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GOVERNMENT OF
THE UNITED REPUBLIC OF TANZANIA

TANZANIA INDUSTRIAL COMPETITIVENESS REPORT 2015

Tanzania at a Crossroad:
Shifting Gears Towards Inclusive and Sustainable Industrialisation

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MAIN REPORT

Acknowledgements

The Tanzania Industrial Competitiveness Report (TICR) 2015 is a product of the Ministry of Industry, Trade and Investment (MITI) of the Government of the United Republic Tanzania. The main authors include Esther Mkenda and Valency Mutakyamirwa, forming the Industrial Intelligence Team at the Ministry, and with the support of Neema Towo from the University of Dar es Salaam. At its early stages, the report also benefited from the work of Falecia Massacky.

Support, supervision and guidance was provided by the two Permanent Secretaries of the Ministry of Industry, Trade and Investment: Dr. Adelhelm J. Meru and Prof. Adolf F. Mkenda and by the Director of Industry Development, Mr. Obadiah M. Nyagiro, and the Assistant Director Mrs. Elli Pallangyo. Furthermore, a team from Zanzibar headed by the Ministry of Trade, Industry and Marketing, including Mr. Abdulla R. Abdulla, has contributed to the analysis on Zanzibar's industrial competitiveness. The report benefited also from the important insight and advice of Dr. Paul Kessy, Deputy Executive Secretary of the President's Office Planning Commission.

Since 2011, with the start of the Industrial Policy Capacity Building Programme funded under the United Nations Development Assistance Plan (2011-2016), the team has been receiving from UNIDO trainings in various forms which have equipped them with the skills and tools to carry out the analyses of this second Tanzania Industrial Competitiveness Report, following the first one published in 2012. For this second report, technical support to the team in the form of guidance, coaching, review, and working sessions was provided throughout the process by the UNIDO team in Dar es Salaam, including Andrea Antonelli (project manager) and Ruth Pollak (international consultant).

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A review workshop, taking place in Dar es Salaam on 16th December, 2014 at Hyatt Regency Hotel, including representatives from Private Sector Associations, from the Development Partners' community of Tanzania, and from other Government and Research Institutions, provided also valuable inputs for the development and expansion of the report.

Finally, the Research and Industrial Policy Advice Division at UNIDO headquarters and Field Office Team of UNIDO in Dar es Salaam reviewed the report and provided recommendations.

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Foreword

Today more than ever before, the crucial role of inclusive and sustainable industrial development for Tanzania is well appreciated and targeted in main international and national development plans.

At national level, policies and implementation plans have put the industrial development agenda at the forefront, with the Long Term Perspective Plan (LTPP) 2011/12-2025/6 providing the overarching strategy linking the envisaged three Five Year Development Plans, oriented towards achieving the National Development Vision of making Tanzania a semi-industrialized country by 2025. The second Five Year Development plan is set to articulate the importance of reorganising national efforts to nurture an industrial economy, based particularly on adding value to the abundant natural resources, and with the goal to obtain significant job creation.

At international level, the new "2030 Agenda for Sustainable Development" of the United Nations includes a specific goal (n. 9) for promoting inclusive and sustainable industrialization and foster innovation and some of the spelt targets are already enshrined in the LTPP.

Manufacturing, which assumes a central role in the industrial sector and one that would guarantee vertical and horizontal sectoral linkages, exhibits growth rates of an ambiguous trend between the periods covered in this analysis. Since the turn of the century, Tanzania's manufacturing has witnessed a healthy growth rate of 7.6 % per annum. Following the promising decade 2000-2010, manufacturing growth rate has shown a slight slowdown to 6.6 % per annum since 2010. This recent trend calls for a careful evaluation of the manufacturing sector and solid monitoring of future progress, to ensure a continuous and people-oriented industrial development trend.

This periodic report is meant to provide a solid monitoring framework to track progress towards national and SDG targets as well as valuable information to decision makers throughout the policy formulation and implementation process. It is therefore an effort to enhance evidence-based policy-making. It comes as the result of the collaboration between the Industrial Intelligence Team at the Ministry of Industry, Trade and Investment, UNIDO International Experts and other key stakeholders, including the Ministry of Trade, Industry and Marketing in Zanzibar. In particular, the report benefited from the UNIDO Industrial Policy and Statistics Capacity Building Programme under the United Nations Development Assistance Plan I (2011-2016) targeting key stakeholders encompassing public, private and research institutions, with the aim of producing relevant and demand driven quantitative analysis including policy recommendations for decision-makers and other beneficiaries.

It thus gives me great pleasure to present this analytical report at this early stage of my tenure as the Minister of Industry, Trade and Investment in Tanzania. I am particularly pleased that the report underlines the critical areas of policy focus: the effect of regional integration on Tanzanian industry and the challenges ahead, the domestic and international opportunities that emerge in the new global market for manufactures, the key role of technology and skills for industrial development, and an overview of trends of employment in manufacturing,

among others. The four main sections (B-E) and related policy recommendations can be read separately according to the interest of the reader. It is my hope that this report will provide concrete elements for discussion to policy makers, especially at this time when the second Five Year Development Plan focusing on industrialization is at its last stages of preparation.

