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# SPIILLOVER STUDY

INSIGHTS FROM  
A PILOT STUDY

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# 1. Introduction

This paper sets out the findings of a pilot study commissioned by COLEAD into the so-called ‘spill-over effects’ of their work over the past two decades to improve the export horticulture value chain in Kenya. ‘Spillovers’ are understood as being the unintended impacts of development interventions, be those positive or negative. As they are not the intended effects, they are neither looked for nor measured by standard project performance matrices. Some work has been done in the past on this topic, for example by the Standards and Trade Development Facility (STDF). However, a systematic understanding of what these effects are and how they might be proactively integrated into future programming remains absent. The short study described in this paper was intended as a pilot to see what might be out there, as a precursor to a larger study in due course.

Since 2001, COLEAD has been working on a range of programmes designed to strengthen the agri-food export sector in ACP countries. The specific objective of these programme has been to enable smallholders, farmer groups and organisations, and MSMEs to access international and domestic horticultural markets by complying with SPS issues and market requirements, in a sustainable framework.

In each of these programmes food safety, food security and plant health were prominent. They were conducted alongside a diversity of trade-related SPS capacity building projects in low and middle-income countries over the past 20 years, supported by many bilateral and multilateral agencies as well as the private sector and academia. Progress has been made in many countries in terms of improved market access and enhanced SPS capabilities and practices. Advances have also been made in methods to assess, prioritise and target SPS capacity-building, and in the implementation of technical assistance programmes.

However, less understanding has been gained on how trade-related SPS capacity building affects domestic practices and institutions in recipient countries, or related development impacts in terms of productivity, health and livelihoods. Although the existence of these spillover effects is often claimed as an outcome of technical assistance programs, to-date there is little formal evidence. Assessing spillover effects is generally not factored into programme design, implementation, or evaluation. This current lack of understanding of if/how spillovers are generated currently limits the ability of agencies to ensure positive (and avoid negative) spillovers from trade-related capacity-building.

The Standards and Trade Development Facility (STDF) initiated activities to address this issue. In 2017-18, a project was funded to study indicators of [spillovers](#), implemented by Michigan State University. The aim was to draw key lessons to improve the design and delivery of trade-related technical assistance.

While this study provided some ideas on how to conceptualize domestic spillovers, it encountered methodological challenges, a lack of data in the literature, and minimal efforts by development programmes to systematically collect evidence. Nevertheless, it did highlight the pressing need to develop practical methods and advice for donor agencies and governments so that they are better able to factor spillovers into programme design.

COLEACP participated in the STDF Spillover Working Group and based on the findings, recommended a detailed country case to identify, analyse and assess spillover impacts of earlier SPS trade-related capacity building. This report sets out the findings of a pilot version of such a country case study, which focused specifically on the situation in Kenya. This country was selected because it is one where a great deal of activity has taken place over many years, and it therefore seemed likely that spillover effects were more likely to be observed. In designing this pilot, the view was taken that there was little to be gained from attempting to apportion impact to individual initiatives, but rather to explore the cumulative impact of programming by COLEAD and others.

In the context of the STDF activities, spillover effects were defined as “unintended or side benefits of trade-related SPS capacity building programs on the domestic food safety and plant health situation.” This case study will take a broader view and look at potential spillovers in a broader context including impacts on resilience, livelihoods, and power dynamics.

The findings are based on fieldwork undertaken in Kenya between June and August 2023. This included interviews and focus groups discussions held with stakeholders at some points in the in-country horticulture value chain. Some of these were undertaken by a visiting consultant in June 2023, and by two local research teams. In total more than 100 people were involved in the research.

This study has identified some very clear spillover effects, which have significant implications for future programming both in Kenya and elsewhere. What is needed now is a more detailed, in-depth research process to examine in more detail those spillovers which this study has described. This will enable COLEAD and others to be able proactively integrate these impacts into what they do next in Kenya and in other focal areas.



## 2. Support to export horticulture in Kenya

### 2.1 International support to Kenya

International agencies have been working with the Kenyan export horticulture sector since the early 2000s with the expressed aim of supporting that sector to be able to export successfully to international markets, including the EU. This work was prompted by the realisation that “despite the overall decline in tariff levels in recent years, firms in developing countries have not been able to reap the full benefits of market access opportunities. One explanation for this is the difficulty they face in complying with trade-related standards. Unlocking the full export potential of developing countries requires compliance with both the public regulations and the private standards of the importing countries.”<sup>1</sup>

Programmes have been undertaken by a range of institutions, of which COLEAD is only one. These projects have often worked together and overlapped. This means that seeking to identify the spillover effects of the activities of one institution would be extremely difficult, if not impossible. For the purposes of this study therefore, the aim has been to explore the spillover effects of support programmes *in toto* which have sought to facilitate Kenya’s export horticulture sector to export to international markets.

### 2.2 COLEAD in Kenya

Notwithstanding the above, it is important for the completeness of this report that some of COLEAD’s main activities in Kenya over the past two decades are detailed. Moreover, programmes undertaken by COLEAD are broadly representative of the wider set of interventions. COLEAD’s work has focused on three areas:

- **Supporting exporting companies:** Training and technical assistance has been provided to firms exporting or wanting to export to the EU. The aim is to ensure that they have the correct capabilities and processes in place to be able to comply with EU regulations and market requirements on issues such as pesticide residues, food safety and traceability.
- **Building the enabling environment:** COLEAD has also worked to develop a network of supporting companies and institutions to support export horticulture. This has been designed to ensure that, at various steps in the supply chain, Kenyan exporters have access to domestic expertise.
- **Research:** The focus here has been on ensuring that competent authorities (research entities and regulators) in countries like Kenya can develop an appropriate regulatory environment to support its exporters. The aim is to support medium and long-term policies to build productive capacity, inspire innovation, and enhance the sustainability and competitiveness of the private sector.

Support actions have been on a demand-led and cost sharing basis. The COLEAD approach has been to enhance existing value chains, and to target support to operators where they identify a need, and demonstrate a clear business case (most often to meet the requirements of their destination markets). Non-substitution of local stakeholders in their respective roles and responsibilities is also a key principle.

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<sup>1</sup> UNIDO. *Meeting Standards, Winning Markets. Trade Standards Compliance*. UNIDO 2010

COLEAD has been working in Kenya since 2001, and since 2021 has maintained an office in Nairobi to support its work. Over the past two decades, COLEAD has operated a number of programmes, including the following:

### 2.3 Pesticide Initiative Programme (PIP) phases 1 and 2.

The first phase of PIP, which ran from 2001 to 2009 aimed to help small and medium sized producers benefit from a lasting and fair strengthening of the competitiveness of the ACP horticultural companies resulting at least in maintaining the value of their market shares in EU imports.

Specifically, PIP aimed to secure the compliance of exported products with the EU regulations, whether in terms of MRLs or the establishment of reliable traceability systems. The aim was to improve the sanitary quality of fresh horticultural products from ACP countries and adapt them to the international standards of importing countries and the growing demands of customers.

Phase 2, which took place between 2009 and 2015, aimed at maintaining and, where possible, increasing the contribution of export horticulture to the alleviation of rural poverty in ACP countries. It did this by improving the compliance of the supply of ACP horticultural products with European regulatory requirements and market demand (food safety, environmental and social standards); and by supporting capacity development of all stakeholders in the ACP horticultural sector to adapt to changing market requirements.

### 2.4 EDES Food Safety Programme (2010-2015)

The EDES Food Safety programme aimed to strengthen the food control system in Kenya working with both the private and public sector in various value chains including horticulture. EDES implemented additional activities, to adapt to additional requests for support due to uprising emergencies in the domain of food safety in Kenya.

The first was the MRL crisis on peas and beans that emerged in 2013 because of the high number of EU RASFF notifications for MRL exceedances for these crops. This resulted in additional requests for support from KEPHIS and PCPB. Support was provided to draft a national residue control plan, to increase the KEPHIS lab analytical capacity and to perform pesticide quality control. This also included the development of the Self-Assessment Guide (SAG) for beans and peas.

The second crisis, which emerged in 2014, was the increase in interceptions on harmful organisms in Capsicum, more specifically the presence of larvae of the False Codling Moth in the produce.

### 2.5 NExT Kenya (2020 – 2025)

Initiated in 2020, the focus of this programme is on value chains with high market potential. Beneficiaries include exporting companies, service providers, government bodies and trade associations. Interventions include work in the following areas:

- **Climate change resilience and environmental management:** Specific support includes management of energy use at packhouse level, and the use of solar energy for drip irrigation, as well as compost and bio-gas production. Support has been offered to companies that

want to implement Environmental Impact Assessment, and apply good environmental management practices.

