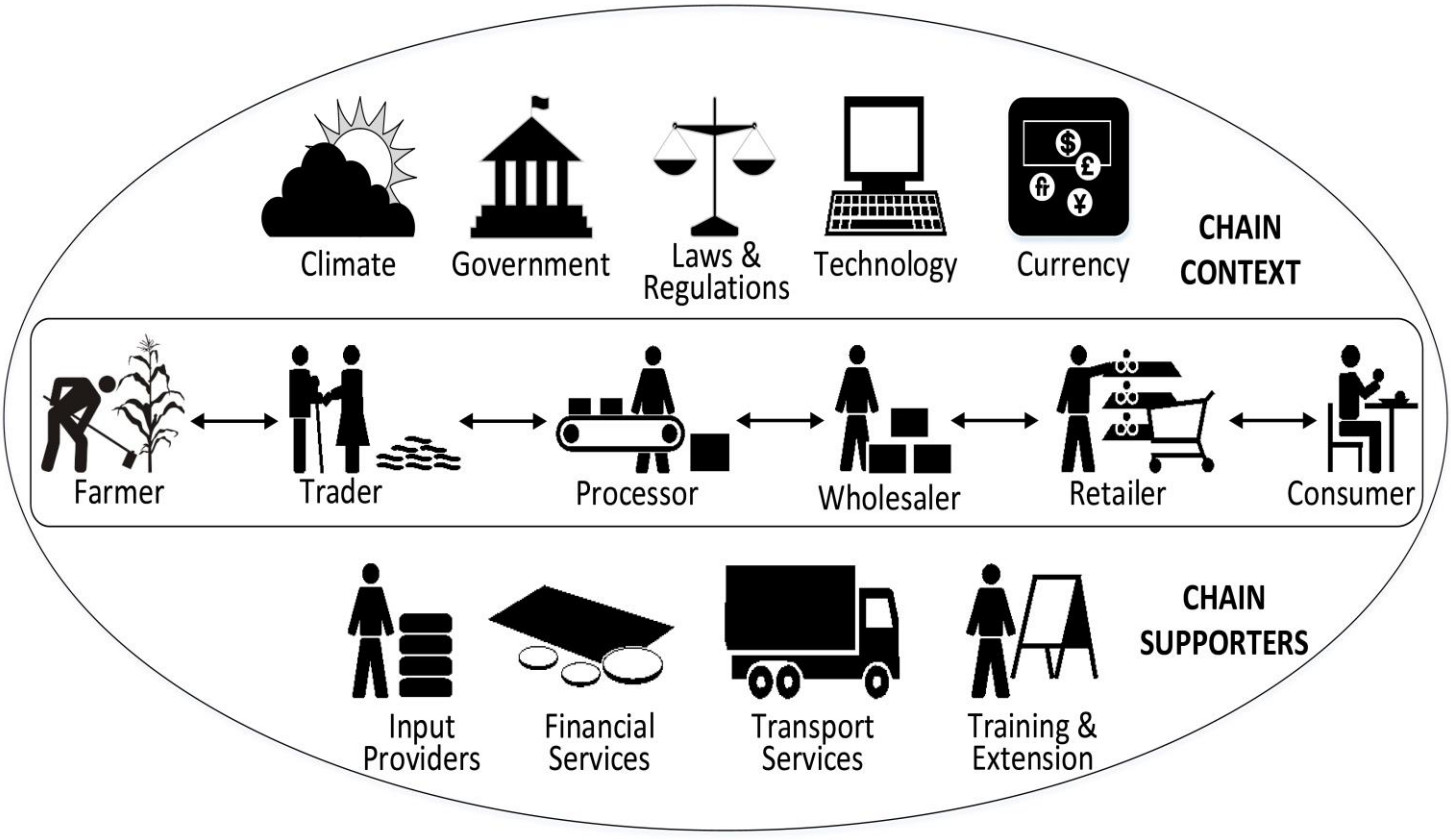
Standing Committee
for Economic and Commercial Cooperation
of the Organization of Islamic Cooperation (COMCEC)

COMCEC

Promoting Agricultural Value Chains In the OIC Member Countries



COMCEC COORDINATION OFFICE
October 2015

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Acronyms and Abbreviations

ASPA	Agri-Business Service Plan Association
BCI	Better Cotton Initiative
COMCEC	Standing Committee for Economic and Commercial Cooperation
CSR	Corporate Social Responsibility
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FELCRA	Federal Land Consolidation and Rehabilitation
FELDA	Federal Land Development Authority
GCU	Gambia Cooperatives Union
GDP	Gross Domestic Product
GM	Genetically modified
GPMB	Gambia Produce Marketing Board
GVC	Global Value Chain
HACCP	Hazard Analysis and Critical Control Points
ICT	Information and communications technology
IDB	Islamic Development Bank
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
ISO	International Organization for Standardization
ITC	International Trade Centre
KIT	Royal Tropical Institute
MPOA	Malaysian Palm Oil Association
MPOB	Malaysian Palm Oil Board
MPOC	Malaysian Palm Oil Council
MRL	Maximum Residue Level
MSPO	Malaysia Sustainable Palm Oil
NGO	Non-governmental Organisation
OECD	Organisation for Economic Development and Co-operation
OIC	Organisation of Islamic Cooperation
PPP	Public-private partnership
R&D	Research and Development
RISDA	Rubber Industry Smallholders' Development Authority
RSPO	Roundtable on Sustainable Palm Oil
SME	Small and Medium Enterprise
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development (UNCTAD)
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WTO	World Trade Organization

Executive Summary

Agriculture in the OIC Member Countries

In many OIC member countries, agriculture is an important sector, both as a contributor to GDP and as a source of employment. Agriculture accounted for 9 percent of GDP in the OIC in 2013 and 22.3 percent of the workforce in 2010-2012. At country level, Indonesia has the highest share of total OIC agricultural GDP (14.4 percent) with US$ 125.3 billion in 2013. Four member countries (Indonesia, Nigeria, Turkey, Pakistan) accounted for 51 percent of the OIC agricultural GDP, with a total of US$ 346.8 billion in 2013.

In 2013, the five most important agricultural products produced in OIC Member Countries were (in quantity) palm oil, rice, sugar cane, wheat and cassava; and (in value) rice, milk, yams, wheat and poultry. For palm oil and rice, OIC Member Countries were also among the Top 5 producers worldwide: Malaysia, Indonesia and Nigeria for palm oil, and Indonesia and Bangladesh for rice. OIC Member Countries are the leading producers for only few highly traded agricultural commodities (palm oil, rice, coffee, cocoa, cotton, tea and sugarcane). Most products which see a leading position of individual OIC Member Countries include minor cereals (millet and sorghum), minor fruits (dates and figs), spices (pepper and vanilla), minor roots and tubers (sweet potato and yams) as well as minor legumes (cow peas).

Institutional framework and public policies

Agricultural policies are highly heterogeneous amongst OIC Member Countries; yet, a broadly shared focus on ensuring food self-sufficiency can be recognised in OIC countries with a view to shielding themselves against the vulnerabilities of external sources. Accordingly, the main crops produced in the OIC are staple foods produced for domestic consumption and as feedstock for livestock. Several OIC countries are large producers of wheat (e.g. Pakistan, Turkey, Iran, Kazakhstan, Egypt, Morocco and Uzbekistan), barley (Turkey, Kazakhstan, Morocco), cassava (Nigeria, Indonesia, Mozambique, Cameroon, Sierra Leone, Benin), maize (Indonesia, Nigeria), millet (Nigeria, Niger, Mali, Burkina Faso, Chad, Senegal), potatoes (Bangladesh, Iran, Algeria, Egypt), rice (Indonesia, Bangladesh, Pakistan, Egypt), and sorghum (Nigeria, Sudan, Burkina Faso, Niger). Livestock farming for meat and dairy production is also widespread. For most of these products, value chains remain overwhelmingly local and do not extend to international markets.

Different policy mechanisms to protect and promote domestic production of food security crops can be identified in OIC countries, which are applied to varying degrees: producer subsidies; fixed prices; government control; import duties; export restrictions; donor support. Yet, despite the focus on food self-sufficiency, the OIC is a net importer of food. For more than two-thirds of OIC countries, food aid also plays an important role. According to a recent FAO report, 21 out of the 37 countries worldwide which are in need of external assistance for food in 2015 are OIC Member Countries.

In parallel to the dominant focus on self-sufficiency, a number of OIC Member Countries are large agricultural players and export significant quantities, such as Turkey, Indonesia, Malaysia, Egypt, and Pakistan. Particularly in South Asia, agriculture is gradually diversifying towards high value commodities. Moves towards global value chain integration for fresh produce can also be observed for a number of African and Arab (Mediterranean) OIC Member Countries.

However, compared to their potential, the overall integration of OIC Member Countries into global agricultural value chains is still underdeveloped. Constraints for global agricultural value chain development are numerous, ranging from natural resource constraints, lack of technology and challenges associated with smallholder-dominated agriculture, to poor infrastructure and logistical barriers, and weak institutional environments. A low level of intra-regional trade between OIC countries also highlights the absence of strong regional integration and economic development.

Standards

One of the main problems for the promotion of agricultural value chains in OIC countries is the lack of standards for food safety and quality or low levels of compliance with standards. The lack of standards starts at the input level (e.g. poor quality seeds and substandard agrochemicals) and carries on through production (e.g. poor agricultural practices, overuse of pesticides and inadequate pest management), post-harvest management (e.g. lack of adequate post-harvest handling), storage and transport (e.g. lack of cold chains and inadequate means of transportation), processing and manufacturing (e.g. poor hygienic practices).

Particularly smallholder products are often not compliant with quality and food safety standards, owing to a generally weak institutional environment with little or no support in terms of extension and credit provision, and a lack of resources and capacities on the part of producers. The lack of well-defined quality standards and quality control makes it difficult for smallholder farmers to access formalised value chains. As agricultural produce passes through numerous middlemen, traders and wholesalers before reaching the final consumer, there are more chances for it to be exposed to unhygienic conditions, thereby failing to meet even basic food safety requirements.

Infrastructure and logistics

Many OIC Member Countries have relatively weak infrastructural environments for agriculture. Problems occur at different levels, including weak research and development, deficient quality control systems, lack of transport and storage capacities, and inefficient processing operations.

In particular, infrastructure underlying production, processing and marketing systems is inefficient and fragmented. Agricultural value chains are highly dependent on a large number of small operators, ranging from small-scale farmers and individual middlemen and traders, to small-sized processing units and small wholesalers and retailers. These rely on weak, inadequate and outdated infrastructure, which increases transaction costs and the overall costs of production and marketing. Poor access to transport limits value chain inclusion of dispersed small-scale farmers, leads to high post-harvest losses and limits farmers' crop choices. Finally, persistent gaps in infrastructure in many OIC countries raise transportation costs and put pressure on the margins by the value chain actors involved and reducing the competitiveness of OIC Member Countries.

Infrastructural development seems particularly important with regard to agro-processing for increased value capture. Currently, many processing facilities in OIC countries need to be upgraded to improve efficiency or operate well under capacity due to the lack of sufficient produce meeting the quality requirements in order to be processed.

This points towards the need for private sector involvement. However, the business environment and investment climate in many OIC countries is rather poor. Out of 189 countries that are compared by the World Bank's Doing Business Report 2015 on a variety of indicators on starting a business and protecting investors, the OIC Member Countries score an average of 126 out of 189. The overall poor performance of OIC countries in this field hampers private sector involvement for infrastructural development in the agricultural sector.

Governance and value chain actors

Agricultural production in the OIC is characterised by the dominance of small-scale holdings of 5 ha or less. Almost 40 percent of the agricultural land is under production by such small-scale farmers which constitute more than 80 percent of all farms in operation in the OIC. The vast majority of these producers are not part of any organised networks and associations, and do not have access to formal value chains. Rather, they trade through 'informal' chains where products undergo little value adding activities and quality standards are low.

At the same time, many OIC countries also have a parallel, commercial agricultural sector based on medium to large scale farming enterprises which are often integrated into the large value chain through vertical integration or at least feature high(er) degrees of vertical coordination. These chains surpass smallholder chains in terms of value creation due to higher levels of mechanisation, higher productivity and efficiency, compliance with food safety and quality standards, and access to modern processing and retailing outlets.

While the dominance of smallholder farmers and the resulting co-existence of informal and formal value chains characterise most OIC Member Countries, different degrees of activity and different types of policies can be observed to promote the inclusion of small-scale farmers into formal value chains. Some countries do not appear to have a specific policy on smallholders; whereas, others pursue one or more of four main policy mechanisms to integrate smallholder farmers into formal value chains: (1) integrated co-development of smallholder farmers and commercial agriculture by establishing institutionalised linkages between the two; (2) producer organisation to reduce the number of chain actors and facilitate access to formal markets for small-scale farmers; (3) public-private partnerships to foster smallholder integration, for instance with donor agencies or large multinational companies; and (4) donor or NGO programmes to assist farmers in linking to formal value chains.

Trade

Exports of agricultural products from OIC Member Countries have increased tremendously from 2002 (US$ 33.8 billion) to 2012 (US$ 132.7 billion). Asian OIC countries are the top exporters, with 75 percent, followed by Arab countries, with 15 percent. The biggest exporters of agricultural products are Indonesia, Malaysia and Turkey (all net exporters). These countries together account for 63 percent of the OIC's total agricultural commodity exports.

Imports of agricultural product have also increased from US$ 53.5 billion in 2002 to US$ 208 billion in 2012. As imports are higher than exports, the OIC is a net importer of food products. Typically, countries belonging to the Arab Group are importers of agricultural products, comprising 50 percent of the OIC import value; followed by the Asian Group with 41 percent. At a country level, the biggest importers are Saudi Arabia, Malaysia and Indonesia, comprising 27 percent of total OIC imports.

In 2013, 54 percent of the total exports of OIC Member Countries went to high-income countries, 28 percent went to developing countries outside the region and 18 percent went to developing countries within the region. This picture is similar when looking at the total imports of OIC countries. Again, about half (51 percent) of the imports come from high-income countries, 34 percent from developing countries outside the region and 15 percent from developing countries inside the region. In the trade of meat and live animals, imports from non-OIC countries even constitute as much as 85 percent of total imports.

Given the weak infrastructural environment, trade costs in OIC countries are higher than in developed and other developing countries. Trade costs among OIC Member Countries are lower than trade costs between OIC and other developing countries, but significantly higher than trade costs between OIC and developed countries. There is a clear political drive towards increased intra-OIC trade among the 57 Member Countries which has risen from 15 percent in 2005 to 18.6 percent in 2013, and is set to rise to 20 percent by 2015 according to OIC's Ten-Year Programme of Action. Agricultural products constitute 3.2 percent of total intra-OIC trade.

Recommendations

1. Increased political commitment and public policies

Agricultural value chains offer significant opportunities for value creation. Political commitment and designated strategies are therefore critical to promote key value chains, i.e. value chains where individual countries have a comparative competitive advantage, be it in production, processing or distribution.

2. Improving agricultural output and sustainability

Many OIC Member Countries are confronted with the need to feed a growing population on the one hand and decreasing availability of agricultural resources, such as arable land and water, on the other. Increasing agricultural output without putting too much pressure on the environment is thus critical.

3. Better crop varieties with more value added

Many producers in the OIC countries struggle with low productivity and low quality production due to the continued use of substandard crop varieties, which calls for the promotion of better crop varieties, both in terms of production-related characteristics and market-related characteristics.

4. Crop varieties suited to local conditions

Context-specificity in terms of the availability of natural and human resources is a critical issue to consider, which requires a targeted shift towards crops that are suitable for local conditions.

5. Development of processing industries

Agribusiness in the form of processing and manufacturing industries has significant potential to increase the value added of agricultural products, both in domestic and export-oriented chains. Promoting agribusiness requires an enabling business environment and investment climate, including adequate institutional frameworks, legal stability and tax incentives.

6. Adopt quality standards and implement quality control

Due to the informal character of many value chains, quality standards are absent and incentives for quality improvement are lacking. Even in formal value chains, maintaining

quality is a significant challenge in the light of poor infrastructure and a general lack of knowledge on quality standards. This calls for enhanced efforts to adopt quality standards and implement quality control.

7. Identify market opportunities for standard compliance

While standards for food safety and quality are often difficult to comply with, considerable market opportunities exist for those producers who are compliant. Depending on type of produce and the type of target market, opportunities lie in Halal production/processing aimed at Muslims around the world and in certified production for high-income countries, such as organic and Fairtrade.

8. Work towards more transparency and traceability

Modern markets require that the origin of the produce is known and that there is a clear chain of custody. Such transparency is not possible in informal value chains, but only in modern chains where systems of traceability can be put in place.

9. Collaborate with relevant standardisation efforts

Voluntary standards have become tremendously successful in international markets, such as GlobalGAP, Fairtrade, organic, and some standards developed by multi-stakeholder initiatives, such as the Better Cotton Initiative and the Roundtable on Sustainable Palm Oil. Governments of OIC countries can promote capacity building for increased standard adoption.

10. Close the infrastructure gap

Closing the infrastructure gap in many OIC countries is critical for increasing agricultural productivity and promoting value chain development. Dimensions of infrastructural development include irrigation, quality control, product storage, transport infrastructure, processing facilities, electricity, water supply, physical market places, and trading facilities.

11. Promote public-private partnerships for infrastructure development

Many agricultural value chains in OIC countries currently suffer from insufficient investment and other challenges associated with inadequate and outdated infrastructure. Governments of OIC Member Countries can promote public-private partnerships to develop the agricultural industry and infrastructure in particular.

12. Organise chain supporters

Many OIC countries lack a well-developed service sector to support value chain actors. In these countries buyers or the public sector have to play a role in building a professional service sector through complementary, possibly non-competitive, investments.

13. Developing smallholder agriculture

Small-scale farmers constitute the majority of agricultural producers in the OIC. Given that they will continue to be the mainstay of agricultural production, policy-makers should design strategies that promote their transition to commercial farming able to cater for growing urban markets. This entails systematically addressing the main challenges that smallholders face: lack of knowledge on enhancing productivity; difficult access to high quality inputs; noncompliance with international standards; and lack of supporting services.

14. Linking formal and informal value chains for the benefit of both

Agricultural value chains in many OIC Member Countries are composed of informal and formal elements. This duality may intensify in the future, as increasing quality and food safety standards are proliferating in modern agricultural value chains. As more value added can be captured in formal value chains, increased efforts should be undertaken to ensure that smallholders can participate in these chains.

15. Facilitate trade

Trade between OIC countries and the rest of the world is often thwarted by complicated export and import procedures, high tariff barriers and other non-tariff barriers to trade. This requires a strong focus on activities to facilitate trade across borders include, such as trade policy, infrastructural development and other trade support measures.

16. Pursue regional integration

The diversity of countries within the OIC – with vast differences in agricultural production, natural endowments, farming systems, labour availability and climatic conditions – provides major opportunities for increased intra-OIC trade in agricultural products, to be stimulated by means of free trade agreements and a general policy shift away from export and import restrictions.

Introduction

Background

More than ever, agricultural value chains are at the heart of international and national efforts to unlock economic growth, promote rural development, and ensure access to food for a growing world population. As value chains become increasingly global in scope, they are not only powerful vehicles for coordinating production and consumption, but effectively determine trade patterns and the integration of countries in the global economy. Across sectors, production processes at the local level are now closely linked to markets which may be in other countries and continents, involving a growing number of nonfarm processes before a product reaches its final destination. Traditional ways of agricultural production, with farmers producing for unspecified demands and relying on local markets to absorb whatever they produce, are increasingly being replaced by practices that involve greater coordination along value chains and higher levels of control by buyers, such as manufacturers and retailers.

As international markets continue expanding and a fast-growing middle class in emerging and developing economies fuels global consumption, significant opportunities arise for countries to use their agricultural sectors and gain better control over production, trade and distribution. Policy efforts have therefore more and more looked beyond issues of agricultural productivity and focused on the structural connective tissue linking farmers with processors, retailers and other value chain actors. The dynamic nature of value chains has drawn attention to several recent trends, such as quality based rather than price based competition, international product standards, technological advancements and agricultural innovations, which underpin value chain competitiveness and determine how producers can position themselves within value chains.

Staying abreast of development trends is particularly relevant for the 57 Member Countries of the Organisation of Islamic Cooperation (OIC), where approximately half of the population lives in rural areas and agriculture is a major source of income and employment. While the total share of agriculture in national GDP in OIC countries has declined from 16.3 percent in 1990 to 10.3 percent in 2012, agriculture is still considered an important economic activity and provides employment for nearly 35 percent of the total OIC population (Alpay, 2014).

Raising the contribution of agriculture to development by means of value chain promotion is therefore an opportunity recognised and emphasised by the OIC's Standing Committee for Economic and Commercial Cooperation (COMCEC) Agriculture Working Group. However, it is also observed that value chain dynamics pose context-specific challenges and place new demands on actors in and around the agricultural sector to cope with and compete in changing environments. Important barriers in this regard comprise the lack of an enabling context offering institutional and infrastructural support, availability of resources and effective coordination in value chains.

This analytical study was commissioned by COMCEC in preparation of the 6th Meeting of the COMCEC Agriculture Working Group on 8 October 2015, to deliver an assessment of the current state of agricultural value chains in OIC Member Countries. Taking a value chain perspective on agriculture provides a point of reference and reflection on how producers operate in domestic and international markets within the context of wider dynamics. The value chain framework takes into account the position of all players in the chain and has frequently been used to pay particular attention to small-scale producers to promote inclusive

and sustainable growth. It is also well suited to identify the relevant factors emanating from the contextual environment, such as supporting services, policies and strategies from both public and private actors, which impact upon value chains. Such an approach therefore serves to get a deeper understanding of the actors and factors playing a role in the steps from production to consumption, and to aid in the design of policies and strategies aiming to promote agriculture in the OIC Member Countries.

Objectives of the report

This report aims to **assess the present situation of agricultural value chains** of OIC Member Countries in terms of institutional frameworks, market access, infrastructure, and governance mechanisms, and to **provide policy recommendations** in the areas of increasing efficiency, accessing new markets, adding value for all chain actors and promoting collaboration in agricultural value chains.

Research methodology

The research methodology for this report is a combination of a comprehensive literature review, cross-country data collection, including interviews with country representatives, and in-country case studies of agricultural value chains in specific OIC Member Countries.

For the literature review, the study draws on analytical reports and publications by international organisations, such as the World Bank, OECD, FAO and other UN bodies as well as academic research on global agricultural value chains, including policies and national strategies related to agricultural value chain development.

For the cross-country data, the study focused on collecting market intelligence and data from publicly available sources, such as trade statistics, policy documents. These sources were complemented by the insights gained from interviews with country representatives and experts on the particular policies and strategies of specific OIC countries.

Six in-country case studies serve to illustrate a number of issues associated with agricultural value chains in OIC countries in greater detail. Information was collected through publicly available reports, documents and statistics, contacts to relevant organisations in the respective countries, and two field visits.

Structure of the report

Chapter 1 presents a brief overview of important concepts and models in understanding agricultural value chains, and explains the conceptual framework used for analysing value chains in the OIC Member Countries.

Chapter 2 highlights the key recent trends in agricultural value chains worldwide to sketch out the global context within which OIC Member Countries operate. This includes a section on "success stories" of value chain promotion from developed and developing countries which showcase the importance and dynamics of agricultural value chains.

Chapter 3 offers a compact cross-country review of the current status and significance of agriculture and agricultural value chains in OIC Member Countries.

Chapter 4 provides an overview of the policies and national strategies related to agricultural value chain development among OIC Member Countries more generally.

Chapter 5 consists of six in-country case studies (Saudi Arabia, Egypt, Turkey, Pakistan, Malaysia, and the Gambia) that offer an in-depth analysis of six different agricultural value

chains. Each case looks at several aspects of the value chain, including institutional and policy frameworks, value chain actors and their governance mechanisms, infrastructure and logistics, and trade and standards.

Chapter 6 concludes with the key insights of the study, including identified opportunities and threats for OIC Member Countries, and formulates recommendations for policy makers, producers, private sector leaders, and nongovernmental organisations.

In the **appendix**, a collection of brief fact sheets to identify the key agricultural products, exports and imports of each OIC Member Country can be found.

1. Conceptual framework

Global value chains have become a dominant feature of the world economy, involving countries at all levels of development, from the poorest to the most advanced, and enterprises of all sizes, from small-scale producers to large multinational companies (OECD et al., 2014). Understanding agriculture in terms of value chains draws attention to the interconnectedness of production and consumption, and moves away from a narrow focus on separate links in isolation. Consequently, the small-scale farmer at the beginning of the chain is closely connected to a series of off-farm activities involving a variety of actors and processes with larger businesses of traders, food processors and supermarket chains at the end (KIT & IIRR, 2010). Such an understanding is necessary to identify and open up new opportunities for economic growth and value creation for countries and businesses around the world.

1.1 The concept

A **value chain** is the entire system of production, processing and marketing of a particular product, from inception to the finished product and its end use. A value chain consists of a series of chain actors, linked together by flows of products, finance, information and services (KIT & IIRR, 2010). Actors are connected across space, both to each other and to world markets, turning value chains into the infrastructure of international trade (Bair, 2009). As they operate globally, competition between chain actors, countries and entire value chains is also global. Coffee producers from Vietnam compete with producers from Uganda, sugar growers from Malawi compete with growers from South Africa, and cotton producers from Pakistan compete with producers from Mali.

A value chain is not identical to a supply chain. Supply chains indicate the processes of growing, transforming and manufacturing commodities into products and physically moving them from producers to consumers. Productivity and efficiency are key determinants of supply chains. Value chains add another dimension by focusing on value creation, value capture and value distribution along the chain. At each stage of the chain, the value of a product becomes higher, as the product comes to resemble more and more the product that is demanded by the consumer. This can entail processing and manufacturing (the product is cleaned, dried, treated, blended, processed, prepared, packaged, etc.) or transport and distribution (the product gets closer to the consumer). At the same time, costs are incurred at each stage of the chain. For instance, farmers who dry and process their coffee after harvest need to invest extra work (hence costs) but are also selling a higher value product than if they sold their coffee directly after harvesting. Costs are also incurred due to losses at each stage of the chain, for instance, due to spoilage, damage and waste. Costs and benefits are distributed along the chain by means of business-to-business relationships that connect chain actors to each other. Therefore, the value chain framework describes the full range of activities that value chain actors, such as firms and workers, perform in bringing a product from inception to delivery of a product to the market, and to understand the ways that value is added (or lost) and distributed along the chain.

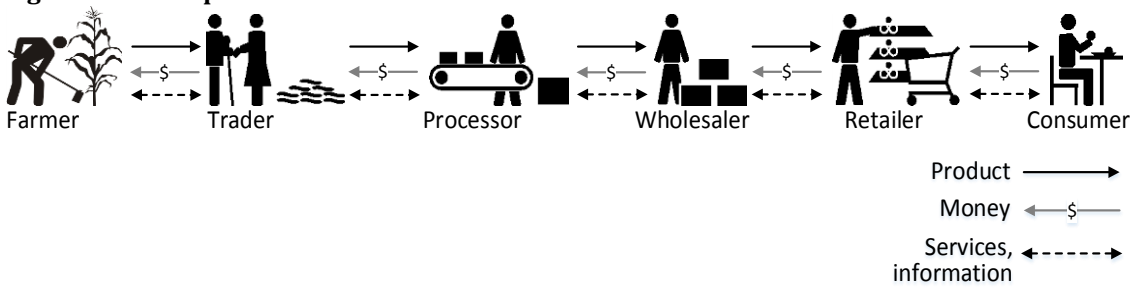
1.2 Actors, supporters and context

Chain actors are the individuals or organisations (e.g. firms) that produce the product, or buy and sell it, and thus own the product at some stage in the chain (KIT & IIRR, 2010).

At each point in the chain, exchange between chain actors involves at least the product itself (from upstream parts of the chain to downstream parts) and money (from downstream parts to upstream parts). The "upstream" part of a chain here refers to the production or extraction of raw materials, whereas the "downstream" part involves the processing and/or manufacturing of a finished product and the actual sale of the product to consumers.

In addition, value chain actors may invest in the relationships to each other to ensure the functioning of the chain. Such investments may take the form of loans (e.g. from trader to farmer), fees (e.g. from farmer to a farmers' cooperative) or funds for new projects (e.g. a new processing plant). Each of the actors may operate a highly different levels of investment, from investments of only a few dollars to several million dollars (African Development Bank, 2013). Value chain actors may also share information with each other so as to enhance the performance of the chain, including information on varieties, quality, quantity or delivery times of products. This gives rise to multiple flows in agricultural value chains which run in parallel (see Figure 1-1).

Figure 1-1 A simple value chain



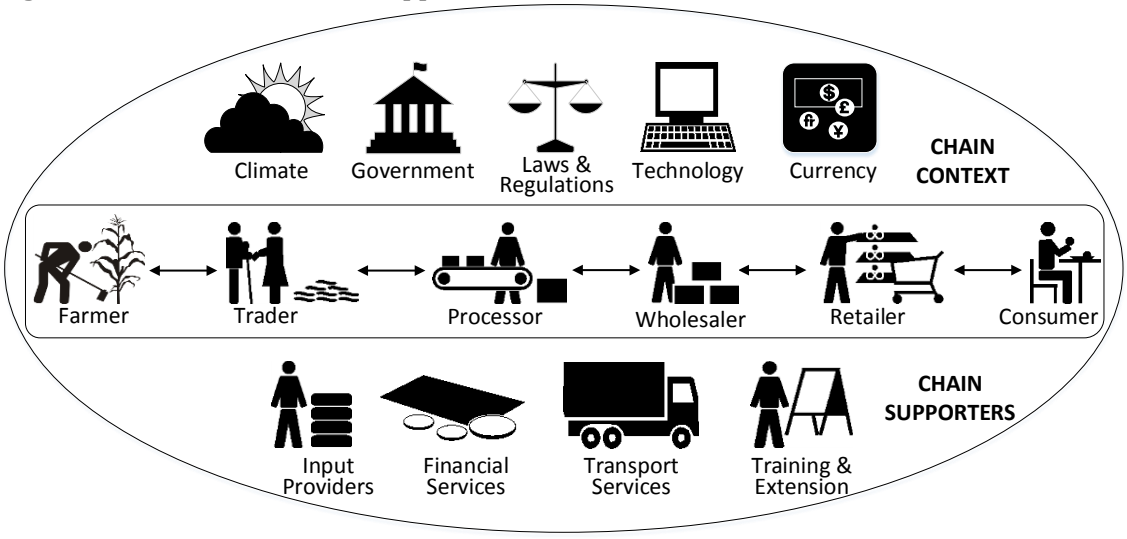
Source: adapted from KIT & IIRR, 2010

Chain supporters may provide various services to the chain actors, such as financial services, including loans, insurance, accounting and savings services, as well as a wide array of non-financial services, which encompass input supplies, farm labour, transport, grading, processing, storage, packaging, advertising, research, training, advice, organisational strengthening, and so on (KIT & IIRR, 2010). Many of these services are provided by a fee; others are offered for free (or rather through indirect levies and tax payments), such as government extension and research services.

The chain context includes the larger economy, currency exchange rates, government economic policy and governance, tax, regulatory and legal frameworks, influence by advocacy movements and by social structures. This context may help the performance of the chain, for example through targeted policies that support business or it may act as a constraint by imposing restrictions and barriers to trade (KIT & IIRR, 2010).

The relationships between value chain actors, supports and context can be visualised as follows (see Figure 1-2).

Figure 1-2 Value chain: actors, supporters and context



Source: adapted from KIT & IIRR, 2010

1.3 Value chain analysis

The changing nature of international trade has been subject to significant amounts of research and debate. In particular, the global value chain (GVC) approach has been widely popularised to explain the social and organisational structure of the global economy and its dynamics. The level of analysis is the "network of labour and production processes whose end result is a finished commodity" (Hopkins & Wallerstein, 1986) rather than individual companies, while the notion of a chain is used as a metaphor to indicate the general sequence of activities involved in bringing a product from inception to the market, taking into account the multiple relational and geographical forms and directions between production and consumption.

GVC analysis examines the international expansion and geographical fragmentation of contemporary value chains and value creation and capture therein (Gereffi & Lee, 2012). This includes questions as regards the organisation of global value chains, how these chains are governed and by whom, and how this impacts on the creation and distribution of value across chain actors. Thereby it "helps us ask questions about the winners and losers in the globalization process, how and why the gains from globalization are spread, and how the number of gainers can be increased" (Gereffi et al., 2001).

This framework has been adopted by many of the most important international organisations concerned with economic development, such as the World Bank, the World Trade Organization (WTO), the Organization for Economic Cooperation and Development (OECD), the International Trade Centre (ITC), the International Labour Organization (ILO), and the U.S. Agency for International Development (USAID).

GVC analysis applies a framework composed of four dimensions to provide a holistic view of value chains. First, the *input-output structure* identifies the main activities/segments of the value chain, such as production, processing, manufacturing and distribution. Value-adding activities including design, marketing and research also form part of the input-output structure. Secondly, the *geography* outlines the spatial configuration of the chains, such as the dispersion of production and consumption activities. Different chain segments often take place in different parts of the world owing to differences in countries' competitive advantages, such

as availability of raw materials, costs of labour and human resource capacities, etc. Thirdly, the *governance structure* of a chain pertains to notions of how chains are organised and managed. The question of who has the power and ability to exert control along the value chain is of central importance. Finally, the *institutional framework* contains the regulatory conditions and policies which shape the value chain. Such contextual factors can refer to local, national or international conditions and dynamics.

1.4 Approach taken in this report

Based on the GVC approach, this report aims to examine the general structure and organisation of agricultural value chains in OIC Member Countries, including the actors producing, processing and distributing agricultural products, the public policies, regulations and institutions governing and supporting these activities, the networks of relationships linking suppliers, processors, transporters and traders in ways that connect producers with final consumers, and the physical infrastructure, logistics and standards that exist to enable production, processing, trading and distribution activities.

To capture the breadth of these interlinked issues, the framework analyses five dimensions, each with a variety of indicators to guide the research (see Table 1-1)

(1) Institutional framework and public policies. *This refers to the collection of institutions, policies, legislative issues and support services which constitute the setting in which value chain actors are embedded and which influence how these actors participate in chains. Not all firms and countries participate equally in agricultural value chains. Some countries have managed to position themselves at the core of many value chains, either as the host country to lead firms or as suppliers of very specific tasks, while others participate very little or only in the periphery. These varying degrees of participation are determined by many considerations, some of which are fixed (such as a country's geographic location and resource endowment), while others can be shaped by public policy and legislation (such as a country's human capital, physical infrastructure, and overall investment climate) (OECD et al., 2014). Increased attention is therefore paid to how governments can promote enabling environments which are conducive to the development of value chains and value-adding activities. Governments are recognised to have a key role in supporting value chain actors, creating stable conditions for investments, encourage diversification, and open up new opportunities for those who may become marginalised by global developments. While public policies cannot address all of the challenges that exist, improvements to the institutional framework through effective laws, regulations and processes can help chain actors to enhance their competitiveness and insert themselves into profitable value chains (Global Harvest Initiative, 2013).*

(2) Standards. Standards are commonly accepted benchmarks that transmit information to customers and end-users about a product's (technical) specifications, its compliance with health and safety criteria or the processes by which it has been produced and sourced (Nadvi, 2008, p. 325). Standards for agricultural products fall in different categories. Firstly, standards can refer to technical specifications, such as variety, size, colour, or shape of a product. Secondly, standards can relate to food safety, including issues of maximum levels of residues (MRLs). Finally, standards can indicate the intrinsic value of a product, such as specifications regarding production processes. This is the case with organic and other social or environmental standards. Regional-specific branding and

origin-based labelling also fall under this category. Certification is often required to demonstrate compliance with such intrinsic value standards.

In agricultural value chains, setting and enforcing standards have become both a public and private issue. While historically, standards and food grades were viewed as public domain issues necessary to address imperfect information leading to market failure, contemporary agricultural value chains are increasing characterised by the proliferation of private standards, such as food safety and quality requirements (Henson & Reardon, 2005). Indeed one of the main drivers of value chain development in recent years has come from the introduction and rapid spread of private standards and the demands for compliance by large, often multinational buyers. Private standards can be collective business standards, individual company standards, multi-stakeholder standards or standards driven by non-governmental organisations.

The rise of private standards has triggered an intense debate in the literature concerning the consequences of this development for developing country producers. While large producers have generally been able to meet the requirements of increasing standards with relative ease, certification has proven to be much more difficult for small-scale farmers due to the demanding requirements and the high costs of compliance in the face of lacking resources and a variety of institutional and technical constraints. Although there are reported cases where small-scale growers have been able to comply with standards and participate in such chains, inclusion or exclusion from agricultural value chains in the context of standards greatly hinges on the provision of extensive external support to such farmers.

(3) Infrastructure and logistics. In many countries, infrastructural and logistical challenges remain critical barriers for inclusive chain development. Particularly in rural areas – the place of origin of most agricultural products – infrastructure is often in a poor state and moving agricultural goods from production to markets is often expensive and time-consuming. For instance, electricity infrastructure in sub-Saharan Africa is the least developed, least accessible, least reliable, most costly to operate and highest priced of any region in the world, putting African producers and processors at an immediate competitive disadvantage as regards electricity costs (United States International Trade Commission, 2009). Weak storage, distribution and cooling facilities further add to the costs of agricultural trade and lead to high spoilage rates due to the time-sensitivity of certain inputs and the perishable nature of many agricultural goods (Global Harvest Initiative, 2013).

A range of studies therefore show the positive effects of infrastructural development on agricultural production and trade. For instance, it has been found that a 10 percent improvement in transport and trade-related infrastructure has the potential to increase developing country agricultural exports by 30 percent (Moise et al., 2013). Better access to markets also reduces the impact of price shocks and provides opportunities for new agricultural and non-agricultural activities (Jouanjean, 2013).

In addition to such “hard infrastructure”, “soft infrastructure” is recognised as key to the development of agricultural value chains. This includes administrative procedures, trade processing at border crossings or ports, access to information technology and value chain finance. Particularly the latter is often a major concern in many developing countries

despite the increased recognition that financial services and investments are needed at all levels of agricultural value chains. Yet, financial products and services for agricultural and rural populations are frequently deficient, and especially small-scale farmers are still underserved (Miller & Jones, 2010).

(4) Governance and value chain actors. Governance refers to the power relationships between actors and the way that financial, material and human resources are allocated along the chain (Gereffi et al., 1994). A chain is governed if certain firms set and/or enforce the parameters under which other actors in the chain operate. These parameters include decisions on what is to be produced (product and quality specifications), how (process and post-harvest specifications), when (delivery and logistics), and how much (quantity specifications) (Humphrey & Schmitz, 2001). Thus, power is exercised through setting specific rules, processes and practices, and the actor or organisation that is in the position to set these can be considered the 'lead firm'.

A distinction is made between two types of governance structures in value chains: '*producer-driven*' and '*buyer-driven*' (Gereffi, 1994). In the former, large manufacturers of capital and technology-intensive goods, such as cars and computers, play the central roles in coordinating production networks. In the latter, the lead firms are retailers and branded manufacturers which focus on high profit functions while externalising low profit functions to a network of suppliers, typically located in developing countries. Particularly in agricultural value chains, global buyers hold considerable power over international chains despite lacking ownership over most parts of the chain. This can be attributed to their ability to occupy strategic, highly specialised chain positions and effectively act as gatekeepers to global consumer markets. The role played by lead firms is highlighted in various forms of GVC governance. Between the two extremes of spot market transactions and vertical integration (hierarchy), different forms of network governance exist, such as modular, relational and captive transactions between chain actors (Gereffi et al., 2005).

Governance is of increasing importance in many agricultural value chains due to the greater emphasis on product differentiation and the growing proliferation of various types of quality, food safety and product standards required for lucrative market access. Such issues impact heavily on the way that trade is conducted, chains are organised, and growers and other suppliers can participate. In particular, it influences which marketing channels are available to producers, as each channel may be subject to different forms of governance – some of which may be easier and others more difficult to access for producers.

(5) Trade. Trade is an integral part of agricultural value chain development, including increased productivity, sales and incomes. Only if trade systems are in place will producers, processors and other value chain actors be able to effectively meet consumer demand (Global Harvest Initiative, 2013). Therefore, trade facilitation to ease the movement of products and services is becoming increasingly important.

Already many agricultural value chains are spanning across borders forming complex global networks constituted by a multitude of actors and processes. Much of agricultural trade is based on Southern production and Northern consumption, but as world trade is becoming more dynamic, traditional North-South patterns are becoming less important.

The high growth rates of emerging and developing economies therefore put the spotlight increasingly on regional market development, including intra-regional and South-South trade.

However, many barriers continue hindering farmers and other value chain actors to participate more profitably in regional or global trade. Tariff barriers, in particular, tend to remain higher for agricultural products than for manufactured goods. Other market interventions and non-tariff barriers, such as phytosanitary measures, further complicate obtaining market access. Reports confirm that addressing tariff barriers would have significant pay-offs. For instance, a study by Moise et al. (2013) finds that a decrease of tariffs by 10 percent would lead to an increase of agricultural trade volume by about 3.7 percent. In light of the negative impact of tariffs on agriculture, trade policy, including different forms of regional and international cooperation, has been identified as critical in establishing reliable systems for moving goods.

Table 1-1 Framework used to analyse agricultural value chains

Dimension	Indicators
1. Institutional framework and public policies	➢ National strategy for agricultural development ➢ Strategic focus on certain commodities/products ➢ Support to chain actors and organisations, e.g. extension, research, credit facilities, etc. ➢ Specific governmental organisations that develops and promote the subsector ➢ International programs to support and develop agricultural value chains
2. Standards	➢ Quality standards and control ➢ Health & safety standards ➢ Sector codes of conduct ➢ Sustainability standards ➢ Multi-stakeholder initiatives ➢ Government support to help producers comply with international market requirements, e.g. standards, MRLs, etc.
3. Infrastructure and logistics	➢ Opportunities and barriers in terms of existing infrastructure ➢ Targeted investments by private and public actors ➢ Electricity and water ➢ Cold chain facilities, transport, processing facilities
4. Governance and value chain actors	➢ Actors involved in the value chain ➢ Linkages between actors ➢ Marketing channels and markets
5. Trade	➢ Exports and imports ➢ Value adding activities ➢ Trade related obstacles (tariff barriers) and opportunities (tax exemptions; preferential trading areas, free trade agreements) ➢ Non-tariff barriers to trade (e.g. phytosanitary standards, etc.)

