UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

UNCTAD

FROM REGIONAL ECONOMIC COMMUNITIES TO A CONTINENTAL FREE TRADE AREA:

Strategic tools to assist negotiators and agricultural policy design in Africa

UNITED NATIONS

Note

Acknowledgements

This report is a product of UNCTAD, prepared as part of the project on “Strengthening capacities of African countries in boosting intra-Africa trade”. Alessandro Sanches-Pereira from the Research Group on Bioenergy (GBio) at São Paulo University (USP) prepared this report under the guidance of Henrique Pacini and Malick Kane from the UNCTAD secretariat, under the supervision of Bonapas Onguglo. Editing has been done by Richard Cutler, design by Rafe Dent and cover by Sophie Combette. Tamara Gregol provided reviewing assistance and Luís Gustavo Tudeschini provided support on statistical computing and graphics.

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12 February 2018

UNCTAD/WEB/DITC/2017/1

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Acronyms

AU	Africa Union
AEC	African Economic Community
AIDA	Action Plan for Accelerated Industrial Development of Africa
ASEAN	Association of Southeast Asian Nations
BIAT	Action Plan on Boost Intra-Africa Trade Strategy
CEN-SAD	Community of Sahel-Saharan States
CFTA	Continental Free Trade Area
COMESA	Common Market for Eastern and Southern Africa
EAC	East African Community
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of West African States
FOB	Free On Board
FTA	Free Trade Area
GDP	Gross Domestic Product
HS	Harmonized System
ICGLR	International Conference on the Great Lakes Region
IGAD	Intergovernmental Authority on Development
IOC	Intergovernmental Oceanographic Commission
kg	kilograms
MIP	Minimum Integration Programme
MRU	Mano River Union
NEPAD	New Partnership for Africa's Development
PIDA	Programme of Infrastructure Development in Africa
REC	Regional Economic Community
R&D	Research & Development
SACU	Southern African Customs Union
SADC	Southern African Development Community
SMEs	Small and Medium Enterprises
UMA	Arab Maghreb Union
UN	United Nations
WAEMU	West African Economic and Monetary Union
WCO	World Customs Organization

EXECUTIVE SUMMARY

The establishment of the Continental Free Trade Area (CFTA) is gaining speed, with the African Union (AU) aiming to get the CFTA agreement in place by 2018. If fully implemented, the CFTA could increase intra-African trade significantly and promote structural transformation by providing a lever to industrial development in African economies.

In this context, this report seeks to enhance knowledge among policymakers, experts and private sector stakeholders on essential policies and measures for establishing the CFTA and boost regional supply chains in not only agricultural commodities but also processed food products. This has been done through network analysis, which allows visualizing which country has competitive advantage over others in each trade agreement or regional context, as well as highlight overlapping regional agreements and identify trade hubs within Africa. The report then carries out a specific analysis of agricultural products identified in the Abuja declaration and in other literature sources as being of interest.

The ultimate purpose of this work is to inform African policy-makers with strategic tools to assist trade negotiations and agricultural policy design. Its focus is on the eight Regional Economic Communities that exist in Africa, as they do not only constitute key building blocks for economic integration, but are also important actors working in collaboration with the AU in ensuring peace and stability in their regions.

Around 80 per cent of all intra-African trade flows through Regional Economic Communities (RECs) and 20 per cent flows outside trade agreements. Based on trade volumes, five countries play central roles in mobilizing the intra-African trade – Algeria, Côte d'Ivoire, Egypt, Nigeria, and South Africa – being responsible for 67 per cent of all intra-African traded volumes in 2015. However, the network analysis indicated that four countries in Africa represent central players in trade networks in the continent, namely South Africa, Côte d'Ivoire, Kenya and Morocco. As a result, these countries benefit from more diversified trade flows and higher proportion of intermediate and value-added products than their neighbors. As a result, their experience could serve as pathways to development outcomes due to their pivotal role on connecting trade channels among SADC, CEN-SAD, COMESA, EAC, IGAD, UMA and ECOWAS. Among them, South Africa is a central player on establishing the CFTA because the country is not only responsible for the largest traded volumes in Africa (i.e. about 45 per cent of all intra-Africa exports) but also is a major commercial hub. South Africa has direct trade with 96 per cent of the intra-African network (53 countries out of 54 AU´s member states).

Many producers based in African countries fall short to compete in domestic and regional markets due to many challenges such as the lack of infrastructure and supporting processes that leads to high unit cost (e.g. fresh poultry produce in Mozambique versus frozen poultry from Brazil). In addition, there is substantial and thriving informal trade in the region, which means that intra-African trade is in fact likely to be significantly higher than official statistics suggest, having direct implications for fiscal revenue of governments in the region.

The Declaration of the Abuja Food Security Summit named a number of strategic agricultural products for Africa (e.g. rice, maize, legumes, cotton, palm oil, beef, dairy products, poultry, and fisheries), which were analyzed in this study. Adding to those, this report also identified seven additional promising agricultural commodity chains based on economic, social, environmental and regional integration criterion (e.g. avocados, cashew nuts, floriculture, onions and shallots, pineapples, potato, and tea). A priority assessment indicated that those products carry large development potential in regional value chains in Africa. Among them, tea and potato present the highest potential for local development and

the knowledge about their regional supply chains can guide decision-making on establishing a CFTA.

Despite farming being the primary source of food and income in the region and providing up to 60 per cent of all jobs on the continent, the share of agricultural commodities in intra-regional trade is less 30 per cent. Meeting the standards required for integrating into global value chains will be a gradual process. In the interim, gains can be made from integration of regional value chains. Since agriculture accounts for 25 per cent of African GDP, developing regional value chains for strategic agricultural commodities is essential to CFTA's success, as they can help exploit economies of scale, lower production and marketing costs. Better agriculture directly correlates to improved livelihoods, given the sectors importance as a job-creator in Africa.

To maximize the opportunities offered by RECs in agriculture, it is necessary to deal with the overlapping memberships that hinder harmonization and standardization, as well as the enforcement of rules of origin. Looking exclusively at the strategic commodities 32 per cent of all traded volumes flow through channels in which trade partners present two or three overlapping memberships. Unless a good dispute settlement mechanism exists, some disputes can threaten the continued operation of RECs and hinder the CFTA's success.

The establishment of the CFTA will require all African countries to further develop their internal capacity to refine their regional trade policies and ensure that they are able to benefit from these various trade opportunities. To do this, they will need to strengthen their internal negotiations with key stakeholders to ensure that national policies and trade negotiation strategies reflect their interests. This will require regional trade policies that are inclusive, gender sensitive and well-articulated by their national trade negotiators. In this context, strategic tools (e.g. network analysis and value chain assessment) can assist these trade negotiations and be used to benchmark integration process of RECs into CFTA.

Organic tea production in the United Republic of Tanzania.

Photo credit © Christof Krackhardt

Tubers displayed at the East African Organic Policy Forum in Arusha, 2017

Photo credit © Henrique Pacini

1. INTRODUCTION

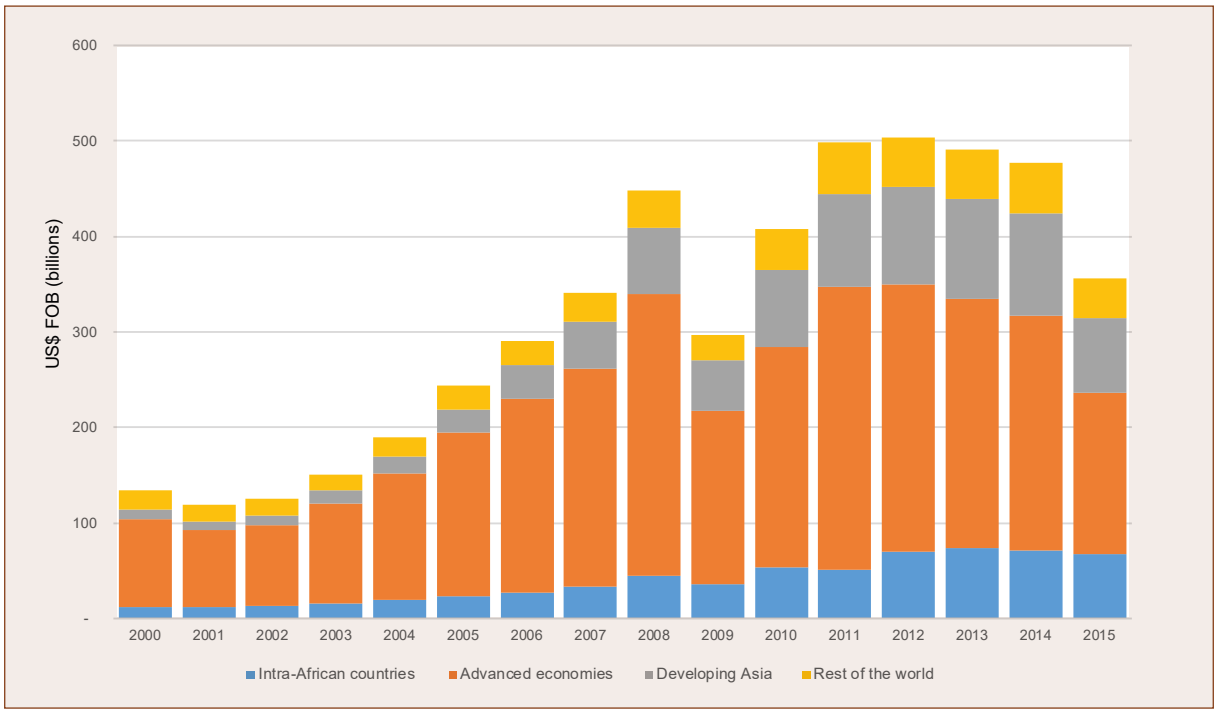
In June 2012, the Africa Union's (AU) Heads of States endorsed the Boost Intra-Africa Trade Strategy (BIAT), which outlines the benefits of an open market (UNCTAD, 2015a). Three years later, in June 2015, negotiations for establishing of the Continental Free Trade Area (CFTA) aiming to support the ongoing effort to boost intra-African trade were held in Johannesburg, South Africa (AU, 2015a).

The establishment of the CFTA presents major opportunities and challenges to boost intra-African trade. While strengthening the multilateral trading system remains vital, a parallel negotiation process to expeditiously launch the CFTA and monitor the implementation of the related agreement is also important. In addition, in order to multiply the benefits of the CFTA and promote developmental regionalism in Africa, a comprehensive vision of trade and development needs to be in place. Expanded markets for African goods and services, unobstructed factor movements (i.e. labor, capital, and other factors) and the reallocation of resources should promote economic diversification, structural transformation, technological development and the enhancement of local human capital (Sawere and Ndolo, 2016; UNCTAD, 2015a).

The establishment of the CFTA is gaining speed. During 2015, the participants at the African Union Summit agreed to get the CFTA agreement in place by 2017, and to immediately initiate negotiations on the liberalization of trade in goods and services. A first round of these negotiations took place in February 2016 and the preparatory process is now intensifying. As a result, a second round was held in May 2016 and approved the rules of procedure for the CFTA negotiating institutions and the guiding principles for the CFTA negotiations. Additionally, the organization's department of trade and industry stands ready to provide technical and administrative support to the negotiators through a recently established CFTA support unit (ICTSD, 2016). Once fully implemented, the CFTA agreement would offer African countries considerable benefits. For example, the opening of the regional market to African goods and services could increase intra-African trade significantly (Mevel, Simon; Karingi, 2012; UNCTAD, 2015b).

Beyond intra-African trade expansion, the CFTA has the potential to stimulate structural transformation in African countries, provided that Governments formulate and implement appropriate economic development policies that are linked to the CFTA. A number of African regional economic communities

Figure 1: African trade volumes in US$ FOB between 2000 and 2015



Source: Prepared by UNCTAD based on data from IMF (2016).

(RECs) have regional industrial development policies, including the Tripartite Free Trade Area on trade in goods launched in June 2015, comprising the member States of the Common Market for Eastern and Southern Africa (COMESA), Southern African Development Community (SADC) and East African Community (EAC) (UNCTAD, 2015a).

According to most estimates, the opening of the regional market to African goods and services will increase intra-African trade significantly. The UN Economic Commission for Africa (UNECA), for instance, estimates that the removal of tariff barriers for intra-African trade could raise their share in total African trade and the gains would be greater if informal traders are better integrated into formal trade channels (UNECA, 2015a, 2010). For instance, that the removal of tariffs on intra-African trade could raise their share in total African trade from about 10 per cent to 15.per cent from 2010-2022.With enhanced trade facilitation measures, the gains would double to reach 22 per cent (Mevel, Simon; Karingi, 2012; UNCTAD, 2015b). Moreover, most of the increase in trade from the removal of tariffs would be felt in the manufacturing sector, as intra-African trade has a relatively higher industrial content than trade of African countries with the rest of the world. Further boost to intra-African trade would arise from the removal of non-tariff barriers, and gains would be augmented if informal traders were better integrated into the formal trade channels (UNCTAD, 2015b). Currently, the share of the intra-African trade share in the total African trade is 18 per cent. Figure 1 shows the total African traded volumes[1] expressed in US$ FOB[2] between 2000 and 2015 (IMF, 2016).

Development-oriented regionalism can contribute on guiding Africa's achievement of development goals, building resilience to external financial and economic crises, and fostering inclusive growth. It can also contribute to spilling over benefits in terms of fostering peace, and political stability on the continent. Working in partnership with the AU, African States and other development partners, are committed on supporting the attainment of these objectives, embodied under the CFTA (UNCTAD, 2015a).

On important pillar to CFTA's success is agriculture, which forms a significant portion of the economies of all African countries and accounts for approximately 25 per cent of the Gross Domestic Product (GDP) in the region. Meeting the standards required for integrating into global value chains will be a gradual process for Africa's agriculture exporters. In the interim, gains can be made from integrating into regional value chains. Indeed, the agriculture sectors of some African countries — especially South Africa, which is major regional exporter of processed food — are increasingly being integrated into regional value chains. Given the nature of the smallholder-based agriculture in Africa, support will need to be provided to small-scale farmers to be better organized so as to enhance their productivity and ensure the timely off-take of produce from farm to markets (Moyo et al., 2015).

Without a doubt agriculture is as a sector that can, therefore, contribute towards major continental priorities, such as eradicating poverty and hunger, boosting intra-Africa trade and investments, rapid industrialization and economic diversification, sustainable resource and environmental management, and creating jobs, human security and shared prosperity. In fact, farming is the primary source of food and income for Africans and provides up to 60 per cent of all jobs on the continent (Beegle et al., 2016; NEPAD, 2013). However, the level of intra-African trade in agricultural and food products is still low. For example, the share of agricultural commodities in intra-regional trade was 27.5 per cent in 2013 or US$ 20 billion (IMF, 2016; UNECA, 2015b). Consequently, it is necessary to support small-scale producers through national and regional cooperatives or other farmer organizations in order to facilitate their access to inputs, financial services, and markets and to enable them to defend their interests in the value chain (Moyo et al., 2015).

Intra-regional trade of agricultural commodities includes a wide range of products such as tobacco, coffee, tea, fruit and vegetables, but ten of these products account for half of all intra-African trade, valued at US$ 10 billion (IMF, 2016; NEPAD, 2013; UNCTAD, 2015a). Cross-border trade is comprised of flows of local products and of import/re-export flows boosted by strategies adopted to circumvent protectionist policies put in place by some countries against imports from the international market.

In this context, this report's objective is to enhance knowledge among policymakers, experts and private sector stakeholders on strategic tools to assist trade negotiations and agricultural policy design for establishing the CFTA and boost regional supply chains in agricultural commodities and processed food products. In order to fulfil this objective, various research steps were undertaken and a number of

different information sources explored. Secondary data were collected from government institutions and statistical databases, such as FAOstats, World Bank and the African Development Bank. Academic publications and reports from institutions active in the African continent were used to complement and validate the gathered information.

Along with secondary data collection, Network Theory was used to study of interrelations within African countries (Newman, 2010; Wasserman and Faust, 1994). The methodological steps include (i) description of the regional economic communities in the African continent, (ii) mapping of the intra-African trade network so as to produce numerical data, and (iii) identification and quantification of centrality measures of the intra-regional trade flows using *Gephi*, which is an interactive visualization and exploration platform for complex systems and dynamic networks (Bastian and Heymann, 2009).

Network analysis can allow policymakers:

- To visualize trade flows and their performance outcomes among trade partners;
- To identify countries that play central roles in mobilizing the intra-African trade;
- To highlight overlapping regional agreements as well as to identify synergies; and
- To identify trade hubs within the African region.

These findings can be useful to identify policy areas, key products and trade negotiation strategies, which could have a reinforcing impact and the highest likelihood of advancing the CFTA agenda.

The report also used *R* language for statistical computing and graphics. R provides a wide variety of statistical (i.e. linear and nonlinear modelling, classical statistical tests, time-series analysis, classification, clustering, etc.) and graphical techniques. The *R* language provides an open source route for statistical analysis. *R* is available as free software under the terms of the Free Software Foundation's GNU General Public License in source code form. It compiles and runs on a wide variety of platforms (e.g. UNIX, Windows and MacOS) (The R Foundation, 2016).

2. INTRA-AFRICAN TRADE AND ITS REGIONAL ECONOMIC COMMUNITIES

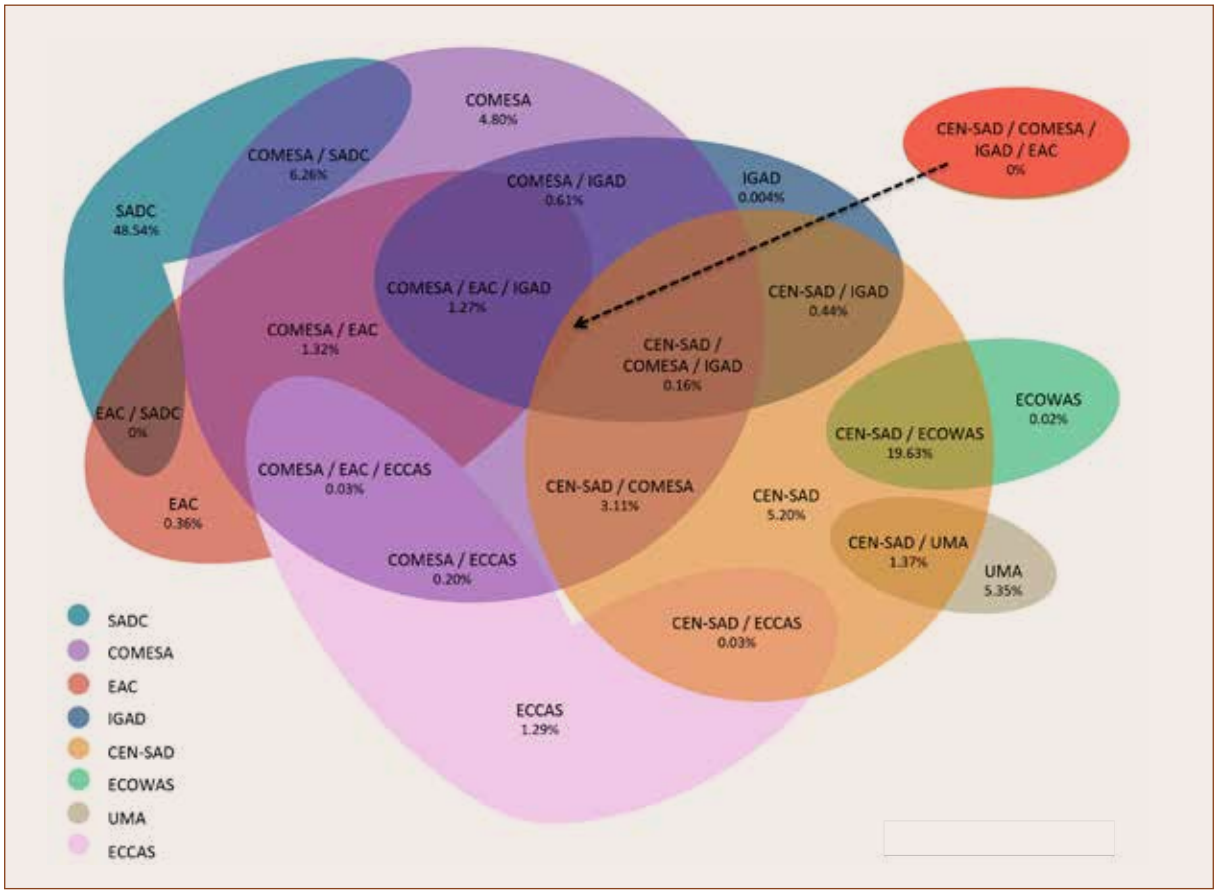
Regional trade integration has long been a strategic objective for Africa. Yet, despite some success in eliminating tariffs within regional communities, the African market remains highly fragmented. A range of non-tariff and regulatory barriers still raise transaction costs and limit the movement of goods, services, people and capital across borders throughout Africa (MIF, 2014).

