

# Discovery of the flower industry in Ethiopia : experimentation and coordination

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**Mulu Gebreeyesus and Michiko Iizuka**



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## **Abstract**

This paper examines the discovery process of a recent and extraordinarily successful, non-traditional, export activity in developing country – namely the flower industry in Ethiopia. To be able to break into non-traditional exports, developing countries do not need to invent new products, but mainly producing at lower cost goods that are already established in the world markets. This necessitates tapping into the global pool of knowledge and diffusion of the imported technology in the course of experimentation. This is an ongoing learning process which involves continuous interaction among different actors, institutions and networks. The paper adopts a functional innovation systems framework in a catching-up country context, to map the dynamics of the interactions among various actors in the discovery process and how success was achieved. It provides detailed information on sector development based on a recently conducted census of all flower farms in Ethiopia and follow-up interviews with industry leaders and policy makers. The study highlights the strategic collaboration required between government and the private sector in the promotion of a non-traditional export in a developing country. It should enrich our understanding of development strategies in the context of an increasingly globalized world.

**KEYWORDS:** non-traditional exports, developing countries, functions of innovation systems

**JEL:** 033, 025, 055

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## 1. Introduction

The process of development requires a shift from producing simple goods based on traditional activities to complex goods applying new technologies and methods, often referred to as *structural transformation* (Rodrik, 2007). The importance of exporting in the development process has been widely documented. Exports are the main source of foreign exchange, economies of scale and specialization, and technology in developing countries (Lall, 2000). Also, producing for the global market provides opportunities for further learning. Hausmann, Hwang, and Rodrik (2005) find a strong and positive relationship between a country's level of income and the income implied by its exports. They show that countries with more advanced export packages are likely to grow more rapidly.

In an increasingly globalized world, export success is more important than ever for the economic performance of developing countries and diversification into high-value, non-traditional exports, therefore, is a major objective of many of these countries. However, successful emergence of new export activities and subsequent structural transformation, are not a natural or automatic process. They are challenging and require various impediments to be overcome, and often positive inducements from government.

Sub-Saharan Africa (SSA, hereafter) is the developing world region that has the highest dependence on exports of traditional primary products (UNCTAD, 2008). Although, diversification into non-traditional high value exports is advocated as an alternative export promotion strategy the performance of the sub-continent has been generally unsatisfactory. UNECA and AU (2007) point out that since the early 1980s Africa's diversification record has been volatile, and gains fragile and short-lived. However, in recent years, a few SSA countries (e.g. Kenya, South Africa, Uganda, Cote d'Ivoire, Ethiopia, Ghana, and Zambia) have made some progress in diversifying into non-traditional horticultural products for export (UNCTAD, 2008).

The Ethiopian flower industry represents an extraordinarily fast and successful diversification into a non-traditional export product. The floriculture industry began to emerge in the late 1990s and in less than a decade, and despite its late entry into the flower export industry, Ethiopia became the 5<sup>th</sup> largest non-EU exporter to the EU cut-flower market and the 2<sup>nd</sup> largest (after Kenya) flower exporter from Africa in 2007. Riungu, Catherine in her article entitled

“Ethiopia’s flower sector outgrows Kenya” in a leading Kenyan newspaper, Nation Media, in September, 11, 2007 describes this spectacular performance thus:

*Ethiopia is now Africa’s second largest flower exporter after Kenya, with its export earnings growing by 500% over the past year. This has left Kenya stunned, given that five years ago, the Horn of Africa country was doing less than \$20 million of exports compared with the East African giant’s \$300 million. It is estimated that, this year, Ethiopia will close its books at \$120 million, slightly less than half of Kenya’s earnings. ‘It has taken Ethiopia five years to achieve half of what we have in three decades,’ ... Going by this rate, Kenya could be overtaken by Ethiopia in a decade, he added.*

The export promotion strategy adopted by the incumbent government in 1998, provides an extended list of sectors and activities to be prioritized for support, but makes no mention of the flower industry. Government was unaware of the major opportunity offered by this industry and provided no specific support until the end of 2002. The industry emerged based on private, entrepreneurial experimentation. So what triggered the emergence of the sector and how did it evolve? What have been the relative roles of the state and the private sector in the process of discovery of the flower industry? What lessons can be learnt from this astonishing success for the promotion of non-traditional exports? The objective of this study is to address these and other related issues in the course of examining the ‘discovery’ process of the Ethiopian flower industry. Understanding of this process should enrich our understanding of development strategies for promoting non-traditional activities. This study exploits two main data sources, a census survey conducted in early 2008 and follow-up interviews with industry leaders and policy makers.<sup>1</sup>

The study is organized as follows. Section 2 explores a new analytical framework to explain the successful emergence of non-traditional exports in developing countries. Section 3 gives some background on policy and the flower industry. Section 4 maps the evolution of the Ethiopian flower industry using the framework developed in Section 2. Section 5 summarizes the main findings.

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<sup>1</sup> The survey was a collaborative project between the Ethiopian Development Research Institute (EDRI) and the Japanese National Graduate Institute for Policy Studies (GRIPS). Information was obtained from 64 out of 67 flower farms (almost 96%) operational in January 2008. One of the authors of this paper coordinated the survey and conducted face to face follow-up interviews.

## **2. How do new export activities emerge successfully in developing countries? An analytical framework**

Interest in industrial policy and in particular on the right balance between the role of the market and the role of the state has increased in recent years. Rodrik, (2004, 2007), Hausmann and Rodrik (2003, 2006); Hausman and Kilinger (2006); Hausman, Hwang, and Rodrik (2005) among others, all provide insights on industrial policy and the promotion of new export activities in developing countries within an increasingly international context. Despite the widely held view (commonly referred as ‘resource curse’) that diversification into primary commodities and natural resources can be detrimental to on countries’ growth prospects, this literature defines industrial policy as stimulating specific economic activities and promoting structural change in both industry and also non-traditional agriculture and service sectors (Rodrik, 2007).

This emerging literature perceives successful promotion of new export activity as process of ‘self-discovery’ and ‘ongoing learning’. Hausmann and Rodrik (2003) define ‘self-discovery’ as the process of establishing the cost structure of an economy for the production of goods, already available in the world market. They argue that the factor endowment model which predicts a broad structure of comparative advantage (e.g. labor intensive, natural resource based products, etc.) is too broad a classification to be helpful, as hundreds or even thousands of products may be included in its categories. To be successful, policies need to focus on specific activities. This has at least two important implications for the promotion of new activities, both of which justify government interventions.

First, producing a new product involves highly specific and customized inputs – which may be both private and public. Firms that venture into new products will face difficulties in securing the requisite inputs (Hausmann and Klinger, 2006). For some, there may not be markets which can create serious coordination problems (Hausmann and Rodrik, 2006). Second, the profitability and success of a new activity cannot be known with certainty *ex ante*. There is a large element of uncertainty in terms of what a country will be good at producing, and much randomness in the process of discovering this. The discovery process requires entrepreneurial experimentation. However, entrepreneurial experimentation in new activities is costly and rife with market failures (e.g., information externalities and coordination failures). Private businesses are less willing to take risks; hence, coordination and provision of rents by governments are required to stimulate



the discovery process (Hausmann and Rodrik, 2006). This process of identification of more competitive activities should lead to structural transformations; however, the roadmap is unclear.

Despite providing some very useful insights, this literature offers little guidance about how to identify the key policy problems and does not propose an explicit framework for understanding the process of emergence of new activities. This is partly due to its reliance on the concept of 'market failure' to justify government interventions. Cimoli, Dosi, Nelson, and Stiglitz (2006) argue that "... the 'market failure' language tends to be quite misleading in that, in order to evaluate the necessity and efficacy of any policy, it takes as a yardstick those conditions under which standard normative ("welfare") theorem holds. ... In a profound sense, when judged with standard canons, the whole world can be seen as a huge market failure!" According to Metcalfe, (1994) market failures provide a general rationale for policy intervention but do not provide specific guidance to policy makers. In fact, they create problems for policy makers because each case of market failure requires new policy. Market failures also increase the real cost of policy making given their ubiquitous nature.

To be able to break into non-traditional exports developing countries does not necessarily need to invent new products, but mainly producing goods that are already established in the world market at lower cost. This necessitates tapping into global pool of knowledge and diffusion of the imported knowledge in the course of experimentation. According to Jacobsson and Bergek (2006) the innovation and diffusion process is an ongoing process of learning, which emphasizes the importance of continuous interaction among different actors. It is influenced by the actors and market related characteristics, and also by the nature of the institutions and networks. Thus, both market 'failure' and institutional and network 'failures' or weaknesses can cause the entire system to fail to develop new activities. Industrial development and the associated public policy, therefore, should be approached from a 'systemic view'. Structural transformation, in this context, can be considered as system creation or system transition.