2. Global trends and success stories in agricultural value chains

2.1 Trends in promoting agricultural value chains

2.1.1 Agro-food systems in a changing world

In times of accelerated levels of globalisation and liberalised trade, agricultural value chains and markets are rapidly changing and becoming increasingly complex. Several factors contribute to this changing context, including a growing world population, shifts in consumption patterns and consumer demands, advances in technology, and changing governance structures along chains. In addition to basic agricultural commodities, global demand is increasingly multi-faceted, ranging from growing markets for high-value fresh foods and processed foods to large-scale increases in agricultural biofuel production. Markets are also changing geographically. Not so long ago, production of many agricultural commodities took place in developing countries destined for export markets in Europe and the US. With growing purchasing power of emerging economies, especially in Asia, linked to rising incomes and an expanding middle class, much of the momentum for consumer growth lies in these new markets rather than in traditional export destinations.

These trends create new opportunities for remunerative involvement by farmers and agribusinesses around the world. As economies become increasingly intertwined, inclusion in value chains holds great potential for increased income generation, diversification of livelihoods, employment creation and value adding activities in developing countries and emerging economies, all of which are positive for economic growth and poverty reduction.

At the same time, participating in global value chains has become increasingly difficult, as heightened levels of quality demands and sophistication of products pose major challenges for many producers and agribusinesses. Most notably smallholder producers, yet also small-scale processors and small retail shops find themselves increasingly excluded from agricultural value chains or are progressively marginalised into less lucrative positions. High transaction costs, resource and institutional constraints as well as logistical bottlenecks have long been recognised as key impediments to successful participation by small market players, but are now being amplified by a new set of challenges related to the various changes in the production, trade and consumption of agricultural products.

Against this background, agricultural value chains are strikingly present in national and international strategies seeking to promote economic growth and poverty alleviation. In many developing countries and emerging economies, agriculture remains the backbone of the national economy and is of paramount importance both as a component of GDP and source of employment. This emphasises the importance of agriculturally-driven growth, which is considered to be particularly “pro-poor”, as many of the world’s farmers are millions of small-scale producers and labourers whose livelihoods are highly vulnerable and depend on agricultural production. Agricultural growth can also have significant positive spin-offs for non-agricultural sectors due to forward and backward linkages and expanding consumption that comes with rising agricultural income.

Close connections of agricultural growth to food security and hunger are equally pronounced. In 2012-2014 about 805 million people in the world, or one in nine, suffered from chronic undernourishment (FAO et al., 2014). While necessary for combating poverty and hunger, food

production will also need to increase in the face of a growing global population. Estimates forecast the world's population to exceed 9 billion by 2050, which will require significant increases in agricultural outputs and will amplify pressure on the environment and natural resources. The FAO predicts a necessary increase of 70 percent in food production by 2050 in order to meet the growing demand for food (FAO, 2009). Yet, levels of resource degradation and land and water scarcity are already rising whilst the impacts of climate change are increasingly becoming manifest or looming on the horizon. Raising agricultural productivity next to improving efficiencies in value chains and accessing global markets is thus one of the critically discussed issues that many producing countries are facing.

2.1.2 Shifting governance structures and roles of public and private sectors

Since the 1980s, the global agro-food system has undergone fundamental restructuring. On the one hand, neoliberal reforms have led to the retreat of the state and public bodies from regulating production and trade of agricultural products. Markets for most agricultural products have been liberalised to accelerate economic growth by stimulating increased private sector participation, with the exception of some key commodities, such as rice in Asia (Asian Development Bank, 2012). On the other hand, the reduced role of the state has been counteracted by the emergence of large multinational corporations as powerful chain actors – so-called lead firms – epitomising a far-reaching transformation of governance structures into 'buyer-driven' value chains. By occupying strategic positions along value chains these companies have become able to govern agricultural value chains and determine how financial, material and human resources are allocated along the chains (Gereffi et al., 1994; Gereffi et al., 2005).

The growing influence of modern retailers and supermarkets is particularly striking. Based on their enormous buying power and well-known consumer brands, they are able to dictate cost-cutting measures and product specifications to their suppliers in an effort to differentiate themselves from competitors (Lee et al., 2012). While the trend of increased retail power was first visible in the developed markets of Europe and North America, supermarket chains are also becoming increasingly dominant in Latin America, Southeast Asia, and gradually in Africa.

The restructuring of governance structures in global value chains has considerable implications for the terms of participation in these chains. Firstly, the distribution of value added and income along chains has shifted away from producing countries towards powerful buyers, resulting in declining gains for suppliers in developing countries (Talbot, 1997; Daviron & Ponte, 2005). The degree of buyer power is such that lead firms are able to limit the choices and strategies available to producers to increase their gains from participating in global chains (Kaplinsky, 2000).

Secondly, the transformation of global agro-food systems has led to the rise of private product and process standards that encompass not only food safety issues, but also environmental and ethical aspects. While also the number of public regulations for food safety has increased in important consumer markets, particularly in the European Union, the contemporary agrifood system is increasingly governed by an array of private food safety and quality standards. These have become de facto market requirements for suppliers in developing countries (Reardon et al., 2003; Hatanaka et al., 2005; Henson et al., 2005). This indicates a shift from price-based to quality-based competition (Henson & Reardon, 2005), in which notions of quality exceed physical or objectively measurable attributes (Daviron & Ponte, 2005).

Thirdly, quality-based competition has led to increased levels of vertical coordination by consolidated large buyers, particularly retailers, and increasing differentiation at the production level (Reardon et al., 2003; Maertens & Swinnen, 2009). As higher and more complex quality demands increase the risk of supplier failure, developing stronger relationships and higher degrees of coordination between actors is frequently used to ensure that supply matches demand. Large buyers have also shifted towards working with fewer groups of preferred, generally large-scale suppliers capable of meeting their requirements (Lee et al., 2012). This poses inherent challenges to smaller suppliers who are not able to comply with the high requirements of standards and buyer specifications. Meeting high quality demands requires skills and technical assistance that smallholder farmers often do not have access to.

2.1.3 Geographical shifts and the growing importance of emerging economies

The geographic dimension of global agricultural value chains has recently experienced significant transformation due to the increasing demand for agricultural raw materials and products by China, India and other emerging economies that have become major players in the global economy. Previously these countries were largely integrated into global chains as producers and exporting countries; nowadays they are also shaping global demand as consumer countries driven by increases in population, disposable income and urbanisation. Forecasts by the FAO predict that overall food consumption will increase by 70 percent between 2006 and 2050, driven mainly by demand from Asian and African countries. This is expected to lead to increased demand for protein-rich foods, such as meat and dairy products, and value-added food, such as processed or ready-made food (OECD-FAO, 2014). Most major agriculture and food companies have therefore already targeted the emerging markets for growth (KPMG International, 2013a).

The shift in end markets from the North to the South has been accelerated by the 2008-2012 global economic crisis (Kaplinksy & Farooki, 2011). The resultant growing South-South trade has major implications for developing country suppliers. On the one hand, emerging markets often have lower entry barriers and less stringent product and process standards, for instance regarding food safety. This can facilitate increased participation of those suppliers that would otherwise be excluded from global value chains (Gereffi, 2014). Producers may also have better chances at upgrading to higher value activities in South-South value chains as compared to global value chains connected to Northern consumer markets (Gereffi & Lee, 2014). On the other hand, developing country suppliers could become locked into even slimmer margins and cutthroat competition when focusing solely on low-income markets (Kaplinksy & Farooki, 2011).

The global economic crisis also brought about shifts in power in global value chains. Large companies from emerging markets have sought to regionalise their value chains in order to assume lead firm positions and dominate the chains similar to multinational corporations, as for instance South African retailers have done with suppliers in neighbouring countries (Gereffi, 2014). Similarly noteworthy is the growth and consolidation of large producers and manufacturers from emerging markets, which has to some degree offset the power of established lead firms from Northern markets (Gereffi, 2014). China, for instance, has established itself as a power centre for apparel, footwear and consumer electronic products. While traditional lead firms continue to occupy strategic positions within global value chains,

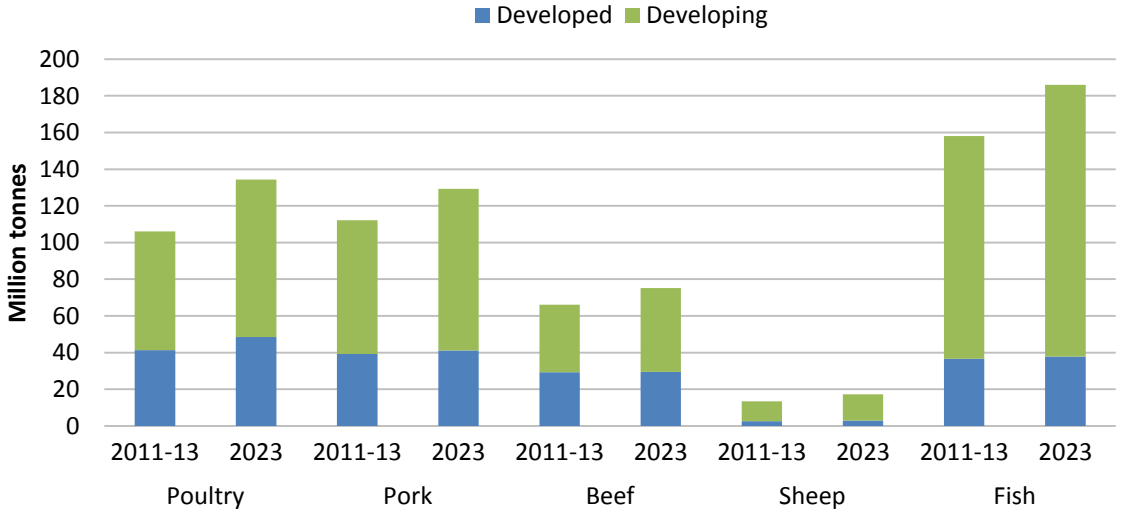
emergent lead firms and large suppliers from the developing world are becoming powerful actors in shaping GVC strategies and requirements for access, integration, and upgrading (OECD et al., 2014).

2.1.4 New consumption patterns and consumer demand shaping agricultural value chains

Traditional agricultural products, such as cereals, continue to be at the core of human diets and experience slight increases in demand due to a growing global population (OECD-FAO, 2014). However, as income levels and urbanisation are increasing in many countries around the world, global food consumption patterns are also undergoing changes, which will also impact on the content and organisation of agricultural value chains.

In developing countries, higher incomes manifest in increased demand for meat, dairy and other products that follow a more western, protein-rich diet (see Figure 2-1). A recent report by the FAO and OECD predicts an increase in global meat consumption by 1.6 percent annually from 2014 to 2023, resulting in more than 58 million tonnes of additional meat consumed by 2023 (OECD-FAO, 2014). Most of this increase will occur in developing countries, where meat consumption is expected to rise by 80 percent (OECD-FAO, 2014), led by poultry as the cheapest and most accessible source of meat and followed by pork which is especially demanded by Chinese consumers. As a consequence, the report expects a significant increase in demand for crops which can be used as fodder for livestock. For instance, coarse grains and oilseeds are estimated to increase by 20 percent and 26 percent by 2023, respectively. Fish consumption is also anticipated to rise significantly in developing countries (OECD-FAO, 2014).

Figure 2-1 Livestock consumption in developed and developing countries



Source: OECD-FAO, 2014

In developed countries, rising incomes translate into trends that are less clear-cut and more paradoxical. On the one hand, urban lifestyles and increasing time scarcity have led to a rising demand for processed, pre-cooked and prepared foods which are generally associated with increased levels of fat, salt and sugar consumption (OECD-FAO, 2014). From a value chain perspective, the rise of these types of convenience foods requires highly sophisticated systems of production, distribution and retailing (Asian Development Bank, 2012). At the same time, the demand for convenience foods translates into considerable opportunities for value-adding activities between farm and fork (African Development Bank, 2013).

On the other hand, recurring 'food scares' such as the 'mad cow disease' (bovine spongiform encephalopathy, BSE) crisis or the more recent horsemeat scandal in Europe have triggered growing concerns by consumers over food safety, nutritional content and health properties of food. In response, mandatory food safety standards by public authorities have increased significantly, including requirements for traceability, nutrition labelling, country of origin, hygiene, microbiological criteria, MRLs, and contaminants.

Many retail companies have developed similar and partially even more stringent standards not only to show that food is safe to consume but that it is also 'sustainable'. This is linked to mounting concerns by consumers on the environmental and social impacts of food, particularly at the level of production. Organic and Fairtrade standards were among the first to provide sustainability assurances to consumers on environmental and social issues, respectively. The former also addresses rising health awareness by consumers by offering food produced without the use of chemical inputs.

While sustainable consumption was confined to niche markets for a long time, an increasing drive towards mainstreaming can be observed for a variety of products, including fresh fruit and vegetables, meat, fish and dairy. Similarly, traditional export commodities, such as coffee, tea and cocoa, and specific bulk commodities which undergo considerable processing and manufacturing before reaching the final consumer, such as palm oil, soy and cotton have witnessed increasing growth in sustainable products. For instance, the market share for sustainable coffee in Europe – the worldwide largest market for coffee – had grown to 15 percent in 2013 (Coffee Barometer, 2014). Other leading sectors in terms of sustainable consumption are cocoa, palm oil, and tea (Potts et al., 2014).

To meet the consumer demand for more sustainable products, a variety of voluntary standards and certification schemes has emerged over recent years. The ITC identifies over 170 standards and codes of conduct worldwide for sustainability in global value chains, of which 100 apply to agricultural products (ITC, 2015). While this trend is largely consumer-driven, public policies, such as the EU 2020 strategy, also aim to promote sustainable consumption to reduce the social and environmental costs of unsustainable agricultural production and consumption.

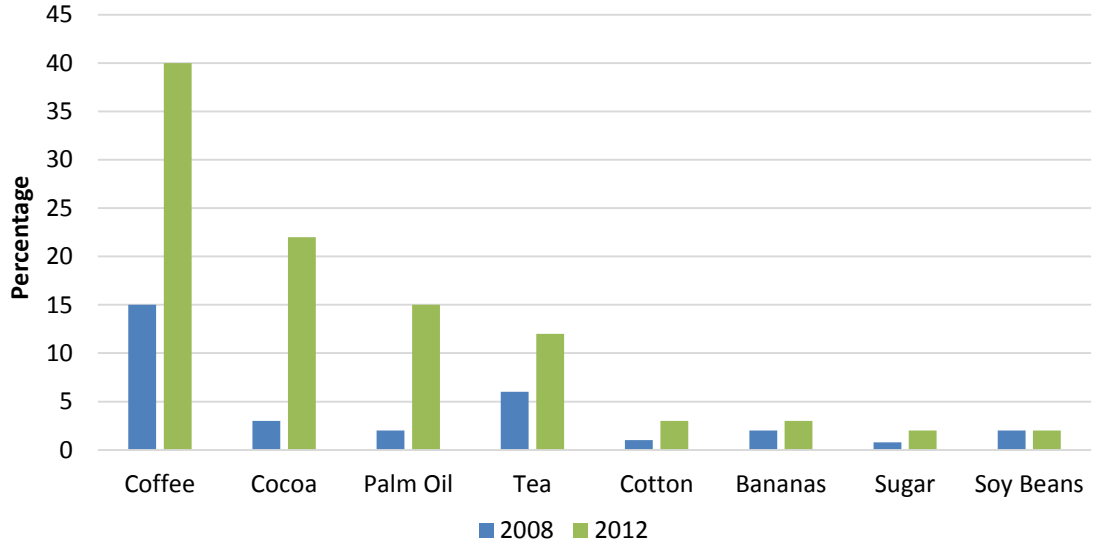
2.1.5 Corporate social responsibility and sustainability

Corporate social responsibility (CSR) occupies an increasingly prominent place in global agricultural value chains. Its growth over the last two decades is intrinsically linked to the mounting pressure on multinational companies by non-governmental organisations (NGOs) and international media to reassess their responsibility for the conditions at the production level. Public allegations of severe environmental degradation and human rights abuses, which began to be voiced from the mid-1990s onwards, posed a clear threat to corporate reputation

and sales, particularly for branded manufacturers and retailers. Some of the largest companies (e.g. Nestlé, Coca-Cola) and global brands (e.g. Nike) suffered significant losses and reputational damage as a result of activist campaigns blaming the companies for inadequate working conditions and environmental degradation in their supply chains. Many companies have since sought to protect their business by engaging in CSR activities, i.e. activities which address "the responsibility of enterprises for their impacts on society" (definition of CSR by the European Commission, 2011). This includes the adoption of corporate codes of conduct, sustainability reporting and stakeholder engagement. While the CSR trend initially focused on large multinational companies from industrialised countries which could easily be targeted in advocacy campaigns, companies from emerging markets are increasingly catching up. For instance, with regard to sustainability reporting, a recent survey confirms exceptional growth in emerging economies. Companies from many of these countries are now approximately on par with companies from the European Union (KPMG International, 2013b).

The most dominant manifestation of the increased importance of CSR is the growing proliferation of sustainability standards, as already referred to in Section 2.1.4. Growth since the late 2000s has expanded far beyond the niche markets of the early 1980s, 1990s and early 2000s. By now sustainability standards have penetrated the mainstream markets for a variety of agricultural products according to a recent survey: For instance, sustainability standard-compliant coffee, which led in terms of market penetration, reached a 40 percent share of global production in 2012 (up from 15 percent in 2008) (Potts et al., 2014). Other agricultural products also experienced a rise in market shares (in terms of global production) (see Figure 2-2).

Figure 2-2 Market shares of selected sustainability standard-compliant agricultural products



Source: Potts et al., 2014

For these products, the growth of standard-compliant production has even outpaced growth in production more generally, mainly due to the adoption by major multinational corporations which has driven up production (Potts et al., 2014).

Another critical observation is that sustainability standards are increasingly developed and implemented as part of broader multi-stakeholder initiatives and focus on entire agricultural sectors. Examples are the standards for palm oil (Roundtable on Sustainable Palm Oil), soy (Roundtable on Responsible Soy), coffee (Common Code for the Coffee Community), biofuels (Roundtable on Sustainable Biomaterials), sugar cane (Better Sugar Cane Initiative/Bonsucro), cotton (Better Cotton Initiative), and aquaculture (Aquaculture Stewardship Council). This contrasts earlier models of NGO-driven standards which can be applied across various products, including standards for organic and Fairtrade production. They also show deeper and broader social, environmental and economic criteria than the new mainstream standards (Potts et al., 2014). The growing prevalence of multi-stakeholder initiatives can be seen as part of a larger trend in global agricultural value chains for companies to embed their CSR activities in collaborations with non-traditional stakeholders, particularly NGOs (Bitzer & Glasbergen, 2015).

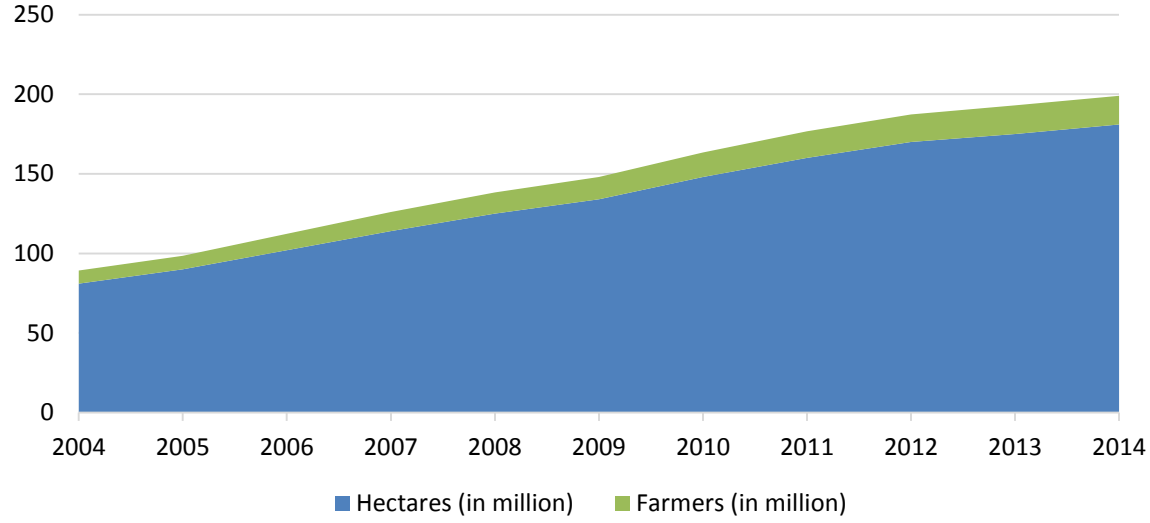
2.1.6 Agricultural innovation and biotechnology

Research and technology to promote agricultural value chains have traditionally aimed at increasing agricultural productivity. The development of higher yielding crops in the context of the Green Revolution, together with improved management practices, such as mechanisation, irrigation and fertiliser application, has been tremendously successful in many parts of the world. Many countries were able to increase their agricultural output for food security or export purposes.

In the face of a growing global population, climate change and further resource constraints continued investment in research and development into enhancing agricultural productivity are necessary to feed the world. Next to conventional research to support innovations in cultivation, farming, breeding and seed systems, the most dominant innovative technology – and simultaneously the most controversial – involves biotechnology into genetic modification (GM) of plant organisms. Genetic modification typically takes place in the form of improving plant resistance to a particular herbicide (glyphosate) or stimulating the production of a natural insecticide known as “Bt”.

GM crops were first commercialised in 1996 in the USA and are now grown in 28 countries worldwide. Starting with 1.7 hectares in the first year of commercialisation, the area under GM crops has increased more than 100 times to 181.5 million hectares in 2014, accounting for some 12 percent of global crop area (James, 2014). While biotechnology exists for a variety of crops, the most common ones are maize, soy beans, cotton and rapeseed (canola). GM crops now account for 82 percent of global soy bean area, 68 percent of cotton, 30 percent of maize, and 25 percent of rapeseed/canola (James, 2014). In 2014, the entire biotech market for crops was worth US$ 15.7 billion which represents more than one fifth of the global crop protection market and 35 percent of the global commercial seed market (James, 2014). A total of 18 million farmers worldwide have planted biotech crops, the vast majority (over 94 percent) being small-scale farmers from developing countries (James, 2014). The growth of GM crops can be seen in Figure 2-3.

Figure 2-3 Increase of GM crop production worldwide, 2004-2014



Source: James, 2014

Of the 181.5 million hectares planted with GM crops, the great majority are in the United States (40 percent of global GM crops), Brazil, Argentina, India and Canada. Emerging economies have displayed particularly high growth rates in GM adoption over recent years, even overtaking industrialised countries in 2012 as the main adopters of transgenic crops by area. By now, more than half of the global biotech crop area of 181.5 million hectares, equivalent to 96.2 million hectares, is grown in 20 developing countries (James, 2014).

In contrast, Europe merely features 0.1 percent of global acreage of GM crops. Only one GM crop is approved for cultivation, a Bt insect resistant maize, led by Spain with 131,538 hectares. The sluggish development in Europe is due to stringent EU regulation on the experimentation and commercial release of GM crops owing to widespread public concerns on the risks for human and environmental health (Baulcombe et al., 2014). Uptake in Africa has been only little faster, but here the lack of science-based and effective regulatory systems is the major constraint to adoption rather than public opposition (James, 2014).

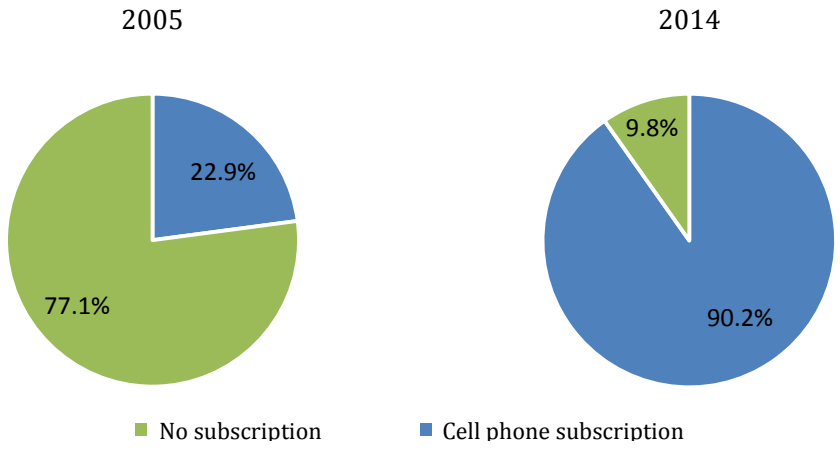
It is likely that many more GM crops will be cultivated in the USA and other countries which have supportive regulatory systems in place. In the USA, for instance, between 500-1,000 field trial applications are approved per annum and 96 applications for commercialisation have been approved since 1990 (Baulcombe et al., 2014). Since adoption rates in mature markets in both developing and industrial countries are already high, predictions for future increases in GM crops are cautiously optimistic, focusing mostly on the development of new biotech products. Another 70 potential products are currently awaiting regulatory approval for planting and import and could be available during the next five years (James, 2014).

2.1.7 Innovations in ICT to support value chain development

Innovations in modern information and communication technologies (ICT) have recently made a significant breakthrough in agriculture due to the rapid spread of mobile phones, internet and computing power. While developed countries still have higher ICT adoption rates, developing countries are catching up quickly. Approximately 90 percent of the population in

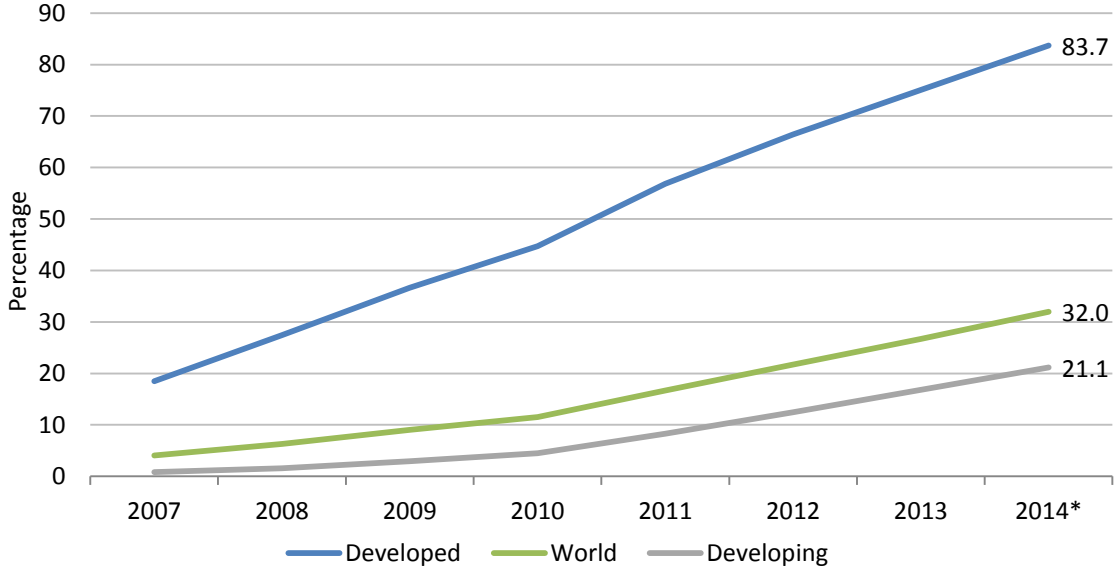
developing countries now have access to mobile phones, compared to less than 23 percent ten years ago (see Figure 2-4). The reach and affordability of data-enabled services is also improving rapidly such that by the end of 2014, mobile-broadband penetration had grown to 21 percent in developing countries, up from 3 percent in 2009 (see Figure 2-5). The high growth rates are largely due to declining costs of mobile phones and communication services, increases in competition, and expansion of infrastructure, making ICT more affordable and accessible in ways that also extend access to small-scale producers in rural areas (World Bank, 2011).

Figure 2-4 Mobile-phone subscriptions in developing countries



Source: ITU World Telecommunication /ICT Indicators database, 2015

Figure 2-5 Mobile-broadband subscriptions, 2007-2014



Source: ITU World Telecommunication/ICT Indicators database, 2015

The rise of ICT is considered to hold enormous potential for growth in developing country agriculture by connecting to millions of geographically dispersed small-scale farmers and improving their inclusion in global value chains (e.g. World Bank, 2011; Miller et al., 2013). A report by Vodafone, Accenture and Oxfam, for instance, notes that mobile-phone solutions could boost farmers' income by US$ 138 billion by 2020 across India, Africa and the Middle East, by assisting producers to receive agricultural information, access financial services, increase supply chain efficiency and facilitating market exchanges (Accenture et al., 2011).

As more and more people gain access to ICT, companies increasingly turn their attention to the delivery of services through modern technologies, especially mobile phones but increasingly also through smartphones and tablets, as the costs of these devices decline (Halewood & Surya, 2012). A 2011 report from the World Bank identified more than 200 ICT applications serving small-scale farmers worldwide, ranging from projects led by large multinational corporations, such as SAP, Google, Nokia and Vodafone, to local entrepreneurial initiatives, such as Eseko in West Africa or e-Choupal in India (World Bank, 2011).

Different types of ICT solutions in agricultural value chains can be distinguished. Firstly, ICT applications for production management focus on helping farmers improve their productivity and profitability by offering digital extension, pest and disease information or weather forecasting services (Miller et al., 2013). Secondly, ICT for market access provides information on pricing of agricultural products and connects farmers to buyers, input suppliers or service providers through virtual trading floors. Thirdly, ICT services can enhance supply chain efficiency by improving data visibility, coordinating transportation to markets or tracing products from farm gate to markets (Halewood & Surya, 2012). Finally, ICT services target financial inclusion of small-scale farmers by offering financial services, such as transfer and payment, credit, savings, insurance and financial derivations (Miller et al., 2013).

As several trends continue to work in parallel, including declining costs of mobile phones and other devices, advances in data storage and exchange, and innovations in business models and service provision, the prospects for using ICT effectively in agriculture are expected to expand considerably in the near future (World Bank, 2011), in particular for specialised services aimed at data-enabled devices with more individualised and user-friendly applications (Halewood & Surya, 2012).

2.2 Success stories in promoting value chains

2.2.1 Enabling environments: The Dutch "Top Sector Policy" to focus on core strengths

Motivated by concerns over international competitiveness and pressed by budgetary constraints resulting from the 2009 economic crisis, the Dutch government introduced a new policy framework in 2010 called "Top Sectors" to support key economic areas and enhance Dutch competitive strength in the global market.

Nine 'top sectors' were chosen, which not only deliver an above average contribution to the Dutch economy, but are also knowledge-intensive and export-oriented to capitalise on the link between innovation and export performance. In addition, the chosen sectors are explicitly related to social-ecological challenges, such as health and food safety, and therefore command the attention of government (van der Wiel & van der Kroon, 2014). The following sectors were

selected: Agriculture & Food, Horticultural & Propagating Stock, Chemicals, Creative Industry, Energy, Life Sciences & Health, Logistics, and Water.

The top sector policy is based on a combination of generic financial instruments and a pronounced emphasis on cooperation in the 'golden triangle' formed by companies, research institutions and government to implement a sector-based and integrated approach. When the policy was released, each top sector was asked to establish a 'top team' of representatives from industry, knowledge infrastructure and government to develop draft knowledge and innovation agendas for consideration by the government. The government evaluated these agendas based on the level of ambition, commitment of stakeholders, openness, balance between social and economic objectives, and the extent to which objectives can be measured (OECD, 2014). The agendas and relationships were subsequently formalised as 'top consortia for knowledge and innovation' (TKIs) which develop strategic action plans, coordinate research activities, and build linkages to education, the labour market and economic diplomacy (AWTI, 2014). The government's aim is to leverage more than 500 million euros of public and private funding, and at least 40 percent by the private sector by 2015.

Agriculture plays a key role in the Top Sector policy, as it is one of the driving forces behind the Dutch economy and accounts for about 10 percent each of national GDP and employment (Hollandtrade, 2013). The Netherlands is the world's second largest exporter of agricultural products and one of the leading producers of fruit and vegetables. At the same time, the sector faces challenges, such as pressure on the environment and a structural shift towards large-scale and more intensive farming, which require an adaptive institutional framework.

The two top sectors relevant for agriculture, Agro & Food and Horticulture & Planting Materials, focus on creating an enabling environment to strengthen the international position of the Dutch agriculture by promoting innovation and competitiveness. The ambition of Agro & Food is to make the Netherlands the world leader in this area by building on the country's strong export position to meet the challenges of producing more food with less inputs, developing new products with greater added value, and addressing international food problems through innovations in sustainable production. The ambition of the Horticulture & Planting Materials is to double the growth in added value through new product innovations and become a world leader in sustainable solutions by 2020 (Berkhout et al., 2011). Since accessing and tapping into new export markets is a key priority, Dutch cooperation with China has been identified to be of strategic importance to support the expansion and diversification of Dutch agricultural exports into China (The Hague Centre for Strategic Studies & LEI, 2014).

The Top Sector policy also serves to ensure that the Dutch agricultural sector is able to cope with and make use of changes expected to occur in the future. Such changes include the anticipated declining importance of livestock production and the growth opportunities for value added and employment in arable farming, greenhouse horticulture and open-field cultivation (Berkhout et al., 2011). Processing and logistical links are also expected to grow whereas the importance of primary and supplying links are estimated to decline (Berkhout et al., 2011).

As a result of the Top Sector policy, the government's role in industrial policy has changed from management-by-subsidy to network management (AWTI, 2014). The Government does not make its own proposals to promote the sectors, but depends on the TKIs to develop concrete lines of action (OECD, 2014). This has the advantage of facilitating demand-driven rather than government-centred policies and reducing regulatory and administrative burden on businesses (OECD, 2014). Although it is still too early to make conclusions about the effects of the Top Sector policy, in their 2014 status update, the Advisory Council for Science,

Technology and Innovation observed a new dynamism in the Dutch economy triggered by the policy, as many parties have entered into dialogues and research agendas have been coordinated within a sector.

2.2.2 Value chain promotion: The rapid growth of Ethiopia's cut flower export industry

Over the past decade, Ethiopia has been among the world's fastest growing economies and one of its most striking success stories is its cut flower industry. From a handful of farms in the late 1990s, Ethiopia grew into the second largest flower exporter on the African continent after Kenya and the fourth largest non-EU country to offer flowers on the world market (EFE, 2015).

It all began when European growers started relocating their flower production towards developing countries with favourable climatic conditions and low labour costs in the 1990s. While countries like Kenya, Zimbabwe, Ecuador and Colombia soon managed to established themselves as important production sites, the Ethiopian government was initially unaware of the market opportunities offered by flower production. The few private floriculture companies that existed struggled with significant obstacles, particularly related to land, input supply, logistics and finance (Melese & Helmsing, 2010). In 2002, they formed the Ethiopian Horticulture Producers and Exporters Association (EHPEA) and successfully lobbied for government support to further develop the sector. Together with EHPEA the government developed a five year action plan to have 1000ha under production by the end of 2007. To meet this target, the government made state-owned land available at affordable prices, especially near the airport, and offered air transport coordination. It also revised the country's investment code to create incentives for domestic and foreign investors, including duty-free imports of capital goods and raw materials, easy access to bank loans, and exemption from income tax for different periods of time, depending on the overall investment package.

As a result of these and other incentives, such as the abundance of low-cost labour, good climatic conditions and cheap transportation, Ethiopia's cut flower industry soon took off. Flower exports rose from US$ 660,000 in 2001 to US$ 178.3 million in 2010/11 (Abiye, 2014) and are projected to reach US$ 550 million by the end of 2016 (EFE 2015). Flowers are even expected to overtake coffee as the leading export commodity.

To a large extent, the rapid growth of the floriculture sector is due to heightened levels of direct foreign investment. While initially most flower farms and exporters were domestic owned firms, the incentives by the government attracted investors from other African countries and Europe, particularly from the Netherlands. The number of flower farms operating grew from 10 in 2004 to currently over 84, of which 70 are either foreign-owned or joint ventures with Ethiopian participation (Abiye, 2014).

More than 70 percent of Ethiopia's floriculture produce is exported to the Netherlands (Abiye, 2014). The majority of flowers are still sold through the Dutch flower auctions but an increasing amount is sold through direct contracts with supermarkets and fixed channels (Gebreeyesus & Sonobe, 2012). Inherent in this trend is also the increased importance of standards governing horticultural trade, such as GlobalGAP or the Milieu Project Sierteeld (MPS) label. Already early on the Ethiopian industry recognised the importance of such standards and, supported by the Ethiopia-Netherlands Horticulture Partnership, developed a Code of Conduct aligned to international requirements.

The boom of the flower sector has had tremendous benefits for both export generation, employment creation – more than 100,000 jobs have been created – and gender perspectives, as more than 75 percent of the workers are female (EFE, 2015). Although some observers criticise the dominant role of Dutch foreign investors and the continued dependency on the Netherlands as the main export market, the flower sector is generally regarded as a successful case of diversification into non-traditional exports.

2.2.3 Private sector standards: Boosting confidence in UK farmers through the Red Tractor logo

In the mid-1990s, the UK food industry found itself in deep crisis. Alarmed by the outbreak of BSE, which led to the slaughtering of more than three million cattle in an effort to control the disease, and other public health disasters such as salmonella in eggs, consumer confidence had reached a historical low. The economic toll of these crises was enormous: in 1996/1997 alone the overall economic impact of BSE was estimated at £740-980 million (Atkinson, 1999).

As a response to these high profile 'food scares', the UK government intensified food safety and animal welfare regulations, particularly for meat production and processing, and established an independent Food Standards Agency to enforce regulations. UK retailers also sought to restore consumer confidence by drawing up their own private food safety standards to practice due diligence and ensure that the safety and quality of products was maintained throughout the supply chain. As numerous private labels emerged simultaneously and threatened to result in considerable confusion among consumers, the British Farm Standard was developed by Assured Food Standards – a coalition of several producer associations and other sections of the agrifood industry – and officially launched by then Prime Minister Tony Blair in 2000. Products that comply with these standards are labelled with the Red Tractor logo:

> "The Red Tractor is a food assurance scheme which covers production standards developed by experts on safety, hygiene, animal welfare and the environment amongst other things." (Assured Food Standards, 2015)

By checking compliance through independent certification bodies and offering full traceability from farm to pack, the Red Tractor logo aims to ensure that food conforming to its standards is safe to consume and was produced with respect for the environment and animal welfare (Red Tractor website). Separate standards under the umbrella logo exist for six sectors: beef and lamb, pigs, poultry, dairy, combinable crops and sugar beet, and fresh produce. This standardisation and harmonization effort served two main purposes; firstly, to differentiate 'safe' from 'unsafe' producers and secondly, to provide a platform for rebuilding the value of agricultural commodities produced in the UK (Henson & Humphrey, 2010). Later in 2005 the Red Tractor logo was redesigned to incorporate the Union Jack in the background to emphasise that the standards not only guarantee safe food, but also stand for the British origin of the food.

Within just a few years of its inception, the Red Tractor label achieved acceptance by all major buyers and retailers, and managed to establish itself as a general quality indicator for agricultural products (Henson & Humphrey, 2010). By now, more than 88,000 farming enterprises comply with one of the standards under the Red Tractor logo which has a market recognition of 64 percent among UK consumers (Assured Food Standards, 2015). The success of the Red Tractor logo has also led to its expansion from initially labelling primary products

for retail outlets to making its way to the food services industry in 2009 and certification of the first fast food chain in 2011. Following the horsemeat scandal that hit Europe in 2013 and the resulting slump in convenience food sales, ready meals can now also get branded with the Red Tractor logo to guarantee that 100 percent of the meat used meets its standard (BBC, 2014).

Despite this apparent success, Red Tractor has faced a variety of setbacks and criticisms throughout the years. Soon after its launch in 2000 a number of environmental and animal welfare NGOs started condemning the scheme for doing little more than ensuring legislative compliance. The environmental campaign group Friends of the Earth, for instance, argued that the scheme made mostly empty claims and did not provide any assurances that food was produced to any higher standard that other food sold in retail markets (FoE, 2002). A 2012 study produced by two charities, Compassion in World Farming (CIWF) and OneKind, claimed that the Red Tractor scheme even ranked lowest on animal welfare among a variety of voluntary schemes and advised consumers to buy meat carrying the "Freedom Food" label by leading UK animal welfare charity RSPCA or the logo by the UK Soil Association instead (CIWF & OneKind, 2012). Shortly after the adverse publicity triggered by the report, supermarket chain Sainsbury's announced to opt out of the Red Tractor assurance scheme from its products, claiming that it did not want to confuse consumers with too many logos appearing on its packaging. Although the retailer announced that it would continue sourcing from Red Tractor certified enterprises, its decision to keep similar labels on its products, such as Freedom Food, may indeed be an indication that Red Tractor's adherence to minimum legal requirements does not serve the retailer's need to differentiate itself vis-à-vis other competing retailers anymore.

2.2.4 Changing consumer demands: The rise of ready meals in the UK experience

Convenience takes many forms and one of its most visible ones is in food. Changing demographics, busy lifestyles and time-scarcity have created a multi-billion dollar industry that caters to the demand for convenience by offering meal solutions that require little or no extra ingredients before consumption. Such "ready meals" (or "ready-to-eat" meals) can be broadly defined as "complex assemblages or precooked foodstuffs, packaged together and sold through the refrigerated retail chain" (Muhamad & Karim, 2015, p. 106). This includes products such as frozen pizza, fresh pasta, prepared salads, chilled soups, sandwiches, desserts, chilled pizza, or fresh juice. All of these foods enable the consumer to save time and effort related to shopping, meal preparation and cooking, consumption and post-meal activities (Buckley et al., 2007).