The African Union (AU), as an economic bloc, corresponds to 54 member states and occupies a very low position in the global economic classification. The African continent is home to 14.8 per cent of the global population; it accounts for less than three per cent of the global GDP and receives only three per cent of foreign direct investment. As regards to global goods trade, the continent accounts for only 1.8 per cent of imports and 3.6 per cent of exports. These rates are even lower in the services sector, which corresponds to 1.7 per cent of imports and 1.8 per cent of exports. Beyond the relatively unfavorable general positioning, the situation is quite mixed if the countries are considered on individual basis (AU, 2015b). In 2015, intra-African trade stands at around 18 per cent compared to 60 per cent, 40 per cent, 30 per cent intra-regional trade that has been achieved by Europe, North America and Association of Southeast Asian Nations (ASEAN) respectively. Even if allowance is made for Africa's unrecorded informal cross-border trade, the total level of intra-African trade is not likely to be more than 20 per cent, which is still lower than that of other major regions of the world (AU, 2015b; IMF, 2016).

2.1 Regional economic communities

The AU recognizes eight regional economic communities (RECs) and five subgroups[3], which

Figure 2: Euler diagram representing the eight RECs and their overlapping memberships



Source: Prepared by UNCTAD.

consist primarily of trade blocs and, in some cases, involve some political cooperation and monetary unions. All the eight communities form the pillars of the African Economic Community (AEC). Most of them have followed diverse, largely uncoordinated paths, and deadlines to liberalize trade among their members have not been met. They have tried to follow a sequence mostly based on standard customs union theory. For example, they started as free trade areas, moving to customs union and economic community. However, such sequencing and pacing has been difficult to follow in many RECs. Also, some started out as cooperation agreements that evolved to incorporate trade issues and have not yet implement their free trade areas (FTAs) (AU, 2015b; UNCTAD, 2015b).

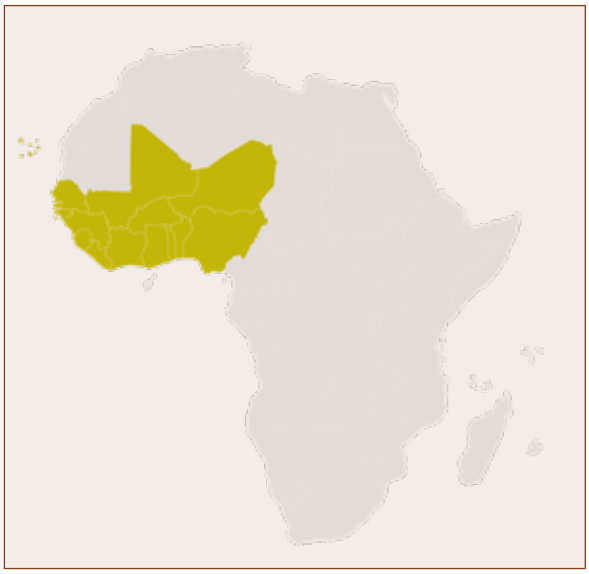
The eight RECs in Africa are listed in chronological order (MIF, 2014):

- Economic Community of West African States (ECOWAS) established in 1975;
- Economic Community of Central African States (ECCAS) established in 1983;
- Arab Maghreb Union, Union du Maghreb arabe in French, (UMA) established in 1989;
- Southern African Development Community (SADC) established in 1992;
- Common Market for Eastern and Southern Africa (COMESA) established in 1993;
- Intergovernmental Authority on Development (IGAD) established in 1996;
- Community of Sahel-Saharan States (CEN-SAD) established in 1998; and
- East African Community (EAC) established in 1990.

Thirty-nine countries out of 54 countries are members of more than one of the eight RECs. In fact, Burundi, Democratic Republic of Congo, Djibouti, Eritrea, Libya, Uganda, and Sudan are each members of three RECs. Kenya[4] is the only country in the region holding four RECs memberships: CEN-SAD, COMESA, IGAD and EAC (MIF, 2014). Figure 2 shows a Euler diagram representing the overlapping memberships of RECs and their contribution share to the intra-African trade. It is important to mention that about 80 per cent of all intra-African traded volumes flows through RECs in 2015 (IMF, 2016).

As the building blocks and implementing arms of the AU, the RECs have been central to various transformative programs of the continent, including the New Partnership for Africa's Development (NEPAD) adopted in 2001, and the AU's Agenda 2063 adopted by its Summit in January 2015, and its First Ten-Year Implementation Plan adopted by the 25th Summit of the AU in June 2015.

Figure 3: ECOWAS member states



Source: Prepared by UNCTAD based on MIF (2014).

This report focuses entirely on the eight RECs since they do not only constitute key building blocks for economic integration in Africa, but are also key actors working in collaboration with the AU in ensuring peace and stability in their regions.

2.1.1 Economic Community of West African States (ECOWAS)

The Economic Community of West African States (ECOWAS) is a regional economic community of fifteen West African countries: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo. Figure 3 highlights the ECOWAS member states.

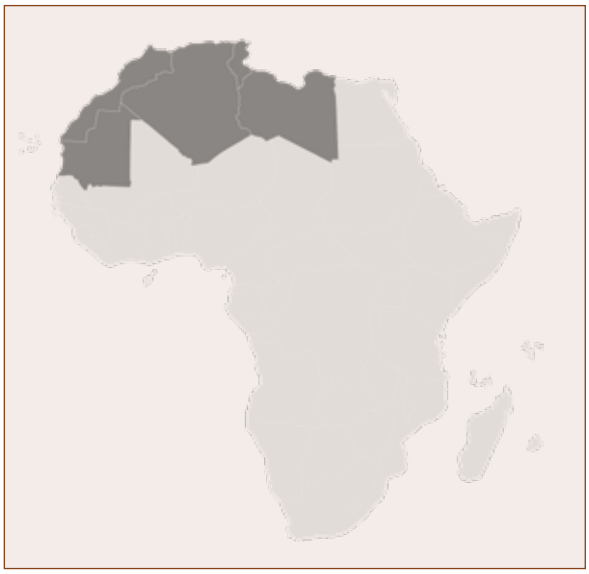
In 2013, the ECOWAS corresponded to 29.4 per cent of Africa's population, about 318.5 billion people, from which 44.9 per cent living in urban areas. Its Gross Domestic Product (GDP) corresponds to US$ 395.7 million or US$ 1,242.2 per capita (MIF, 2014).

There is a strong trade relationship between ECOWAS member states and the CEN-SAD, all but one country, Cape Verde, hold double membership with ECOWAS and CEN-SAD. As a result, about 99.9 per cent of the traded volumes among member states flows to countries that are members of the CEN-SAD and

Figure 4: ECCAS member states

Source: Prepared by UNCTAD based on MIF (2014).

Figure 5: UMA member states



Source: Prepared by UNCTAD based on MIF (2014).

less than one per cent is traded exclusively within ECOWAS (IMF, 2016). In 2015, its exports to Africa corresponded to about US$ 14 million or 16 per cent of ECOWAS's total exports (ITC, 2016).

2.1.2 Economic Community of Central African States (ECCAS)

The Economic Community of Central African States (ECCAS) is a regional economic community of ten Central African countries: Angola, Burundi, Cameroon, Central Africa Republic, Chad, Republic of the Congo, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Rwanda, and São Tomé and Príncipe. Figure 4 highlights the ECCAS member states.

In 2013, the ECCAS corresponded to 13.1 per cent of Africa's population, about 141.9 million people, from which 39.6 per cent living in urban areas. Its GDP corresponds to US$ 224.2 billion or US$ 1 579.7 per capita (MIF, 2014).

All ten countries are responsible for about 83 per cent of the traded volumes within the ECCAS. However, Angola holds a double membership with SADC, and the Democratic Republic of the Congo with COMESA and SADC. Burundi and Rwanda hold a triple membership with COMESA and EAC (IMF, 2016). In short, all member states use the intra-REC flows to trade their goods. Five member states benefit from their double or triple memberships to trade about 17 per cent of the goods.

2.1.3 Arab Maghreb Union (UMA)

The Arab Maghreb Union (UMA) is a regional economic community of five Arab countries in Africa: Algeria, Libya, Mauritania, Morocco, and Tunisia. Figure 5 highlights the UMA member states.

In 2013, the UMA corresponded to 8.5 per cent of Africa's population, about 91.8 million people, from which 65.5 per cent living in urban areas. Its GDP corresponds to US$ 414 billion or US$ 4,522.5 per capita (MIF, 2014).

One country, Algeria, is responsible for more than 79 per cent of the traded volumes within the UMA. Regarding the remaining four member states, Mauritania, Morocco and Tunisia hold double membership with CEN-SAD and Libya hold a triple membership with CEN-SAD and COMESA (IMF, 2016). In short, about 21 per cent of the traded volumes happen double and triple memberships. In 2015, its exports to Africa corresponded to about US$ 83 million or 8 per cent of UMA´s total exports (ITC, 2016).

2.1.4 Southern African Development Community (SADC)

The Southern African Development Community (SADC) is a regional economic community of fifteen southern African states: Angola, Botswana, Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe.

Figure 6: SADC member states

Source: Prepared by UNCTAD based on MIF (2014).

Figure 7: COMESA member states

Source: Prepared by UNCTAD based on MIF (2014).

Figure 6 highlights the SADC member states.

In 2013, the SADC corresponded to 26.5 per cent of Africa's population, about 286.8 million people, from which 56.9 per cent living in urban areas. Its GDP corresponds to US$ 648.3 billion or US$ 2,269.6 per capita (MIF, 2014).

One country, South Africa, is responsible for about 74 per cent of the traded volumes within the REC. Since SADC is the REC with the largest intra-African traded volume, about 48.54 per cent, South Africa alone is responsible for more than 40 per cent of all intra-African traded volume in 2015 (IMF, 2016). In 2015, its exports to Africa corresponded to about US$ 148 million or 26 per cent of total exports, from which about half was traded exclusively between SADC member states (IMF, 2016; ITC, 2016).

Among the fifteen member states, Botswana, Lesotho, Mozambique, Namibia, and South Africa hold single membership with SADC. Angola holds double membership with ECCAS, Tanzania a double membership with EAC, and Democratic Republic of the Congo a triple membership with COMESA and ECCAS. The remaining seven member states, Madagascar, Malawi, Mauritius, Seychelles, Swaziland, Zambia, and Zimbabwe hold double membership with COMESA (IMF, 2016). In short, eleven out of fifteen member states use intra-REC flows to exchange about 89 per cent of their trade. The other four member states benefit from their double or triple memberships to trade the remaining 11 per cent.

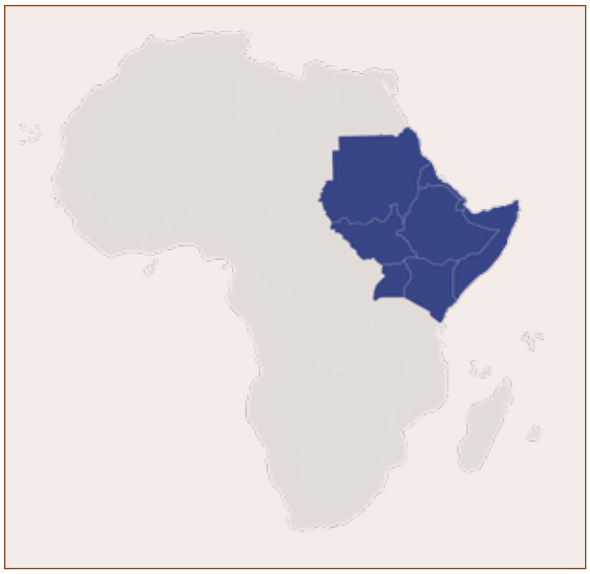
2.1.5 Common Market for Eastern and Southern Africa (COMESA)

The Common Market for Eastern and Southern Africa (COMESA) is a regional economic community of twenty member states: Burundi, Comoros, Democratic Republic of the Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, and Zimbabwe. Figure 7 highlights the SADC member states.

In 2013, the COMESA corresponded to 43.4 per cent of Africa's population, about 469.4 million people, from which 29.2 per cent living in urban areas. Its GDP corresponds to US$ 587.8 billion or US$ 1,252.6 per capita (MIF, 2014).

All member states of COMESA have more than one REC membership. Egypt and Comoros hold double membership with CEN-SAD, Eritrea and Ethiopia hold double membership with Intergovernmental Authority on Development (IGAD), and Madagascar, Malawi, Mauritius, Seychelles, Swaziland, Zambia, and Zimbabwe hold double membership with SADC. Burundi and Tanzania hold a triple membership with EAC and ECOWAS, and Democratic Republic of Congo with ECCAS and SADC, Djibouti, and Sudan with CEN-SAD and IGAD, Libya with CEN-SAD and

Figure 8: IGAD member states



Source: Prepared by UNCTAD based on MIF (2014).

Figure 9: CEN-SAD member states

Source: Prepared by UNCTAD based on MIF (2014).

UMA, and Rwanda with EAC and ECCAS. Kenya is a member of four RECs, COMESA, CEN-SAD, EAC, and IGAD.

Sixteen member states are responsible for about 27 per cent of the traded volumes within the COMESA. The remaining 73 per cent is traded through double, triple or quadruple memberships holders (IMF, 2016). In 2015, its exports to Africa corresponded to about US$ 75 million or 22 per cent of COMESA´s total exports (ITC, 2016).

2.1.6 Intergovernmental Authority on Development (IGAD)

The Intergovernmental Authority on Development (IGAD) is a regional economic community of eight member states: Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, and Uganda. Figure 8 highlights the IGAD member states.

In 2013, the IGAD region represented 21.9 per cent of Africa's population, about 236.5 million people, from which 21.9 per cent living in urban areas. Its GDP corresponds to US$ 175.1 billion or US$ 740.7 per capita (MIF, 2014).

All member states of IGAD have more than one REC membership, except for South Sudan. Eritrea and Ethiopia hold double membership with COMESA, and Somalia holds double membership with CEN-SAD. Djibouti and Sudan hold a triple membership with COMESA and CEN-SAD, and Uganda with COMESA and EAC. As mentioned before, Kenya is a member of four RECs, COMESA, CEN-SAD, EAC, and IGAD.

In this REC, only five member states – Ethiopia, Kenya, Somalia, Sudan and Uganda – are responsible for all traded volumes that corresponds to almost 5 per cent of the intra-African trade in 2015, from which 87 per cent is traded within the REC and the remaining 13 per cent is exported to other African countries (IMF, 2016).

2.1.7 Community of Sahel-Saharan States (CEN-SAD)

The Community of Sahel-Saharan States (CEN-SAD) is a regional economic community of twenty-seven member states: Benin, Burkina Faso, Central African Republic, Chad, Comoros, Côte d'Ivoire, Djibouti, Egypt, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Mali, Mauritania, Morocco, Niger, Nigeria, São Tomé and Príncipe, Senegal, Sierra Leone, Somalia, Sudan, Togo, and Tunisia. Figure 9 highlights the CEN-SAD member states.

In 2013, the CEN-SAD corresponded to 51 per cent of Africa's population, about 551.4 million people, from which 43.2 per cent living in urban areas. Its GDP corresponds to US$ 973.5 billion or US$ 1,766.8 per capita (MIF, 2014).

All member states of CEN-SAD have more than one REC membership. Benin, Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau,

Figure 10: EAC member states

Source: Prepared by UNCTAD based on MIF (2014).

Mali, Liberia, Niger, Nigeria, Senegal, Sierra Leone and Togo hold double membership with ECOWAS, Central African Republic, Chad, and São Tomé and Príncipe with ECCAS, Comoros and Egypt with COMESA, Mauritania, Morocco and Tunisia with UMA, and Somalia with IGAD. Somalia holds double membership with CEN-SAD. Djibouti and Sudan hold a triple membership with COMESA and IGAD, and Libya with COMESA and UMA. Kenya is a member of four RECs, COMESA, CEN-SAD, EAC, and IGAD.

As mentioned previously, there is a strong trade relationship between CEN-SAD member states and the ECOWAS, fourteen member states hold double membership with ECOWAS. As a result, about 66 per cent of the traded volumes among member states flows to countries that are members of the ECOWAS and the remaining 34 per cent is split, from which one half is traded exclusively within CEN-SAD and the other half is traded through double, triple or quadruple memberships holders (IMF, 2016).

2.1.8 East African Community (EAC)

The East African Community is a regional economic community of five member states: Burundi, Kenya, Rwanda, Tanzania and Uganda. Figure 10 highlights the EAC member states.

In 2013, the EAC corresponded to 13.7 per cent of Africa's population, about 148.6 million people, from which 21.7 per cent living in urban areas. Its GDP corresponds to US$ 98.4 billion or US$ 662.1 per capita (MIF, 2014).

All member states of EAC have more than one REC membership. Tanzania holds double membership with SADC. Burundi and Rwanda hold triple membership with COMESA and ECCAS, Uganda with COMESA and IGAD, and Kenya with membership on four RECs, COMESA, CEN-SAD, EAC, and IGAD.

Only 12 per cent of the regional traded volume flows exclusively within the REC and Tanzania alone is responsible for all of it. The remaining 88 per cent is traded through double, triple or quadruple membership holders. Being Kenya the largest trader in the region with 59 per cent of all traded volume within EAC (IMF, 2016). In 2015, its exports to Africa corresponded to about US$ 14 million or 41 per cent of EAC´s total exports (ITC, 2016).

2.2 Key findings

Around 80 per cent of all intra-African trade flows through RECs and 20 per cent flows outside trade agreements. Five countries – Algeria, Côte d'Ivoire, Egypt, Nigeria, and South Africa – are responsible for 67 per cent of all intra-African traded volumes in 2015 (IMF, 2016). They represent five out of the eight RECs: ECOWAS, UMA, SADC, COMESA, and CEN-SAD.

Despite farming being the primary source of food and income in the region and providing up to 60 per cent of all jobs on the continent, the share of agricultural commodities in intra-regional trade is less 30 per cent (UNECA, 2015b).

Intra-regional trade is most developed in SADC, with almost 50 per cent share of Africa's intra-regional trade in 2015 (IMF, 2016).South Africa alone was responsible for 45 per cent of all intra-African trade, followed by Nigeria with almost 10 per cent (ITC, 2016).

Unfortunately, there is substantial and thriving informal trade in the region, which means that intra-African trade is in fact significantly higher than official statistics suggest. As a result, it is estimated that informal cross border trade represents 43 per cent of official GDP, therefore being almost equivalent to the formal sector. This informal trade, which escapes regulatory framework and payment of duties and charges, deprives countries and regions of significant tax revenues (MIF, 2014).

3. THE INTRA-AFRICAN TRADE NETWORK

The network analysis[5] can be used to conceptualize not only policy impacts but also the results of trade agreements since they are the result of interactions between policy actors and/or trade partners. In short, the network analysis assumes that the structure of these interactions explains the outcomes instead of making theoretical assumptions about them (Brandes et al., 2003). For example, network analysis shows which network actor has competitive advantage over others in each trade agreement or regional context.

Many structural characteristics are taken into account in the analysis and explanation of trade networks. The most prominent ones are structural notions of centrality measures, which are considered reliable indicators for identifying competitive advantage (Brandes et al., 2003; Jackson, 2008). There are four different measures of centrality: degree centrality, closeness centrality, betweenness centrality, and eigenvector centrality (Jackson, 2008).

Degree centrality shows how connected a given country is and how many other countries can this particular country trade directly and indirectly. For example, degree centrality can provide an insight about collaboration and partnerships among countries within the intra-African trade network beyond their RECs. In short, degree centrality is a local property and is an indicator of "activity" or "visibility" of a trade actor (Benedictis et al., 2013). Figure 11 shows the degree centrality of the intra-African trade network.

The degree centrality results ratify South Africa is an important player on establishing a CFTA since it presents the higher degree centrality or the highest number of trading partners in Africa. Other important players are Côte d'Ivoire, Kenya, Morocco, Egypt and Senegal. These six countries are responsible for about 54 per cent of all intra-African trade. The results also shows that 86 per cent of all traded volumes flow through trade agreements, ratifying the importance of RECs on supporting intra-regional trade in Africa (IMF, 2016).

