



Food and Agriculture Organization
of the United Nations



Discussion Paper

**Linking trade and food and nutrition security in Indian Ocean
Commission member states**

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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Acronyms

AGOA	African Growth and Opportunity Act
COMESA	Common Market for Eastern and Southern Africa
DES	Daily Energy Supply
FAO	Food and Agriculture Organization
FTA	Free Trade Agreement
GSP	Generalised System of Preferences
IOC	Indian Ocean Commission
LDCs	Least Development Countries
MDG	Millennium Development Goal
PRESAN	Programme Régional de Sécurité Alimentaire et Nutritionnelle
SADC	Southern African Development Community
SIDS	Small Island Developing States
WTO	World Trade Organization
SDGs	Sustainable Development Goals

Background and context

The Indian Ocean Commission (IOC) consists of Comoros, Madagascar, Mauritius, Seychelles and Reunion. Madagascar is the only country amongst them that is not a member of the group of Small Island Developing States (SIDS). Both Madagascar and Comoros are Least Developed Countries (LDCs), while Mauritius and Seychelles are middle income and upper middle-income countries, respectively. Reunion is a French territory.

The IOC countries face numerous challenges in their quest to achieve food and nutrition security - high vulnerability to food import variability, climatic volatility and limited natural resource base for domestic food production, contributing to precarious food supply instability. Furthermore, guaranteed all year access to affordable food is undermined by weak integration of IOC with regional and global trade channels, worsened by physical distance. Consequently, the high cost of food production has resulted in uncompetitive agriculture markets thus fueling high levels of nutrient poor imported foods.

The vulnerability of IOC states to fluctuations in global food commodity markets highlights the demand for enhanced regional market integration. In 2014, the SIDS amongst the IOC, adopted the SIDS Accelerated Modalities of Action (S.A.M.O.A Pathway) and invited FAO and other agencies to support the SIDS in developing a programme of action to address food and nutrition challenges facing SIDS. The S.A.M.O.A Pathway stressed the importance of supporting trade facilitation between SIDS and their improved negotiation in global trade frameworks aligned to WTO interventions.

At the same, FAO has been supporting the IOC in developing its ‘Programme Régional de Sécurité Alimentaire et Nutritionnelle (PRESAN) which aims to increase agriculture productivity, production and trade through 3 main pillars; i) Enhanced Productivity, production and competitiveness, ii) Promotion of Intra-regional trade in agricultural markets and iii) nutrition security and resilience. As the objectives of the S.A.M.O.A Pathway are subsumed within the boarder PRESAN for the IOC countries, the PRESAN is thus regarded as the overall guiding framework for addressing the food security and nutrition challenges facing the IOC countries.

The core objective of the PRESAN program is to promote a breadbasket of the Indian Ocean Space, with priority to rice, maize, onion, legumes, soybeans, red meat (zebu and goat) and chicken. The program will provide incentives to producers, agribusinesses and public institutions to join efforts in ensuring quality production, mainly in Madagascar, but also in other IOC islands with agro-ecological potential. The IOC will implement these axes by using financing and regulatory instruments to provide incentives to value chain actors as well as public sector.

All IOC countries are members of the Common Market for Eastern and Southern Africa (COMESA), however, only Mauritius and Madagascar are parties to the COMESA-FTA, which grant duty free access on good trade with the two countries on a reciprocal basis. With regards to the South African Development Cooperation (SADC), Madagascar, Mauritius and Seychelles are Members with Madagascar and Mauritius been the only members of the FTA within SADC. Furthermore, Mauritius, Madagascar, Seychelles along with Zimbabwe signed an Interim Economic Partnership Agreement with the EU. Besides the IOC countries,

individually, also benefits from a host of preferences are granted by other developed countries (e.g. AGOA, GSP, etc.) and have concluded bilateral trade agreements with other developing countries. In terms of the wider WTO, Mauritius, Madagascar, Seychelles are already Members while Comoros is still in accession. The nature of these agreements and how they will impact on the IOC's quest to strengthen market integration will be explored later on as part of FAO's trade-related support to Axis 2 of the IOC PRESAN programme.

This document is aimed at stimulating discussions around the nexus between trade and food and nutrition security with the objective of collecting some building blocks for strategies geared toward the development of Axis 2 (regional markets) of the PRESAN. Given the limited data available, to the extent possible, the paper will explore the linkage between trade and food and nutrition security by accentuating the overlaps between food markets and consumption in the context of IOC member states. Presentation of key trends and patterns in food import and export markets focuses on the Comoros, Seychelles, Mauritius and Madagascar. A brief analysis on the relationship between food supply, consumption and nutrition in the above mentioned countries is followed by a summary of opportunities for further collaboration between nutrition and trade. The brief then highlights potential recommendations for action moving forward. Furthermore, the results of a mapping of the maize-livestock feed value chain in the IOC countries is presented as an Appendix to this paper as it was derived as an output from FAO technical support to COMESA under the COMESA Regional Investment Programme in Agriculture (RIPA-II).

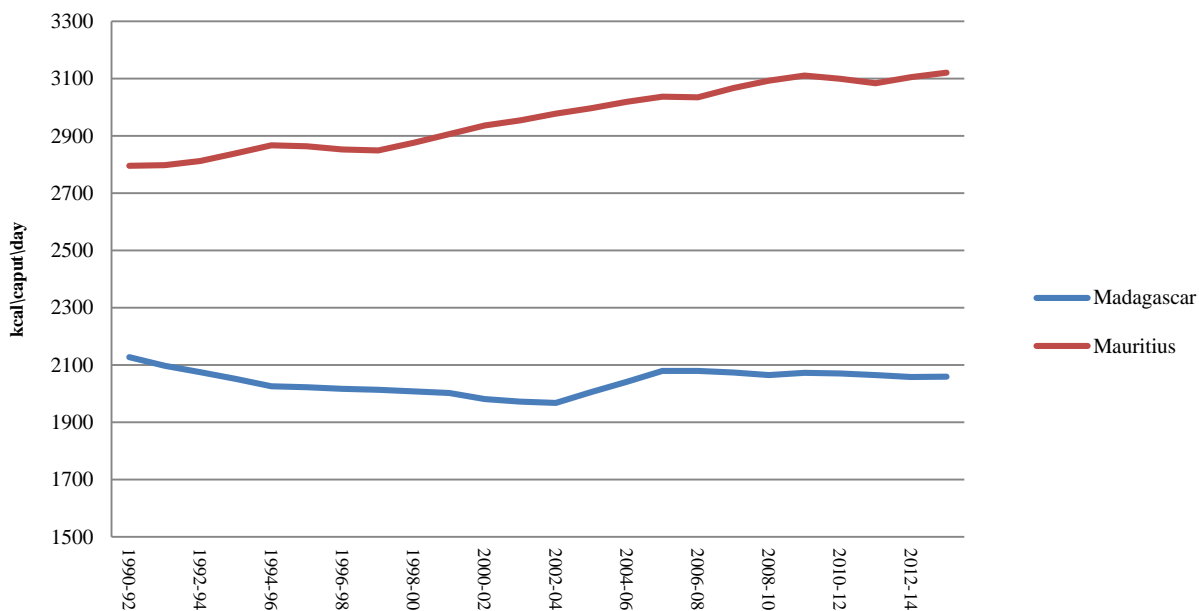
Has the status of food and nutrition security in the IOC improved over time?

Acute vulnerability to high levels of food insecurity tends to be a common feature among SIDS who are typically exposed to chronic external risks to stable food consumption. This is illustrated by the threat to food production caused by variations in climate combined by the dangers posed by dependence on food imports in the occurrence of sharp market fluctuations in food prices. Enhancing the resilience of food production system within SIDS while ensuring all year round access to safe nutrition is a key area of priority for the S.A.M.O.A pathway agreed to by IOC member states.

Considering the heterogeneity of food and nutrition security trends in the IOC region, it is difficult to draw general conclusions, as this will tend to mask the importance of size, national and socio-economic characteristics among the IOC Member States. Therefore, for Madagascar, the long term the average daily Dietary Energy Supply (DES) was highest at 2080 kcal/caput/day during the 2005-7 in contrast to a high of 3111 kcal/caput/day for Mauritius achieve during 2009-11 period (Figure 1).

As a matter of fact, in 2014, FAO recognized Mauritius for meeting the MDG1 target of reducing by half the proportion of people who suffer from hunger. Contrastingly, available information indicates that undernourishment has reached chronic levels in Comoros with 65% of the population affected, compared to Madagascar with 30% of people undernourished. In both countries, the proportion of undernourished has declined only marginally in the last decade suggesting that much work is yet to be done under the current era of SDGs (see figure 2).

Figure 1: Average Dietary Energy Supply



Similarly, the degree of undernourishment, anemia varies widely among the IOC countries and poses a concern particular amongst women of childbearing age. For women in this age group, over 30% are affected by anemia in Madagascar and Comoros, whereas in Seychelles and Mauritius, the share falls to between 20-23% (IOC 2014).

However, in the case of children under 5 years of age, the trend in anemia for all IOC countries, although still on the high side, has been sharply downward indicating marked improvements (Figure 3).