The rise of ready meals can be traced back to the 1950s when US food company Swansons came up with the idea of marketing a traditional Thanksgiving dinner (turkey and all the other components) as a single frozen meal which only needed to be heated in the microwave. What became known as "TV dinner" set the trend for a whole industry, and as domestic freezers made their way into American and European homes in the 1960s and 1970s, so did a whole range of frozen ready meals. Although made possible by technological progress through the spread of modern retail chains, which allowed for the better handling of perishable and frozen foods, the demand for ready meals was fuelled by changing lifestyles underpinned by social, economic and demographic shifts. For one, the transformation of traditional household roles in Western societies led to the undoing of the clear cut division between provider (men) and home-maker (women). As women joined the work force and both men and women were

working outside the house, less time was available for household related tasks, including grocery shopping and cooking. Divorce rates were also on the rise, which offered an additional marketing opportunity for ready meals, as single men having to cook for themselves were quickly identified as the primary targets of ready meal solutions. This had the unintended side effect that ready meals became associated with loneliness. As the discrepancy between the label on the packaging and the content of the meal became ever more obvious, the idea of the ready meal seemed overhauled and the industry experienced its first slowdown in the 1970s (Winterman, 2013).

The turnaround came when UK supermarket chain Marks & Spencer in 1979 introduced a first 'chilled' ready meal which quickly became the new pacemaker of the industry. It responded to consumer demands for freshness and quality, while still capitalising on ongoing societal changes, such as the increase in single person households, higher disposable incomes, greater time pressures and (perceived) time-scarcity. Chilled ready meals are particularly successful in the UK where according to industry figures the market is worth £10 billion per annum, representing 13 percent of the retail food market and growing at 4 percent annually (Chilled Foods Association, 2015a). Here the market is particularly diverse, offering a variety of 'healthy' food choices, such as ready-to-consume salads and fruit juices, and even 'luxury' products created by well-known TV chefs.

Not only because of the volume and range of products offered is the UK considered a frontrunner in the ready food market. Unlike many value chains for unprocessed food, which are often global in scope, ready meals are processed in the target markets close to the consumer to avoid a break in the cool chain (products must continuously be stored at or below 8°C). This offers new opportunities for added value in the UK. UK manufacturers additionally implement a full Hazard Analysis Critical Control Point (HACCP) approach for strict temperature controls and traceability of raw materials (Chilled Foods Association, 2015b). Delivery to retailers – where nearly all ready meal products are sold under the retailer's brand – is based on short production runs, often on the day of production. These high demands in terms of logistics, technology, marketing knowledge/capacity and other financial or human resources also pose, next to trade tariffs, an insurmountable barrier to many developing countries to access the ready meal markets (Vander Stichele & van der Wal, 2006).

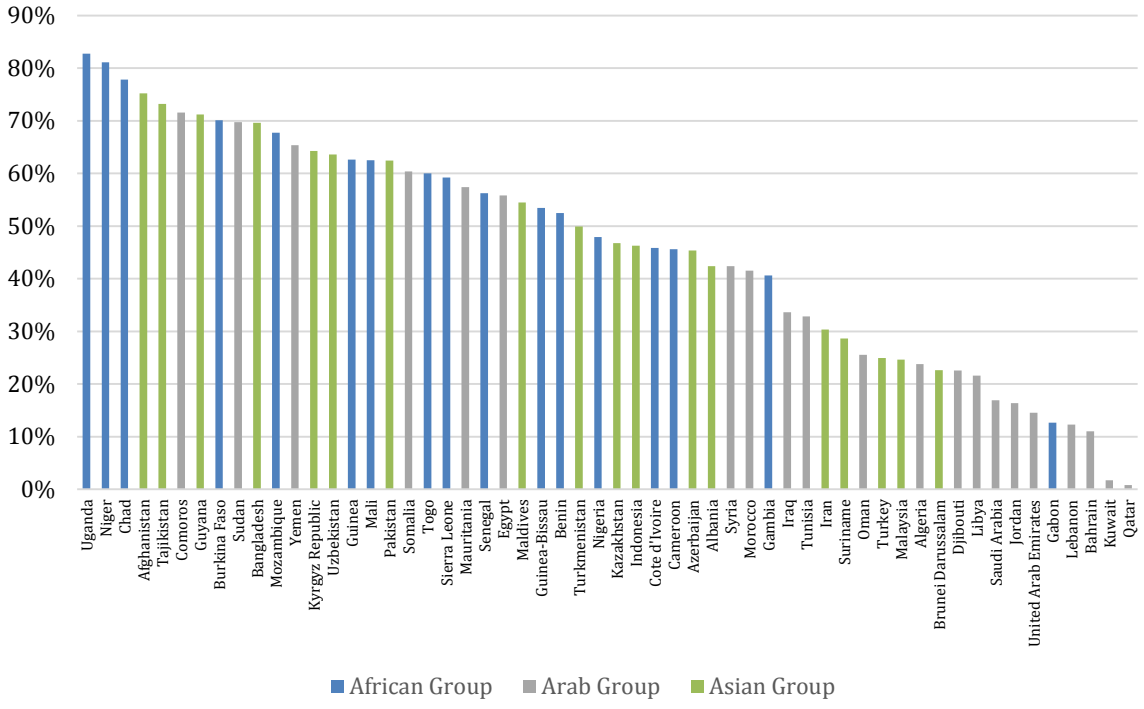
Despite the undisputable popularity of ready meals, food and nutrition experts, scientists and politicians have repeatedly voiced concerns over the health effects of ready meals – not to mention their implications for societal and family structures. Scientific studies seem in unison when they showcase the poor nutritional content of such food: Ready meals tend to be high in fat, calories and sodium, and low in carbohydrates, fibre, calcium or iron (Howard et al., 2012; Celnik et al., 2012). Not surprisingly thus, ready meals are readily associated with less healthy diets, obesity and other chronic health-related diseases (Jabs & Devine, 2006). This is certainly not the image that the industry wants to portray, especially not now that the ready meal has managed to shed its shabby image. The UK Chilled Foods Association, for instance, pushes chilled ready meals as "fresh, local, made by experts, good for employment and crucial for the economy" (Chilled Foods Association, 2015a).

3. Agricultural value chains in OIC Member Countries

3.1 The importance of agriculture in the OIC

In 2013, the OIC Member Countries had a total population of just over 1.7 billion people, of which 51 percent resided in rural areas and the remaining 49 percent in urban areas. This ranges from countries with 83 percent of rural population (Uganda) to countries with only 1 percent or less (Kuwait and Qatar) (see Figure 3-1). Due to increasing urbanisation the average share of rural population tends to decrease, but the rural economy in the form of agriculture still plays an important role in the OIC.

Figure 3-1 Percentage of rural population in OIC Member Countries, 2013



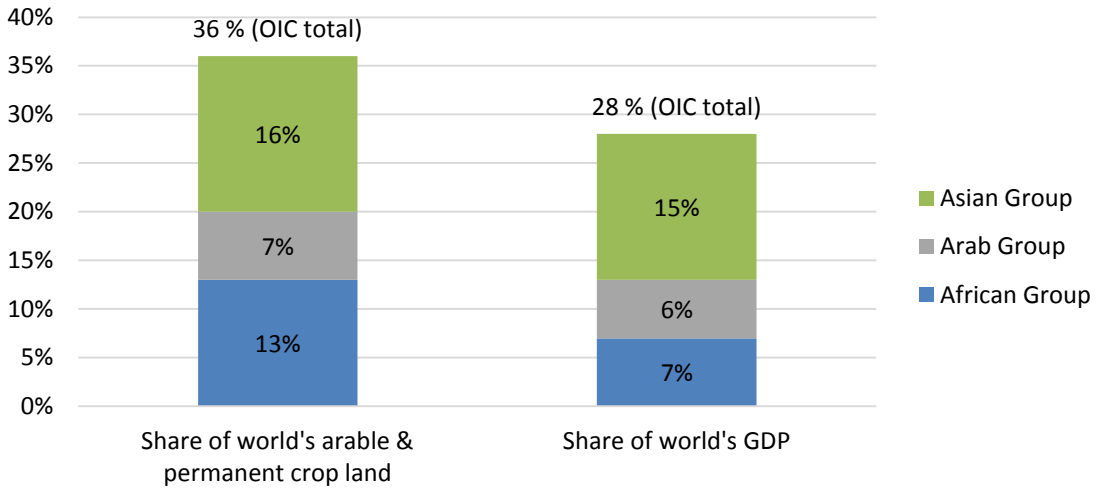
Source: FAOSTAT, 2015

OIC Member Countries cover 36 percent of the total world agricultural area[1] and contributed 28 percent to the world's agricultural GDP in 2013 (see Figure 3-2), totalling US$ 635 billion. In light of this significance, agriculture constitutes one of the six cooperation areas of COMCEC, which set itself the strategic objective of "increasing the productivity of agriculture sector and sustaining the food security in the OIC Member Countries". COMCEC's strategy in the field of agriculture defines increasing productivity, regulatory framework and institutional capacity,

[1] Arable land and permanent crop land

reliable and up-to-date data, market performance and access as the output areas. An important way to achieve these outputs is by developing agricultural value chains.

Figure 3-2 Agricultural importance of the OIC, 2013



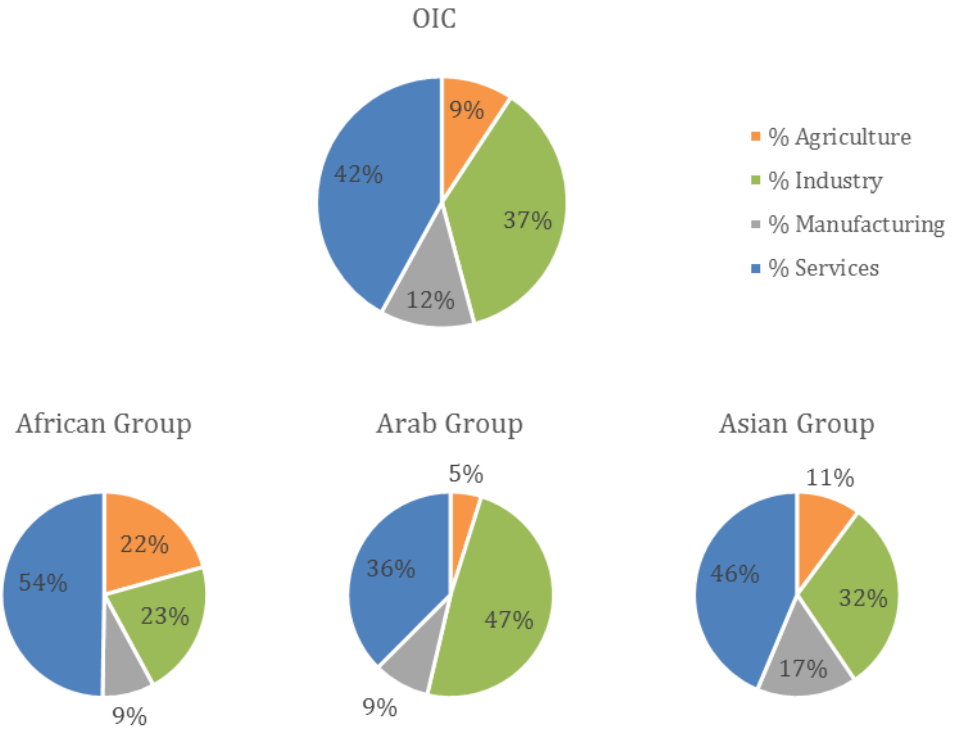
Source: WDI, 2015

In many OIC Member Countries, agriculture is an important sector, both as a contributor to GDP and as a source of employment. As regards the former, agriculture accounted for 9 percent of GDP in 2013 in the OIC (see Figure 3-3), while manufacturing had a share of 12 percent, industry 37 percent and services 42 percent. Agriculture was responsible for 10-19 percent in 10 out of 57 OIC countries, 20-29 percent in 13 countries, 30-39 percent in 4 countries, and more than 40 percent also in 4 countries. In the latter four countries (Chad, Guinea-Bissau, Mali and Sierra Leone), agriculture was also the most important sector in the economy.

Agriculture and agribusiness together account for nearly half of GDP in Africa. Agricultural production is the most important sector in most African countries, averaging 24 percent of GDP for the region. Agribusiness input supply, processing, marketing, and retailing add about 20 percent of GDP (World Bank, 2013).

The role of agribusiness becomes more pronounced with rising incomes. Globally, agribusiness is about 78 percent of value added in the agricultural value chain, with farming constituting the remainder, although the share varies widely across countries and income levels. The ratio of value added in agribusiness to that in farming is 0.6 in agriculture-based countries (most of Africa), but the ratio increases to 2 for transforming countries (mostly Asia), 3.3 in urbanised countries (mostly Latin America), and 13 in the United States (World Bank, 2013). The share of upstream and downstream agribusiness in total GDP rises to as much as 30 percent in middle-income countries, even as the share of primary agricultural production in the economy is decreasing rapidly. These trends reflect the commercialisation of farming to meet rising demand from urban consumers, leading to higher use of purchased inputs; increased services for machinery repair, finance, and retail; and greater demand for processing, packaging, and transportation (World Bank, 2013).

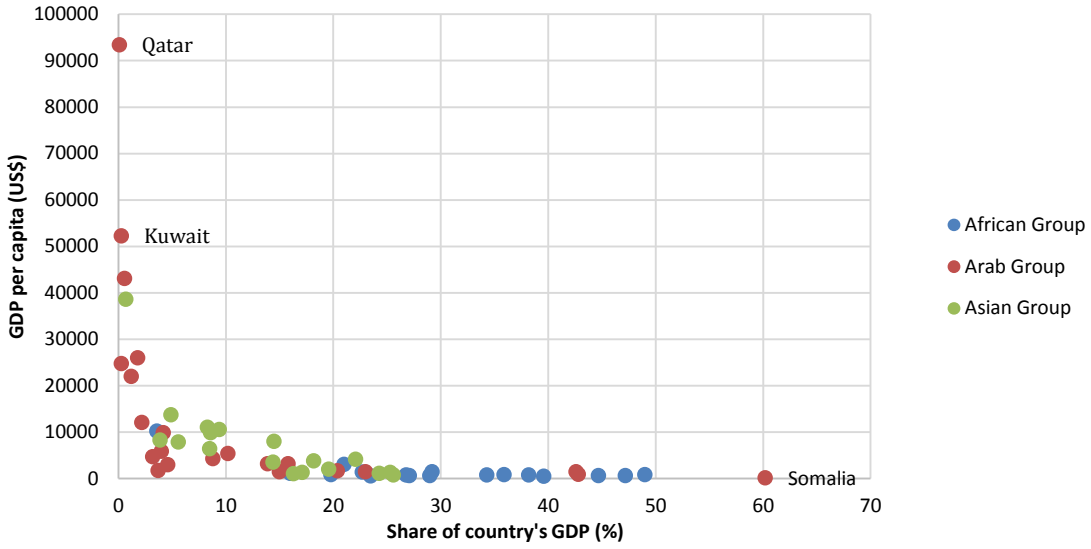
Figure 3-3 GDP composition in the OIC, 2013



Source: World Development Indicators, 2015

The high differences among OIC Member Countries can best be observed when looking at the extremes of the scale: In Somalia agriculture accounted for 60.2 percent of GDP in 2013, whereas in the Gulf States of Kuwait and Qatar agriculture's contribution to GDP was ranked at zero percent. These sharp differences both have to do with the general agricultural potential of a country (land surface, arable land, availability of natural resources, etc.) and with the level of economic development. In general, agriculture is more important in poorer countries, as can also be seen in the example above, where Somalia's GDP per capita is US$ 133, whereas Kuwait and Qatar have a GDP per capita of about US$ 52,000 and US$ 93,000, respectively.

Figure 3-4 GDP per capita versus share of agriculture GDP in the OIC, 2013

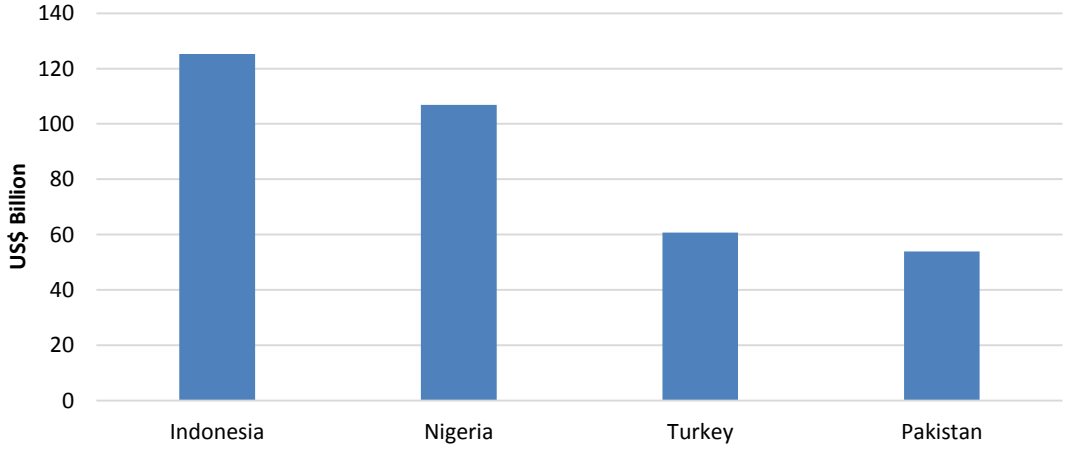


Source: UNSTAT, 2015

It is therefore not surprising that agriculture plays a more significant role in the African Group of OIC Member Countries than in the Asian and Arab Groups. In the African OIC countries, agriculture accounts for an average of 29 percent to GDP; whereas, in Asian and Arab OIC countries, this number is at 13 percent and 12 percent, respectively.

At country level, Indonesia has the highest share of total OIC agricultural GDP (14.4 percent) with US$ 125 billion in 2013. Four member countries – Indonesia, Nigeria, Turkey, Pakistan – accounted for 51 percent of the OIC agricultural GDP, with a total of US$ 346.8 billion in 2013 (see Figure 3-5).

Figure 3-5 Top 4 OIC countries in agricultural GDP, 2013



Source: UNSTAT, 2015

The importance of agriculture becomes even more evident when looking at its contribution to employment. While the sector accounted for 9 percent of GDP in 2013, its share in employment

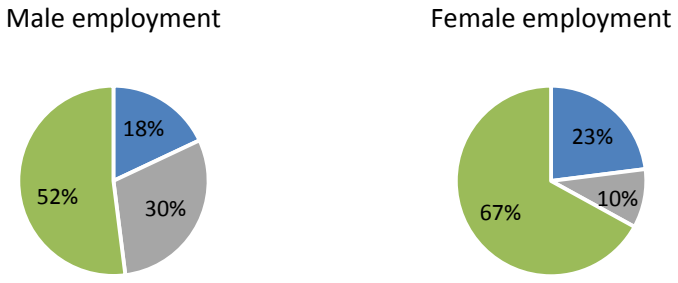
was at 22.3 percent overall, 18 percent for the male workforce and 23 percent for the female workforce (2010-2012) (see Figure 3-6).

Again, there are significant regional differences to be observed. In the African Group, agriculture is the number one source of employment, already striking for male employment (49 percent), but even more pronounced for women (58 percent), whereas in the Asian and Arab Groups, the services and industry sectors are far more important.

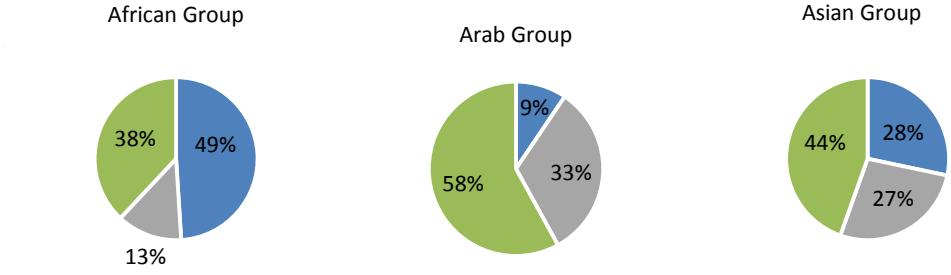
Overall, the agricultural population is decreasing in the OIC and its three regions. In 1990, the share of the agricultural population was at 46.8 percent for OIC countries. This share decreased to 42.2 percent in 2000, 39.2 percent in 2005 and 35.5 percent in 2011 (COMCEC, 2014). This is still quite high if compared with other parts of the world.

Figure 3-6 Contribution of agriculture to employment in the OIC, 2010-2012

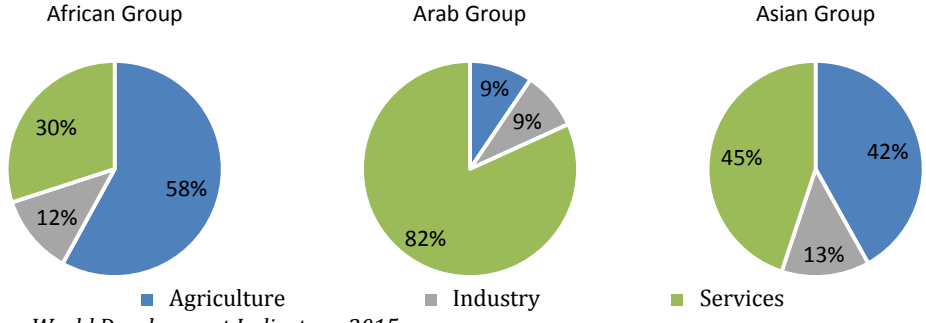
Panel 1: Male and female employment per sector in the OIC



Panel 2: Male employment per sector in OIC Regional Groups



Panel 3: Female employment per sector in OIC Regional Groups



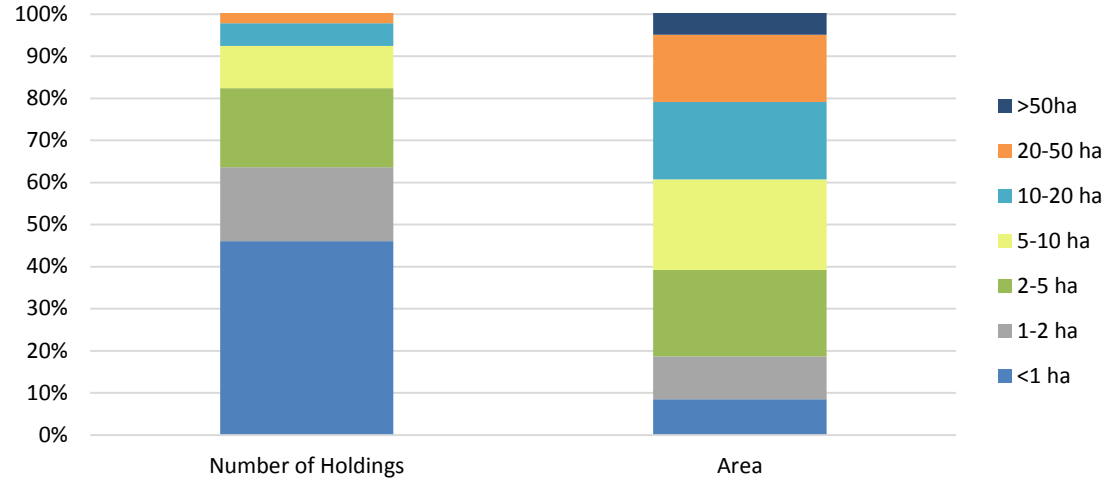
Source: World Development Indicators, 2015

3.2 Agricultural production

Arable land constitutes 9.4 percent of the surface area of OIC Member Countries, and permanent cropland comprises 2 percent.

Agricultural production is characterised by the dominance of small-scale holdings of five hectares or less. Almost 40 percent of the agricultural land is under production by such small-scale farmers which constitute more than 80 percent of all farms in operation in the OIC. Farms of over 50 hectares constitute less than one percent of all farms, but occupy five percent of the agricultural land (see Figure 3-7).

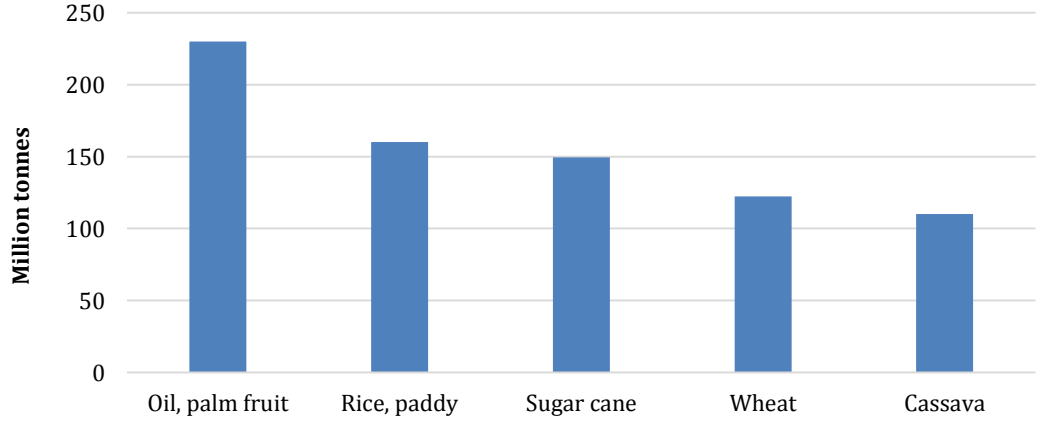
Figure 3-7 Percentage of total agricultural holdings in OIC Member Countries, 2011



Source: FAO, 2014a

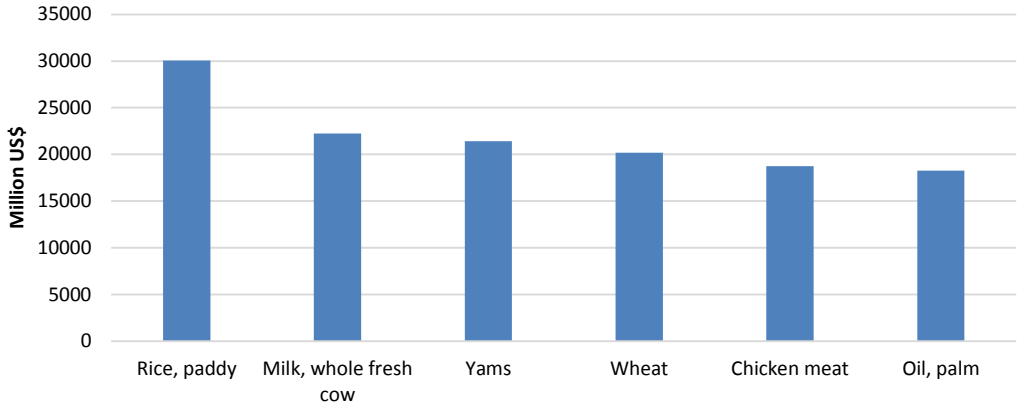
In 2013, the five most important crops grown in OIC Member Countries on an aggregate level (in quantity) were palm oil, rice, sugar cane, wheat and cassava (see Figure 3-8). In terms of agricultural value, including livestock, oil palm ranks as number six. The top 5 in value were paddy rice, milk, yams, wheat and chicken meat (see Figure 3-9).

Figure 3-8 Top Five produced crops in the OIC, 2013



Source: FAO, 2014a

Figure 3-9 Top Six livestock and agriculture produce in value in the OIC, 2004-2006



Source: FAOSTAT, 2015

For palm oil and rice, OIC Member Countries were also among the top 5 producers worldwide: Malaysia, Indonesia and Nigeria for palm oil, and Indonesia and Bangladesh for rice. Table 3-1 below shows that individual OIC Member Countries were leading only in relatively few highly traded commodities from 1993-2013. These include, next to the already mentioned palm oil and rice, coffee, cocoa, cotton, tea and sugarcane. Most products which see a leading position of individual OIC countries include minor cereals (millet and sorghum), minor fruits (dates and figs), spices (pepper and vanilla), minor roots and tubers (sweet potato and yams) as well as minor legumes (cow peas).

The position as top producing country does not indicate that these countries are also leading in terms of yields in the respective product. For instance, cocoa production sees Cote d'Ivoire, Indonesia and Nigeria on positions 1, 2 and 4 worldwide. However, none of them appear in the list of countries with the highest cocoa yields. The only OIC country to make an appearance is Malaysia as the country with the worldwide 5th highest yields. This may have to do with use of fertiliser and level of mechanisation in the OIC, which are both lower than the world average. Generally poor ecological conditions for agriculture, such as limited water sources and climatic conditions, may also contribute to the relatively low yields in OIC countries.

Table 3-1 OIC countries as top producers, average 1993-2013

Product	Production					Yields				
	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th
Almonds	USA	Spain	Italy	**Iran**	**Syria**	**Lebanon**	**UAE**	**Jordan**	USA	Croatia
Apricots	**Turkey**	**Iran**	Italy	**Pakistan**	**Uzbekistan**	Austria	Slovenia	**Egypt**	Greece	Italy
Cocoa	**Cote d'Ivoire**	**Indonesia**	Ghana	**Nigeria**	Brazil	Guatemala	Thailand	St. Lucia	Madagascar	**Malaysia**
Coffee	Brazil	Vietnam	Colombia	**Indonesia**	Mexico	Belize	Vietnam	Tonga	Martinique	**Sierra Leone**
Cotton lint	China	USA	India	**Pakistan**	**Uzbekistan**	n/a	n/a	n/a	n/a	n/a
Cow peas (dry)	**Nigeria**	**Niger**	**Burkina Faso**	Tanzania	Myanmar	Croatia	Trinidad & Tobago	Macedonia	Serbia	**Palestine**
Dates	**Egypt**	**Iran**	**Saudi Arabia**	**Iraq**	**Pakistan**	**Egypt**	China	**Bahrain**	**Qatar**	**Sudan**
Figs	**Turkey**	**Egypt**	**Morocco**	**Iran**	**Algeria**	Colombia	Cyprus	Japan	Macedonia	**Uzbekistan**
Groundnuts	China	India	**Nigeria**	USA	**Indonesia**	Cyprus	Israel	**Saudi Arabia**	**Palestine**	Nicaragua
Lentils	India	Canada	**Turkey**	USA	Nepal	New Zealand	**Egypt**	Croatia	China	Argentina
Millet	India	**Nigeria**	**Niger**	China	**Mali**	France	**Jordan**	Croatia	**Uzbekistan**	Switzerland
Palm oil	**Malaysia**	**Indonesia**	**Nigeria**	Thailand	Colombia	n/a	n/a	n/a	n/a	n/a
Palm oil fruit	**Malaysia**	**Indonesia**	**Nigeria**	Thailand	Colombia	Nicaragua	**Malaysia**	**Cameroon**	Peru	Colombia
Pepper	Vietnam	**Indonesia**	India	Brazil	**Malaysia**	Cambodia	Costa Rica	Rwanda	Thailand	Peru
Pistachios	**Iran**	USA	**Turkey**	**Syria**	China	USA	**Pakistan**	**Jordan**	China	**Turkey**
Plantains	**Uganda**	Colombia	Ghana	Rwanda	**Nigeria**	Guatemala	Belize	**Suriname**	El Salvador	Martinique
Rice	China	India	**Indonesia**	**Bangladesh**	Vietnam	**Egypt**	Australia	**Syria**	USA	Greece
Raisins	**Turkey**	USA	**Iran**	Greece	Chile	n/a	n/a	**n/a**	n/a	n/a
Rubber (natural)	Thailand	**Indonesia**	**Malaysia**	India	China	Mexico	Dominican Republic	**Cote d'Ivoire**	India	Thailand
Seed cotton	China	India	USA	**Pakistan**	**Uzbekistan**	Israel	Australia	**Turkey**	**Syria**	Botswana
Sesame	China	India	Myanmar	**Sudan**	**Nigeria**	Italy	Lebanon	Israel	Macedonia	**Saudi Arabia**
Sorghum	USA	India	**Nigeria**	Mexico	**Sudan**	USA	**Jordan**	**Oman**	Austria	**Algeria**
Sugarcane	Brazil	India	China	Thailand	**Pakistan**	Peru	**Egypt**	**Senegal**	Malawi	Zambia
Sweet potatoes	China	**Nigeria**	**Uganda**	**Indonesia**	Vietnam	Israel	**Palestine**	Cook Islands	Australia	**Egypt**
Tea	China	India	Kenya	Sri Lanka	**Turkey**	Thailand	**Iran**	Burundi	**Malaysia**	Zimbabwe
Tobacco	China	Brazil	India	USA	**Indonesia**	**UAE**	Peru	Laos	**Oman**	Samoa
Tomatoes	China	USA	India	**Turkey**	**Egypt**	Netherlands	Belgium	UK	Norway	Luxemburg
Vanilla	**Indonesia**	Madagascar	China	Papua New Guinea	Mexico	Cook Islands	China	Tonga	**Uganda**	Mexico
Walnuts	China	USA	**Iran**	**Turkey**	Ukraine	Slovenia	Romania	**Pakistan**	**Egypt**	Ukraine
Yams	**Nigeria**	**Cote d'Ivoire**	Ghana	**Benin**	Togo	Japan	Papua New Guinea	Tonga	Jamaica	Portugal

Source: FAOSTAT, 2015

In terms of livestock production, individual OIC countries were only top producers for buffalo meat, camel meat, game meat and horse meat (see Table 3-2). In 2012, OIC countries imported US$ 15.4 billion of meat and life animal products and exported only US$ 1.5 billion.

Table 3-2 OIC countries as top livestock producers, average 1993-2013

Product	Production				
	1st	2nd	3rd	4th	5th
Buffalo meat	India	**Pakistan**	China	**Egypt**	Nepal
Camel meat	**Sudan**	**Saudi Arabia**	**Somalia**	**Egypt**	Kenya
Game meat	Papua New Guinea	USA	**Nigeria**	**Cote d'Ivoire**	DRC
Goat meat	China	India	**Pakistan**	**Nigeria**	**Bangladesh**
Horsemeat	China	Mexico	**Kazakhstan**	Russia	Argentina

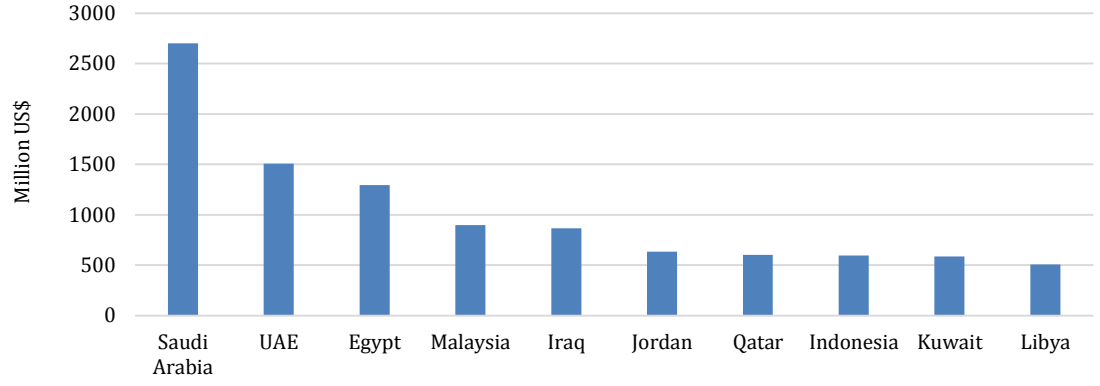
Source: FAOSTAT, 2015

In 2012, OIC countries imported US$ 15.4 billion of meat and life animal products and exported only US$ 1.5 billion. The biggest importers were Saudi Arabia, UAE, Egypt and Malaysia (see Figure 3-10). Data suggest that there is a huge potential for the development of value chains around halal meat, which can also be exported to markets outside the OIC where many Muslims live. Reuters & Dinar Standard (2015) estimates that global Muslim spending on food and beverages increased by 10.8 percent to reach US$ 1.29 billion in 2013. This would take the potential core Halal food market to be 17.7 percent of global expenditure in 2013.

The impact of the growing interest in the Halal food market on global logistics should not be underestimated. Full traceability of Halal products is increasingly becoming a concern, with recent Halal integrity issues in China, pork DNA found in Halal burgers in UK schools, horse meat scandals, and so on. The estimated logistic costs for the potential global Halal food market were US$ 151 billion in 2013 (Reuters & Dinar Standard, 2015).

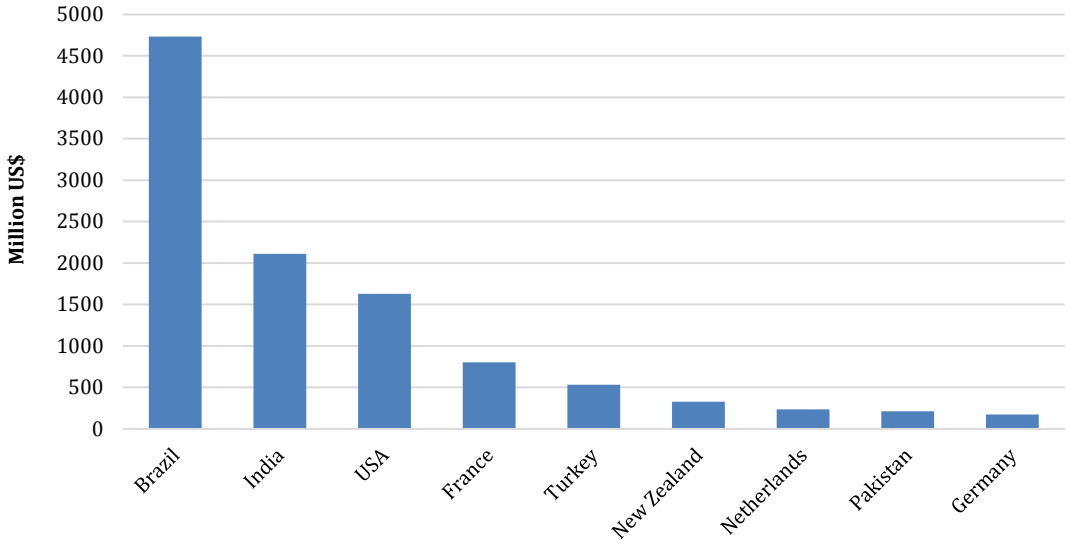
Brazil is currently the major supplier of meat and live animals to OIC countries. The Brazil Food Company is among the world's largest food companies and a major Halal market supplier. It opened its first manufacturing site in the Middle East in Abu Dhabi in 2014. The factory processes poultry from Brazil for repackaging and shipping to other countries. Figure 3-11 shows the top exporting countries of meat and live animals to the OIC.

Figure 3-10 Top importers of meat and live animals in the OIC, 2013



Source: Reuters & Dinar Standard, 2015

Figure 3-11 Top exporters of meat and live animals to OIC member countries, 2013



Source: Reuters & Dinar Standard, 2015

3.3 Specific requirements for agricultural value chains in OIC countries

Because of Halal requirements[2], agricultural value chains that start or end in OIC countries tend to differ slightly from those that take place in other parts of the world. There is a wide diversity in awareness and adoption of the Halal concept within the customer base of Muslims globally. In Muslim majority countries, most customers will assume all foods are credibly halal, while other non-Muslim majority markets will seek Halal verification, for example by checking labels and certificates (Reuters & Dinar Standard, 2014). In most OIC countries, Halal verification on all food imports is managed at the government level.

Halal requirements have an impact on the way food is produced. Almost all segments of food and beverage industry value chains are somehow impacted by the Halal food certification process. The implications for companies and other organisations throughout the value chain are as follows (Table 3-3).

[2] Food permitted per Islamic dietary guidelines from the Quran. Muslims cannot consume: pork or pork by-products, animals that were dead prior to slaughtering, animals not slaughtered properly or not slaughtered in the name of God (Allah), blood and blood by-products, alcohol, carnivorous animals, birds of prey.

Table 3-3 Impact of Halal requirements on the value chain

Food industry segment	Halal process impact	Main companies and other organisations
Core suppliers	Core feeding, slaughtering and handling of animals and animal products that adhere to Islamic rulings. Halal certification of core food preservatives and other ingredients.	Brazil Food Company (Brazil) Allanasons (India) American Foods Group (USA) Cargill (USA)
Technology	Specialised technologies to facilitate slaughtering of animals and related management technologies.	
Food processing	Halal certification of sourced food supplies and all ingredients used in producing and managing the food.	Nestlé (Switzerland) Al Islami (UAE) Saffron Road (USA) Tahira Foods (UK) Arman (China)
Channels	Retailers focus on creating space and positioning of halal food products. This is especially relevant in markets where Muslims are not a majority.	Tesco (UK) Carrefour (France) BIM (Turkey) Marrybrown Sdn Bhd (Malaysia) Lulu (UAE)
Logistics	An important aspect of ensuring the purity of the halal concept is making sure that the global distribution of halal food is kept pure and not in contact with non-halal food items.	
Eco-system	Training, R&D, marketing, financial services, regulations, and compliance are all need to address halal needs.	SMICC (OIC / Turkey) International Halal Integrity Alliance (Malaysia) JAKIM (Malaysia) IFANCA (USA) ESMA (UAE) MUI (Indonesia)

Source: Reuters & Dinar Standard, 2015

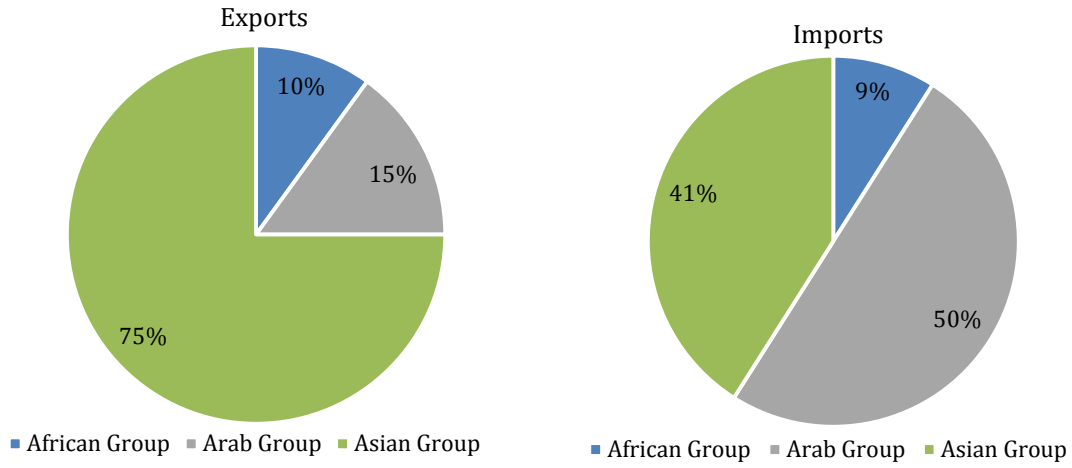
There is still a long way to go, but there are signs of increased scrutiny by OIC governments on the Halal integrity of food products. In October 2014, for example, Qatari authorities pulled several American-branded, pre-packaged meat products from the shelves, claiming they were un-Halal. They removed products including well-known brands such as Sara Lee's Cracked Pepper Turkey Breast, Ball Park's Beef Franks and Hillshire Farm's Turkey Lit'l Smokies (Reuters & Dinar Standard, 2015).

