculture farms in Ethiopia. According to [Fatuma \[10\]](#) most of the local communities perceived and claimed that there are shortages of agricultural farm lands, woods to be used for construction and fuel. Moreover, they claimed climate changes in association with the expansion of floricultural farms. The local communities in Holeta area, one of the main floriculture areas in Ethiopia, stressed that most agricultural lands and eucalyptus plantations are changed to floriculture farms that resulted shortage of agricultural, and forest products and thus their prices are becoming higher that cannot be affordable by the local communities [\[10\]](#). Similarly, [International Labor Organization \(ILO\) \[12\]](#) reported the conversion of forest resources to floricultural farms as one of the side effects of floriculture expansion in the country. The Ethiopian Environmental Protection Authority on his part explained the comparative advantages of the current resource utilization with the previous land use system. The Authority also recommended that further studies are required to choose the land use type which is more appropriate and useful for the economic, social and environmental advantages of the society at large [\[10, 13\]](#).

The floriculture industry is characterized by intensive application of chemicals such as fertilizers and pesticides as indicated above. Therefore, workers health and occupational safety is one of the paramount important social issues raised by the communities in floriculture industry of Ethiopia. As pesticides vary widely in their toxicity, they may severely irritate or corrosive to human skins or even may cause death. Some are also readily absorbed through intact skin [\[10\]](#). Moreover, pesticides can be applied as powders and/or may be sprayed that can form airborne dusts and mists that can be inhaled and cause respiratory diseases. Some formulations contain volatile solvents that can evaporate and form hazardous vapor. Therefore, protecting employee especially those working with pesticides is very important in floriculture industry. Thus such workers should be provided with appropriate Personal Protective Equipments (PPE) that include items such as water proof hat, gloves, goggle, respirator, rubber boots, high-visibility clothing. Moreover, PPE shall be utilized and maintained in a clean and reliable condition whenever deemed necessary by reason of hazards, processes or environment. According to health problems such as allergies, headaches, stomachaches, respiratory problems, vomiting, and unconsciousness are also observed in some flower farms in Ethiopia which are witnessed by the health centers.

Moreover, according to [Getu \[1\]](#) and workers sometimes experienced health and safety problems due to long standing hours in green-, and pack houses as indicated in [Figure 7](#) which causes swellings of feet and kidney problems. Furthermore, some flower farms lack provision of safe drinking water and toilets in the farm. Therefore, awareness creation of the workers and respective stakeholders through continuous trainings about the health and safety issues associated with floriculture industry is paramount necessary in the country. Moreover, the respective regulatory bodies should give due attention on the implementation of rules and regulations on occupational health and safety matters in flower farms.



**Figure-7.** Working conditions of employees in floricultural farms in Ethiopia

Source: [Ethiopian Horticulture Development Agency \(EHDA\) \[4\]](#)

Jobs in the floriculture industries are characterized by short-term contracts, mostly at daily basis. In such type of employer-worker relationship, it is difficult to keep the rights and securities of the workers which expose the workers to direct repression and unfair dismissal. According to seasonal and casual workers in the flower farms are worried to become pregnant, sick or injured since they risk losing their jobs. Such job insecurity has also specific gender implications where some women will be excluded from benefits such as maternity and sick leave. Moreover many workers leave their children behind in rural areas due to job insecurity.

Overtime works are the other social issue raised in floriculture farms. As long as it is not excessive, overtime is not necessarily problematic, if workers are compensated appropriately and it is chosen freely. However, in most of the cases of the floriculture industries of developing countries including in Ethiopia, it is not voluntary and workers are not given the opportunity to refuse. In Kenyan In all farms covered floriculture industries, overtime is generally compulsory and is particularly common at the time of Christmas, Valentine's Day and Mother's Day. According to the study, more female workers interviewed were involved in overtime works which have serious implications on their family as they typically also bear the responsibility for work in the home like child care and domestic tasks. Similar problems are also observed in Ethiopian floriculture industry regarding overtime.

Compensations given to the owner of land which is changed to floriculture farm is the other serious issue associated with the development of the industry in Ethiopia. According to the [The Oakland Institute \[14\]](#) issues of compensation are more challenging to discuss, as government officials insist that no one has been displaced from farmland, and thus compensation does not need to be paid. However, compensation requirements are clearly stated in the Ethiopian legislation. The proclamation 455/2005 outlines the procedures for expropriation, including the advance payment of compensation equivalent to the replacement cost of property on the land and any improvements made to the land. In addition, displaced persons should receive 10 times their average annual income from the previous 5 years. According to [The Oakland Institute \[14\]](#) however, such compensations and expropriation rules are applied only for farmers that have legal title. No legislative expropriation or compensation procedures exist for those who do not have title, which is the rule in the areas where investment is currently focused.

As reported by [The Oakland Institute \[14\]](#) compensation is frequently given out to farmers in the vicinity of Addis Ababa who have land expropriated for example for urban expansion, and industrial land uses. Compensation was also given out during the rapid floriculture expansion that occurred from 2005 to 2007 in Ethiopia. According to the institute no villages or farmers were offered compensation from the lost land after this period. In some cases, those who lost land were offered employment by the investor. Even if land was compensated at a fair value, the land itself cannot be replaced, as land cannot be purchased in Ethiopia. This compensation is thus not sufficient to restore livelihoods and only leads to increased farmer landlessness [\[14\]](#).

## 5. CONCLUSIONS AND RECOMMENDATION

The floriculture sector is a new agricultural industry in Ethiopia. Because of vast unexploited arable land, suitable climatic conditions, plenty of low-cost labor market and attractive investment incentives in the country, the industry is developed in unexpected high speed in the last years. The floriculture industry together with the associated industries created job opportunities for thousands of people. Moreover, the industry helps the country to diversify the export items to international markets and generates huge amount of foreign exchange earnings for the country's economy. Although, significant contributions to the country's economy, the industry is suffering from improper infrastructure development and is associated with negative environmental and social impacts which may negatively impact the future development of the sector in the country. Therefore, all stakeholders involved in the sector should give due attention in the implementation of guidelines and rules to minimize the negative impacts of the industry. Continuous trainings on health and safety issues as well as regular monitoring on the implementation of safety rules are recommended to sustain the future development of the flower industry in Ethiopia.

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