I am very grateful to the Industrial Intelligence Team, UNIDO's international experts and other key stakeholders who joined hands to produce this analytical report. I therefore look forward to seeing it become one important tool to support the planning of activities for inclusive and sustainable industrial development in Tanzania.

Hon. Charles John Mwijage
Minister for Industry, Trade and Investment

Abbreviations and Acronyms

ADLI	Agriculture Development Led Industrialization
ADRI	Animal Disease Research Institute
AGOA	The African Growth and Opportunity Act
ARI	Agricultural Research Institute
ASIP	Annual Survey of Industrial Production
BET	Board of External Traders
BPO	Business Process Outsourcing
CAGR	Compounded Annual Growth Rate
CAMARTEC	Centre for Agricultural Mechanization and Rural Technology
CIC	Convention Industry Council
CIP	Competitive Industrial Performance
COMESA	Common Market for Eastern and Southern Africa
COMSATS	Institute of Information Technology
COSTECH	Tanzania Commission for Science and Technology
CSIR	Council for Scientific and Industrial Research
DIT	Dar es salaam Institute of Technology
EAC	East African Community
EPZ	Export Processing Zone
EQuIP	Enhancing the Quality of Industrial Policies
FBT	Food, Beverage and Tobacco
FDI	Foreign Direct Investment
FYDP	Five Year Development Plan
GDP	Gross Domestic Product
GERD	Gross Expenditure of Research and Development
GIZ	The Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GTAP	Global Trade Analysis Project
GTP	Growth and Transformation Plan
HORTI	Tengeru Agricultural Research Institute
HT	High-Tech
ICT	Information and Communication Technology
IDR	Industrial Development Report
IHI	Ifakara Health Institute
INDSTAT	UNIDO Industrial Statistics Database
ISIC	International Standard Industrial Classification
ISO	International Organization for Standardization
IUMP	Industrial Upgrading and Modernization Program
LDC	Least Developed Country
LRC	Livestock Research Centre
LT	Low-Tech
LTPP	Long Term Perspective Plan
MARI	Mikocheni Agricultural Research Institute
MENA	Middle East and North Africa
MHT	Medium-High Tech
MITI	Ministry of Industry Trade and Investment

MKUZA	Zanzibar Strategy for Growth and Reduction of Poverty
MNC	Multinational Corporation
MRO	Maintenance, Repair and Operations
MSI	Manufacturing System of Innovation
MSME	Micro Small and Medium Enterprises
MVA	Manufacturing Value Added
NCAA	Ngorongoro Conservation Area Authority
NCC	National Construction Council
NDT	Non Destructive and Destructive Technology Services
NHBRA	National Housing and Building Research Agency
NIMR	National Institute for Medical Research
NLRI	National Livestock Research Institute
NSI	National System of Innovation
NTBs	Non-Tariff Barriers
PASDEP	Plan for Accelerated and Sustainable Development and Poverty
PTI	Public Technology Intermediaries
R&D	Research and Development
RB	Resource Based
REC	Regional Economic Cooperation
SADC	Southern African Development Community
SADCC	Southern Africa Development Coordination Conference
SIDO	Small Industries Development Organization
SIDP	Sustainable Industries Development Policy
SIRIM	Standards and Industrial Research Institute of Malaysia
SITC	Standard International Trade Classification
SOAS	University of London
SRI	Sugarcane Research Institute
SSA	Sub-Saharan Africa
SUA	Sokoine University of Agriculture
TACRI	Tanzania Coffee Research Institute
TAEC	Tanzania Atomic Energy Commission
TAFIRI	Tanzania Fisheries Research Institute
TAFORI	Tanzania Forestry Research Institute
TATC	Tanzania Automotive Technology Centre
TAWIRI	Tanzania Wildlife Research Institute
TBS	Tanzania Bureau of Standards
TDV	Tanzania Development Vision
TEMDO	Tanzania Engineering and Manufacturing Design Organization
TFNC	Tanzania Food and Nutrition Centre
TICR	Tanzania Industrial Competitiveness Report
TIR	Tanzania Investment Report
TIRDO	Tanzania Industrial Research and Development Organization
TORITA	Tobacco Research Institute of Tanzania
TPRI	Tanzania Pesticide Research Institute
TRIT	Tea Research Institute Maruku
TTRI	Tsetse and Trypanosomiasis Research Institute
TVET	Technical Vocational Education and Training

UDO	University of Dodoma
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNIDO	United Nations Industrial Development Organisations
UNSD	United Nations Statistics Division
URT	United Republic of Tanzania
VETA	Vocational Education and Training Authority
WAITRO	World Association of Industrial and Technological Research Organisation
WDI	World Development Indicators
WTO	World Trade Organisation

A Setting the Scene

A.1. Introduction and methodology

The role of inclusive and sustainable industrial development economic and in general human development is increasingly recognized at continental level in Africa and at international level with the inclusion of a dedicated Sustainable Development Goal (n. 9) in the UN Agenda 2030. Anticipated benefits such as fostering economic growth, reduction of economic vulnerability, large forward and backward linkages to other sectors, positive spill-over effects of skills development and technology innovation across the economy, and direct and indirect job creation, are some of the reasons why industrialization was brought to the forefront of national development plans of the country, and why Vision 2025 envisages Tanzania to be a semi-industrialized nation by 2025.