3.4 Participation in global value chains

Overall, trade in agricultural products in OIC Member Countries has grown tremendously from 2002 to 2012. Total agricultural product exports increased from US$ 33.8 billion in 2002 to US$ 132.7 billion in 2012. At the same time, agricultural product imports rose from US$ 53.5 billion in 2002 to US$ 208 billion in 2012. As imports are higher than exports, the OIC is a net importer of food products. It is noteworthy that no less than 85 percent of OIC countries' meat and live animal imports come from non-OIC countries (Reuters & Dinar Standard, 2015).

There are, however, big differences between countries when it comes to trade deficits and surpluses. Typically, Arab countries are importers of agricultural products, comprising 50 percent of OIC import value, followed by Asia, with 41 percent. Asian OIC countries are the top exporters, with 75 percent, followed by Arab countries, with 15 percent (see Figure 3-12). As a group, Asian OIC countries are net exporters. Arab and African are net importers.

Figure 3-12 Share of OIC agricultural trade, 2013



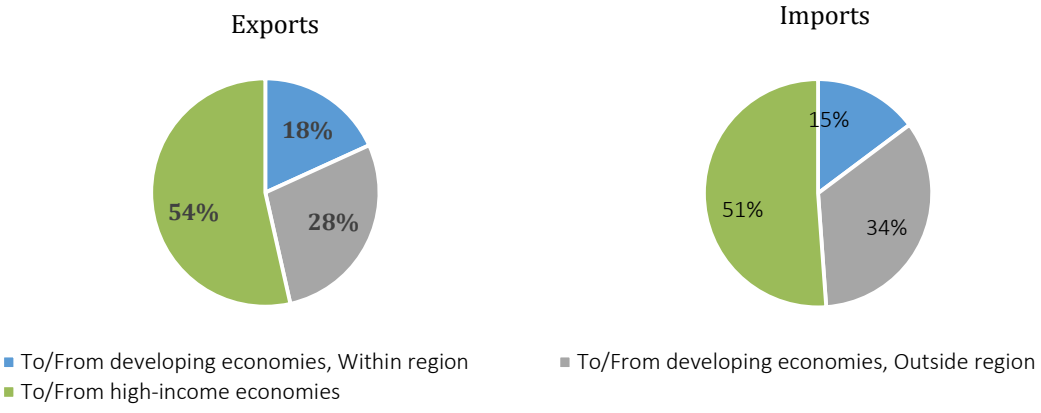
Source: FAOSTAT, 2015

The biggest importers are Saudi Arabia, Malaysia and Indonesia, comprising 27 percent of total OIC imports.

The biggest exporters of agricultural products are Indonesia, Malaysia and Turkey. These countries together account for 63 percent of the OIC's total agricultural commodity exports. Indonesia, Malaysia and Turkey are net exporters; whereas, Saudi Arabia is a net importer.

In 2013, 54 percent of the total exports of OIC Member Countries went to high-income countries, 28 percent went to developing countries outside the region and 18 percent went to developing countries within the region. This picture is similar when looking at the total imports of OIC countries. Again, about half (51 percent) of the imports come from high-income countries, 34 percent from developing countries outside the region and 15 percent from developing countries inside the region (see Figure 3-13).

Figure 3-13 Trade in OIC Countries, 2013



Source: World Bank Development Indicators, 2015

More and more countries are looking for ways to take part in global value chains. The idea is that participating in world markets provides better avenues for development than protectionism. Global value chains can offer opportunities such as increased GDP growth, job creation and diversification into new products and markets. At the same time, the global expansion of value chains may pose challenges for OIC member countries, specifically the ones that are considered least developed. Issues such as sustainable development, labour rights, the regulation of multinational companies, as well as the breath and spread of value chains need to be considered (Islamic Development Bank (IDB) Group, 2013).

A study by the United Nations Conference on Trade and Development (UNCTAD) reports that engaging in global value chains is accompanied by higher GDP growth rates. Most sluggish growth is recorded for countries with a low GVC participation growth rate and low growth of the domestic value added share of exports (0.7 percent). Higher domestic value addition without increased participation in GVCs correlates with higher GDP growth (1.2 percent). However, integration in GVCs without increase in domestic value added seems to offer higher GDP growth (2.2 percent). The highest GDP growths are recorded for those countries that have a high GVC participation growth rate and, at the same time, manage to increase their domestic value added in exports (a median GDP growth of 3.4 percent). In a similar vein, recent UNCTAD research shows that the share of OECD countries in total value added created by GVCs is found to be 67 percent. The so-called Newly Industrialised Countries such as Korea and Singapore capture around 11 percent, BRICS countries comprises 14 percent of which China's share is 9 percent. The share of the Rest of the World which includes all LDCs and other developing countries is only 8 percent. Most OIC member countries belong to the latter category. OIC member countries with the highest shares include Malaysia (0.8 percent of total value added created by GVCs) and Indonesia (0.6 percent). However, the share of foreign value added is relatively high for Malaysia (around 40 percent compared with 15 percent for the United States). Indonesia has a higher domestic value added, driven by a high share of mining products which feed into other country's value chains (Islamic Development Bank (IDB) Group, 2013).

In agriculture, around 16 percent of the world food production enters international trade. This means that national and local markets absorb most of the food that farmers grow. Most farmers do not sell on the international market, directly or indirectly. In the OIC, a focus on regional value chains has been observed of late. Growing demand in OIC Member Countries make these markets lucrative for other OIC Member Countries. These markets can also be more attractive for producers based in OIC Member Countries, in particular for small and medium sized enterprises (SMEs), compared with developed country markets. They also tend to impose fewer requirements and less stringent standards than developed countries. Moreover, OIC Member Countries share common relationship networks and cultural norms that can facilitate trade (Islamic Development Bank (IDB) Group, 2013).

4. Agricultural value chain policies and enabling environments in the OIC Member Countries

4.1 Policy diversity and policy dynamics in OIC countries

Nowadays, agricultural development in many OIC Member Countries does not receive due prominence from policy makers given the low contribution of agriculture to GDP (Alpay, 2014). While agriculture continues to represent a major source of employment for many countries in the OIC, its importance as revenue generator has declined over time, resulting in decreasing attention by many governments.

However, before the liberalisation agenda of the 1980s and 1990s, governments in many OIC countries were heavily involved in agriculture and assumed different roles, including the provision of inputs, credit and marketing services. Domestic prices were often kept artificially low to promote exports or they were set above world market prices to guarantee a minimum price to producers. The results of these policies, however, were mostly poor because government interventions were often ill-informed and poorly implemented. Subsequent reform efforts implemented in the context of structural adjustment programmes, led to a sharp decline or even collapse of many services previously provided, such as extension, input supply and marketing, resulting in a general situation of underinvestment in public funding for agriculture.

This broad assessment (Alpay, 2014) should not underestimate the significant diversity which exists among OIC Member Countries, reflecting the heterogeneous role that agriculture continues to play in their economic activity. Lower income countries, particularly in the African region, tend to have a larger share of agriculture in their economies than high income countries (see also Chapter 3). Natural resources used in agriculture, such as arable land, soil and water resources, as well as the availability of non-agricultural natural resources, such as oil and gas, also notably influence a country's agricultural value chain policies. These differences among the OIC Member Countries result in highly varied patterns of specialisation and agricultural policies.

Across these differences, a broadly shared set of challenges is a common driver of agricultural policies in the OIC Member Countries: assuring economic viability of the agricultural sector and producing sufficient food to cater to the needs of the population (OECD, 2015).

4.2 Self-sufficiency as main policy focus in OIC countries

Recognising the strategic importance of producing food domestically to shield themselves against the vulnerabilities of external sources, most OIC Member Countries pursue goals of food self-sufficiency. Accordingly, the main crops produced in the OIC are staple foods produced for domestic consumption and as feedstock for livestock. Several OIC countries are large producers of wheat (e.g. Pakistan, Turkey, Iran, Kazakhstan, Egypt, Morocco and Uzbekistan), barley (Turkey, Kazakhstan, Morocco), cassava (Nigeria, Indonesia, Mozambique, Cameroon, Sierra Leone, Benin), maize (Indonesia, Nigeria), millet (Nigeria, Niger, Mali, Burkina Faso, Chad, Senegal), potatoes (Bangladesh, Iran, Algeria, Egypt), rice (Indonesia, Bangladesh, Pakistan, Egypt), and sorghum (Nigeria, Sudan, Burkina Faso, Niger). Livestock

farming for meat and dairy production is also widespread. For most of these products, value chains remain overwhelmingly local.

Particularly in the African OIC Member Countries, including Chad, Niger, Senegal, Uganda, Sierra Leone, Sudan and Cote d'Ivoire, official government policies aim at boosting the production of staples to enhance food security. Traditionally, cereal production is very diversified in African OIC countries: millet is the principal cereal cultivated in many Sahel countries (e.g. Mauritania, Mali, Chad, Niger), in coastal countries rice (Senegal, Sierra Leone) or yams (Cote d'Ivoire, Cameroon) are most important; and in Central and Southern Africa (Uganda, Mozambique) cassava and maize are the principal cereals. However, throughout the entire region, a growing focus on rice production can be observed due to increasing demand in the context of a growing population and changing consumption patterns away from millet and maize.

In Arab OIC Member Countries, wheat and to a lesser extent barley are the main crops cultivated as they are the staple food of the population and are also used as feed for livestock. Most countries in the region have therefore established policies for subsidizing the production of key crops. However, production in these countries takes place amidst a number of limiting factors, including aridity, limited arable land, declining water resources, and poor soil quality (Sadik, 2014). As this region is one of the most water scarce regions in the world, the environmental distress caused by growing water shortage severely constrains domestic production (Ahmed et al., 2013). Therefore, all Arab OIC countries are net importers of wheat. Moreover, growing interest from Arab countries, especially Gulf countries, to use land overseas to ensure food security can be observed since the 2008 spike in food prices. For instance, Qatar is involved in agricultural overseas projects in Cambodia, the Philippines, Pakistan, Indonesia and Vietnam; Egypt acquired land in Sudan and Uganda; and the United Arab Emirates reportedly invested in projects in Pakistan, Morocco and Ethiopia.

These land acquisitions differ from agricultural investments in the past in several respects (Cuffaro & Hallam, 2011). Firstly, the investors are resource seeking (land and water) instead of market seeking. Secondly, they emphasise cultivation of basic food crops, including animal feed, to be exported back to the investing country rather than for wider commercial export. Finally, they involve acquisition of land and actual production rather than looser forms of joint venture.

Box 1. Wheat production in Saudi Arabia: from self-sufficiency to complete import dependency within a decade

Saudi Arabia's arid climate, poor soil fertility, limited water supply and limited arable land (1.5 percent of the total land area) severely restrict its agricultural potential. Nevertheless, the country was able to become self-sufficient in wheat from the 1980s onwards. Revenues from oil and gas exports subsidised an expensive agricultural strategy entailing interest free loans, support services, free seeds and fertilisers, low-cost water and electricity and free land programmes (Ahmed et al. 2013). By the early 1990s, the country had even become the world's 6th largest exporter of wheat (Ahmed et al., 2013). However, in the mid-2000s it became increasingly clear that the extensive agricultural production had depleted the country's underground non-renewable water resources.

This prompted a drastic policy shift in 2008 away from food self-sufficiency towards a more comprehensive and sustainable food security strategy which follows a three-pronged approach (Al-Tkhais, 2014). Firstly, government decided to continue producing some water-extensive commodities domestically, taking into account the limited water resources. Wheat does not fall in this category and is to be reduced out by 12.5 percent annually with the goal of terminating production by 2016. Secondly, the private sector continues to import food commodities and sell them domestically. Thirdly, the Saudi Arabia adopted the "King Abdullah's Initiative for Agricultural Investments Abroad", which seeks to conclude agricultural investments in land-rich countries for the production of food commodities.

In the Asian OIC Member Countries, a broad distinction can be made between Central and South Asian economies. In Central Asia the main crop for self-sufficiency is wheat. For instance, Iran has promoted self-sufficiency in agricultural production since the Islamic Revolution in 1979. To this purpose, a guaranteed price is provided for more than 20 agricultural crops, with wheat and rice being the most important. In 1999, the government initiated a special programme for wheat self-sufficiency for wheat by increasing production through input subsidies, improved seeds, mechanisation, and farmer training. The implementation of this strategy and the guaranteed price support is likely to have contributed to an increase in wheat production, and Iran went from being the 16th largest wheat producer when the programme was launched to the 12th leading producer of wheat in the world in 2012 (FAO, 2014b).

In South Asian OIC Member Countries, rice is the most important crop for food self-sufficiency in line with the importance of rice for domestic supply and costs of imports. Countries such as Indonesia and Bangladesh have devoted large portions of their agricultural resources to the production of rice, and are the worldwide 3rd and 4th largest producer countries, respectively. For Indonesia, rice self-sufficiency is even the priority objective of its agricultural policies.

Different policy mechanisms to protect and promote domestic production of food security crops can be identified in OIC countries.

Producer subsidies. Different OIC Member Countries subsidise inputs, equipment and seed distribution. For instance, Benin and Mali have launched government programmes to distribute free seeds, subsidised fertiliser and irrigation equipment for rice producers.

Fixed prices. Many OIC Member Countries have fixed prices for certain crops to limit high food prices. For example, Senegal and Cote d'Ivoire have guaranteed producer prices for rice to encourage production and to reduce their dependency on rice imports (Senegal typically imports about 70 percent of its rice for domestic consumption). In Pakistan, the government controls the wheat market through a guaranteed minimum support price to producers and an issue price for wheat sold to flour mills.

Government control. In a number of OIC countries, government plays a dominant role in the processing and marketing of strategic agricultural products. In Saudi Arabia and Egypt, mills are almost exclusively owned by the state. In Syria, the government is the sole buyer of wheat and controls all marketing channels. Also in Egypt, the state is the primary purchaser of wheat and buys the produce from farmers at prices above the prevailing world price. In Iran, mills are privately owned but the state is the exclusive buyer of flour.

Import duties. The majority of OIC countries have established high import tariffs on key commodities to protect domestic producers. For instance, many OIC countries have high barriers for wheat imports, including tariff barriers and sales tax. This protects local producers but also effectively allows the domestic price above the international market price.

Export restrictions. Some OIC Member Countries have established legislative barriers to control, restrict, or even eliminate the exports of cereal staple crops. For instance, in Bangladesh exports of non-fragrant rice are banned and exports of fragrant rice require official permissions. In Egypt, rice exports are frequently banned such as in 2008, 2009, 2011, 2013 and 2014, with unclear prospects for the future (USDA, 2014a). In West Africa, seasonal bans to grain exports are often not an official act or decree, but politically motivated decisions to meet public concerns of rising food prices and hunger, and to garner support for politicians in elections (Ngo-Eyok, 2013).

Donor support. Countries rally for donor support to assist in their objective of promoting food security. Various donor programmes and initiatives are in place, such as the USDA Food for Progress Program, which is one of the biggest food security programmes and is active in all African OIC Member Countries. National initiatives aiming towards donor support also exist. For instance, Niger has recently launched its programme "Nigeriens Nourish Nigeriens" (3N), which aims to address the country's dire situation of recurring food crises. The government is investing 22 percent of the total amount needed for the programme and currently lobbies for donor support to cover the remaining finances. The 3N initiative encompasses 11 key programmes that aim to diversify agricultural production, to increase cereal yields, to improve the availability of high quality seeds and irrigation, and to promote localized production clusters, so that each region of the country focuses on crops and livestock that are suitable to its agro-ecological conditions.

Despite the pronounced focus on focus security, most OIC countries are unable to achieve this and are net importers of food crops, as shown in Chapter 3. Agricultural production suffers from low productivity and is not able to keep up with population growth. For instance, Nigeria was self-sufficient in food in the 1960s and exported significant quantities of agricultural commodities (cocoa, nuts, vegetable oils). Nowadays, Nigeria is a large importer of food and the world's biggest rice importer (Schaffnit-Chatterjee, 2014).

For more than two-thirds of OIC countries, food aid also plays an important role. The FAO (2015) reports that 21 out of the 37 countries worldwide which are in need of external assistance for food in 2015 are OIC Member Countries. Food insecure countries are grouped into three broad categories, depending on whether their need for external assistance arises due to conflict, crop failure or the impact of localised high food prices on vulnerable groups (see Table 4-1).

Table 4-1 Status of food insecurity in OIC Member Countries 2015

FAO Category	Explanation	African OIC Member Countries	Arab OIC Member Countries	Asian OIC Member Countries
1) Exceptional shortfall in aggregate food production/ supplies	Countries facing an exceptional shortfall in aggregate food production/supplies as a result of crop failure, natural disasters, interruption of imports, disruption of distribution, excessive post-harvest losses, or other supply bottlenecks.	• The Gambia • Guinea-Bissau • Senegal	• Syrian Arab Republic • Iraq	
2) Widespread lack of access	Countries with widespread lack of access, where a majority of the population is considered to be unable to procure food from local markets, due to very low incomes, exceptionally high food prices, or the inability to circulate within the country.	• Burkina Faso • Chad • Guinea • Mali • Niger • Sierra Leone	• Djibouti • Mauritania • Yemen	
3) Severe localized food insecurity	Countries with severe localized food insecurity due to the influx of refugees, a concentration of internally displaced persons, or areas with combinations of crop failure and deep poverty.	• Cameroon • Cote d'Ivoire • Mozambique • Uganda	• Somalia • Sudan	• Afghanistan

Source: FAO, 2015

4.3 Export promotion in OIC countries for global agricultural value chains

In parallel to the dominant focus on self-sufficiency, a number of OIC Member Countries are large agricultural players and export significant quantities, such as Turkey, Indonesia, Malaysia, Egypt, and Pakistan. Particularly in South Asia, agriculture is gradually diversifying towards high value commodities. Malaysia and Indonesia are the most prominent examples of this group: Both are large agricultural exporters of palm oil and rubber; and in the case of Indonesia also coffee, tea and cocoa. A high level of government involvement in agriculture can be witnessed for both countries, and is particularly manifest in Indonesia, where four government ministries are involved in agricultural policies and regulation.

Both countries have different strategies in place to maintain and enhance their position as key agricultural exporters in the global market; for instance, by means of market diversification and product differentiation. As regards market diversification, both countries increasingly broaden their customer base and cater to diverse markets, from traditional buyers in the European Union to the emerging markets of India and China, which together account for more than a third of global palm oil imports. Concerning product differentiation, although palm oil is a mass commodity with limited scope for variation, both countries have supported global sustainability standards and multi-stakeholder initiatives. This serves enhance their legitimacy and fortify their worldwide leading position with regard to other emerging (and competing) producer countries, such as Colombia and Nigeria. Recently, both countries have also developed their own domestic standards for sustainably produced palm oil which have been introduced to address sustainability concerns associated with palm oil production and maintain access to European and US markets, where demand for sustainable products has grown significantly over recent years.

Furthermore, both Indonesia and Malaysia aim to decrease their dependency on exporting crude palm oil, as prices tend to be highly volatile, and to increase their domestic processing capacities in order to capture more value added locally. Therefore, increased diversification is targeted in the form of entering export activities with high value added within the existing chains. Both countries have initiated programmes to locally convert palm oil into biodiesel, which is currently mostly sold on the domestic market but may be upgraded to reach export markets as well.

Also other OIC countries aim to make use of the opportunities offered by high value global agricultural value chains. Success cases include Turkey, Senegal, Cameroon, Burkina Faso, Morocco, and Egypt who managed to position themselves as suppliers of fresh fruit and vegetables to the EU market, producing mostly non-traditional export crops such as green beans, onions, tomatoes, grapes and citrus fruit. Several African OIC countries promote the production of vegetable oil crops, particularly palm oil, such as Uganda (which also encourages sunflower and sesame oil), Sierra Leone and Cameroon. In the African OIC region, attempts at re-launching the production and export of traditional smallholder products can also be observed. Products include sesame (e.g. Chad, Burkina Faso, Uganda, Nigeria), groundnuts (the Gambia, Senegal, Guinea) or shea nuts (Mali, Burkina Faso, Nigeria).

However, compared to their potential, the overall integration of OIC Member Countries into global agricultural value chains is still underdeveloped. For instance, in Arab OIC countries, the lack of strong agricultural value chains reflects the countries' virtual lack of strong competitive advantage in production, processing or distribution through existing value chains (ESCWA, 2014).

Constraints for global agricultural value chain development are numerous, ranging from natural resource constraints, lack of technology and challenges associated with smallholder-dominated agriculture, to poor infrastructure and logistical barriers, and weak institutional environments. A low level of intra-regional trade (see also Chapter 3) between OIC countries also highlights the absence of strong regional integration and economic development.

In many OIC countries, strategic policies at targeted global agricultural value chain development are largely absent (e.g. Mauritania), only recently adopted (e.g. Bangladesh) or ineffective due to lacking implementation (e.g. the Gambia and Benin). Drastic changes in policies over time can also be observed. Senegal, for instance, was characterised by a strong focus on groundnut production for export from the 1960s until the late 1980s. In the 1990s, the government sought to diversify agricultural production to ensure food security. This was confirmed by the "Great Agricultural Push for Food and Abundance" (GOANA) in April 2008 which aimed to stimulate the production of maize, rice, cassava, and other cereals. In 2012, the new "Plan Senegal Emergent", however, was launched to place renewed focus on the export of groundnut and high value agricultural products (e.g. horticulture). This shows the shifts that policies undergo as new governments come into power, new donor agendas come into play, and global outlooks for crops and markets change.

4.4 Integrating smallholders into agricultural value chains

The vast majority of producers in OIC Member Countries are smallholder farmers who cultivate on less than five hectares, who are not part of any organised networks and associations, and who do not have access to formal value chains. Rather, they trade through 'informal' chains and find their own way around the market. Informal chains are characterised by the prevalence of middlemen and lack of quality standards and control. Most of the products usually undergo little value adding activities. Market transactions take place based on individual initiative and are often based on personal or kinship relationships between actors, or else through once-off contacts. For instance, in Uganda, a bunch of bananas changes hands five to seven times from farmer until consumer: starting with the farmer who sells to a bicycle trader, from the bicycle trader to another trader or middlemen, and from there to a market vendor who ultimately sells to the consumers (Zijlstra, 2015). Formal value chains, on the other hand, rely on medium or large-scale production, and are governed by higher degrees of vertical integration, formal contracts, and heightened quality demands.

While the dominance of smallholder farmers and the resulting co-existence of informal and formal value chains characterise most OIC Member Countries, different degrees of activity and different types of policies can be observed to promote the inclusion of small-scale farmers into formal value chains. Some countries do not appear to have a specific policy on smallholders (e.g. Saudi Arabia, Oman and Chad); whereas, others focus all of their agricultural policies on smallholders (e.g. Uganda, Sierra Leone and Mauritania). Yet others pursue a twin-pillar approach where one set of policies addresses the commercial sector and the other set addresses the smallholder segment (e.g. Indonesia, Malaysia, Senegal, and Morocco). This reflects the heterogeneity of the organisation of agriculture in OIC countries.

Four main policy mechanisms can be identified in OIC countries that aim to integrate smallholder farmers into formal value chains (see also Table 4-2)

1) **Integrated development of commercial and small-scale farming (contract farming)**
   This is the policy that Indonesia, Malaysia and Senegal, for example, are following. In

Indonesia the government implemented policies to 'formalise' small-scale farmers by discontinuing the use of traditional laws ("adat") which used to co-exist next to government laws and by linking small-scale farmers to larger estates, either through Nucleus Estate Farm model, which resembles contract farming schemes elsewhere, or through joint ventures. The Indonesian Government aims to have this transformation completed by 2019. Similar policies are in place in Malaysia. In Senegal, the "Plan Senegal Emergent" of 2012 aims for the co-development of commercial agriculture with small-scale family farming by establishing 150-200 micro projects designed to learn from the innovations of commercial agriculture and create synergies between the different types of farming operations. This is supposed to increase productivity, to diversify production and to encourage a gradual conversion to high-value crops such as horticultural crops.

2) Promotion of smallholder producer organisations

This policy can be observed in Uganda, where the government promotes farmer organisations to reduce the number of chain actors (e.g. cut out middlemen) and facilitate linkages to processors and marketers which individual farmers would not be able to establish. Producer organisations are also critical in the government's efforts to facilitate access to finance for smallholders, which is currently a challenge as individual farmers lack collateral and loans in agriculture are subject to high interest rates due to changing and varying weather patterns. To address this problem, the government aims to establish a credit line through farmer organisations to assist farmers in obtaining land for growing oil pal, soy beans, sunflower or maize.

3) Public-private partnerships

In several OIC countries, a growing number of public-private partnerships (PPPs) has formed to leverage private resources in the efforts to link small-scale farmers to markets. Prominent examples include, but are not limited to, the "Vegetal Oil Development Project" (VODP) in Uganda by IFAD and a consortium of Ugandan and international companies; the "Agribusiness Market and Support Activity" (AMARTA) in Indonesia, a joint initiative of USAID, Olam International and Blommer Chocolate Company; or the "Agribusiness Linkages Global Development Alliance" between USAID, Heinz International, ACDI/VOCA which worked together with 13 Egyptian tomato-processing companies to double tomato production in Egypt.

4) Donor and NGO programmes

A variety of donor and NGO initiatives exist in OIC countries to link smallholder farmers to value chains. Current and recent examples abound, including the "Value Chains Development Programme for Poverty Reduction" by IFAD in Mauritania which aims to develop the value chains of vegetables, dates, milk, poultry, skins and hides, red meat, and non-timber forest products. Other examples are the "Commodity Value Chain Support Project" in Cameroon, also by IFAD, which seeks to develop the rice and onion value chains, or the "Cereal Value Chain" project by USAID in Mali, which works towards inclusive value chain development and women's empowerment in the sorghum/millet and rice value chains. Similarly, the "Productive Agriculture Project" in Tajikistan, also by USAID, helped farmers transition to commercial production and participate in profitable value chains through leveraging private sector incentives and relationships between chain actors.

Table 4-2 Smallholder integration approaches in selected OIC Member Countries

Integrated development	Producer organisations	Public-private partnerships	Donor/NGO programmes	No specific policies
Malaysia	Mauritania	Uganda	Mauritania	Saudi Arabia
Indonesia	Palestine	Egypt	Mali	Oman
Senegal	Turkey	Indonesia	Cameroon	Chad
Egypt	Egypt	Nigeria	Tajikistan	
Pakistan	The Gambia		Sudan	
Bangladesh	Jordan			

Source: Authors' elaboration

Upgrading, which is defined in terms of increased productivity, efficiency and quality, plays an essential role in bringing smallholders into formalised, higher value markets because it increases smallholder contributions to value added (Dunn, 2014). While informal markets require no standard quality or grading norms, modern retail chains and export markets often require the delivery of specific crop cultivars with characteristics (e.g. size, shape, taste) that consumers prefer and the adherence to quality and food safety standards related to pesticides or bacterial contamination. Quality control measures may include public inspections (e.g. for CODEX Alimentarius adherence) or independent third-party inspection (e.g. for GlobalGAP and organic production).

However, in many OIC countries smallholder products are often not compliant with the demands of high value markets, owing to a generally weak institutional environment with lacking extension support or absence of financial services in rural areas, and a lack of resources and capacities on the part of producers. Particularly the lack of well-defined food quality standards and quality control makes it difficult for smallholders to access formalised value chains. As agricultural produce passes through numerous middlemen, traders and wholesalers, there are more chances for it to be exposed to unhygienic conditions and failing to meet even basic food safety requirements.

Box 2. Helping farmers to become certified for increased value added: The Jordan Exporters and Producers Association (JEPA)

In Jordan, fresh fruit and vegetables constitute most of its agricultural exports. The EU has been identified as the most lucrative market for value capture compared to, for instance, other Arab countries. Since exports to the EU are held to high quality standards, such as GlobalGAP, market access was initially restricted to a small number of large Jordanian producers. However, due to the initiative of the Exporters and Producers Association (JEPA) – an organisation that comprises members from all stages of the agricultural value chain – the number of GlobalGAP certified producers has been growing rapidly in recent years. Since 2006, it provides advisory and training services for GlobalGAP as well as other standards (HACCP, ISO 9000, organic). The number of certified farmers increased from 1 with the start of the training programme to 100 in 2012 (Oxford Business Group, 2012a). By now, JEPA members are responsible for 100 percent of Jordanian agricultural exports to Europe (USAID & EAT, 2012).

4.5 Agricultural research and technology policies

Agricultural research & development (R&D) can make a significant contribution to increasing agricultural production and thereby contribute to economic growth and food security, and adapt to emerging challenges, such as water scarcity, increasing weather variability, and price volatility in global markets.

Many OIC Member Countries have a decent R&D infrastructure for the agricultural sciences, and specialised agricultural research stations exist in every OIC Member Country. However, according to a recent study by Alpay (2014), OIC countries are lagging behind developed countries in terms of putting agricultural R&D into use, because public budgets for agricultural R&D are declining significantly and private funds are short in supply. During the period 2000-2008, agricultural spending of the public sector in OIC Member Countries was around US$ 2.3 billion per year compared to US$ 7.5 billion per year in other developing countries. This translated into an average agricultural spending per agricultural person of only US $5.2 in the OIC countries, whereas other developing countries spent an average of US $7.5 per agricultural person (Alpay, 2014).

Consequently, many R&D agencies in OIC Member Countries lack the necessary human, operating, and infrastructural resources to successfully develop, adapt, and disseminate science and technology innovations. This leads to critical gaps in R&D in OIC Member Countries, resulting in the following weaknesses of agricultural production (Alpay, 2014):

1) Low productivity in agriculture
- Inefficient use of land and increasing land degradation;
- Low levels of average machinery and technology and input utilization;
- Low levels of genetic improvement in crop and livestock varieties.

2) Water scarcity
- Overuse and degradation of water resources;
- Severe water pressures, particularly in West Asia and North-East Africa, due to limited opportunities for the exploitation of new water resources.

3) Inefficient irrigation
- Widespread use of surface irrigation, which is the most traditional and least water-saving technique (practiced on more than 82 percent of the total area equipped for irrigation);
- Large amount of water run-off or percolation and high economic costs.

4) Climate change
- High vulnerability of many OIC countries to expected climate change, particularly African and Asian countries due to their geographic location, higher prevalence of undernourishment and low financial capacity to adapt and mitigate the negative impacts of climate change;
- Vulnerability particularly in terms of increased water stress (lower levels of precipitation and higher temperatures), erratic weather events such as floods or droughts, and increased proliferation of pests;
- Overall, most OIC Member Countries are expected to experience high production losses.

The lack of adequate political support in terms of R&D, extension and agricultural innovation thus threatens the long-term viability of agricultural production and limits opportunities to improve production efficiency and product quality over the short and medium term to increase the value added by producers.

OIC Member Countries also lag behind when it comes to the adoption of GM crops compared to other regions of the world. Thus far, only 8 out of 57 OIC Member Countries have commercialised the use of biotechnology in agriculture (see Table 4-3). In particular, Malaysia has recently been at the forefront in the adoption of biotechnology with the proclaimed goal of establishing itself as a biotech player at the global level.

Table 4-3 Commercialisation of GM crops in OIC Member Countries

Country	GM crops		
Bangladesh	Eggplant (1 event/variety)		
Burkina Faso	Cotton (1 event/variety)		
Egypt	Maize (1 event/variety)		
Indonesia	Maize (7 events/varieties)	Sugarcane (3 events/varieties)	Soybean (2 events/varieties)
Iran[3]	Rice (1 event/variety)		
Malaysia	Carnation (8 events/varieties)	Maize (8 events/varieties)	Soybean (6 events/varieties)
Pakistan	Cotton (2 events/varieties)		
Sudan	Cotton (1 event/variety)		

Source: ISAAA GM Approval Database, 2015

The reasons for the slow adoption of GM crops can be found in the lack of trained scientists, inadequate biosafety frameworks and weak political support. Debates and public concerns about the Halal status of GM crops also play an important role. As many OIC countries are net importers of food, political leadership in many OIC countries has recently recognised the importance of biotechnology to meet food demands and promote economic growth. A high level meeting in the context of the OIC in 2011 established a general political agreement that biotechnology should be promoted by establishing regulatory frameworks and enabling infrastructure for the application and commercialisation of biotechnology (Stephensons & Arujanan, 2011).

[3] Iran approved GM rice commercialisation in 2004 but then put a halt on cultivation when the government changed. Only in the past two years has the Iranian Government been working on establishing a legal framework to facilitate the commercialisation of GM crops. In June 2015, Iran announced that it had developed its first GM cotton variety.

4.6 Infrastructure for value chain development and agro-processing

With regard to value chains, infrastructure consists of activities such as accounting, legal, finance, control, public relations, quality assurance and general (strategic) management. The more generally accepted definition of infrastructure refers to the fundamental facilities and systems serving a country, including the services and facilities necessary for its economy to function.

In many OIC countries, infrastructure underlying production, processing and marketing systems is inefficient and fragmented (Alpay, 2014; COMCEC, 2014). Agricultural value chains are highly dependent on a large number of small operators, ranging from small-scale farmers and individual middlemen and traders, to small-sized processing units and small wholesalers and retailers. These rely on weak, inadequate and outdated infrastructure, which increases transaction costs and the overall costs of production and marketing. Poor access to transport limits value chain inclusion, as farmers located far from major roads and urban centres are much less likely to market most of what they produce. High post-harvest losses of up to half of what is produced are a consequence of the inadequate infrastructure in many OIC countries (COMCEC, 2013). Poor infrastructure also limits farmers' crop choices, often preventing them from growing high-value, perishable crops that must be transported to a trader or processor very soon after harvest. Finally, persistent gaps in infrastructure in many OIC countries keeps transportation costs as high as 77 percent of the value of exports (Alpay, 2014), putting pressure on the margins by the value chain actors involved and reducing the countries' competitiveness.

Similarly, market and retail infrastructure is insufficient in many OIC Member Countries: roadside markets are very common, where the produce is exposed to sun, elevated temperatures, dust and dirt, which increases spoilage and health risks for consumers (ESCWA, 2013).

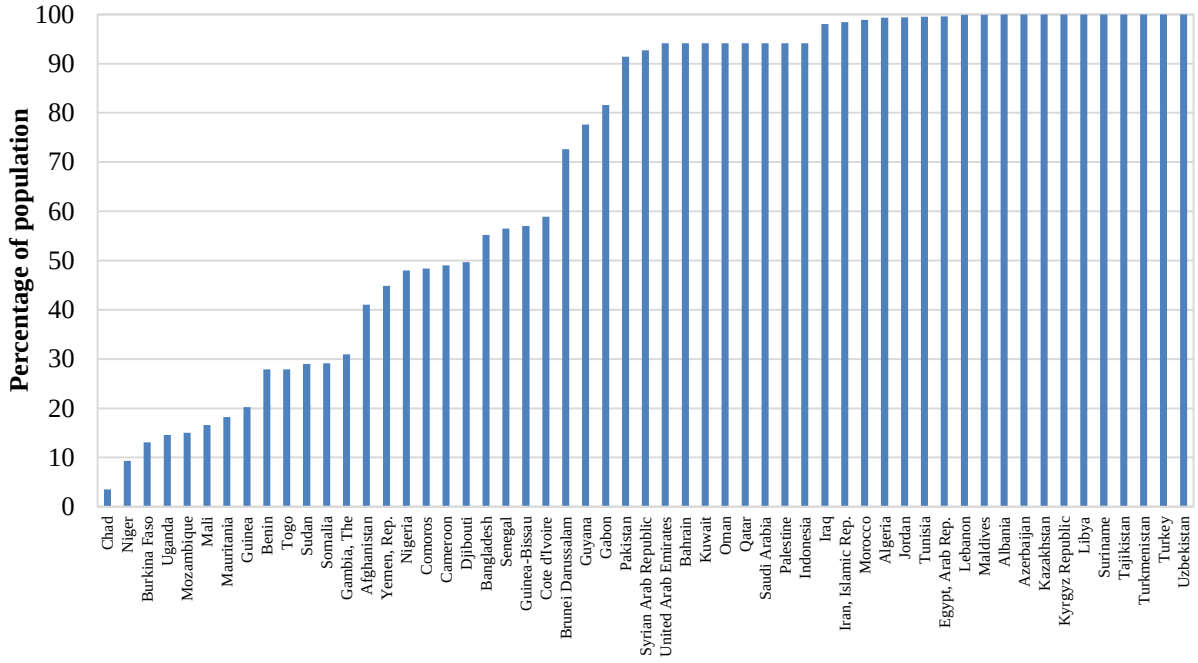
Investments to improve road infrastructure, to extend and upgrade rural feeder roads in main production zones and to establish cold stores are therefore critical in many OIC countries. Wholesale and retail infrastructure also needs improvement. Finally, investments in ports and railway systems tend to have high payoffs. It is not enough to invest in new infrastructure and upgrade the existing infrastructure, as maintenance is also key (COMCEC, 2013).

Access to electricity – as well as its cost and the reliability of supply – is another central component of infrastructure for value chain development and agro-processing. In many African OIC Member Countries less than half of the population has access to electricity (World Bank, 2015) (see also Figure 4-1).

This means that it is very difficult, if not impossible, to produce and to market crops for which a cold chain is needed. Increased access to electricity is an important factor in expanding cold storage facilities, which enables farmers to command a higher price for their produce than if they sell it immediately after the harvest.

In several OIC Member Countries, power outages or shortages remain a major problem. In fiscal year 2011–2012, power shortages cost Pakistan about US$ 12.5 billion, which is the equivalence of approximately 6 percent of its GDP (Shah, 2013).

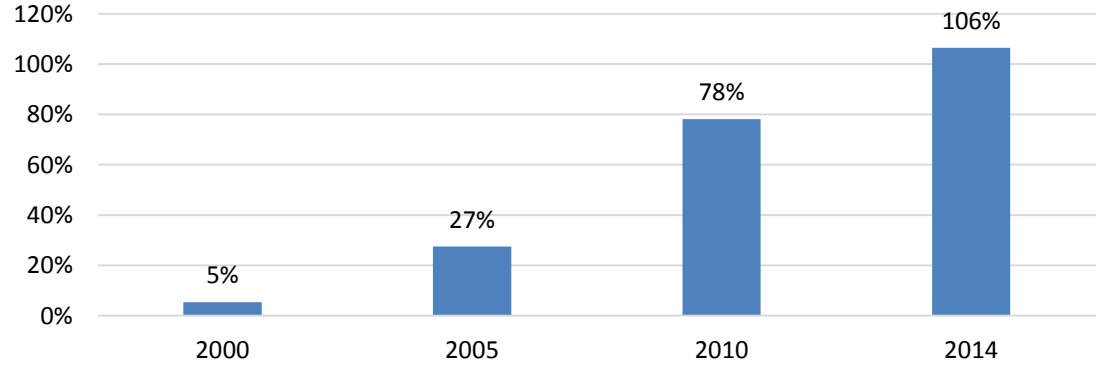
Figure 4-1 Access to electricity in OIC Member Countries, 2010



Source: World Development Indicators, 2015

On a positive note, access to mobile telecommunication has improved greatly over the past 15 years in OIC Member Countries. In 2000, the average mobile phone subscription rate in OIC countries was at 5 per 100 inhabitants, and by 2014 this number had reached 106 on average (see Figure 4-2) (ITU World Telecommunication/ICT Indicators database, 2015).