Figure 2 - Madagascar - Prevalence of undernourishment (%)

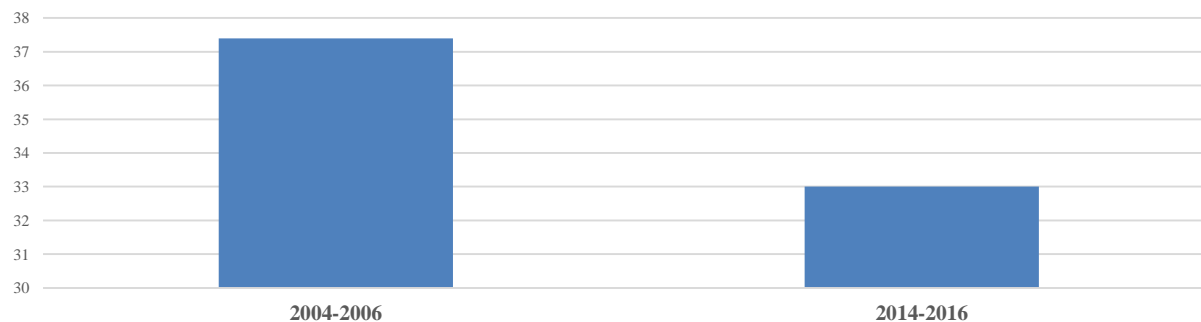
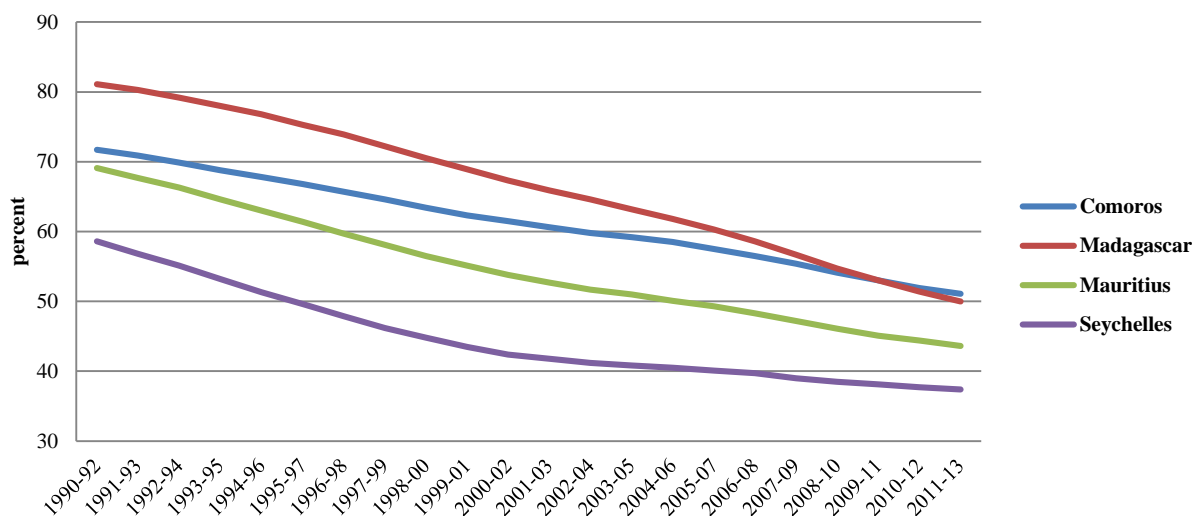


Figure 3: Prevalence of under 5 Aneamia



For the prevalence of under-5 stunting, available information indicates a range from 32% in Comoros to 49% in Madagascar. In Comoros, considerable progress has been made in the reduction of stunting from a high base of 47% in 2000s (IFPRI 2014)

The problem of obesity is largely concentrated in Seychelles and Mauritius where 25% and 18% of the population are affected, respectively.

Fruit, vegetables and pulses form an important part of national diets within the sub region. According to available data, the consumption of fruits has been steadily increasing. In Madagascar, fruit supplies reached over 100,000 tonnes in 2011 up from 85000 in 2006. The vegetable sector also witnessed growth from 32,000-38000 tonnes in the 2006-2011 period. Contrarily, the supply of pulses stabilized over the same period. This trend was also reflected in Mauritius.

In relation to calorie intake, pulses made a considerable contribution to household nutrition, particularly in Mauritius where roughly 90 kcal per capita was sourced from pulses on average in 2011. This was followed by vegetables and fruits at 58kcal and 56 kcal respectively (FAO STAT).

A wide variation exists in the food production capacity amongst IOC member states and the consequent financial contribution of the agriculture sector to the national economy. Trends on the production level of major food commodities in the Seychelles supports the marginal contribution of the agriculture sector to its high middle-income status. Despite being its leading food commodity, less than 3000 tonnes of coconut was produced in 2013. On the contrary, data from Madagascar shows the significant importance of rice as source of national revenue. Rice production reached over 92,000 tonnes at a value of 3.6BN USD (Figures 4 & 5).

Figure 4, Seychelles - Major Food Commodities (2013)

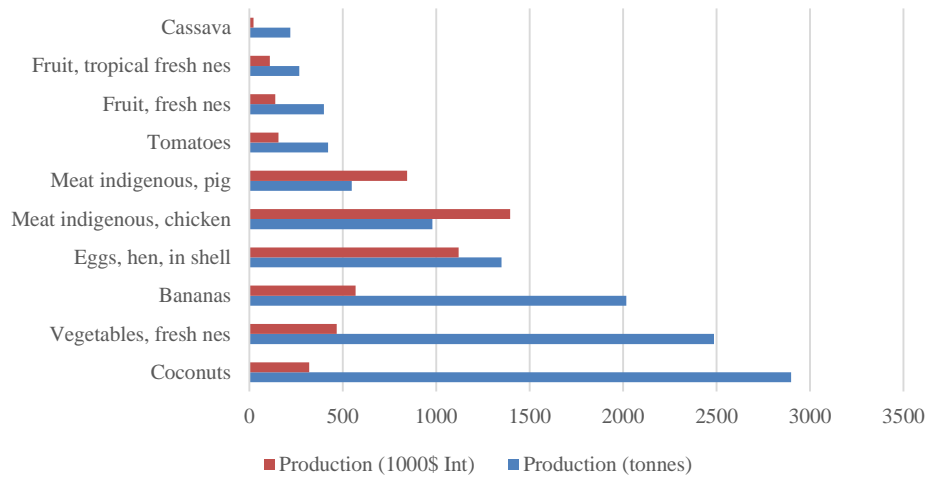
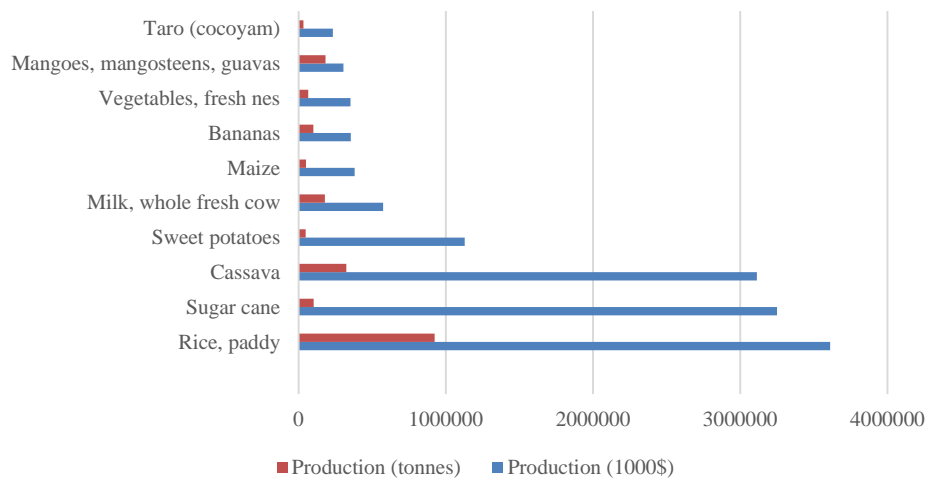


Figure 5, Madagascar - Major Food Commodities (2013)

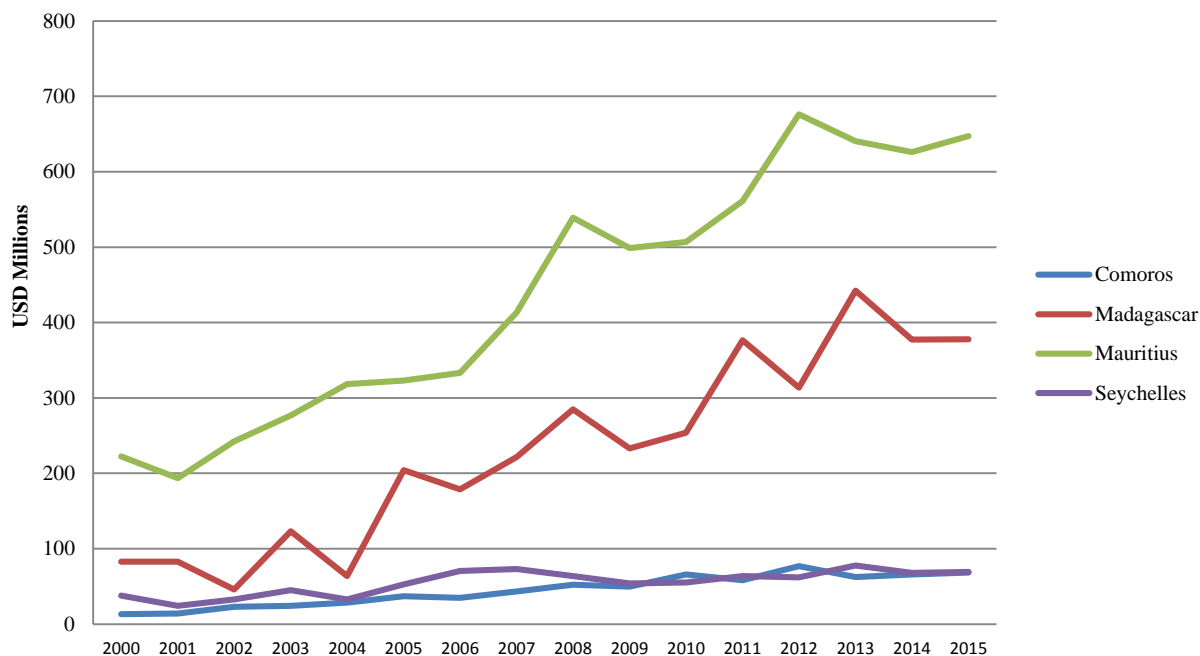


How does trade and nutrition interlink for greater food security?

The trade-nutrition nexus is founded on a combination of socioeconomic factors covering fluctuations in income and population levels in addition to the rate of urbanization particularly for Madagascar. These factors can influence the configuration of trade due to changing preference for food products and the impact of population pressure on the volume of food imports. The nutritional value of food is intrinsically related to the availability of food imports. As such there is a close interlink between nutrition and food markets with clear consequences for food diversification. Moreover income levels at household level strongly impact on the availability of diverse nutritious food groups for consumption

Figure 6 presents trends in the food import bill for the IOC countries. The steep trend and magnitudes for both Mauritius and Madagascar is a strong indication that trade has been important in meeting food needs in both countries. However, in the case of Mauritius where food imports bill has been growing at a much steeper and higher rate averaging between 600-700 million USD in recent years. This can be largely associated with meeting the demands to cater more for the large tourist population. However, although these trends does not tell us much about nutritional values of the imported food, the share magnitude and levels of increases points to the importance of trade in achieve food security and nutrition in the IOC countries.

Figure 6: Trends in Food Import Bill for IOC Countries



A breakdown in the contribution of food imports to daily calorie intake shows some continuity in nutritional outcomes at country level (see Figure 7a & b). In Mauritius, cereals imports cover 22% share of calories with rice and wheat accounting for the largest proportion within the cereal groups. In contrast in Madagascar, cereal imports account for a smaller share at 10%, however the importance of rice and wheat imports is mirrored.