Similarly, understanding the factors behind the successful emergence of new activities requires a systemic- 'innovation system' (IS) approach. A system is defined by Freeman (1987:1) as "the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies". The focus of the IS approach is on the diffusion of new technology. It enables the identification of the relevant actors (firms and other organizations, networks, and institutions) that may block or induce the evolution of

new productive activities. Identifying the IS structure and components is not enough, however. How these actors function through interacting is equally important. In fact, the focus should be on ‘what is actually happening’ as a result of interaction (i.e. the functions) in the IS rather than the existence of institutions and stakeholders (Jacobsson, 2005). Just as structural transformation requires changes within the wider web of stakeholders—both vertical and horizontal—to transform activities from low-value added to higher value, the systemic approach may provide an appropriate framework to understand the transition process.

Several studies (Galli and Teubal, 1997; Bergek, 2002; Edquist, 2004; Jacobson and Bergek, 2006; Hekkert, Suurs, Negro, Kuhlmann, and Smits, 2007) propose lists of key activities or system functions based on empirical case studies of emerging technology in developed countries. The common features of these studies are examined and compiled in Begek, Jacobsson, Carlsson, Lindmark and Rickne (2008). Their study identifies seven functions crucial for the system building process for emerging technology: (1) knowledge development and diffusion; (2) entrepreneurial experimentation; (3) influence of the direction of search; (4) market formation; (5) legitimation; (6) resource mobilization; and (7) development of positive externalities. These are known as ‘functions of innovations systems’ or just ‘functions’. Bergek et al. (2008) argue that for IS to evolve and perform well requires these seven functional requirements to be fulfilled. They propose that these ‘functions’ can be used as an analytical framework to understand the dynamics of emerging new activities and as a policy tool to identify impediments in the system to the diffusion of new technology.

This methodology was introduced for emerging technologies, mainly environmental, in developed countries. The emerging technology shares some commonality with emerging activities in developing countries as stakeholders face similar degrees of uncertainty and require incentives for certain activities/technology to diffuse. Hence, the functions identified within the framework, with some modifications, can be applied also to understanding the emergence of new activities in developing countries.

To analyze the emergence of the Ethiopian flower industry systematically, we use the ‘functional IS framework. There have been some attempts to apply this framework by Jacobsson and Bergek (2006) to analyze industry cases in catching-up countries such as, Brazil (steel and airplanes), Korea (machinery), and Chile (salmon farming). We build on this work to conceptualize the seven key processes (functions) and set the framework in the context of

developing countries. In so doing, we complement the ‘functional’ framework by drawing on other literatures, including the emerging work on industrial policy. Also, most of the components of the functions framework (e.g. experimentation, knowledge diffusion, resource mobilization, legitimacy and guiding the search) are identified in Hausmann and Rodrik (2003, 2006), but less systematically. Our adapted version of function is explained below. The main questions we would like to address in each function are summarized in Table 1.

[Insert TABLE 1]

## **2.1 Entrepreneurial experimentation**

In a market economy, entrepreneurs occupy a central position in any economic activity. Entrepreneurs identify market niches and bear the risks, and transform the potential of new knowledge, networks and markets into the concrete actions of creating new products and/or processes through new combinations (Hekkert, et al., 2007). An emerging IS evolves under considerable uncertainty in terms of technologies, applications and markets. The entrepreneurs, who are the risk takers, create dynamic regeneration of the system into new forms through their search processes. Entrepreneurial experimentation, therefore, is crucial for a vibrant IS (Bergek, et al., 2008).

Entrepreneurial experimentation in catching-up economies, however, tends not to involve the emergence of a new product or process, but discovery that a certain good, already well established in the world market, can be produced domestically at lower cost, described as ‘*cost discovery*’ (Hausmann and Rodrik, 2003). Entrepreneurial experimentation involves a range of exercises from selecting and importing appropriate technology; adapting it to the local environment; producing the right quality; and marketing the new product(s). Success in learning is uncertain because (i) of the large element of uncertainty and randomness as to what the country might be able to produce well and at lower cost (Hausmann and Rodrik, 2006), and (ii) catching-up country entrepreneurs enter into the international IS with lower technological capabilities and various resource impediments. Private businesses are less willing to take risks in developing countries. Provision of rents (e.g. through subsidies or complementary services or

products) by governments, therefore, plays a crucial role in stimulating the cost discovery process.

## **2.2 Market formation**

Markets for emerging technologies and products may not exist or may be greatly underdeveloped. Hence, market formation for new product involves various phases such as nurturing, bridging and maturity. In a catching-up economy, market formation basically means linking to existing and established international markets (Jacobsson and Bergek, 2006). Although well-established international markets exist for most export products, access is a big challenge for developing country firms. First, the required quality for the developed world markets is usually high. Producers from developing countries may find it difficult to meet quality requirements due to their (i) 'latecomer' firm characteristics (i.e. technologically backward) and (ii) the fact that the new products for export have not been available in the domestic market. This implies a gap between the existing and required knowledge and capabilities for supplying the export market for non-traditional products (Humphrey and Schmitz, 2004; Kessing and Lall, 1992).

Second, many developing country exporters face tariff and non-tariff trade barriers in entering the international market. Despite recent moves by developed countries to grant preferential access to exports from poor countries, the increasingly high standards and power of global buyers in the value chain create major challenges for developing countries (Humphrey, 2006). These developments have major policy implications for the sustainability of new export activities and require adoption of national standards, coordinated transport and logistics related activities, etc.<sup>2</sup>

## **2.3 Knowledge development and diffusion**

According to Hekkert et al. (2007), knowledge development is a fundamental resource in the modern economy, and is at the heart of IS and is a pre-requisite for new activities. The characteristics of knowledge development in the context of catching-up, however, is not development of new knowledge but rather knowledge to access, transfer and master established technology in the developed world. Developing country firms need to invest in technological

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<sup>2</sup> A detail discussion on change in the governance of the global value chain and the impact on developing countries can be found in World Bank (2005), Maertens and Swinnen (2006) and Altenburg (2006).

efforts while at the same time taking risks because to acquire, master, adapt and improve existing technologies involves significant uncertainties.

Technological learning does not take place in isolation. It involves a range of actors and networks (formal as well as informal). The most important interactions are those involving suppliers of inputs or capital goods, competitors, customers, consultants and technology suppliers. Linkages can also occur with firms in unrelated industries, technology institutes, extension services and universities, industry associations and training institutions (Lall , 2005). Technology diffusion is critical to the overall dynamics of the IS in new activities. There are different mechanisms through which diffusion takes place such as, training (formal/informal and in-house/external), mobility of skilled labor, and clustering. Technology diffusion, however, implies major externalities. For example, labor mobility, one of the major mechanism through which new technologies and productive capabilities disseminate among firms, involves externalities (Hausmann and Rodrik, 2006).

#### **2.4 Guiding the direction of search**

The emergence of a new activity may be ‘induced’ by government or be the result of a private initiative (i.e. ‘unplanned’). The factors triggering a new activity could be a combination of different developments, for example, regulation, crises in current business, technical bottlenecks, country endowments, sector development in competing countries. However, the development of an IS requires a range of firms and other organizations choosing to enter it (Bergek, et al., 2008).

New activities are rife with uncertainties and also require complementary inputs. Uncertainty and lack of the necessary inputs/services is more critical in a developing country context, which may discourage private businesses from investing. Governments in developing countries should persuade potential investors, both local and foreign, by boosting the expectations and beliefs about the growth potential of a new activity, and demonstrating improvements in governance and institutional reforms. Government promotion alone might not be sufficient to generate the momentum for change in a specific direction. There must also be provision of adequate incentives to share the cost of discovery through factor/product prices (e.g. taxes or input prices). Influencing the direction of search should not be limited to governments, but should be an interactive and cumulative process involving several stakeholders (Hekkert et al. 2007).

Influencing the direction of search is closely related to resource mobilization (function 5) and legitimation (function 6).

## **2.5 Resource mobilization**

Mobilization of a range of resources, such as human capital in the specific field, finance, complementary products and services, infrastructure, is needed for a new activity (IS) to develop (Jacobsson and Bergek, 2006). Mobilizing these resources for a new activity is not straightforward because the complementary inputs and expertise required for the new IS not be available in the domestic market. Fund raising might be difficult given the higher uncertainty associated with any new activity. Hence, resource mobilization requires the full commitment and support of government.

## **2.6 Legitimation**

According to Bergek et al., (2008) legitimacy is a matter of social acceptance and compliance with the relevant institutions. This means the new technology and its proponents need to be considered appropriate and desirable by relevant actors, in order for the resources to be mobilized, for demand to emerge, and for the actors in the new IS to acquire political strength. Legitimacy is not given; it is formed through conscious action which may involve considerable time and effort. Jacobsson and Bergek (2006) argue that “*The formation of ‘advocacy coalition’ sharing a certain vision and the objective of shaping institutional setup forms a key feature of the process of structural change influencing this function (i.e. legitimacy)*”. The process of legitimacy also is often associated with institutional alignment. The relevant institutions to support the new activities may not exist initially and may require the development of an appropriate institutional framework over time (Bergek et al., 2008).