Figure 4-2 Mobile phone subscriptions in OIC Member Countries



Source: ITU World Telecommunication/ICT Indicators database, 2015

With the proliferation of mobile telecommunication, access to market information has improved for many farmers. Mobile phones make it possible to convey timely, accurate information on prices, buyer contracts, distribution channels, specification for grades and standards, and storage recommendations. Such information significantly reduces the transaction costs along the value chain. In countries such as Bangladesh and Nigeria, mobile

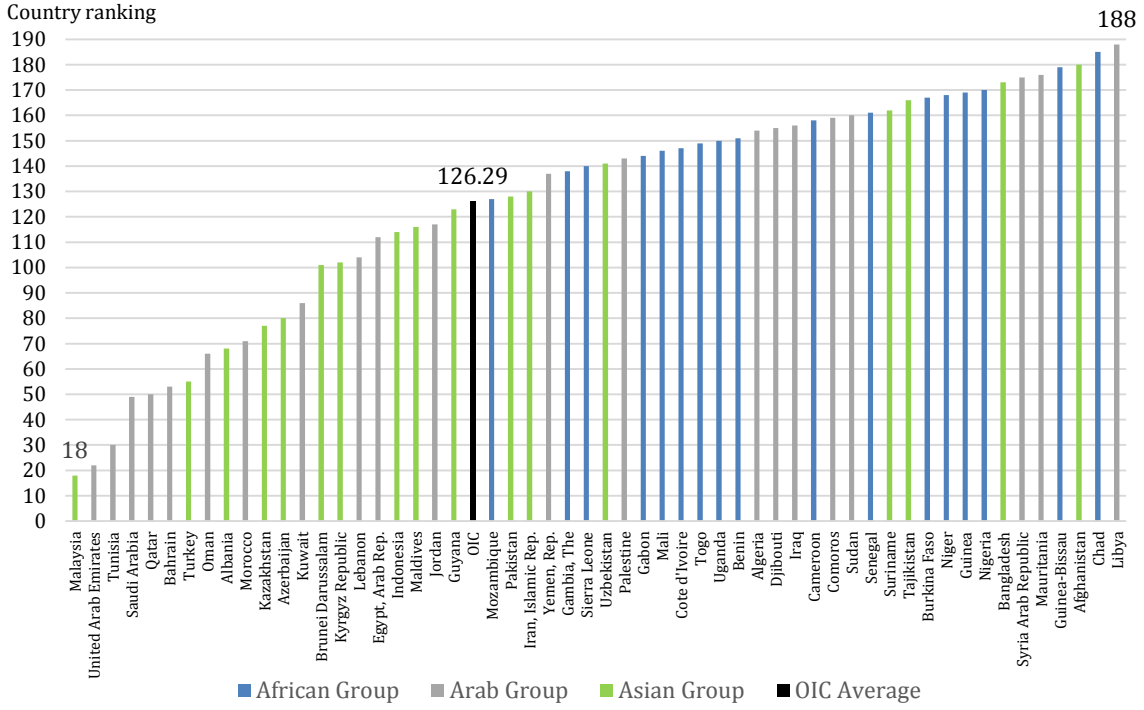
phones have reduced the number of intermediaries in commodity value chains. Because of mobile phones, farmers can bypass village traders and sell directly to wholesalers.

4.7 Investment climate for value adding activities and exports

Many OIC countries are interested in upgrading to enhance the value adding activities within their borders. However, this requires investment and in many OIC countries the investment climate is not conducive for this, as the World Bank's Cost of Doing Business Study (2015) reveals. This study keeps track and measures the ease with which it is possible to do business, trade and exchange in a country to give a general indication of a country's investment climate, including procedures for starting a business, access to finance, getting utility connections, ease of trading across borders, and registering property.

Overall, 189 countries are compared with respect to starting a business and protecting investors and the OIC Member Countries score an average of 126th out of 189. The best performing OIC country is Malaysia on place 18 overall, compared to the worst performing country Libya, ranking 188 (see Figure 4-3).

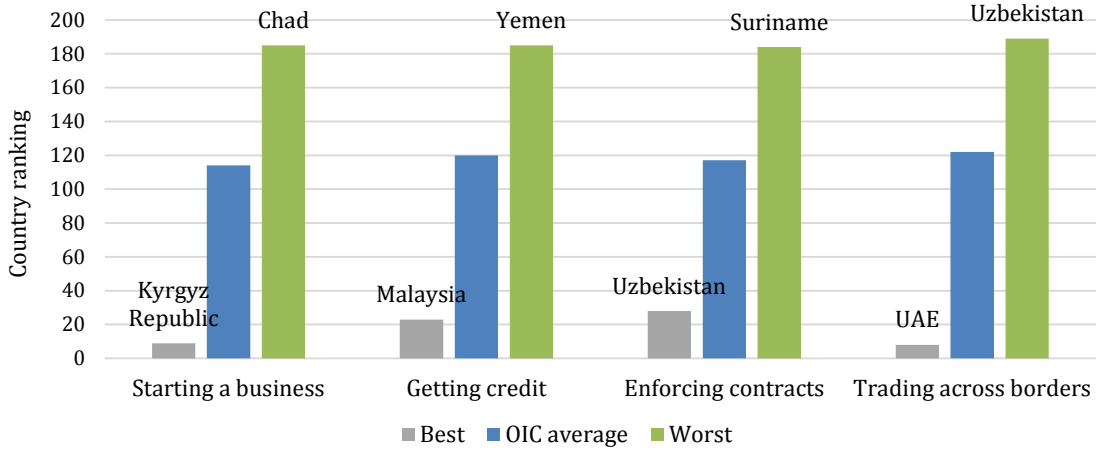
Figure 4-3 The ease of doing business in OIC Member Countries, 2015



Source: World Bank Doing Business Study, 2015
Explanation: Number of ranked countries: 189. The higher the score of a country, the worse the business climate.

When looking at some of the indicators required for investment in agricultural value chains, the picture is similar (see Figure 4-4).

Figure 4-4 Indicators for ease of agricultural investments, 2015



Source: World Bank Doing Business Study, 2015
Explanation: Number of ranked countries: 189. The higher the score of a country, the worse the business climate.

This means that procedures, time and costs to start a company are high; credit facilities are difficult to access; and contract enforcement when dealing with suppliers or customers is difficult. Addressing these issues has been identified as important for facilitating investments in agro-processing facilities in OIC countries (COMCEC, 2013). Trading across borders is particularly relevant for export purposes and the import of raw materials, machinery and equipment. While OIC countries on average are ranked at a relatively low 122nd place, this is one of the areas of the business environment where OIC countries have improved most over the past year. For instance, Benin, Cote d'Ivoire, Morocco and Uzbekistan reduced the number of documents required for customs; and Algeria, Jordan, Kazakhstan strengthened transport or port infrastructure (World Bank, 2015).

Box 3. Uzbekistan's investment in cotton value adding

Over the past five years, Uzbekistan's cotton spinning and weaving industries have been investing heavily in new equipment and upgrading of existing equipment to satisfy growing domestic and export demand for cotton yarn. Many local textile mills are aiming to broaden their production assortment in order to expand to high value added products. Currently, there are more than 50 joint ventures established in the textile industry with partners from Turkey, Germany, South Korea, Japan and Switzerland. In 2013, total foreign investments in the textile industry exceeded US$ 2 billion. The main products produced and exported by textile mills remain cotton yarn (320,000 tons), grey fabrics (225 million sq. meters), knitted fabrics (55,000 tons), knitted garments (179 million units) and hosiery (45 million pairs). Despite existing economic problems, the local spinning industry is optimistic about textile production and export growth. In 2013, 252 enterprises of light industry exported textile products worth of US$ 827 million, which is for 17 percent higher than in 2012. Compared with 2012 levels, in 2013 export volumes of knitted linen have increased 2.2-fold, cotton yarn by 28.7 percent, fabrics by 27.7 percent and knitted garments by 23 percent. Currently, Uzbekistan exports its textile products to 48 countries, including new exports markets such as Tunisia, Nigeria, Kenya, Sri Lanka or Estonia.

The government also implemented a number of tax incentives to stimulate investment in value adding activities in the cotton sector:

- Producers of hosiery & ready garment are exempted from all taxes (except VAT);
- Textile exporters (more than 80% to be exported) are exempted from property tax (3.5%).

- 100% exemption of custom payments on importing technological equipment;
- 100% exemption from custom payments on importing raw materials not produced in Uzbekistan (synthetic fibre, fabric, etc.);
- 15% discount from world cotton price;
- Special rules to finance the cotton lint purchases by 15% cash payment and remaining 85% payable in 90 days, covered by bank guarantee;
- Zero rating VAT (20%) on textile exports;
- Up to January 1, 2016, exemption from paying import and customs duties on chemicals, dye-stuff, accessories and fittings, as well as other auxiliary materials that are imported to the Republic for production purposes, but are not manufactured domestically.

Source: USDA, 2014b

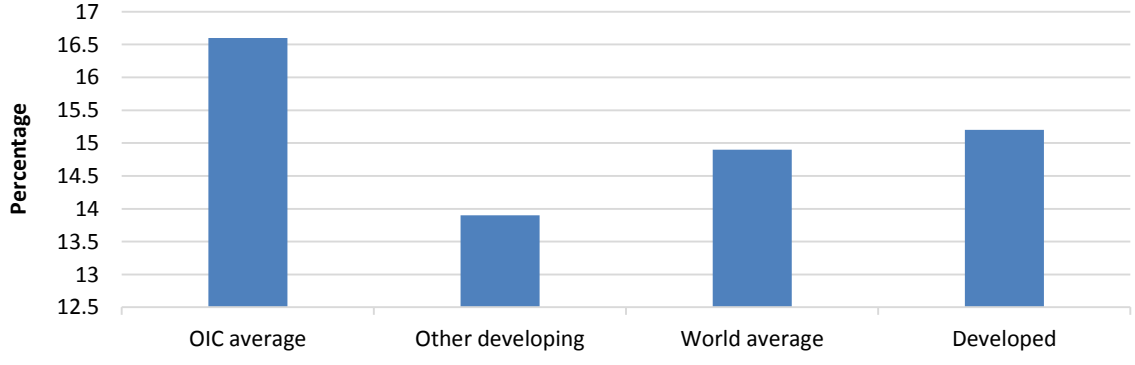
4.8 Trade costs and policies

Trade costs are influenced by distance and transport costs, tariff and non-tariff measures, and logistics. Countries tend to use trade policy measures to discourage imports of foreign products, together with industrial policy measures, in order to spur industrial growth and economic diversification. Accordingly, support measures for particular sectors, combined with tariff and/or other trade measures aim to protect them from foreign competition on the domestic market and boost their export performance at the same time. Such trade policies affect economic activity and well-being not only in the country enacting these policies but in their partner countries as well.

A study undertaken by the Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC) in 2014 found that trade costs in OIC countries are higher than in developed and other developing countries. Trade costs among OIC Member Countries are lower than trade costs between OIC and other developing countries, but significantly higher than trade costs between OIC and developed countries (SESRIC, 2014).

On average, in developed countries trade costs fell about 20 percent between 1995 and 2010. In OIC Member Countries trade costs only decreased 9 percent in the same period. OIC Member Countries are, in general, more protectionist when compared to other countries. Figure 4-5 below shows the OIC Member Countries tend to have higher tariff rates for agricultural products than others:

Figure 4-5 Average tariff rates for agricultural products



Source: World Tariff Profiles, WTO/ITC/UNCTAD, 2014

While tariff measures may protect domestic markets and national production bases, such restrictive policies may limit the possibilities for farmers to participate in global value chains. Other countries usually respond to tariff measures with reciprocal arrangements. If not properly regulated and applied with caution, these measures tend to be detrimental to economic value creation.

Many of the changes in the geographical distribution of exports of OIC Member Countries can be attributed to changes in trade costs. According to SESRIC, distance remains the largest contributor to trade costs. Tariff measures are becoming less important than other policies, such as investments in transport infrastructure, regional trade agreements and common currencies.

There is a clear political drive towards increased intra-OIC trade among the 57 Member Countries which has risen from 15 percent in 2005 to 18.6 percent in 2013 (The Islamic Centre for Development of Trade, 2015). The official target set by the OIC's Ten-Year Programme of Action (TYPOA) anticipates a share of intra-OIC trade of 20 percent by 2015. This increase in cross-border trade is largely due to improvements in export infrastructure and export procedures which reduce costs and time of trade operations (The Islamic Centre for Development of Trade, 2015).

The main products traded among OIC countries are miscellaneous goods (31 percent) and mineral fields (28 percent), followed by agri-food products on 3rd place with 17 percent. Agricultural trade among OIC countries thus constitutes 3.2 percent of their total trade activities.

Box 4. Towards 'best practice' policies for value chain development

National policies, in particular economic and trade policies, have a significant influence on the performance of value chains. The following policies or policy interventions can serve as best practices in supporting value chains.

1) A conducive business environment strongly influences the performance of the private sector and its ability to create employment and income opportunities for the poor. If, for example, property rights are not guaranteed or contracts cannot be enforced due to deficiencies in the legal system, entrepreneurs will reduce inter-firm transactions as much as possible. Traders and small business often work informally as bureaucratic procedures and costs impede them from registration; yet, this may limit them from connecting with formally established actors. Policy interventions that encourage transparency and reduce bureaucracy will contribute to interaction between (potential) value chain actors.

2) Related to this is tax policy. In many developing countries only large corporations pay taxes. The majority of enterprises, however, are small or micro enterprises that 'escape' tax paying. This is not only in their advantage; being informal also means being excluded from access to legal justice, support programmes and contracts with formal buyers. To legalize informal firms and make them eligible as supply chain partners is important to broaden the tax base while keeping taxes for micro and small firms low. Moreover, tax systems are often based on sales taxes which are levied on the basis of total turnover rather than value-added taxes. Sales taxes, however, act as a disadvantage to inter-firm specialisation because they do not allow for deduction of taxes which already been paid at the previous stage of the value chain. Value added taxes are thus more conducive to inter-firm specialisation.

3) Trade and investment policies are of considerable importance for the linkages between domestic and foreign markets, as they determine to what extent developing countries benefit from offshoring. When operating costs are lower elsewhere, enterprises in industrialised countries tend to move activities offshore. Any location interested in attracting international offshoring investment should guarantee lower costs in terms of labour, taxes and trading.

4) Export promotion may also facilitate the integration of developing country firms in global supply chains. Examples of concrete actions are trade fairs, welcoming trade delegations, preferential trade and tax zones. The level of import tariffs and bureaucratic non-tariff trade barriers, the treatment of foreign

investors, the quality of export promotion programs, the competitiveness of ports and airports as well as the road and rail system therefore all strongly impact on the degree of integration in international value chains.

5) However, trade and investment policies also affect the competitiveness of local enterprises and value chains vis-à-vis imports and market-seeking foreign investment. In recent years, cheap imports especially of light manufactures such as garments and shoes have ruined local industries in many developing countries around the world. Likewise, the global expansion of large retail chains is expected to impact severely on local value chains. Although protectionist trade policies tend to hold back innovations and productivity growth, there is a strong case for careful timing and sequencing of liberalisation.

6) Policies and programs for skills development and innovation. The most important constraint for vertical business linkages, especially with large-scale processors, wholesalers and exporters, is the generally low capacity of local SMEs to produce at a competitive cost, supply reliably and comply with standards. Strengthening the supply capacity of local SMEs is often the focus of value chain support. This requires the development of skills in different fields, ranging from technical skills in production processes to management competences to in a later stage the ability to innovate and upgrade. Governments could create tax incentives for firms to invest more in skills development and innovation.

7) In many developing countries access to finance is another major growth constraints for farmers, farmer groups and SMEs. To acquire new production technologies and logistics to increase economies of scale, to invest in human capital, or to comply with quality standards investment capital is required. The cost and availability of capital is of huge influence for their performance and subsequently ability to take part in a value chain.

8) In similar vein knowledge and expertise to prepare farmers, farmer groups and SMEs for collaboration with other value chain stakeholders is also crucial. Smallholder support programs and investments aiming at the supply of such specialised services can help in this and thereby indirectly impact on value chains.

9) By increasing competitiveness of enterprise networks in a given locality firms become more attractive for extra-regional business partners.

Based on: Altenburg (2007) and ILO (2015)

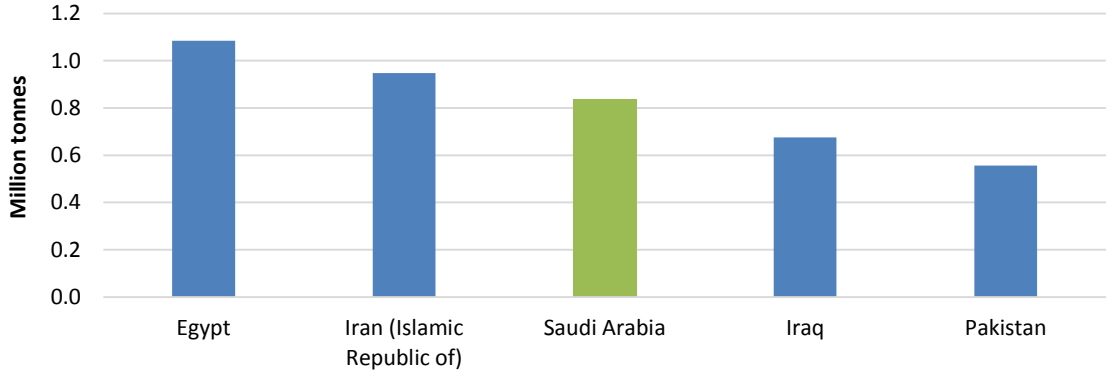
5. Case studies: agricultural value chain promotion in six OIC Member Countries

5.1 The date value chain in Saudi Arabia

The date palm is one of the most important fruit crops in Arab countries where it has historically been viewed as a symbol of life in the desert due to its high tolerance of elevated temperatures and arid conditions (El-Juhany, 2010). Dates take a prominent place in Muslim traditions and diets, and play a critical role in food security, as they are rich in protein, vitamins and mineral salts.

In Saudi Arabia, the unique role of dates is particularly pronounced. The Kingdom has the worldwide highest rate of per capita consumption of dates, reaching 34.8 kg in 2003 (Al-Shreed et al., 2012), and is ranked as the world's third largest producer of dates, after Egypt and Iran (see Figure 5-1), accounting for about 17 percent of global date production (Al-Wusaibai et al., 2014).

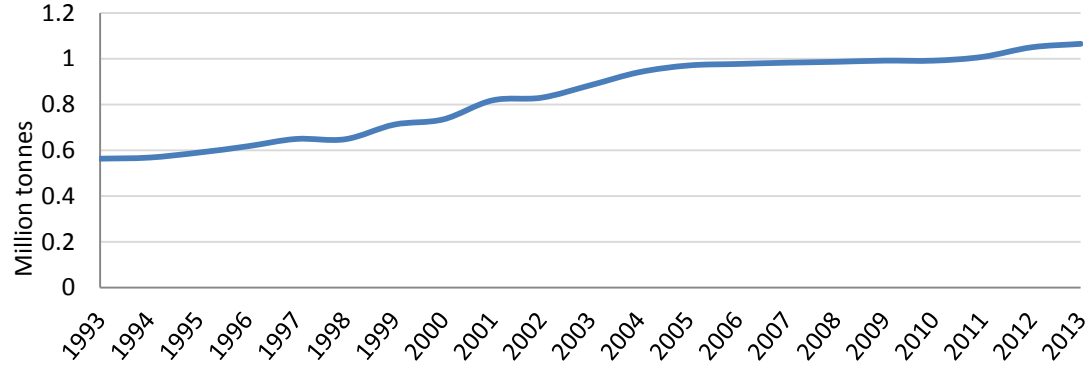
Figure 5-1 Top five date producing countries, average 1993-2013



Source: FAOSTAT, 2015

Within Saudi Arabia, dates constitute the second most important agricultural commodity in terms of quantity after milk and the third most important agricultural commodity in terms of value after poultry and milk (FAOSTAT, 2015). Production of dates has grown by an average of 3.5 percent from 1993 to 2013, largely due to increases in the production area (see Figure 5-2).

Figure 5-2 Date production in Saudi Arabia, 1993-2013



Source: FAOSTAT, 2015

Saudi Arabia has a rich genetic pool of over 400 date palm varieties, of which 25 are commercially significant. Together they account for an annual production volume of more than 1 million tonnes from an estimated 23 million date palms grown over 172,000 ha (Al-Wusaibai et al., 2014). Production is concentrated around Riyadh, in the Eastern Province, Al Qasim Province and the Al Madinah Province (El-Habba & Al-Mulhim, 2013).

Productivity is at 6.6 tonnes per ha and thus slightly lower than the world average of 6.8 tonnes per ha (Beers et al., 2014). The main causes for the comparatively low productivity are widespread pests and diseases (e.g. the red palm weevil), old fruit orchards and the existence of low yielding date varieties (e.g. El-Juhany, 2010). It is also pointed out that a large number of newly planted palm groves have not yet entered the production phase, and thus increases in production and potentially also productivity are expected for the coming years (El-Habba & Al-Mulhim, 2013).

Most of the dates produced in Saudi Arabia are consumed on the domestic market. While average per capita consumption is high, there are signs that this is decreasing due to shifting consumption patterns brought by changes in family size and food traditions, such as increased competition in the form of other fresh fruit and artificial sweets (El-Juhany, 2010). Although the production of dates exceeds local consumption requirements, exports play only a small role at about 7-8 percent of national production (Ali et al., 2014; El-Habba & Al-Mulhim 2013).

5.1.1 Institutional framework and public policy

The Saudi Government has focused intensely on promoting agriculture for food security and export over the past decades. Large areas of desert were turned into agricultural fields by means of large scale irrigation projects and mechanisation. Nonetheless, the land area suitable for agricultural use amounts to only around one percent of the total area. The area devoted to growing crops has fallen steadily in recent years, from 1.07 million ha in 2007 to 743,742 ha in 2012 (Oxford Business Group, 2014).

From the 1970s until the 1990s, priority was given to wheat production and the Kingdom managed to become the world's sixth largest exporter of wheat. However, due to increasing water scarcity and a growing awareness of prevailing water mismanagement, the government revised its agricultural strategy in 2008 and has since shifted focus towards more value-added crops, such as fruits and vegetables, through the utilisation of water-saving technologies, such as greenhouses and drip irrigation (Oxford Analytica, 2009). Subsidies for crops that consume large amounts of water are being phased out, and food security issues are now sought to be addressed through agricultural projects abroad in land-rich developing countries (Lippman, 2012). Wheat production, for instance, is reduced by an annual rate of 12.5 percent and is expected to be phased out completely in 2016.

Dates, both as a high value-added crop suitable for export and as a traditionally grown fruit, have received considerable attention by the Saudi Government. Firstly, date producers receive government subsidies per kg of fruit produced, even though they sell their product through the market, and per tree planted (Al-Sheikh, 1998). Subsidies also exist for fertiliser, seeds, machinery and equipment, and irrigation systems. Interest-free loans are available to farmers from the state-owned Agricultural Bank (Alshuaibi, 2011).

Secondly, the Saudi government financially supports a number of specialised research institutes dedicated to improving the cultivation and processing of dates. The King Abdulaz City for Science and Technology (KACST) is the Saudi Arabian national science agency and

national laboratories. It reports directly to the Prime Minister and is a key player in terms of science policy making, data collection and funding of research (Beers et al., 2014). The National Center for Palms and Dates (NCPD) was established in 2011 with the objective of supporting the production of dates and date products. A recent initiative of the NCPD involves reducing the number of date varieties from 400 to the twenty most profitable ones. The Date Palm Center of Excellence, hosted by King Faisal University and funded by the Ministry of Higher Education, is the oldest research centre with nearly thirty years of experience in date palm research. Recent research projects include pest control, biotechnology, and date fermentation and value added products. Finally, the Date Palm Research Center, established in 1954, focuses on research on germ plasm, food processing and soil conservation (Beers et al., 2014).

Thirdly, the Saudi government has recently initiated a specific research and development (R&D) initiative on the marketing of dates in the context of the Agricultural Development Fund (ADF). The ADF acts as a government-funded agricultural bank for short and medium-term loans and is responsible for implementing a seven-point government strategy of the agricultural sector, including the creation of a new agricultural information system in cooperation with the Dutch Agricultural Economic Institute (LEI) (Oxford Business Group, 2014).

Despite the support of R&D activities, date production faces several challenges, most importantly pests (red palm weevil and Al Wijam disease, lack of integrated pest management), cultivation management (lack of irrigation and scarcity of water) and productivity decrease (lack of new technology, lack of good quality offshoots, low quality and undesirable varieties) (e.g. El-Juhany, 2010). Date palms have been associated with high water consumption, but a study by the Saudi Irrigation and Drainage Authority found that high water usage is commonly caused by over-irrigation rather than high water needs of date palms (El-Juhany, 2010).

5.1.2 Standards

Specific quality standards for dates do not exist in Saudi Arabia. In the absence thereof, the FAO CODEX Standard for Dates is used as reference (Beers et al., 2014), which includes the following: dates “shall possess a characteristic colour and flavour for the variety and type, be of proper stage of ripeness, be free of live insects and insect eggs and mites” and must “not exceed the allowances for the respective defects”, such as blemishes, dirt, mould or decay (CODEX STAN 143-1985).

However, quality problems are rife in date production and marketing, including the spread of pests and diseases in different regions of the country (El-Juhany, 2010) and high levels of bacterial contamination (Elsabea, 2012). Quality control and traceability systems are only in place in modern palm plantation systems (Al-Shreed et al., 2012).

Since the early 2000s, the Saudi Arabian government has shown commitment to developing a strong organic sector (Hartmann et al., 2012). To this purpose, the Ministry of Agriculture established a specialised Department of Organic Farming in 2008 and set up the Kingdom’s Organic Farming Project to train pilot farmers in organic farming practices. Organic production, although at a low level, comprises vegetables, herbs and fruit crops, including dates which are grown organically on about a dozen of farms. Until 2010, organic certification by private certification bodies was only possible against international standards, such EU

standards, but in 2011 Saudi Arabia introduced its own National Regulation & Standards for Organic Agriculture. Private certification bodies are mostly internationally operating firms, with the first Saudi Arabian certifier currently awaiting accreditation according to international norms (ISO 65/17065) (Hartmann et al., 2012).

5.1.3 Infrastructure and logistics

Date production still operates using manual labour. Infrastructural and logistical problems are thus particularly noted for the processing and manufacturing of dates in Saudi Arabia, as only about 10 percent of total production is used for further value-added activities (Elsabea, 2012). Of the 10 percent, 80 percent is used for packaging and the rest is turned into molasses and paste (Beers et al., 2014). Studies point out that the increase in production of dates over recent years (from 941,300t in 2004 to 1,050,000t in 2012, according FAOSTAT, 2015) was not accompanied by a corresponding increase in processing and manufacturing, although there are sufficient processing facilities (43 in total) in Saudi Arabia (Eleid, 2008, cited in Elsabea, 2012). Both private and government-owned facilities exist; the most important government-owned one being the Alhassa processing facility, which was established to support farmers by paying minimum prices for dates and to donate the packaged dates to low income households or international food security programmes (Elsabea, 2012).

Problems restricting the growth of value-added activities can be identified both at the farm and processing levels. Firstly, a lack of grading and standardised quality dates as well as continued production of low quality date varieties contribute to a general shortage of suitable dates for processing (Al-Abdoulhadi et al., 2011). The problem of low quality date varieties is currently addressed by the National Centre for Palm and Dates, as discussed above. Secondly, the lack of adequate cooling and transport facilities and old or unspecialised processing equipment lead to inefficient manufacturing processes and high spoilage rates (Elsabea, 2012; El-Habba & Al-Mulhim, 2013). Overall, this results in high per-unit costs for processing factories (Elsabea, 2012). Upgrading existing infrastructure is thus recommended to become more competitive and cater to the needs of consumers (Al-Shreed et al., 2012).

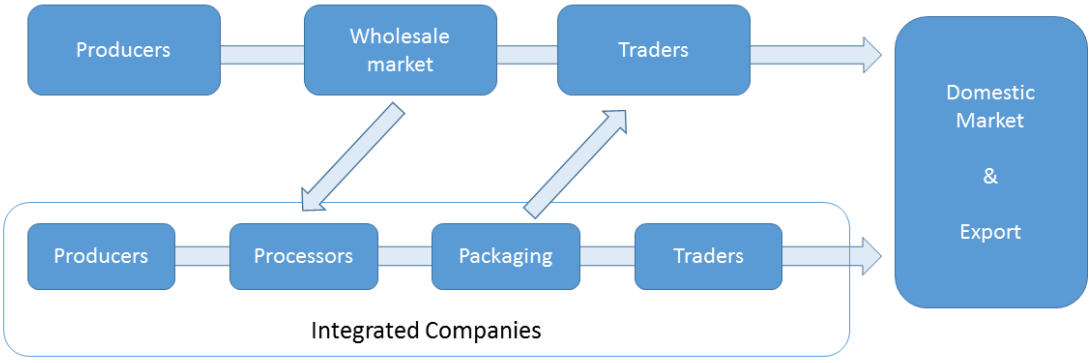
5.1.4 Governance and value chain actors

According to Elsabea (2012), two main marketing channels for dates and date products can be distinguished in Saudi Arabia (see Figure 5-3). The first is the traditional marketing channel through which most farmers sell their produce, particularly those in the Eastern Province where farms are usually small and date palms are old (more than thirty years). Dates are sold on the fresh market through face-to-face spot market transactions. Linkages and trust-based relationships between actors are generally weak. While farmers conduct rudimentary on-farm grading, the quality, variety and size of dates sold on the fresh market is highly heterogeneous, leading to a general decrease in farmer prices. Prices are further reduced as most farmers sell their produce directly after harvest which leads to short-term surpluses of dates available on the market. Finally, improper storage increases the percentage of dates with microbial infestation and insect contamination, which again negatively impacts on the prices received by farmers.

The second marketing channel is the modern marketing channel, which is particularly important in the areas around Riyadh and Al Qasim where there are a number of large-scale and relatively recent established palm plantations. These are often larger integrated

companies that own large palm groves for date production and have their own processing, packaging and exporting activities (Beers et al., 2014). In this marketing channel proper sorting, grading, washing, packaging, transport and storage are critical factors for quality control and to ensure that the dates can either be exported or processed (Elsabea, 2012).

Figure 5-3 Date value chain in Saudi Arabia

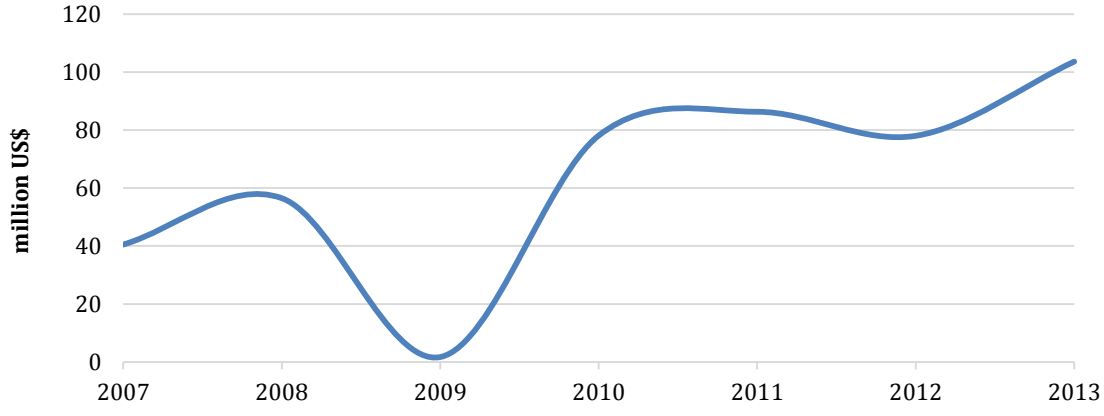


Source: Authors' elaboration

5.1.5 Trade

In 1999, Saudi Arabia established an export programme under the Saudi Fund for Development (SFD) to encourage exports of dates and date products to existing markets and to access new markets, as part of a broader policy initiative to diversify export revenues and national income (Ali et al., 2014). However, exports of Saudi dates are still weak and stagnate between 7-8 percent of national production (Ali et al., 2014; El-Habba & Al-Mulhim 2013). In 2013, exports of dates reached a value of US$ 103.6 million up from US$ 40.5 million in 2007 (see Figure 5-4).

Figure 5-4 Date exports from Saudi Arabia, 2007-2013



Source: IndexBox, 2015

Due to excess production of dates, decreasing consumption, and weak processing and export activities of dates, a surplus of dates of about 400,000 tonnes was recorded for 2010, which is expected to exceed 600,000 tonnes by 2022 (El-Habba & Al-Mulhim 2013). Therefore, various studies call for a renewed export strategy for Saudi Arabian dates (e.g. Al-Abbad et al., 2011; Elsabea, 2012; Ali et al., 2014).

Currently, most exports of dates from Saudi Arabia are directed to low income countries from the Middle East, at low prices, while only marginal quantities are exported to high income countries at higher prices (Muhsen et al., 2013). In 2009/2010, the majority of exports went to Yemen (49 percent), the Gulf countries (24 percent) and Syria, Lebanon and Jordan (together 12 percent) (Elsabea, 2012). In 2013, Egypt replaced Yemen as the main importing country, but it remains to be seen whether this was incidental or indicates a more lasting trend (Beers et al., 2014). Exports to Europe account for only 2 percent of total date exports (Elsabea, 2012).

One explanation for this dominant focus on Middle Eastern countries is that Saudi Arabia is part of the Gulf Cooperation Council (GCC) which has implemented a Free Trade Agreement and customs union that encompasses, next to Saudi Arabia, Bahrain, Kuwait, Oman, Qatar and the United Arab Emirates. Saudi Arabia is also party to the Greater Arab Free Trade Area which ensures tariff-free access to other traditional export destinations, such as Yemen, Syria, Lebanon and Jordan. Moreover, Middle Eastern countries have a high level of date consumption and show high demand for Saudi Arabian date varieties (Al-Shreed et al., 2012).

On the other hand, entry barriers to the EU market are significantly higher. Firstly, Saudi Arabian dates face intense competition to access the European market, particularly from Tunisia, Iran and Egypt who are able to supply more sought after date varieties (El-Juhany, 2010). Saudi dates are generally not well known on the European market and lack a premium brand of high quality dates that could reap high prices (Beers et al., 2014). High levels of bacterial contamination further impede access to the EU (Elsabea, 2012). Secondly, Saudi Arabian date exporters lack long-standing ties with existing European importers. For instance, Tunisia and Iran have strong connections to French importers, who not only supply the French market but cater to the entire North European market (Beers et al., 2014). This indicates that much of the value of European imports does not reach the producing countries but is captured by French importers (Botes & Zaid, 2002).

Additional export markets for the future have been identified to lie in Malaysia and Indonesia (countries with a large Muslim population where date consumption is particularly high during Ramadan), Russia and Eastern European countries (Al-Shreed et al., 2012).

Studies also indicate that there is significant potential for product diversification and value-adding activities aimed at export markets, particularly increased processing, including frozen dates, pastries from dates, date syrup, jam and vinegar (Al-Shreed et al., 2012). As date seed contains about 6-12 percent oil, oil extraction could be another opportunity (Zaid, 2002).

5.1.6 Conclusions and lessons learned

Dates are an important product in Saudi Arabia, particularly for satisfying high domestic consumption. The date value chain seems to benefit from a generally supporting institutional environment, with an enabling legislative framework created by the Saudi Government and several research institutes dedicated to date palm.

However, a variety of challenges are noted. At the production level, these include the high incidence of pests and diseases, and high levels of bacterial contamination of dates. As many farmers continue to sell their produce through traditional, mostly informal marketing channels, few incentives exist to enhance quality through improved agricultural practices and post-harvest management.

At the processing part of the value chain, facilities operate well under capacity which points towards a gap between growing national date production on the one hand and increased specialization opportunities, which could create and satisfy demand for processed date products.

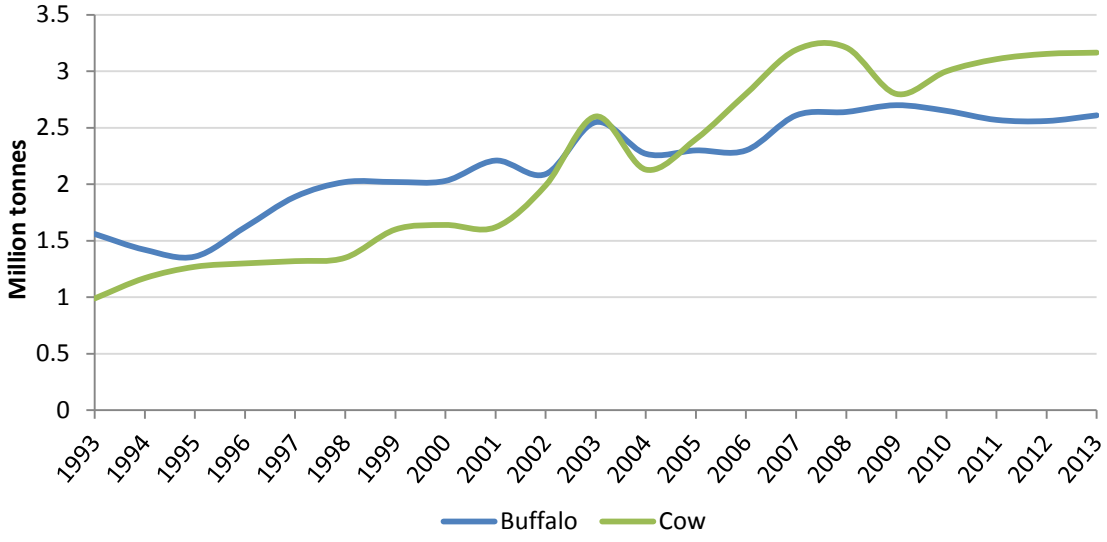
At the trade level, export levels remain low, particularly to high income markets. The majority of dates are exported to countries that have experienced considerable political instability of late, which makes the respective markets highly volatile and uncertain.

At the same time, a number of opportunities to enhance the performance and competitiveness of the date value chain have been identified. These encompass organic date production, taking advantage of the newly established infrastructure for organic certification, and product diversification to increase the value added, such as processed and manufactured date products. Critical for both is a focus on quality management to reduce the percent of widespread bacterial contamination of dates. The modern marketing channel seems to be particularly suitable to explore these opportunities, as systems of quality control and traceability are already in place. Efforts should be undertaken to integrate more date farmers, who usually sell through traditional marketing channels, into the modern date value chain.

5.2 The milk value chain in Egypt

Egypt is one of the main milk producing countries in the Middle East and Africa with a total milk production, both from cows and buffaloes, of about 5.77 million tonnes in 2013 (FAOSTAT, 2015). Milk production has grown continuously over the past decade (see Figure 5-5) and estimates indicate that there is still considerable scope for growth.

Figure 5-5 Fresh milk production in Egypt, 1993-2013



Source: FAOSTAT, 2015

Most of the milk produced in Egypt is consumed directly. The rest feeds into a relatively large dairy industry that offers a broad range of products, such as raw milk, butter, cheese, yoghurt, condense milk and ice cream. While per capita consumption of dairy products is at 21 kg per year, which is significantly below the world average of about 50 kg per person, Egypt represents a large emerging market for milk and dairy products due to a growing population, rising urban demand and changing consumption patterns away from traditional, loosely sold foods towards packaged and processed food items (El Lateif Aita et al., 2012). Therefore, particular opportunities for growth are discerned for the processing and manufacturing segments to cater for Egypt's growing urban centres.

At the same time, the dairy sector struggles with a number of barriers concerning both the production and consumption ends of the value chain. On the production side, most of the milk is produced by smallholders with 1-8 cattle and is sold loosely as raw milk on the informal market. Due to low average productivity, Egypt is still a net importer of dairy products – mostly skimmed milk powder, butter and high quality cheeses. On the consumption side, per capita intake of milk is relatively low by North African standards and dairy products do not feature in the diet as much as in neighbouring countries such that milk constituted only 3.2 percent of the total food supply in Egypt in 2011 (FAO, 2014; Oxford Business Group, 2012b).

5.2.1 Institutional framework and public policy

The Egyptian economy has traditionally relied heavily on the agricultural sector as a source of growth and food security. Therefore, public development efforts during the 1980s, 1990s and early 2000s focused on expanding agricultural land and increasing productivity per unit of land. Currently, agricultural land constitutes 3.6 percent of the total surface area (about 3.6 million ha) (Resource Statistics, 2015), which is, however, under severe pressure from urbanisation and problems of salinization and desertification.

Government intervention in the agricultural sector was particularly strong from the 1960s to the 1980s, and crop area controls, fixed producer prices and compulsory procurement of crops constituted important policy instruments. This included support to cow and buffalo farmers to keep dairy prices low. Since the implementation of macro-economic structural adjustment policies in the 1980s, the control of the Government has weakened considerably and input subsidies, price and procurement controls were eliminated (Soliman et al., 2010).

In 2009, the Government of Egypt released a *Sustainable Agricultural Development Strategy (SADS) 2030* which aims at "modernising Egyptian agriculture based on achieving food security and improving the livelihood of the rural inhabitants, through the efficient use of development resources, the utilisation of the geopolitical and environmental advantages, and the comparative advantages of the different agro-ecological regions." Strategic objectives encompass:

- Promoting sustainable use of resources;
- Improving national production by increasing land availability and productivity per ha;
- Increasing the competitiveness of agricultural products in local and international markets;
- Improving the agricultural investment;
- Improving the livelihood of rural inhabitants, and reducing poverty rates in rural areas.

Implementation is carried out in different phases. During the first phase of implementation, the so-called First Business Plan (2011-2017), animal husbandry and dairy development are identified as one of nine main programme areas, among others with the following objectives:

- Increase green fodder production [for livestock] by 50 percent;
- Increase dairy production to 7.2 million tonnes;
- Increase per capita consumption of dairy products to 63kg per year.

For this first phase, a total of US$ 18.3 billion are estimated, of which the Government of Egypt is willing to contribute US$ 8.38 billion and hopes for private investments of US$ 9.92 billion.

In May 2013, the Government made livestock immunisation and insurance mandatory for farmers and livestock breeders to control the spread of foot-and-mouth disease (FMD) and other livestock diseases. Prior to 2006, Egypt had not reported any cases of FMD, but in January 2006 outbreaks of FMD quickly spread in the Nile Delta region and led to the death of more than 12,000 cattle (Knowles et al., 2007). After a similar outbreak in 2012 almost 30,000 animals succumbed to the disease. Reports indicate that 40 percent of Egypt's herd is currently vaccinated against the FMD virus. This has lowered the reported number of positive FMD cases in 2013 to 40 (USDA, 2013a).

In addition to FMD, Egyptian cattle production suffers from frequent outbreaks of lumpy skin disease and bovine tuberculosis, resulting in regular shortages in milk supply (Markt & Produkt 2010). Low yields of local cattle breeds and crossbreeds, and a lack of genetic

efficiency are further recognised problems (Tibbo, 2013). In 2009, average milk production per cow was at 0.62t per year compared to 10t per year in the USA (LACTIMED, 2014). Furthermore, a significant gap in domestic feedstock production implies that Egypt has to import maize, soybean and bran from abroad to supplement domestically grown fodder.