- **Post harvest losses:** To address this problem, interventions have included industry Good Practice Guide for avocado was produced in 2023. Other steps include assessments of companies' IPM strategies for avocado and mango, followed by IPM training for producers of these crops.
- **SPS compliance:** The Kenyan horticultural sector is supported to implement any necessary adaptations in line with the new EU Plant Health regulations. This includes sensitisation of the Kenyan horticultural sector stakeholders on new regulations; peer-to-peer information and training sessions; and support to companies experiencing particular problems.
- **Business performance:** This includes encouragement to young farmers to engage in export production, and companies are being trained to assist their out growers in better financial planning and cashflow management of their production. For companies, support is provided to improve their business models and operational plans to improve performance.
- **Strengthening of the private sector associations:** Support includes the development of a data management strategy, representing members at international trade fairs and trade missions, as well as to train and coach their members on SPS related matters.

## 2.6 Agrinfo (2022-2026)

Established in 2022, this is an information programme that provides enhanced data and knowledge to developing and emerging countries, covering EU policies, regulatory and non-regulatory measures, standards, and market trends that have a potential impact on the competitiveness, market access and trade dynamics of agricultural value chains linked to the EU market. Its key activities are as follows:

- Identify and monitor EU policies, and market trends in agriculture and agrifood that have a potential impact on competitiveness, market access and trade dynamics in partner countries.
- Generate and disseminate accessible, regularly updated digital information on conditions and requirements for EU market access and competitiveness.
- Capture evidence of the evolving impacts of these conditions and requirements on agricultural value chains in developing and emerging economies
- Contribute to information sharing and engagement among stakeholders to ensure better understanding and to inform policymaking and standard-setting processes
- Offer targeted information on demand, to inform the design of strategies and actions to minimise or mitigate negative impacts, and to leverage opportunities.

## 2.7 Fit for Market (2016-2023)

Fit For Market aims to maintain and improve the capacity of smallholders, farmer groups and horticultural MSMEs to access domestic, regional, and international markets through the progressive sustainable intensification of the horticultural sector. The aim is to facilitate the transition of horticulture in Kenya and elsewhere towards more sustainable food systems. Key actions will include:

- Strengthening the capacity of smallholders, farmer groups and horticultural MSMEs to access domestic, regional and international markets by complying with regulatory and market requirements in a sustainable framework.
- Ensuring these stakeholders have the business skills and tools to pursue and improve their operations through enhanced capacity to manage change and facilitate access to finance.

- Leveraging market opportunities resulting from Covid-19 disruptions, and monitor conditions and requirements for market access and competitiveness.
- Enhancing the capacity of ACP competent authorities to support the agri-food sector.
- Brokering technical innovation and research to generate the knowledge, skills and technologies needed to facilitate the transition of horticulture.

## 3. Methodology

### 3.1 Research scope and aims

Efforts have been made before to identify and quantify spillover effects. For example, the Standards and Trade Development Facility (STDF) funded a project to study indicators of spillovers, implemented by Michigan State University. Whilst this work provided some ideas on how to conceptualize domestic spillovers, it encountered methodological challenges, a lack of data in the literature, and minimal efforts by development programmes to systematically collect evidence.

Put simply, spillovers probably exist, but defining them precisely is hard, and obtaining data to prove their existence even harder. In practice, neither of these things is surprising. The log-frame approach ensures that interventions are designed with clear outcomes in mind, and with metrics to quantify those outcomes. Definitionally, spillovers are impacts that were not intended, and therefore not looked for as an intervention procedure, nor are metrics in place for them.

Identifying whether spillovers exist is vital to intelligent planning of interventions. If a given project can achieve more, by planning in those things which currently happen 'by accident' then that greatly improves the effectiveness of the resources deployed. Equally, if negative spillovers can be identified, it is possible for programmes to avoid these in future.

The aim of this research process was to build on the work of STDF and others by looking, in a systematic way for spillover effects, but recognising that quantifiable data was unlikely to be available to substantiate them. This project proceeded therefore with the aim of establishing reasonable grounds to say that a spillover had occurred. Assuming that some spillovers had been so identified, the intention is then to undertake a more detailed study to define them more precisely, and to develop data sources to demonstrate change.

The aim of this study was not to seek to isolate specific spillover effects only from the interventions undertaken by COLEAD. As noted elsewhere, programming by COLEAD and by others is sufficiently intertwined to make this difficult, if not impossible for a small research project such as this one.

### 3.2 Drawing on previous studies

The existing literature exploring spillover effects specifically of SPS and similar training interventions is limited. The most significant piece of work to date has been the STDF study conducted in 2018.<sup>2</sup> This reviewed the very limited studies on the topic in peer-review journals as well as evaluations and reviews of a range of SPS training programme from a wide range of countries. Whilst concluding that "most of the evidence for spillover effects was anecdotal in nature", this study was able to "develop hypotheses" which have been valuable in shaping the design of this present study. The STDF identified 19=8 "potential spillover effects", which included:

- Adoption of good practices by farmers and SMEs for exported products extends to different products sold in local markets.
- Investments in regulatory capacity for supporting exports also results in strengthened domestic food safety policies and improved regulatory compliance for the local market.

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2 Bourquin L & D Thiagarajan. *Spillover Effects of Export-Oriented SPS Technical Assistance on the Domestic Food Safety Situation*. Michigan State University Dec 2018.

- Technical assistance projects aimed at meeting maximum residue limits (MRLs) for pesticide residues in fruit and vegetable products may reduce environmental pollution and reduce cases of pesticide poisoning among farm workers.
- Increasing consumer awareness of food safety as a result of technical assistance projects can create demand for safer food.
- Demonstration of effective food safety management in one or more value chains in a country can have positive spillovers for other value chains

The STDF hypothesis drawn from its global review that farmers trained in good practices in relation to export crops apply those practices those for the domestic market is borne out by an earlier study looking specifically at Kirinyaga county in Kenya. This studies found “that all interviewed GlobalGAP certified farmers applied the good pesticide use practices used in the export market on their tomatoes destined for the domestic market. Most of the interviewed farmers from non-certified GlobalGAP farmers however did not meet the good crop protection practices.”<sup>3</sup> A 2019 study of the mango sector in Kenya bore out another of the STDF’s hypotheses, that good practices learned in relation to one crop are carried over into practice in others. This study explored the use of IPM to control fruit flies and examined how practice in relation the mango crop had impacted on practice in relation to other crops susceptible to this pest, specifically avocado, pawpaw, citrus and banana. This study “found positive and significant cross-commodity spillover effects in respect of employing the IPM strategy for fruit fly targeting pawpaw and citrus, suggesting a wide scope for IPM investment in Kenya and other fruit-producing regions.”

There is, however, also a wider literature which explores spillover effects in other supply chains. A particular area of focus is how mobility between firms can improve knowledge and practices within an industry as those who have been trained in one firm are hired into others. These spillover studies have mostly focused on developed countries, but nonetheless provide interesting insights which inform this current work in Kenya. For example, a study of Danish manufacturing between 1995 and 2007<sup>4</sup> found that “new workers coming from more productive firms increase the hiring firms’ productivity.” However, it is not just the firms that benefit: “workers, new as well as incumbent, benefit too,” in terms of wage increases. A similar study, focused on Germany<sup>5</sup>, reached a similar but slightly more nuanced conclusion. “Hiring workers from more productive firms can increase hiring firms’ productivity (“learning by hiring”), but...We suggest that hiring the top-performers from less productive firms could be equally – or even more – effective.” Interestingly, this study also commented on the lack of insight available into spillover effects, and the challenge of demonstrating them: “empirical identification is still a challenge, due to the multifaceted concept of knowledge and a lack of suitable data or identification strategies.”

Also relevant to this study is the literature around regulatory spillovers, which echoes one of the hypotheses put forward by the STDF review, that work done to strengthen the regulatory regime on one crop strengthens practice in other areas. The idea that such spillovers might exist has long been under consideration, and as far ago as 2006<sup>6</sup>, one study spoke of the importance of “investments in research to support management and control of hazards, improved infrastructure

3 Maundu JN. *The spillover of good crop protection practices for export crops to crops for the domestic market: A case of Kirinyaga district, Kenya*. University of Applied Science, Wageningen 2009

4 Dtoyanov A & N Zubanov. *Money on the Table? Firms’ and Workers’ Gains from Productivity Spillovers through Worker Mobility*. Discussion paper 7702. Institute for the Study of Labour, Bonn 2013

5 Stockinger B & K Wolf. *Do Knowledge Spillovers through Worker Inflows Increase Establishments’ Productivity? First Evidence from Germany*. Institute for Employment Research. Nuremberg. 2015.

6 Unnevehr LJ. *Food Safety as a Global Public Good: Is There Underinvestment?* Presentation to the International Association of Agricultural Economists Conference, 2006

for sanitation and preservation, and inspection or monitoring to support certification,” and concluded that “the spillover benefits from such investments are likely to be large for developing country consumers in the long run.”