Hausmann and Rodrik (2006), pointed out that legitimacy is the principal motivation for public-private partnerships in the promotion of a new activity. The relationship between government and lobby groups potentially is an excellent source of information, but could also facilitate rent-seeking. Hausmann and Rodrik suggest three principles for a *shared vision* involving government and lobby group. (1) *Open architecture*: whenever possible government should not predetermine which sectors or activities it will engage with. (2) *Self-organization*: forcing groups to organize according to some predetermined criteria, e.g. by sector classification,

may create groups with few common needs. (3) *Transparency*: making private sector requests public knowledge, and committing to performing independent evaluation of such requests in the interests of public benefit.

## **2.7 Development of positive externalities**

Bergek et al. (2008) argue that the generation of positive external economies is a key process in the formation and growth of emerging IS. They propose three reasons why the entry of new firms into the emerging IS might be crucial for the development of positive externalities. First, new entrants may resolve the initial uncertainties with respect to technology and markets thereby strengthening the functions ‘influencing the direction of search’ and ‘market formation’. Second, their entry could legitimate the new IS and strengthen the political power of advocacy coalitions. Third, the greater the number and variety of the actors in the system, the greater will be the chances of new combinations emerging. The development of positive externalities is not independent but works through the strengthening of the other six functions.

## **3. Policy, economic performance and industry background in Ethiopia**

### **3.1. Overview of industrial policy and economic performance**

Following the change of government in 1991, Ethiopia adopted a structural adjustment program and began to implement extensive reforms to transform the previous command economy to a market oriented one. In the mid-1990s government announced its development vision, known as Agricultural Development Led Industrialization (ADLI, hereafter).<sup>3</sup> In 1998, it adopted an Export Promotion Strategy. This listed priority sectors—such as manufacturing and agro industries, which would receive preferential treatment. The flower industry was NOT included in the list of priority sectors.

A comprehensive Industrial Development Strategy (IDS, hereafter) was formulated in 2002/03. A key element of the IDS is the linkage between industry and agriculture, which is based on the broader ADLI. Another core element of the IDS is that sustainable and rapid

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<sup>3</sup> ADLI is a development strategy based on a philosophy where agriculture development plays a leading role in the industrialization process by providing the conditions for full-fledged industrialization through the supply of inputs to the industry sector, generating foreign exchange for importing industrial inputs, and creating markets for industry outputs.

industrial development can only be ensured if the sector is competitive in the international market. Hence, export oriented sectors should lead industrial development and be given preferential treatment. Third, the IDS recognizes the role of the private sector as a driver of the industrialization process. Fourth, the strategy states the importance of government intervention not only as facilitator but also as a leader (i.e., in providing direct support, coordinating and guiding the private sector). It cites two important mechanisms by which government could engage and promote the private sector; *creating a conducive environment* and *providing direct support for selected sectors*. The strategy also lists priority sectors for direct government support (MoFED, 2006).

Ethiopia is one of the poorest countries in the world with per capita income of less than 200 USD (at 2000 constant price); however, its economy has been on a continuous high growth trajectory since the drought related contraction in 2002/03 (see Table 2). Between 2004 and 2008, GDP grew by an annual average of 11.8 percent. The long-term pattern for the structure of the economy shows an increasing share of the service sector and a still small (even by sub-Saharan Africa standards) industry base.

Ethiopia's export structure has barely changed since the 1990s, and is based mainly on agricultural products (e.g., food accounted for some 61 percent of total exports in 2007). However, there has been significant growth in exports earnings averaging 24 percent in the period 2004-2008 (National Bank of Ethiopia – NBE, 2007/08). Ethiopia's pattern of exports in the last five years demonstrates that the growth is based mainly on agricultural products, from diversification to non-traditional exports and intensification of traditional goods. According to the NBE 2007/08 annual report, cut flowers, pulses, live animals, and oil seeds are among the high performers with (444%), (101%), (73%) and (25%) annual growth respectively. The cut flower industry is a particularly successful diversification for Ethiopia.

[Insert Table 2]

### **3.2. The Ethiopian flower industry**

Ethiopia is endowed with the conditions required for a successful flower industry (i.e., flat land at high altitudes, a cool climate, low cost labor, proximity to major markets, and an international airport near to the production areas). Ethiopia (like Ecuador) is regarded as



especially suited to the production of high quality, T-hybrid roses (Reinders, 2008). In the early 1980s there was brief effort made by the state farms to produce and export summer flowers to Europe. The potential and basic know-how related to flower growing existed but was not well utilized until quite recently.

Initial attempts to establish a flower industry emerged in the mid 1990s and the sector flourished in the early 2000s with large-scale export of cut-flowers. Figure 1 depicts the number of new entrants, the cumulative population of firms, and export value in USD by years for 2000-2008. In 2003, only five farms were engaged in the production and export of flowers. The post-2003 period is characterized by high entry of firms and spectacular growth in exports. Annual average growth in number of firms and exports in 2003 to 2008 is around 380% and 638% respectively.

[Insert figure 1]

In 2008, there were 81 flower farms employing around 50,000 workers (over 70% women). Ethiopia's flower exports reached 100 million USD and the industry is one of the top four sources of foreign exchange for the country. In less than a decade of experience, Ethiopia ranks second in Africa for flower exports (after Kenya) and fifth in Extra-EU exporters to the EU market (Table 3).

[Insert Table 3]

#### **4. Mapping the functional patterns of the Ethiopian flower industry**

In this section we employ the seven key functions to highlight the flower industry discovery process and the factors that have contributed to the success of the flower export sector in Ethiopia. Based on the earlier description of flower industry, each function is explained in terms of this specific context.

## **4.1. Entrepreneurial experimentation: iterative learning process**

### **(4.1.1) First movers**

Meskel Flowers Plc. was the first private company to engage in export oriented commercial flower farming in Ethiopia. The farm in Meki, 160 kms south of the capital city, Addis Ababa, began operations in 1993. A second private farm, Ethio-Flora, was established (in Zeway, 98 kms south of Addis Ababa) soon after. Both farms are Ethiopian owned and produce summer flowers (field produced) such as alliums, statice, and carnations for export to EU markets. Initially, the farms recruited domestic expertise mainly former state owned flower farm employees. But Meskel Flower recruited a production manager from Kenya. Both farms received support from the EU, to employ consultants for a period from Kenya and the UK.

Learning took place gradually, and the first entrant (Meskel Flower) made a move in 1999 to begin rose production. It started production using wooden greenhouses despite steel based greenhouse technology being mature and available in the international market. In 1996, the EU financed a half-hectare summer flower (carnation) demonstration with Ethio-Flora in Zeway. In 1996, neither of the farms was receiving specific support from the Ethiopian government. Both farms were unable to continue to export flowers, but for different reasons. Meskel Flower ceased production and export following the arrest of its owner in 2001,<sup>4</sup> While Ethio-Flora shifted production to vegetables only.<sup>5</sup> Despite their early exit, these farms contributed to the initial accumulation of flower industry knowledge in Ethiopia and the feasibility for Golden Rose, a new entrant, relied on the experience of these farms.

### **(4.1.2) The pioneer – Golden Rose**

In 1999, Golden Rose Agrofarms Ltd. (Golden Rose, hereafter) – a foreign owned firm – started rose production using steel structure greenhouses, 42 kms South West of Addis Ababa. Although the pioneers (Meskel Flower and Ethio-Flora) had laid the foundations for the flower industry growing summer flowers, Golden Rose is considered to be the pioneer by many followers due to its introduction of modern technology (e.g. steel structure greenhouses).

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<sup>4</sup> After his release in 2005 the owner launched another flower farm business under the same name but on farm land leased from Sher-Ethiopia in Zeway.

<sup>5</sup> The owner of Ethio Flora, Ato Tsegaye Abebe, started a new rose farm (a joint venture with a Dutch partner) in 2005, under the name Ethio Highlands and in another location. He is founder and currently Chairman of the Horticulture Industry Association.

Golden Rose is a subsidiary of RINA Investment, an Indian family business, based in the UK. Before entering Ethiopia, the mother company was involved in several business activities (e.g. textile, property, ostrich farming, and flour mills) in a number of countries including Uganda, Kenya, and Rwanda in Africa. Initially, the company's interest to enter Ethiopia was to purchase privatized state firms. The bid for the state owned Saint George brewery was not successful and the company had to look for other business opportunities. It hired a consultant which produced a promising feasibility study on rose flower farms. Based on this the company decided to establish a rose farm in Ethiopia. However, neither the mother company nor the managing director of Golden Rose had any experience in flower farming. How did Golden Rose overcome the initial difficulties in acquiring the technology and skilled labor and penetrating the global market?