A number of public research institutes are tasked with the objective of conducting research to address these needs and maximise economic return per unit of land and water, e.g. Agriculture Research Center, Animal Production Research Institute, and National Research Centre Food and Dairy Technology Department. The focus on increasing milk output is particularly pronounced given Egypt's limited agricultural land and water resources, which restricts large increases in cattle herds and limits the expansion of the area used for fodder crop production (Oxford Business Group, 2012b).

In addition, the Egyptian dairy sector has received support from various donor agencies over the years. For instance, a current project (LACTIMED, 2012-2015), financed by the European Union through the European Neighbourhood and Partnership Instrument, "aims to foster the production and distribution of typical and innovative dairy products in the Mediterranean by organising local value chains, supporting producers in their development projects and creating new markets for their products". An earlier project financed by the European Commission (BAT4MED, 2010-2013) aimed at implementing best available techniques (BAT) to respond to health and environmental impacts of industrial emissions in the dairy and textiles industry in Egypt, Morocco and Tunisia. Finally, the US development agency USAID implemented a Dairy Directive Project (2001-2004) which promoted improvements in the dairy sector to prevent child malnutrition and illness.

Currently the agricultural sector, including livestock and dairy production, is recovering from the political events starting in January 2011, which heavily impacted on the entire economy. Prices of inputs increased, mainly due to the disruption of transport and the depreciation of the Egyptian Pound. Steep fuel price increases and disturbances in manufacturing and distribution sectors led to a reduction in sales value growth from 24 percent in 2010 to 21 percent in 2011 (LACTIMED, 2014). While there are indications that growth rates accelerated from 2012 onwards again, it is unclear in how far the dairy sector continues to be affected by the political situation.

5.2.2 Standards

Quality and food safety standards have existed for dairy products only since 1980 (Markt & Produkt, 2010). Such standards are designed and implemented by the Egyptian Organisation for Standardisation and Quality Control (EOS) and the General Organisation for Export and Import Control (GOEIC). The former has to enforce requirements and standards for imported and domestic products; the latter inspects imported and exported goods.

Most Egyptian standards on dairy products are mandatory. This holds in particular for technical standards that relate to food safety including food pathogens and pesticide residues. Under the Quality Control Plan issued in 2003, the 63 most important Egyptian dairy food standards, i.e. those directly affecting consumer health and food safety, were harmonized towards international standards (CODEX Alimentarius and EU import standards). A specialised committee for dairy products was formed, comprising experts from the chamber of food industries, ministries, regulatory authorities, dairy processing companies, universities, research centres and consumer protection agencies, with the aim of enabling exported

Egyptian dairy products to be compatible with world market demands and at same time to be competitive with imported dairy products in the local market (El Lateif Aita et al., 2012).

In 2014, the Minister of Industry and Foreign Trade issued a directive to establish a committee responsible for developing a quality and food safety control system for the dairy sector to ensure that international export standards can be met. The committee was also tasked to establish a plan for the coordination and integration among private sector and government bodies operating in the dairy sector.

In order to address hygiene related issues in the dairy sector, in the year 2001, the Government also issued a decree to pasteurise all locally produced milk (El Lateif Aita et al., 2012). However, implementation is a significant problem in the fragmented Egyptian processing industry, particularly for small and medium-sized entities due to severe infrastructural and capacity problems.

Standards seem to be significantly higher in the large-scale commercial dairy sector. Although HACCP or ISO certification is neither required by Egyptian authorities nor for export, recognised voluntary standards and systematic quality control systems are recommended by importers and importing governments alike. This has led to increasing awareness and resultant adoption rates of HACCP by large dairy companies in Egypt.

5.2.3 Infrastructure and logistics

In light of the milk sector's heavy reliance on smallholder production and informal marketing, logistical and infrastructural problems constitute a key impediment to the further development of the sector. Lacking cold chains and refrigerated transport systems, combined with poor knowledge on hygienic handling of raw milk from farm to factory, lead to high milk spoilage rates (El Lateif Aita et al., 2012). Studies show that contamination of milk already starts during the milking of cows due to unhygienic and improper practices (Hofi, 2011). Smallholders in particular do not have access to pasteurisation and proper storage facilities. This carries a high risk of bacterial contamination of raw milk subsequently consumed on the informal market. Due to the resulting health risks, the government has recently sought to reduce the amount of loosely sold milk. Efforts by the large-scale dairy industry to educate consumers on the risks of raw milk and the benefits of processed milk aim at the same effect. While the results of these campaigns have been positive in that processed milk and dairy products have been gaining market share, further successes are considered to depend on the strengthening of regulatory and monitoring bodies by the Government as well as support and capacity building for small-scale and medium-sized milk producers (Oxford Business Group, 2012b).

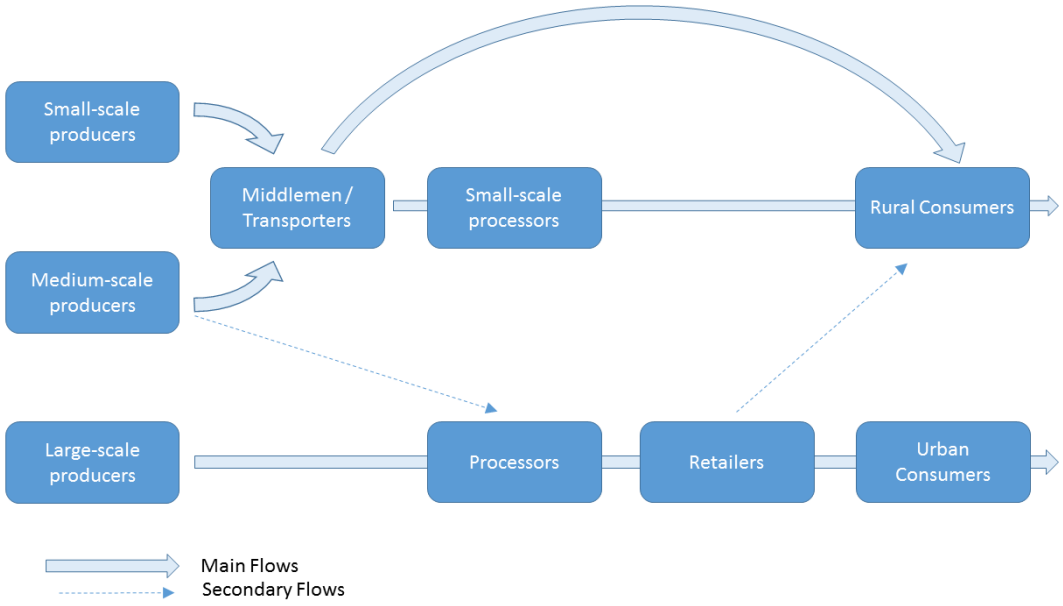
However, not only raw milk but also processed dairy products, such as cheese, often exhibit severe food safety issues, as much of the processing takes place at small enterprises that lack adequate facilities and capacity. A recent study by Hofi (2011) shows that many dairy farms transport milk directly to cheese factories in cans on open vehicles which increases the risk of contamination and spoilage. Only modern dairy factories refuse un-chilled milk for processing but the majority of processors neither employ good hygienic practices to minimise product contamination nor test the bacteriological quality of the milk received. As about two thirds of cheese factories operate without cooling facilities and 80 percent of them do not apply pasteurisation, further contamination is likely to occur during processing (Hofi, 2011).

Finally, poor road infrastructure and high transport costs have been identified as impediments to domestic milk and dairy consumption as well as export promotion (Markt & Produkt, 2010).

5.2.4 Governance and value chain actors

Milk production is very fragmented and three main categories of farmers can be identified (Oxford Business Group, 2012b) (see Figure 5-6).

Figure 5-6 Milk value chain in Egypt



Source: Authors' elaboration

Firstly, small family farms with 1-8 cattle constitute the majority of dairy farmers and are the major source of raw milk. Sources indicate that these farmers are responsible for about 80 percent of the milk produced (Al-Amaiem, 2014). Most smallholders follow an integrated production system where fodder crops are grown as feed for animals and animal manure is used to enhance soil fertility (El-Nahrawy, 2011). Milk is produced mainly as a subsistence activity and surpluses are sold to family members or within the local community (Markt & Produkt, 2010). Some of the farmers are organised in the Egyptian Milk Producers Association, but most of them are unorganised and are considered to be the weakest link in the value chain (El-Nahrawy, 2011). The absence of producer organisations for milk collection, cooling and transport facilities has been recognised as one of the main challenges for ensuring quality along the chain (Tibbo, 2013). Secondly, there are about 80-100 of medium sized farms, which have automatic milking machines and cooling facilities but are often characterised by inefficient operations (Oxford Business Group, 2012b). Finally, there a small number of large-sized farms which are frequently owned by big processing and manufacturing companies in a system of vertical integration.

The majority of milk produced (about 85 percent) is marketed as raw milk, e.g. sold loosely on the street or through vendors that go from door to door, or processed into home-made butter

and cheese and sold in small shops (Oxford Business Group, 2012b). Particularly smallholder farmers in rural areas rely on middlemen to collect and market their milk through such informal channels, as they do not have access to formal marketing channels. The practice of utilising middlemen is considered to reduce prices for farmers, as gains are not passed onto farmers, for instance, when prices are seasonally high (El-Amaiem, 2014). At the same time, middlemen often provide access to support services, such as credit and health care, in order to strengthen their market position within a community (El-Amaiem, 2014).

Only about 10-15 percent of the milk produced in Egypt is processed by the modern commercial sector due to the dominance of the informal milk sector, the lack of contract farming and very weak relationships between producers and processors (El Lateif Aita et al., 2012). Similar to the situation at the production level, processing is very fragmented and the majority of facilities process less than one tonne per day on a relatively informal level. There are about 25 companies involved in the industrial processing and packaging of dairy products; 14 of which are members of the Dairy Industry Development Association and 7-8t can be regarded as important players. Most of these companies use fresh milk as main input for the production processes (El Lateif Aita et al., 2012), but due to the general low level of production, several of the larger companies import milk powder to increase processing activities. Actual production is at 500,000-800,000 tonnes per year, which is significantly below the total capacity estimated at 1.9 million tonnes per year (El Lateif Aita et al., 2012). A lack of cold chains, adulteration, unhygienic practices during farm production, fragmented farm base and long distances to dairy farmers further adversely impact on processing operations (El-Amaiem, 2014).

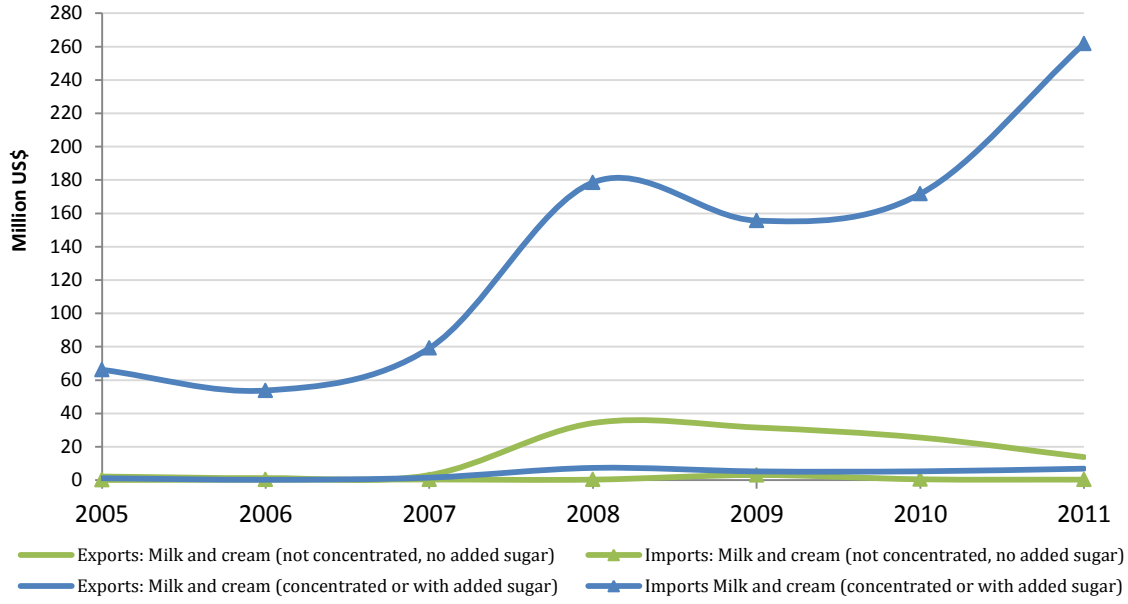
Manufacturing has recently experienced increased firm consolidation. Until 1980, the dairy sector was dominated by the public sector, after which the role of the private sector became increasingly important. By now, public companies play hardly any role. Over the past few years, the market has evolved from being dominated by local players to a mix of local, regional and international players. For instance, French giant Danone entered the market in 2005 and has established itself as a market leader in terms of sales (Oxford Business Group, 2012b). The entry of international companies was accompanied by some consolidation, including acquisitions by private equity funds and vertical integration to secure raw materials (raw milk, fruits and animal feed), and control and expand distribution channels. The yogurt and, more recently, packaged milk segments have seen the highest levels of activity (El Lateif Aita et al., 2012). So far, local companies have been able to maintain a strong market position such that the market for drinking milk products is dominated by local company Juhayna Food Industries with a market share of about 65 percent. Its products are exported to over 48 countries, including the US, the Gulf States and Europe (El Lateif Aita et al., 2012).

5.2.5 Trade

Both exports and imports of dairy products have accelerated over the past decade. One of the main trade items are concentrated milk products or ingredients which are imported to cover domestic demand for processed dairy products. Low productivity per cow, especially for smallholder farmers, is considered the main reason for the shortage in national production, caused by a lack of sufficient and seasonally fluctuating animal feed and the dominance of low yield cow and buffalo varieties (El-Amaiem, 2014). Milk production is particularly low during summer months and fluctuations in supply result in high processing costs of raw milk. Therefore, imports are required to cover up to 40 percent of actual market needs (El Lateif Aita et al., 2012). Imports are particularly important for butter (main import countries: New

Zealand, Australia and Ethiopia) and for skimmed milk powder (main import countries: Poland, New Zealand and Sweden), which is used by the dairy processing industry (see Figure 5-7).

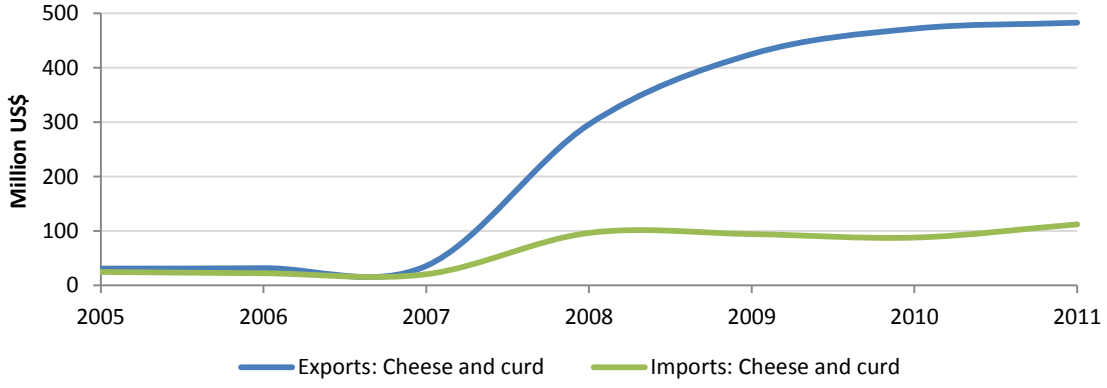
Figure 5-7 Egyptian exports and imports of milk and cream, 2005-2011



Source: IndexMundi, 2015

Imports are also relevant for cheese products, although here Egypt exports significantly more than it imports. An export surplus can also be observed for trade in fresh milk products (see Figure 5-8).

Figure 5-8 Egyptian exports and imports of cheese and curd, 2005-2011



Source: IndexMundi, 2015

Due to the existence of a relatively modern milk and dairy processing sector, export promotion has recently received growing attention by the Egyptian Government. As per the 2014 directive of the Minister of Industry and Foreign Trade to ensure the compatibility of Egyptian

dairy products with international standards, exports are to be promoted in coordination with relevant state agencies, and business regulations will be proposed and approved with international references on the issue. Promising export opportunities for dairy products are particularly identified for Arab and African markets (LACTIMED, 2014).

5.2.6 Conclusions and lessons learned

The Egyptian dairy sector is growing and is considered to be among the better performing of Egypt's agribusiness sectors. In light of a growing population and changing consumption patterns towards more dairy products, growth opportunities exist in particular for the processing and manufacturing segments to target local consumers. Moreover, export of milk products is only emerging and has not yet reached its full potential, as the sector is predominantly focused on fulfilling domestic consumption needs. Market opportunities seem to lie especially in other Arab and African countries, but may also include the EU seeing the generally good trade relationships.

However, a number of issues need to be addressed to take advantage of the growth of the dairy sector. Specifically, the fragmentation at the production level with the majority of producers being unorganised smallholders represents a significant challenge in terms of adhering to basic product hygiene. This concerns about 85 percent of the total milk produced in Egypt, which is consumed as raw milk and does not undergo further processing, including pasteurisation. Not only have studies revealed that raw milk consumption poses health risks, but from a value chain perspective this is also a missed opportunity for the creation and distribution of further added value. Integrating smallholder dairy farmers into formal processing and marketing channels, for instance through farmer organisations or collection centres, is thus critical for the development of the entire dairy sector. In turn, this requires an adequate support infrastructure for smallholder farmers, ranging from training and technical services to feedstock supply, to help them raise both the quantity and quality of milk. Integrating smallholder farmers into the formal value chain also necessitates considerable investments into upgrading and modernising existing infrastructure to ensure fast processing and product handling times. If exports are to be promoted, meeting international quality requirements is critical, which necessitates further public support.

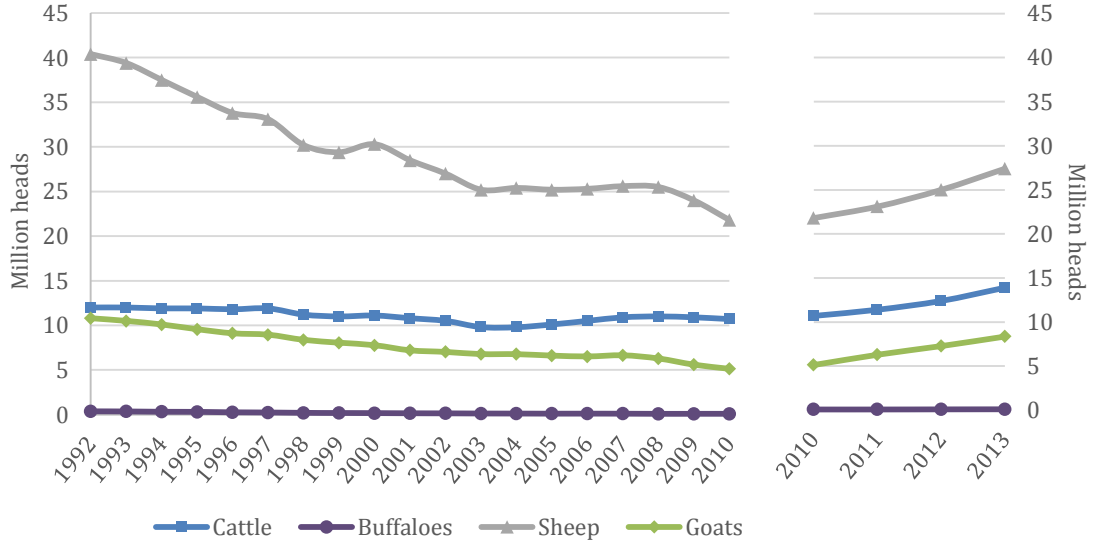
5.3 The red meat value chain in Turkey

Turkey is one of the largest producers of red neat (cattle, sheep, goats and buffalo) in the Middle East and North Africa regarding the livestock population. Only Iran has a larger quantity of sheep and goats in its region, but Turkey is the largest producer of cattle and buffalo (FAOSTAT, 2015). Figure 5-9 below illustrates the substantial increase in livestock numbers since 2009, particularly cattle livestock. With large tracts of agricultural land not operating to its full potential, there remains an opportunity for boosting production.

The majority of red meat is produced and consumed domestically. The red meat sector is growing, with demand driven by population growth and changing consumption patterns. Whereas Turkey's economic growth is not entirely attributable to its agricultural sector, it is playing an important role, and its modernisation and increased productivity is vital to Turkey's future prosperity.

About half of the total herd stock (cattle) is located in the eastern regions, where there is a heavy concentration of native breeds. While these can adapt to the harsher specific climate in that part of Turkey, they are less productive than animals in the west. Up to 70 percent of the pure breeds are located in the Marmara, Aegean, Central North and Central South regions. About half of the sheep are also in the eastern regions. The Mediterranean region holds 25 percent of the goat-herd, where they adapt to the inferior vegetation conditions (IPARD, 2013).

Figure 5-9 Red meat production in Turkey, 1993-2013[4]



Source: FAOSTAT, 2015

[4] This figure is split in two given the alteration to the data collection of red meat statistics in Turkey after 2010. Data on meat has not been included in annual series since 2010, because it has been published through monthly News Releases (starting from January 2010). Starting from January 2012, data on red meat production has been published quarterly. The data collection method was altered, with a username and password given to every participating holding by TurkStat. The holdings enter their data electronically every month to the data entry system established by TurkStat.

However, the sector continues to face several key issues which prevent further development. The smallholder farmers responsible for the majority of production utilise different breeds of cattle, with different productivity, depending on the geographical area that they occupy. These different breeds, combined with the use of outdated or inappropriate rearing techniques hamper growth of livestock, and contribute to low productivity per head. A second significant barrier is the unregistered slaughtering of as much as 40 percent of the livestock (ARDSI, 2013), where regulations in hygiene and proper practice are often not adhered to (Tathdil et al., 2013).

5.3.1 Institutional framework and public policy

Overall objectives for agricultural development in Turkey, including livestock and fisheries, are set by the 10th Development Plan 2014-2018, determined by the Ministry of Development. The primary aim is to create an agriculture sector that provides a sufficiently balanced nutritional intake for the populace. Utilising advanced technologies, strong infrastructural, effective organisation and high productivity can increase its international competitiveness through a demand driven production structure which utilises natural resources in a sustainable manner (Turkish Ministry of Development, 2014).

Food security is to be ensured through (1) effective stock management; (2) diminishing the losses in production; (3) improving the marketing and consumption chain; (4) strengthening administrative and technical capacity related to the market regulation; and (5) more effective use of foreign trade tools.

Although it is recognised that agriculture's contribution to national GDP and employment is bound to decline, growth in the agricultural sector is predicted at 3.1 percent per annum (Turkish Ministry of Development, 2014). Increasing and improving meat production and animal husbandry constitute key target areas of the 10th Development Plan. According to Strategic Objective 3 of the 2013-2017 Strategic Plan of the Ministry of Food, Agriculture and Livestock, specific aims are to ensure food security and accessibility for agricultural products, and increase the amount of red meat production which is experiencing supply deficit, and in so doing ensure the security of supply, and diminish price fluctuations (Turkish Ministry of Food, Agriculture and Livestock, 2014).

Traditionally, the extensive livestock farming systems in the Central and Eastern parts of Turkey are the primary source of cattle for the rearing and fattening units in the Western and Southern regions. However, the sustainability of this extensive livestock rearing model is presently impaired by the high rate of net population migration from these provinces over the last 10 to 15 years. In addition to this, fodder production, improvement of pastures, quality and quantity of artificial insemination procedures are below international averages and current measures taken for animal health and animal movements are far from being sufficient (Turkish Ministry of Development, 2014).

Given this unfavourable context, animal husbandry support was increased and regional projects were put into practice. These support mechanisms have brought increases in red meat and production in recent years. In the animal husbandry sector specifically, improvement of beef cattle and sheep breeding are given priority and implementation of regional support programs will be continued over the coming years. For instance, the proportion of pure bred cattle to the total cattle stock is set to rise to 56 percent by 2018, up from 26 percent in 2006. To support this commitment, Farm-Oriented Preventive Veterinary Medicine System and One

Health Policy including animal welfare measures that will be implemented (Turkish Ministry of Development, 2014).

Furthermore, the Turkish Government seeks to address the fragmented structure of agricultural businesses by improving the market access conditions of producer organisations. Legislative and institutional arrangements will be put into action providing the entirety of agricultural businesses, consisting of a significant number of scattered parcels, preventing land fragmentation, and constituting a well-functioning agricultural land market.

Finally, efficient and productive use of meadows and pastures to support livestock production will be realised by accelerating identification, limitation, classification and reclamation efforts of these areas, and the forage needs will be met by increased production and product diversification (Turkish Ministry of Development, 2014).

Table 5-1 below shows the growing red meat production in Turkey, and its projected growth.

Table 5-1 Growth and projections in red meat production in Turkey, 2012-2017

	2012	2013	2014	2015 (estimated)	2016 (estimated)	2017 (estimated)
Red Meat production (in million tonnes)	870	930	1,200	1,300	1,400	1,500

Source: Turkish Ministry of Food, Agriculture and Livestock, 2014

5.3.2 Standards

Quality and food safety standards in Turkey are in place, but their reach is limited throughout the country. One of the main problems of the red meat sector is the unregistered slaughtering (in butcher shops, farms, and certain slaughterhouses). It is estimated to account for as much as 40 percent of the whole red meat production within Turkey (ARDSI, 2013).

Livestock traditionally reaches the market in several ways: producers may sell live animals in local markets, at livestock exchange markets, or to traders. Animals are then taken to municipal or private slaughterhouses and subsequently to meat processing enterprises. Most meat enterprises also buy directly from farmers and some also have their own feed lots (IFOAM, 2015). This method of purchasing and slaughtering meat means it often does not go through 'official' channels, and as a consequence quality and food standards are not enforced (see also Table **5-2**).

Table 5-2 Slaughtering situation in red meat production in Turkey

Cattle	
Carcass meat production (187kg/animal)	475,600 tonnes meat carcass
Registered Production	366,948 tonnes meat carcass
Balance	108,652 tonnes unregistered (22%)
Sheep & Goats	
Meat carcass production (15 kg/animal)	262,442 tonnes meat carcass
Registered production	80,015 tonnes of meat carcass
Balance Sheep and goat meat	182,427 tonnes unregistered (69%)
Total meat	
Total meat production	738,042 tonnes meat carcass
Total meat registered	446,963 tonnes meat carcass
Balance	291,079 tonnes meat carcass unregistered (40%)

Source: ARDSI, 2013

The extent of this unregistered slaughtering can be partially attributed to the insufficient number of large-scale modern enterprises suited to the practice. Of the 641 slaughterhouses for bovine animals, only 181 are classified as Class 1 and 20 as Class 2 (20-40 animals a day).

Public slaughterhouses of Class 3 are usually managed by municipalities, but their facilities are mostly outdated and well below modern standards relating to hygiene, food safety and animal welfare. They only undertake 15-20 percent of present slaughtering, and would need to be in fact fully replaced by more modern and adapted enterprises (IPARD, 2013).

The most important factors limiting 'organic' livestock production are the non-integration of plant production with animal production in addition to the rarity of appropriate foodstuffs. Again, a particular difficulty is that many farmers are small land owners and are not organised to meet the costs of inspection and certification.

From a health and food safety standpoint, facilities at many meat enterprises require upgrading to comply with EU requirements, especially in small enterprises involved in cooked meat products. A number of legislative measures have been introduced and inspection services organised but, in general, regulations governing the management of slaughtering and meat enterprises are not yet harmonised with EU Community Standards. Moreover, the enforcement of compliance, especially at local level, is not always effective. In its present state, the industry needs incentives to raise standards for hygiene and environmental protection (World Bank, 2010). Significant work is needed on upgrading agri-food establishments to meet EU standards, the identification and registration of animals, animal welfare, animal by-products and the fight against animal diseases.

Still, a number of the more dynamic small to medium enterprises, besides the bigger integrated enterprises, could be brought back to competitiveness conditions, as well as compliance with modern quality standards, if properly supported.

Although not specifically addressed by the IPARD Programme (EU ascension programme), many of the 39 registered animal markets will need to be upgraded under national support schemes in the future.

The Turkish Government has acknowledged the importance of food safety, and has been involved in the implementation of international standards on animal welfare. An illustration of this are the policies put in place to come into line with EU standards, with the 'Foot and Mouth disease Emergency Action Plan' being a particular success. For the first time, a region in Turkey has been declared foot-and-mouth free (Thrace) by the World Animal Health Organization and the EU (World Bank, 2010).

5.3.3 Infrastructure and logistics

Turkey possesses a number of advantages logistically, which have developed significantly since its entry into the EU Customs Union. Its geographic, physical, and corporate infrastructure is one of the key attractions for potential investors. However, the general inefficiency of meat production, coupled with high feed costs, tariffs and import restrictions, means high prices for consumers. The net migration of young producers from central and eastern Turkey, cattle-breeding regions that traditionally supply the rearing and fattening units in the west and south of the country into the cities is a further complication to the sustainability of red meat production. Developing units in central and eastern Turkey is therefore key to ensuring the long term viability of Turkey's livestock-rearing model.

According to the World Economic Forum (WEF) 2014-15 report, Turkey's efficiency with infrastructure and logistics is reasonably high. It has been given a score of 3.5 (1=low to 5=high) for its 2014 performance, suggesting it is reasonably efficient in logistical planning, and with the infrastructural basis to support it. However, the score of 3.5 is a slight decrease on the 2012 score of 3.51, suggesting a slightly stagnant infrastructural and logistical environment (WEF, 2015).

5.3.4 Governance and value chain actors

The primary actor in the Turkish red meat sector is Ministry of Food, Agriculture and Livestock (MFAL) and its affiliated (state-owned) Meant and Milk Institution (ESK).

At the upstream level, Turkish livestock production is a predominantly small-scale activity, within a mixed farming system; 67.4 percent of farms have some crops as well as livestock. Small farms (under 20 ha) constitute two-thirds of the total and hold 49.8 percent and 48.7 percent of the small ruminant and cattle population respectively. Of the 2.2 million cattle holdings in 2001, 50 percent had one to four animals (IPARD, 2013). For these farming households, particularly in the eastern regions of the country, livestock represents an important means of subsistence and food security.

On the other hand there is a significant degree of concentration of beef fattening in a small number of farms that have more than 300 animals; 1.2 percent of the 72,000 specialised holdings keep 43 percent of fattening animals. This phenomenon is driven by investments of major capital groups and private entrepreneurs. The high capital modern intensified fattening units are mostly concentrated in the Western part of the country. The leading producers within Turkey are: Aytaç, Pınar, Namet, Sultan, Şahin and Sütaş which all have high capacity units available for use.

The ESK and the MFAL do not wield control over the whole value chain, but there are moves towards increased central influence over red meat production (as illustrated by the growth of the companies mentioned above). This is particularly evident in efforts to consolidate (and prevent fracturing of) patches of land into larger pastures, for more effective cattle grazing. Without these centralised efforts to move beyond the current small-scale nature of red meat production, effective governance of the value chain remains elusive.

A consequence of the continuing small-scale nature of red meat production is relatively low carcass productivity. Productivity per cattle is roughly 187 kg (FAOSTAT, 2012). This is due to a combination of several unfavourable factors:

- Small size of the farms;
- Low production and high cost of feed: fodder planting is limited and pastures are not properly managed. Most animals are fed with a high content of straw in the diet, which restricts growth rates;
- Indigenous or Holstein and Brown Swiss breeds reared are not suitable for high quality beef production.

The introduction of new, more appropriate breeds of cattle, coupled with more effective land use and farming inputs aims to increase this average carcass productivity, and modernise the sector.

5.3.5 Trade

The contemporary nature of red meat imports and exports in Turkey are fluid. While the EU remains one of Turkey's biggest agricultural partners, there is increasing demand for Turkish red meat imports from countries in the Middle East (Şanliurfa, 2014). Protection of prices is ensured through import tariffs on livestock products and the restrictions on the import of beef and live bovine animals from the EU (and other countries), which keep the price of red meat higher than it would otherwise be.

In 2009, the Government intervened in meat prices by issuing import licenses for foreign red meat and livestock. The cheaper livestock from abroad pushed down domestic red meat prices (Erdem, 2012). Turkish imports of red meat were worth US$ 3.22 billion between June 2010 and January 2013 (Zaman, 2013) (see also Table 5-3).

Table 5-3 Turkish red meat imports in 2012

Item	Year	Unit	Value
Meat, Cattle	2012	1000$	95,979
Meat, beef, preparations	2012	1000$	1013
Meat: Bovine (Fresh)	2012	1000$	95,992
Bovine Meat	2012	1000$	97,062

Source: FAOSTAT, 2012

5.3.6 Conclusions and lessons learned

Turkey's red meat production has increased significantly over the last decade, particularly in cattle livestock due to growing demand for beef. Production is thus mostly for domestic consumption of the country's growing population and as a means of subsistence for many farmers, especially sheep and goat farmers, in the poorer regions of Turkey.

The increase in red meat production should be seen in the context of the country's overall increase in agricultural production due to modernisation and productivity increases. These advances were largely driven by the government which supported the livestock sector through enabling legislation and animal husbandry projects.

Growth in red meat production is projected to continue, but a number of challenges need to be addressed to enable the sector to take advantage of its full potential. The main problem relates to the poor enforcement of quality and food safety standards along the red meat value chain, as much of red meat production is traded through informal channels and does not go through registered slaughtering. This results in unhygienic practices for as much as 40 percent of Turkey's red meat production. On the one hand, this calls for better implementation of quality and food safety standards; for instance, by increasing the number of large-scale modern slaughtering enterprises which are able to meet the required standards.

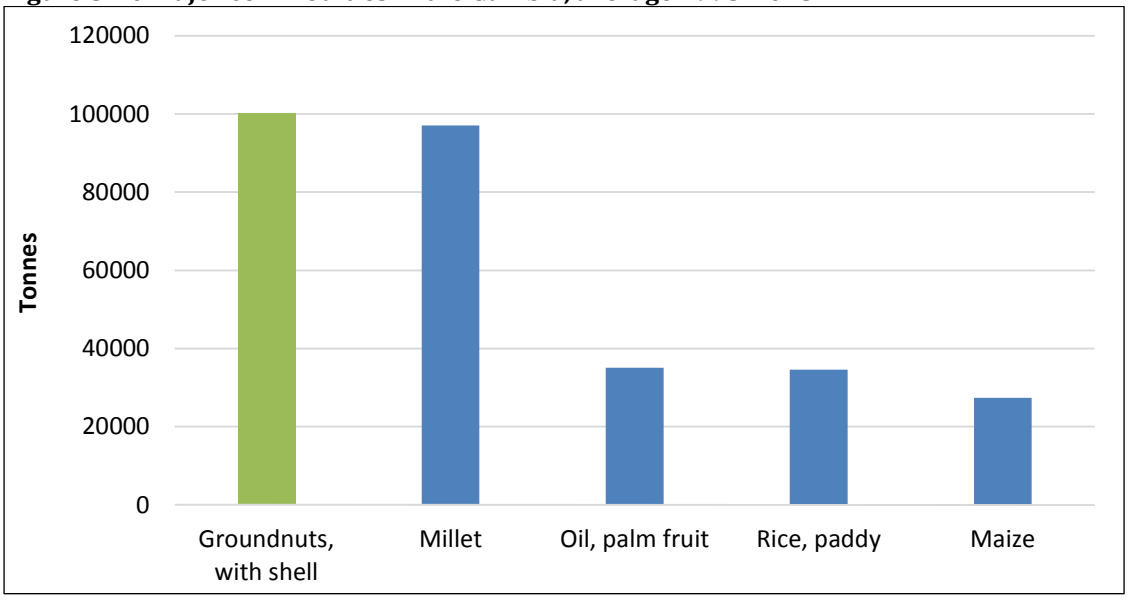
On the other hand, the situation of small-scale farmers needs to be addressed, as they constitute two-thirds of livestock producers and are thus of critical importance for the future of the industry. To ensure that they raise both the quality and quantity of their production, better support structures need to be created, for instance through producer organisations, which deliver training and information to the producers. New, appropriate cattle breeds should be introduced to replace the current dominance of indigenous breeds which are not productive or suitable for commercial beef production. This would contribute to the continued modernisation of Turkey's red meat value chain.

5.4 The groundnut value chain in the Gambia

The Gambia is characteristic of Africa's groundnut producing countries. For this agriculture-based country – agriculture accounts for about 29 percent of GDP and 75 percent of the labour force – groundnuts is the principal cash crop, accounting for 23 percent of agricultural GDP (Government of The Gambia (GoTG), 2012) (see also Figure 5-10). Approximately 42 percent of the arable land was devoted to groundnut cultivation in 2012 (GIEPA, 2013). Groundnut plays a critical role in food security, poverty reduction, and livestock feed.

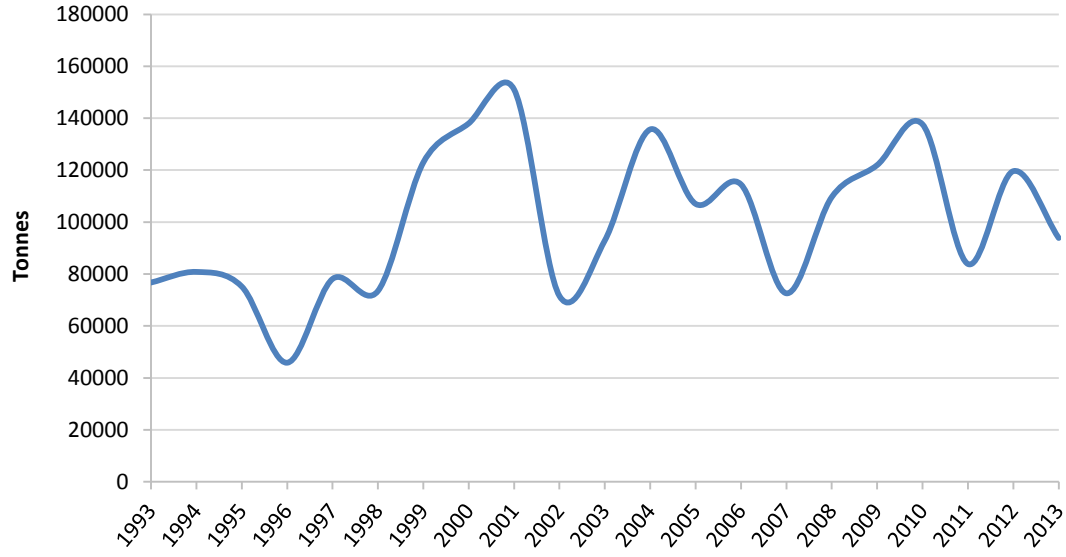
Despite its importance, groundnut exports have declined since the 1980s, and production suffers from both low productivity and poor quality. Output levels fluctuate heavily from year to year (Figure 5-11). The sector is dominated by small-scale farmers and farming methods are characterised by low levels of mechanisation, with farmers relying on hand-held tools, draught power provided by animals, and rain-fed production.

Figure 5-10 Major commodities in the Gambia, average 1993-2013



Source: FAOSTAT, 2015

Figure 5-11 Groundnut production in the Gambia, 1993-2013



Source: FAOSTAT, 2015

5.4.1 Institutional environment and public policy

The groundnut sector was state-controlled for a long time and still sees periodic interventions by the Gambian Government. Initially groundnut trading, processing, and marketing were in the hands of the government-owned Gambia Produce Marketing Board (GPMB), which also determined the prices. The markets for inputs, nut collection and transport were organised through the Gambia Cooperatives Union (GCU), a branch of the GPMB. The GCU's operations were largely inefficient: input delivery was erratic, and post-harvest crop losses were high (WTO, 2004). In the early 1980's, the GPMB became insolvent, also due to falling international groundnut prices.

An Economic Recovery Programme (1986-94) was launched to reform the sector. When the exchange rate regime was liberalised, the GPMB switched to setting depot prices rather than farm-gate prices and as such welcomed competition between private traders and buying agents working for the GCU. In 1990, the GPMB's monopoly on groundnut exports was completely removed and the whole value chain was opened up to the private sector. In need for modernisation, productivity enhancement and quality improvement the GPMB was privatised in 1993 and renamed Gambia Groundnut Corporation (GGC). The major shareholder was a Swiss investor, Alimenta.

The privatization did not result in the desired benefits, however (WTO, 2004). Instead, groundnut production declined in the mid-1990s, partly because of unfavourable weather conditions but also because input services to smallholder farmers were discontinued by the GGC. As a consequence, in 1998 the Government took over the processing plant without agreement from Alimenta. A legal battle was the consequence and in the end the Gambia had to compensate Alimenta US$ 11.2 million for the damage and losses suffered (US Department of State, 2015).

During the same period the Government, being under pressure from international donors, implemented the Groundnut Sector Revitalization Strategy running from 1999 to 2003. The Strategy pursued a three-pronged approach: (1) introduction of a producer price determination mechanism coupled with a price stabilisation fund; (ii) an Agricultural Credit Programme (ACP) to finance the acquisition of inputs; and (iii) an agronomic component focusing on the development of high-quality seed varieties, known as the Seed Multiplication Programme of the National Agriculture Research Institute (NARI).

An Agri-Business Service Plan Association (ASPA) was set up to implement the policy, but when the programme finished in 2003 the Government stopped financing the ASPA. However, due to the consequential decline in quality and quantity, the Government called the ASPA into life again in 2010 and continued the guaranteed price mechanism. A WTO trade policy document critically mentions: The quoting of a single undifferentiated reference price for unshelled groundnuts means that producers of lower quality groundnuts reap some of the reward from increases in production of higher quality groundnuts. The fact that the threshold price is set to cover costs does not in itself act as incentive to farmers and industrial operators to reduce costs and increase efficiency (WTO, 2014). In 2014, the Government once again stopped funding the ASPA and left the price setting to GGC, leading to low prices, uninformed farmers and increasing smuggling to Senegal.