Exactly how these spillovers develop has been the subject of more recent work. One study,<sup>7</sup> for example, develops the notion of ‘science diplomacy’, and argues that engagement by the World Trade Organisation and other international bodies with governmental agencies in sub-Saharan Africa has developed the latter’s ability both to engage at an international level, and to develop effective regulation internally. “Science diplomacy takes on the shape of an international effort to mobilise expertise towards building scientific and technical capacity in SSA and through improving SSA state representation in international standard setting. Such efforts hold traction amongst SSA states as they are connected to improving SSA states’ participation in the multilateral trading system governed by WTO as well as to advance their capacity to design regulations that safeguard human, animal, plant life and health.”

There has also been exploration about how regional cooperation can enhance spillovers in technical performance. Using patent data for 114 countries/ regions for the period 1991-2007, one study<sup>8</sup> found that strong integration within regional trade agreements does indeed lead to more spillovers. A larger study, produced for the International Centre for Trade and Sustainable Development (ICTSD) and the World Economic Forum<sup>9</sup> found that “instead of deliberation in the WTO, the focus of attention in addressing [regulatory] spillovers has been shifting to regional and plurilateral fora” The study notes that “the policy spillover agenda spans health and safety norms, certification requirements for services providers, policies pertaining to data security and privacy.” It concludes that international cooperation can help address how national regulation and standards needs to alter so as not to be effectively barriers to trade, because for example they may be seen as protectionist.

### 3.3 Research process

#### 3.3.1 Preliminary workshop

A workshop was held in Brussels with a number of key people at COLEAD who have worked extensively on the organisation’s projects in Kenya. The aim was to draw on that experience to identify what those individuals felt to be spillovers that either seemed possible given the work being done, or that they themselves thought they had observed. The following spillovers were hypothesised:

- **Knowledge:** The work done on export markets like EU affects the behaviours on other markets/ domestic consumption in relation to food safety hazards, incidence and detection and an enterprise’s practices to manage food safety risks.
- **Good regulatory practice:** Work done to support export agriculture has improved primary production and industry systems for exports provide lessons for domestic markets; risk-based import controls boost domestic food safety.
- **Other institutional spillovers:** Interventions have strengthened industry capacities and food

7 Hornsby DJ & A Parshotam. *Science Diplomacy, Epistemic Communities, and Practice in Sub-Saharan Africa*. In ‘Global Policy’ May 2018

8 Jinji N, X Zhang & S Haruna. *Do deeper regional trade agreements enhance international technology spillovers?* In ‘The World Economy’ Apr 2019

9 Hoekman B & PC Mavroidis. *Regulatory Spillovers and the Trading System: From Coherence to Cooperation*. E15 Task Force on Regulatory Systems Coherence. Apr 2015

safety programmes; models for product traceability, successful track records of public-private partnerships, etc.

- **Infrastructure spillovers:** deployment of upgraded laboratory testing capacity for hazard and market surveillance; upgraded fish landing sites and market collection centres have benefited the wider horticulture and agriculture sectors.
- **Incentive-related spillovers:** increased consumer and enterprise awareness of food safety boosts domestic demand and supply of safe food, reaching smaller food businesses.
- **Standards compliance spillovers:** trade-associated practices (such as more careful use of pesticides, antibiotics and food additives) influences other farmers/firms and reduces pollution.

### 3.3.2 Primary research

This was undertaken between June and August 2023. It consisted of interviews and focus groups held with stakeholders at all points in the in-country green bean value chain. Some of these were undertaken by a visiting consultant, in June 2023, and by two local research teams, during July and August 2023. In total more than 100 people participated in the research.

The timeframe in which this research was undertaken implied that a purposive sampling approach was used. This meant that the process could cover as much ground as possible in the relatively short timescale available. This was greatly assisted by the fact that the local research team had considerable experience in researching horticulture supply chains and therefore had excellent contacts through the sector. As far as possible the research focused on companies, service providers, pack houses and farmers which were in the same supply chain. The research focused on two counties which have both been subject to considerable focus by international programming but differ in the structure of their horticulture sector. Kajiado works largely with producer groups and largescale production; whereas in Kirinyaga, the sector has relied more on smallholder farmers.

It was important to capture potential spillovers at different stages of the supply chain. The research process was therefore designed in such a way as to interact specifically with a range of different stakeholder groups. This interaction was undertaken through a mixture of interviews and focus groups, the choice of which being defined by which would be most likely to elicit information from the stakeholder. Key stakeholder groups, and means of interaction were as follows:

STAKEHOLDER GROUP	MEANS OF INTERACTION
Senior managers of exporting companies	One on one interviews
Representatives of service providers	Interviews and focus groups
Representatives of government agencies	One on one interviews
SMEs servicing different elements of the value chain	One on one interviews
Pack house workers	Male/ female focus groups
Smallholder farmers and farmer groups	Male/ female focus groups
Workers on commercial farms	Male/ female focus groups



## 4. Findings

This chapter sets out the findings of the research. The terms of reference for this study defined “spillovers’ as being unintended impacts (not planned or anticipated) that resulted from SPS-focused interventions”. The aim is to better understand what those effects might be – both positive and negative – so that future support interventions can be designed more carefully with those spillovers in mind. The research has identified several such spillovers. However, in addition to that, it has also identified a number of other factors which are relevant to inform how programmes are designed in future. Although the spillovers identified overlap to some degree, this chapter has been organised to group them under key headings, which are as follows:

- **General observations on programmes:** Research identified issues which, whilst not strictly spillovers, are relevant to be included here as they impact on how future programmes may be planned.
- **Economic development and incomes:** The technical training interventions designed to support Kenya’s export horticulture sector have had significant impacts on economic development at a country level, and on incomes for individuals.
- **Transfer effects:** Although interventions have focused on export horticulture, there have also been impacts on Kenya more broadly, in areas such as government provision and how farmers are organised.
- **Capabilities and attitudes:** Spillovers at a technical and operational level have had effects which have evidently altered behaviours and attitudes at a deeper level. These impact on power dynamics and relationships.

### 4.1 General observations

The overarching aim of this research is to identify themes and insights in programmes to date which can inform the improved interventions in future. Whilst the main focus is on ‘spillover effects’, other issues emerged which need to be noted since they are relevant for next generation programme design.

#### 4.1.1 Variability of impact

Probably the most significant observation which cannot strictly be defined as a ‘spillover’ is the variability in impact of the primary aim of the support provided by the COLEAD interventions. In some instances, FGDs and interviews have demonstrated that interventions such as SPS training have had a profoundly deep effect and has fundamentally shifted behaviours amongst different stakeholder groups. In other cases, interventions seem to have had almost no lasting effect – “we had some training a couple of years ago, but not since” was a comment from one interviewee.

An example was a farmer cooperative in Kirinyaga. They said that although they knew about the importance of PPE, only two of the twelve in the group used this protection. The others simply used old clothes when spraying. Similarly, although they knew the importance of proper signage, for example putting red flags on sprayed areas, this practice was not used regularly. In this case, the unwillingness to adhere to SPS protocols was closely linked in the farmers’ minds with the low prices they felt they received, in this case for beans. It also appeared that SPS training had not been properly repeated in this area – some of them said that the last time training was provided was as long ago as 2015. As a result, younger farmers have never had any training at all.

By contrast, another farmer cooperative in the same region reported that they had regular and continually updated training. This training seemed to be adopted through changed practices in their work, for example building a dedicated chemical store, observation of PHIs and bringing used pesticide containers back to be properly disposed of.

#### *4.1.2 The importance of communication*

Quite why there is such a disparity between two cooperatives in the same area is not completely clear. However, one possibility is the attitude and behaviour of the exporting firm, in particular in relation to how it communicates with its farmer base. In a number of farmer interviews, they complained that they had no visibility on orders and therefore saw no reason to maintain high SPS standards. Equally, some packhouses and exporters felt they had insufficient communication from farmer cooperatives. Where levels of communication were high, where farmers had clarity about what to deliver and when, and where processing firms and exporters communicated, there was both greater efficiency, and satisfaction with being part of the green bean business.

In some cases, poor communication comes to be seen as dishonesty on the part of the exporters. An example given by this group was where farmers deliver produce which is accepted at farm level, but then rejected by a pack house because of alleged grade changes. It was also alleged that “‘rejected’ produce is never returned.” This group recommended establishing forums and structures to improve information sharing – “growers’ involvement along the marketing chain will resolve this on return of the rejects.”

One of the service-provider focus groups also commented on communications problems between farmers and exporters, and observed that it would be valuable if programmes such as those supported by COLEAD concentrated more on this challenge. The comment of a farmer cooperative was that Government agencies should do more to ensure this dialogue takes place.

## **4.2 Economic development and incomes**

The interventions by COLEAD and others over the past two decades have clearly had significant spillover effects in terms of economic development at sectoral level, in the expansion of a cadre of capable businesses in operation, and in development of the incomes of individuals along the supply chain.