Golden Rose relied on imported equipment and knowledge to start its flower business. It entered into a turnkey arrangement with an Israeli consulting company. The consulting firm constructed all the farm facilities (including the green-houses, irrigation facilities, cold-rooms, etc.) and planted the roses. It provided a farm manager for the initial stage. Due to the lack of domestic human resources, Golden Rose recruited two Indian expatriates to support the farm manager put in by the consultant, and began to train up Ethiopian workers. The company (management and workers) experienced a major learning curve.<sup>6</sup> On the farm, only the three experts knew about rose growing. At first, the company has almost 50% of its production rejected for export based on poor quality and bad handling. It continued to provide training to its workers and middle managers to improve their skills. However, the company was also faced with high turnover of workers after they acquired these new skills. This problem became critical with the entry of new firms in the take-off period. By 2004 the company had lost nearly all the staff it had trained to new firms and was forced continuously to adjust wages in order to retain what skilled labor remained.

Golden Rose began exporting in 2000 through Dutch auction. According to the managing director the price was initially acceptable. However, after a few months (around July 2000) the auction price declined. Moreover, the firm was subject to a large hidden (service) charge (around 20- 25% of the price obtained according to the manager), which it did not expect and could not control. Consequently, the company started to receive negative returns. According to the

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<sup>6</sup> The information on Golden Rose presented in this part is based on an interview with Mr. Ryaz Shamji, its founder and managing director.

manager “that was a completely confusing and challenging moment.” Since then Golden Rose has searched for direct sales opportunities and abandoned the auction route.

**BOX 1: Pioneer firm, Golden Rose**

Golden Rose is not only a pioneer but also one of the most successful and most diversified firms in the sector. It continuously expanded up to 2007/08 and showed rapid growth - employment grew from 115 to about 900, production surface area from 7 hectares to 22.5 hectares, and flower value chains were expanded through the acquisition of trading licenses to import equipment, chemicals and fertilizers (2003), establish a carton box factory (2004) and establish propagation facilities (2006).

**(4.1.3) Early imitators and diffusion of knowledge**

Following the entry of Golden Rose, four other rose farms (Summit Agro industry, Ethio Dreams, SIET Agro PLC, and Eniy Ethio Rose) entered the industry between 2001 and 2003. Three out of the four new entrants were domestic owned. Most of the owners of these farms had migrated from another line of business in an attempt to diversify and had no prior experience in flower farming. According to Golden Rose’s manager, unlike the late comers (i.e. after 2003), these early followers did not try to steal skilled workers from the pioneer. Rather, the early followers had very close and cooperative relationships with Golden Rose farm. They learned from its experience through frequent visits to the farm and discussions with management. The cooperation included sharing of equipment (e.g. trucks), storage facilities (cold storage), and skilled employees.

The early followers imitated some Golden Rose’s production and marketing methods. Like Golden Rose, the early followers produced and exported roses. All imported equipment for the construction of physical infrastructure (greenhouses, irrigation systems) came mainly from Israel and the Netherlands. They also relied on international breeders through licensed royalties, as the main sources of new varieties.

**(4.1.4) Take-off and flow of foreign investors**

The sequence of entry of firms in the Ethiopian flower industry shows that domestic entrepreneurs played a major role in the initial stages. With the exception of Golden Rose and Ethio Dream, the first movers and early imitators were domestic owned firms. Foreign firms (in the form of joint-venture or full ownership) started to enter mostly after 2003, a period marked

by high entry and export growth. The majority (four out five) of the 2004 new entrants were foreign owned (two fully foreign owned, two joint ventures with 99% and with 50% foreign shares). Of the 21 farms that started production in 2005, 11 were fully domestic owned and only 4 fully foreign owned. But five out of the six joint ventures have 50% and above share of foreign ownership. In 2006 and 2007, the entry of foreign owned firms surpassed the entry of domestic firms, 11 to 4 and 10 to 4 respectively. Moreover, the seven joint ventures registered in 2006 had 75% and above foreign share.

A significant number of the foreign firms came from other African countries, including Kenya (e.g. Linsen, Abyssinia, Maranque, Karuturi, and Sher-Ethiopia), Uganda and Zimbabwe. The better investment climate in Ethiopia compared to these countries may have contributed to the increasing shift of foreign investment to Ethiopia. According to our survey, 33% and 23% foreign owned farms rated climate and government supporting policies respectively as the major reason for investment in the flower industry in Ethiopia.

The large flow of foreign owned firms helped to ‘scale-up’ the Ethiopian flower industry in terms of both export quantity and firm population and also diversification of activities and transfer of knowledge. This is exemplified by the fact that all the eight summer flower farms and five cuttings farms are fully foreign owned or are joint ventures with higher foreign shares. The case of Sher-Ethiopia, a subsidiary of Sher-Holland – the biggest flower producer in the world, is an example of the role of foreign firms in stimulating the sector and particularly the transfer of technology and marketing knowledge (see, Box 2).

The entrepreneurial experimentation went through several phases. In the formative phase, as demonstrated by the case of Golden Rose, the early pioneering firms achieved successful learning and adjusted to the environment, allowing them to establish a new activity through the acquisition of knowledge in the form of embodied capital, they achieved market penetration by shifting from the auction market to contract buyers, and solved the problem of lack of resources both human and financial. In the high growth period, the industry received support from government and the extra boost from foreign direct investment. All this allowed them to mobilize their resources effectively to diffuse knowledge and to scale up activities which involved cooperation for example in the form of shared use of infrastructures which created creating positive externalities.

**BOX 2 Sher-Ethiopia**

The entry of Sher-Ethiopia in 2005 was a landmark in the Ethiopian flower industry growth. The company had been engaged in flower farming business in Kenya for over 15 years with production on 300 ha of farming land (Africa News, 2008). In 2007, it sold its Kenyan farm and moved to Ethiopia to become the largest investor in the sector. It leased about 500 ha of land from the government in an area about 170 km from Addis Ababa (known as Zeway) near the highway between Addis Ababa and Nairobi.

Sher-Ethiopia is not only the largest farm but is well known for its unique business scheme. It developed all initial infrastructural investments (including construction of greenhouses, irrigation systems, packing sheds, cold rooms and other facilities, installation of machines and flower plantations) in the land acquired from government and leased them to other private investors. It provides packets of 10 ha and over, to interested businesses on lease arrangements. Ownership is transferred to the lessee after 105 months (just less than 9 years). As of 2008, there were 9 companies – four local and five foreign –operating under this leasing scheme. In addition to leasing, Sher-Ethiopia supplies seed to nine farms, and handles their exports under the trade mark Afri Flora, and provides training and consultancy (Addis Fortune, 2008). This arrangement makes it possible for growers to start immediately on a reasonable scale, without having to take on a major financial and technological risk.

**4.2. Legitimation: creation of a shared vision through private-public partnership**

In the early experimentation stages, entrepreneurs encountered various obstacles. A critical problem for exporters in this stage was lack of reliable and cheap air cargo. For example, in the early years, air cargo space was only available on passenger flights operated by Ethiopian Airlines (EAL) and Lufthansa. Availability of finance was another problem since the flower industry is capital intensive and start-up investment involved considerable fixed assets. Prior to 2003, private investors in the flower sector were mainly forced to obtain land by leasing it from small farmers. This was a slow process that required consolidation of several small contiguous holdings. Even when government offered land to investors on a lease basis the bureaucratic procedures involved were cumbersome.

To try to address these and other problems, the entrepreneurs confronted government with the potential success and profitability of the flower industry and the opportunity it represented for the country. They organized themselves to form an association, the Ethiopia Horticulture Producers and Exporters Association (EHPEA, the association, hereafter) established in September 2002 with five members. The association currently has more than 86 members of which about 81 are flower producers/exporters.

The association has been instrumental in the development of the sector since its establishment and has acted as a 'pathfinder'. One of its early activities was to lobby government for privileges to be granted to the sector. The association has been highly successful in raising awareness in government about the opportunity represented by the sector and for its harmonious operation. For example, the Chairman of EHPEA was involved in preparing the first five-year government plan of action for the sector.

With government help, the association began to address a wider audience that included buyers, NGOs, and the public. The association has been involved in developing informal networks with donors and organizing various forums such as international trade fairs. As a result, it has created strong connections with the donor community and secured wide support for the sector. Donors include the UK DFID, the French Development Cooperation, USAID, and the Dutch government. The relationship with the Netherlands is particularly visible. The association received wide support from the Dutch government within the project 'Ethiopian-Netherlands Horticulture Partnership'. Different Dutch institutions such as the Dutch Center for the Promotion of Imports from Developing Countries (CBI) and Wageningen University are helping with capacity building. The association, therefore, has been crucial for building a shared vision among the various stakeholders through its interactions.

The association organized three international trade fairs in Addis Ababa, in 2005, 2007, and in March 2009. More than 130 companies (mostly foreign companies) related to the floriculture sector (flower growers, breeders, fertilizer and chemicals traders, greenhouse and irrigation system constructors, refrigeration installation companies, etc.) participated in the last two exhibitions which was supported by government. The 2009 exhibition was opened with remarks from the Prime Minister, who exhibitors were invited to meet (Afrik.com, 2009).