Figure 7a: Mauritius - Proportion of Calories from Imports - 2011

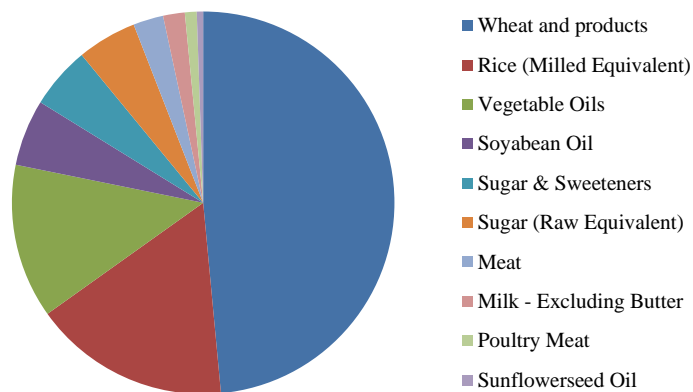
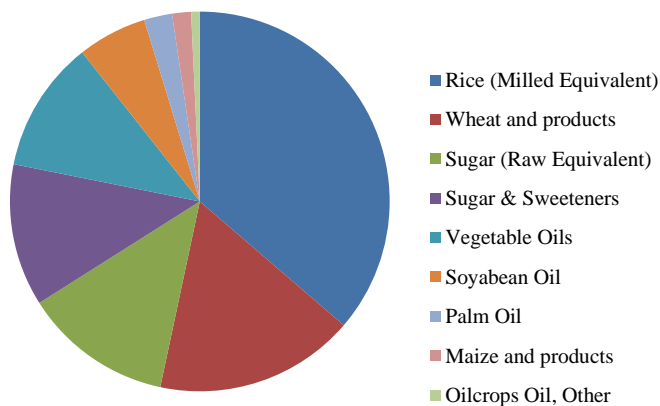


Figure 7b: Madagascar- Proportion of Calories from Imports - 2011



In terms of the priority commodities under the IOC's PRESAN, trends in imports of selected priority commodities are presented below with of the aim of showing patterns amongst the IOC (Figures 8a-d).

Figure 8a: Comoros - Trends in Imports of Selected Priority Commodities

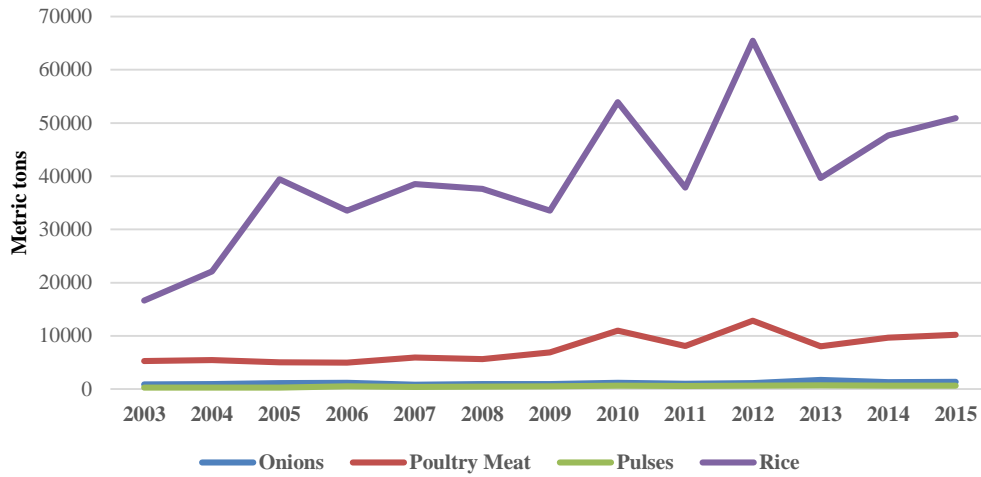
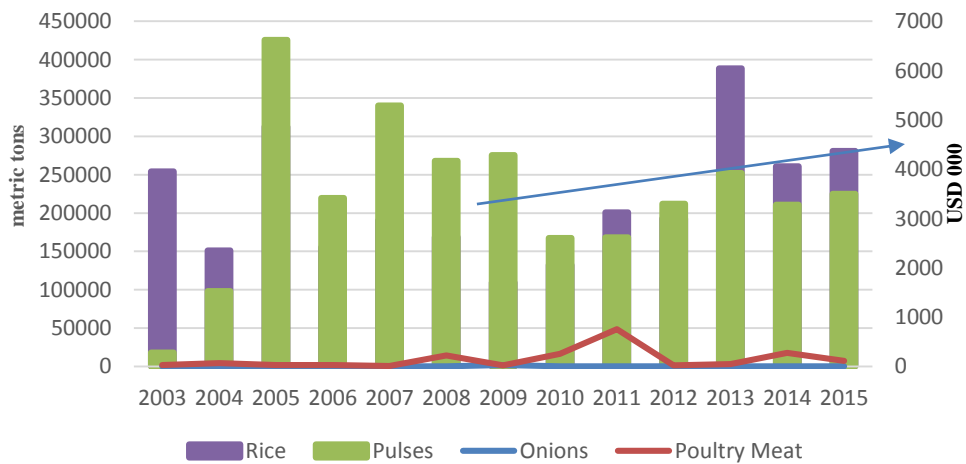
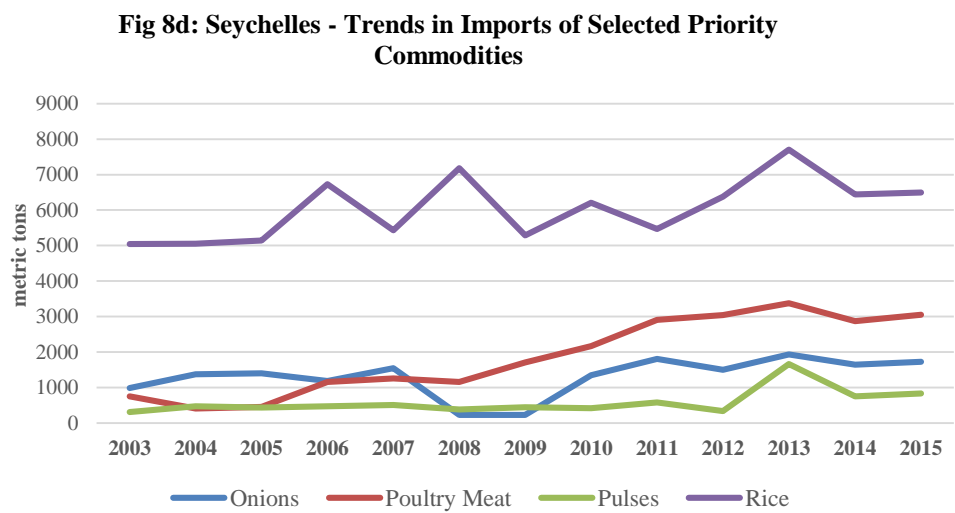
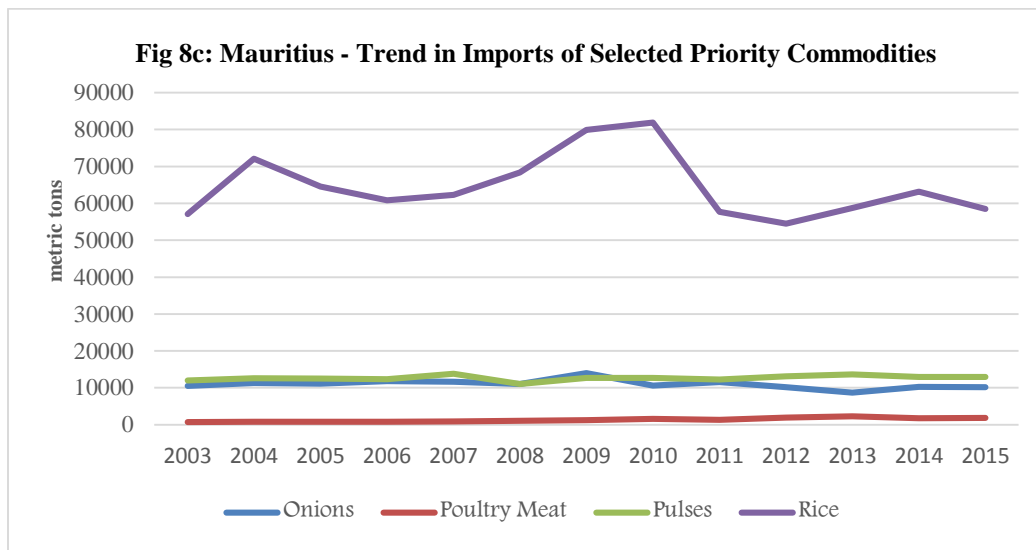


Fig 8b: Madagascar - Trends in Imports of Priority Commodities





Trade liberalization is generally credited with expanding food availability by removing barriers to food imports and in principle lowering food prices for consumers. Conversely, there are negative connotations of liberal trade regimes on food security and nutrition. Although global markets are often regarded as less volatile than domestic markets, high import dependent countries (including SIDs) often face vulnerability to short term commodity shocks while domestic producers can also experience displacement as a result of limited productive capacity to compete with cheaper exports.

Nevertheless, there is evidence that domestic production can benefit from import competition due to potential stimulation in productivity and innovation, although this is largely dependent on the promotion of tailored public measures and required targeted investment.

Different population groups will experience the influence of trade on nutrition in a variety of ways. For example agricultural households benefiting from employment generated from commercial farms engaged in the production of agricultural exports will have improved purchasing capacity on local food markets with implication for dietary diversity.

On the other hand, a reduction in tariffs has been shown to contribute to an increase in imports, contributing to improved supply of food products that can contribute to improve nutrition. However this does not automatically translate into an increase in consumption at household level particularly among low income groups. Predominantly, an increase in imports tends to favor improved consumption by higher income households (UNS 2015).