### *4.2.1 Sector development*

At its most fundamental, the types of interventions which COLEAD and others have provided has allowed the Kenyan horticulture sector to capitalise on the huge expansion in demand from Europe and elsewhere. In 2022, Kenya’s exports of fresh horticulture products stood at around \$1bn<sup>10</sup>.

Over the past two decades, Kenyan export horticulture has been most synonymous with French beans. In many interviews, there was much complaint about this crop, and in particular stagnation in prices. “The price I get for my beans has not changed much in years, but my costs still rise and import regulations into our markets keep getting tighter,” was a complaint from one export firm, typical of comments made by others.

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<sup>10</sup> Statista. *Export value of fresh horticultural products in Kenya from 2016 to 2022* [Kenya: export value of horticulture | Statista](#) (accessed 25/09/23)

Despite these complaints, it is also the case that green beans remain a popular crop to grow. It has significant advantages, in particular for farmers who have a crop that can be harvested every 45 days, giving a more regular income over the year. The general view, as expressed by one export company was that “it is a good business to be in, albeit with high risks.”

It is also clear that, although the focus initially was on relatively narrow selection of crops – principally flowers and green beans – there has subsequently been a huge increase in the crops grown and exported. “Our food crop exports now include carrots, beans, cabbage, and aubergines. We also cultivate fruits which would not have been traditional: there’s now a boom in things like passion fruit, mango, and pineapple.” There has also been a focus on developing the export of crops which operate well in crop rotation with beans. This includes herbs and spices for example, and what are termed ‘medicinal and aromatic plants’ (MAPS) which also have much higher per-kilo prices.

This means that Kenya has the resilience to respond to changing patterns of demand from markets like Europe. “We know consumers want to buy cheaply, so if you’re exporting green beans from Morocco, where it is only a few kilometres from Spain, you have a huge price advantage,” was the observation of one exporter: “it means we’ve had to diversify.”

Changes in end markets also appears to be driving some interesting moves into value addition. One interviewee, for example observed that their customers in Europe are increasing the use of goods packed at source. “The cost of labour in the UK is around £10 per hour, so it can work out more cheaply for us to wash and pre-pack in Kenya, for example pre-packed salads or packs of mixed vegetables.” Another commented that this type of change was also happening in the flower sector: “we are not just growing the flower, in some cases we are also making them into bouquets.” Another interviewee observed that in the Rift Valley area, there is an increase in the growing of avocados to be turned in to avocado oil.

#### *4.2.2 COLEAD support as a springboard*

It is clear that programming supported by COLEAD and others has provided a base of experience and learning that has been widely used as a springboard to grow and develop. Indeed, one interviewee (themselves working for a smaller exporter whose leadership had previously worked for a larger one) observed, the types of interventions supported by COLEAD and others has “led to the creation of a whole new food safety industry; auditors, inspectors and certifiers. This has created job opportunities for many people.” One interviewee commented that those who became involved in the training programmes at an early stage are now the leaders in the business. Examples of this were identified throughout the value chain.

### **Exporters**

A number of the exporting firms interviewed reported that engagement with COLEAD had a wider impact on their corporate development than simply ensuring that their practices met the necessary SPS and other regulatory requirements. This in turn had enabled them to build their businesses in ways which would not have been possible without that engagement. As one company managing director explained, their business had been able to grow in “confidence and culture.”

This process of development appears to have evolved through a number of phases. One company, established in 2004 engaged with SPS and other training simply because it was a “tick in the box”

to allow them access to international markets. However, over time, the company representative explained, the need for these practices had become internalised. “Now we treat every day as if it is audit day.”

This, the representative reported, had led to significant changes in their business model, in particular in realising the need to work more closely with smallholder farmers. Historically this relationship had been at arm’s length, but now the company works much more closely with them to ensure good practice along the supply chain. They now have well-developed contract farming arrangements in place. This in turn had led to working with farmers to explore how to expand their operations to include other crops, mango for example.

It is clear also that engagement with COLEAD (in this case, specifically on the PIP programme) has provided this company with other experience and connections than simply those related to the training. They have an agent in Switzerland with whom they work, and sell into the Middle East and other parts of Africa: “We would not have got these connections [to do this] except through COLEAD.” The company has now expanded into the processing of mangos into pulp, which is sold to customers including Coca Cola and PepsiCo.

A second exporter reported a similar trajectory. This company had originated with the current owner’s mother selling her farm’s produce at local markets. The firm had begun to sell into European markets but reported that their approach to issues such as SPS was “informal.” As with the firm above, this company evidently feels that the training delivered through COLEAD provided more than just the technical ability to access export markets more effectively, but also allowed the company to grow in confidence and to develop its own internal systems. “Engagement with COLEAD has meant we see things differently as we now have more of an understanding of what is going on in the wider world. That’s really influenced our strategy.” The company also reported that the need to put systems in place to manage regulatory compliance had also led them to put in place systems and processes in other areas of their business, for example in relation to human resources policies, contract management and other internal procedures. “We have changed from being an informal business to being a formal one.”

### **SME development**

A number of interviewees commented on the emergence, over the past decade or so of a number of new exporting firms set up by individuals who had been working within an existing export firm. These individuals have learned about the market and the correct processes needed to export and have decided to set up business for themselves. The gradual expansion of the sector over time means that the opportunity is there for those with the necessary entrepreneurial flair. As one interviewee observed: “as the barrier to market entry is low, it is easy for anyone who has knowledge, connections and capital to become an exporter.” The fact of new companies coming into existence also has the effect of creating new jobs, and of further spreading good practice in relation to SPS and other similar practices as these new companies train their staff.

One such individual interviewed had been an employee of an export company and had benefited from SPS training on topics including safe use of chemicals, IPM and pest and disease identification. He had subsequently set up his own business as an agrochemical dealer in Sagana in Kirinyaga. He now supplies to local farmers and, he claims, only deals in genuine chemicals and is sensitive about safety.

## Service providers

However, it is not only exporting firms which have leveraged engagement with SPS and other training to develop in broader ways and so been able to expand in ways they might not otherwise have been possible. This is true of those service providers along the supply chain.

For example, an interview was undertaken by a specialist which had supported COLEAD's work in supporting the Government to introduce improved legal and regulatory frameworks to assist export horticulture. This work has enabled the provider to develop a better understanding of the challenges of making these changes, and how to overcome these. This knowledge had enabled them to work in other parts of Africa, and had provided support to governments in Tanzania, Sierra Leone and Tanzania.

A focus group of service providers who had provided training to companies on GlobalGAP and on internal policies observed that being a service provider used by COLEAD and other international providers is a very strong CV point and allowed them to secure contracts with organisations like UNIDO and Solidaridad. One of their number had gone on to be a GlobalGAP auditor. The work is also, they said, a good networking opportunity both with other trainers in Kenya and internationally. This group commented on the fact that they had been able to attend Biofach (a global agribusiness trade fair). Some were even following up opportunities in other countries, including the US, India, and China. China appeared to be of considerable interest as many exporters from there require GlobalGAP certification.

Interviews were also undertaken with individuals who have set themselves up as independent crop sprayers having received training in this by COLEAD-backed programmes. For most, this opportunity would not have existed in the past. These individuals appeared to have developed a reasonably diversified portfolio of clients. One works with both export-oriented farmers, and others serving the domestic market, providing spraying services to farmers growing a range of crops including capsicums, tomatoes, and cucumbers. Another worked in tick spraying for livestock. Another has a contract with the Government to provide emergency spraying services when that is required, for example during a recent army worm outbreak. He also gets work as a trainer on farmer field days in the area. This was borne out also by comments made at the third of the FGDs with technical managers: that a lot of peer-to-peer training went on outside the scope of the project-provided training.

However, it is not just the case that training provided through COLEAD intervention has enabled these individuals to set up their own businesses. It has also put them in a stronger position in relation to the companies selling the chemical sprays. "I know how to identify when a product is fake, and I pay attention to sell-by dates, so I know what I am getting", was the observation of one independent sprayer. Another observed that "counterfeit pesticides are a big problem, but my training helps me to spot them." They also reported that the training had provided them with a network of colleagues from whom they could seek advice: "if there is a new chemical, I can ask the people I trained with."

### *4.2.3 Impact on incomes*

The effects at sectoral, company and business level detailed above have also had effects on individuals at different stages of the supply chain. Although this effect has been variable, a large number of those interviewed along the value chain reported that involvement in the export

horticulture had provided them with higher incomes and greater visibility of income.

One farmer, for example, explained that this improved income stream had allowed him to negotiate a deal on payment of school fees. His two sons were in high school simultaneously, he could take them to school without immediate payment of school fees. Instead, he would assure the head teacher that he would complete the fees before the term's end, paying in instalments every two weeks. His income from green beans received every two weeks, allowed him to pay school fees in a manageable manner, successfully funding both his sons' education. Another group, of women farmers, reported that their incomes had increased, which allowed them to pay for education, healthcare, and for 'treats' such as "nice clothes and getting our hair done." Other groups also reported better and more visible incomes. A focus group of GlobalGAP training providers observed that because COLEAD pays competitive rates, this strengthens their hand when negotiating with others.