Closeness centrality considers inwards trade flows (e.g. imports) and outwards flows (e.g. exports) and measures regional integration. For example, closeness centrality is important from the point of view of policymaking because it highlights diversified markets and the shortest commercial pathways in Africa (Benedictis et al., 2013). Figure 12 shows the closeness centrality of the intra-African trade network, in which South Africa, Kenya, Côte d'Ivoire, Egypt, Morocco, Senegal and Uganda present closeness centrality equal or higher than 0.90 (IMF, 2016).

Generally, countries with high closeness centralities in trade networks have many inward and outward flows.

Figure 11: Degree centrality of the intra-African trade flows in 2015

Source: Prepared by UNCTAD based on MIF (2014).

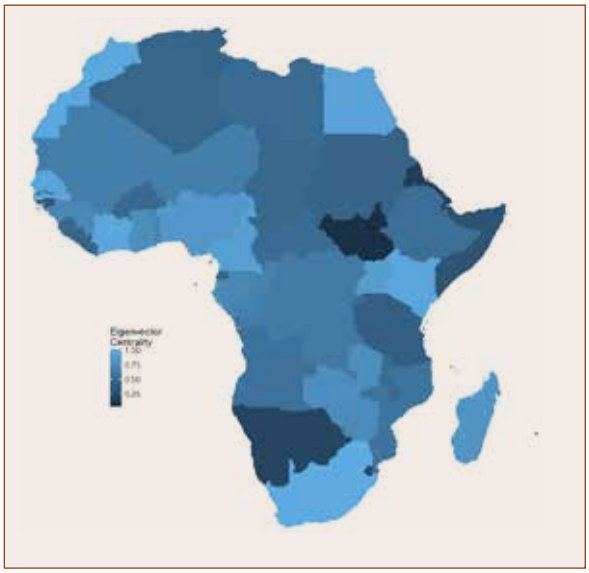
Figure 12: Closeness centrality of the intra-African trade flows in 2015

Source: Prepared by UNCTAD based on MIF (2014).

Figure 13: Betweenness centrality of the intra-African trade flows in 2015

Source: Prepared by UNCTAD based on MIF (2014).

Figure 14: Eigenvector centrality of the intra-African trade flows in 2015



Source: Prepared by UNCTAD based on MIF (2014).

Unsurprisingly, the rank between inward and outward flows shows these seven countries as the major intra-African exporters in number of trade partners (Benedictis et al., 2013). Table 1 summarizes the trade flows and closeness centrality values of these seven countries. Note that being an export partners does not exclude the possibility of being an import partner as well.

Table 1: Major intra-African exporters in number of trade partners

Selected country	Close-ness centrality	Number of intra-African partners		Share of exported volumes	
		Exports	Imports	Intra-REC (%)	Outside the REC (%)
South Africa	0.96	50	44	87	13
Kenya	0.93	48	40	96	4
Côte d'Ivoire	0.92	47	41	82	18
Egypt	0.92	46	40	91	9
Morocco	0.92	45	43	70	30
Senegal	0.90	45	41	87	13
Uganda	0.90	45	35	89	11

Betweenness centrality shows how important a given country is in terms of connecting trade routes to other countries. In short, it measures how likely a given country is the most direct route between two other countries in the trade network. As a result, betweenness centrality captures the role of a country as a hub in the region (Benedictis et al., 2013). Figure 13 presents the graph with the betweenness centrality results for the intra-African trade network, in which South Africa is the most important hub connecting SADC to all the other RECs in the region. In addition, Guinea, Kenya, Egypt, Côte d'Ivoire and Uganda are highlighted as regional hubs in 2015 (IMF, 2016).

On the one hand, the presence of hubs has the potential to become obstacles to CFTA because they imply unbalanced bargaining power. On the other hand, they can become influential actors in their regions not only by influencing but also by facilitating market access and integration to other RECs.

Eigenvector centrality shows central players and peripheral ones. If closeness centrality stresses the trade flows, eigenvector centrality stresses the relevance of countries in the intra-African trade network (Benedictis et al., 2013). In fact, it is not the country´s centrality itself that matters but the centrality of the partner countries with which the selected country has trade relationships (e.g. imports and exports). Figure 14 presents the graph with the eigenvector centrality results for the intra-African trade network, in which South Africa is shown as an important central player. The figure also shows that Namibia, Botswana, Eritrea, Lesotho, South Sudan are peripheral players, hence, they are countries benefiting the least of regional trade agreements.

3.1 Key findings

Mapping the intra-African trade network flows provides an insight of how commercial interactions among its member states influence the CFTA development in the region. In short, it provides more breadth than depth. Yet, it makes available a blueprint that contains enough information to highlight key players responsible for regional market access and expansion.

The network analysis ratifies South Africa as a central player on establishing the CFTA because the country is not only responsible for the largest traded volumes in Africa (i.e. about 45 per cent of all intra-Africa exports) but also is a major commercial hub (ITC, 2016). South Africa has directly trade relationships with 96 per cent of the intra-African network or has direct trade relationships with 53 countries out of 54 AU´s member states. In total, South Africa exports to 50 countries and imports from 44. Other central players are Côte d'Ivoire, Kenya and Morocco. These three countries and South Africa represents about 53 per cent of all intra-African trade in 2015 (ITC, 2016).

In short, these four central players – South Africa, Côte d'Ivoire, Kenya and Morocco – benefit from more diversified trade flows and higher proportion of intermediate and value-added products than their neighbors. As a result, their experience could serve as pathways to development outcomes due to their pivotal role on connecting trade channels among SADC, CEN-SAD, COMESA, EAC, IGAD, UMA and ECOWAS. Interestingly, ECCAS is not part of these potential synergic benefits, reflecting the lack of a legitimate and credible regional leader that would be willing to play the role of driver such as Nigeria in the ECOWAS and South Africa in the SADC (Meyer, 2015).

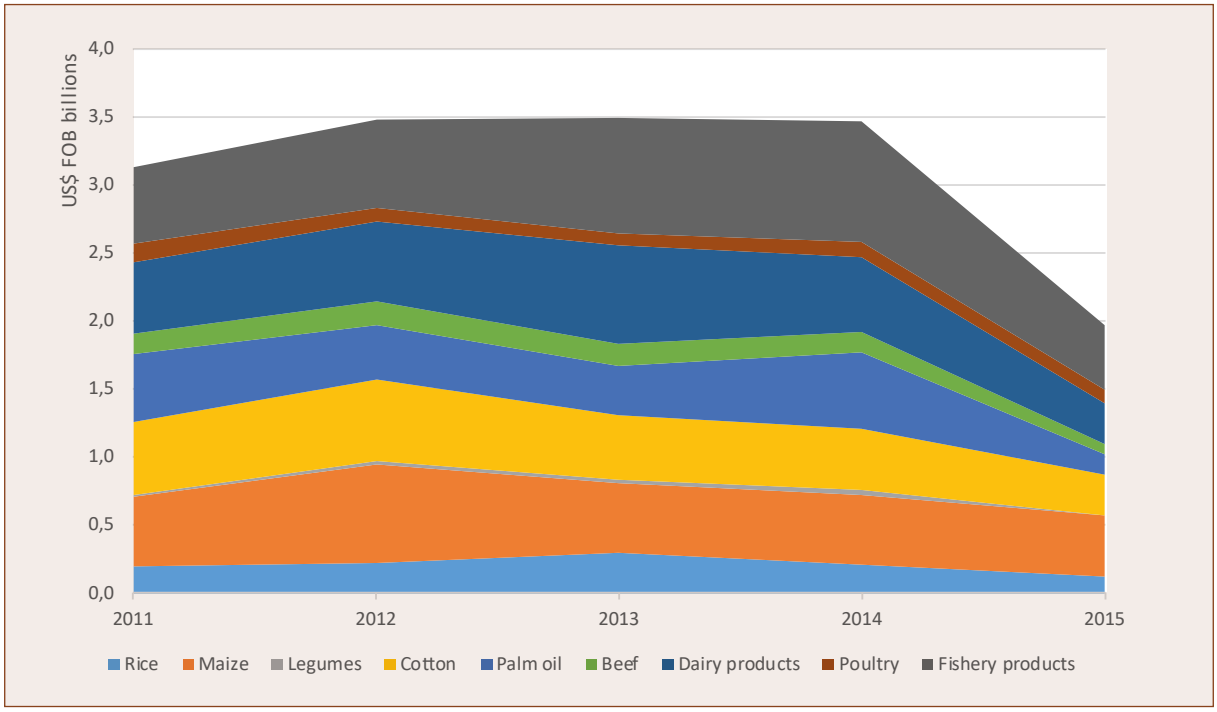
4. INTRA-AFRICAN AGRICULTURAL TRADE

Agriculture is the mainstay of the majority of the population in Africa and the relationship between its performance and that of the key economic indicators like GDP, trade flows and employment cannot be overemphasized. In addition, agriculture is an important pillar to CFTA's success in Africa because it forms a significant portion of the economies in the region. Hence, the agriculture sector can contribute towards major continental priorities, such as eradicating poverty and hunger. At the same time, it can boost intra-Africa trade and investments, foster industrialization and economic diversification, and create jobs, human security and regional prosperity. Currently, farming is the primary source of food and income for Africans and provides up to 60 per cent of all jobs on the continent (Beegle et al., 2016; NEPAD, 2013). However, the level of intra-African trade in agricultural and food products is still low (IMF, 2016; UNECA, 2015b).

Africa's demand for food will increase in the coming years due to demographic growth and changing food habits. In this context, it is important for the region achieving a level of security in the production of agricultural products consumed by its population. In fact, Africa has the capacity to do so, given its natural potentialities. In addition, the majority of the population experiencing food insecurity is located in rural areas, which is likely to produce its own food and have no other job or income alternatives (Levard et al., 2013).

There is a tendency for growth in agricultural production to stimulate other sectors of activity (agro-food processing, trade, agricultural input supply, etc.) and to generate jobs and incomes in these sectors. Furthermore, excessive dependency on world markets seems highly risky, especially given the limited possibilities for generating income in other activity sectors, as well as the strong volatility of world agricultural and food prices (Levard et al., 2013). Hence, Africa's ability to meet most of its food needs will largely depend on the development of local and national exchanges. Despite a renewed focus on agriculture as a mean of poverty reduction and the adoption of a continental framework for agricultural transformation, agriculture in Africa remains too often characterized by low productivity and little value added.

Figure 15: Strategic commodities in US$ FOB between 2011 and 2015



Source: Prepared by UNCTAD based on data from ITC (2016).

4.1 Intra-African agricultural trade of strategic commodities

Almost 60 per cent of the world's arable land is found in Africa, and yet food scarcity remains a persistent problem for the continent. Many countries in Africa during the immediate post-colonial period attempted to rapidly industrialize by often using heavy taxes and price distortions on agricultural products to finance such attempts. Countries also sought to keep food prices particularly low to prevent urban populations from protesting, rioting, or worse. These approaches broadly resulted in reduced incentives for agricultural production and yielded poorly performing economies. Beginning in the 1970s, Africa became a net food importer. By 2007, the food de deficit was approximately US$22 billion. The past decade, however, has seen renewed interest in agriculture-based development policy on the continent, and agriculture has been recognized as an engine for growth with many underlying opportunities (Burchard, 2015; UNCTAD, 2015b).

Smallholder farmers on farms averaging 2.5 hectares in size produce about 90 per cent of the agricultural output in Africa. Commercial farms produce the other 10 per cent (UNDPI, 2014). Intra-African trade remains weak overall on the continent, representing only 18 per cent of the continent's commercial exchanges in 2015 (IMF, 2016). Looking exclusively at the share of agricultural commodities, the intra-regional trade corresponds to less than 5 per cent of all products combined (IMF, 2016; UNECA, 2015b). However, official statistics do not show the entire situation. On the one hand, local estimates taking into account informal trade shows that intra-regional trade figures would double (Levard et al., 2013). On the other hand, international studies show that even if an allowance is made for Africa's unrecorded informal cross-border trade, the total level of intra-African trade is not likely to be more than 20 per cent. Therefore, it would still be lower than that of other major regions of the world (AU, 2015b; IMF, 2016; Levard et al., 2013).

Generally, in Africa, the marketing channels of agricultural products flow from production areas and ports of discharge towards the major urban centres. The large majority of agricultural produce is consumed in the very country where it was produced. Only a portion of it is marketed through cross-border channels (Levard et al., 2013).

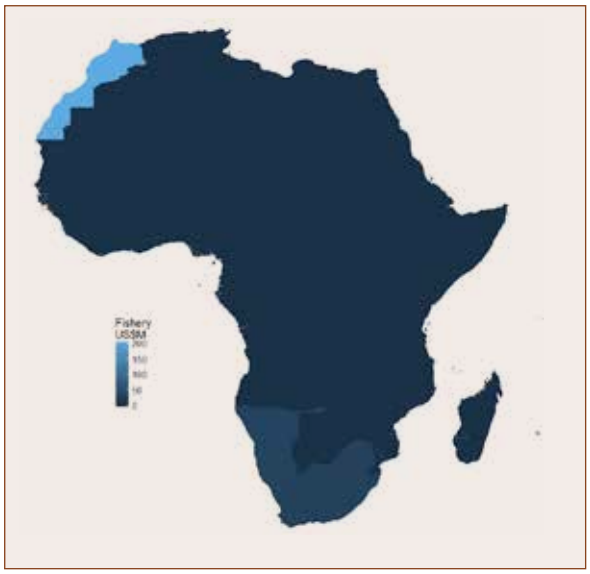
At the African level, it is largely accepted that developing regional value chains for strategic agricultural commodities is essential (AU, 2012). The Declaration of the Abuja Food Security Summit, aims at increasing intra-African trade by promoting and protecting rice, maize, legumes or pulses (e.g. beans, lentils, peas, and peanuts), cotton, palm oil, beef, dairy, poultry and fishery products as strategic commodities at the continental level, and cassava, sorghum and millet at sub-regional level (AU, 2006). In 2015, the strategic commodities represented 4 per cent of the overall intra-African trade. However, tobacco has the largest traded volumes of an agricultural produce in Africa. In fact, it alone equals to about 54 per cent of all traded volumes of strategic commodities in the same period (ITC, 2016). Figure 15 shows the intra-African trade volumes of the strategic commodities between 2011 and 2015.

4.1.1 Fishery products

Africa's participation in the global fish trade has been limited, providing less than five per cent of the total value traded in the world. Many African countries are endowed with fish resources in oceans, seas, lakes, rivers, floodplains and fish farms, which generate a range of benefits, including food and nutrition security, livelihoods, exports, and ecological resilience. The value added by fisheries as a whole in 2011 was estimated at more than US$ 24 billion, representing 1.26 per cent of the GDP of all African countries (WorldFish, 2015)fish processors and traders, along with government leaders, have begun to demand a change in the way Africa trades its fish. In May 2014, the second Conference of African Ministers of Fisheries and Aquaculture (CAMFA. However, only US$ 560 million were related to intra-African trade (ITC, 2016). In this context, fishery products are a mainstay of many African economies and represents a significant source of foreign exchange earnings, in addition to the sector's important role in income generation, employment and food security (ARSO, 2016).

The sector as a whole employs 12.3 million people as full-time fishers or full-time and part-time processors, accounting for 2 per cent of Africa's population of between 15 and 64 years old. Of these employed, almost half were fishers; 42 per cent were processors and 7.5 per cent were engaged in aquaculture in 2014. Women are heavily involved in the fish sector, accounting for about 27 per cent of the total workforce in fisheries and aquaculture, and they are directly involved in fishing (4 per cent), processing (58 per cent), and aquaculture (4 per cent) (ARSO, 2016).

Figure 16: Distribution of the intra-African traded volumes of fishery products in 2015



Source: Prepared by UNCTAD based on MIF (2014).

Fishery products are the largest strategic commodities being traded in Africa; its intra-regional trade represents 24 per cent of traded volumes in 2015 of strategic commodities. They are also represented in the Sustainable Development Goals[6], which calls for the alignment of governance and negotiation strategies on this environmentally sensitive sector (UNCTAD, 2015b). However, intra-regional fish trade is constrained by inadequate market and trade infrastructure and deficient policy and institutional frameworks. These lead to high transport costs, complex trade rules and inadequate market information, all of which prevent Africa from optimizing the social and economic benefits available from fish trade (WorldFish, 2015)fish processors and traders, along with government leaders, have begun to demand a change in the way Africa trades its fish. In May 2014, the second Conference of African Ministers of Fisheries and Aquaculture (CAMFA.

In 2015, only 34 per cent of all fishery produce traded in Africa were supplied locally. Imports represented strong competition to African producers, corresponding to 66 per cent of fish consumed in the continent. Non-African imports consist mostly of low-value, high volume fresh, chilled and frozen fish products, coming mainly from the USA, Chile, Thailand, the European Union and China. Considering only the African suppliers, five countries were responsible for about 99 per cent of all intra-African trade (ITC, 2016). They were Morocco with 74 per cent, Namibia with 12 per cent, South Africa with 10 per cent, Mauritius with two per cent, and Senegal with one per cent each. Figure 16 shows the distribution of the intra-African traded volumes of fishery products in 2015.

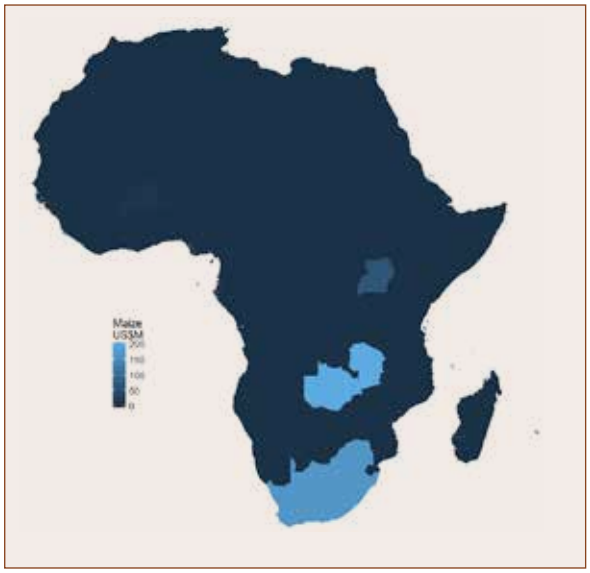
There is great potential for fisheries to generate greater food and nutrition security and help reduce poverty at both the household and national levels. Fish provide micronutrients that are essential to cognitive and physical development, especially in children, and are an important part of a healthy diet. As an affordable animal source of protein in some of the poorest countries, fish is a primary source of nutrition, creating growing demand for this staple. However, fish supplies in the region are failing to meet demand, and there are major shortages in some critically poor countries where they are needed most. For example, per capita consumption of fish in Africa was reported to be 9.7 kg per year; lower than the world average of 18.9 kg/year; with some countries (i.e. Congo, Gabon, Liberia, Malawi and South Africa) experiencing stagnant or declining per capita (ARSO, 2016; FAO, 2014; WorldFish, 2015)fish processors and traders, along with government leaders, have begun to demand a change in the way Africa trades its fish. In May 2014, the second Conference of African Ministers of Fisheries and Aquaculture (CAMFA.

4.1.2 Maize

Maize is the second largest strategic commodity being traded in Africa; its intra-regional trade represents 23 per cent of traded volumes in 2015 of strategic commodities. However, it represents less than one per cent when considering the overall intra-African trade (ITC, 2016). Maize represents an important source of food calories in the region. In addition, it can be used as fodder. Africa produces most of what it consumes but it remains in deficit overall and the region imports maize mostly from United States and Mexico (ITC, 2016; Levard et al., 2013).