Table 1: Trade and the four dimensions of food security

	Positive	Negative
Availability	<ul style="list-style-type: none"> Greater competition trigger investment in productivity and promotes knowledge of new nutritious food groups 	<ul style="list-style-type: none"> Domestic producers unable to compete with imports reduce production
Access	<ul style="list-style-type: none"> Food prices fall as trade barriers removed widening access to food groups with high nutritional value 	<ul style="list-style-type: none"> Employment decline in food import competing sectors weakening FSN outcomes for H/H
Utilization	<ul style="list-style-type: none"> Wider variety of available food products including fruit and vegetables leads to diversification of food consumed- if managed properly and linked to local firms can improve nutrition 	<ul style="list-style-type: none"> Food imports lead to a rise in high calorie food low in nutritional value
Stability	<ul style="list-style-type: none"> Imports reduce seasonal effect on food availability and boost nutrition 	<ul style="list-style-type: none"> Vulnerability to food export policy – export bans

FAO (2015)

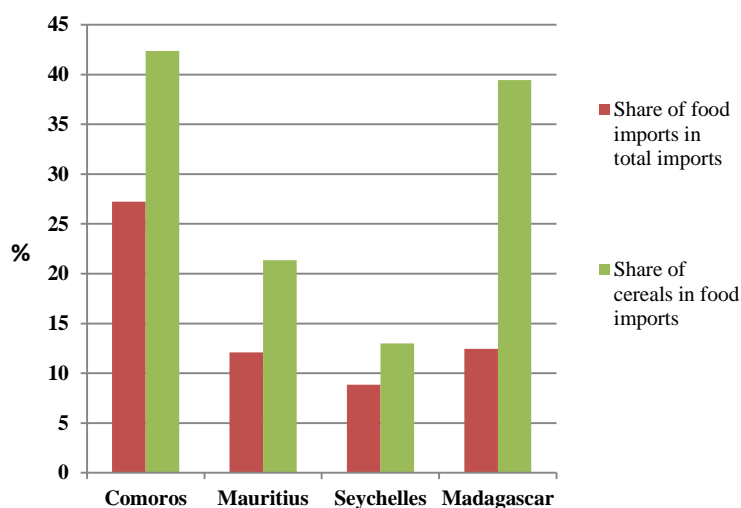
What has been the contribution of trade to nutrition security?

Large variations in size and structure of food markets in the IOC region contribute to a diverse range of production and consumption trends at national level. Nonetheless, food import dependency is a major feature across all IOC states placing pressure on foreign currency reserves thus exacerbating current account deficits. The structure of the IOC economy is divided between a dominant service sector which accounts for 60% of GDP and complementary sub sectors including construction, public works and agro-processing. National GDP varies from 600MUSD to 1.4BN USD in Comoros and Seychelles to 10.6BN USD and 12.6BN USD in Madagascar and Mauritius respectively (World Bank 2014)

Low population rates are widespread across IOC states with the exception of Madagascar, which constitutes 87% of the total population. The agricultural sector remains largely uncompetitive in comparison with food import due to factors that are already widely known. Scarce natural resources have limited the productive capacity of the agricultural sector for staple food production fueling food increased import demand. In addition, all the IOC countries (with the exception of Mauritius to some extent) face serious constraints of data availability which undermine accurately reporting on market and trade indicators.

The structure of IOC food imports demonstrates the extent to which cereal consumption is dependent on trade flows entering national markets. This is most pronounced in Madagascar and Comoros where cereals account for approximately 40% of total food imports (see Figure 9).

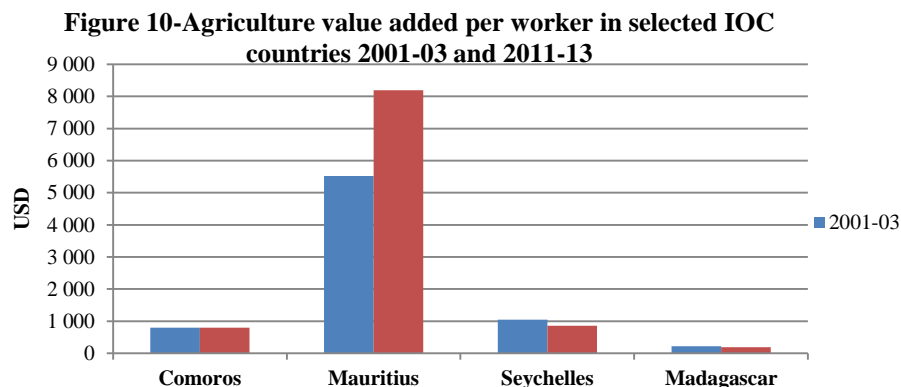
Figure 9 - Structure of food imports in selected OIC states 2010-2012



On the other hand, comparatively high agricultural production has upheld Madagascar’s position as the breadbasket of the region with significant exports of cereals (particularly rice and maize) to neighboring states. It is envisaged that Madagascar will undergo a process of diversification in agriculture production pushed by market demand from the other IOC States particularly in the area of maize, beans and onions (WTO 2015). In Mauritius the share of food and live animal exports increased from 31.3% in 2008 to 37.8% in 2013 reflecting growing domestic market capacity in terms of production and strong external trade linkages to Europe (its main trade market) and neighboring states (WTO 2015).

Low levels of public investment in the agriculture sector combined with minor expansions in productive capacity have reduced the potential for agro-commercialization within the IOC region. With the exception of Mauritius, the region has experienced disappointing progress in relation to agricultural value addition (see Figure 10) with majority of states witnessing a decline or stagnation in the last decade.

Mauritius has performed markedly above other IOC member states in the area of agriculture value addition per worker (according to available data). Its share in agriculture value addition increased sharply by approximately 3000USD from 2001-2003 to 2011-2013. In comparison, Seychelles its nearest competitors sees a regression to under 1000USD in the same period. This trend of falling agriculture value addition is repeated in both Comoros and Madagascar.



Data on agricultural exports based on the stage processing from 2002-2-2013 reveal the disparity between member states in relation to market development (Figures 11 & 12). While Madagascar performs strongly in the area of raw agriculture exports, Seychelles dominates in the area of processed goods by a considerable margin reaching close to 45BN USD in 2010-2013. Contrarily, significant progress has been achieved by Mauritius with regards to semi- processed agriculture exports from a low base in the 2002-2005 period to 300M USD between 2010-2013.

Figure 11- Agricultural exports per processing stage 2002-2005

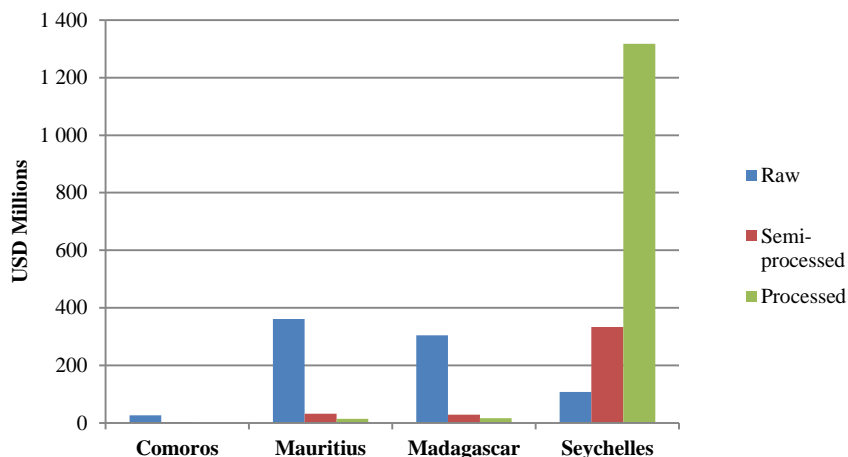
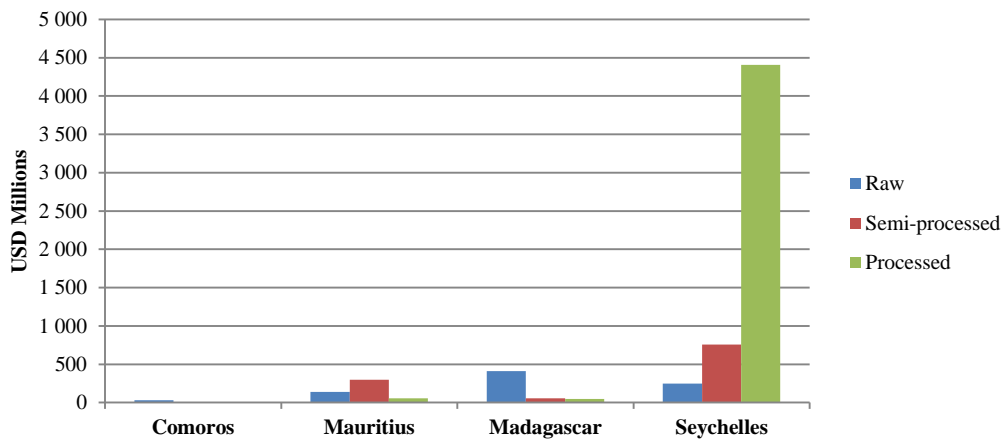
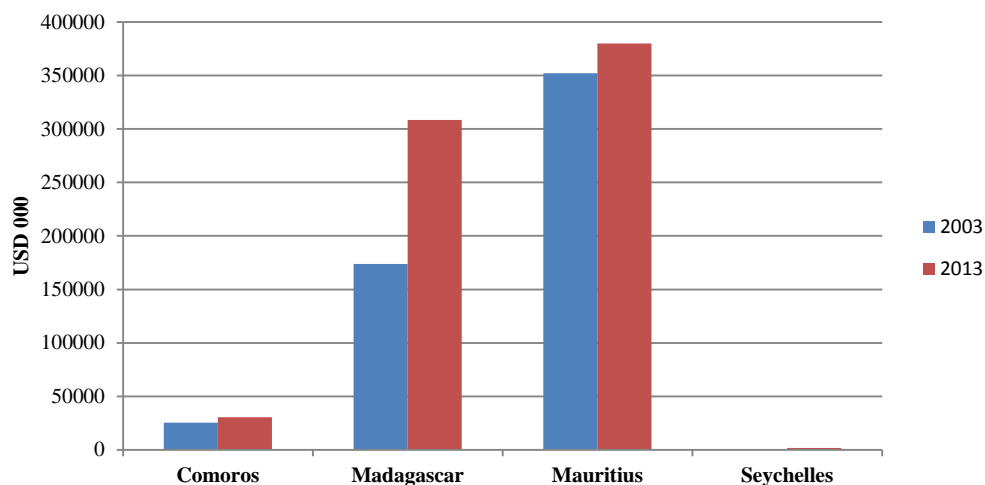


Figure 12- Agricultural exports per processing stage 2010-2013



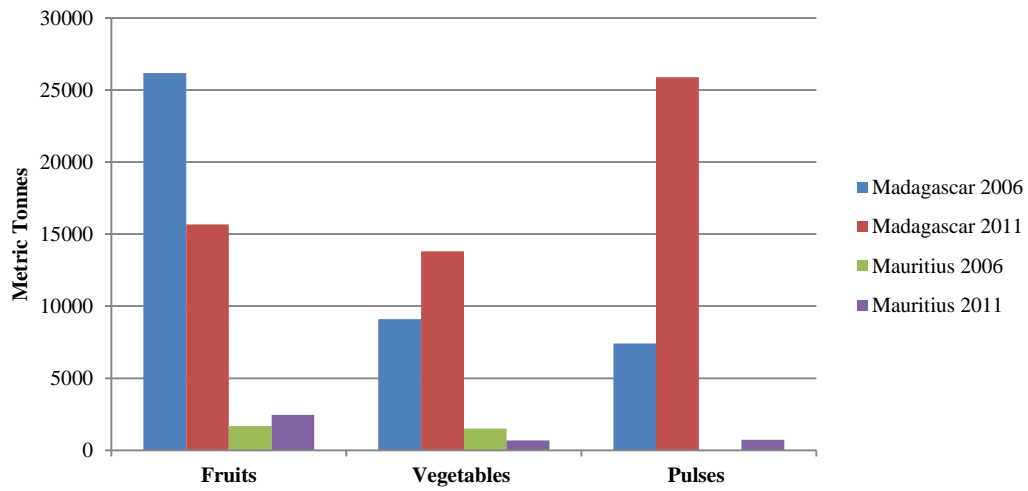
In the case of food exports, the IOC food export markets have stabilized in the majority of states as limited expansion has occurred in the 2003-2013 period. Contrarily, Madagascar has appeared to buck the trend achieving considerable progress in the value of food exports, which nearly doubled from 173M in 2003 to 308M in 2013 (Figure 13).