The current organisation of the groundnut sector, and the Government's policy towards it, falls under the Gambia National Agricultural Investment Plan, launched in 2010, and the National Export Strategy, adopted in 2012.

The Gambia National Agricultural Investment Plan (GNAIP) (2011-2015) aims at raising the productivity of the agricultural sector through commercialisation and private sector investments, aimed at food security and poverty reduction. Value chain development is one of the core programmes of the GNAIP, among which groundnuts are identified as key crop. According to the Government, the expected outcome is improved management of groundnut chains (oil and confectionery) and quality assurance of products to meet international standards and increase exports. Yields are targeted to increase from 0.97 mt/ha (2009) to 1.2 mt/ha (2015) (GoG, 2010). Under the GNAIP programme, various development partners, such as the EU, African Development Bank and FAO, provide infrastructural support to the sector.

The National Export Strategy (NES) (2013-2017) is complementary to the GNAIP and focuses on promoting export-led economic growth and enhancing the country's competitiveness. Agriculture is an important pillar of the NES with horticulture, cashew nuts, and groundnuts as the focus value chains.

5.4.2 Standards

The groundnut value chain in the Gambia suffers from a lack of standards and quality control, apart from a general classification system that groups groundnut production as either 'handpicked selected' nuts (HPS) (bearing a relatively high value as they are used directly for consumption or to serve the confectionary market), and the 'fair and average quality' nuts (FAQ) (used primarily for the production of groundnut oil and groundnut cake).

The major problem in the Gambia is the high level of aflatoxin of groundnuts, which is a human carcinogen produced by mould that grows on crops stored in warm and humid conditions. Domestically, aflatoxin is a major concern because groundnut products are the most important source of proteins and fats for the poorest segments of the population (International Trade

Centre Annual Report, 2013). As regards exports, aflatoxin is identified as one of the key barriers to profitable market access. The EU, for instance, as the main export destination of Gambian groundnuts, has stringent rules on aflatoxin levels (15 ppb for groundnuts intended at further processing and 4 ppb for nuts for direct consumption), which are often not met by Gambian exports. As a result, Gambian groundnuts suffer from prices discounted by between 65-70 percent on the international market (Colley, 2013).

Different projects are currently under way to ameliorate this situation. Funded by the EU West African Quality Program, in 2011 the Gambia set up the Gambia Standards Bureau to standardise methods, processes and products (both imported and locally produced). The programme also works on strengthening three quality testing labs to apply for international accreditation. At this stage, however, the Gambia does not have accredited laboratories for quality control, forcing exporters to send samples to buyers in Europe to test the groundnuts before they can be exported.

Supported by the World Bank, the Gambia Standards Bureau elaborated and adopted a Quality Assurance Framework for Groundnuts. Control points should be established, processing centres should be HACCP accredited and especially at the level of producers aflatoxin can be prevented and reduced. However, the Bureau lacks funding for full implementation (Colley, 2013).

At the producer level, the International Trade Centre, together with the ASPA, trains farmers on good agricultural practices and quality enhancement to reduce aflatoxin levels to international standards. Generally, however, it has been noted that the problem of aflatoxin persists due to inadequate research and development, and limited agricultural extension services to support producers (GoG, 2012).

5.4.3 Infrastructure and logistics

The Gambia's groundnut sector is characterised by poor infrastructural conditions. Processing equipment and storage facilities are inadequate, and transportation costs from the farm gate to buying and processing centres are high (GoG, 2012).

Support is mainly coming from international donors. For instance, the International Islamic Trade Finance Corporation granted a US$ 14 million non-interest bearing loan to upgrade and modernize the Gambia Groundnut Corporation (GCC) and its processing facilities. The African Development Fund (AfDB) is financing the construction of the Trans-Gambian Corridor, an economic and strategic link connecting the northern and southern parts of the Gambia and Senegal that currently are characterised by several barriers like, check points, long customs procedures, non-reliable ferries across the Gambia River, and poor road conditions. Transaction costs are high, hindering national and regional trade (Africa Development Fund, 2013).

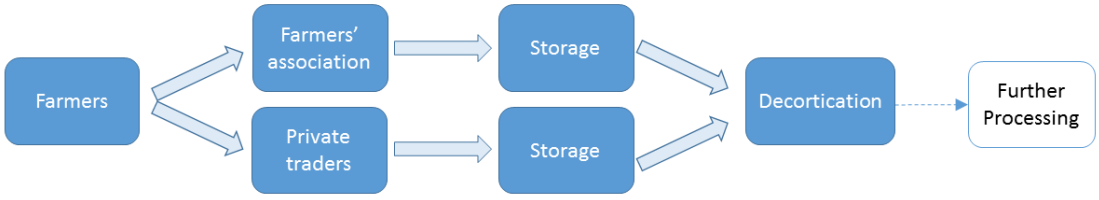
5.4.4 Governance and value chain actors

The Gambia has about 100,000-120,000 ha under cultivation planted with groundnuts (Colley, 2013). Production rests entirely on smallholder farmers with less than 10 ha of land; there are no commercial plantations (WTO, 2004). Groundnut cultivation provides an important source of income to an estimated 57,000 producers, which equals over 80 percent of the country's agricultural households (National Planning Commission, 2015). Groundnut producers are

often poorly organised and belong to the poorest segment of the population with a poverty rate of 76 percent (GoG, 2010). This highlights the important role of groundnut production for food security, as about 40 percent of the marketable groundnut crop is sold on the domestic market, offering an important source of protein to the local population (National Planning Commission, 2015).

Both the value chain for the higher quality 'handpicked selected' nuts (HPS) and the 'fair and average quality' nuts (FAQ) are similar. The current marketing system consists of a countrywide network of farmers' associations, known as cooperative produce and marketing societies (CPMSs), as well as private buying points operated by private traders (WTO, 2014). Farmers can sell their produce through either of the two, and also contract credit for production inputs (see Figure 5-12).

Figure 5-12 Groundnut value chain in the Gambia



Source: Authors' elaboration

Until 2014, farmers were offered a guaranteed producer price set by the Government, which was introduced through the 1999-03 Revitalization Strategy. The minimum price is coupled to a price stabilisation fund. The purpose of the price determination mechanism and stabilisation fund is to guarantee a floor price to farmers, calculated so as to provide them with a minimum margin on their yearly investment, plus, depending on the circumstances, an upward adjustment based on current market values (WTO, 2004). Farmers received between 60-65 percent of the export prices, depending on the parameters that were negotiated between the stakeholders and the exchange rates prevailing at the time. However, since the abandonment of the guaranteed price mechanism, prices for farmers seem to have dropped, which has encouraged the smuggling of Gambian groundnuts into Senegal.

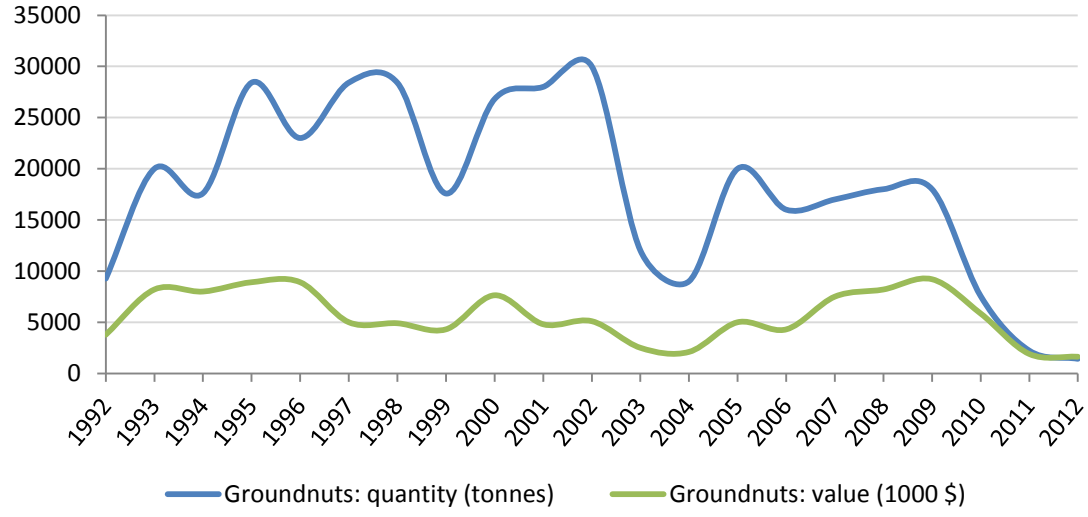
The CPMSs and private traders are responsible for the storage of groundnuts, and their sale to industrial operators, who are involved primarily in decortication. Often traders are employed by one of the industrial operators. Interviews revealed that from the 18 companies active in the Gambia five years ago, only two are still operating; the rest left or quit due to extremely high taxes, levies and other hidden trade barriers.

Only two industrial facilities to process groundnuts are currently in operation: the Denton Bridge and Buniadu decorticating plants; both operated by the Government (WTO, 2004). This showcases the continued dominant position of the Government in the groundnut value chain, despite official encouragement of private sector involvement and investments. Observers suggest that that the Government is enhancing its influence in key sectors, including groundnut processing/manufacturing, as well as in more sensitive areas, such as television, radio broadcasting and defence (US Department of State, 2015).

5.4.5 Trade

Since the 1980s groundnut exports from the Gambia have declined as a result of adverse climatic conditions, in-country marketing challenges, fluctuating world market price, and low quality nuts due to poor handling and inadequate post-harvest practices (GoG 2012). Exports declined from 52,000 tonnes with a value of US$ 27 million in 1975 to 1,400 tonnes with a value of US$ 1.6 million in 2012 (FAOSTAT, 2015) (see Figure 5-13).

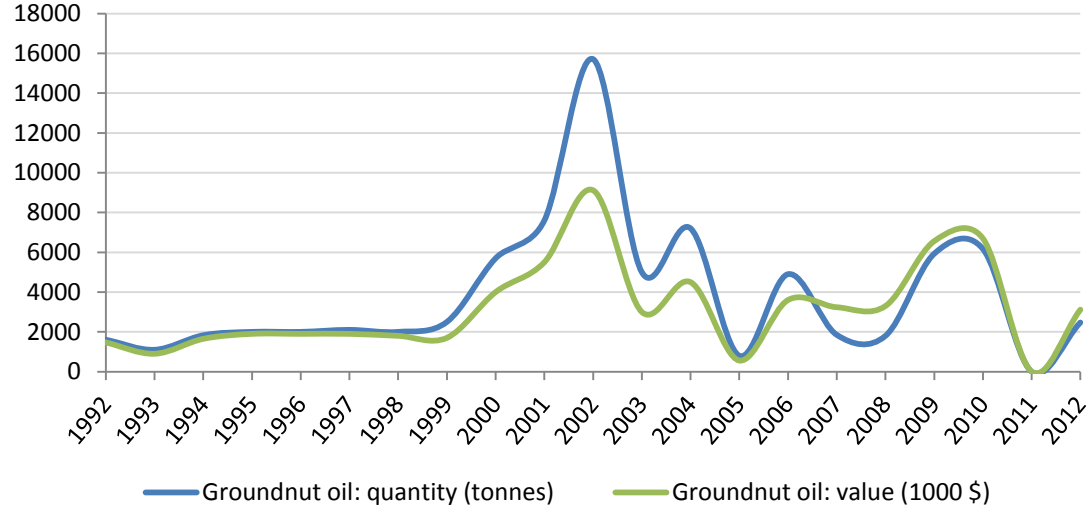
Figure 5-13 Exports of (shelled) groundnuts from the Gambia, 1992-2012



Source: FAOTSTAT, 2015

Exports of processed groundnut products in the form of groundnut oil have seen a similar decline, from 17,000 tonnes (US$ 15 million) in 1975 to 2,400 tonnes (US$ 3 million) in 2012 (FAOSTAT, 2015) (see). High levels of fluctuations in exports can be observed which mirror the high fluctuations in groundnut production (see Figure 5-11 again).

Figure 5-14 Exports of groundnut oil from the Gambia, 1992-2012



Source: FAOTSTAT, 2015

The low and declining exports are due to a variety of factors, including the increasingly stringent international quality requirements which pose problems for the Gambian groundnut sector, low productivity and erratic weather conditions. For example, the dry spells experienced during the 2006/2007 cropping season resulted in poor crop productivity. During this period there was a gross reduction in the productivity of all major crops. Groundnut production declined from about 82,000 tons in 2006 to 73,000 tons in 2007 (about 11 percent decrease), resulting in a decrease in exports.

The high aflatoxin levels are particularly detrimental to Gambian exports since the main export market is the European Union where official standards are strict. Consignments are often significantly higher in aflatoxin than international standards allow (100-200 ppb are not uncommon whereas the EU demands levels of 15 or 4 ppb) (Colley, 2013).

The Ministry of Trade, Regional Integration and Employment has overall responsibility for trade policies in collaboration with the Ministry of Foreign Affairs. Tariffs are set by the Ministry of Finance and administered by the Gambia Revenue Authority. Import tariffs are the main trade policy instrument: like most agricultural products, groundnuts protected are by an import tariff of 20 percent.

To attract foreign direct investment in processing and exporting facilities of groundnuts, the Gambia established the Gambia Investment Promotion and Free Zones Agency (GIPFZA) in 2002, whose primary task was to establish and manage Free Economic Zones. However, the free zone incentive did not manage to attract new export businesses and in 2010, the project was closed. Subsequently, GIPFZA was restructured and transformed into the Gambia Investment and Export Promotion Agency (GIEPA) with an extended mandate to also promote export and support small and micro enterprise development. The incentives to attract investors have been enhanced to increase private investment, but observers remain critical as to the success of the project (World Bank, 2013).

GIEPA seeks to promote the Gambia by emphasising the country's preferential duty rates and quota free export to ECOWAS countries (under the ECOWAS Trade Liberalisation Scheme), the European Union (under the Everything but Arms Initiative), the USA (under the African Growth and Opportunity Act), and India, Brazil and South Korea (under preferential duty rates for products from Least Developed Countries). Moreover, there are a number of measures in place that should incentivize foreign investors, including tax exemptions (e.g. for turnover and corporate tax for 5-8 years), import tax incentives (exemption of import taxes on direct project inputs, such as agricultural machinery) and export incentives (exemption of duty and sales tax on goods that are produced or imported within the Export Processing Zone). However, business competitiveness is constrained by the enormous number and high levels of duties/taxes on imports, high utility tariffs in particular with electricity, non-enforcement of property rights, delays in processing lease applications, challenges with acquiring land for project expansions, cost of credit by commercial banks, and lacking or low technical skills levels of the population (GoG, 2012).

5.4.6 Conclusions and lessons learned

Groundnut is the primary agricultural crop in the Gambia, serving both a staple food crop for domestic consumption and as an export commodity. As the groundnut sector has largely declined over the past two decades, the Gambian Government has identified groundnuts as one of the priority value chains to be rebuilt through its recent agricultural and export strategies.

However, due to a variety of challenges the Gambia is not in a position to meets its potential for groundnut production, processing and exporting.

At the production level, yields per ha are low and have even declined over the past decade. This is largely related to the use of traditional farming methods with little mechanisation, low-yielding seed varieties and lack of access to inputs. Unreliable rain patterns and pest and disease incidences also make groundnut production subject to significant fluctuations.

As most of the groundnuts are produced for domestic consumption and traded through the informal market where no quality standards or quality control exist, the quality of groundnuts is often poor. Incentives to improve quality do not exist. This aggravates any attempts to export groundnuts, as they do not conform to international quality standards. Particular problems are noted with regard to high levels of aflatoxin. This makes it difficult for the Gambia to take advantage of the export opportunities offered by favourable market access policies of the EU, the USA, India, Brazil and South Korea which all have zero or preferential duty rates for products from Least Developed Countries, such as the Gambia.

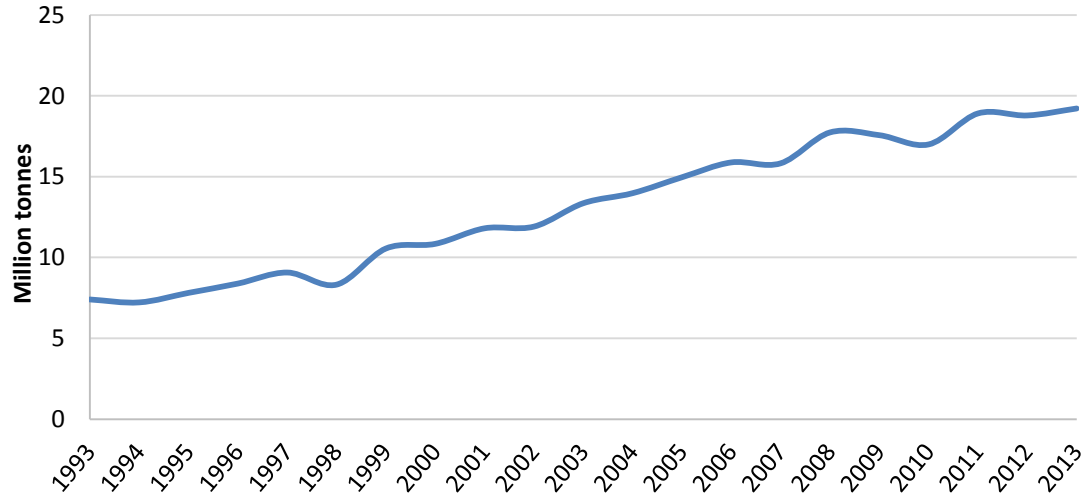
The above noted challenges also obstruct the development of a domestic processing industry for export purposes. While significant opportunities exist to process groundnuts and thereby increase the value added before exporting, very little processing is currently done in the Gambia. This also has to do with a generally unsupportive business environment: most private companies have left the groundnut sector due to a reportedly disruptive operative context.

5.5 The palm oil value chain in Malaysia

Since its introduction as an ornamental plant in 1875 and the start of the first commercial plantation in 1917, palm oil has turned into a high value contributor to Malaysia's development and the backbone of the economy. Production has increased steadily over the years by an average of 3.6 percent per annum up to a level of 19.8 million tonnes in 2014 with an export value of US$ 11.6 billion (IndexMundi, 2015; Exim Bank, 2015) (see also Figure 5-15). The sector's contribution to GDP and annual export earnings is estimated at approximately 5 percent each. More than 600,000 people are already employed by the palm oil sector and another 60,000 people are expected to be employed in the near future through the current expansion of the industry into biofuel applications (MPOC, 2013).

Malaysia currently accounts for 39 percent of world palm oil production and 44 percent of world exports (MPOC, 2012). The country is the second largest producer of palm oil after Indonesia and collectively the two countries account for 85 percent of worldwide production. While monoculture plantations are the main production systems in Malaysia, about 40 percent of total output comes from smallholder farmers.

Figure 5-15 Palm oil production in Malaysia, 1993-2013



Source: FAOSTAT, 2015

The confounding increase of palm oil production is connected to a growth in global consumption by 7 percent per annum over the past 20 years (Exim Bank, 2015). By now, palm oil constitutes the world's most widely consumed vegetable oil. Both palm oil and palm oil kernel have a wide range of applications: about 80 percent are used in food while the rest is feedstock for a number of non-food applications, including cosmetics, detergents and cleaning agents.

Global demand for palm oil is expected to continue to increase due to growing consumption in emerging economies, notably in India and China. The high demand for palm oil is also attributed to its relatively low price given the low production costs and high yields in Malaysia and Indonesia (Exim Bank, 2015).

While market prospects for growth are good, Malaysia is facing a specific set of challenges. Unlike Indonesia, Malaysia has hardly any new land left for further expansion of palm oil plantations. In 2005, the Government of Malaysia adopted laws against the further conversion of rainforest areas into new palm oil estates. Roughly 4 million ha are under cultivation and with little expansion prospects, the main sources for growth will come from (1) an increase in yield, (2) moving up the value chain and (3) regional downstream innovations, including processed food and biodiesel.

5.5.1 Institutional framework and public policy

Palm oil production and expansion has been promoted by the Malaysian Government since the 1960s to reduce the country's dependency on rubber and tin exports. A key driver for this effort was the establishment of the Federal Land Development Authority (FELDA) in 1956 to resettle the rural poor into newly developed agricultural land and organise palm oil production by smallholders. Subsequently, the government established further schemes to integrate the landless and unemployed into palm oil production, such as FELCRA and RISDA.

Palm oil falls under Malaysia's Ministry of Plantation Industries and Commodities (MPIC), which formulates policies and strategies for the overall development of the plantation and commodity sectors (MPIC, 2015). Although the sector receives hardly any direct financial government assistance in terms of subsidies, the government has set in place a considerable institutional infrastructure to support the development of the sector.

The main governmental agency is the Malaysian Palm Oil Board (MPOB), which was established in 2000, taking over the function of the preceding Palm Oil Research Institute of Malaysia and the Palm Oil Registration and Licensing Authority. The MPOB focuses on research and development to support both upstream and downstream operations. Its activities are financed by a research cess for every tonne of crude palm oil which producers are required to pay.

Palm oil and rubber together have been identified one of the 12 National Key Economic Areas of Malaysia's Economic Transformation Programme (ETP), launched in 2010 to assist Malaysia in achieving its goal of reaching high-income status by 2020. Eight entry point projects to promote the palm oil sector have been identified.

At the upstream level, the focus is on raising worker productivity, increasing the oil extraction rate, and accelerating the replanting of palm oil. The Government committed over US$ 135 million in 2013 to jump-start a national oil palm replanting programme targeting smallholder producers in the western and eastern provinces. In addition, it is assumed that privately held commercial palm oil companies will also replant upwards of 100,000 ha per annum, resulting in a net 200,000 ha per annum total replanting scheme. If this target is reached, Malaysia could theoretically eradicate the backlog of old trees by 2018 and reignite the national palm oil yield growth rate by 2020 (USDA, 2012a). Moreover, enhancing fresh fruit bunch yield is critical, as yields have been stagnating over the past 7 years, due to adverse weather, ageing trees, plant disease, and restrictive government labour and immigration policies (USDA, 2012a; USDA, 2014c). The latter aspect touches upon the labour shortages faced by the palm oil industry. Since palm oil is labour intensive, the country depends to a large extent on migrant labour from other Asian countries, with 21 percent of labourers on palm oil plantations being seasonal immigrants. Both government and plantation companies are therefore working on policies to mitigate the labour shortages (USDA, 2012a).

At the downstream level, the priority areas include developing biogas at palm oil mills for energy generation, developing oleo derivatives, advancing into food and health-based segments, and promoting biofuels. The focus on biofuels relates to the ongoing efforts of the Malaysian Government to explore into the global market for biofuels as the demand for renewable fuels has increased significantly over the past decade. In 2007, the Government passed the Malaysian Biofuel Industry Act to encourage the use of palm oil domestically. Since then all diesel fuel used in the transportation sector must contain at least 5 percent of palm oil biodiesel (B5). The Government recently announced that this would be increased to 7 percent from November 2015 onwards (B7). This would spur domestic consumption of palm oil biodiesel to 575,000 tonnes compared to 472,000 tonnes in 2013 (Exim Bank, 2015).

Malaysia also looked at the USA and Europe as potential markets for biodiesel. However, the US Environmental Protection Agency ruled that palm oil biodiesel does not qualify as a renewable biofuel. Market entry into the EU has been more successful, as the EU has mandated the increase of renewable energy in transport to 10 percent by 2020, which includes palm oil biodiesel (Renewable Energy Directive of 2009). All biodiesel imported must be produced in compliance with specific sustainability criteria to reduce greenhouse gas emissions without adversely affecting the environment or social sustainability. Nonetheless, the EU policy has received harsh criticism from NGOs and social movements as energy crops such as palm oil are competing for land with food crops. Therefore, the EU is currently considering reducing the contribution of food-based biofuels, such as palm oil, to 6 percent which would also imply a smaller EU market for Malaysian biofuel exports.

5.5.2 Standards

The rapid growth of the Malaysian oil palm industry has given rise to sustainability concerns related to social development and environmental protection, including deforestation of biodiversity-rich rainforests and rights violations of local communities. Largely due to public pressure originating in EU as one of the main importers of Malaysian palm oil, many Malaysian stakeholders participate in the Roundtable Sustainable Palm Oil (RSPO). The RSPO was established in 2004 as a multi-stakeholder initiative to develop and implement a global standard for sustainable palm oil. Headquartered in Kuala Lumpur, the RSPO currently has more than 2,000 members representing 40 percent of the palm oil industry (RSPO, 2015). Two different standards have been developed, one for plantations and one for mills, each covering matters relating to best agronomic and mill practices, economic, legal, environment, biodiversity, safety, workers, community and social issues. In addition to complying with the standards, RSPO members are required to carry out a High Conservation Value Assessment (HVA) before establishing new palm oil plantations.

The RSPO as a form of "private voluntary governance" is generally acknowledged to have played an important agenda setting role, having raised awareness of sustainability issues in palm oil (Schouten & Glasbergen, 2011). More than 120 Malaysian companies and organisations, including plantations, processors, manufacturers and environmental organisations, are affiliated with the RSPO.

At the same time, there are several voices criticising the RSPO for either having too weak social and environmental standards or for setting too high standards which are difficult for producers to adhere to. Particularly smallholder farmers are often thought to be left out of the opportunities offered by certified sustainable palm oil.

Therefore, the Malaysian Palm Oil Association (MPOA), which represents the Malaysian palm oil producers and is one of the key members under the RSPO's growers group, began developing its own national certification standard in 2011, the Malaysia Sustainable Palm Oil (MSPO). The MSPO standard was officially launched in January 2015 and is promoted on a voluntary basis. Many Malaysian companies who are RSPO-certified already expressed their interest in obtaining MSPO certification as well. Special focus will also be placed on facilitating compliance by small and medium-sized farmers by means of an initial fund of US$ 13.2 million established for this purpose. Independent smallholders seem to be more receptive towards getting MSPO certification compared to the costly certification process of the RSPO. At the moment, the MPOB acts as the governing body for the standard, but the plan is to establish a separate entity in the future, while the MPOB becomes the owner of the standard. A review of the MSPO, which encompasses criteria on sustainable agricultural practices as well as on environmental, social and economic aspects, is scheduled for 2018.

5.5.3 Infrastructure and logistics

Being one of the biggest producers and exporters of palm oil and palm oil products worldwide, Malaysia has an important role to play in fulfilling the growing global need for oils and fats (MPOC, 2012). The industry therefore relies on a well-organised system of logistics and infrastructure which is important for reasons of efficiency but also a necessity as it involves a product processed into numerous consumer products worldwide and thus health and safety are of great concern. A highly organised logistical set-up is reflected in the first steps of the production process at the palm oil estates. To avoid spoilage, fresh fruit bunches (FFBs) are to be milled within 24 hours after harvesting and on the larger estates an extensive logistical network of harvesting, transporting, milling and recycling of the plant material is in place. The first processing is done at the mill on the estate. The two main products from the FFB are crude palm oil and palm kernels (from which oil is extracted as well).

Crude palm oil for export is usually shipped overseas for further processing. Traders connect with the shippers who on their turn take care of custom clearance issues. Transport over land mainly goes by rail. In upcoming markets like in Central Asia logistics are seen as one of the market challenges for Malaysian palm products due to the landlocked location of many countries. Shipment through China remains the most viable option but limited wagons available on the Chinese railway into Russia and Kazakhstan, for instance, might delay consignment deliveries (Hidzir & Aspar, 2013).

Since the adoption of the Biofuel Industry Act in 2007, Malaysia has established a substantive infrastructure to produce palm oil biodiesel and production has grown steadily. However, due to continuous delays in implementing the government mandate to include biodiesel in all diesel used for transport, only 10 out of 29 biodiesel plans are in operation. In 2013, just over 330,000 tonnes of biodiesel were produced which is well below the annual production capacity of 3.5 million tonnes (USDA, 2014c).

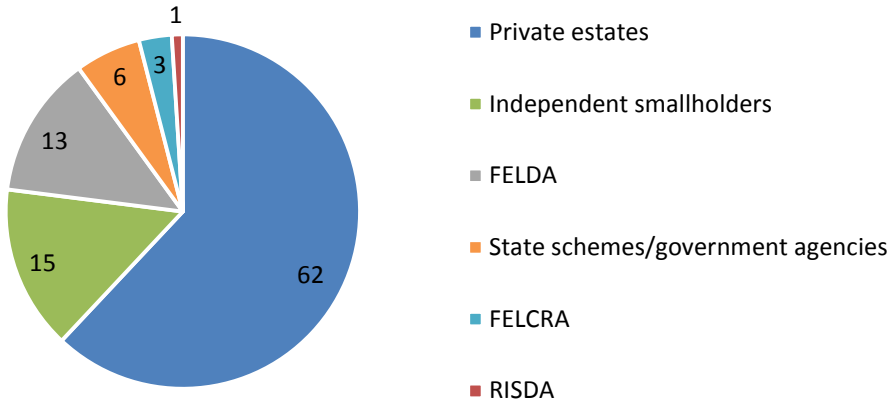
5.5.4 Governance and value chain actors

The palm oil value chain can be categorised into an upstream and a downstream part. In the upstream part, smallholder farmers account for close to 40 percent of the area planted, while the rest is attributed to large scale plantations (see Figure 5-16). There are two categories of smallholder farmers. The first are independent farmers with less than 40 ha (15 percent of the

area planted) who deliver the produce to the nearest collection centres. Several NGOs, such as Wild Asia, have programmes in place to provide technical support, training and capacity building to groups of independent smallholders (Nagiah & Azmi, 2012).

The second category is comprised of slightly larger farmers who are often organised in government schemes, such as FELDA (13 percent), FELCRA (3 percent) and RISDA (1 percent). These also organise the collection and processing of palm oil from smallholders. Each of the government schemes also operates large scale plantation companies in parallel, especially FELDA who is the largest single upstream actor. The majority of production area, however, is held by private estates (62 percent). These vary in size, from a few 100 ha to more than 100,000 ha (Cheng, 2002). High degrees of vertical integration can be observed, as all estates have their own nurseries, R&D departments, and infrastructure for milling. Many of the present day plantations have their beginnings in the colonial era but nowadays only very few companies have substantial or controlling foreign ownership (Cheng, 2002). The main companies are FELDA, United Plantations, IOI Corporation, and Sime Darby.

Figure 5-16 Distribution of oil palm on total planted area by category of growers, 2014



Source: MPOB, 2015
Abbreviations: FELDA: Federal Land Development Authority; FELCRA: Federal Land Consolidation and Rehabilitation; RISDA: Rubber Industry Smallholders' Development Authority

Several of the Malaysian estate companies have recently invested in downstream assets abroad, initially in neighbouring countries such as Indonesia (where Malaysian firms now own 25 percent of the palm oil acreage) and Papua New Guinea. More recently there has been a move to invest in plantations in West and Central Africa, such as Sierra Leone, Liberia, the Democratic Republic of Congo, and Cameroon.

Besides the production of crude palm oil, many estate companies are also involved in the downstream part of the chain, including palm oil refining, edible oil production, and manufacturing of basic oleo chemicals. This is due to the higher margins which can be achieved in the downstream value chain, as compared to the production level (e.g. El Fegoun, 2015). Therefore, a shift can be observed from general refined products to more specialised value added products. While downstream innovation used to be driven by oil refining hubs like the USA, Singapore and Europe, Malaysian companies have recently started investing in R&D centres at both firm and industry levels (Belai et al., 2011). Malaysian companies have also

expanded their downstream activities abroad by establishing oil palm refineries in consuming countries, such as the Netherlands, India, Pakistan, Bangladesh, China and Egypt (Cheng, 2002).

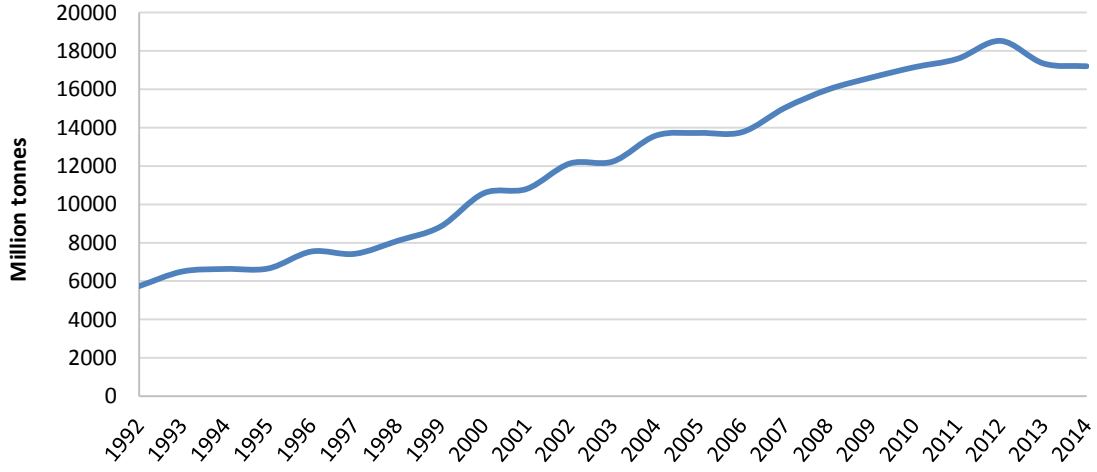
The diverse actors in the palm oil value chain are well organised at the industry level. The two most important associations are the Malaysian Palm Oil Association (MPOA) and the Malaysian Palm Oil Council (MPOC). While both a private, industry-funded organisations, they have strong ties to the Government.

The MPOA is the plantation owners' association with a membership of 29 companies with established palm oil plantations about 560,000 ha involving 274 estates and 36 palm mills. The organisation represents the industry in several government bodies and related industry organisations, including membership on the Board of the Malaysian Palm Oil Board (MPOB) and Chairman of the Board of Trustees of the MPOC (Cheng, 2002). Similarly, the MPOC, which is in charge of promotional and marketing activities of Malaysian palm oil, has close connections to the Government, including the MPOB and the Department of Environment.

5.5.5 Trade

Palm oil from Malaysia is widely traded and used around the world. The major export destinations are India, China and the EU. Exports from Malaysia increased steadily until 2012 and then experienced a drop in 2013 and 2014 (see Figure 5-17). The slump is continuing in 2015 as low global energy prices have reduced the demand for biodiesel from palm oil and record global oilseed supply, especially from soybeans, have reduced demand for crude palm oil.

Figure 5-17 Palm oil exports from Malaysia, 1992-2014



Source: Index Mundi, 2015

Malaysia introduced a multi-tiered tax system in 2013 which puts a tax of 5 percent on the export of crude palm oil. This is a "flexible" tax which is reviewed on a monthly basis, such that it was in effect in April 2015 but expended for May 2015.

Malaysia has identified growth potential in untapped markets in west and central Asia where most countries rely on imports from countries such as Turkey, Iran and Kazakhstan (Hidzir & Aspar, 2014). In Turkey, local production of oils and fats is unable to meet domestic requirements and therefore the country is importing oils and fats for domestic use. The 24 countries from the west and central Asian region together imported 1.5 million tonnes of Malaysian palm products in 2013. Despite challenges, e.g. logistics and the high costs of transportation of the individual countries in west and central Asia region, the use of Malaysian palm oil products for solid fats formulation has been identified as one of the strategies of market expansion in west Asia (Hidzir & Aspar, 2014).

5.5.6 Conclusions and lessons learned

Malaysia is the world's second biggest producer and exporter of palm oil. The sector involves both large-scale plantations, usually held by large Malaysia-owned companies, and smallholder farmers, who are often integrated in governmental plantation schemes but may also operate as independent smallholders. The industry is well organised with close ties to the Government of Malaysia. Both public and private infrastructure is in place, for instance for R&D and processing.

Since 2010, palm oil is one of 12 National Key Economic Areas identified by the Malaysian Government. As the country is running out of land that could support the spatial expansion of palm oil, other ways needed to be identified to promote the sector in the future. At the upstream level, the Government promotes the replanting of oil palm trees and productivity increases. At the downstream level, emphasis is placed on developing more value added activities in Malaysia. This includes the promotion of biodiesel from palm oil and the development of chemical, food and health-based industries in which palm oil is a key ingredient.

Meanwhile, large Malaysian companies are increasingly expanding their operations abroad by acquiring land in resource-rich developing countries for establishing palm oil plantations. Some have even acquired downstream operations, such as refineries, directly in consuming countries. This testifies to the growing involvement of Malaysian palm oil actors at all stages of the global value chain rather than merely being producers of raw materials.

However, palm oil production is increasingly confronted with a number of sustainability challenges, including deforestation, loss of biodiversity and climate change. While many Malaysian actors are members of the RSPO and the MPOA has even developed a local version of sustainable palm oil certification, the MSPO, the extent to which the industry manages to address and resolve such sustainability challenges will be critically watched by all actors involved.

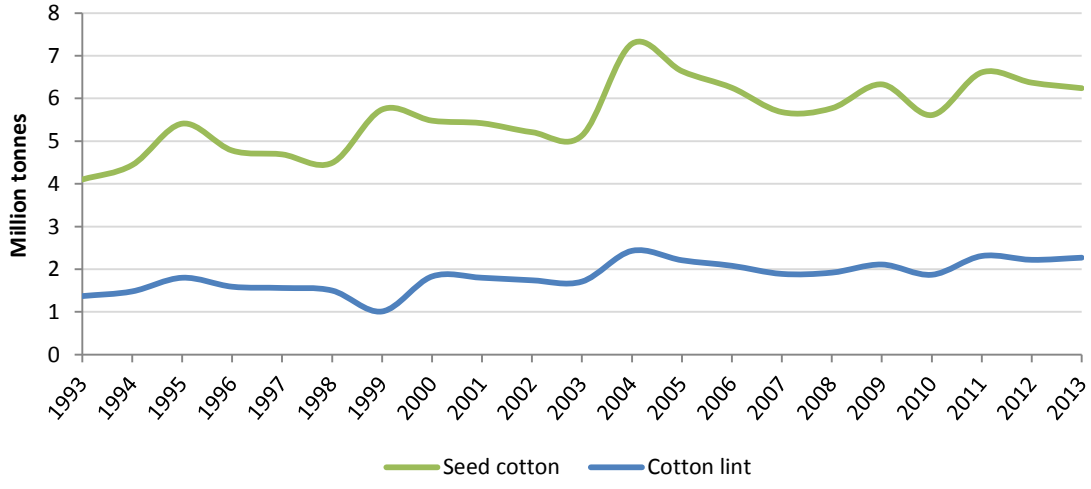
5.6 The cotton value chain in Pakistan

Cotton is the backbone and driver of Pakistan's economy. The country is the 4th largest cotton producer worldwide after China, India and the USA, the 3rd largest consumer of cotton and also the largest exporter of cotton yarn in the world. The cotton sector, together with the textile and apparel industry, accounts for 8 percent of national GDP and 50 percent of the country's export value, while employing 40 percent of the industrial work force (USDA, 2015). Cotton production thus supports Pakistan's largest industrial sector, comprised of over 425 textile mills, 1,000 ginneries, and 300 cotton seed oil crushers and refiners.

Grown on 15 percent of the country's arable land, cotton production is concentrated in the two provinces of Punjab (about 79 percent of production) and Sindh (20 percent) and cultivated by an estimated 1.6 million farmers with mostly small holdings of less than five hectares (USDA, 2015).

Cotton production has grown slowly between 1993 and 2013 to a total production volume of 6.2 million tonnes of seed cotton in 2013, which translated into 2.17 million tonnes of cotton lint (see Figure 5-18), with large fluctuations in cotton yields between the years. The main causes of these fluctuations are large-scale pest infestations and cotton diseases, which have hit production since the early 1990s and have caused high economic losses (Nazli, 2010). Losses are estimated to vary from 10-15 percent in average years to 30-40 percent in bad crop years (Salam, 2008). Although a wide variety of pesticides has been introduced to control the various cotton pests, fluctuation continues due to the proliferation of substandard chemicals and poor pest control methods (Nazli, 2010). Farmers' of overuse of pesticides has led to widespread problems of environmental pollution and has also resulted in higher production costs, as the pests have progressively developed resistance to these chemicals (Salam, 2008).

Figure 5-18 Cotton production in Pakistan, 1993-2013



Source: FAOSTAT, 2015

In addition to the recurring pests, cotton yields have suffered from a lack of quality seed, late wheat harvests resulting in delayed cotton planting, excessive rains at the time of sowing, and improper use of biotech seeds and pesticides by farmers (USDA, 2013b). Yields were at 757 kg/ha in 2014, which is relatively high compared to recent years and higher than in

neighbouring India, but lower than in many other cotton growing countries, such as China, the USA, Turkey and Brazil (IndexMundi, 2015). Due to the low yields, highly fluctuating production and increased domestic use, Pakistan has become a net importer of cotton lint (Nazli, 2010).

5.6.1 Institutional framework and public policy

The cotton and textile sectors in Pakistan have long been subject to strong state intervention. In 1974, the Pakistani Government established the Cotton Export Corporation which had a monopoly on cotton trade until the late 1980s when the private sector was once again allowed to buy cotton from ginners and export cotton or sell it domestically. During the period of state control, export taxes and domestic price policies kept cotton prices in Pakistan below world market prices by as much as one third (Salam, 2008). While this ensured the availability of low-cost cotton to the domestic processing industries, the policy led to low prices for cotton growers and exporters (Cororaton & Orden, 2007). The price management system finally broke down in the mid-1990s and domestic cotton prices quickly aligned with international market prices. Subsequently, the Pakistani government implemented far-reaching reforms to increase private sector involvement and reduced its own role to the annual review of the support prices of seed cotton and limited public sector procurements to maintain it (Salam, 2008).