There has also been impacts on visibility of incomes, specifically because on SPS and other issues has led to greater consistency of quality. "Our customers appreciate the quality of the goods we provide, and the fact that we almost never have rejections. That means they give us more orders," observed one packhouse manager. The same was commented on also by farmer groups which have adopted good SPS practices. "Because we stick to the required measures, we no longer face rejections from our customers because of chemical residues," commented a farmer group in Kajiado.

However, the impact on incomes seems also to have been driven to some degree by cost savings. Some farmers reported that because they had been taught to scout for pests on their farms, they needed to spray less, and therefore saved money.

It is clear that, in at least some cases, engagement with COLEAD training has allowed a diversification of income. One of the technical trainers interviewed, who had been trained as a spray service provider observed that he was now able to generate incomes both as a trainer, and as a sprayer. Another individual, operating in the Ngong area is now, because of the training he has received, able to offer services to local farmers in spraying, planting, irrigation services and greenhouse management. Farmers, for example a cooperative in Kirinyaga, found that applying good SPS to other crops had improved yields of maize, kale, and tomatoes.

#### *4.2.4 Piece rate*

Notwithstanding the observations above, there are payment challenges, in particular in relation to the fact that almost all packhouse workers are paid on a piece rate basis. Many reported that reaching a daily quota required them to work very long hours. One group of packhouse workers gave a clear example of how problematic a piece rate can be. They said that during the wet season the produce is more likely to be muddy or damaged by rain. This means workers will spend more time sorting the produce, rather than packing. They are paid at a piece rate therefore when they spend more time sorting it means they will pack less or spend more time working in order to meet their daily target. This, a number of pack house groups commented, leads to fatigue and tiredness.

The impact of piece rate on behaviours was apparent even in the way in which the FDGs operated. In one group in Kirinyaga, for example, those with packing experience were excluded from the FGD to ensure they met the day's production targets efficiently, as they were quicker at packing. This decision was likely influenced by the FGD consuming production time. The time the

participants spent at the FGD is likely not be compensated for. This also infringed upon their lunch break.

This challenge is, of course, not a spillover from the support programmes provided by COLEAD and others, but of the prevailing norms in the export sector. On one level it is understandable why processing companies, which themselves are working to tight budgets because of the pressure from their customers in Europe, use this approach.

This appears to be, therefore, an instance of where a negative spillovers of the industry could usefully have been factored into the support programmes. COLEAD and others cannot dictate commercial practices of the firms they work with, but future programming could do more to raise awareness of the real-world impacts of the use of piece rate and creating a space for dialogue within and between value chain players. As the ILO comments “workers relying on piece rate wages often constitute a vulnerable section of workers”, and generally piece work is seen as generally undesirable, and needs to provide a worker with at least a level of income consistent with a locally-prevailing minimum wage.” Engaging in discussions about how this might be achieved in Kenya’s export horticulture sector would be very valuable.

### 4.3 Broader impacts of interventions

A central question asked at the outset of the planning of this project was how far work specifically in the export horticulture sector had impacted upon other parts of the Kenyan economy and government. It is clear from many of the interviews and focus groups that important spillovers have occurred.

#### 4.3.1 *Impacts on domestic consumption*

An obvious ‘spillover’ for this study to explore was the degree to which skills and lessons learned in relation to SPS behaviours for export markets were being applied also to the production of goods for the domestic market. Whilst there were a few exceptions, the fairly clear indication from most interviews and FGDs is that this anticipated spillover is correct. Along the supply chain from farmers through to packhouses there seems to have been a shift to apply those practices needed for export also to goods for domestic consumption.

One of the groups of technical managers interviewed was clear that the training they provided to farmers in plant health and SPS was being used by those farmers for goods produced for domestic consumption, as well as for the international market. Another of these groups stated that farmers had become more aware of the need to observe pre-harvest intervals for crops for domestic consumption, as well as for export.

A number of interviewees observed significant changes in how the domestic market for fresh produce operates in Kenya. Historically, most people would have gone to markets where they would have bought goods loose. More recently, increasing numbers of the urban population shop in supermarkets. This means that increasingly they are buying fresh produce pre-packed. Obviously, this change is the result of many socio-economic factors, but a number of interviewees commented that the growth of the green bean sector made more people aware of pre-packed food and comfortable with buying in this way.

Such changes, however, appear to be far from universal. One farmer explained that he had

approached a school to sell tomatoes he had produced observing SPS measures. He told the school the tomatoes were safe for consumption because he observes the relevant pre-harvest intervals, used the recommended pesticides as well as observed hygiene practices. Another farmer who doesn't observe SPS measures approached the school and offered them tomatoes at a cheaper price, and the school chose to go with the cheaper ones, not the healthier ones.

#### *4.3.2 Government infrastructure*

A clear and highly-desirable spillover from interventions supported by COLEAD and others has been to create robust structures in the Kenyan government to underpin the success of the horticulture sector. There is a solid set of institutions in existence and, although some weaknesses remain, there appears to be a professional and competent cadre of officials. Manifestly, this is not due just to work in the green bean sector, but interviews suggested that the importance of this market was a catalyst to improving the performance of the Government and its agencies.

A number of the interviews with Government agencies demonstrated an increasing degree of sophistication in how they manage their affairs. One agency, for example described a process it had developed for internal assessment process to identify over time where they might need to improve. This was designed to be a proactive process to understand where challenges or changes may be needed, rather than react to issues identified by the audit processes of the EU or elsewhere.

This proactivity also appears to be preparing government and the horticulture sector to be able to respond to increasing demand for other crops. "We know that export markets will have tight requirements of other crops, like mango, but we now have the infrastructure to anticipate that and understand what we need to do to deliver the quality and specifications that will be required."

As part of this process, this agency is also proactively looking for information about the specific requirements of different destination markets. "What usually limits market access is lack of information about that market and what the restrictions might be. We can conduct research into this and therefore be able to collect data that can then be used to secure market access."

It is also clear that the governmental capacity which has been built in order to respond to the needs of export markets in Europe is also being applied, at least to some degree, to the local market. The monitoring structures used for export are used for some domestic production as well. It was not clear from the relatively small number of interviews whether this coverage is comprehensive, or only partial.

Clearly though, challenges remain, and a number of interviewees commented that there can sometimes be a lack of join-up between different government agencies. "There can sometimes be a lack of communication within the ministries, and competition between different ministries, agencies and parastatals can sometimes be unhelpful" was one observation. This appears particularly to be the case in terms of inspections: "a site can be subject to several inspections, which can be exhausting. There's a need to streamline this" was another comment.

This is seen by some to dent what otherwise is a positive picture in relation to the regulatory framework governing export horticulture. "There have been some positive developments on the ease of doing business, but some agencies do not seem to realise that some of their decisions and practices undermine this."

Almost all of the interviews and focus groups commented on the inadequacy of the Kenyan



Government's agricultural extension service. For the most part, this seems to be largely absent from most farmers' lives in the horticultural export sector. Some of our interactions suggested that the reason for lack of contact with government extension workers was a direct result of the fact that farmers receive this type of support from providers backed by money from international development institutions. It is also the case that the export horticulture sector is not a priority for the Government's extension service. It is not deemed to be a sector of 'national strategic importance'. Priority is given to those crops which are staples within the country, and which therefore are deemed to be important from the perspective of food security.

#### *4.3.3 Fostering collaboration*

Arguably, promoting a collaborative agenda has been one of the core aims of COLEAD's interventions. Yet it is clear from several interviews that the process of bringing people together has been extremely valuable. There is clearly a good deal of affection and respect for COLEAD as an organisation and for the people working for it. The organisation is seen as being close enough to the horticulture sector in Kenya to be knowledgeable and informed, yet sufficiently at arm's-length to be regarded as a neutral arbiter when disputes emerge. "COLEAD can help overcome the rivalries between different organisations. They know where the constraints are, but can bring people together," was one comment. Another interviewee observed that "COLEAD is able to get everyone together, from the lead farmer to all the relevant experts – I'm not sure that anyone else would be able to do it... the result is production guides that cover everything from the agronomy right through the commercial angles: they have become bibles in their area."

Furthermore, there have clearly been very beneficial impacts from some activities by COLEAD that were not necessarily a direct focus on quality. One interviewee said how important a mission facilitated by COLEAD two years ago to the EU had been. This, it was felt, made it easier to help shape the SPS regimes in ways that are beneficial to Kenya. There is clearly a demand for more structured trade missions, and to work with embassies. There is seen as being particular interest in the US, specifically for guava. But market access is not easy at the moment because no appropriate SPS protocol is in place.