Figure 13 - Food Export Value in selected IOC countries

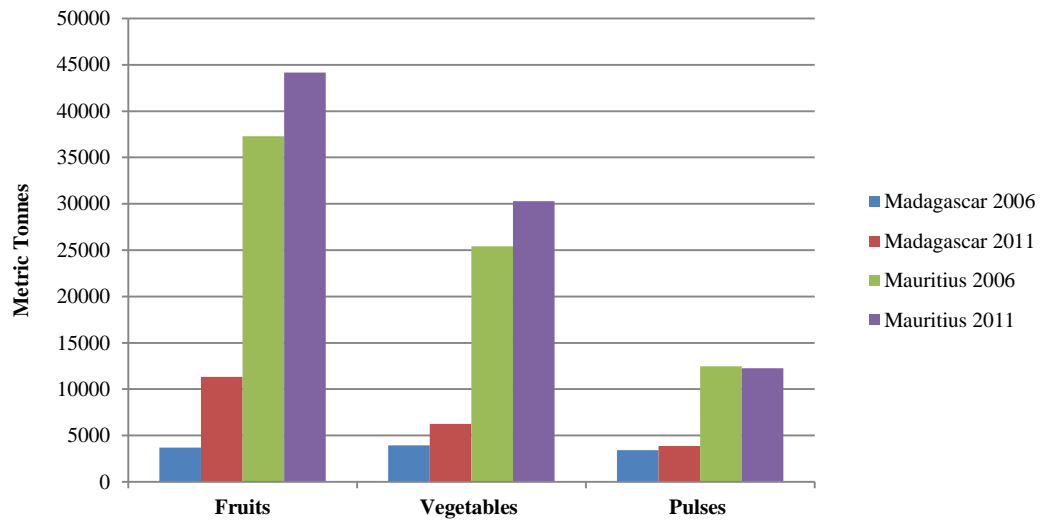


Trade in food and vegetables has been expanding within IOC states, with strong growth recorded in the pulses sector particularly in Madagascar where export rates have increased exponentially from 2006-2011 by over 15,000 tonnes. Contrarily modest export growth was reported in the fruits and vegetables sector with declining vegetable exports shown in Mauritius. Import markets reveal strong demand for fruit imports rising to 44,000 tonnes in Mauritius in 2011. Vegetables imports made steady expansion in both Madagascar and Mauritius. This compares to flat demand for pulses imports over the same period (see figures 14a & 14b).

14a: Export Quantity, Fruits, Vegetables and Pulses, 2006-2011



14b: Import Quantity, Fruits, Vegetables and Pulses, 2006-2011



The fisheries sector is of immense significance to IOC Countries

The fisheries industry is a major sub sector within the IOC economy with considerable potential for improved trade integration with implications for enhanced nutrition security. Current fish consumption is closely tied to a dominant tourist sector which traditionally fuels market demand particularly in Mauritius. Overall, the Indian Ocean fisheries markets is characterized by pelagic fisheries, covering swordfish and tuna alongside shrimp and cephalopods (mainly supplied from Madagascar). The EU provides the prime market destination for the majority of fisheries products with the exception of Reunion which has strong trade links with the Asian market. Inter-regional fish trade flows are dominated by supply from Madagascar to Mauritius, Seychelles and Comoros which generate strong demand from a buoyant tourism sector.

Per capita fish consumption remains low in the IOC region, further undermined by slowing GDP, particularly in Madagascar. On average yearly fish consumption per capita reaches around 20kg, however this ranges from up to 60kg in Seychelles while falling to less than 8kg in Madagascar, where strong urban demand for low value fish has not matched low national production despite high import costs. Marginal trade in fisheries with continental Africa persists due to low competition within fishing supply chains and high trade costs.

The seafood industry is one of the fast growing sector within the Mauritius economy employing around 16,000 with the value of exports expanding sharply from MUR 9.481 billion in 2011 to MUR 14.607 billion in 2013. Strong demand from European markets is highlighted as a major driver in the expansion of the seafood markets. Mauritius supplies roughly 1/3 of the UK tinned tuna market, whilst making significant contributions to fish markets in Japan and China (Mauritius - Board of Investment 2014)

A wide range in the level of fish and seafood import and export markets exists across IOC states (figures 13 & 14) demonstrating the diversity in demand and purchasing capacity with strong import demand from Mauritius, largely unmatched in the region. Mauritius has also managed to dominate the fishing export market by exporting nearly 10 times more fish than Madagascar in the 2008-2011 period.

The exploitation of high value marine products predominantly located in warmer waters of the Indian Ocean require policy assistance to ensure the transition to productive efficient and commercialized markets. Shrimp farming is highlighted as an entry point for investment in the fisheries sector, however trade has been undermined by strong competition from Asian and Latin America worsened by high production costs (IOC 2012).

Furthermore, regional trade in fish product has been restrained by slow rates of population growth in Mauritius and Seychelles contributing to weak demand. Other limiting factors include the non-membership of Reunion as part of COMESA making it difficult to proceed with negotiations on trade integration. In response to demand for sector development, the Government of Mauritius has developed a strategy for ocean economy reform with the target of 10% annual growth, a dialogue was launched in 2013 to establish a strategic roadmap for implementation.

Figure 14- Total fish seafood - Imports

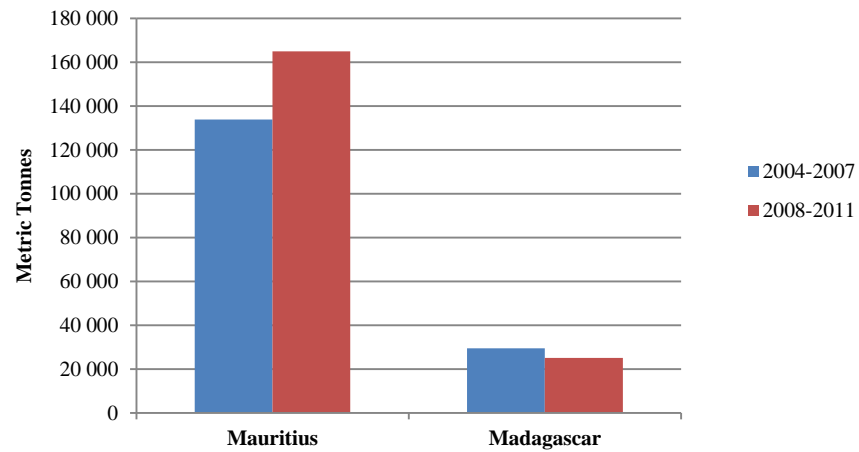
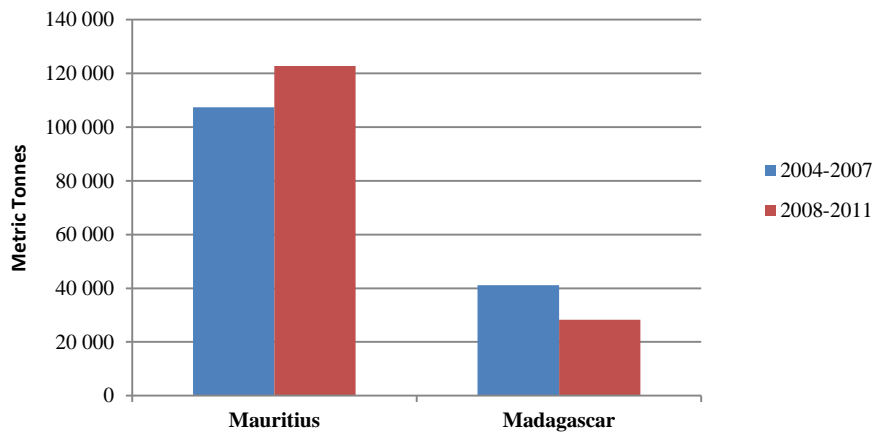


Figure 15- Total fish seafood - Exports



Towards enhancing the integration between trade and nutrition

The numerous benefits of trade promotion to pro- nutritional outcomes rest firmly on the enhanced supply and diversified availability of food in national markets combined with the improved access by consumers to a diverse range of externally produced food products. In the IOC region a range of opportunities exist for national governments and development partners to consolidate the linkage between trade and nutrition with positive implications for producers and consumers.

While efforts to improve domestic consumption of indigenous foods is critical for enhanced national food security, development of traditional staple crops such as cereals, fruit and vegetables and roots and tubers could also offer new export markets opportunities for producers and provide a platform for enhanced IOC regional integration.

Sustained investment in fisheries sector is necessary to trigger an expansion in production and consequent consumption levels amongst IOC states. Consolidating intra-regional trade linkages will act as a way to protect the emerging fisheries sector from external competition. Notably however this will require considerable high level policy cooperation to enable consensus on trade integration currently in need of political momentum on the regional stage.

In consideration of substantial natural resource constraints across the IOC region, increased crop production will require channeling strategic agriculture investment in areas where scarce arable land is available with a focus on upgrading existing production bases notably in the rice and wheat sector.

Targeted support to stimulate production mainly pulses, fruits and vegetables should involve a combination of scaled up input distribution with enhanced capacity in extension support.

Import policies to support diversification in household food consumption can promote a shift towards high nutritional value food products. The high levels of food imports across IOC States suggests a continuing shift in food consumption patterns that are likely to lead to low level of food diversification, which consequently may undermine the achievement of nutrition security outcomes. Government action on import controls will be more effectively managed at the regional level suggesting closer cooperation with COMESA and SADC in collaboration with member states.