While the East African country continued witnessing a healthy growth rate in manufacturing of 7.6 % per annum since the turn of the century, more recent data indicate that there has been a slight slowdown in growth (6.6 % per annum since 2010). This recent trend calls for an in-depth assessment of the manufacturing sector and for consistent monitoring of future progress, to ensure inclusive and sustainable industrial development takes place.

This analytical output constitutes the second of a series of reports analysing Tanzania's industrial competitiveness, which are intended to be published biennially, if supported by the regular publication of (industrial) statistical data. Such reports would provide relevant analysis and monitoring of industrial (and particularly manufacturing) performance feeding valuable information into the policy-making process. Nonetheless, these and similar publications are also to be used by other departments within the ministry, as well as relevant institutions and the private sector. These contributions dialogue with each other and sheds light on different interdependent issues. Among them, this report provides a unique perspective on the industrial performance and ongoing transformation of the Tanzanian productive sector, its drivers as well as its impact on fundamental policy dimensions such as technological and product upgrading, value addition and value capture opportunities, linkages development and job creation.

The first of this series of reports was published in 2012 and was the earliest publication of the then newly formed Industrial Intelligence Unit (IIU) at the Ministry of Industry, Trade and Investment[1]. This unit was created with the support of UNIDO to ensure there is an institutionalized function within the Ministry whose mandate is to produce relevant and demand-driven analysis with policy recommendations for decision-makers and other beneficiaries. In addition to the Industrial Competitiveness Reports, the unit, equipped with trained analysts, publishes a range of relevant documents such as policy briefs, case studies and more[2].

This document, along with the others of this nature, uses UNIDO methodologies to measure different aspects of industrial development.

1 Then called Ministry of Industry and Trade

2 The delay in the present report is due to the fact that the authors were waiting for newly collected and updated data.

The report includes two core sections, complemented by other two thematic sections and a final policy recommendations section. The core and thematic sections, though cross-referential, can be read separately, independently from each other, leaving the reader the opportunity to zoom in a particular area according to her/his research/policy interest.

The core sections are:

Section B. "The competitive industrial performance of URT": a benchmarking analysis assessing and comparing the industrial performance of the country to that of other economies of interest (comparators), taking both production and exports into account, and

Section D. "The Tanzanian Manufacturing System: Industrial Drivers, production linkages and public technology intermediaries": an analysis of the main drivers of industrial competitiveness, that is, the main capabilities and enablers to allow the sector to grow.

These core sections are expected to be found in the different reports of this series. Additionally, the analysis undertaken in the remaining thematic sections will vary from one report to the other, allowing us to focus on the 'hot' topics at the time of drafting. TICR 2015 includes an additional section on two key value chains, sunflower oil and cotton apparel exports, and another section on employment in manufacturing. The detailed description of sections in this report is as follows:

This introduction (Section A: "Setting the Scene") provides an overview of Tanzania's industrial development trajectory and its current efforts, in particular the government's initiatives to boost the productive transformation of the economy. This section highlights the importance of evidence-based industrial policy, by collecting and using reliable data throughout the entire policy process to support decision making and policy design, implementation and monitoring. Benchmarking analyses are also critical to understand the positioning of the country – that is, its industrial competitiveness – and identify possible weaknesses as well as opportunities.

Section B of this report is purposely in line with the same section in the TICR 2012 to allow a longitudinal analysis across time. It uses the UNIDO's Competitive Industrial Performance (CIP) Toolbox to undertake a holistic quantitative and comparative analysis of industrial development in the country. Undertaking the same analysis some years later allows us to update the findings discussed in TICR 2012 and test whether the overall positive trends identified at the time still hold today (performing a longitudinal analysis). Additionally, and again similarly to the TICR 2012, the section analyses the main impact upon Tanzania by belonging to two regional markets, East African Community (EAC) and the South African Development Community (SADC), and observes how Tanzania is faring in some of its most important export markets globally.

The following thematic section, Section C, complements the core section B by zooming into two value chains of key interest to the country: sunflower oil and cotton apparel. Both value chains were strategically selected due to their importance in terms also of employment and potential of growth at this present moment for the country. The section identifies which main sub-products Tanzania is exporting from these value chains. It then analyses the prices at which Tanzania is exporting these, compared to the prices of exporting other products along the same chain. It finally examines the key markets. The aim is to understand the attractiveness of moving up (or down) the specific value chain, as well as the demand dynamism for the considered value chains and products.