#### *4.3.4 Environmental impacts*

Central to the interventions to support Kenyan export horticulture has been the work to ensure that these exports meet ever-tightening regulations on pesticide and other residues in crops. The focus of regulations is on protection of the end consumer. However, responses from many of the interviews and focus groups undertaken for this study suggests that this work may also have had positive impacts on the environment in Kenya.

All four of the focus groups with technical managers who had been responsible for providing training to farmers suggested that a notable impact of that work was a more responsive attitude to spraying by those farmers. An improved ability to recognise pests and diseases, and the use of scouting had the result of ensuring farmers used the correct sprays, and in practice sprayed less often. Improved calibration of spraying equipment was also seen as a significant step in making sure that the right amount of a spray was being used. One of these groups also commented on the rise in organic production, and the impacts this might have environmentally.

Another of these groups was of the opinion that there had been "massive pollution of soils and also damage to farming ecosystems." It is not possible for this study to verify or disprove

this allegation, however it does appear that the training provided is leading to a more holistic approach to farming. A focus group of GlobalGAP training providers also observed that “intensive horticultural production is not good for the soils, which have been degraded.” They also observed that some farmers are moving towards a more mixed farming approach, in which they use livestock and crop production systems to improve soil quality. An interview with an agrochemical dealer also commented on the impact that incorrect use of sprays and chemicals can have on the environment: “anyone who abuses chemical may be poisoning a river, and you don’t know who will drink from it downstream.” He and a second dealer interviewed also commented on the fact that they were now very careful about disposal of chemicals, which suggests that in the past this might not necessarily been the case, and that therefore out-of-date or spare chemicals were disposed of in the local environment. A contract farming business interviewed also made the same point: “use of IPM led to reduced chemical use. There is more sensitivity in chemical waste disposal, controlled spraying, and choice of pesticide.”

Historically, farmers would simply spray to the timetable provided by the chemical manufacturer, whether that spraying was necessary or not. The use of pest scouting allows farmers to spray only when there is a real need. This has beneficial impacts in terms of environmental pollution, but also in cost savings, as farmers use smaller amounts of chemicals.

They felt that GlobalGAP has been important in helping farmers better to understand nutrition and crop protection. “Holistic farm management to ensure the soils remain fertile and can be farmed over a long time has been an area that capacity support is now targeting.” This group also pointed to the reduction in use of pesticides, with management of pollinators and encouragement of friendly pests to thrive in farming ecosystems being an important element in better farm management.

Training in the proper disposal of chemical containers also appears to be having positive environmental impacts. Although not all do so, many of those farmers interviewed now brought these containers back to be properly disposed of. In the past, a number of means of getting rid of them were mentioned, including throwing them in rivers, burying them, and putting them into a latrine pit.

That said, there are clearly significant adverse environmental impacts from the bean business, particularly in relation to water use. Reduced water levels, an increase in population, and the desire for more people to farm have created a crisis in the distribution of water for irrigation. The water is not enough to serve everyone. One cooperative interviewed now has a schedule for who gets water and when so farmers don’t just get water when they want. Previously, the schedule was for every 7 days, but now it is every 9 days. This is a problem for green beans because they should get water every 4 - 5 days.

In relation to climate change, one interviewee commented that rain-fed agriculture was no longer possible in many areas because of drought, and therefore farmers are having to move to drip irrigation. One of the farmer focus groups was clear about the steps that need to be taken. Water reservoirs and their sources should be fenced and protected. For example, they would like the spring (their source of water for agriculture) to be fenced and more trees to be planted there. One of the farmers recalls when he was a child, the area was a thick forest, and he could not jump across the spring because of the high volumes of water. Now, his 3-year-old child can jump across the spring, and the thick forest has turned into bare land. They would like support to restore this

bare land back to a forest so that the volume of water in the spring will be restored and because they wouldn't like this water source to disappear.

## 4.4 Capabilities and attitudes

Interventions by COLEAD and others have been of a technical nature: providing training and support along the export horticulture value chain. However, it is apparent that this technical approach has wrought some extremely important dynamic changes, both in how people behave, and how they see themselves.

### 4.4.1 Professionalisation

A key observation from a number of interviews was that the cumulative effect of the interventions by COLEAD and others has been to professionalise the agribusiness sector. Even though specific programmes have been designed to target particular issues in the value chain, those in the sector have internalised what they have learned and become more professional as a result. Another section of this report comments on the fact that many organisations and individuals have used engagement with COLEAD as a springboard to greater things, but a further effect is that the support given now means that a cadre of consultants now exists, who are able to advise and train both in the private sector, and in government.

This improvement in professionalism seems to permeate into a good deal of the value chain. One of the groups of technical managers interviewed spoke of how the training they received had improved their record keeping and document management. They observed that this was true also of many of the farmers they worked with.

The representative of one firm interviewed, which uses contract farmers to grow crops including baby corn, beetroot and broccoli for export bore this out in a number of areas of their business. The company has a process of internal audits, which helped identify challenges around maximum residue levels, and improved safety. Use of pest scouting had been mainstreamed, which had led to reduced pesticide use and hence cost reductions.

At farm level too, the research process highlighted examples of improved professionalism. One farmer group interviewed in Kajiado, for example has a process by which each farmer's produce is labelled separately so that if there are rejects from MRL or other reasons, the cause can be readily traced.

Packhouse workers in Kirinyaga reported on changes which can be regarded as their employing company becoming more professional in its behaviours. In the past year, the firm has adopted the use of different coloured crates to distinguish between raw materials coming in, product being graded, and finished products. The employer has also paved the area round the packhouse to reduce dust, and designated different entrances and exits for staff and for produce. Another factory had introduced a tagging process for all crops. Green beans and all other produce come with tags on them. The tag has a code for the farmers who produced them. This traceability is maintained from receiving at the raw material cold room to packing, sealing, and dispatch. It enables consumers to trace back the produce in case there is a need.

Another pack house, in Naivasha, had introduced a random testing process for chemical residues on the produce coming in. This was part of a comprehensive process for traceability. Each batch of

produce is accompanied by temperature records, bio-wash reports, metal detection logs, chlorine control records, knife control and knife number records, table clearance records, calibration reports for every batch, weight records, labelling records, among others. This supports a quality control system which begins from the moment goods arrive at the packhouse. The specifications include approved suppliers, traceability details, hygiene of the product and the truck, checking the truck seal for integrity, temperature monitoring, and communication to the management and the farmer in case of rejects. If the raw material does not meet the required parameters, it is automatically rejected at intake.

This level of professionalism also extends to handling of allergens. Another focus group of packhouse workers in Kirinyaga, said that when processing allergens, such as soya beans, no other products are allowed to be processed or stored in close proximity. A thorough cleaning process known as «changeover» is done between processing different products, including a thorough cleaning after processing soya beans.

#### *4.4.2 Transferable skills*

It is not just at corporate level that greater professionalisation has been developed, a similar dynamic is observable to in relation to individuals. It was demonstrated by many of the focus groups that receiving training from COLEAD and others has provided people at different parts of the value chain with transferable skills that give them greater flexibility in their employment choices, and therefore in their self-confidence. In a number of FGDs, individuals commented that they now had skills which made them more employable and so would allow them to move elsewhere in due course. Similarly, a number of farmers observed that the training received on green beans has helped them improve how they farm other crops.

One interview with an exporting company gave more insight into how a market for these skills is developing. This company explained that having worked closely with COLEAD and others had given them the confidence to develop their own training programme and to bring in relatively unskilled young people, knowing that they would be able to train them up to the required standard.

The company reported that many of their staff stay with them for around two years before moving on or being poached by larger firms. Indeed, there seems to have been a shift in behaviours, with bigger firms proactively targeting workers at firms which have been provided with COLEAD training as they know that the skills levels will be high, and it removes the need for them to do that training themselves.

This issue of staff poaching was also discussed at a meeting of the National Horticulture Taskforce during this author's research visit to Nairobi. Views on the development were mixed. Some felt it to be a disincentive to smaller firms to invest in training of staff they might quickly lose. Others expressed the view that this demonstrated the emergence of a more modern style employment market in which workers with the right skills are not trapped but can move to where they can maximise their incomes.

Interestingly, one group of technical managers felt that the training they were providing to farmers was encouraging more young people to take up farming. This is a very positive development since in many parts of Africa there is a decline in the number of young people wanting to enter the business. "The training helped young farmers link the theories with practice in the field. This gave them a sense of the opportunities available in farming." In particular, a number of young people

trained in SPS were able to get additional work as extension workers with other farmers.

Clearly farmers are able to apply what they have learned in relation to an export crop to other things that they grow. One farmer cooperative, for example, focused in particular on the issue of crop health, and the need to balance inputs to get a good crop. In their case, expertise provided in relation to their export crop of green beans was also being used to grow sweet potatoes.