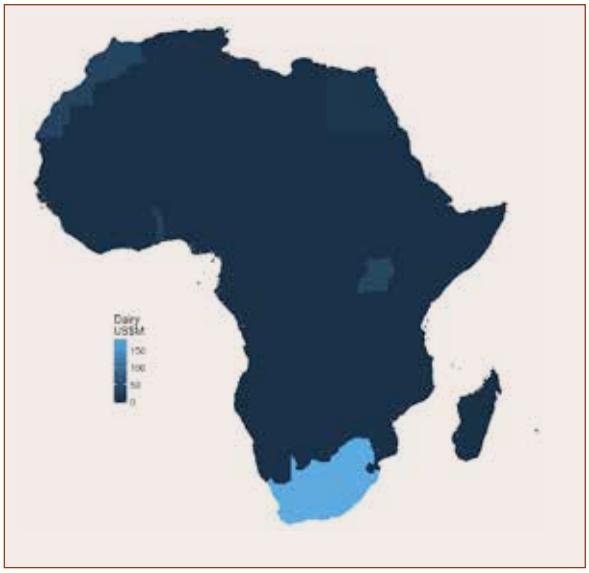
In 2015, only 11 per cent of all maize traded in Africa were supplied locally, from which four countries were responsible for 98 per cent of all intra-African trade of maize (ITC, 2016). They were Zambia with 45 per cent, South Africa with 38 per cent, Uganda with 14 per cent, and Burkina Faso with two per cent. Malawi used to be an important exporter but the delayed onset of seasonal rains and El Niño-induced drought conditions throughout most of the cropping season in the past years, particularly affecting the southern

Figure 17: Distribution of the intra-African traded volumes of maize products in 2015



Source: Prepared by UNCTAD based on MIF (2014).

Figure 18: Distribution of the intra-African traded volumes of dairy products in 2015



Source: Prepared by UNCTAD based on MIF (2014).

and central areas, causing a year-on-year production decline (FAO, 2016a). Figure 17 shows the distribution of the intra-African traded volumes of fishery products in 2015.

One important finding is that about 99 per cent of intra-African trade of maize occurs within a REC, which shows how that trade agreements are pivotal for agricultural flows in Africa. Interestingly, the trade flows of maize ratify the findings from the numerical analysis of the intra-African trade network, which highlighted SADC as an important REC controlling the exports and re-exports within Africa. For example, SADC alone controls about 37 per cent of the regional trade flows of maize in 2015. In fact, its influence increases when considering overlapping connections. It grows from 37 to 66 per cent of all intra-REC trade flows of maize in the region.

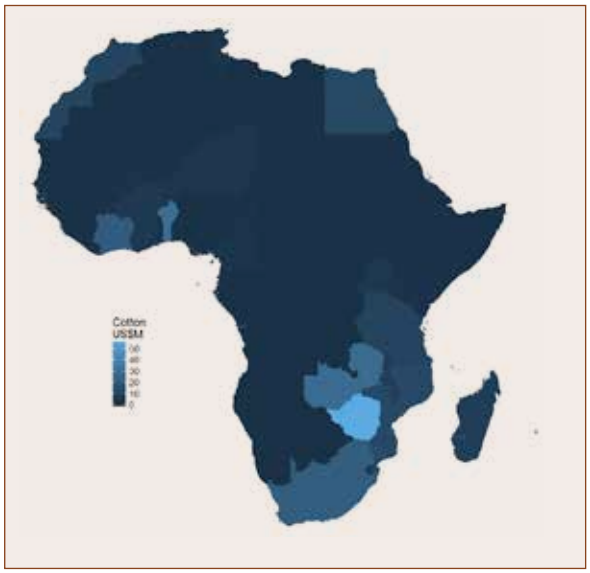
4.1.3 Dairy products

Annual milk production in Africa is around 31 million tonnes. IGAD produces around 40 per cent, UMA 33 per cent, SADC 15 per cent, ECOWAS ten per cent and ECCAS three per cent. However, all regions RECs are net importers of milk and milk products. The main exporting regions are SADC and ECOWAS (Mankor, 2013).

Dairy products are the third largest strategic commodities being traded in Africa during 2015 and represent about 16 per cent of traded volumes of strategic commodities listed in the Declaration of the Abuja Food Security Summit (AU, 2006; ITC, 2016). In 2015, only seven per cent of all dairy produce traded in Africa were supplied locally, from which four countries were responsible for almost 93 per cent of all intra-African trade of dairy products (ITC, 2016). They were South Africa with 62 per cent, Uganda with 12 per cent, Morocco with ten per cent and Togo with nine per cent. Looking exclusively at these four countries, 94 per cent of traded volume of dairy products in 2015 was exported through intra-RECs flows and the remaining six per cent was traded outside of RECs. Figure 18 shows the distribution of the intra-African traded volumes of dairy products in 2015.

Milk consumption in Africa is currently the lowest in the world, around 37 liters per capita annually, which is 67 liters below the world average of 104 liters per capita and only accounts for six percent of world consumption. The growth, however, will come at the expense of “loose milk”, which is unpasteurized milk sold in cans and/or bags. Accordingly, this implies more imported pasteurized milk until local production can develop the technology and packing capability to meet demand. West Africa has many examples of high dairy importing, with some countries importing US$ 13 million to US$ 20 million of pasteurized milk (i.e., Mali, Niger), negatively impacting trade balances (Davis Jr, 2016). While country-by-country consumption of dairy products in Africa is a convoluted issue based on

Figure 19: Distribution of the intra-African traded volumes of cotton in 2015



Source: Prepared by UNCTAD based on MIF (2014).

habits and cultural aspects, one uncontested fact is the demand for milk is growing across the continent, growing from 15 billion liters in 2010 to almost 25 billion liters in 2020 (TetraPak, 2014). For example, Kenya leads the African milk consumption with 120 liters per capita annually, which is 80 liters below the FAO's recommend 200 liters (Haggblade and Hazell, 2010). Uganda, Tanzania, and Rwanda record anemic annual per capita consumption numbers of 53 liters, 42 liters, and 38 liters, respectively. Ethiopia consumes a measly 20 liters per capita, which is 180 liters below the recommended 200 liters.

Regarding milk production, Africa has 13.4 million dairy farms. But despite the impression of mass industrial-scale farming, the average cattle herd is only 10 cows strong. From the nomadic Maasai inhabiting southern Kenya and northern Tanzania to the Bodi tribe in Ethiopia, small-scale herding is still a way of life for some (Page, 2015). In some sub-Saharan African countries, cows produce below 200 liters of milk per year, compared to over 12,500 liters per cow in some developed countries. For example, Kenya has nine times the cattle population of South Africa, yet it reports milk production numbers that are not even close to what you would expect given its cattle population. The cause of these abysmal results in sub-Saharan Africa is generally low technology via the absence of any credits or subsidies to help investment in such technology. Accordingly, many dairy farmers in sub-Saharan Africa fail to enter the processing aspect of the dairy business where most of the value is added (Davis Jr, 2016).

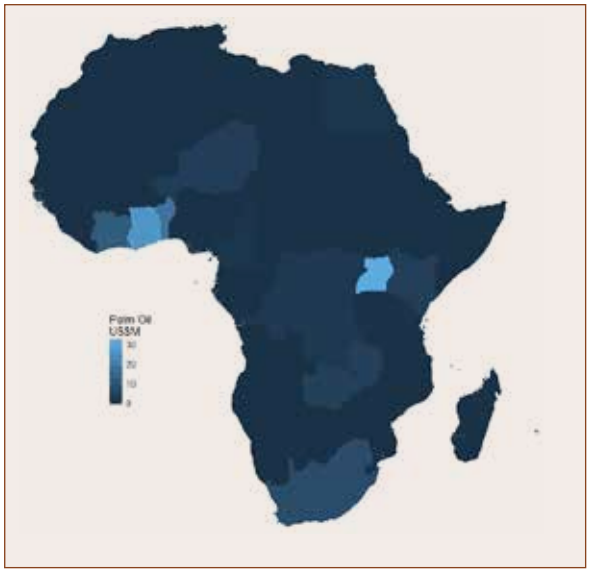
4.1.4 Cotton

In 2015, only seven per cent of all cotton-based produce traded in Africa was supplied locally. Cotton represents about 15 per cent of the traded volumes of strategic commodities (ITC, 2016). It is one of the most important cash crops on the continent, with more than 2.5 million livelihoods dependent on cotton production alone. Most cotton production in Africa is by smallholders, which generally are farmers with less than one hectare of land. These farmers tend to achieve low yields and have a limited access to inputs such as water and pesticides. Quality has traditionally been seen as high throughout the continent, largely thanks to hand picking (BCI, 2016). Africa has traditionally been an important cotton production base. However, almost 80 per cent of cotton fiber is processed into yarn in Asia. In contrast, fiber transformation rates in Africa are at an historic low (Knappe, 2011).

Differently from the trade flows of maize and dairy products, the intra-African trade flows of cotton are more homogenous. About 90 per cent of them are shared among 13 countries. In 2015, Zimbabwe was responsible for 20 per cent and Benin, Zambia, and Mauritius are responsible for about ten per cent each. South Africa, Côte d'Ivoire, and Lesotho were responsible for about seven per cent each. Mozambique, Egypt, and Morocco with four per cent each. Tanzania was responsible for three per cent and Malawi and Madagascar with two per cent each (ITC, 2016). In these countries, about 97 per cent of cotton was traded intra-REC. Figure 19 shows the distribution of the intra-African traded volumes of cotton in 2015.

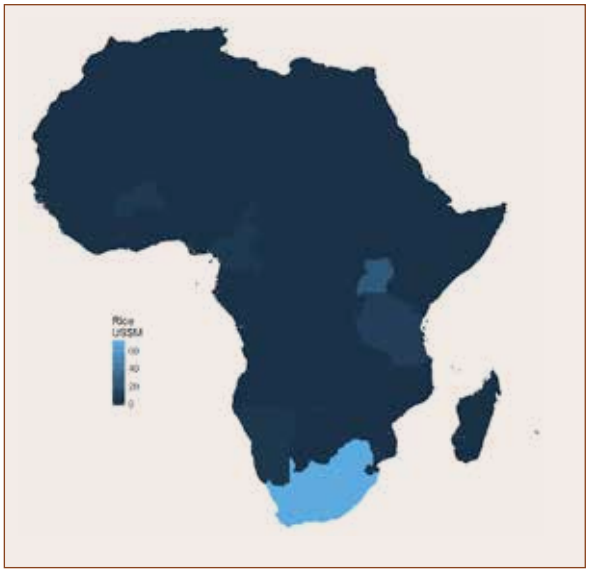
Cotton is one major cash income generator for small farms in west and central African regions. It has sometimes been the only viable cash crop, particularly in Sahelian zones[7], although this may now be changing with several cereals staples becoming cash crops in the context of increasing demand and prices. Most of these farmers are poor by international standards. However, farmers in cotton zones are often better off than farmers elsewhere due to greater access to inputs, innovation, technical advisory services, and availability of organized production and marketing chains. In these zones there is evidence that a boom in cereals production accompanied the cotton boom (Hussein, 2008).

Figure 20: Distribution of the intra-African traded volumes of palm oil in 2015



Source: Prepared by UNCTAD based on MIF (2014).

Figure 21: Distribution of the intra-African traded volumes of rice in 2015



Source: Prepared by UNCTAD based on MIF (2014).

4.1.5 Palm oil

In 2015, only three per cent of all palm oil traded in Africa was supplied locally. Palm oil represents about seven per cent of traded volumes of strategic commodities (ITC, 2016). Oil palm – *Elaeis guineenses* – originated in West Africa and grows extensively in this region. However, its cultivation is largely a low-yield multi-crop stands in and around villages, where it has been traditionally grown as a subsistence crop in small-scale farming systems for thousands of years (SPOTT, 2016).

Currently, Africa, particularly West Africa, is considered the next frontier region for large-scale palm oil production. Many companies that already have existing plantations and other investors are now looking to expand their operations into this region to meet the growing demand for palm oil, especially in the food sector. Depending on the country, smallholders account for between 70 and 90 per cent of African oil palm growers. Yield is much lower in Africa than in Southeast Asia for various reasons, including climate and infrastructural limitations and a predominantly smallholder approach to production. It is debatable whether comparative yields are achievable even with investment and improved growing techniques (SPOTT, 2016).

While Africa remains a net importer of palm oil, African governments see oil palm development as a potential source of tax and export revenue; and a growing number of investors, including some of the world's largest plantation companies, are finding concession areas easier to secure in Africa than in other parts of the world such as Asia (SPOTT, 2016).

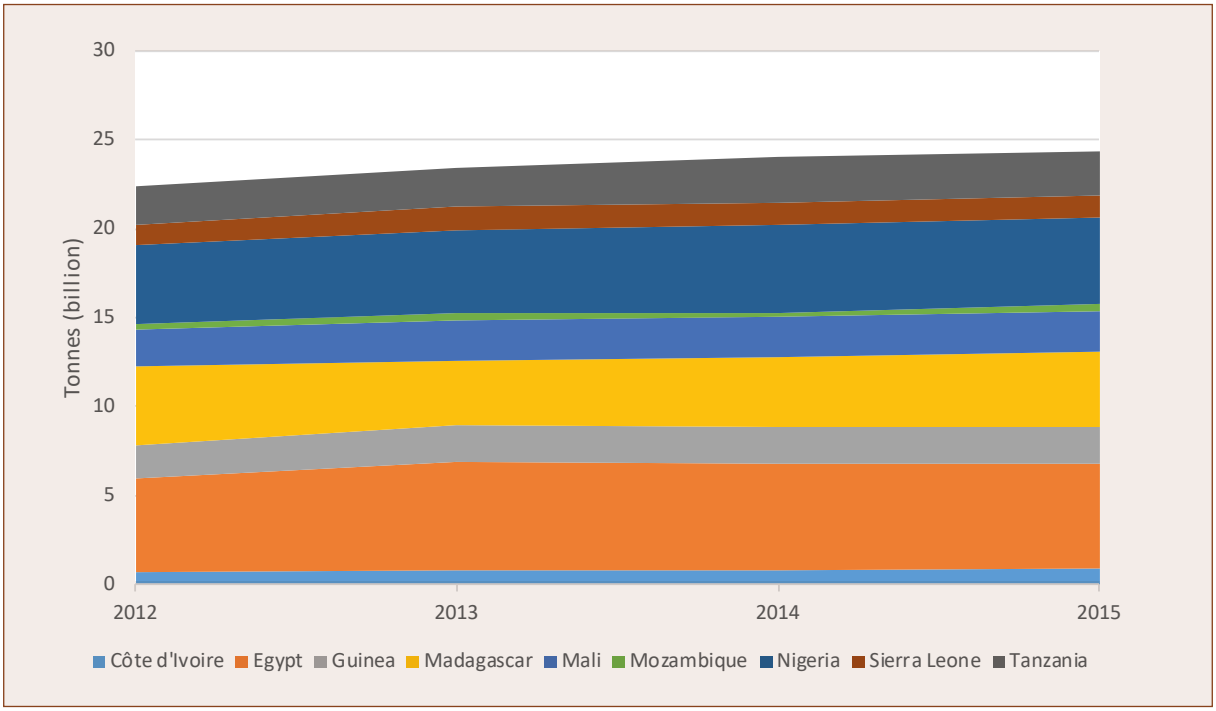
In 2015, eight countries were responsible for about 94 per cent of all intra-African trade of palm oil. They were Uganda with 23 per cent, Togo and Ghana with 19 per cent each, Benin with 13 per cent, and Côte d'Ivoire with eight per cent, South Africa with five per cent and Zambia and Kenya with three per cent each. In these countries, about 98 per cent of palm oil was traded intra-REC. Figure 20 shows the distribution of the intra-African traded volumes of palm oil in 2015.

Developments for sustainable palm oil are at the very early stage and are likely to be determined by the pace of agro-industrial project developments. The Africa Palm Oil Initiative (APOI), the first Signature Initiative of the TFA 2020, recognizes the ambitious development plans of countries in Africa. It aims to help transition the palm oil sector to a sustainable driver of long-term, low-carbon development in the region, through the development and implementation of a set of regional principles for responsible palm oil development (SPOTT, 2016).

4.1.6 Rice

With demand outstripping domestic production, Africa is the largest rice-importing region in the world,

Figure 22: African rice production per country between 2012 and 2015



Source: Prepared by UNCTAD based on data from ITC (2016).

but low-priced Asian exporters supply the bulk of its imports. At the regional level, almost all cross-border rice trade is imported through formal transit shipments from the main ports and through informal trade. Almost all trade from surplus rural production areas to deficit urban markets remains within the country of production due to high transport costs and customs formalities (WBG, 2012). As a result, locally produced rice represents about 6 per cent of the strategic commodities listed in the Declaration of the Abuja Food Security Summit being traded in Africa (AU, 2006; ITC, 2016).

In 2015, only two per cent of all rice traded in Africa was supplied locally, from which eight countries were responsible for about 99 per cent of all intra-African trade of rice (ITC, 2016). They were South Africa with 59 per cent, Uganda with 20 per cent, Tanzania with seven per cent, Burkina Faso and Cameroon with four per cent each, Namibia with three per cent and Egypt and Côte d'Ivoire with one per cent each. In these countries, almost all rice was traded intra-REC; only 0.02 per cent was exported to countries outside of trade agreement regions. Figure 22 shows the African rice production per country between 2012 and 2015 (FAO, 2016b, 2015).

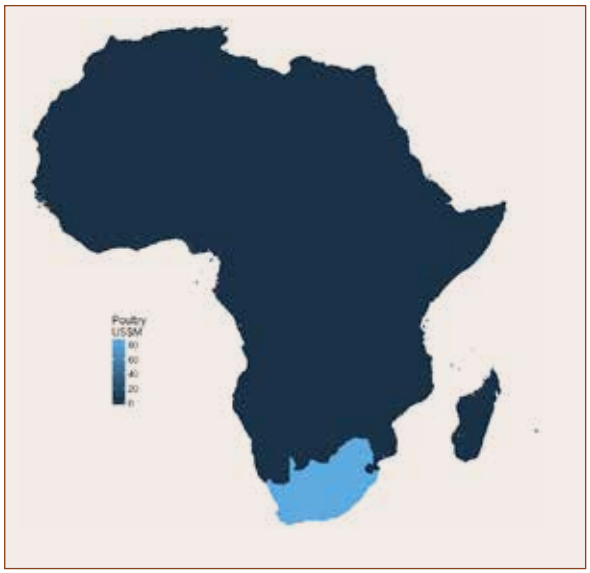
Interestingly, none of the major African producers – Egypt, Nigeria and Madagascar – are important exporters of rice. In fact, their productions are not enough to supply their local demands (FAO, 2016b, 2015). Figure 21 shows the distribution of the intra-African traded volumes of rice in 2015.

South Africa, major intra-African rice exporter, is totally dependent on rice imports to meet the local demand as no rice production takes place in the country, due to the high-water requirements of the crop. As a result, rice imports are duty free and regional exporters benefits from it to re-export to neighboring countries (Esterhuizen, 2016).

4.1.7 Poultry

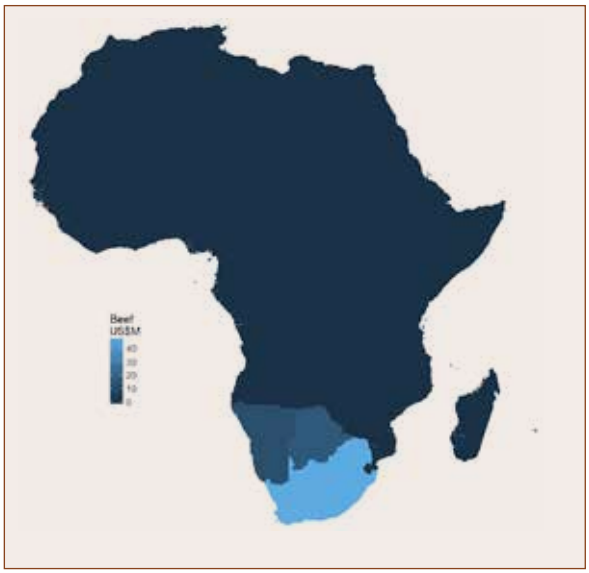
Poultry has a major role to play in Africa because produce is relatively inexpensive and widely available. To produce 1 kg of meat from a commercial broiler chicken only about 1.7 kg of feed is needed. In addition, poultry production has a less detrimental impact on the environment than other livestock and uses less water, which is a sensitive factor in many African countries. There is also the semi-scavenging backyard indigenous poultry that are extremely important in providing income and high-quality protein in the diets of rural people whose traditional foods are typically rich in carbohydrate but low in protein (Farrel, 2008).

Figure 23: Distribution of the intra-African traded volumes of poultry in 2015



Source: Prepared by UNCTAD based on MIF (2014).

Figure 24: Distribution of the intra-African traded volumes of beef in 2015



Source: Prepared by UNCTAD based on MIF (2014).

In general, Africa is one of the regions with the lowest traded volumes of poultry in the world (TPS, 2014). In 2015, only five per cent of all poultry traded in Africa was supplied locally. Currently, poultry also represents about five per cent of traded volumes of strategic commodities (ITC, 2016). South Africa alone was responsible for about 94 per cent of all intra-African trade of poultry in 2015. As result, almost all South African poultry production was traded inside SADC; only one per cent was exported to countries outside of trade agreement regions Figure 23 shows the distribution of the intra-African traded volumes of poultry in 2015.