The second core section of the report (Section D) focuses on the industrial capabilities driving the industrial performance of the Tanzanian economy as well as the transformation of its manufacturing system. In particular, alongside a battery of benchmarking indicators capturing information on key industrial drivers such as skills, productive investments and technology

acquisitions, the section provides first evidence of the existing linkages among various sectors in the economy and the related value addition dynamics, also with respect to international trade flows. Understanding where value is created and added in the economy is extremely relevant for two main reasons. First, it allows policy makers to prioritising their interventions to increase domestic value addition. Secondly, it shows how the linkage structure of the economy is changing over the years and what the potential bottlenecks are that impede the economy to develop. In fact, the development of one sector with high value addition potential might be impeded by the lack of scale or technological capabilities in a complementary sector. Finally, the quantitative analysis will be complemented with some first observations on a specific set of actors supporting the development of industrial capabilities and their relationship with the private sector. These actors are called 'public technology intermediaries' and refer to all those industrial research and extension service centres supporting critical functions, from standardisation and technology adoption, to product and process upgrading.

The development of industrial capabilities is ultimately a matter of developing individual and collective skills (organisational capabilities). This process is fundamentally intertwined with the overall structural transformation of the economy and employment trends. This is why Section E complements both core sections by providing an analysis of employment trends in the manufacturing sector. This section looks at overall trends in employment levels, before it unpacks the manufacturing sector to analyse employment, productivity and employment elasticities at sub-sectoral level. It then focuses on light manufacturing, due to its high absorption of labour and capacity to create even more jobs in the future.

The final section of the report (Section F) takes stock of the evidence and analyses developed throughout the report to pinpoint a number of policy recommendations.

Methodology and conceptual framework

In this report, as in TICR 2012, industrial competitiveness is understood as "the capacity of countries to increase their industrial presence in domestic and international markets while developing industrial structures in sectors and activities with higher value added and technological content" (UNIDO, 2002-2003 and UNIDO 2012-13). UNIDO's Competitiveness Industrial Performance methodology is aimed at measuring, to the extent possible, the above statement through a combination of eight indicators.

The Competitiveness Industrial Performance Index and its indicators is a benchmarking tool, which allows any economy to compare its industrial growth to that of other countries and regions globally and throughout time. This is possible, as the indicators use publicly available data from international databases (such as World Bank's World Development Indicators, UNCOMTRADE's trade database and UNIDO's Industrial Statistics, INDSTAT, database). The use of such data makes cross-country comparisons and time-series analysis possible. The benchmarking exercise of this methodology means that it becomes possible to identify and track the developments of economies identified as role models, and current or future competitors, to better understand where the country in question is positioned. Box 1 below summarizes the different dimensions and indicators of the CIP Index [3].

While these indicators measure the performance of the industrial – and more specifically, the manufacturing – sector, industrial competitiveness is embedded in a conceptual framework presented in Figure 1. The figure depicts how the industrial system of an economy is affected by national and international factors. International factors which have an impact on national industrial performance include changing dynamics and results of globalisation, trade regimes, and

3 More information on this can be found in TICR 2012 page 21 and in the UNIDO Competitive Industrial Performance Report 2012-13.

the fast pace of technological change causing rapid shifts both in demand and production. Domestically, a range of factors matters substantially, such as the overall business environment and the extent to which this is conducive for manufacturing in particular, the availability of reliable intermediary institutions providing services and support required by manufacturers and inputs available and capabilities of the national industry itself. Whereas a national government will be in a weak position to influence international factors, it is its role to ensure that national factors can encourage, rather than hinder, industrial development [4].

Box 1: Dimensions and indicators of the CIP index

Industrial capacity. MVA per capita is the basic indicator of a country's level of industrialization adjusted for population size. It shows a country's capacity to add value in the manufacturing process. Yet MVA is not always exposed to international competition – inward-oriented policies and trade barriers can limit the exposure of domestic industries to global competition. MVA analysis may show distorting results for countries that have undergone a long period of protectionism and import substitution. It is therefore important to combine MVA with export orientation, which places the competitiveness of industrial activity in the international scene.

Manufactured export capacity. In a globalizing world, the capacity to export is a key ingredient for economic growth and competitiveness. Manufactured export per capita is the basic indicator of trade competitiveness: it shows the capacity of countries to meet global demand for manufactured goods in a highly competitive and changing environment. Manufactured exports indicate whether national MVA is in fact competitive internationally. MVA also adds to trade analysis as it shows the extent of value that domestic companies contribute to exports. Trade analysis on its own can cause distortions in the case of countries with low domestic capabilities, but is used by multinational corporations (MNCs) as export platforms.

Impact in world MVA. The impact of a country in world MVA production is measured by its share in world MVA, which indicates the relative performance and impact of a country, taking into account total volumes of manufacturing production. It indicates the position of a country relative to others in terms of its contribution to world MVA.

Impact in world manufactured trade. The impact of a country in world manufactured exports is measured by its share in world manufactured exports. It reveals the competitive position of a country relative to others in international markets. Gains in world market shares reflect improved competitiveness, while losses signal a deterioration of a country's competitive position.