Another important step in the legitimacy process was the adoption in 2007 of a code of conduct for the sector. The association, government, and donors played important roles in this. Adoption of international standards in this code of conduct has helped to promote the image of the Ethiopian flower industry in the international market and address concerns among civil society in Ethiopia about the environmental impact of flower farms.

The success of this new activity, therefore, was enabled by a combination of the collection of separate efforts through entrepreneurial experimentation and also collective action by the various

stakeholders—public sector and civil society—towards a shared vision promoted by EHPEA as the ‘pathfinder’, to legitimize the trajectory of its development.

### **4.3. Resource mobilization and influencing the direction of search**

Prior to 2003, there were few programs specifically targeting the flower industry. The export promotion strategy adopted in 1998 made no mention of the flower industry. Although the flower industry might have benefited from this broad export promotion support scheme, take-off did not occur until industry specific support was provided by government.<sup>7</sup>

By the end of 2002, government realized the opportunity offered by the flower industry to earn sizeable amounts of foreign exchange. Ethiopia was able to enter the top end of the flower market because the quality of its cut roses compared with the best in the world (Ecuador and Colombia). Government decided therefore to actively engage in promoting the sector in terms of resource mobilization and coordination. The Prime Minister’s Office (PMO) requested the Ministry of Trade and Industry (MoTI) to propose a five-year action plan for the sector, outlining constraints and possible solutions. Based on the MoTI report, targets were set to put 1,000 hectares under flower production after five years, based on the record of Kenya’s output and export earnings. At the end of 2002, the area under glass was less than 30 hectares. To scale up from this base, government came in with multi-faceted support starting in 2003, focusing particularly on access to land, access to long-term credit, infrastructure and air transport coordination.

After the government decision to support the sector, land held by government was made available for flower farms near to the airport in Addis Ababa, at very cheap prices of under 20 USD per annum per hectare. Table 4 reports the sources of land and average duration of tenure. The majority of those surveyed (83%) indicated that their land was government leased. Land lease payments were fixed over an extended period of, on average, 21.5 years. This helped to reduce the financial burden for investors and made entry easier. The average tenure period is 27.5 years and the maximum 90 years. Provision of this land at low prices and with longer tenure periods would not have been possible without the release of government land.

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<sup>7</sup> The promotion scheme for export includes 100% exemption from duties on imports of capital goods and raw materials necessary for the production of export goods, exemption from export tax and tax on transfer of shares of assets, and tax holidays on profits for 5 years.



[Insert Table 4]

Government also provided long-term credit on very generous terms through the Development Bank of Ethiopia. Investors can borrow up to 70:30 debt-equity ratio with no collateral requirement. Interest rates are low and do not vary much. According to our survey, 75% of farms have a bank term loan and 45% of them reported borrowing from DBE for their initial investment. The majority of farms (62.5%) indicated that firm equity or a project was the only collateral required for a bank loan (see, Table 4).

Compared to other major horticultural exporter countries in Africa, government support in Ethiopia is clearly very favorable. For example, the fixed interest rate (around 7.5%) is very low compared to many other African countries' interest rates which are generally around 15%. The real interest rate that Ethiopian exporters have been required to pay since 2005 is zero when calculated against the growing rate of inflation in Ethiopia. This translates into a pure resource transfer (subsidy) to exporters.

Government has also played an important role in resolving the air transport problem. It initiated discussion and cooperation between the exporters and Ethiopian Airlines (EAL) with the result that the majority (87%) of flower farm enterprises use this airline (see, Table 4). EAL supports the flower industry by leasing cargo planes. The airline also in 2008 relocated its cargo handling activities from Amsterdam to Brussels and to Liege Airports in Belgium, running 6 to 10 daytime flights weekly, to transport flowers to the major flower auctions (Liege Airport press release, 2008).

Other foreign carriers, such as, KLM, Lufthansa, Etihad, and Emirates, have begun to carry flowers from Ethiopia and exporters are working to open up the air freight market. They claim that unlike the situation in Kenya, the airfreight market in Ethiopia is overregulated based on the concerns of the authorities over foreign exchange.

As well as mobilizing resources, government is involved in advocacy to attract domestic and foreign investors. Its strong commitment to this start is demonstrated by the involvement of the top officials, including the Prime Minister through his position as the chair of the National Export Promotion Committee, and frequent interaction with the sector entrepreneurs directly and through their association.

Over time, other forms of engagements such as regulation (e.g., Industry Code of Conduct, foreign exchange use, diversification of location, and the environment) have been initiated. Government has been engaged also in upgrading and formalizing the institutions responsible for the sector. Until recently, MoTI dealt with the private sector in the flower industry. In 2002, it established a Horticulture Development Team which, in 2008, was upgraded to agency level and named the Ethiopian Horticulture Development Agency (EHAD), under the Ministry of Agriculture and Rural Development (MoRAD), with the objective of further strengthening and formalizing support for the sector.

#### **4.4. Knowledge transfer and diffusion: interactive learning process**

The main source of technology for the development of the flower industry is foreign. Technology transfer occurs mainly through private acquisitions, i.e. equipment purchase and plants (new varieties) licensed from international companies. In the initial period, there was acute shortage of skilled manpower specialized in flower production and marketing, in the domestic market. Hence, most early entrant farms hired expatriates particularly from neighboring Kenya.

Turnover of skilled workers became one of the main channels for the diffusion of knowledge. Poaching of experienced workers increased with the accumulation of some knowledge among the early movers and increased new entry. As already discussed, Golden Rose suffered from very high turnover of trained employees particularly following the influx of new firms in 2004, and was forced continuously to adjust its wages in a bid to retain its skilled labor. As the sector expanded, the pool of domestic expertise has increased and the market for skilled labor has stabilized. There is a greater availability of experienced people on the flower farms. Table 5 reports the percentage of expertise from other domestic flower farms in initial production, by year of entry. From the eight farms that started production before 2005, only one reported using Ethiopian managers or supervisors recruited from other flower farms in Ethiopia. However, among those firms that started production after 2005 recruitment from other Ethiopian farms for managers and supervisors is much higher. For example, among the 15 new entrants in 2006, 11 reported recruiting managers and supervisors for their initial production from other domestic flower farms. And in 2007, among the 12 new entrants, 8 reported recruiting Ethiopian managers or supervisors for their start up phase.

[Insert Table 5]

Another important mechanism of knowledge diffusion and learning is in-house and external training. According to our survey, the majority of farms provide (in house and external) short-term training for production workers and agro-specialists. For example, in 2007, 52 (81%) of flower farms provided in-house training for their production workers and the percentage that were given training in total production workers was 70%. Some 31 farms indicated that in the same year, they sent about 11% of their production workers for outside training. Also, half of the farms offered in-house and external training to their agro-specialists in 2007. The average percentage of agro-specialists that participated in this training was 72% for in-house training and 49% for outside training.

The association plays a significant role in organizing external training courses for workers and managers from member farms. The training programs include post-harvest handling and cool chain; safe use and storage of pesticides; and strategies to secure competitive advantage in flower industry. Some of this training is provided by international experts from the Dutch CBI and other reputable institutions. The association organizes certificate and training programs related to the sector Code of Conduct.

As the sector expands, the supply of industry specialists becomes more critical. Government with the support of the Dutch government has started to consolidate higher education in horticulture. One of the state universities, Jimma University, has begun to offer diplomas (BSc and MSc) in floriculture. Efforts are also underway to establish a Horticulture Practical Training Center (HPTC) within the Ethiopian-Netherlands Partnership on Horticulture.

So far, there are no links with the national agricultural research organization (EARO) on the development of new varieties. Thus, the sector may have to continue to rely on international breeders for sourcing suitable rose varieties and conducting adaptive trials in the medium and even longer term.

#### **4.5. Market formation**

There are markets for flowers across the developed world, hence, in the early stage, the problem was mainly to link to the existing market. For Ethiopia – and for all of Africa - the major flower export destination is the EU. Cut flowers are sold via the auction markets (mainly Dutch

auctions) and/or directly to supermarkets and other retailers. Relative ease of access to the auction market means new entrants tend to begin by using this channel. The main barrier to the European market in the early stage was the cost and the poor availability of air cargo space. Government efforts to coordinate transport with the EAL largely resolved this problem.

Access to the EU market has become more difficult due to new rules and standards. To respond to these, in 2006, the Ethiopian flower association developed its own code of conduct which was implemented in 2007. During its development, 20 farms joined a pilot training program and 10 farms received certification in 2009.

Over time, the sector has become more diversified in terms of market channels and destinations. In 2007, 41 farms reported involvement in direct sales. Table 6 shows the top market destinations for Ethiopian flowers. The number of destinations has increased from 2-3 countries (all in Europe) in the early 2000s, to some 56 worldwide in 2008. There are 14 destination countries with USD 100,000 and over export value. The EU is still the major destination accounting for around 94.5% of total export value with the Netherlands (88%) in the lead.