#### *4.4.3 Value chain dynamics*

There have clearly been changes in the dynamics between farmers and the export firms they work with. However, in this regard there is no clear direction of travel.

Some interviewed clearly felt that farmers were now in a stronger position than in the past. For example, one of the groups of technical managers interviewed felt that because there has been a significant increase in the number of farmers training in safe production, this made it easier even for farmers not in-contract to an exporter could nevertheless find a market for their goods.

This improvement in the market position of farmers appears to be borne out by instances identified in this research of farmers who had stopped supplying export firms they felt were not treating them well. Women members of a farmers' cooperative in Kirinyaga for example had stopped supplying one of the larger exporters because they felt they were being paid too little for their crop, and the export firm was charging too much for the inputs it provided. Some of the women in this group do now supply as individuals to the exporting firm, but feel themselves to be more in control since, for example, they can buy their own input chemicals and decide when best to use them, rather than be told what to do and, in their view, being overcharged by the exporter.

However, there are clearly issues in some cases with the internal dynamics of farmer cooperatives. One cooperative in Kirinyaga said that when they had been contracted by an exporter, the cost of inputs loaned to the farmers is calculated collectively for all the members. In practice, some members failed to follow the production programme and to deliver their produce.

This means that, as some farmers are choosing not to work for particular exporters, so some exporters are being choosier about which farmers they use. One packing company reported that they had largely stopped working with farmer groups because of a lack of transparency and problems with communication. When procedures and requirements for production are communicated through a third party (for example a cooperative chair), there are often rejects, and the farmers do not understand the reasons behind them. This has made it difficult for most companies to work with farmer groups, and they prefer contracting farmers individually because they can control how they produce.

Another exporter explained that they had historically worked with a network of smallholder farmers but had stopped doing so because the quality of the produce provided was so variable. "We now have clear contractual relationships with a range of farmers now, which means we are able to have oversight of their farming practices and therefore of the quality of their produce. We have also started running a small farm of our own, which we never thought we would do. But it really helps in terms of reliability of quality and supply." Side selling is evidently still an issue to some extent. One of the larger export firms commented that despite them investing in their farmers, the latter would still often sell on their crop to another dealer.

The relationship between farmers and export appears therefore to be somewhat in flux. However,

the most successful farmer/ exporter relationships seem to be those where communication is best. Some exporters appeared to favour an out-grower structure, whereas others preferred to work with a series of groups of smallholder farmers. Whatever is preferred, it appears that the relationships have become more formal and professional over the past few years, in order that a production chain can respond effectively and quickly to changes in demand. As noted elsewhere, it is clear that a much wider number of crops is now grown and exported. One firm interviewed, which uses a network of farmers to grow for export found that the contract approach worked well. Because the majority of the farmers were under contract there was better supervision of production processes and safety.

#### *4.4.4 Behavioural changes*

Many of the respondents commented that the lessons they had learned from trainings at work were being applied to their domestic lives. Practices such as hand washing after going to the bathroom, keeping food preparation areas clean and ensuring proper storage for food stuffs were in many cases informing how those workers behaved at home. One group of technical managers observed that a focus on hand-washing had helped during the Covid-19 epidemic as people were already aware of the importance of this practice.

The third of our FGDs with technical managers identified an interesting WASH development beyond simply improved handwashing. They commented that farmers now had improved latrine facilities, both in the field and at home. They said that before implementation of the support, it was common to find sanitation infrastructure that was not appropriate; including latrines without a cement floor making it difficult to clean. Since the training, “there has been significant improvement in hygiene and most homes as a norm now have sanitary infrastructure like toilets and bathrooms that are cemented, have water and easy to clean. You find hand wash stations in almost every home not just homes that produce for export.”

Packhouse workers also reported that the lessons they had learned in work were carried over also into their private lives. One group interviewed in Kirinyaga said that they now handle food safely at home because they have learned how to be clean. They also commented that they make it a habit to bathe and change clothes every day because they handle food daily at work and need to maintain cleanliness. More broadly, they said that they had also learned about time management. They are aware they have to wake up early in the morning and plan their day since if they are late to work, they have to explain why, which emphasizes the importance of learning time management. They learn hospitality because the packhouse receives customers and visitors regularly. They are trained on how to greet and be hospitable to guests, and this practice extends to their lives outside of work.

Some also commented that knowledge about food safety informed where they shopped and what food stuffs they purchased, and that they understood the idea of foods’ shelf life. “I now know to look for pest damage on vegetables before I buy them,” was one remark.

All of this was reported by a number of those interviewed to be having positive health impacts on the local community. One group reported that “there is no longer an infestation of bugs like lice and jiggers in their homes because people know the importance of wearing shoes. Cases of diarrhoea, heartburn, and acidity have been reduced.” One male worker at a packhouse in Naivasha explained how fire training had impacted on him: “Most houses where I live have only

one door. I'd now only live somewhere with two for evacuation reasons.”

Also interesting were comments made in relation to health and safety training. Several groups of packhouse workers interviewed observed that they were able to do basic first aid, and in some cases reported that they had become a ‘go to’ in their community to deal with children’s cuts and bruises. Others commented that they are now able to prevent cockroaches, rodents, and flying insects from entering their homes, using methods like putting a rug under the door and using curtains. “We didn’t know to do this before we had the SPS training.” One group was of the opinion that their children suffered fewer infections and health challenges than others. One packhouse worker commented that she had trained her babysitter in some of the health issues she had learned about, in particular what to do if a child is choking.

Some groups reported that training for them had led to a ‘halo effect’ amongst their neighbours. A farmer cooperative in Kirinyaga said that workers and neighbours had observed and learned from their better practice, for example, “harvesters now know to wear short nails, no jewellery, no perfumes, closed shoes, head nets, and wrappers when going onto the farms.” Again, this impact was far from universal. Another cooperative spoke about the “ignorance” of some of their neighbours in continuing with damaging farming practices.

#### *4.4.5 Changes in attitudes*

Some interview responses hinted at even deeper changes brought about in individuals by the interventions. Some workers said that the training they had given them greater self-confidence and ability to project themselves in a more positive way. A number commented on the importance of understanding proper timekeeping, being polite and being able to get along with others.

One group of packhouse workers in Kajiado explained that the requirement at work to operate swiftly and efficiently had led them to manage their time better also in their private life. Another group, in Kirinyaga commented that they felt a sense of empowerment which leads to greater autonomy and efficiency in their tasks, as they are well-aware of what needs to be done and when.

Other studies of spillover effects have suggested that these changes can be extremely important because they can, over time, lead to beneficial changes in social dynamics because those who in the past might have regarded themselves as inferior are more prepared to challenge existing norms and structures.

Indeed, to some degree this already seems to be happening. A frequent complaint from many of those interviewed revolves around the behaviours of the ultimate buyers (typically European retailers) who regularly cut orders at very short notice. It is clear that at least some in the Kenyan sector have developed the confidence to push-back against this behaviour. One exporter explained that “some buyers who fail to sell the product we provide then try to push it back to us saying the quality was not good enough to sell. However, we have the systems in place that allow us to fight our corner.”

#### *4.4.6 Gender dynamics*

One spillover effect which has not occurred, but which needs to be considered more carefully is the fact of what seem to be strict gender roles in the green bean value chain. In farming for example, women lead on tasks such as picking the crop and men on things such as planting and digging. This can be a challenge for women farmers, a number of whom observed that that they

had to hire in male labour for heavy work not seen as fitting the female role. Focus groups with farming communities allowed us to develop the following assessment of gender roles, specifically in the green bean market:

Activity	Men	Women
Planting and Seedling Management	Land preparation, which includes ploughing and tilling the soil	Planting green bean seeds, managing seedlings
Weeding and Pest Control	Spraying of pesticides	Weeding
Irrigation	Both men and women may be involved in irrigation activities, including setting up and maintaining irrigation systems	
Harvesting	Both men and women participate in picking mature beans when they are ready for market	
Post-Harvest Activities	May be responsible for transporting the produce to the collection/buying centre	Sorting, cleaning, and packaging green beans for sale or storage and transporting to the collection/buying centre
Decision-Making	Men have more control over resources and decision-making	Female farmers who are members of a Self Help Group have more decision making power than those who are not.

Women members of a farmer cooperative felt that their need to focus also on domestic tasks disadvantaged them. A woman farming alone may be so busy with household chores and taking care of the children and will end up not having time for all farming activities, for which she will have to pay another to complete. Where a couple farms together, typically it will be the man who goes for meetings/training while the wife is left at home tending to other duties. They will both be involved in farm work but only the man will have been trained. It was said that a lack of proper planning of training timetables made this problem worse. Also, since attending training is not paid, some farmers opted to spend their time in income-generating activities, such as selling at market, rather than attend training.