Nevertheless, due to the high importance of cotton for the national economy, the Government continues to actively support cotton production, processing and textile manufacturing, including short-term interventions if necessary. In September 2014, the Government announced a cotton intervention price much above the prevailing market price to procure up to one million bales through the state-controlled Trading Corporation of Pakistan (TCP), as market prices had plummeted due to increased cotton imports from India which threatened to lower domestic production. However, as the TCP only purchased ten percent of the declared amount of cotton, the programme had little effect on the market and did not increase revenues for farmers (USDA, 2015).

More generally, since the 2000s the Government has taken various policy initiatives to boost the cotton and textile sectors, including the establishment of a separate Ministry of Textile and the implementation of a free trade policy for cotton with no quantitative restrictions on imports or exports. Until 2009, the Annual Trade Policy was the main policy document for the cotton and textile sectors. Since then the Government issues a comprehensive Textile Policy for periods of five years, the most recent being the 2014-2019 Textile Policy, announced in 2012. The policy addresses the complete cotton and textile value chains, and aims to develop the industry by focusing on increasing the value added in the country, enhancing productivity and improving quality. Concrete goals include the doubling of value addition from US$ 1 billion per million bales to US$ 2 billion within five years, the doubling of textile exports from US$ 13 million per annum to US$ 26 billion, and to facilitate additional investments of US$ 5 billion in machinery and technology (Government of Pakistan, 2015).

Other recent key Government documents include the Cotton Vision 2005 and Cotton Vision 2015, which are not official policy documents but represent coordinated efforts of sector development. Cotton Vision 2015, for instance, aimed to boost cotton production from about 12 million bales in 2010 to 19.1 million bales of cotton by 2015 through increases in the area under production and enhanced productivity. While this target seems to not have been met, as

production for 2014/2015 season is estimated at 10.5 million bales, the yields have been at a record high in 2014/15 at an average of 775kg per hectare (USDA, 2015).

Next to policy initiatives, cotton research has always received high priority in Pakistan, primarily aiming at developing new pest and disease-resistant cotton varieties that have high yield potential and desirable fibre characteristics. Priority is given to the disease of cotton caused by the Leaf Curl Virus which is particularly pervasive in Pakistan. A variety of research institutes are active in this field, including the Pakistan Central Cotton Committee, the Central Cotton Research Institute, the Pakistan Institute of Cotton Research and Technology, the Pakistan Agricultural Research Council, and a number of provincial Cotton Research Stations. Yet despite achieving varietal improvement, Pakistan still has not been able to achieve its full potential for cotton production and continues to struggle with a variety of pests and diseases.

The Government also offers extension services to farmers on Integrated Pest Management, but this has not been very successful on a broad scale (Salam, 2008). Moreover, the focus of extension services has been on production quantity, but not product quality, which contributes to the quality problems in the cotton industry (Ghulam, 2014).

Research on genetically modified cotton was initiated in Pakistan in 1995, involving both public and private sector institutes.[5] Although field trials were concluded successfully in 2005, Pakistan did not commercially adopt *Bacillus Thuringiensis* (Bt) cotton until 2010 due to delays in the approval of Bt varieties. This delay resulted in the adoption of unapproved Bt cotton varieties, which were developed based on a Bt variety that Monsanto had not patented in Pakistan and were first grown in the country in 2002 (Nazli, 2010). In 2007, already 60 percent of the growing area was under transgenic cotton (Nazli, 2010) – a number which rapidly increased to approximately 95 percent in 2014 (USDA, 2015). In 2010, Pakistan formally approved ten Bt cotton varieties for commercial use, resulting in the first officially commercial cotton crop cultivated in the 2010/11 season (USDA, 2013b). The Punjab Seed Council approved further Bt varieties in 2012, but at the Federal level progress in the commercialisation of Bt cotton has stalled since 2010, as three major laws have been pending in the national parliament since 2009: the Seed Amendment, the Plant Breeder's Right Bill and the Biosafety Law, all of which are considered necessary to regulate the development of transgenic varieties by establishing infrastructure for maintaining standards and quality control (USDA, 2012b). The USDA Foreign Agricultural Service views the introduction of new biotech varieties as unlikely until the regulatory environment is more certain (USDA, 2015).

5.6.2 Standards

The lack of (adherence to) quality standards is one of the central challenges of the Pakistan cotton sector: severe quality issues arise due to contamination and watering (Ghulam, 2014; USDA, 2015). Contamination takes place in different stages of the cotton value chain, including on the field, post-harvest management, storage and transport (Ghulam, 2014; USDA, 2015). Factors contributing to contamination include remnants from fabrics and polypropylene bags which the pickers use, leaf trash, cotton sticks, grasses or human hair (Ghulam 2014; USDA, 2015). This not only increases the costs of production, but even after cleaning, the contamination is entrenched in the yarn and affects the quality and value of the cotton (State Bank of Pakistan, 2005).

[5] Institutes include the National Centre of Excellence in Molecular Biology (University of Punjab), Agricultural Biotechnology Research Institute Faisalabad, Centre of Agricultural Biotechnology and Biochemistry (CABB), National Institute for Biotechnology and Genetic Engineering (NIBGE), and Nuclear Institute of Agriculture and Biology (NIAB)

Watering is another issue which affects the quality of cotton. Since the price of cotton depends on its weight, pickers tend to add water to increase its weight by picking cotton in the morning when there is still dew on it and by storing it on wet soil (State Bank of Pakistan, 2005; Ghulam, 2014).

Although most of the cotton production takes place in the informal sector, the central Government and the provinces have undertaken various initiatives to increase quality control in recent years. The Cotton Control Act aims to eliminate contamination by punishing the possession of contaminated cotton, and contamination-free cotton production programmes are set up by the Government with noticeable achievement, e.g. Clean Cotton programme (International Cotton Advisory Committee, 2012). Moreover, the Government established the Pakistan Cotton Standard Institute (PCSI) to develop and uphold quality standards for seed cotton and cotton lint. While the PCSI trains value chain actors on quality improvement and maintenance of the quality, the impact seems to be limited due to little cooperation from the ginners (Ghulam, 2014). In its 2014-2019 Textile Policy, the Government of Pakistan openly criticises that "the resistance to grading and standardisation of cotton bales by ginners and spinners alike has consistently lowered the value of Pakistani cotton by around 10 cents per pound in the international market" (Government of Pakistan, 2015).

Further efforts to promote adherence to quality standards are implemented by the Pakistan Central Cotton Committee (PCCC), a semi-autonomous body with the Federal Minister for Textile Industry as its president. The PCCC develops extensive research and outreach programmes to improve the quality of cotton production, processing and marketing. This is supported by a network of organisations with quality labs to test, evaluate and monitor the fibre quality of cotton.[6]

Social and environmental standards also exist in the cotton chain. Firstly, Pakistan signed the most important International Labour Conventions and established policies such as a National Action Plan for Children, National Education Policy, Provincial Plans of Action to Combat Child Labour. However, there are various implementation gaps in the cotton sector, and inadequate working conditions and child and forced labour continue to exist (United States Department of Labor, 2013; Better Cotton Initiative & IDH, 2013).

Secondly, global voluntary standards have been introduced to cotton production in Pakistan. While production according to Fairtrade and organic standards remains negligible, production that follows the standard of the Better Cotton Initiative (BCI) has recently increased since its first introduction in Pakistan in 2010. The BCI is a global multi-stakeholder initiative, headquartered in Geneva, which brings together actors from all stages of the value chain, multinational brands, and civil society organisations to transform cotton production and make sustainable cotton production the mainstream standard. Since 2010, BCI and WWF-Pakistan have worked in Punjab and Sindh with smallholder farmers and in 2013, they reached 46,500 farmers producing 157,000 million tonnes of Better Cotton lint on 193,000 hectares (BCI, 2014). In comparison with conventional farmers the programme observed a 15 percent increase in yields, a 24 and 17 percent decrease in pesticides and synthetic inputs, respectively, and a 42 percent higher income for BCI farmers through improved input management and pest control (BCI, 2014).

[6] Organisations with quality laboratories include the PSCI, Pakistan Central Cotton Committee, Synthetic Fiber Development & Application Center, Karachi, Textile Institute of Pakistan, University of Agriculture, Faisalabad, National Textile University, Faisalabad, Nuclear Institute of Agriculture & Biology, Faisalabad, and National Institute of Biotechnology & Genetic Engineering, Faisalabad.

5.6.3 Infrastructure and logistics

Since 1999, the textile industry has invested a total of approximately US$ 6.8 billion in improving its infrastructure and modernising its mills and factories (USDA, 2014d).

The break-up of total investments indicates that 50.2 percent of investment was directed in the spinning sector, followed by 17 percent in textile processing, 15 percent in weaving whereas the investment in other sectors, namely knitwear, made ups and synthetic textiles, were at respective rates of 7 percent, 4.7 percent and 5.8 percent (UNCTAD & Commonwealth Office, 2011).

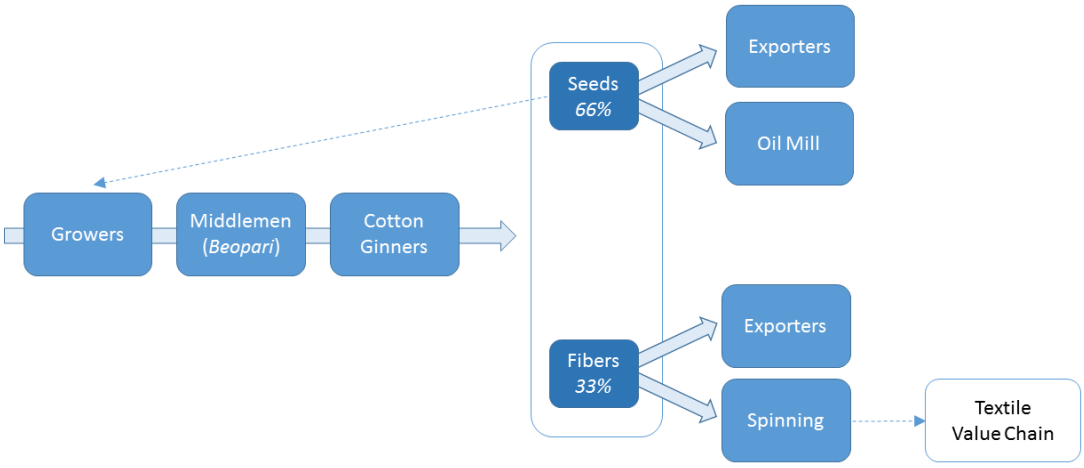
However, the industry still faces challenges in keeping up with its competitors, as it failed to diversify and upgrade its production capabilities by using better materials and technologies in the production value chain (USDA, 2013b). The Textile Policy 2014-2019 recognises the decrease in investment in the cotton and textile sectors since 2007 and the resultant production inefficiencies. "The overall technological configuration of the industry needs major up-gradation for replacing that machinery which has become obsolete or has outlived its economic life" (Government of Pakistan, 2015). The Policy identifies a need for additional investments of US$ 5 billion in machinery and technology for both basic and value-added activities.

The lack of a reliable electricity supply due to frequent power outages is a further problem facing the cotton and textile industry. Load shedding and power cuts are particularly detrimental during the harvest period, as cotton cannot be processed and prices decrease rapidly (Ghulam, 2014). This contributes to rising costs of production and processing, together with increasing costs for inputs such as water, fertiliser and pesticides. Another constraint is the limited availability of water for irrigation during peak sowing season from April to June, particularly in the province of Sindh. Since much irrigation infrastructure is operated through electricity, frequent power cuts add to water shortages for cotton production (USDA, 2012b). The textile industry has therefore invested in its own energy infrastructure for mills to meet export demands (USDA, 2014d).

5.6.4 Governance and value chain actors

The cotton value chain consists of input suppliers, cotton producers, middlemen and ginning factories that separate the cotton fibres from the seed and thus turn seed cotton into cotton lint (see Figure 5-19). In the subsequent textile value chain, the cotton is processed into cotton yarn by spinning factories, sold to the textile industry which weaves it into fabric and finally the garment industry produces textile items, such as clothing. Output at each stage of the value chain can be exported.

Figure 5-19 Cotton value chain in Pakistan



Source: Authors' elaboration

There are approximately 1.6 million cotton producers in Pakistan, of which farmers cultivating less than 2 ha account for 49 percent of the total cotton growing farms and contribute close to 20 percent of the total cotton output. Producers sowing on approximately 5 ha or less constitute more than 80 percent of all cotton farmers (Salam, 2008). In contrast, farmers growing on 20 ha or more account for only 2 percent of farmers but produce on 14 percent of the entire cotton growing area (Salam, 2008).

Particularly small-scale farmers are highly vulnerable to the risks involved in cotton production stemming from the devastating impact of pest infestation. While extension services are offered by both public bodies (e.g. provincial agencies) and private organisations (e.g. NGOs), pest control remains problematic due to its high costs, the sophisticated nature of the methods and technologies involved – farmers are often illiterate – and the proliferation of substandard pesticides in the market (Salam, 2008; Khan et al., 2011).

After hand-picking the cotton through seasonal, often female employment and family labour, most farmers sell their product to middlemen, so-called village beoparis, who collect the cotton directly at the farm gate (Kahn et al., 2011). Especially small-scale farmers depend on the beopari and are obliged to sell their crop immediately after harvest, as they lack the physical facilities for storage and do not have the financial capacity to hold onto their product for better prices (Salam, 2008). Some middlemen offer credit to help with pre-harvest liquidity constraints, in return for the marketing rights to the harvest. Contracts do not exist within this chain and little information is transferred between the actors, so that farmers are not aware of the prices and margins along the chain (Ghulam, 2014). This situation makes smallholder farmers vulnerable to exploitation.

After weighing the seed cotton, the beoparis transport it to the ginning factories. Contamination levels at this point of the value chain are high due to improper on-field treatment and post-harvest management by the farmers, and inadequate methods of transport and storage used by the beoparis. Studies indicate that this leads to relatively small margins for beoparis, as they are penalised for contaminated seed cotton at the ginning factories (CABI South Asia, 2010; Khan et al., 2011).

The cotton seed is processed in the ginning factories into cotton lint, which is pressed and converted into bales weighing 480 lb. The ginning sector is fragmented and out of the approximately 1,000 units country-wide (USDA, 2015) most are small to medium-sized. In rural areas, small and micro ginning stations are operated for the use of the local community (Altaf, 2008). The cotton lint is sold through commission agents to spinning factors, where the cotton fibres are converted into yarn and then sold to weaving units and textile mills.

The textile and garment sector consists of small, medium and large-scale units, most of them having 50 machines and below. About 450,000 stitching machines are installed in 600 large and 4,500 smaller units (UNCTAD & Commonwealth Office, 2011). In this part of the chain significant value added can be captured. For instance, a study by Javed et al. (in Cororaton et al., 2008) shows that in 2002, the export price for cotton lint was US$ 0.87 per kg, whereas the value of garments was US$ 13.62 per kg. Therefore, the Government of Pakistan has identified textiles as a key priority sector, and is taking steps to introduce appropriate policies and incentives that can spur expansion and draw more private sector investment in this value added sector (USDA, 2014d). However, the Government also acknowledges that the textile and garment sector has grown only marginally in recent years due to its limited product range, low usage of man-made fibres and the inability of manufacturing units to restructure themselves to meet changing international demands (Government of Pakistan, 2015). In addition, the lack of skilled human resources, low employment of women in the garment sector, and absence of modern management practices are identified to obstruct increased value-addition and enhanced exports in the entire textiles chain (Government of Pakistan, 2015).

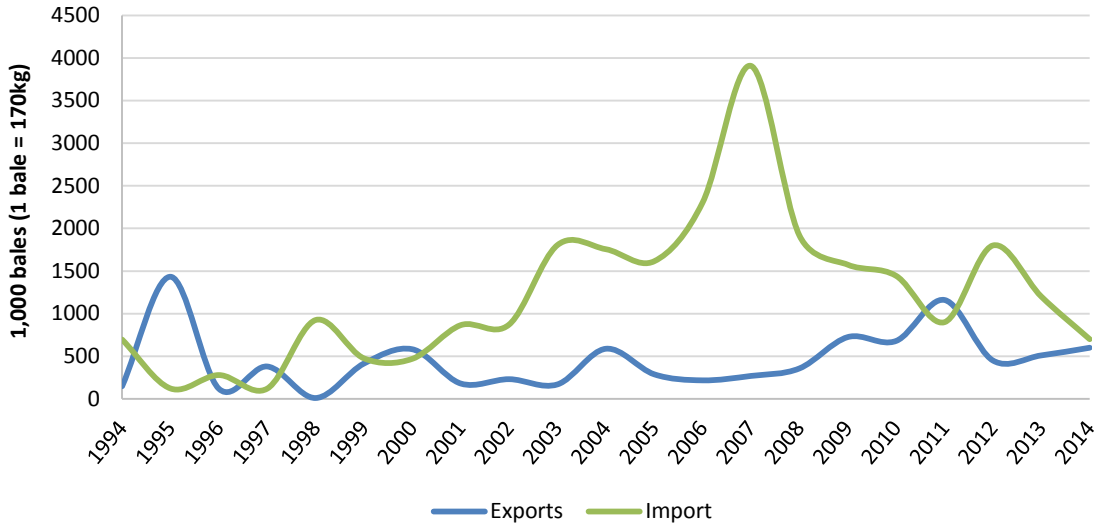
The high number of small and medium sized units in the Pakistan cotton and textile value chain, from producer units through to manufacturing units, shows a high degree of fragmentation of the industry, without the existence of a single power centre. Chain concentration and buyer power is most evident in those parts of the value chain not located in Pakistan, namely branded manufacturers and clothing retailers in consuming countries (e.g. Lund-Thompsen & Nadvi, 2010).

5.6.5 Trade

Since the abolishment of the export monopoly of the state-owned Cotton Export Corporation in the late 1980s, exports and imports of cotton have been in the hands of the private sector and do not fall under any quantitative restrictions or duties imposed by the Government.

Since the mid-1990s, Pakistan has been a net importer of cotton (see Figure 5-20), primarily because of strong demand for better grades of cotton for producing export oriented quality textile products, whereas domestically produced cotton is mostly medium staple. Large amounts of extra-long staple cotton are therefore imported from the United States (Pima and Upland cotton), India (Suvin cotton) and Egypt (Giza cotton). In addition, Pakistan imports significant quantities of short to medium staple cotton from India and Brazil to augment domestic supplies for processing and textile manufacturing. In 2014, total cotton imports declined to 700,000 bales (IndexMundi, 2015), but are expected to rise steeply to 2 million bales in 2015 due to expectations of weaker domestic cotton production coupled with increased domestic consumption (USDA, 2015). As global market demand for better quality fabrics is growing, Pakistan's textile industry is expected to rely increasingly on imported long staple and quality cottons.

Figure 5-20 Cotton exports and imports of Pakistan, 1994-2014



Source: IndexMundi, 2015

At the same time, Pakistan continues to be a major exporter of cotton. In 2014, exports amounted to 600,000 bales and are forecast at 500,000 bales in 2015 due to an expected weak cotton harvest. However, exports of cotton products, especially as textiles and garments, are expected to increase, as Pakistan has been granted "Generalized System of Preferences" (GSP Plus) status to the European Union from 2014 through to 2017, which allows 20 percent of Pakistani exports to enter the EU market at zero tariff and 70 percent at preferential rates. These concessions serve to help Pakistan's economy recover from the devastating 2010 floods. Since 30 percent of Pakistan's textile exports are destined for the EU, the GSP Plus status may increase textile exports to the EU by US$ 1 billion every year. This is expected to raise imports of cotton to satisfy export demands (USDA, 2015).

Of particular note is the increasing trade in cotton and cotton products between Pakistan and India which has developed since 2003/04, despite continued unresolved political issues. Cotton imported from India increased from US$ 455 million in 2004/05 to US$ 716 in 2012/13, making India the biggest supplier of raw cotton for Pakistan and turning Pakistan into the biggest destination for Indian agricultural exports (39 percent of total agricultural exports) (Chand & Saxena, 2014). Vice versa, Pakistan also exports small amounts of raw cotton to India, but mostly sells value added cotton fabric and textiles to India, which in 2012/13 was worth US$ 60 million (Chand & Saxena, 2014). The growing trade is facilitated through the reduced tariff limits under the South Asian Free Trade Area (SAFTA), which dictates a reduction of tariffs to 5 percent with effect from 1 January 2013.

5.6.6 Conclusions and lessons learned

Pakistan is one of the main players in global cotton production and consumption, and the cotton and textile sectors are the mainstay of the country's economy. While yields and cotton output have increased over the past two decades, Pakistan has not been able to take full advantage of its cotton production. Seed quality and agricultural practices are generally poor, and pest infestations and cotton diseases lead to huge economic losses each year. Therefore,

great hopes are vested in Bt cotton varieties to improve the resistance of cotton plants. However, continued delays in the areas of seed law adoption are currently stalling the further development of Bt cotton.

Issues of poor quality cotton also impact on the economy and drive up imports of more expensive, higher quality cotton. Yet, as long as general quality standards are lacking or not adhered to, cotton produced in Pakistan will continue to be of mostly mediocre quality due to widespread practices of adulteration of seed cotton with water and foreign matter. Although this problem is recognised by the Government of Pakistan, joint efforts of public and private actors seem necessary to ensure cotton quality.

Similarly, upgrading of infrastructure (e.g. mills) is needed to reduce the costs per unit. This seems particularly challenging, as much of the machinery belongs to small and medium-sized processing and textile manufacturing units which increases the costs due to scale diseconomies. At the same time, investments are essential if Pakistan wants to move up the value ladder and focus on developing the ready-made garment sector which sits as the top of the value added chain, as also emphasised by the Government in its latest Textile Policy.

In this context, the Pakistan's current GSP Plus status to the EU is expected to result in a considerable push to the cotton and textile sectors. Exports are estimated to increase by US$ 1 billion per year, which can spur the expansion of the sectors and stimulate enhanced private and public investments.

6. Findings and recommendations

6.1 Findings

In many OIC Member Countries, **agriculture is one of the most important economic activities**. The relative importance of the agriculture sector varies between the Member Countries, and is generally most prominent in countries with lower levels of GDP per capita. Within the OIC, agriculture's relative importance is thus highest for the African OIC region and lowest for the Arab OIC region.

If one considers the broader agricultural value chain, including input supply, processing and retailing (much of what is classified as services and to a lesser extent as manufacturing) the importance of agriculture becomes even more pronounced. In this segment of the value chain, referred to as agribusiness, about 78 percent of agricultural value added is captured (World Bank, 2013). Global experience suggests that the importance of agribusiness activities increases with rising GDP per capita.

6.1.1 Institutional framework and public policies

Most OIC Member Countries pursue a **policy of achieving self-sufficiency in food production**. Accordingly, the main agricultural products produced in the OIC are staple crops, such as wheat and rice. This indicates that agricultural value chains are primarily targeted at meeting domestic food consumption and are overwhelmingly local. Nevertheless, despite this focus on self-sufficiency, most OIC countries – with few exceptions – are net food importers. Due to generally low productivity, increasing resource scarcity and weak infrastructure, local production capacities are not sufficient to meet the demands of the population, although many OIC countries used to be agricultural net exporters in the past. In 2015, 21 out of 57 OIC Member Countries are even classified by the FAO as food insecure and are dependent on external assistance for food supplies.

The food deficiency in many OIC Member Countries points towards a **general disregard of agriculture by policy-makers**. Various countries that are rich in other raw materials, such as oil and gas, have focused on those sectors rather than agriculture in the past. Lack of policy implementation is also a frequently encountered reason hampering increased and effective political backing to agricultural value chains in OIC countries. Insufficient support in terms of research and development and effective extension services has led to overall low access to agricultural innovation (e.g. high quality seeds), low yields, low human capacities, declining water resources, decreased soil fertility and increased pressure on land resources. Climate change, including increased aridity, extreme weather events, and higher proliferation of pest incidences, threatens to compound these problems and result in declining productivity or production losses.

The weak support to agriculture also indicates the presence of **institutional voids**, which is particularly challenging for smallholder farmers who are not organised or who do not have access to services through other value chain actors. For instance, many Egyptian small-scale dairy farmers suffer from the near absence of veterinary, breeding and quality control services to help them improve productivity and adhere to basic hygienic standards. Not only do these farmers subsequently sell most of their milk through informal markets, where the value added is generally lower than in formalised markets, but the widespread consumption of raw milk

with high rates of bacterial contamination also poses a considerable health risk to consumers – turning an agricultural challenge into a concern for national health.

In recent years, however, **increased attention to the development of export-oriented value chains** to realise the economic potential of agriculture as a contributor to revenues and employment can be observed across OIC countries. Countries such as Indonesia, Malaysia, Pakistan and Cote d'Ivoire have long been global players in the production and export of specific agricultural commodities, such as palm oil, cotton and cocoa, respectively. In Malaysia, for instance, palm oil production has enjoyed considerable governmental support since the 1960s and is nowadays one out of 12 National Key Economic Areas.

Several recent best practices also exist, and a number of OIC Member Countries have managed to position themselves competitively in global value chains, such as different African, Mediterranean and Arab countries in high value horticulture chains destined at EU supermarket outlets. Other high value agricultural products include dairy and meat products, for which significant growth and export potential exist if sector development were promoted and supported by the government. The dairy and red meat sectors in Egypt and Turkey, respectively, seem to be cases in point – both are still largely focused on domestic consumption but with continued modernization export markets may be explored.

6.1.2 Standards

One of the main problems for the promotion of agricultural value chains in OIC countries is the **lack of standards for food safety and quality or low levels of compliance with standards**. The lack of standards starts at the input level (e.g. poor quality seeds and substandard agrochemicals) and carries on through production (e.g. poor agricultural practices, overuse of pesticides and inadequate pest management), post-harvest management (e.g. lack of adequate post-harvest handling), storage and transport (e.g. lack of cold chains and inadequate means of transportation), processing and manufacturing (e.g. poor hygienic practices). This is a recurring theme across the cases analysed due to the informal character of many value chains in OIC countries.

In Saudi Arabia, for instance, the high incidence of pests and diseases, and high levels of bacterial contamination of dates is a direct consequence of generally poor quality control and quality standards, despite an otherwise enabling institutional environment for date production. Yet, in the predominant informal date value chain, few incentives exist for farmers to adhere to quality standards. Price premiums would be the main market mechanism to promote compliance with standards, but informal value chains are often characterised by a lack of differentiation and specialisation of production where standards are not important.

Similarly, groundnut production in the Gambia suffers from the absence of quality standards and control, which results in high levels of aflatoxin measured in groundnuts. This hinders attempts to export groundnuts, despite the preferential duty rates offered to the Gambia as a least developed country, as importing countries have much stricter standards with regard to aflatoxin and either reject groundnuts from the Gambia or demand heavy price discounts.

Lack of (adherence to) standards also poses challenges for the processing sector, as the cases of red meat from Turkey, milk from Egypt, and cotton from Pakistan illustrate. In Pakistan, for instance, the lack of rigour along the value chain leads to domestic production being dominated by medium staple (i.e. lower quality) cotton. As the Pakistani textile and garment industry requires long staple cotton to produce high quality fabrics for exports, cotton imports

have soared and since the mid-1990s, Pakistan is has been a net importer of cotton, despite being the 4th largest producing country worldwide. This points towards a missed opportunity to increase value added and develop a high value, integrated cotton and textile chain in Pakistan.

At the same time, not all value chains in OIC countries comprising smallholder farmers suffer from an absence of standards, as the case of palm oil from Malaysia showcases. Large parts of the Malaysian value chain are formalised whereby many smallholders are organised into larger production schemes. Value chain actors are generally well organised, and the state is active in infrastructural development and policy support. This has facilitated a significant amount of producers being members of the standard initiative "Roundtable on Sustainable Palm Oil" and creates optimistic projections for the promotion and speedy adoption of the new sustainability standard developed by the (government-owned) Malaysian Palm Oil Board.

6.1.3 Infrastructure and logistics

Many OIC Member Countries have relatively **weak infrastructural environments** for agriculture. Problems occur at different levels, including weak research and development, deficient quality control systems, lack of transport and storage capacities, and inefficient processing operations.

Infrastructural development seems particularly important with regard to **agro-processing** for increased value capture. Currently, many processing facilities in OIC countries need to be upgraded to improve efficiency, such as in the cotton sector in Pakistan, or operate well under capacity due to the lack of sufficient produce meeting the quality requirements in order to be processed, such as with dates in Saudi Arabia or groundnuts in the Gambia.

While this points towards the need for private sector involvement, the **business environment and investment climate in many OIC countries is rather poor**. Out of 189 countries that are compared by the World Bank's Doing Business Report 2015 on a variety of indicators on starting a business and protecting investors, the **OIC Member Countries score an average of 126 out of 189.** The best performing OIC country is Malaysia on place 18 overall, compared to the worst performing country Libya, ranking 188. The overall poor performance of OIC countries in this field hampers private sector involvement for infrastructural development in the agricultural sector.

6.1.4 Governance and value chain actors

Many value chains in OIC Member Countries have a **dual character**: informal and formal chains co-exist and often serve different markets. Informal chains are aimed at local processing and/or local markets; whereas formal chains serve modern processing and market outlets, including export markets. Dates in Saudi Arabia, milk in Egypt and red meat in Turkey serve as illustrative examples for such dualistic value chains.

The predominant value chains in terms of the number of actors involved and the quantity of products produced and traded are often the informal value chains. These **informal chains rest on small-scale, labour-intensive production** with low levels of technology and modern inputs. As such, they are characterised by **considerable fragmentation** due to the large number of small-scale farmers in rural areas with unfavourable transport connections and/or geographical distance to processing and marketing opportunities. In some chains, for example

in the Pakistani cotton chain, processing units are also mostly small-scale which further increases the fragmentation of the value chain. Such a dispersed value chain set-up represents a challenge in terms of improving efficiency and the value added and captured by each chain actor.

At the same time, many OIC countries also have a **parallel, commercial agricultural sector** based on **medium to large scale farming enterprises** which are often integrated into the large value chain through vertical integration or at least feature high(er) degrees of vertical coordination. These chains surpass smallholder chains in terms of value creation due to higher levels of mechanisation, higher productivity and efficiency, compliance with food safety and quality standards, and access to modern processing and retailing outlets. In the case of Malaysia, for example, there is a high occurrence of large-scale plantations that are often part of larger industrial conglomerates. These big agribusiness companies increasingly expand their upstream operations abroad by acquiring plantations in other, land-rich countries. Some also venture into downstream operations, such as refineries, to increase their value added. The Malaysian agribusiness companies showcase the tentative, yet increasing trend of emerging country actors to become involved in all stages of the value chain rather than merely being suppliers of raw materials. Significant **opportunities to increase the value added** of emerging country actors are associated with this trend.

The co-existence of both formal and informal value chains calls for **efforts to integrate smallholder farmers into formalised chains**. OIC countries offer a highly diverse picture with regard to how they seek to promote smallholder inclusion. This study has identified four main (non-exclusive) policy mechanisms used in OIC countries. Indonesia, Senegal, Malaysia and Bangladesh aim to promote an **integrated development of smallholder farmers and commercial agriculture** by establishing institutionalised linkages between the two, such as contract farming schemes. Uganda, Turkey, Jordan, Egypt or Mauritania, for instance, have policies in place to promote **producer organisation** in order to reduce the number of chain actors and facilitate access to formal markets for small-scale farmers. Other countries are (often simultaneously) promoting the use of **public-private partnerships** to foster smallholder integration, for instance with donor agencies or large multinational companies. Uganda, Indonesia, Egypt and Nigeria serve as examples of OIC countries supporting this approach. Finally, a number of OIC countries heavily rely on **donor or NGO programmes** to assist farmers in linking to formal value chains. There are also still some OIC countries that have not yet articulated a specific policy to promote smallholder inclusion or that have not implemented such a policy, including Saudi Arabia, Chad and Oman.

6.1.5 Trade

Trade in agricultural products in OIC Member Countries has grown tremendously from 2002 to 2012. There are big differences in trade flows within the OIC. The Arab region constitutes the biggest importer of agricultural products within the OIC (about 50 percent of all agricultural imports), while the Asian region is the main exporter of agricultural products within the OIC (75 percent of all exports). Both import and export trade flows are dominated by high income countries: 54 percent total OIC agricultural exports go to high income countries while 51 percent of all OIC imports come from high income countries. At the same time, an increase in intra-OIC can be observed over the past ten years, but still agricultural trade among OIC Member Countries is only 3.2 percent of all trade activities of OIC countries.

Overall, **export levels remain low in the OIC**. Food is mainly produced for domestic consumption purposes and not oriented towards the demands of overseas consumers.

Considerable bottlenecks and obstacles to increasing export and trade in agricultural products still exist in many OIC countries, such as import tariffs and administrative burdens of cross-border economic activities. Quality problems, such as high levels of bacterial contamination of agricultural products or noncompliance with international standards, often impede access to lucrative export markets. These problems are particularly severe for least developed countries within the OIC that lack the required infrastructure to ensure and maintain the quality of products. In this way, they are often not able to make use of preferential access to high income markets which they are granted based on their least developed country-status. For instance, the Gambia has duty-free access to the EU, the US, Japan and a variety of emerging economies, but is unable to export significant quantities of groundnuts as production does not comply with international norms.

6.2 Recommendations

Increased attention for agricultural value chains

Although the share of agriculture in GDP and employment tends to decrease as an economy develops, agricultural value chains provide a way to promote economic growth and contribute to poverty reduction. Opportunities for value creation abound in agricultural value chains – for instance through increased processing, service provision, and market specialisation. While traditional export markets in high income countries (e.g. in the EU) continue to be lucrative outlets for high value products, such as fresh fruit and vegetables, emerging economies are turning into the leading source for demand growth for agricultural products, particularly for meat and dairy products, due to growing populations and rising incomes. These dynamics in international trade patterns offer opportunities for economic growth, poverty reduction and food security through agricultural value chain promotion.

6.2.1 Institutional framework and public policies

Increased political commitment and public policies

Governments have a key role to play in value chain promotion, starting from production and processing through to distribution and consumption activities. Reducing the role of agriculture to the mere aspect of production does not capture the opportunities for value creation along agricultural value chains – many of which lie in the manufacturing and services sector. Continuous political commitment and designated strategies are critical to promote key value chains, i.e. value chains where individual countries have a comparative competitive advantage, be it in production, processing or distribution.

Improving agricultural output and sustainability

Many OIC Member Countries are confronted with the need to feed a growing population on the one hand and decreasing availability of agricultural resources, such as arable land and water, on the other. Increasing agricultural output without putting too much pressure on the environment is thus critical, particularly in the face of climate change. This requires specialised research institutes and effective extension services dedicated to improving the cultivation and processing of certain crops and breeding of livestock. This is particularly needed when the private sector does not show an interest in establishing or financing such institutes.

Better crop varieties with more value added

Many producers in the OIC countries struggle with low productivity (low yields) and low quality production due to the continued use of substandard crop varieties. Others grow

varieties that are not demanded by the market. The use of better crop varieties, both in terms of production-related characteristics and market-related characteristics, is an urgent challenge that needs to be addressed; for instance, through facilitating a better and more regulated seed supply, and incentivising private investments in the seed sector. This has the potential to contribute to increase value added, particularly by farmers.

Crop varieties suited to local conditions

Context-specificity in terms of the availability of natural and human resources is a critical issue to consider. For instance, the area suitable for agriculture is limited in many OIC countries, particularly in the Middle East. Water scarcity is often a key problem. For these reasons many member countries are shifting towards crops that are suitable for local conditions. Saudi Arabia, for example, focused on wheat production from the 1970s until the 1990s as the main staple food. Increasing depletion of groundwater sources forced the Kingdom to change its policy and date production is now receiving renewed attention, both as a local staple food and as a cash crop for exports. Farmers who produce crops that need large amounts of water receive less subsidies, whilst date producers in Saudi Arabia can obtain subsidies per kg of fruit produced.

Development of processing industries

Agribusinesses in the form of processing and manufacturing industries have significant potential to increase the value added of agricultural products. This holds both for domestic value chains as well as for export-oriented chains. Increasing processing activities requires an active private sector, which, in turn, is associated with the business environment and investment climate of a country. Private investments need to be stimulated in order to grow processing industries, for instance, through adequate institutional frameworks, legal stability and tax incentives. Capacity building in the areas of food science and technology, and promoting entrepreneurship, for instance through training and business incubators, are equally important.

6.2.2 Standards

Adopt quality standards and implement quality control

Ensuring quality along supply chains is a critical issue in many OIC countries, as also the case studies revealed. Due to the informal character of many value chains, quality standards are absent and incentives for quality improvement are lacking. Even in formal value chains, maintaining quality is a significant challenge in the light of poor infrastructure (such as cold chains), high transport costs and a general lack of capacity and knowledge on quality standards. This represents not only an urgent task for governments to address, but also poses opportunities for public-private collaborations as private chain actors stand to gain significantly with higher quality products.

Identify market opportunities for standard compliance

While standards for food safety and quality are often difficult to comply with, considerable market opportunities exist for those producers who are compliant. Depending on type of produce and the type of target market, opportunities lie in Halal production / processing aimed at Muslims around the world. Other opportunities have been identified for organic and Fairtrade production. For instance, for Saudi Arabian date farmers, organic production seems to hold considerable opportunities, as a newly developed infrastructure for quality control and

organic certification has recently been put in place, and export markets for organic products look promising.

Work towards more transparency and traceability

Modern markets require that the origin of the produce is known and that there is a clear chain of custody. The most common way to ensure that information about origins, quality and handling is correct is through standards. The use of standards is widespread in many global value chains. In order to get access to these value chains, transparency about origins and production processes is needed. Such transparency is not possible in informal value chains, but only in modern chains where systems of traceability can be put in place.

Collaborate with relevant standardisation efforts

Voluntary standards have become tremendously successful in international markets. Examples of such standards are GlobalGAP, Fairtrade, organic, and some standards developed by multi-stakeholder initiatives, such as the Better Cotton Initiative and the Roundtable on Sustainable Palm Oil. In relevant sectors, governments of OIC Member Countries can help integrate these standards into public extension curricula or in national legislation. Governments can also play a significant role in harmonising voluntary quality and sustainability standards.

6.2.3 Infrastructure and logistics

Close the infrastructure gap

Lacking or poor quality infrastructure is a well-known constraint to development in many OIC countries, particularly to agriculture-driven growth. The absence of adequate storage facilities and means of transport, resulting in high costs and high post-harvest losses, is frequently one of the main barriers preventing smallholder farmers becoming commercial farmers and accessing lucrative market opportunities. Closing the infrastructure gap is therefore of critical importance to increasing agricultural productivity and promoting value chain development. Dimensions of infrastructural development include irrigation, certification, quality control, product storage, roads, ports, railway systems, transport services, processing facilities, electricity and water supply, telecommunications for market information, and physical market places and trading facilities.

Promote public-private partnerships for infrastructure development

Governments of OIC Member Countries can promote public-private partnerships (PPPs) to develop the agricultural industry and infrastructure in particular. Many agricultural value chains in OIC countries currently suffer from insufficient investment and other challenges associated with inadequate and outdated infrastructure. Against this backdrop, PPPs offer a mechanism for gaining access to additional financial and human resources, share risks and benefits, and address different constraints to sustainable and inclusive agricultural value chains.

Organise chain supporters

In an ideal situation, chain supporters, such as extension, inputs and finance providers, operate in a competitive market of service providers. These chain supporters would treat farmers as clients who pay for what they need. Many countries, however, lack such a well-developed professional service sector. In these countries buyers or the public sector have to play a role in building a professional service sector through complementary, possibly non-competitive,

investments. Small sector levies and taxes may offer potential for longer-term sector-wide financing of services.

6.2.4 Governance and value chain actors

Developing smallholder agriculture

Small-scale farmers constitute the majority of agricultural producers in the OIC. Given that they will continue to be the mainstay of agricultural production – irrespective of migration patterns from rural to urban areas – policy-makers must design strategies that promote their transition to commercial farming able to cater for growing urban markets, both domestically and abroad. This entails systematically addressing the main challenges that smallholders face: lack of knowledge on enhancing productivity and incomes through good agricultural practices; difficult access to high quality seeds and inputs; noncompliance with food safety, quality and environmental/social standards; and lack of supporting services, such as extension and financial services, as a result of institutional voids.

Linking formal and informal value chains for the benefit of both

Agricultural value chains in many OIC Member Countries are composed of informal and formal elements. As smallholder farmers lack economies of scale and often produce heterogeneous quality, they are largely excluded from participating in formalised value chains where higher value added can often be captured. This trend may intensify in the future, as increasing quality and food safety standards are proliferating in modern agricultural value chains; not only in high income markets but due to heightened levels of urbanisation also in modern retail outlets in emerging and developing economies. Increased efforts should thus be undertaken to integrate more smallholder farmers into formal value chains aimed at modern retail or export markets. A variety of policy mechanisms are already in place across the OIC, with some countries having made significant strides in linking smallholder farmers to commercial agriculture. Given the large diversity of farming systems, markets and agro-ecological conditions across the OIC, each country will need to find its own path in terms of linking formal and informal value chains.

6.2.5 Trade

Facilitate trade

Fully exploiting the opportunities offered by regional and international markets is critical for OIC Members Countries to take advantage of their agricultural potential. However, trade between OIC countries and the rest of the world is often thwarted by complicated export and import procedures, high tariff barriers and other non-tariff barriers to trade. Activities that make it easier to trade across borders include: improving port infrastructure to reduce shipping time and costs; simplification of trade documents and harmonisation in accordance with international standards; improving customs efficiency to streamline border controls; reducing the number of documents for customs clearance; simplifying cargo inspection processes; reducing the time for handling activities; and improved (online) availability of information on trade procedures.

Pursue regional integration

The diversity of countries within the OIC – with vast differences in agricultural production, natural endowments, farming systems, labour availability and climatic conditions – provides major opportunities for increased intra-OIC trade in agricultural products. Currently, trade in agri-food products among OIC countries constitutes a mere 3.2 percent of the total trade activities of OIC Member Countries. There is thus significant potential to increase agriculture-based trade among OIC countries, which could be stimulated by means of free trade agreements and a general policy shift away from export and import restrictions.

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