[Insert Table 6]

The association continues to play an important role in expanding the market. The association members visit or received visitors from potential buyer countries in Europe, the Middle East and Japan. Currently, they are keen to expand business links with the Dubai Flower Centre (DFC) because of its geographical and logistical advantages which would boost their supplies to the Middle East and the Far East.

#### **4.6. Development of positive externalities**

The sources of positive externalities in the evolution of new activities are widespread. For example, the entry of pioneers into the business was crucial for smoothing the way for followers. This was discussed in section 4.1 in relation to the entry process. Stabilization of the market for skilled labor is another positive externality that has come with sector expansion. This was discussed in section 4.4 under knowledge transfer and diffusion. Here, we concentrate on the positive externalities arising from the diversification of activities.

With the expansion of the sector, complementary activities, such as propagation of planting materials, packaging, fertilizers and chemicals supplies, and forwarding companies, started to emerge. By early 2008, there were six cuttings companies, all European in origin, producing pot plants and cut flower cuttings for export. The cuttings farms also propagate new varieties for the domestic market. A number of rose farms have begun to propagate for their own use and for the domestic market. Thus, the source of plant materials is slowly shifting from imports to local supply. There is an increasing trend for imported fertilizers and chemicals to be substituted by local production, and the majority of farms (96%) use locally produced packaging materials.

So far, the emergence of Ethiopian flower industry has been explained within the framework of the IS. As mentioned by Bergek et al. (2008), the functions of the IS are not independent but overlap as interactions evolve among stakeholders. The case of the Ethiopian flower industry demonstrates the difficulties involved in separating functions. The analysis in this paper shows the provision of a framework of functions makes it easier to identify what is happening in the systemic context to facilitate effective policy formulation.

## **5. Summary and concluding remarks**

This paper has examined the evolution of the Ethiopian flower industry as an example of successful non-traditional natural resource based export activities in developing countries. We applied the ‘functional IS’ framework to a catching-up country context to conduct an ex-post analysis on the evolution of a new activity. We find this framework to be a useful policy tool to map the dynamics of interaction among the various actors in the discovery process and formulation of tasks. The framework enabled the identification of a particular sequence of the seven functions in a catching-up country. The main findings are summarized below.

The trigger factors for the emergence of the flower industry in Ethiopia included the combination of several factors. Natural endowment and generous government incentives for all export activities created favourable conditions compared to neighbouring flower exporting countries (e.g. Kenya, Zimbabwe and Uganda). However, without ‘*entrepreneurial experimentation*’, the industry could not have become established. The flower industry was not among the government’s initial priority list of export activities. Thus, ‘*entrepreneurial experimentation*’ by private entrepreneurs was the first critical step in the ‘discovery’ of the sector. The role of these early entrants was important for reducing uncertainties for fellow

investors (*positive externality*) and for making government aware of this alternative policy option.

One characteristic of the early stage in a new activity is the prevalence of huge uncertainty in technology, markets and infrastructure. *Legitimation* and *resource mobilization* were badly needed by the early entrants. Following advocacy activity by the entrepreneurs, government began to provide support and launched a strategy to *guide the direction of search*. It established a five-year target and identified three key areas of intervention: provision of long-term credit; provision of land; and coordination of air transport. The government intervention in terms of improving *legitimation*, *resource mobilization* and *guidance* was the crucial next step. It helped to reduce the uncertainties surrounding the early entrants and created the conditions for the industry to expand.

*Market formation* was relatively less challenging in the formative phase where the main task was to link into the existing international market and search for a market niche, mainly through auctions in the Netherlands. The growth period required some market formation for the producers to stay in the market for a sustained period. To improve the reputation of the industry in the world market, the association focused strongly on quality control and developed an industry Code of Conduct. The association also contributed by diversifying and expanding market destinations. In this regard, the private sector took the lead role through the association while government played supportive role.

The flower sector had to rely on international purchase to acquire the necessary *technology and expertise* for production and marketing, particularly in the initial stage. Foreign direct investment played an important role in knowledge transfer and diffusion. Training and turnover of skilled workers were the main channels of the *knowledge diffusion* in the sector. In the later stage, the association and government supported human capacity building with the former organizing short courses, and the latter consolidating higher education in horticulture. There is a lack of local research/university linkages for knowledge creation and the sector is dependent on international breeders for plant stock.

This study shows that the presence of a 'pathfinder' institution, in this case the association, to consistently pursue development of the sector and coordinate activities is crucial. The association has played a critical role in the success of the Ethiopian flower industry. Its activities cover a

wide spectrum including lobbying government, standards setting, collective market search, developing the capacity of members, promoting and legitimation of the sector.

It shows also that collaboration between government and the private sector is required for sector building. The private entrepreneurs ‘discovered’ that flowers could be produced and exported profitably. They formed the association in an effort to build a strong ‘*advocacy coalition*’ and were able to convince the government about the opportunity offered by the sector. Government recognized the opportunity and potential and added cut flower production to its priority list. It began by inviting the association representatives to participate in the preparation of the first-five-year action plan for the sector outlining constraints and possible solutions. The association and government achieved consensus and a shared vision of sector development, which further improved legitimacy.

This is consistent with Rodrik’s (2004) view that: “*The right model for industrial policy is not that of an autonomous government applying Pigovian taxes or subsidies, but of strategic collaboration between the private sector and the government with the aim of uncovering where the most significant obstacles to restructuring lie and what type of interventions are more likely to remove them is critical.*”

Finally, the context and relative importance of the functions differ by the stage of development of the sector. For example, ‘legitimation’ in the initial stage was mainly targeted at acquiring government support, but in the later stages focused on the wider audience. ‘Market formation’ was not a huge challenge in the early stage but become crucial in the growth stage. Correspondingly, the role of government changed through the different phases of sector development. In the early stage government played a developmental role by providing inputs and sharing costs (e.g., finance, land, and transport coordination). In the growth stage, other forms of engagement such as an increasing regulatory role, capacity building, formalization of interactions, and strengthening of institutions is required. This suggests that successful policies must be context specific and may differ by country and sector/activity and also by stage of development of the activity. This reinforces the importance of dynamic policy and ability of policy makers to react quickly to the needs of the private sector.

Structural transformation is crucial for developing countries. Due to the globalization of economy, the export sector can create a space for learning through interaction with various external stakeholders; however, the process of learning is not automatic. The timing is crucial as

is the identification of solutions. Formulating and identifying the appropriate policy ex-ante is difficult. The example of Ethiopian flower industry demonstrates that the functions of the IS framework can support this policy formulation process by providing guidelines to enable the search for the right solutions by identifying the actors, functions and impediments in the wider, 'systemic' context.



## **References**

- Africa News (2008) “Ethiopia: Company expands flower farms” Africa News.com  
<[http://www.africanews.com/site/list\\_messages/22160](http://www.africanews.com/site/list_messages/22160)> Posted 15, 12, 2008 and  
accessed 16/12/2008
- Addis Fortune (2008) *Sher-Ethiopia's Social Seed Flowers in Zeway*, Addis Fortune,  
<<http://www.addisfortune.com/Vol%209%20No%20450%20Archive/Sher%20Ethiopia's%20Social%20Seed%20Flowers%20in%20Zeway.htm>> posted 14, 12, 2008 and  
accessed 16, 12, 2008.
- Afrik.com (2009) *Flower producers hold 2nd international exhibition*,  
<<http://en.afrik.com/article15486.html>>, posted 26, 04, 2009 and accessed 22/06/09.
- Altenburg, T. (2006) “Governance Patterns in Value Chains and their Development Impact” *The European Journal of Development Research*, 18(4): 498-521.
- Bergek, A. (2002): *Shaping and Exploiting Technological Opportunities: The Case of Renewable Energy Technology in Sweden*. PhD thesis, Department of Industrial Dynamics, Chalmers University of Technology, Gothenburg. Sweden.
- Bergek, A. S. Jacobsson, B. Carlsson, S. Lindmark, and A. Rickne (2008), “Analyzing the functional dynamics of technological innovation systems: a scheme of analysis” *Research Policy*, 37: 407-429.
- Cimoli, M., G. Dosi, R. Nelson and J. Stiglitz (2006), “Institutions and policies shaping industrial development: an introductory note”, working paper 2006/02 in Laboratory of Economic Management, Sant’Anna School of Advanced Studies, Italy.
- Edquist, C. (2004), “Systems of innovation: perspectives and challenges.” In: Fagerberg, J., Mowery, D.C., Nelson, R.R. (Eds.), *The Oxford Handbook of Innovation*. Oxford University Press, Oxford.
- Freeman, C. (1987), *Technology Policy and Economic Performance*, London, Pinter publishers.
- Galli, R. and Teubal, M. (1997), “Paradigmatic Shifts in National Innovation Systems”, in C. Edquist (ed.), *Systems of Innovation*, London: Pinter, pp.342–370.
- Hausmann R. and B. Klinger (2006), “Structural transformation and pattern of comparative advantage in the product space”, John F. Kennedy School of Government working paper No. RWP06-041, Harvard University.