The problem of scaling up the African commercial production of poultry are not only the fact that larger flocks no longer live in trees and require coops but also feeding cost and access to treatments to prevent parasites and disease. For example, small chicken growers in Mozambique usually fail because they cannot produce at a cost below those of the larger growers. In even remote local markets, frozen chickens produced in Mozambique or imported from Brazil[8] and South Africa are cheaper than local live chickens. Local chickens taste better, but they are a luxury product. And margins are tight, to make a profit a farmer must be able to grow and sell the chicken in five weeks; if it takes just one extra week, then all the profit is lost to extra feed costs (Hanlon and Wethli, 2016).

4.1.8 Beef

Beef represents about four per cent of traded volumes of strategic commodities in 2015 (ITC, 2016). The African continent accounts for less than five per cent of the world production of animal products. However, its share in the world trade of beef is less than one per cent and local consumption of beef is among the lowest in the world (Mankor, 2013)

In 2015, only four per cent of all beef traded in Africa was supplied locally, from which South Africa, Botswana and Namibia were responsible for about 97 per cent of all intra-African trade of beef. As a result, almost all beef was traded inside SADC; only seven per cent was exported to countries outside of trade agreement regions Figure 24 shows the distribution of the intra-African traded volumes of beef in 2015.

Beyond SADC, the West African region presents tremendous potential for the development of the livestock sector based on national and regional markets. The region has a cattle population of over 60 million head, with the livestock sector in ECOWAS contributing some 44 per cent of agricultural GDP and providing livelihoods for millions of people. While 98 per cent of regional beef consumption is met from domestic production, demand is growing at twice the rate of supply (e.g. demand growing four per cent, compared to supply with two per cent per annum). In addition, the African per capita consumption of beef

is about 20 kg per year, which is low by international standards, 58 per cent the level of per capita consumption in the world (e.g. 48 kg per year) (CTA, 2011; FAO, 2016c).

4.1.9 Legumes

In 2015, 39 per cent of all legumes or pulses traded in Africa are supplied locally. Legumes represent less than one per cent of traded volumes of strategic commodities in 2015 (ITC, 2016). Five countries were responsible for almost 90 per cent of all intra-African trade of legumes. They were South Africa with 51 per cent, Kenya with 20 per cent, Uganda with nine per cent, Burkina Faso with seven per cent and Zambia with three per cent. In these countries, about 70 per cent of legumes were traded intra-RECs and the remaining 30 per cent was traded outside of regions with trade agreements. Figure 25 shows the distribution of the intra-African traded volumes of legumes in 2015.

Legumes play a vital role as a source of livelihood for millions of people in Africa. They also offer large potential to contribute to hunger alleviation in the region, especially resource-poor farmers since their cultivation contribute to the sustainability of cropping systems and soil fertility.

Figure 25: Distribution of the intra-African traded volumes of legumes in 2015

Source: Prepared by UNCTAD based on MIF (2014).

From a nutritional point of view, legumes are a critical and inexpensive source of plant-based proteins, vitamins and minerals for poor households in Africa. They have a low-fat content, contain zero cholesterol, and are a significant source of dietary fiber. Moreover, they are rich in minerals and B vitamins, all of which are important for a healthy life. From an agricultural point of view, multiple cropping systems that include legumes enhance soil fertility, improve yields, and contribute to a more sustainable food system. It is particularly noteworthy that legumes have a very low water footprint compared with other protein sources, and can be grown in very poor soils where other crops cannot be cultivated. Crop residues of legumes, and legumes in general, can also be used as animal fodder, thus increasing the quality of the animal diet. Furthermore, legumes can play an important role in climate change adaptation, since they have a broad genetic diversity from which climate-resilient varieties can be selected and/or bred.

4.2 Key findings

Measuring where Africa stands on regional integration of strategic commodities gives an assessment of what is happening across the continent regarding the intra-African trade and is an important way of highlighting where the gaps are. Looking exclusively at strategic commodities listed in the Declaration of the Abuja Food Security Summit, African countries have failed to successfully compete in domestic and regional markets due to many challenges such as the lack of infrastructure and supporting processes that leads to high unit cost (e.g. fresh poultry produce in Mozambique versus frozen poultry from Brazil).

To maximize the opportunities offered by RECs, it is necessary to deal with the overlapping memberships that hinder harmonization and standardization, as well as the enforcement of rules of origin. Looking exclusively at the strategic commodities 32 per cent of all traded volumes flow through channels in which trade partners present two or three overlapping memberships (ICTSD, 2012; ITC, 2016). As a result, the first obstacle is the fact that in any trading arrangement, there is always the possibility of disputes between trading partners. Unless a good dispute settlement mechanism exists, some disputes can threaten the continued operation of RECs (ICTSD, 2012).

5. AGRICULTURAL VALUE CHAINS AND REGIONAL DEVELOPMENT

Value chain concept corresponds to the sequence of value-adding activities[9] involved in bringing a product from production to the end-consumer. In agriculture they can be thought of as a "farm-to-fork" set of inputs, processes and flows (Da Silva, 2009). A value chain is not an entire sector or subsector since it involves a specific group of interrelated producers and other actors (IFAD, 2012). In terms of value added, it is quite challenging to obtain an absolute value or a proportion for developing countries. Generally, there is a consensus among researchers on the fact that value added in agriculture produces is low (UNCTAD, 2016). For example, developed countries process about 98 per cent of their agricultural products, compared to only 38 per cent in developing countries. In addition, the value-added of processed agricultural products in developing countries is almost five times less important than in industrialized ones (Cattaneo, 2013).

Agricultural development is one of the fastest ways to achieve poverty reduction because growth in the agricultural sector could be two or four times more effective at reducing poverty than growth in other sectors. Harnessing value chain development for poverty reduction is an opportunity for local development and trade (Cattaneo, 2013; IFAD, 2012; UNCTAD, 2015b).

Agricultural value chains can be divided into traditional and modern value chains. Traditional agricultural value chains are generally governed by spot market transactions involving a large number of small retailers and producers. The primary interface of the farmer in this system is with a buyer, often with monopsony power in which information asymmetry prevails. Modern value chains are characterized by vertical coordination or consolidation of the supply base, agro-industrial processing and the use of standards throughout the chain. Initially driven by export sector opportunities, modern value chains are becoming more prevalent in the domestic markets of developing countries as incomes rise, urban populations grow and retail structures change. It is important to mention that traditional and modern value chain systems may include smallholders. However, modern value chains require smooth product flows, high standards and error-free production. Consequently, lead firms are willing to invest in knowledge, technology, and other forms of transfers to the benefit of local suppliers (Cattaneo, 2013).

Table 2: Top ten agricultural and processed food commodities exported to global markets

Rank-ing	HS Code	Product nomenclature	Africa´s exports to world (%)	Strategic comm-odities
1	18	Cocoa and cocoa preparations	2.50	No
2	08	Edible fruit and nuts; peel of citrus fruit or melons	1.92	No
3	09	Coffee, tea, mate and spices	1.14	No
4	03	Fish and crustaceans, molluscs and …	1.10	Yes
5	07	Edible vegetables and certain roots and tubers	1.07	Yes (legumes)
6	24	Tobacco and manufactured tobacco substitutes	0.79	No
7	15	Animal or vegetal fats and oils and…	0.73	Yes (palm oil)
8	12	Oil seeds and oleaginous fruits…	0.70	No
9	52	Cotton	0.61	Yes
10	17	Sugar and sugar confectionery	0.54	No

Initially motivated by export market opportunities, agricultural value chains are also extending their reach into domestic and regional markets as retail markets evolve to meet the needs of urban consumers. Africa is the second-fastest urbanizing continent, second only to Asia. Currently, the share of urban residents is 40 per cent, and is expected to reach 50 percent by the mid-2030s (OECD, 2016a).

Regional value chains differ from global value chains because the finished product is exported by a country within the region, either globally or regionally (Banga et al., 2015). Therefore, regional value chains offer opportunities to the countries in the region to climb up the value chains by using the region to boost their competitiveness and to produce and export products with higher value added. Well-established regional value chains in Africa can also provide an opportunity to the countries in the region to link gainfully into the global value chain system and increase their bargaining power with the lead firms (Banga et al., 2015). Thus, regional agricultural value chains can cover two realities. The first, when production is national and intended for regional consumption. The second, when production is regional and supplies global markets (OECD, 2016b; Proctor and Lucchesi, 2012).

Table 3: Top ten agricultural and processed food commodities exported to African markets

Rank-ing	HS Code	Product nomenclature	Africa´s exports to world (%)	Strategic comm-odities
1	24	Tobacco and manufactured tobacco substitutes	2.48	No
2	7	Edible vegetables and certain roots and tubers	1.83	Yes (legumes)
3	17	Sugar and sugar confectionery	1.66	No
4	15	Animal or vegetal fats and oils and …	1.49	Yes (palm oil)
5	22	Beverages, spirits and vinegar	1.37	No
6	9	Coffee, tea, mate and spices	1.34	No
7	10	Cereals	1.22	Yes (maize and rice)
8	3	Fish and crustaceans, molluscs and …	1.18	Yes
9	8	Edible fruit and nuts; peel of citrus fruit or melons	0.84	No
10	4	Dairy produce; birds' eggs; natural honey; …	0.81	Yes (dairy produce)

Table 4: The top ten African agricultural value chains in 2015

Rank-ing	HS Code	Product nomenclature	Strategic comm-odities
1	7	Edible vegetables and certain roots and tubers	Yes (legumes)
2	24	Tobacco and manufactured tobacco substitutes	No
3	9	Coffee, tea, mate and spices	No
4	15	Animal or vegetal fats and oils and …	Yes (palm oil)
5	8	Edible fruit and nuts; peel of citrus fruit or melons	No
6	18	Cocoa and cocoa preparations	No
7	3	Fish and crustaceans, molluscs and …	Yes
8	17	Sugar and sugar confectionery	No
9	22	Beverages, spirits and vinegar	No
10	10	Cereals	Yes (maize and rice)

Regional integration can be a powerful multidimensional process if pursued effectively. It is expected to lead to coordination, cooperation and convergence efforts around projects of common interest but its level of ambition can be more or less deep, depending on the political and socio-economic realities of the member countries. In that sense, real region-wide progress, through regional agricultural value chains requires improved connectivity (i.e. infrastructure, energy access, etc.), convergence in regulatory policies and effective support to trade and trade-related policies are all fundamental to accompany the transformation process in Africa into a CFTA (Ramdoo, 2014).

Bringing national and regional efforts together would therefore undoubtedly enhance the attractiveness of the continent and sustain its economic prospects as the latter ambitions to shift to a CFTA and integrate Africa successfully into the global economy (Ramdoo, 2014).

At the African level, it is now largely accepted that developing regional value chains for strategic agricultural commodities is essential. Developing regional value chains could exploit economy of scale, lower production and marketing costs, and help removing non-tariff barriers (UNECA, 2015a). As most countries export primary commodities, some of them selling packaged and processed goods and others involved in marketing and branding, there seems to be room to develop productive synergies within the continent and ultimately stimulate intra-African trade. In this context, it is important to identify the main agricultural value chains already in place in Africa. In 2015, Table 2 presents the top ten agricultural-based commodities exported to global markets and their Harmonized System (HS) code[10] (ITC, 2016).

Table 3 presents the top ten agricultural and processed food commodities exported to African markets (ITC, 2016).

The cross-analysis between Table 2 and Table 3 presents the top ten African agricultural value chains already in place. The results are presents in Table 4.

5.1 Proposed value chain prioritization methodology and assessment

In order to identify the most promising agricultural commodity chains among the top ten African agricultural value chains (see Table 4), a prioritization criteria were adopted. The approach was based on acknowledged methodologies for value chain analysis[11] and consists of four criteria: economic criterion; social criterion; environmental criterion; and

regional integration criterion (Dairon, 2016). For each criterion is assigned a weight in order to facilitate the appraisal process in a fast and reasoned fashion (UNIDO, 2009). For each parameter is also assigned a weight ranging from -5 to 5. Parameter receive zero as weight when information is missing (Dairon, 2016).

5.1.1 Prioritization criteria

Economic criterion

Under these criteria, factors such as export value and its growth on the continent as well as start-ups costs are considered. The competitive advantage is also assessed based on the productivity, cost of production, infrastructure, and business environment. In addition, potential value addition growth is studied by assessing the opportunities for developing processed products and capturing existing price premiums for certified productions. To this criterion is assigned a weight of 20 points out of 100. Its parameters are (Dairon, 2016):

- Export value in Africa;
- Growth market demand in Africa;
- Contribution to GDP;
- Start up costs;
- Existence of a competitive advantage; and
- Potential for value adding growth.

Social criterion

Considered social aspects include the type of workforce and the potential for income growth (i.e. family-farming system with smallholders versus an extensive farming system with rural employees). Other elements such as the prevalence of women workers and the possibility of skill development (i.e. the existence of training centers or programs) are also considered. To this criterion is assigned a weight of 20 points out of 100. Its parameters are (Dairon, 2016):

- Target population;
- Potential for income generation;
- Potential for skill development; and
- Other effects on rural life.

Environmental criterion

The sustainability of the production practices and infrastructure are key issues in the success of value chain development. So it is sustainable certifications and standards that exist for agri-food products (i.e. organic product standards). As the regional market for agricultural produce grows, the importance of such instruments with regards to the continental trade is expected to become more significant. To this criterion is assigned a weight of 20 points out of 100. Its parameters are (Dairon, 2016):

- Impact of the infrastructure needed on the environment;
- Existence of sustainable certification and standards; and
- Impact on biodiversity and soil conservation.

Regional integration criterion

Considering the degree of adaptation to the regional context – especially in the perspective of the future CFTA – is an essential part of the proposed methodology. In this regard, synergies among countries (i.e. producer versus importer, intra-REC trade, etc.) and the maximization of effects at regional level, such as the possibility to foster infrastructures and knowledge centers at regional level, were identified as relevant parameters. To this criterion is assigned a weight of 40 points out of 100. Its parameters are (Dairon, 2016):

- Potential impact on regional employment;
- Complementarities among countries;
- Potential for developing regional infrastructures; and
- Potential for innovation and research & development (R&D).

5.1.2 Assessment of promising regional value chains

Webber *et al.* (2010), Neven (2014), and Dairon (2016) highlight seven specific agricultural commodities as local products with promising regional value chains due to their recognized importance to the African agricultural economy. Interestingly, none of the promising regional value chains corresponds to any of the strategic commodities listed in the Declaration of the Abuja Food Security Summit (AU, 2006). However, only one of them – floriculture – is not one of the top ten African agricultural value chains listed in Table 4. The seven commodities are:

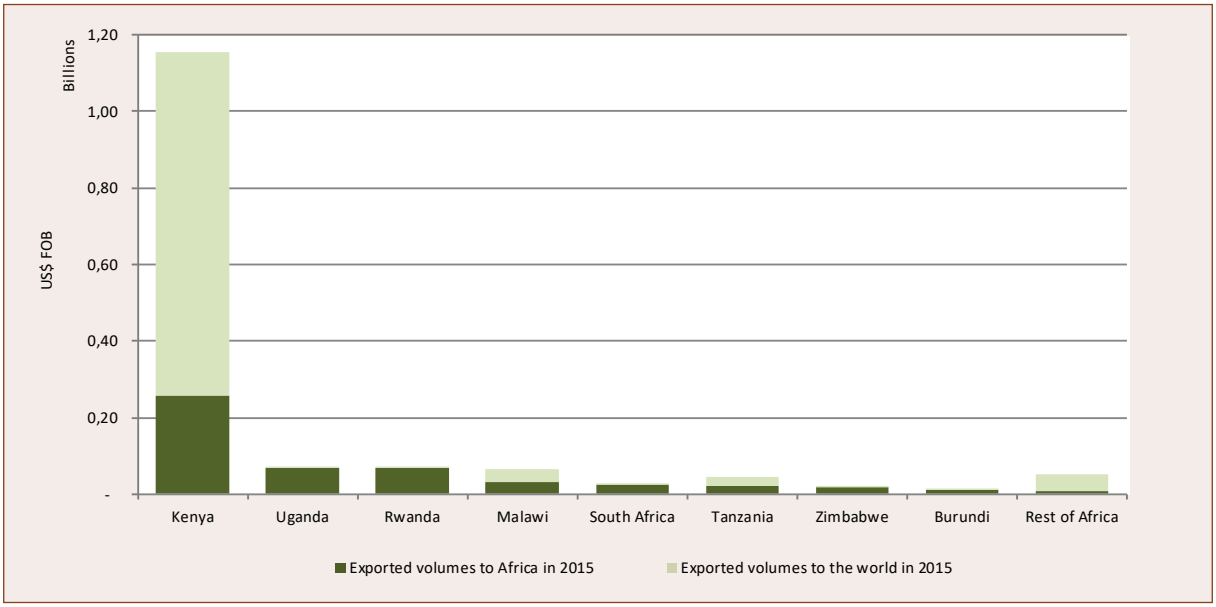
- Avocados;
- Cashew nuts;
- Floriculture;
- Onions / shallots;
- Pineapples;
- Potato; and
- Tea.

Dairon (2016) has assessed their degree of priority for the development of regional value chains. Her assessment was based on desk review; therefore, it is important to mention that there is decision bias based on the availability of information. Yet, it is an important

Table 5: Priority assessment of agricultural commodities for the development of regional value chains in Africa

Prioritization criteria	Avocados HS 080440	Cashew nuts HS 0801	Floriculture HS 0603	Onions/ shallots HS 0703	Pineapples HS 080430	Potato HS 0701	Tea HS 0902
Economic criterion							
Export value in Africa	1.0	2.0	3.0	4.0	1.0	4.0	5.0
Growth market demand in Africa	4.0	2.0	3.0	2.0	4.0	4.0	5.0
Contribution to GDP	3.0	3.0	0.0	3.0	0.0	2.0	5.0
Startup costs	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Existence of a competitive advantage	2.0	3.0	3.0	2.0	2.0	2.0	2.0
Potential for value adding growth	4.0	4.0	3.0	3.0	4.0	4.0	5.0
Subtotal	17.0	17.0	15.0	17.0	14.0	19.0	25.0
Economic impact = (20 x subtotal) / 100	3.4	3.4	3.0	3.4	2.8	3.8	5.0
Social criterion							
Target population	2.0	4.0	3.0	2.0	0.0	3.0	4.0
Potential for income generation	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Potential for skill development	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Other effects on rural life	0.0	2.0	0.0	0.0	2.0	5.0	0.0
Subtotal	2.0	9.0	3.0	2.0	2.0	8.0	6.0
Social impact = (20 x subtotal) / 100	0.4	1.8	0.6	0.4	0.4	1.6	1.2
Environmental criterion							
Impact of the infrastructure needed on the environment	0.0	0.0	0.0	0.0	0.0	-1.0	0.0
Existence of sustainable certification and standards	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Impact on biodiversity and soil conservation	0.0	0.0	0.0	0.0	0.0	3.0	-2.0
Subtotal	3.0	3.0	3.0	3.0	3.0	5.0	1.0
Env. impact = (20 x subtotal) / 100	0.6	0.6	0.6	0.6	0.6	1.0	0.2
Regional integration criterion							
Potential impact on regional employment	2.0	3.0	4.0	2.0	3.0	2.0	3.0
Complementarities among countries	3.0	4.0	4.0	3.0	4.0	3.0	4.0
Potential for developing regional infrastructures	0.0	2.0	3.0	3.0	2.0	2.0	3.0
Potential for innovation and research & development (R&D)	3.0	3.0	3.0	0.0	3.0	4.0	3.0
Subtotal	8.0	12.0	14.0	8.0	12.0	11.0	13.0
Regional impact = (40 x subtotal) / 100	3.2	4.8	5.6	3.2	4.8	4.4	5.2
Total impact score	**7.6**	**10.6**	**9.8**	**7.6**	**8.6**	**10.8**	**11.6**

Figure 26: The eight main intra-African exporters of tea in 2015



Source: Prepared by UNCTAD based on data from ITC (2016).