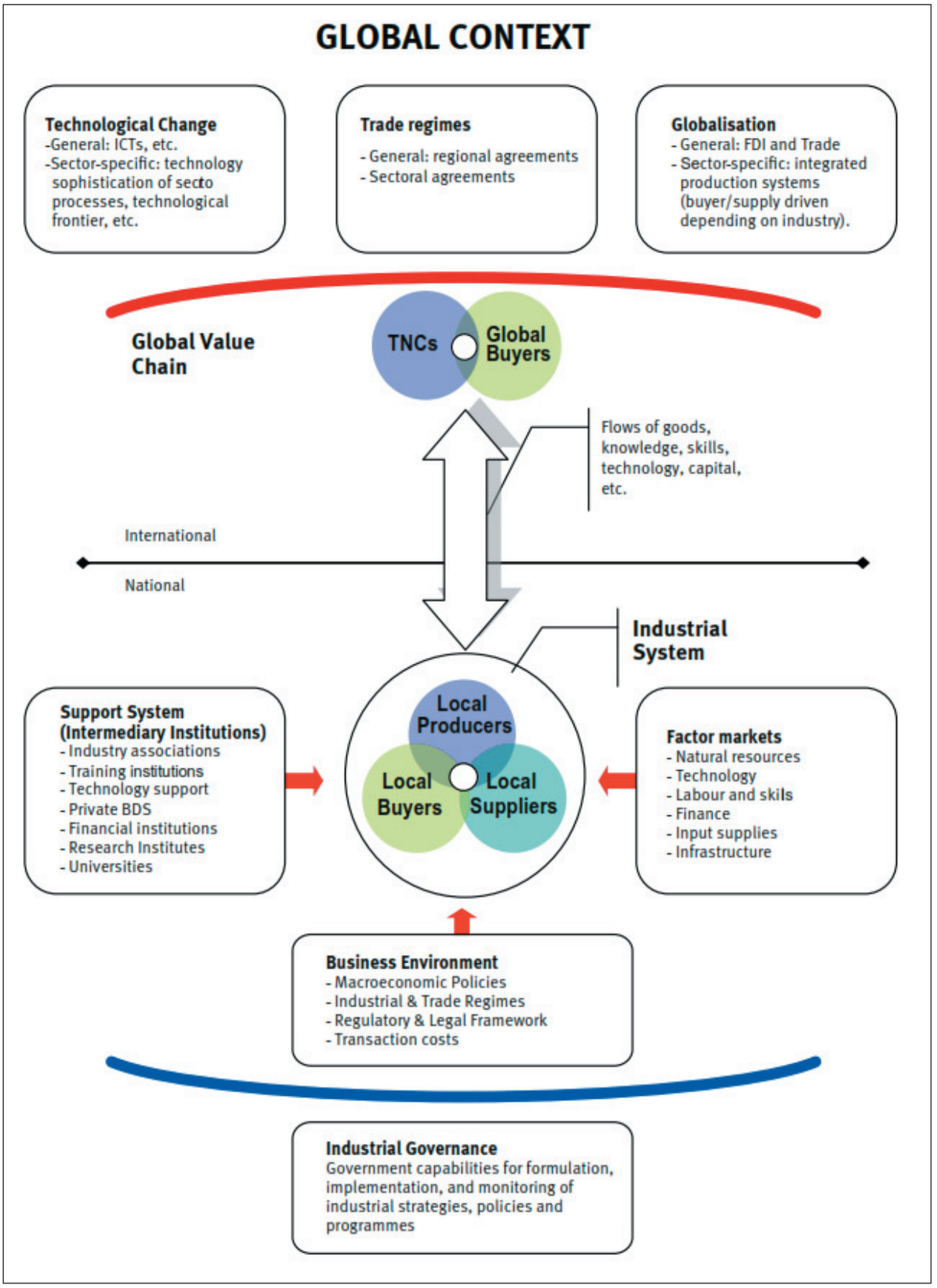
Industrialization intensity. The intensity of industrialization is measured by the arithmetic average of the share of MVA in GDP and the share of medium and high technology activities (MHT) in MVA. The former captures the role of manufacturing in the economy and the latter the technological complexity of manufacturing. The latter variable also adds positive weight to complex activities on the grounds that these are desirable for competitive performance: a more complex structure denotes industrial maturity, flexibility and the ability to move into faster growing activities. However, the measure only captures shifts across activities and not the upgrading within them, and it overlooks an important aspect of technological improvement. It is also fairly aggregate and cannot capture fine technological differences within the categories (some low-technology activities may have segments of high technology, and vice versa). These deficiencies reflect the nature of the data, but the broad findings appear to be sound and plausible.

Export quality. The quality of exports is measured by the simple formula of the share of manufactured exports in total exports and the share of medium and high technology products in manufactured exports. The reasoning is similar to that of industrialization intensity. The share of manufactures in total exports captures the role of manufacturing in export activity. The share of medium and high technology products captures the technological complexity of exports, along with the ability to manufacture more advanced products and move into more dynamic areas of exports.