- Hausmann R. and D. Rodrik (2003), “Economic development as self-discovery” *Journal of Development Economics* 72: 603-633.
- Hausmann, R., and D. Rodrik (2006), “Doomed to choose: industrial policy as predicament”. John F. Kennedy School of Government, Harvard University. Paper prepared for the first Blue Sky seminar organized by the Center for International Development at Harvard University on September 9, 2006.
- Hausmann, R., J. Hwang, and D. Rodrik, (2005), “What you export matters.” NBER Working Paper No. 11905 and CID Working Paper No. 123. Kennedy School of Government, Harvard University
- Hekkert, M, R. Suurs, S. Negro, S. Kuhlmann, and R. Smits (2007), “Functions of innovation systems: a new approach for analyzing technical change” *Technological Forecasting & Social Change* 74: 213-232.
- Humphrey J. and H. Schmitz (2004), “Governance in global value chains”, in H. Schmitz (ed.) *Local Enterprises in the Global Economy: Issues of governance and upgrading*, Edward Elgar Publishing Limited, UK.
- Humphrey, J. (2006), “Policy Implications of Trends in Agribusiness Value Chains”, *European Journal of Development Research* 18.4:572-92.
- Jacobson, S. and A. Bergek (2006), “A framework for guiding policy-makers interning in emerging innovation systems in ‘catching-up countries’”, *The European Journal of Development Research*, 18 (4):687-707.
- Jacobsson, S. (2005), “Formation and growth of sectoral innovation systems – ‘functional analysis’ as a tool for policymakers in identifying policy issues”, UNIDO 2005, Industrial Development Report, background paper, source: [http://www.unido.org/fileadmin/import/44919\\_BackgroundPaper\\_Jacobsson.pdf](http://www.unido.org/fileadmin/import/44919_BackgroundPaper_Jacobsson.pdf), accessed 12, 12, 2009.
- Kessing, D. and S. Lall, (1992), “Marketing manufactured exports from developing countries: learning sequences and public support”, in G. Helleiner (ed.) *Trade Policy, Industrialization and Development*, Oxford: Oxford University press, pp. 176-93.
- Lall, S. (2000), “The Technological Structure and Performance of Developing Country Manufactured Exports, 1985-98”, *Oxford Development Studies*, 28(3): 337-369.

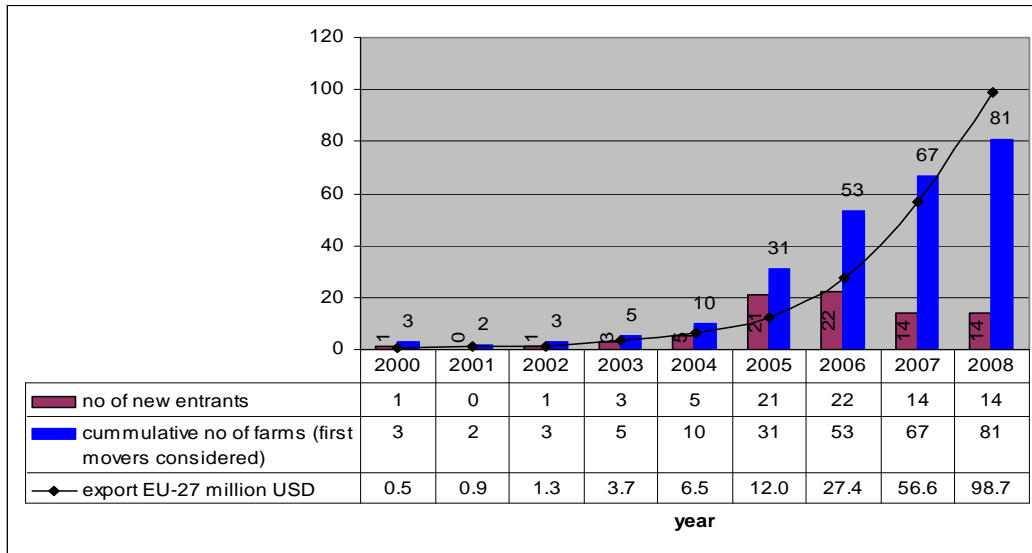
- Lall, S. (2005), “Is African industry competing?” Queen Elizabeth House, Working Paper Series QEHWPS 122.
- Liege Airport press release (2008) “Ethiopian Airlines relocated its cargo activities to Liege Airport”, source <<http://www.liegeairport.com/documents/08-07-01EthiopianAirlinesrelocatesitscargoactivitiestoLiegeAirport-EN.pdf>> posted on 01, 07, 2008 and accessed 01/07, 2009.
- Maertens, M. and J. F.M. Swinnen (2006), “Standards as barriers and catalysts for trade and poverty reduction” presented at the 26<sup>th</sup> conference of the International Association of Agricultural Economists, Queensland, Australia, August 12-18, 2006
- Metcalf J. S. (1994), “Evolutionary economics and technology policy” *The Economic Journal*, 104(425): 931-944.
- Ministry of Finance and Development (MoFED) (2006), “Ethiopia: Building on Progress A Plan for Accelerated and Sustained Development to End Poverty (PASDEP) (2005/06-2009/10)” Addis Ababa.
- National Bank of Ethiopia (2007/08), *Annual Report 2007/08*, online source at <[www.nbe.gov.et](http://www.nbe.gov.et)>, accessed on 15/04/2010.
- Reinders, U. (2008), “Ethiopia: rose nation” FlowerTech, vol. 11. no. 7, source <[http://www.agriworld.nl/public/file/pdf/20081126-06-09\\_ft11\\_07.pdf](http://www.agriworld.nl/public/file/pdf/20081126-06-09_ft11_07.pdf)>, posted 29, 10, 2010 and accessed 15, 04, 2010.
- Riungu, C. (2007) “Ethiopia’s flower sector outgrows Kenya” Kilimanjaro Forum, <<http://www.kforumonline.com/viewtopic.php?t=903>>, accessed on 19/6/2009.
- Rodrik. D. (2004), “Industrial Policy for the twenty-first century” John F. Kennedy School of Government; Centre for Economic Policy Research (CEPR) CEPR Discussion Paper No. 4767, Harvard University.
- Rodrik, D. (2007), “Normalizing industrial policy” Commission on Growth and Development Working Paper No. 3, Washington, DC.
- UN comtrade (2009), source, <<http://comtrade.un.org/>>
- United Nations Conference on Trade and Development, UNCTAD, (2008), “Private-sector standards and national schemes for good agricultural practices: implications for exports of fresh fruits and vegetables from sub-Saharan Africa – experience of Ghana, Kenya and Uganda” United Nations, New York and Geneva.

United Nations Economic Commission for Africa (UNECA) and African Union (AU) (2007).  
*Economic Report on Africa 2007: Accelerating Africa's Development through  
Diversification*. United Nations Economic Commission for Africa publication. Sales no.  
E.07.II.K.1. Addis Ababa.

World Bank (2005) "The European horticulture market: opportunities for sub-Saharan African  
exporters" working paper No. 63, The World Bank, Washington DC.

World Bank (2010), *World Development Indicators*, online source at, < [http://ddp-  
ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=6](http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=6)  
>, accessed January, 12, 2010.