There are clear opportunities to accelerate regional trade integration in the IOC due to strong prospects for markets expansion particularly by widening market channels with mainland Africa and emerging markets. In order to capitalize from markets openings, diversification of export markets will be essential alongside the increase in economies of scale to improve competitiveness and efficiency. Nevertheless it will be essential to overcome structural constraints which may impede the success of efforts towards regional integration these include the limited connectivity between member states worsened by weak transport infrastructure and low capacity to enforce regional trade agreements.

The IOC has taken pertinent steps towards the formulation of a regional strategy in support of trade integration. The PRESAN strategy features a specific component on trade with clear objectives towards the facilitation of intra agriculture trade. In this regard, emphasis is placed on scaling up Malagasy exports alongside other island states with agro-ecological potential.

Priority action for trade promotion focuses on harmonizing trade quality standards and certification, strengthening market infrastructure and facilitating agricultural trade agreements between actors in member states. In addition, the improvement of safety of consumed foods at community and household level is key to reduce the risk of food borne diseases.

In order to accelerate the process of regional integration, specific measures will need to be put in place to enhance the scale, value and quality of trade. This should include (among others) the targeted elimination of trade tariffs and non-tariff barriers, the simplification of rules of origins and a reduction in restrictions to trade flows at port entry and exit points. Moreover, particular emphasis should be given to improved customs facilitation and efficiency thus lowering overall trade costs.

Moving forward - Recommendations for Action

Overall, the IOC region is experiencing a challenging trade environment for food markets due to strong imports dependency which continues to place a heavy burden on public finances. Notably the expansion in domestic crop and fish production is regarded as essential for supporting national and regional food and agricultural market development. Reversing the food production deficit lies at the core of successful strategies for intra-regional trade integration in food and agricultural markets with positive implications for strengthening food and nutrition security.

Moreover, shifting the composition of food imports could provide a channel for the diversification of diets at household level thus reversing the dominance of cereals and oils as a share of food imports consequently impacting positively on the quality of household consumption.

Lowering the cost of trade in the IOC region involving the removal of tariffs and the gradual reduction of non-tariff barriers can only be achieved through enhanced trade cooperation. Greater trade promotion through strengthening market synergies within the food and agriculture sector could be effectively facilitated through closer partnerships between IOC, COMESA, SADC and WTO.

- Achieving all year round access to sufficient, safe and nutritious food is dependent on stable regional food supply. Trade should play a critical role in supporting IOC states to widen diversified food availability by reducing the cost of healthy food within domestic markets;
- Increasing food export levels for IOC states can support mobilization of government revenue and lower demand on foreign currency reserves. Higher government revenue should be diverted into public investment into agriculture sector development focusing on investment in productive capacity; Targeted support should be provided towards the development of the fishing sector with a focus on the promotion of inter-regional trade in fish markets. Furthermore policy measures should be put in place to enhance consumer access to fish products with the aim of enhanced nutrition security at household level;
- Data production and analysis on trade- nutrition nexus should be improved for more nuanced policy responses;
- Further work is needed to strengthen trade cooperation amongst IOC states in food and agriculture markets including reforms to trade infrastructure, transport and facilitation. There should be a focus on high policy level negotiation with COMESA, SADC and WTO to enhance participation in agricultural trade in related goods and services

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Appendix: — Mapping the maize-to-livestock feed value chain in the Indian Ocean Islands sub-region of COMESA

Introduction

Under the Comprehensive Africa Agriculture Development Programme (CAADP), Africa's overarching policy framework for agricultural transformation and food security, Africa's regional economic communities (RECs) are meant to develop Regional CAADP 'Compacts' and Investment Plans, detailing areas of joint collaboration between their member states. The CAADP Compact of the Common Market for Eastern and Southern Africa (COMESA) was signed by COMESA member states in November 2014. To ensure that this Compact leads to real action, COMESA, with technical support from FAO has begun developing regional value chain platforms to promote agricultural transformation and food security in Eastern and Southern Africa. These are priority areas under its Regional Investment Programme in Agriculture - Priority Area 2 (RIPA-II). This Appendix highlights one of the output of FAO technical support to COMESA and focuses maize-livestock value chain in the IOC countries.

One of the key outputs of RIPA-II is the establishment of regional public-private platforms for dialogue and partnerships in support of the development of priority regional agro-food value chains. Initial platforms are to be established for particular sub-regions of COMESA and will focus on agro-food value chains of strategic importance in each of these sub-regions. As a result, each of these platforms will initially require the participation of only a subset of COMESA member states.

RIPA-II also envisages the establishment of further sub-regional value chain dialogue platforms. To this end, the RIPA-II Programme Document identifies three more priority regional agro-food value chains that, based on consultations conducted with stakeholders throughout the region, would benefit from the establishment of such platforms. These are the cassava value chain in the 'Southern' COMESA sub-region (DRC, Malawi, Swaziland, Zambia and Zimbabwe), the 'maize-to-livestock feed' value chain in the Indian Ocean Islands (IOC) COMESA sub-region (Comoros, Madagascar, Mauritius and Seychelles) and the pulses value chain in the 'Horn' COMESA sub-region (Djibouti, Ethiopia and Sudan). In order to lay the groundwork for the design and establishment of platforms to promote these value chains, FAO/ECPDM has analyzed the three value chains and has conducted missions to the three relevant COMESA sub-regions to engage with stakeholders there about the priority issues that would ideally be addressed by these platforms.

This mapping study of the maize-to-livestock feed value chain in the IOC sub-region of COMESA presents the findings of FAO/ECDPM's analysis and of two separate missions to the region - to Mauritius (in January 2016) and Madagascar (April 2016). The study presents: i) key relevant maize consumption, trade and production trends in IOC sub-region; ii) the policy environment in the sub-region relevant to the value chain; iii) the major bottlenecks to the development of the value chain; iv) existing initiatives that efforts to promote the value chain could build on; and v) the key stakeholders in the value chain. The study also explores how a regional public-private platform established under RIPA-II could support the development of value chain. In summary, the main findings of the analysis and missions are:

- 1) Significant focus is currently being put on promoting regional agro-food value chains as a means to boost agricultural transformation and food security in IOC, and maize has been earmarked as a key commodity to promote in this context.*
- 2) Trade in maize for human consumption is limited in the region, but livestock feed producers based in Mauritius represent significant sources of demand for maize in IOC (currently being satisfied by South American imports), and potential sources of private investment in increased maize production in Madagascar, the only major maize producer in the region*

- 3) *Such investment could help stimulate increased maize production in Madagascar, which would allow the country to both satisfy local demand (for human consumption and for input into local livestock feed processing) and export surplus production to the region, but low agricultural productivity, a weakly organized local value chain, poor infrastructure, a 'risky' investment climate, and cumbersome export procedures deter investment, inhibit maize trade and complicate efforts to develop a regional maize-to-livestock feed value chain.*
- 4) *Appropriate regulatory reform coupled with coordinated public and private investment is needed to address these obstacles, and could be supported by the establishment of a public-private platform to facilitate dialogue between stakeholders in the region on those reforms and investments most urgently required to support maize production and trade in the region.*

Consumption, trade and production trends in maize in IOC

Consumption and trade trends

In the IOC sub-region, rice is the most important staple food, and maize is not as important to the diets of local populations as it is in other parts of Eastern and Southern Africa. Even in Madagascar, which produces a significant amount of maize, and where consumption of maize has increased notably over the past two decades, per capita consumption of maize and maize products is only around 21kg per year (USAID, 2013), which is four to five times less than in countries such as Malawi, Zambia and Zimbabwe (Ranum et al., 2014).

IOC countries are not big importers of maize. Trade figures from the International Trade Centre (ITC) show very little intra-regional trade in maize and maize products in the sub- region and that most maize and maize products imported by countries in the region come from countries outside the region (including from Argentina, Paraguay, South Africa for maize, and South Africa, EU, US, China and India for maize products - See Table 1 below). These figures also show that Mauritius accounts for the bulk of maize imported into the region (with most of this maize coming from Argentina, and, to a lesser degree, Paraguay).

The main sources of demand for imported maize in the IOC sub-region are the livestock feed processing mills in Mauritius. There are two large livestock feed producers in Mauritius (Livestock Feed Limited, part of the Food and Allied Group, and Meaders Feeds, part of Innodis), both of which produce for local and regional markets. Due to a lack of production in Mauritius, all the maize and soya bean (the two major inputs in feed production) utilized by these two companies is imported from South America. The fact that these processors have to import from such a remote source leaves them highly exposed to market risks, and has prompted an interest in the viability of a regional procurement base and supply chain, with Madagascar the main focus due to its potential to produce a marketable surplus of maize. The Food and Allied Group already procures maize in Madagascar through its local subsidiary, LFL Madagascar.

Table 1: IOC imports of maize, maize seed and maize products, 2013-2015 (USD '000s)

	2013	2014	2015	Main supplying markets
Total agricultural imports	1,977,315	2,069,660	1,607,221	
Maize	33,975	23,224	21,585	Argentina, Paraguay, South Africa
Maize as % of total agricultural imports	1,7%	1,1%	1,3%	
Maize (Mauritius only)	30,712	19,725	18,877	Argentina, Paraguay
Maize seed	99	4,749	158	Argentina (2014)
Maize products and byproducts	1,963	1,458	4,047	South Africa, EU, US, China, India

Source: Own calculations using ITC Trademap database (www.trademap.org).

Production trends

In the IOC sub- region, only Madagascar produces significant quantities of maize (366,000 tonnes in 2014 according to FAO estimates), and, given the lack of cultivable land in the rest of IOC, Madagascar is the only country in the region with the potential to produce significant surpluses of maize for regional export. Maize is currently grown throughout the country, with the main production areas concentrated in the Middle West, the Central Highlands and the Southwest of the country (USAID, 2013). Low productivity of staple crops, including maize, is a major issue in Madagascar, where maize yields average around 1.3 tonnes per hectare (See Table 2 below).

Table 2: Maize production in Madagascar, 2010-2014

	2010	2011	2012	2013	2014
Production (tonnes)	411,914	428,390	447,948	381,000	366,000
Area under harvest (Ha)	293,313	301,589	300,000	280,000	280,000
Average yield (Hg/Ha)	14,043	14,204	14,932	13,607	13,071

Source: FAOSTAT (<http://faostat3.fao.org/>)

This low productivity results from, among other things, heavy dependence on subsistence agriculture, limited use of improved inputs (e.g. seeds and fertilizers), lack of infrastructure (e.g. irrigation), issues around land use and land tenure and periodic natural disasters such as cyclones and locust swarms. Despite maize availability in most surplus production areas, poor road conditions due to heavy rains limit the movement of surplus maize to deficit areas (USAID, 2013).