Source: UNIDO Training Manual 2012

4 More information on the framework can once again be found in the TICR 2012 page 11.

Figure 1 Analytical and conceptual framework for industrial competitiveness



Source: UNIDO

The conceptual framework aids the analyst to comprehend how industrial performance of a country is embedded in a complex and closely intertwined reality, keeping in mind that these are by far not all the factors influencing competitiveness. Section D on industrial drivers will provide more theory and concepts on these complex systemic issues. While the framework seen in Figure 1 is also used for the macro-level CIP analysis, it becomes even more relevant to use this when sub-sectors or value chains are examined. Each value chain, sector, product and even firm will be affected in distinct ways by national and international circumstances. Lastly, the methodology used for Section E on employment in manufacturing is in part based on the EQuIP ("Enhancing the Quality of Industrial Policies") methodology – a joint product of UNIDO and GIZ, in particular on Tool 5: Industrial Employment and Poverty Alleviation.

Methodological considerations

Some important methodological caveats are listed below, in line with the ones sketched in the TICR 2012 [5], shedding more light on the scope and limits of this report:

- Much emphasis is placed on the benchmarking approach, that is, the comparative analysis with other countries. This puts the observations on the development of Tanzania into perspective and allows for a more holistic understanding. The countries with which Tanzania is being compared with and the justification of these are explained at the beginning of section B of this report.

- The report uses quantitative and transparent data which does not rely on business perceptions. This allows for an unbiased analysis of industrial performance, along cross-country and longitudinal dimensions. Most data used is found in international and publicly available databases.

- This report, just like the previous one, uses UNIDO's technological classification for both manufactured trade and manufacturing value added (henceforth MVA). This divides the product groups which belong to the manufacturing sector into 1) resource-based 2) low-technology 3) medium technology 4) high technology manufactured products, and enables to develop an insight into the complexity of production and exports observed. A full list of product groups which fall under these categories can be found in the Annex I.

- To create a holistic understanding of industrial competitiveness of Tanzania, the different methodologies and indicators observe current levels as well as trends over time (e.g. last 5 to 10 years). The report will also break down the macro analysis into sub-sectors when this is reasonable and data is available.

Scope and limitations of the report

While a wealth of information is presented in this report, it is important to spell out the limitations as well:

- Firstly, and more generally, the report is mostly based on quantitative analysis for the aforementioned reasons: mainly to ensure the industrial performance is measured in an unbiased manner and when comparison across countries and time is feasible. However, quantitative analysis should be supported or complemented by qualitative information. While the report incorporates such information to the extent possible, in-depth qualitative research goes well beyond the scope of this report. Hence, the findings of this research provide a robust and reliable overview of key issues and trends of industrial development, and guide the analyst in regards to where additional qualitative research would be useful, depending on the reader's interest.

5 Please see p. 13 of TICR 2012 for more.

- Measuring industrial competitiveness requires an examination of both national production and exports, to see, on the one hand, the extent to which the country can domestically produce manufactured goods (or parts of), and on the other hand, how competitive it is to sell them in the global market. Whereas the CIP methodology in Section B enables to carry out both these analyses, limitations in data related to national production has led to the remaining of the report focusing more on the exports of manufactured products (e.g. value chain analysis looks only at exports). This, however, provides the opportunity to analyse manufactured exports to a larger extent, focusing also on main markets, demand dynamism, regional integration and so forth. National production data is generally more difficult to obtain, as it requires the regular undertaking of surveys/censuses which can be very time intensive and costly. Trade data, on the other hand, is collected at customs, and automatically updated.

  Nonetheless, data from the Annual Survey of Industrial Production (ASIP) covering the years 2010 to 2012, and the industrial census covering 2013 data are expected to be published shortly. Following this, a separate analytical report will be developed, focusing on the performance of industrial production in Tanzania, and complementing the findings of this report.

- A note needs to be made on currently available industrial data as it is presented for Tanzania in the INDSTAT database. While there is data available since 2003, it was decided that only data from 2008 onwards would be used for Tanzania in this report. This is due to the fact that the methodology of reporting such data has changed, and it was first implemented for the 2008 data. Comparisons with earlier years are therefore difficult to make and the decision to observe data from 2008 increases the consistency of the findings.

- There is a lack of data on the informal sector in Tanzania. The INDSTAT database (mainly used for sub-sectoral analysis of MVA, employment and wages in this report) is based on a survey which includes firms with 10 or more employees only. As micro and small enterprises employ a significant share of the Tanzanian population, having such data would enrich the analysis and would better contribute to shaping adequate initiatives and policies for the country.

- Some other limitations outlined in TICR 2012 hold here as well, as related to the concept of competitiveness, the lack of data, and to UNIDO's technology classification [6]. The latter allows carrying out analysis based on technology intensity, but it holds a number of assumptions, which may not always be an accurate representation of the processing activity for the specific product in question. There can be more complex activities in lower-technology product groups, or very simple processes in product groups classified as high technology intensive. UNIDO's methodology classifies products using a three-digit level in SITC and ISIC, resulting in a somewhat aggregated categorization. Furthermore, using such a classification does not allow observing upgrades of technology used within a certain sector. This will require separate analysis, and the report reminds the reader about this. However, UNIDO also advocates for a parallel national classification systems in some developing countries where it would suit more the local industrial context.