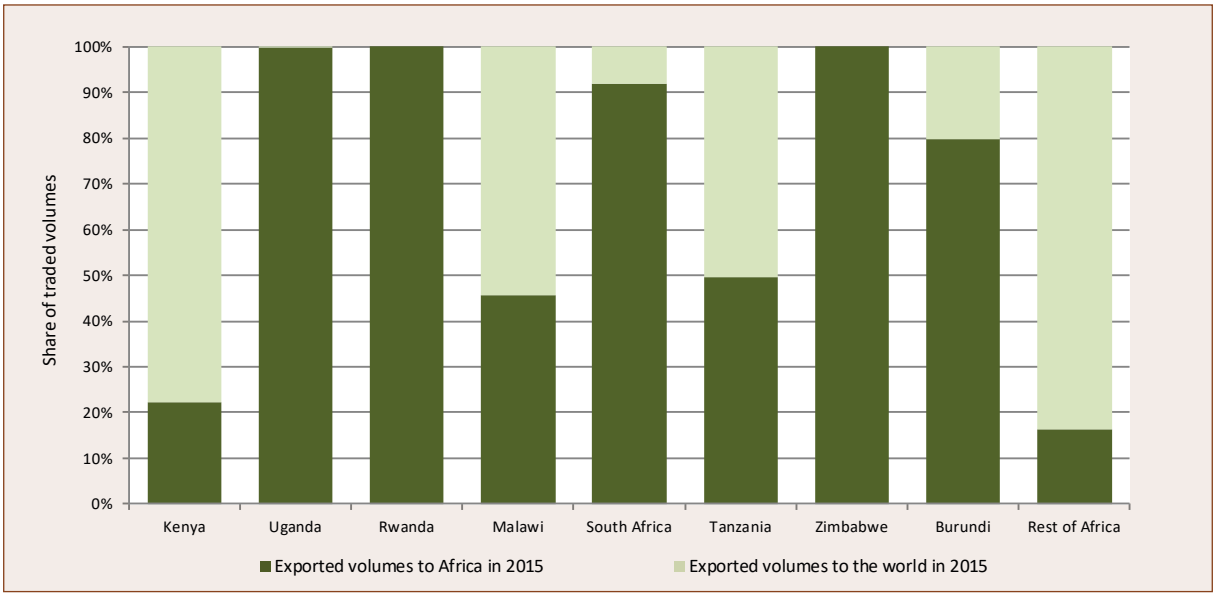
and rapid assessment tool for screening agricultural products, from which researchers should focus on gathering primary data to support policymakers during decision-making processes about the development of regional commodity chains. Table 5 summarizes the assessment results (Dairon, 2016).

Assessment results reveal that among the selected agricultural commodities, tea and potato present the highest potential – scoring 11.6 and 10.8 respectively – for the knowledge about regional supply chains of agricultural commodities and their impacts on establishing a CFTA.

5.2 The tea value chain in Africa

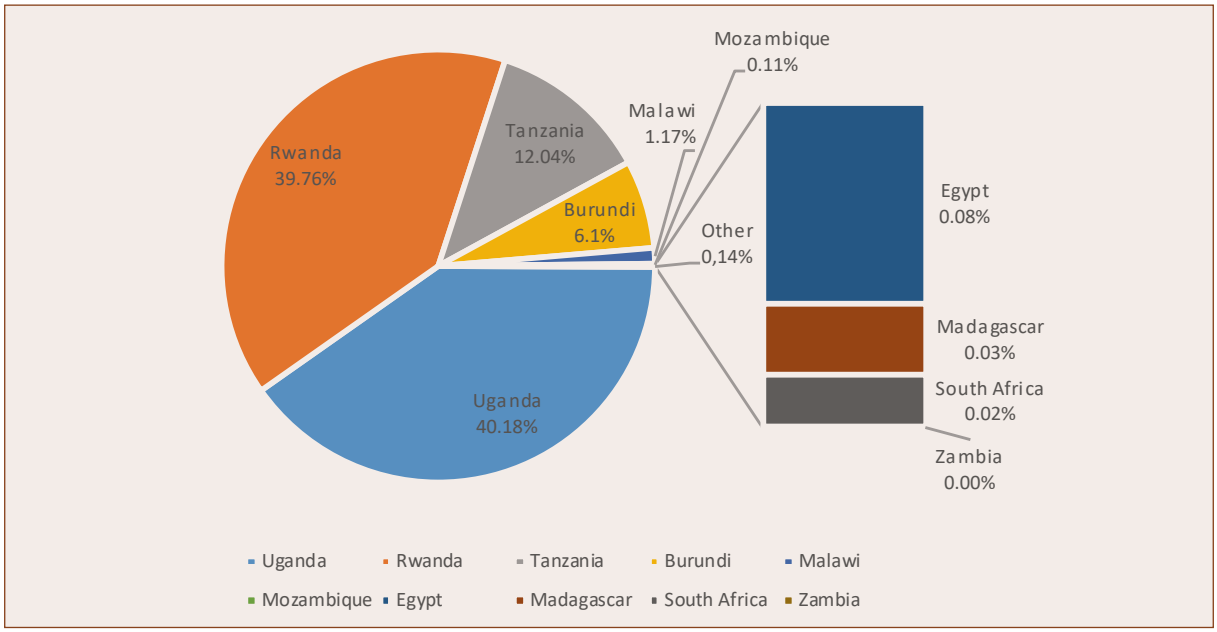
In 2015, Africa was responsible for about 21 per cent of all global trade of tea[12], from which Kenya alone supplied about 76 per cent of all African

Figure 27: Share of intra-African trade of tea in 2015



Source: Prepared by UNCTAD based on data from ITC (2016).

Figure 28: African exporters of tea to Kenya in 2015



Source: Prepared by UNCTAD based on ITC (2016).

traded volumes. Kenya exported an estimated US$ 208 million worth of tea each to its two biggest markets, Pakistan and Egypt. Other important and growing markets for Kenyan tea include the United Kingdom, Afghanistan, Sudan, United Arab Emirates and Yemen. Cumulatively, exports to these seven countries amount to 80 per cent of the tea export from the country. Kenyan tea exporters have also benefited from better prices in the world market. Between 2007 and 2010, the price per tonne of Kenyan tea has risen from US$ 1,865 to US$ 2,786 per tonne. However, this is still lower than the price of Sri Lankan and Indian tea, which command prices, at least, twice as higher (ITC, 2014). Kenya is the world's third largest producer of tea after India and China, with an output of 399 thousand tonnes in 2010. In the same year, the country exported almost 418 thousand tonnes of tea worth US$ 1.2 billion, making it the largest tea exporter in the world in terms of quantity and the second largest in terms of value (ITC, 2014).

Looking at regional trade numbers, about 66 per cent of the African production of tea was exported outside the continent. Only 34 per cent remained in the continent. Figure 26 shows the eight main tea exporters to regional markets in 2015, which are responsible for more than 98 per cent of all traded volumes of tea in Africa (ITC, 2016).

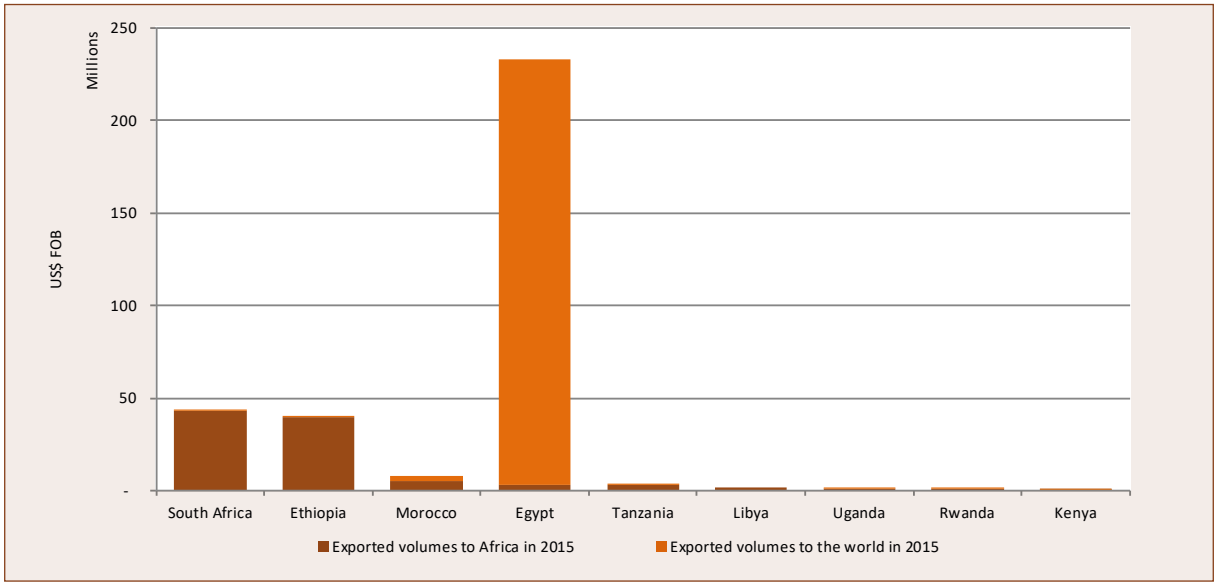
Clearly, Kenya is the main exporter in the region when it comes to regional and global traded volumes of tea. However, three countries present an important role as regional traders since their tea production is almost entirely dealt through intra-African trade flows. These countries are Rwanda, Uganda and Zimbabwe. Figure 27 shows the importance of regional trade for the eight main intra-African exporters in 2015 (ITC, 2016).

Differently of other main tea exporters in the region, these three countries – Rwanda, Uganda and Zimbabwe – present unique tea value chains that rely entirely on regional markets. Therefore, they provide an opportunity to understand their value adding structures, which are able to boost regional supply chains of other agricultural commodities and processed food products in Africa.

Rwanda and Uganda are the main tea suppliers to Kenya. In fact, these two countries rely entirely on Kenya to re-export their product through intra-COMESA flows. In 2015, African countries supplied about 15 per cent of all traded volumes of tea exported by Kenya. Figure 28 shows the main African exporters to Kenya (ITC, 2016).

Zimbabwe, however, relies on intra-SADC flows, especially exports to South Africa (e.g. 58 per cent of traded volumes), Mozambique (e.g. 35 per cent), and Zambia (e.g. seven per cent) (ITC, 2016). In short, the tea industry is a vital component of the local economy

Figure 29: The eight main intra-African exporters of potatoes in 2015



Source: Prepared by UNCTAD based on data from ITC (2016).

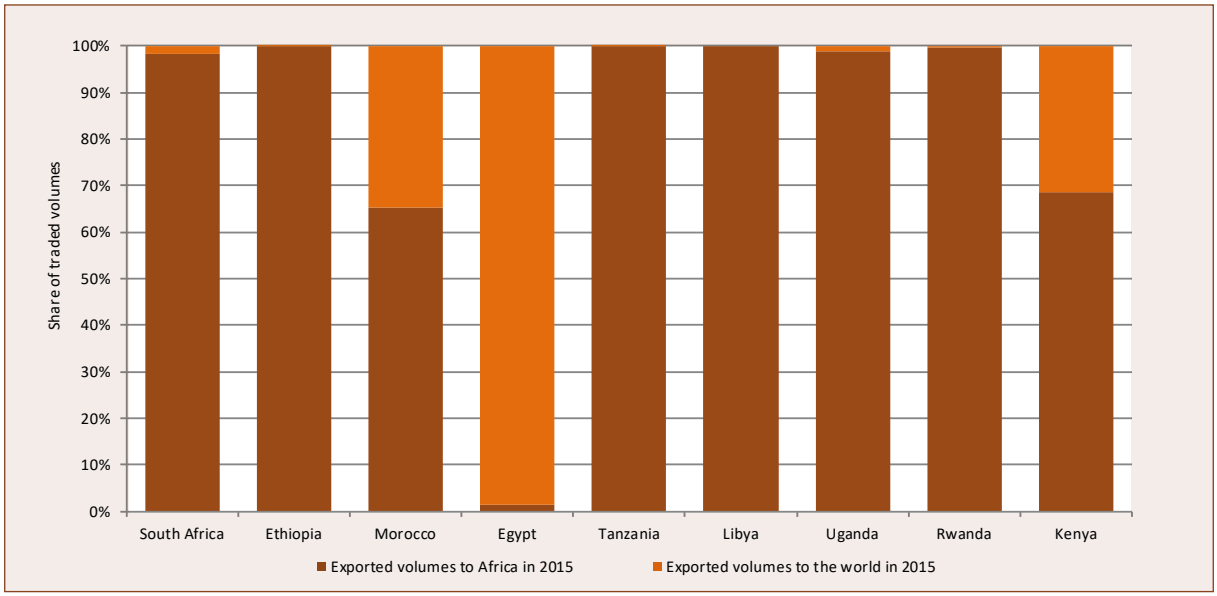
as it provides livelihoods for a large share of the population and is the main source of foreign exchange earnings (ITC, 2014).

The larger intra-African importer of tea is Egypt (i.e. 52 per cent of traded volumes of tea), followed by Kenya (i.e. 34 per cent). In order to meet its local demand of tea, Egypt imports about 88 per cent of tea from local supplier. Kenya is the major exporter. In 2015, Kenyan tea corresponded to more than 99 per cent of the Egyptian intra-African imports (ITC, 2016).

5.3 The potato value chain in Africa

In 2015, Africa was responsible for about nine per cent of all global trade of potato[13], from which Egypt alone supplied about 70 per cent of all African traded volumes (ITC, 2016)I. Since the European Union is its major importer, Egypt imports seed of potatoes

Figure 30: Share of intra-African trade of potatoes in 2015



Source: Prepared by UNCTAD based on data from ITC (2016).

exclusively from the European Union, primarily the Netherlands and the United Kingdom (Al-Habbal, 2015).

Looking at regional trade numbers, about 70 per cent of the African production of potato was exported outside the continent. Only 30 per cent remained in the continent. Figure 29 shows the eight main potato exporters to regional markets in 2015, which are responsible for more than 99 per cent of all traded volumes of potato in Africa (ITC, 2016).

When it comes to regional versus global traded volumes of potato, two countries – South Africa and Ethiopia – present an important role as regional traders since their potato export volumes are not only the largest in the region, excluding Egypt that is focused on exporting to global markets, but also their production are almost entirely dealt through intra-African trade flows. Figure 30 shows the importance of regional trade for the eight main intra-African exporters of potatoes in 2015 (ITC, 2016).

South Africa and Ethiopia are alone responsible for 87 per cent of all intra-African trade of potatoes (ITC, 2016). In Ethiopia, potatoes are still widely regarded as a secondary crop, and annual per capita consumption is estimated at just five kilograms (kg). In 2013, Ethiopia exported 15 per cent of its potato production, from which around 91 per cent to Somalia (FAO, 2016c).

In South Africa, potato production has grown strongly over the past 15 years and based relatively on large farms under irrigation conditions, with yields averaging around 34 tonnes per hectare. The country presents a sophisticated seed potato industry and potato processing sector, which utilizes some 250 000 tonnes of potatoes per year, mainly for frozen French-fries and crisps. Its annual potato consumption is around 30 kg per person. In 2013, South Africa exported only five per cent of its potato production, from which around 99 per cent were exported to Africa (FAO, 2016c).

Interestingly, these two countries rely entirely in their respective RECs to export their potato production within the continent, South Africa through SADC and Ethiopia through IGAD (ITC, 2016).

5.4 Key findings

Regional value chains offer opportunities to the countries in the region to climb up the value chains by using the region to boost their competitiveness and to produce and export products with higher value added (e.g. frozen French-fries and crisps exported by South Africa through SADC). In addition, regional value chains can help in creating conditions for African countries to take advantage of existing intra-African trade flows to facilitate the integration of partner countries in the various stages of production and value adding phases accordingly to their competitive advantages. As a result, encouraging the creation of new regional value chains that could eventually become the steppingstone of the CFTA (UNCTAD, 2015b).

In this context, tools for value chain assessment and prioritization can provide policymakers a better understanding of downstream and upstream production processes and their impacts on local development (UNCTAD, 2015b). These tools can also help policymakers to understand that national strategies are no longer at national level, but at the regional level. Whether looking at issues related to energy access, transportation infrastructure, poverty reduction, or security, successful efforts must focus on key regional issues rather than national level strategies only (Mayaki, 2016).

6. CONCLUDING REMARKS

This report's objective is to enhance knowledge among policymakers, experts and private sector stakeholders on the benefits of using strategic tools (e.g. network analysis and value chain assessment) to assist trade negotiations and boost regional supply chains in agricultural commodities and processed food products.

The network analysis can be used to measure regional integration in order to help African countries lower their cost base and enhance competiveness as a whole. It can measure how regional integration offers the prospect of improved access to neighboring markets as well as the potential to attract foreign investments in trade infrastructure. In addition, it can identify reliance on export of a single product to single marketing channels (e.g. meat, tea, and maize). The value chain assessment can map regional opportunities to enhance specialization within the context of regional value chains and increase diversity of pathways to produce higher value-added products. These strategic tools can highlight where opportunities are for boosting intra-African trade and to harnessing trade options across regional boarders that currently remain unexploited due to inefficiencies in transport, customs and technical regulations and standards.

These tools can also help to revisit the integration process of RECs in order to harmonize and coordinate inter-RECs integration and avoid one-side imperatives and/or monopsony power. Consequently, the RECs at different stages and levels of integration can identify building blocks for the creation of an integrated African market. Currently, new initiatives adopted by the AU´s member states (i.e. the Action Plan on Boosting Intra-Africa Trade (BIAT), the Action Plan for Accelerated Industrial Development of Africa (AIDA), the Programme of Infrastructure Development in Africa (PIDA), and the Minimum Integration Programme (MIP)) provide the basis for a different approach to integration which could benefit from these strategic tools to benchmark their progress (TRALAC, 2015). They can also be used to assess REC convergence without restricting the pace of progress of the RECs that are ahead of the others. However, it is necessary to identify key priorities.

In this context, strategic tools can provide policymakers a more workable approach to identify leverage points for Africa's integration and to avoid getting trapped on market access negotiations.

Many producers based in African countries fall short to compete in domestic and regional markets due to many challenges such as the lack of infrastructure and supporting processes that leads to high unit cost (e.g. fresh poultry produce in Mozambique versus frozen poultry from Brazil). In addition, there is substantial and thriving informal trade in the region, which means that intra-African trade is in fact likely to be significantly higher than official statistics suggest, having direct implications for fiscal revenue of governments in the region. Therefore, a practical sector-by-sector or issue-by-issue approach in which fundamental principles and minimum common points are outlined in an early agreement among member states could provide the basis for continuous adaption and improvement in each identified area required to a successful integration process of RECs into CFTA (Dairon, 2016; TRALAC, 2015; UNCTAD, 2015a, 2015c).

One good starting point is the agriculture sector since food remains the single most important household expense in Africa, despite wide variation between the budgets and consumptions habits of rural and urban populations. For example, in Nigeria, food typically accounts for 71 per cent of rural household expenditure, versus 54 per cent for urban households. These data are not exactly comparable. On the one hand, rural households have lower incomes and spend more of their incomes on imported or processed food, which is more costly, and harvest much of their own grain and protein (CTA, 2016). On the other hand, urban dwellers have higher incomes but must buy most of their food, typically more than 90 per cent of what they consume, versus 30 per cent in rural households. Food dominates both rural and urban budgets and present a direct and strong connection with local value chains, especially in the agricultural sector (CTA, 2016). As a result, support continental development of regional value chains in the agricultural sector can enhance food security and would be an important feature of the CFTA (UNCTAD, 2015b).

In short, the establishment of the CFTA will require all African countries to further develop their internal capacity to refine their regional trade policies and ensure that they are able to benefit from these various trade opportunities. In order to do this, they will need to strengthen their internal negotiations with key stakeholders to ensure that national

policies and trade negotiation strategies reflect their interests. This will require regional trade policies that are inclusive, gender sensitive and well-articulated by their national trade negotiators. In this context, strategic tools (e.g. network analysis and value chain assessment) can assist these trade negotiations and be used to benchmark integration process of RECs into CFTA.

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Notes

1 Traded volumes correspond to economic values of exports and not weight of goods.

2 The US$ FOB (Free on Board) means that the seller pays for transportation of the goods in American dollars to the port of shipment, plus loading costs. The buyer pays cost of marine freight transport, insurance, unloading, and transportation from the arrival port to the final destination.