Maize production in Madagascar is undertaken largely by small-scale producers, with around 700,000 maize producers producing on approximately 262,000 hectares of land. Aggregating this scattered production is a big challenge, and a lack of adequate transportation, storage and processing infrastructure in the country adds costs and lowers quality (USAID, 2013).

The maize value chain in Madagascar is, nevertheless better organized than other staple crop value chains in the country, because it is partly driven by the agribusiness industry - around 75 percent of maize produced in Madagascar is for human consumption, but the remainder is mostly used as an input into the production of livestock feed for the local market (USAID, 2013). In the domestic maize-to-livestock feed value chain in Madagascar, producers sell their surplus production to collectors, who work with brokers. Collectors then sell to wholesalers who store maize in their own facilities and supply Madagascar's three major livestock feed producers - LFL Madagascar, SABMA and Agrifarm-Agrival.

There appears to be agreement among stakeholders in the IOC sub-region that Madagascar has the agroecological potential to become an even bigger producer of maize, and that with the right support it could produce enough maize to satisfy local demand as well as demand from the region's livestock feed producers, and in so doing play a bigger role in contributing to the region's food security. To achieve such a goal, however, interventions are needed to address the various policy, organizational, institutional and infrastructural challenges that hamper the productivity of the maize sector in Madagascar.

The policy environment for a maize-to-livestock feed value chain in IOC

Policy for maize production in Madagascar

There are no policies currently in place in Madagascar dedicated specifically to encouraging maize production. The government has, however, developed a number of policies and policy frameworks to support agricultural development more generally, including Madagascar's national CAADP Compact, the Programme Sectoriel Agriculture Elevage Pêche (PSAEP) and National Investment Plan for Agriculture, Livestock and Fisheries (PNIAEP), as well as an agricultural sector development plan, the Lettre de Politique Sectorielle Agriculture, Elevage et Pêche (LPAEP) (World Bank, 2016). The Malagasy government is also implementing a strategy to promote private sector investment in agribusiness – with the Economic Development Board of Madagascar (EDBM) playing a leading role in driving relevant reforms – and preparing legislation for Agricultural Investment Zones.

Trade and investment agreements in IOC

Trade within the IOC sub region has been liberalized through a number of trade arrangements to which some, if not all, are party. These include the COMESA Free Trade Area (for all IOC), the Southern African Development Community (SADC) Protocol on Trade (for all except Comoros) and preferences granted in the IOC sub-region (currently only being applied for trade between Mauritius and Madagascar). Through these arrangements, goods traded within the IOC sub-region are exempt from import duties, provided they meet the relevant rules of origin. Other trade-related bilateral agreements have also been signed by between Madagascar and Mauritius to promote bilateral trade and investment. These include a Protocol on Veterinary Services (specifically related to exportation of animal feed to Madagascar; 2008), a Memorandum of Understanding on Phytosanitary Cooperation (2008), and a Protocol on Special Economic Zones (SEZs) (2016).

Madagascar and Mauritius have also signed and ratified a bilateral investment treaty, the Agreement on the Promotion and Protection of Investments between the Governments of the Republic of Mauritius and the Republic of Madagascar (2004). This treaty protects investments made between the two countries from arbitrary expropriation and other such risks. To further promote investments between the two countries, Madagascar's EDBM and Mauritius' Board of Investment (BOI) recently signed a memorandum of understanding to strengthen cooperation between the two institutions.

Major bottlenecks hampering the development of a maize-to-livestock feed value chain in IOC

Low agricultural productivity in Madagascar

Most agricultural production in Madagascar is still undertaken on a small scale with low productivity, high post-harvest losses and low quality due to, among other things, poor soil fertility management and use of local seeds (World Bank, 2016). This is true for maize production as well, and maize producers typically lack access to inputs and technology, leading to recurring struggles to satisfy local demand. Where livestock feed producers from the region find themselves competing with Malagasy consumers for limited supply, this might trigger a backlash against maize exports from Madagascar based on the notions, already prevalent in the country, that maize should be primarily for human consumption, rather than for animals, and that Madagascar should focus on producing food for itself rather than for export.

Insufficiently organized local value chain in Madagascar

While the maize value chain in Madagascar is better organized than other agricultural value chains in the country, the value chain is still not sufficiently organized. Farmers are not effectively organized (e.g. into functioning producer associations and cooperatives) and do not have much bargaining power in the value chain. One result of this is that farmers struggle to get their product to processors, retailers or exporters and become heavily reliant on collectors. The latter generally have the capacity to transport and store harvested maize and are able to deal directly with processors, retailers and exporters. They are also perceived as taking advantage of this situation (as well as the fact that farmers lack access to market information, cannot store their produce and require upfront cash payment), by paying low prices to farmers. Having collected maize from producers, collectors also have the ability to manipulate prices paid by processors and consumers.

Given the important, if somewhat controversial, role they play in the Malagasy maize value chain, it would be difficult to remove collectors from the picture completely. Moreover, for some producers, collectors represent the only realistic market for their produce and for breaking out of pure subsistence farming. There is, however, need for better organization of the value chain, perhaps initially through the organization of farmers into cooperatives or producer associations, and in the longer run through the establishment of an inter-professional organization that brings together stakeholders from along the value chain. Better organization of the value chain is crucial for ensuring that value produced along the chain is shared in a more equitable way, and that farmers – particularly small-scale producers – are able to generate greater incomes. It is difficult to see how smallholder production in Madagascar can be scaled up if farmers are not adequately incentivized to invest in increased production.

Poor infrastructure

The lack of adequate transportation and trade infrastructure in Madagascar also hampers the ability of Malagasy maize producers to participate in regional and global trade. The country has three ports of sufficient capacity to handle the volumes of maize trade that would be involved in a regional maize-to-livestock feed value chain in the IOC sub-region - the Port of Tamatave (Toamasina) on the east coast of the country, northeast of the capital Antananarivo, the Port of Diego Suarez (Antsiranana) in the far northeast of the country and the Port of Fort Dauphin on the southeast coast, in the Anosy Region. The poor quality of many roads in Madagascar, however, means that getting maize to these ports, potentially from areas quite far away, would involve very high transport costs, discouraging potential exporters. Indeed, poor transport infrastructure and high transportation costs even constrain the movement of maize from surplus to deficit areas within Madagascar. These constraints could be somewhat alleviated in the case of exports if production for export was encouraged close to the aforementioned ports, but doubts exist as to how ideal the areas around these ports are for maize production (e.g. in terms of soil fertility).

Another crucial infrastructural shortcoming in Madagascar that inhibits the development of a regional maize-to-livestock feed value chain is the lack of sufficient and adequate post-harvest storage and treatment infrastructure in the country. Investment in such infrastructure - whether from public or private sources - is badly needed to promote better post-harvest management of maize production in Madagascar, a key necessary condition for greater maize production in Madagascar and the development of a regional maize-to-livestock feed value chain.

The investment climate in Madagascar

Another big challenge for the promotion of a maize-to-livestock feed value chain in the IOC sub-region is that despite the fact that Malagasy agriculture badly needs investment, the economic and political environment in Madagascar is not considered particularly conducive to investment in agribusiness (World Bank, 2016), and foreign investors are perceived to face certain risks when investing in the country. Uncertain land rights are one of the major constraints to agricultural investments in Madagascar, and poorly managed large scale land acquisitions in Madagascar in the past - notably the aborted procurement by Korean company Daewoo in 2008 of 1.3 million hectares of land to produce maize and palm oil for export back to Korea - led to serious conflicts that were an aggravating factor for the 2009 political crisis in Madagascar (World Bank, 2016). Similarly, the recent signing of the SEZ Protocol between Madagascar and Mauritius was apparently opposed by those in Madagascar who disapprove of the autonomy such a protocol would give to foreigners on Malagasy soil.

Most investments in Madagascar that require land are “imposed in a top-down manner”, generally to the disadvantage of both local communities and investors (World Bank, 2016). For potential investors in Madagascar’s agricultural sector, access to agricultural land involves risks that could jeopardize their investments. For smallholders in Madagascar, agreements with investors can be beneficial so long as their land rights are respected, but due to past experiences there is currently a negative attitude towards foreign investment in agricultural land in Madagascar (World Bank, 2016).

There is also a perception that the Malagasy government has not done enough in the past to assist investors when they face challenges in Madagascar. The increasingly prominent role of the EDBM in promoting investment in agriculture and agribusiness is a positive sign in this regard. Better institutional capacity for land management and land use planning in Madagascar is, however, also required in order to facilitate the sustainable investments in maize production that are required to develop the country’s potential as a maize exporter and to promote a regional maize-to-livestock feed value chain in the IOC sub-region.

In addition, the value added tax (VAT) regime in place in Madagascar does not incentivize investment in industrial livestock feed processing. While industrially produced feed is exempt from VAT, processors are obliged to pay VAT of 20 percent on maize and other goods and services needed as inputs into production. At the same time, informal feed producers can avoid paying VAT. This results in industrially produced feed being less competitive vis-à-vis the lower quality product produced by informal producers.

Trade barriers

Although the trade regime in the IOC sub-region is relatively open, with few obvious restrictions on trade in goods, stakeholders in Madagascar note a number of challenges they face when attempting to export goods to the region. They report, for example, that the decentralization of Malagasy institutions and the various procedures and rules applied by these different institutions, create delays and increase the costs involved in exporting. Rules for exporting are perceived as changing with changes in government, creating problems for buyers and exporters. In addition, exporting also requires a significant amount of paperwork, leading to a discouraging administrative burden. In this regard, the Ministry of Trade and Consumption in Madagascar is currently in the process of finalizing the creation of a centralized unit for export, aimed at: unifying all procedures to reduce costs and delays; creating one point for information on export procedures; and simplifying the administrative procedures required for exporting. Some Malagasy stakeholders also note the language barrier as an impediment to exporting to Anglophone markets.

Finally, stakeholders in Madagascar also mention difficulties arising from a lack of norms and standards in the IOC sub-region, but this may not be such an issue for maize as the ISO9001 quality standard has been adopted for maize in Madagascar. There are currently, however, no formally accredited laboratories in the country and so samples that need to be tested in order to ensure compliance with certain SPS regulations have to be sent to laboratories abroad to be analyzed. While it is possible to carry out certain analyses in Madagascar and Mauritius, in the case of controls on, for example, aflatoxins, samples of maize intended for export from Madagascar have to be sent to laboratories in France, and it can take weeks before these are sent back. In order to avoid such delays, financing is currently being secured for the establishment of an accredited laboratory in Madagascar.

Existing initiatives relevant for efforts to promote the maize-to-livestock feed value chain in IOC

Regional initiatives

Efforts to support the development of a maize-to-livestock feed value chain in IOC through the establishment of a regional public-private dialogue platform under RIPA-II could build on existing initiatives in Madagascar and the region, and could benefit from support mobilized under relevant policy frameworks for promoting agricultural transformation, agribusiness development, trade and value chain promotion and food security in the IOC sub region.