6 TICR 2012, page 14.

A.2. Industrial development and policy in Tanzania

This second Tanzania Industrial Competitiveness Report is published just before the release of the Second Five-Year Development Plan (FYDP II 2015/16-2020/21) which is set to promote the development of the manufacturing sector, mainly through resource-based and low-tech industrialization, as a national priority to achieve the Tanzania Development Vision (TDV) goals, and following the implementation of FYDP I, whose aim was mainly to remove the binding constraints (e.g. infrastructure) to growth.

The Long Term Perspective Plan (2011/12-2025/26), linking the three FYDPs towards the achievement of TDV, clearly places industrialization at the centre stage of Tanzania's socio-economic transformation, setting concrete indicators and targets in this direction, aligned also with the Sustainable Development Goal 9 (Industry, Innovation, Infrastructure).

Structural change of the economy towards manufacturing as overarching development goal: LTPP vs. UNIDO IDR 2013

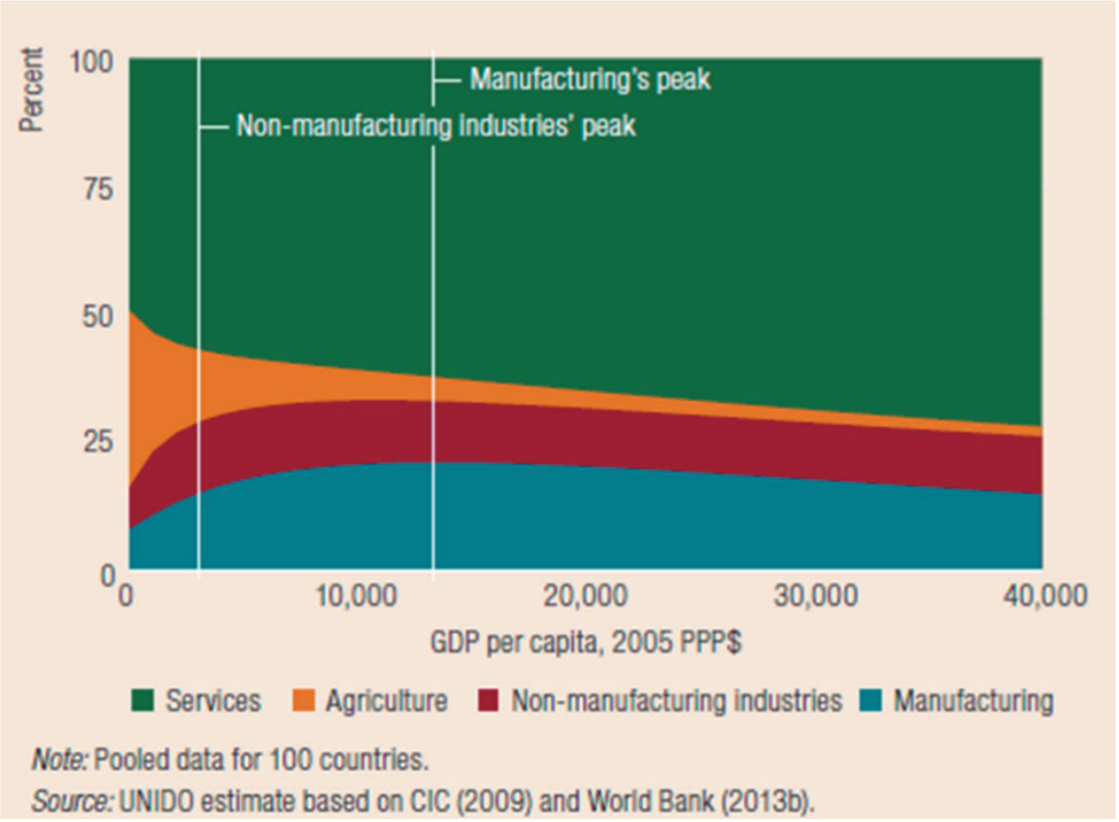
Tanzania recognizes the fundamental role of structural change in driving development in its main national planning documents, including the Development Vision 2025 (TDV 2025), the Long Term Perspective Plan (LTPP) 2011/12-2025/6 and the Five Year Development Plans (FYDPs). However, it is the LTPP that directly tackles structural change providing the strategic direction to the Five-Year Development Plans to achieve the TDV by including also concrete indicators with baseline and targets.

Structural change of the economy towards manufacturing figures as a prominent element in LICs' (industrial) national development strategies, as a means to broaden the employment base, enhance productivity and ultimately achieve economic development and poverty reduction. At macro-level, structural change refers to long-term changes in the relative importance and shares of economic sectors (i.e. agriculture, industry and services) in an economy in terms of production and share of capital and labour. This can happen through diversification, upgrading and deepening, depending, among others, at which stage of development a country is. Furthermore, structural change can occur across sectors (e.g. primary to manufacturing) or within a sector as well (e.g. transition from low tech to medium/high tech manufacturing).