Out of necessity, some women farmers have been forced to take up traditional male tasks such as spraying and irrigation. This has indirectly empowered them from being at the mercy of male labourers who do not carry out their duties well when supervised by a woman. One of the female manager narrated how she faced a challenge with male sprayers. Some of them steal pesticides to sell to other farmers. Consequently, she has taken on the responsibility of carrying out the spraying herself both on the farm she manages and on her own farm. Having received training in the proper use of PPEs, she is well equipped to do the spraying. Additionally, she has also trained and now takes on female workers for irrigation activities

A group of female packhouse workers in Kirinyaga explained the effect on workers of having to fulfil large orders. The workers assigned to the tables commence their shifts at 7:00 am, yet they



are uncertain about the time they leave, as they must fulfil their daily production goals. Often, they finish work around 10:00 pm or 11:00 pm, and occasionally, they continue working past midnight. Only employees with more than a decade of experience consistently achieve their targets on time and are even eligible for bonuses. Their situation is challenging, as they have to rely on public transportation for their commute back home, which poses safety risks.

However, possibly the most significant gender-related issue to emerge from the research relates to the periodic need to fulfil big orders. When this happens, workers have to work late – in some cases this was reported to be to midnight. These workers, who are predominantly female then have to walk home after their shift, with all the potential safety risks that implies.

## 5. Conclusions and next steps

### 5.1 Conclusions

The overarching aim of the international support that has been provided to the Kenyan horticulture sector over the past two decades is best summed up by UNIDO's 2010 report, *Meeting Standards, Winning Markets*. This argued that "despite the overall decline in tariff levels in recent years, firms in developing countries have not been able to reap the full benefits of market access opportunities. One explanation for this is the difficulty they face in complying with trade-related standards. Unlocking the full export potential of developing countries requires compliance with both the public regulations and the private standards of the importing countries."<sup>11</sup>

The core of the international support, therefore, has been to provide technical training and support to different parts of the export horticulture value chain to provide it with the skills and capabilities to export successfully. It is clear, even from this relatively-small piece of work that the spillover effects – unintended impacts of development interventions – from these two decades of activity have been significant.

### 5.2 The anatomy of economic impact

International interventions to support the export horticulture sector have enabled Kenya to gain highly successful access to the EU market. At its peak a huge proportion of the green beans being sold in Europe were grown in Kenya. Arguably, this success is not strictly a spillover effect, given that logframes for interventions are likely to have had 'market access' as their goal at impact level. However, if one considers in more detail the anatomy of how this success has occurred the presence of spillovers becomes more apparent.

Spillovers have occurred as actors in the Kenyan horticulture sector have moved from a compliance-based approach to SPS and other standards, to a situation where the behaviours encouraged by the training become internalised both in companies and in individuals. As the MD of one exporting firm put it, "we used to comply because we had to, but now we understand the value of good practices to our business. We don't just ramp up our performance when we know there will be an inspection. Now we work as if every day is an inspection day."

At the level of companies operating in the sector, in particular the packing and exporting firms, the change has been demonstrated as a greatly increased professionalism and systematisation in how the business is run. Senior staff in these firms internalised the skills being trained for by international support, and then applied a similar approach to other parts of their business. "We got to the point where we realised that proper procedures on processing the product worked as it meant we got fewer rejections, and if we did, we could trace where the problem came from. We then realised that the same sort of systematic approach could help other parts of the business too," was a comment from another exporting firm.

This study also highlighted a similar dynamic also at the level of the individual. A number of the newer exporting firms have been set up, or helped to expand, by those who worked for larger firms. These individuals had received training from internationally backed projects, and

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<sup>11</sup> UNIDO. 2010 *Op cit*

this training gave them both the skills and the confidence to set up on their own, or to move elsewhere. In other parts of the supply chain too, those who have benefited from training have been able to become independent. These include independent crop sprayers, advisors to farmers and agrochemical dealers.

There have been similar spillover impacts on government too. Interventions by COLEAD and others has sought to provide support in policy formation and institutional development, but what is in place now is a (largely) professional set of government institutions which are able to support the horticulture sector. Challenges do remain in government provision, however.

A negative spillover, however, arises from the use of piece rates in packing houses. As noted above, this is not a spillover from the support provided by COLEAD and others, but from the way the trade works. The horticulture sector is extremely price- and time-sensitive, and use of piece rate, the companies would argue, is a means to deal with this reality.

Yet the effect on workers is problematic. Several of the focus groups of packhouse workers observed that to earn enough money often meant working very long hours, a situation exacerbated during bad weather when the produce needed to be cleaned before it could be prepared. A number of workers spoke of ongoing tiredness because of these long hours, but the most worrying effect was the group of women workers reporting that they often had to return home late at night after public transport had stopped. The security and welfare implications of this are concerning.

The key point here is that support programmes have not been aware of negative impacts like this. A clear lesson, therefore, is that COLEAD and other programme providers need to work hard to 'spot' challenges like this and be proactive in taking steps to address them. This might be by awareness raising, or providing a forum for discussion between industry actors, or other means.

### 5.3 Lateral spillovers

Whilst the picture is not perfect, the consequence of the spillover effects detailed here has been the creation of an industry which has the capacities and capabilities not just to grow, but to address challenges and alter course when needed.

Throughout the research process, complaints about the green bean market were universal. Prices have remained static despite rising costs. Customers not infrequently cancel orders at short notice or reject deliveries for reasons which, it is claimed, are sometimes unclear. All this in a situation where Kenya is facing increasing competition from growers in north Africa.

However, what has also happened is that as the green beans market has become tougher, the Kenyan horticulture sector has been able to apply the skills it has learned to a range of other crops which are being exported in increasing quantities. Some companies have also adapted by adding value to basic products, for example by exporting mixed packs of vegetables, or flowers in bouquets. Government too has, to a significant degree, applied the lessons from export horticulture to the domestic market.

However, it is also apparent that there has been a lateral spillover for the domestic market. Many of those interviewed at all stages of the supply chain told us that the practices they had learned in relation to the export market were also being applied to how they treated products destined for the domestic market too. Interestingly, a not insignificant number of respondents also mentioned

that their own buying behaviours had been altered by what they had learned, for example by checking sell by dates and product quality.

## 5.4 Behaviours and attitudes

There have clearly been spillover effects beyond the horticulture sector. Many workers reported that the skills they had learned, for example in first aid, or in food preparation had been adopted in their home lives. It was also interesting to note that these changes went further than simply practical skills. In several of the focus groups, participants reported that their training had made them more focused and better at skills like time management. Some workers said that the training they had given them greater self-confidence and ability to project themselves in a more positive way.

There is some evidence from this study that these indications of growing self-confidence are having positive effects on power dynamics in the supply chain. Some exporters reported that they now felt better able to push back against what they saw as unfair behaviours by their customers, which is a positive development.

## 5.5 Next steps

There is clearly a need for a more in-depth examination of the spillover effects from the trade-related SPS capacity building projects put in place by COLEAD and others. The pilot study described in this paper has identified a considerable network of spillover effects, and these need to be explored in more detail. As the STDF review found, it is hard to provide hard data which would allow us to measure and fully scope these spillovers. However, similar effects were reported across a wide range of different interviews and focus groups. Therefore, even if these effects cannot be precisely detailed in a quantitative sense, they are nevertheless real, significant and ought to be studied in greater detail. This would allow us to get greater granularity on these spillovers, and hopefully to develop meaningful metrics to be applied in the future.

This matters because the spillovers identified could have significant relevance for future programming in Kenya and elsewhere. Although the interventions by COLEAD and others were technical and principally focused on trade-related SPS capacity building, the ripple effects have been much more far-reaching. Even where the spillovers described in this report might plausibly be described as an 'economic development' impact level of project logframes, this study has shed light on the dynamic processes which have led from technical intervention to wider and higher-level impact. Professionalisation, labour mobility, government capacity and other factors have all spilled-over from those interventions.

As was stated at the outset of this report, the challenge in identifying spillovers is that they are the things which result from interventions which are not planned for, therefore neither looked for or measured in a project's life. Studies like this one allow project designers to take a wider view of the whole system those projects work within. This is particularly relevant to help programmes evolve, to ensure that they are as relevant as possible, and to respond to changing needs in a given country.

In Kenya, for example, it was suggested by a number of those interviewed that there is a need

to focus particularly on young people in the farming sector. Focus groups suggested that young farmers were much less likely to have received training than their older peers, and that many of them had either moved into other careers or wanted to. This migration away from farming would certainly reflect what is seen in other parts of Africa, for example, in West African cocoa.

A key spillover identified by this study is the professionalisation that has occurred throughout the horticulture sector. That this happened could be built into future programming goals to demonstrate to younger people that farming can be a career rather than a livelihood, and that working in farming is as good a route to a professional life and income as other opportunities.

This example demonstrates that a better understanding of the spillover effects from programming to date could add greatly to the processing of planning interventions in the future. A fuller, more detailed study would provide greater insight to the specifics of how to do this most effectively.



# ***GROWING PEOPLE***