**Figure 1: Pattern of firm entry and exports in the Ethiopian flower industry**



Sources: exports figures are found from UN-Comtrade and the rest own survey

**Table 1: Summary of the functions issues to be raised under each heading**

| Functions                                    | In developing countries   | In this function we assess  |
|--|---|---|
| <b>Entrepreneurial experimentation</b>       | entrepreneurial experimentation is likely to be the first and critical step in 'discovery' process  | <ul style="list-style-type: none"> <li>○ Who are the first movers and what was their motivation to enter the industry?</li> <li>○ What challenges did the pioneers encountered at the initial stage and how were these problems solved?</li> <li>○ Who are the early followers and how did knowledge diffuse from pioneer to followers?</li> <li>○ What was the role of different actors at the initial stage?</li> <li>○ And how did the sector evolve in terms of number of entrants, export patterns, and diversified activities?</li> </ul> |
| <b>Market formation</b>                      | basically linking to existing and established international markets   | <ul style="list-style-type: none"> <li>○ the link to international markets and market diversification efforts,</li> <li>○ development of code of conduct of the industry to improve access,</li> <li>○ government and other stakeholders supports in market formation</li> </ul>  |
| <b>Knowledge development and diffusion</b>   | mainly to access, transfer and master established technology in the developed world – imitation   | <ul style="list-style-type: none"> <li>○ role of different source of technology (e.g. FDI, licensing, acquisition) and networks and interactions with input suppliers and product buyers,</li> <li>○ market for skilled labor (foreign expertise versus domestic availability)</li> <li>○ labor turnover, training (in-house and external),</li> <li>○ strengthening higher education (a long term perspective)</li> </ul>  |
| <b>Guiding the direction of search</b>       | New activities are full of uncertainty and also require complementary inputs and services - more critical in developing countries.                  | <ul style="list-style-type: none"> <li>○ What triggered the emergence of the sector (country investment climate and external factors)?</li> <li>○ Is the sector a government induced or discovery of private experiment?</li> <li>○ What package of incentives was provided by the government to guide the search?</li> </ul>   |
| <b>Legitimatization</b>                      | It is a matter of social acceptance, compliance with relevant institutions and concerns the principal motivation behind public-private partnerships | <ul style="list-style-type: none"> <li>○ advocacy activity</li> <li>○ synergy between government, association, and other stakeholders</li> <li>○ Institutional alignment (co-evolution of industry association and government institutions)</li> <li>○ effort to comply with international standards</li> </ul>   |
| <b>Resource mobilization</b>                 | for a new activity to develop mobilization of a range of resources is needed  | <ul style="list-style-type: none"> <li>○ how some of these key resources (e.g. land, finance, and human capital) were mobilized and</li> <li>○ what the role of the government was in this process</li> </ul>   |
| <b>Development of positive externalities</b> | Entry of new firms into the emerging SIS is central to the development of positive externalities  | <ul style="list-style-type: none"> <li>○ development of complementary activities (specialized intermediate goods and services providers)</li> <li>○ labor markets</li> <li>○ expansion of the sector and formation of new coalitions</li> </ul>   |

**Table 2: Aggregate indicators of Ethiopian economic performance**

|   | 1991 | 1995 | 2000 | 2005 | 2006 | 2007 | 2008 | 2004-08<br>(avg.) |
|---|------|------|------|------|------|------|------|-------------------|
| GDP per capita (constant 2000 US\$)             | 116  | 115  | 125  | 150  | 162  | 175  | 190  | ..                |
| GDP growth (annual %)                           | -7   | 6    | 6    | 12   | 11   | 11   | 11   | 11.8              |
| Agriculture, value added (% of GDP)             | 64   | 57   | 50   | 47   | 48   | 46   | 43   | ..                |
| Agriculture, value added (annual % growth)      | 3    | 4    | 3    | 14   | 11   | 9    | 8    | 11.8              |
| Services, etc., value added (% of GDP)          | 27   | 33   | 38   | 40   | 39   | 40   | 45   | ..                |
| Services, etc., value added (annual % growth)   | -15  | 9    | 10   | 13   | 13   | 14   | 16   | 12.4              |
| Industry, value added (% of GDP)                | 9    | 10   | 12   | 13   | 13   | 13   | 13   | ..                |
| Industry, value added (annual % growth)         | -23  | 8    | 5    | 9    | 10   | 11   | 10   | 10.4              |
| Manufacturing, value added (% of GDP)           | 3    | 5    | 6    | 5    | 5    | 5    | 5    | ..                |
| Manufacturing, value added (annual % growth)    | -40  | 10   | 7    | 13   | 11   | 10   | 9    | 10.0              |
| Food exports (% of merchandise exports)         | ..   | 73   | 67   | 75   | 72   | 61   | ..   | ..                |
| Manufactures exports (% of merchandise exports) | ..   | 11   | 9    | 4    | 5    | 13   | ..   | ..                |

Source: World Bank (2010) World Development Indicator (WDI), online source.

**Table 3: Top 10 cut-flower exporters into the EU market 2001-2007**

| 2001            |                    |           | 2003            |                    |           | 2007            |                    |          |
|-----------------|--------------------|-----------|-----------------|--------------------|-----------|-----------------|--------------------|----------|
| country         | share in EU market | Rank      | country         | share in EU market | Rank      | country         | share in EU market | Rank     |
| Kenya           | 25.90              | 1         | Kenya           | 31.71              | 1         | Kenya           | 39                 | 1        |
| Israel          | 18.35              | 2         | Colombia        | 15.15              | 2         | Colombia        | 14.17              | 2        |
| Colombia        | 15.40              | 3         | Israel          | 14.08              | 3         | Ecuador         | 13.6               | 3        |
| Ecuador         | 12.10              | 4         | Ecuador         | 11.15              | 4         | Israel          | 8.94               | 4        |
| Zimbabwe        | 10.04              | 5         | Zimbabwe        | 8.69               | 5         | <b>Ethiopia</b> | <b>5.05</b>        | <b>5</b> |
| Thailand        | 2.84               | 6         | Thailand        | 2.71               | 6         | Zimbabwe        | 2.82               | 6        |
| Zambia          | 2.67               | 7         | Uganda          | 2.66               | 7         | Uganda          | 2.56               | 7        |
| Uganda          | 1.87               | 8         | Zambia          | 2.61               | 8         | Thailand        | 2.52               | 8        |
| South Africa    | 1.60               | 9         | South Africa    | 2.24               | 9         | Zambia          | 1.96               | 9        |
| Tanzania        | 1.45               | 10        | Turkey          | 1.67               | 10        | South Africa    | 1.62               | 10       |
|                 |                    |           |                 |                    |           |                 |                    |          |
| <b>Ethiopia</b> | <b>0.14</b>        | <b>24</b> | <b>Ethiopia</b> | <b>0.50</b>        | <b>15</b> |                 |                    |          |

Source: UN comtrade, but own calculation



**Table 4: Source of land and means of transport and credit**

|   |           |         |
|---|-----------|---------|
| How did this enterprise obtain land when started business?    | Frequency | %       |
| Government  | 53        | 82.9    |
| private/farmers   | 11        | 17.2    |
| Total   | 64        | 100     |
|   |           |         |
|   | Mean      | Maximum |
| Length of the lease period of the current contract? (Years)   | 27.5      | 90      |
| Over how long do you expect to pay the total cost? (Years)    | 21.5      | 85      |
|   |           |         |
| Do you have a term loan from a bank or financial institution? | Frequency | %       |
| Yes   | 48        | 75      |
| No  | 16        | 25      |
| Total   | 64        | 100     |
|   |           |         |
| What was the required collateral for your loan?               |           |         |
| Land  | 4         | 8.3     |
| Buildings   | 6         | 12.5    |
| Machinery & equipment   | 8         | 16.7    |
| Firm equity/project   | 29        | 62.5    |
| Total   | 48        | 100     |
|   |           |         |
| Air liner often used in exporting your flowers                |           |         |
| Ethiopian   | 55        | 87.3    |
| Lufthansa   | 1         | 1.6     |
| Emirates  | 5         | 7.9     |
| KLM   | 1         | 1.6     |
| Ethiopian, Emirates, & KLM                                    | 1         | 1.6     |

Source: own survey

**Table 5: expertise from other domestic flower company at initial production year**

| % managers and supervisors coming from other domestic flower company at initial production year | Number of firms by year of start of production |      |      |      |      |      |      |
|---|--|------|------|------|------|------|------|
|   | 2000   | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
| 0   | 1  |      | 3    | 3    | 16   | 4    | 4    |
| greater than zero   | 0  | 1    | 0    | 0    | 3    | 11   | 8    |
| 20% and above   | 0  | 0    | 0    | 0    | 2    | 8    | 6    |
| 40% and above   | 0  | 0    | 0    | 0    | 1    | 6    | 1    |
|   |  |      |      |      |      |      |      |
| All reported firms  | 1  | 1    | 3    | 3    | 19   | 15   | 12   |

Source: own survey

**Table 6: Top market destination countries for Ethiopian flower export 2008**

| Top market destination countries 2008           | Region      | exports millions USD | % of total exports |
|---|-------------|----------------------|--------------------|
| Netherlands                                     | EU          | 92.37                | 88.19              |
| Germany   | EU          | 3.95                 | 3.77               |
| United Kingdom                                  | EU          | 1.54                 | 1.47               |
| Japan   | Japan       | 1.32                 | 1.26               |
| United Arab Emirates                            | Middle East | 1.28                 | 1.23               |
| Saudi Arabia                                    | Middle East | 0.83                 | 0.79               |
| Russian Federation                              | East Europe | 0.68                 | 0.65               |
| Israel  | Middle East | 0.61                 | 0.58               |
| Ireland   | EU          | 0.46                 | 0.43               |
| Norway  | EU          | 0.41                 | 0.39               |
| South Africa                                    | Africa      | 0.27                 | 0.26               |
| France  | EU          | 0.16                 | 0.15               |
| Cyprus  | EU          | 0.12                 | 0.12               |
| Australia                                       | Australia   | 0.11                 | 0.10               |
|   |             |                      |                    |
| EU total  |             | 99.02                | 94.53              |
| All countries with 100,000 USD and above export |             | 104.09               | 99.38              |
| World   |             | 104.74               | 100.00             |

Source: own survey

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