The IOC, in collaboration with CIRAD, has also established a Regional Platform for Agricultural Research for Development (PReRAD - Plateforme Régionale de Recherche Agronomique pour le Développement), based in Réunion. The aim of this platform is to strengthen agricultural research (including research into diseases, seeds, post-harvest management and storage) in the Indian Ocean and mobilize regional stakeholders more effectively around food security objectives in the region.

Initiatives in Madagascar

There are also a number of specific projects (especially in Madagascar) that a regional maize-to-livestock feed platform could benefit from, connect to, or build on. For example, in 2014 the Malagasy Employers Association (FIV.MPA.MA), which represents a number of agribusinesses in Madagascar, established, together with the Malagasy Ministry of Agriculture, a National Maize Platform to bring together the various maize value chain actors in the country to reflect on ways to boost domestic production. The initiative is currently dormant due to a lack of financial support and leadership, but attempts to reinvigorate the platform are being explored by FIV.MPA.MA.

The development of Pôles Intégrés de Croissance (PIC), or Integrated Growth Poles, is a World Bank supported initiative by the Government of Madagascar to increase economic growth, focusing on certain poles (areas), while supporting a number of promising subsectors. The project focuses on the agribusiness sector, including on both subsistence and export crops. PICs are demand driven projects in rural areas that build on existing initiatives and growth potential and seek to establish public-private partnerships (PPPs). In the South Eastern region of Madagascar, there is a PIC which focuses on the production of maize for animal feed, with the objective of promoting exports to the region (Mauritius, Mayotte and Réunion) and potentially beyond (China). The PICs are still at a very early stage of development and are actively seeking 'champions' to drive the PPPs.

Other relevant projects and initiatives in Madagascar include: the identification of Agricultural Investment Zones (World Bank, 2016) by the Ministry of Agriculture and preparation of corresponding legislation; a World Bank supported initiative on Agricultural Growth and Land Management (World Bank, 2016); an Investment Promotion Support Project (PAPI) by the African Development Bank (AfDB, 2015); and investment by the International Finance Corporation (IFC) to, among other things, help build the capacity of farmers in Madagascar that supply maize for use in livestock feed production.

It is interesting to note that many donor supported agricultural programmes are being implemented in the more food insecure southern half of Madagascar, while the northern half of the country arguably holds more potential for the development of agricultural activities that can drive agricultural transformation and economic development in the country.

Key stakeholders in a maize-to-livestock feed value chain in IOC

Private sector actors

As important sources of demand for maize in the IOC sub-region, and potential sources of private investment in Madagascar's maize sector, livestock feed processors from the region, and in particular, the two large Mauritian firms - Livestock Feed Limited/Food and Allied Group and Meaders Feeds/Innodis - have the potential to be significant consumers of increased regional production and key drivers of any regional maize-to-livestock feed value chain. Importantly, they could offer producers in Madagascar, who already supply locally-based livestock feed producers, a new market for their maize, and could also potentially crowd in much-needed investment into agricultural production in Madagascar.

The role of Malagasy feed producers such as Agrifarm-Agrival, SABMA and Livestock Feed Limited (LFL) Madagascar would also be important in promoting a regional value chain, especially given their greater exposure to local realities in Madagascar. LFL Madagascar, for instance, works with its fellow Food and Allied Group subsidiary, Enterprise Cereale Madagascar (ECM), to encourage better practices by collectors and to facilitate aggregation of production by promoting more effective farmer associations and cooperatives.

Given the sheer number of smallholder Maize farmers in Madagascar, and, as a consequence, the impact that developments in the maize sector could have on rural incomes/employment and food security in Madagascar, it is crucial that the needs and interests of these stakeholders are articulated effectively. Apex farmer organisations in Madagascar, such as the Confédération des agriculteurs Malagasy (FEKRITAMA), would therefore also be crucial stakeholders in a regional value chain.

Another key set of stakeholders includes the collectors in Madagascar, who currently play a crucial, if somewhat controversial role linking producers and consumers/processors in the country. These stakeholders would probably continue to have an important role to play in a regional value chain, especially as production patterns in Madagascar are unlikely to become significantly more centralized overnight. It would be beneficial, however, if the perceived exploitation of farmers by these middlemen was somehow eradicated.

Private sector associations in Madagascar, such as the Federation of Chambers of Commerce and Industry in Madagascar (FCCIM) and the Malagasy Employers Organization (FIV.MPA.MA), would also be important stakeholders. FCCIM is the main interlocutor between the public and private sector in Madagascar and the focal point for the COMESA Business Council in Madagascar. FIV.MPA.MA, meanwhile, has an agribusiness department, represents livestock feed producers in Madagascar and was involved in establishing a national maize platform in Madagascar.

Public sector

The governments of the IOC (especially Madagascar), and their respective Ministries of Trade, Finance and Agriculture, among others, are also key to the establishment of a viable regional maize-to-livestock feed value chain in the sub region, as significant policy reform is still required to promote such a value chain. Other public sector bodies in the region could also be key stakeholders. For example, given the importance of investment in Madagascar for promoting a maize-to-livestock feed value chain, EDBM has a particularly key role to play. EDBM has already concluded a Memorandum of Understanding with the Board of Investment (BOI) of Mauritius, which serves as an intermediary to promote outward investment by Mauritian firms, to strengthen cooperation between the two institutions. Such linkages could become important for promoting investment between the two countries, including in maize production in Madagascar. Indeed, the BOI is working on the establishment of a Mauritius-Madagascar exclusive economic zone (EEZ) around the newly developed port at Fort

Dauphin in the south of Madagascar. One part of this project involves the identification of land for maize production, with this maize then to be exported using the newly developed port facilities nearby.

Regional organizations, technical partners and development partners

Given that regional cooperation will be crucial to promoting a regional maize-to-feed value chain in IOC sub-region, regional organizations such as COMESA (including its various specialized technical agencies) and the IOC have an important role to play, not least as conveners and facilitators of regional dialogue and coordinators of regional cooperation processes. Each of these two regional organizations also promotes a regional policy framework which efforts to develop a regional maize-to-livestock feed value chain could link to. In the case of COMESA this is the COMESA CAADP agenda including RIPA-II, and in the case of the IOC this is the PRESAN food security programme.

Finally, technical and development partners, including the EU, World Bank and CIRAD, would be crucial for providing technical and financial support to efforts to boost maize production in Madagascar and promote a more enabling environment for investment and trade in maize and livestock feed in IOC. Such support could also serve to build the capacity of relevant local and regional institutions such as the National Centre for Applied Research and Rural Development (FOFIFA) in Madagascar.

How could a regional maize-to-livestock feed platform support the development of a regional value chain?

The viability of a maize-to-livestock feed value chain in the IOC sub-region will depend significantly on efforts to increase production and productivity in Madagascar, including through promoting increased use of intensive agricultural methods and more efficient aggregation of smallholder production. Investment will be crucial in this regard, especially in order to address current shortcomings in: farm-level productivity; post-harvest handling; and storage, transportation and trade infrastructure. While some of this investment (e.g. in transport and trade infrastructure) will probably need to come from public sources (i.e. the Government of Madagascar), possibly with support from development partners (e.g. the European Union) and international financial institutions (e.g. the World Bank), private investment will also be crucial for facilitating the transfer of technology, know-how and capital to producers and traders in Madagascar, and in spurring agricultural transformation, at least in the maize sector.

Livestock feed producers in Mauritius have already demonstrated an interest in investing in efforts to develop a regional procurement base, but are unlikely to make large-scale investments in maize production or livestock feed processing in Madagascar if corresponding (public) investments are not made in the public goods that an efficient value chain requires, such as adequate infrastructure. They are also unlikely to invest unless they consider the potential returns to be worth the risk involved. There are a number of options for altering the risk-return equation for potential investors in maize in Madagascar, including reform of the regulatory environment (e.g. ensuring a more secure land rights regime in Madagascar), and provision of subsidized risk financing to support investments with a public-good element. There is therefore need for some level of dialogue between public and private stakeholders to ensure coordinated investments and policy reforms and to ensure that reform processes respond to the needs of the region's businesses as well as the concerns of civil society.

Establishing, in line with RIPA-II, a regional public-private platform for dialogue to promote the development of a maize-to-feed value chain in IOC sub-region, would provide a forum for exactly this kind of dialogue. Such a platform could stimulate frank discussion on the specific policy reforms and investments required to overcome the most significant obstacles to the development of a maize-to-livestock feed value chain, and the appropriate role of the public sector, private sector, development partners and other relevant stakeholders in supporting these interventions. The trust built by such dialogue

could also facilitate consensus on who best to take the lead with regard to addressing the specific bottlenecks identified by this study, and which existing initiatives in the region are worth building on.

Stakeholders in the sub-region have already expressed an interest in the establishment of such a platform, but in order to ensure that this platform gets real political and commercial buy in, that it is relevant for private businesses, that it is established in accordance with the CAADP principles of inclusivity and mutual accountability and that smallholder farmers are able to contribute meaningfully, it is important that all relevant stakeholders are involved in the process, including: livestock feed producers (LFL, Meaders, Agrifarm-Agrival, SABMA); representatives of maize farmers (including smallholder farmers), collectors and wholesalers in Madagascar; relevant private sector associations and civil society organizations (e.g. FIV.MPA.MA), government bodies, public agencies (e.g. EDBM) and regional organizations (e.g. COMESA and IOC); technical and development partners (e.g. CIRAD, FAO, EU); and financial institutions (e.g. World Bank).

While it would be up to the stakeholders in such a platform to identify and prioritize interventions, and to agree on the most appropriate actor(s) to undertake these, possible areas for intervention suggested by stakeholders interviewed in the course of preparing this study include: 1) addressing productivity constraints (e.g. through efforts to provide maize farmers in Madagascar with better training and access to inputs and technology, as well as through initiatives to better aggregate production); 2) better organising the value chain (e.g. through the organization of small producers into cooperatives or producer associations); 3) improving storage, transportation and trade infrastructure in Madagascar (e.g. through investments in storage and treatment facilities and better quality roads linking producer areas to ports and consumer areas); 4) addressing concerns related to investment climate in Madagascar (e.g. through a more clearly articulated regime for investment in land and related rights and more effective avenues for addressing investment-related concerns); and 5) eradicating any remaining barriers to intra-regional trade in IOC (e.g. through simplifying procedures for exportation from Madagascar, and, where relevant, promoting harmonized standards for trade in maize, maize products and livestock feed between IOC countries).