3 Most of the subgroups were established before the *Abuja Treaty*, which established the African Economic Community (AEC) in 1991. The five subgroups are (MIF, 2014):
   - Southern African Customs Union (SACU), which was initially founded in 1910 and relaunched in 1969. It aims to maintain a common external tariff, share customs revenues and coordinate policies and decision-making on trade issues. SACU is the oldest customs union in the world.
   - Mano River Union (MRU) is an international association established in 1973. The Union was subsumed into ECOWAS but after conflict and tensions prevented the objectives of the regional grouping from being realized, the MRU was revised in May 2004. It aims to work towards the maintenance of peace and stability and a coordinated approach to security, trade and development.
   - Intergovernmental Oceanographic Commission (IOC) established in 1984 and it aims to strengthen relationships and solidarity and build regional sustainable development projects. It is the only regional community comprised of solely island nations.
   - West African Economic and Monetary Union (WAEMU) established in 1994 and it aims to promote economic integration among countries that share the CFA franc as a common currency.
   - International Conference on the Great Lakes Region (ICGLR) established in 2000 and it aims to provide a consolidated and cooperative approach to regional instability and conflict.

4 Kenya's traded volume corresponds to 3.03 per cent of all intra-African trade in 2015, from which 2.92 per cent flow through REC membership. Under single membership, trade flows are CEN-SAD with 0.10 percent and COMESA with 0.61 per cent. Under double membership, trade flows are CEN-SAD / IGAD with 0.23 per cent, CEN-SAD / COMESA with 0.35 per cent, COMESA / IGAD with 0.12 per cent, and COMESA / EAC with 0.38 per cent. Under triple membership, trade flows are COMESA / EAC / IGAD with 1.01 per cent and CEN-SAD / COMESA / IGAD with 0.12 per cent (IMF, 2016).

5 A mathematical model for the intra-African trade network is present in the Annex 1.

6 Goal 14: Conserve and sustainably use the oceans, seas and marine resources (UN, 2016).

7 Sahelian zones are biogeographic zones of transition in Africa between the Sahara to the north and the Sudanian Savanna to the south.

8 With intensive support by the Brazilian Development Bank and tight regulation by the government, Brazil has become the second largest chicken producer in the world and the largest exporter. The chickens are raised by tens of thousands of family farmers, but on a contract basis to large companies which provide day-old-chicks, feed, medication, technical assistance and, most importantly, a guaranteed market (Hanlon and Wethli, 2016).

9 Value can be added to an intermediate agricultural product not only by processing it, but also by storing it (i.e. value increasing over time) and transporting it (i.e. value increasing over space) (Neven, 2014) innovative thinking to find effective solutions and broad-based partnerships to implement programmes that have an impact at scale. In practice, however, a misunderstanding of its fundamental nature can easily result in value-chain projects having limited or non-sustainable impact. Furthermore, development practitioners around the world are learning valuable lessons from both failures and successes, but many of these are not well disseminated. This new set of handbooks aims to address these gaps by providing practical guidance on SFVCD to a target audience of policy-makers, project designers and field practitioners. This first handbook provides a solid conceptual foundation on which to build the subsequent handbooks.

10 The Harmonized Commodity Description and Coding System generally referred to as Harmonized System (HS) is a multipurpose international product nomenclature developed by the World Customs Organization (WCO). It comprises about 5,000 commodity groups; each identified by a six-digit code, arranged in a legal and logical structure and is supported by well-defined rules to achieve uniform classification. More than 200 countries and economies use the system as a basis for their customs tariffs and for the collection of international trade statistics. Over 98 per cent of the merchandise in international trade is classified in terms of the HS. The HS contributes to the harmonization of customs and trade procedures, and the non-documentary trade data interchange in connection with such procedures, thus reducing the costs related to international trade. It is also extensively used by governments, international organizations and the private sector for many other purposes such as internal taxes, trade policies, monitoring of controlled goods, rules of origin, freight tariffs, transport statistics, price monitoring, quota controls, compilation of national accounts, and economic research and analysis. The HS is thus a universal economic language and code for goods, and an indispensable tool for international trade. The code system is based on general product nomenclature:

01-05 Animal & Animal Products; 06-15 Vegetable Products; 16-24 Foodstuffs; 25-27 Mineral Products; 28-38 Chemicals & Allied Industries; 39-40 Plastics / Rubbers; 41-43 Raw Hides, Skins, Leather, & Furs; 44-49 Wood & Wood Products; 50-63 Textiles; 64-67 Footwear / Headgear; 68-71 Stone / Glass; 72-83 Metals; 84-85 Machinery / Electrical; 86-89 Transportation; 90-97 Miscellaneous; and 98-99 Service (WCO, 2016).

11 A summary of acknowledged methodologies for value chain analysis is present in the Annex 2.

12 HS 0902: tea, whether or not flavored.

13 HS 0701: potatoes, fresh or chilled.

14 Traded volumes correspond to economic values of exports and not weight of goods.

ANNEX 1: NUMERICAL ANALYSIS OF THE INTRA-AFRICAN TRADE NETWORK

Let the network *(N,g)* indicates the intra-African trade flows in 2015. In which a set of nodes *N={1,…,n}* refers to 54 member states of AU and a real-valued n x n matrix *g*, where *g_ij* represents interrelations between these members states using values of zero or one. The idea is that two countries are either connected or they are not. If *g_ij=1* then *i* is linked to *j,* otherwise *g_ij=0.* Note that self-connections do not have impact in our numerical analysis, therefore, our model adopts *g_ii=0* for all *i*.

Networks can be defined as directed or undirected and connected or unconnected; our analysis describes the intra-African trade network as an undirected and connected network. It is undirected for the reason that trade is a reciprocal relationship, in which there is a bidirectional exchange of products, services, finances, and/or information between nodes (e.g. countries). For example, a trading relationship within a given trade flow means that both partners need to agree to it, therefore, $g_{ij}=g_{ji}$. The intra-African trade network is also connected because

Figure 31: The intra-African trade network

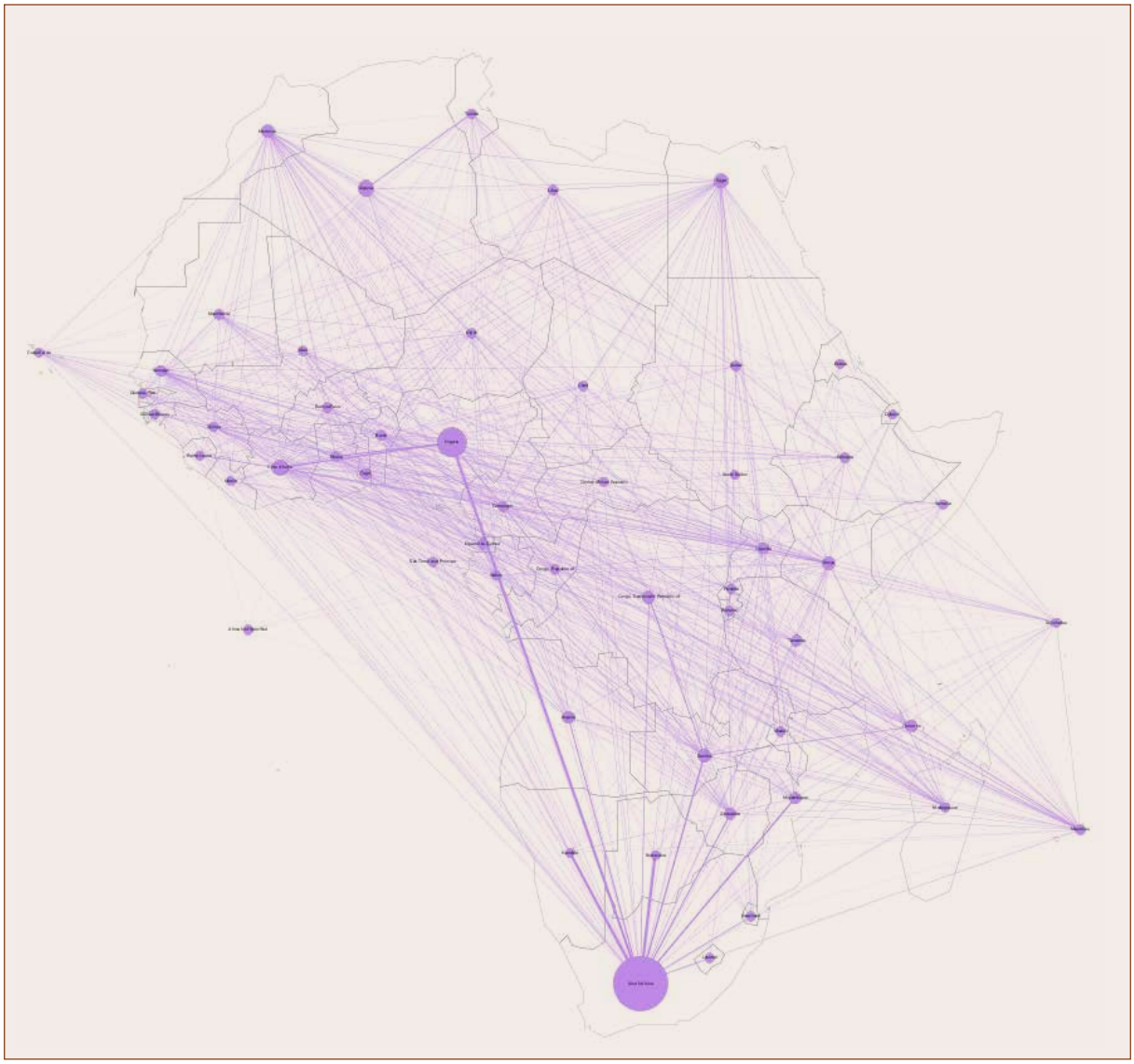
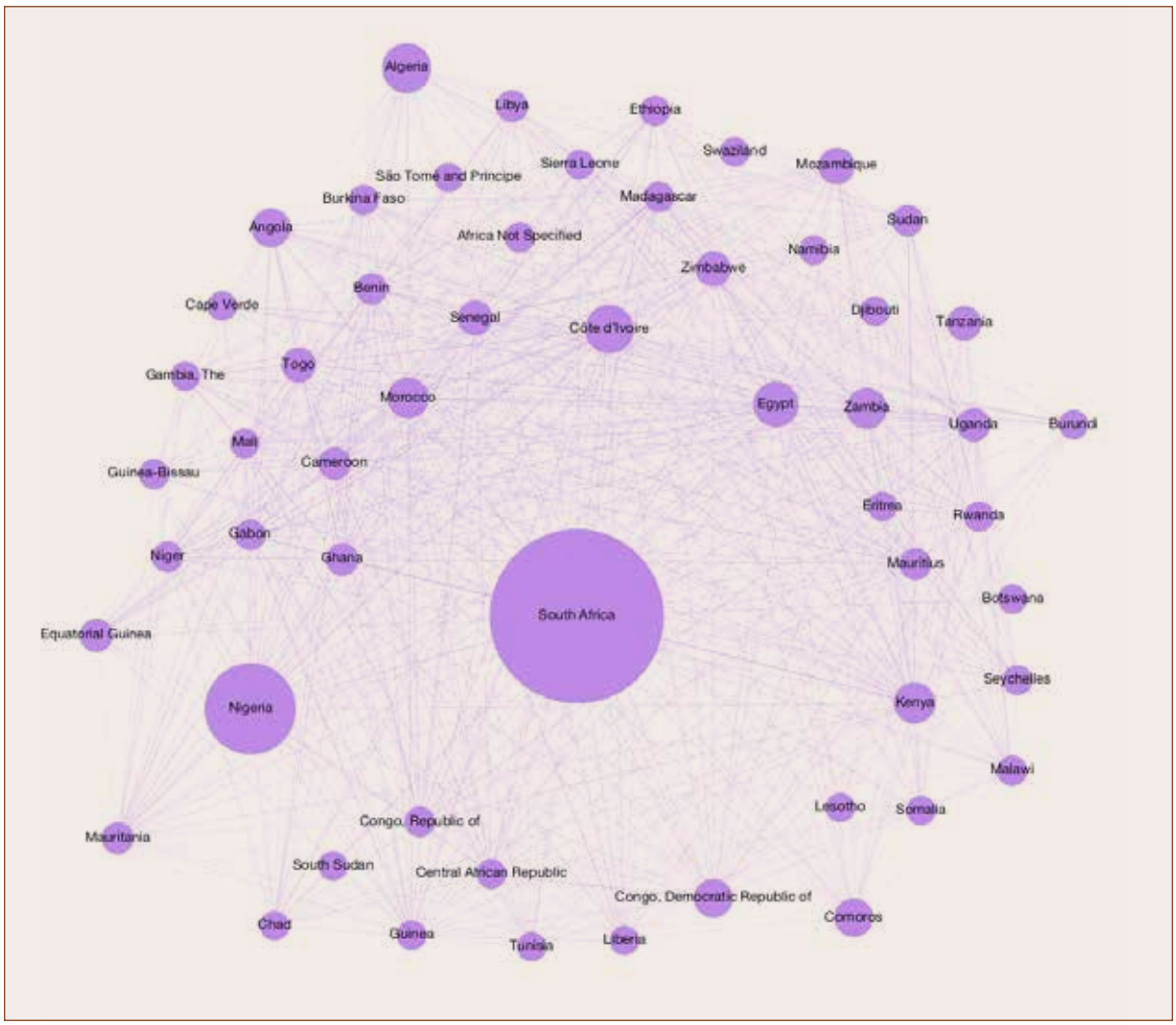


Figure 32: The intra-African trade network based on Yifan Hu graph drawing algorithm



every two nodes in the network are linked forming a single network component (Jackson, 2008). The numerical analysis identified 1,265 links representing direct relationships among countries that establish the intra-African trade network for the year 2015. Figure 31 shows the links among member states.

Note that each node representing a member state within the intra-African trade network has its size based on the amount of traded volumes[14] to other countries. For example, the South Africa is the largest exporter in the region for the year 2015 and its size matches the US$ 26 million that is the amount of traded volumes (i.e. exports) to other African countries in that same year (IMF, 2016). Link thicknesses also indicate the amount of traded volumes that flows between two countries.

An important aspect of Network Theory is the fact that networked relationships are based not only on direct relationships among nodes but also on nodes being impacted by indirect relationships. Hence, analysing a path among nodes can capture these indirect relationships. For example, countries that are already connected through REC's relationship might offer benefits to each other over a non-member partner, which can indirectly suffer from their relationship. A path in the intra-African network consists of a set of involved nodes and a set of links between these nodes. Meaning, it is a sequence of links i_1i_2, i_2i_3, …, $i_{(k-1)}i_k$ such that $i_ki_{(k+1)} \in g$ for each $k \in \{1, \ldots,k\text{-}1\}$, with $i_1=i$ and $i_k=j$, and such that each node in the sequence i_1, …, i_k is distinct (Jackson, 2008).

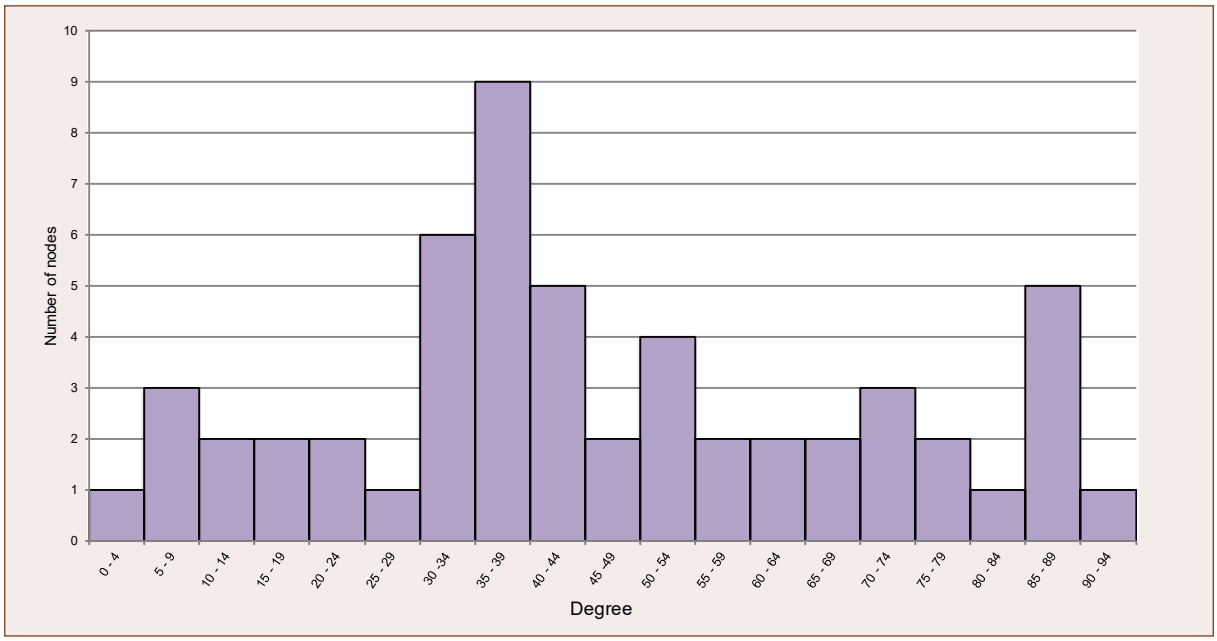
Translating traded volumes flows into a network graph enables visualization of relationships within the intra-African

trade network. Network graphs are generated using mainly "force-based" algorithms in which linked nodes attract each other and non-linked nodes are pushed apart (Hamwey et al., 2013; Hu, 2006). Different algorithms present different topologies and they highlight different characteristics of a given network. Since our analysis is framed using the traded volumes, we applied a graph topology that highlights complementarities among nodes to emulate the topology better representing the intra-African trade network. The numerical analysis uses the Yifan Hu graph drawing algorithm for mapping the networked relationships because it combines two algorithms, force-directed and multilevel, to reduce complexity. In order to increase graph readability, the algorithm used "no-overlapping of nodes" as a condition for drawing the graph. The graph in Figure 32 displays nodes with high degree in its center. Degree of a node is simply the number of links that a node has. For an undirected network the degree of node *i* in a network *g* is denoted as $d_i=\#\{j:g_{ij}=1\}=\#N_i(g)$. In the intra-African trade network, the degree of a node is the number of exporting and importing trade flows (i.e. links) a given country has.

The graph allows us to use numerical analysis in order to describe network relationships and highlight key structures of the intra-African trade network. For example, degree distribution captures a small amount of information. Yet, it gives important hints into network structure.

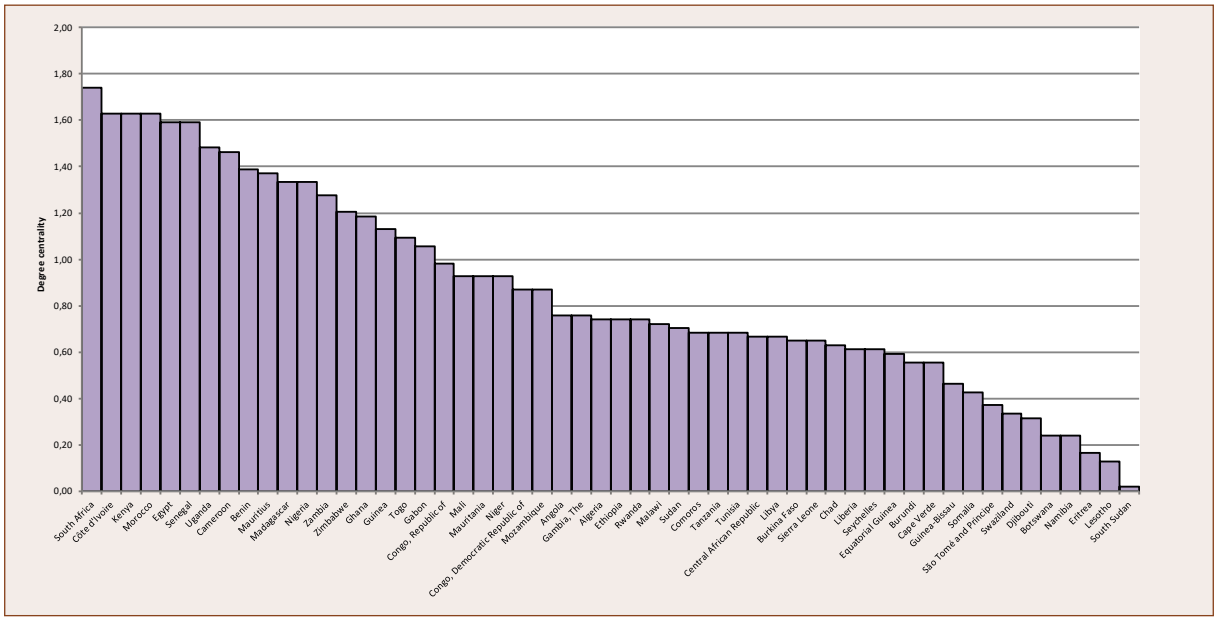
The degree distribution of the intra-African trade network (Figure 33) shows that around most of nodes have relatively smaller degrees or number of links to trade partners than the average degree of about 46 degrees. Thus, about 56 per cent of the nodes are below the average. The large degree nodes concentrate and/or irradiate the majority of flows (i.e. traded volumes) within the network; therefore, they are defined as hubs. In principal, hubs can be both strength and weakness of a network depending on their numbers. If failures occur at random within a given network with a great number of small degree nodes, it is very unlikely that a hub would be affected. Also, the existence of more hubs can safeguard network stability if one of the hubs fails (Page, 2011). The degree distribution indicates South Africa, which has the largest degree among member states, as an important trade hub for the intra-African trade network. Other important hubs are Côte d'Ivoire, Egypt, Kenya, Morocco, Senegal, and Uganda. Note that being identified as a hub indicates that these countries have a strong influence onto regional markets since they are not only responsible for concentrating the majority of trade flows within the intra-African trade network but also are accountable for managing trade information flows within their RECs.

Figure 33: Degree distribution of the intra-African trade network



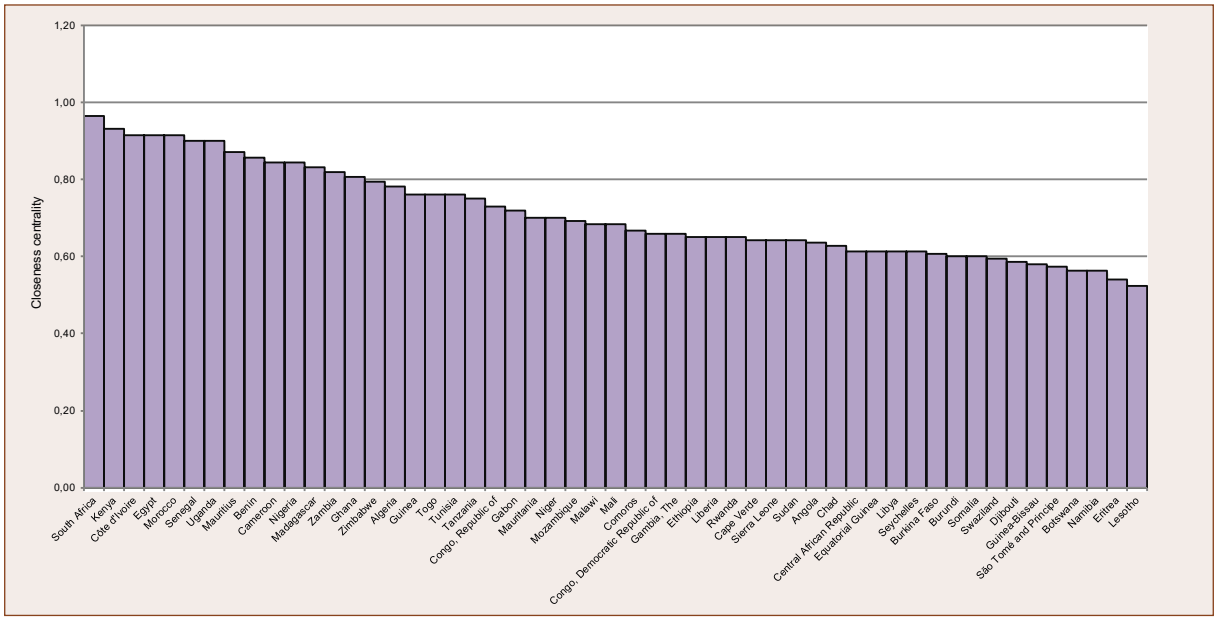
Source: Prepared by UNCTAD

Figure 34: Degree centrality of the intra-African trade network



Source: Prepared by UNCTAD

Figure 35: Closeness centrality of the intra-African trade network



Source: Prepared by UNCTAD

Another numerical analysis that can be used to describe network relationships is graph density. Density ranges from 0 to 1, where 1 represents a very dense network in which every single node within it is linked to almost all other nodes in the same network. Meaning, the degree of each node is close to the overall number of existing nodes. To measure density, the numerical analysis calculates the total number of existing links in the network divided by the total number of possible links in the same network. The intra-African trade network presents a high density of 0.852. Meaning, it can be described as densely connected network because it is connected by a large number of large degree nodes. In general, higher density network allows cascading benefits (i.e. lowering

transaction costs and promoting standardization), which are externalities that emerge though secondary and tertiary transfers in a dense network, and share many overlapping infrastructures and their resources.

Thus far, most of the numerical results described broad characteristics of the intra-African trade network. In order to identify leverage points and potential impacts, the numerical analysis conducted centrality measures that compare nodes so as to understand how a particular node relates to the overall network. There are four different measures of centrality: degree centrality, closeness centrality, betweenness centrality, and eigenvector centrality (Jackson, 2008).

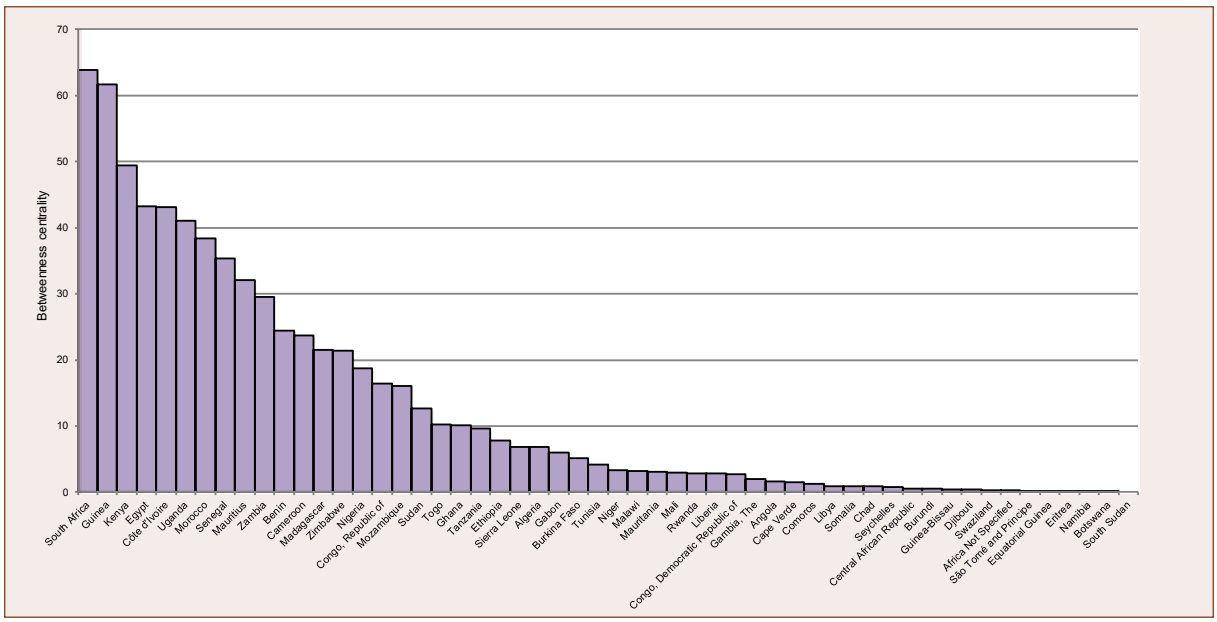
Degree centrality shows how connected a node is and how many other nodes can this particular node reach directly and indirectly. For example, degree centrality can provide an insight about collaboration and partnerships among countries within the intra-African trade network beyond their RECs. Figure 34 shows the degree centrality of the intra-African trade network. The degree centrality results ratify that South Africa is an important player on establishing a CFTA since it presents the higher degree centrality.

Closeness centrality displays how easily or fast a node can reach other nodes in the network. For example, closeness centrality can provide an insight about how fast a particular impact from a particular node will spread to the rest of the network. Figure 35 presents the graph with the closeness centrality results for the intra-African trade network. This figure also shows the top seven countries presenting closeness centrality values equal or greater than 0.90. These countries are:

- South Africa, member of SADC with closeness centrality value equals to 0.96.
- Kenya, member of CEN-SAD, COMESA, EAC and IGAD with closeness centrality value equals to 0.93;
- Côte d'Ivoire, member of CEN-SAD and ECOWAS with closeness centrality value equals to 0.92;
- Egypt, member of CEN-SAD and COMESA with closeness centrality value equals to 0.92;
- Morocco, member of CEN-SAD and UMA with closeness centrality value equals to 0.92;
- Senegal, member of CEN-SAD and ECOWAS with closeness centrality value equals to 0.92; and
- Uganda, member of COMESA, EAC and IGAD with closeness centrality value equals to 0.90.

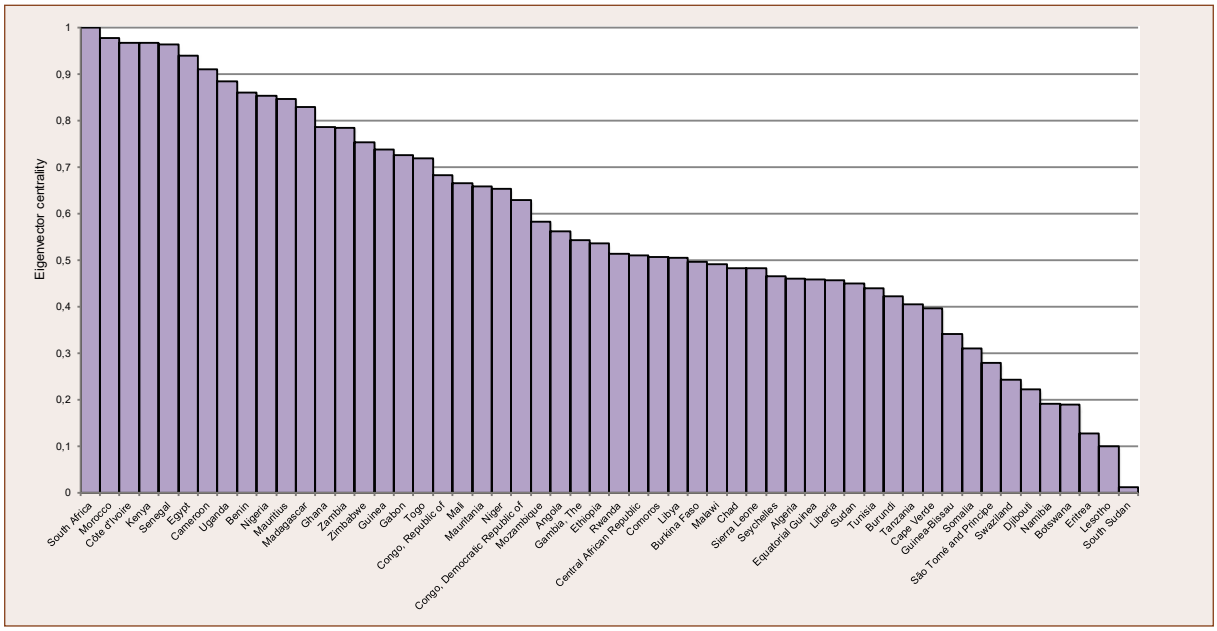
When comparing the degree centrally and closeness centrality results with the top five countries responsible for 67 per cent of all intra-African traded volumes in 2015, Algeria (5 per cent) and Nigeria (16 per cent) are replaced by Morocco (3 per cent), Senegal (1 per cent), and Uganda (1 per cent). As a result, any oscillation on trade flows among these countries, particularly South Africa, can have a strong impact on the region.

Figure 36: Betweenness centrality of the intra-African trade network



Source: Prepared by UNCTAD

Figure 37: Eigenvector centrality for the intra-African trade network



Source: Prepared by UNCTAD

Betweenness centrality shows how important a node is in terms of connecting to other nodes. It measures how likely a given node is the most direct route between two other nodes in the network. Figure 36 presents the graph with the betweenness centrality results for the intra-African trade network.

The betweenness centrality is relevant to problems such as identifying important nodes that control flows of information between separate parts of the network and identifying causal nodes to influence other entities behavior. For example, betweenness displays which is the most likely node that can influence its REC and serves as a bridge to other economic communities around it. The results show South Africa remains as an important network node with the highest betweenness centrality.

Eigenvector centrality shows how influential a node is. It measures how a well-connected node is to other well-connected nodes in the network and gives insights about which are the strong connections among member states within the intra-African trade network. This measure is based on the principle that a node's importance is defined by how well connected its neighbors are. As a result, eigenvector centrality not only accounts for the connectivity or closeness of a given node but also for its proximity to other influential nodes. Figure 37 presents the graph with the eigenvector centrality results for the intra-African trade network based on 10^6 iterations in order to reduce variance.

The graph also shows South Africa as the most influential member state in the intra-African trade network. This result is further confirmed by conducting an Ego Network Analysis, which measures the degree of separation among nodes. Ego is the way we describe a focal node; therefore, a network has as many egos as it has nodes. The numerical analysis shows that South Africa presents the largest ego networks. At the first degree of separation, South Africa is directly linked to 96 per cent of the network. At the 2nd degree, South Africa is already indirectly connected to 100 per cent of the network, which confirms its influential role within the intra-African trade network.

The numerical analysis indicates that intra-African trade network is a flexible structure that can easily adapt to new entrants such as new regional trade flows and integration agreements since they can benefit from many overlapping infrastructures already in place. On the one hand, regional trade and integration agreements should lead to development outcomes. The numerical analysis showed the scope and coverage of the RECs. It also

showed that SADC and the overlapping connection between ECOWAS and CEN-SAD could serve as pathways to development outcomes due to their pivotal role covering about 55 per cent share of all intra-African trade in 2015 (IMF, 2016). Note that trade flows from SADC and from the overlapping connection between ECOWAS and CEN-SAD represent about 55 per cent of the overall intra-African trade in 2015 and 68 per cent of all intra-REC trade in 2015. Table 6 grades the top ten member states in the region per category analyzed, from which South Africa is one of the major regional players on maintaining intra-Africa trade flows and establishing a CFTA.

Table 6: Numerical analysis overview

Ranking	Most connected intra-African traders	Most influential intra-REC trade partners	Most likely direct intra-African trade route	Most influential intra-African trade partners
1	South Africa (SADC)	South Africa (SADC)	South Africa (SADC)	South Africa (SADC)
2	Côte d'Ivoire (CEN-SAD / ECOWAS)	Kenya (CEN-SAD / COMESA / EAC / IGAD)	Guinea (CEN-SAD / ECOWAS)	Morocco (CEN-SAD / UMA)
3	Kenya (CEN-SAD / COMESA / EAC / IGAD)	Côte d'Ivoire (CEN-SAD / ECOWAS)	Kenya (CEN-SAD / COMESA / EAC / IGAD)	Côte d'Ivoire (CEN-SAD / ECOWAS)
4	Morocco (CEN-SAD / UMA)	Egypt (CEN-SAD / COMESA)	Egypt (CEN-SAD / COMESA)	Kenya (CEN-SAD / COMESA / EAC / IGAD)
5	Egypt (CEN-SAD / COMESA)	Morocco (CEN-SAD / UMA)	Côte d'Ivoire (CEN-SAD / ECOWAS)	Senegal (CEN-SAD / ECOWAS)
6	Senegal (CEN-SAD / ECOWAS)	Senegal (CEN-SAD / ECOWAS)	Uganda (COMESA / EAC / IGAD)	Egypt (CEN-SAD / COMESA)
7	Uganda (COMESA / EAC / IGAD)	Uganda (COMESA / EAC / IGAD)	Morocco (CEN-SAD / UMA)	Cameroon (ECCAS)
8	Cameroon (ECCAS)	Mauritius (COMESA / SADC)	Senegal (CEN-SAD / ECOWAS)	Uganda (COMESA / EAC / IGAD)
9	Benin (CEN-SAD / ECOWAS)	Benin (CEN-SAD / ECOWAS)	Mauritius (COMESA / SADC)	Benin (CEN-SAD / ECOWAS)
10	Mauritius (COMESA / SADC)	Cameroon (ECCAS)	Zambia (COMESA / SADC)	Nigeria (CEN-SAD / ECOWAS)

ANNEX 2: SUMMARY OF ACKNOWLEDGED METHODOLOGIES FOR VALUE CHAIN ANALYSIS

The results from a value chain analysis are a snapshot of a certain sector, at a given time. Hence, it cannot capture the variation of that sector overtime. It is also sector-specific and does not take into account, to a certain extent, the influences that other segments of the economy can have over the chain (Proctor and Lucchesi, 2012). Furthermore, to prepare a fully-fledged value chain analysis, researchers need time, relevant and up-to-date documentation, field visits and continuous contacts with all relevant stakeholders, including government authorities, funding institutions, private sector representatives, customers, suppliers, and others. Table 7 summarizes renowned methodologies for value chain analysis that are broadly accepted by the development agencies.

Table 7: Selected methodologies for value chain analysis

Title	Comments	Sector specific	Region specific	Reference
Making Value Chains Work Better for the Poor: a toolbook for practitioners of value chain analysis	The study provides clear tools to conduct value chain analysis. It is pro-poor oriented, focusing on smallholders. It analyses the participation of the poorest actors in the value chains. It places a strong focus on stakeholders and governance mechanisms.	No	No	(M4P, 2008)
Agro-value chain analysis and development: the UNIDO Approach	The study is based in a systematic approach to value chain analysis. It focuses on the relevance of agro-value chains for pro-poor growth while bearing in mind pragmatic economic parameters to ensure their sustainable development.	Yes	No	(UNIDO, 2009)
Staple Foods Value Chain Analysis: Country Report – Zambia	The study reviews the economic and socio-political framework of agriculture with specific reference to staple foods. It reviews the conditions applying to imports and exports, to the processes involved and the regulatory framework.	Yes	Yes	(USAID, 2009)
Building Competitiveness in Africa's Agriculture: a guide to value chain concepts and applications	The study is used to guide and drive high-impact and sustainable initiatives focused on improving productivity, competitiveness, entrepreneurship, and the growth of small and medium enterprises (SMEs). It provides the user with actionable methods and tools to design programs and investment projects that aim to increase the productivity and performance of sub-Saharan African agriculture.	Yes	Yes	(Webber and Labaste, 2010)
Agro-Food Value Chain Interventions in Asia. A Review and Analysis of Case Studies	The study uses a comparative analysis of six field studies of value chain development projects in Sri Lanka, Vietnam and Indonesia. It synthesizes a number of key issues emerging from both the review and the case studies.	Yes	Yes	(Henriksen et al., 2010)
Mapping Study on Value Chain Initiatives in ACP regions	The study provides toolkits and case study materials from multiple sources on interventions in support of value chain development.	Yes	Yes	(Proctor and Lucchesi, 2012)

Agricultural value chain finance strategy and design: Technical Note	The study presents serves as a guide to the design of appropriate program interventions that apply value chain approaches to the development of competitive agricultural value chains. It emphasizes interventions that promote financial inclusiveness and the overall development goals of governments, as well as those of technical and funding agencies.	Yes	No	(IFAD, 2012)
Aid for Trade and Value Chains in Agrifood	The study uses a combined analysis (survey results and a number of aid-for-trade case stories) in order to improve value chains' efficiency, which includes capacity building efforts (from infrastructure to skill-building).	Yes	No	(Cattaneo, 2013)
Developing sustainable food value chains: guiding principles	The study clearly defines the concept of a sustainable food value chain; presents and discusses a development paradigm that integrates the multidimensional concepts of sustainability and value added; presents, discusses and illustrates ten principles that underlie sustainable food value chain development; and discusses the potential and limitations of using the value-chain concept in food-systems development.	Yes	No	(Neven, 2014)
Developing sustainable food value chains: guiding principles	The study clearly defines the concept of a sustainable food value chain; presents and discusses a development paradigm that integrates the multidimensional concepts of sustainability and value added; presents, discusses and illustrates ten principles that underlie sustainable food value chain development; and discusses the potential and limitations of using the value-chain concept in food-systems development.	Yes	No	(Neven, 2014)
African Continental Free Trade Area: developing and strengthening regional value chains in agricultural commodities and processed food products	The study presents key modalities for fostering or adding value in regional supply chains in agricultural commodities and processed food products, in relation to helping to establish the CFTA and boosting intra-African trade.	Yes	Yes	(Dairon, 2016)