The UNIDO Industrial Development Report of 2013, published after the TICR 2012, provides further empirical evidence in support of TDV and LTPP's strategies for industrial socio-economic transformation. At lower incomes the role of manufacturing in structural change is highest, gaining big relative shares against agriculture by shifting resources from low-productive activities such as rural agriculture or urban informal services. At this stage, the application of low capital-intensive technologies allows for improvements in both productivity and employment, a characteristic unique to manufacturing, since the growth of services and non-manufacturing industries usually bring benefits to either one of the two and not always sustainably to the same extent [7].

7 In particular, services can broaden the employment base but have little effect on productivity enhancement; vice versa non-manufacturing industries initially impact more on relative productivity, but not on employment, driven mainly by the high capital intensity of mining and public utilities.

Figure 2 GDP composition by income and sector (1963-2007)



Note: Pooled data for 100 countries.
Source: UNIDO estimate based on CIC (2009) and World Bank (2013b).

Structural change within manufacturing is approximated by the growing technology content of activities and a progressive shift from low- to medium and high tech industries and eventually leading to greater value addition.

I. Low-tech industries are characterized by labour-intensive production processes and low capital intensity;

II. Medium tech industries are primarily capital-intensive resource-processing industries;

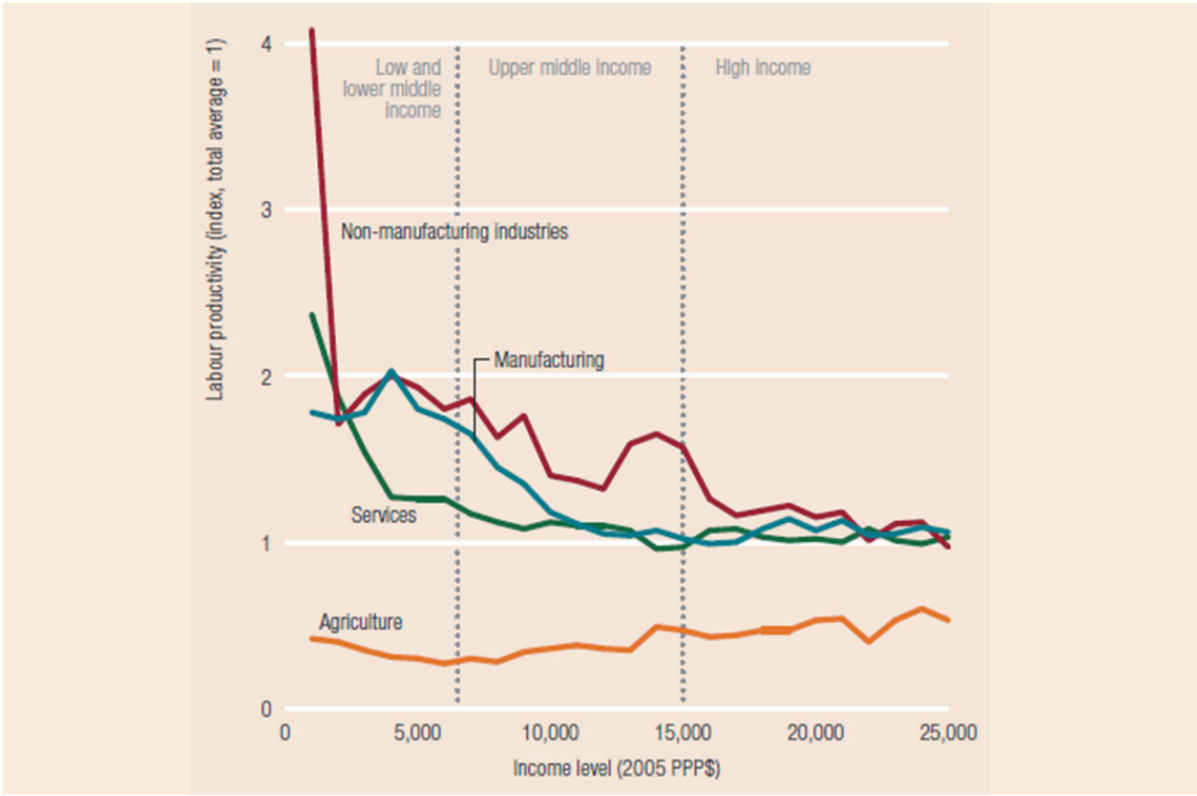
III. High tech industries are mainly capital- and technology-intensive industries.

More simply put the role of manufacturing changes as structural change evolves:

- At lower-income levels the application of low capital-intensive technologies allows for improvements in both productivity and employment.
- As the capital intensity of technology increases, productivity gains dominate and employment shifts towards manufacturing-related and other services.

For developing countries aiming to maintain growth while creating sustainable jobs, manufacturing offers an opportunity not only to re balance the economy towards higher value-added sectors but also to provide a relatively wide employment base with higher labour productivity. This contrasts with a direct transition from agriculture to services, especially for low-income countries, which offers the opportunity to achieve only the first objective (employment), not the second (productivity).

Figure 3 Relative labour productivity by income and sector (1991-2010)

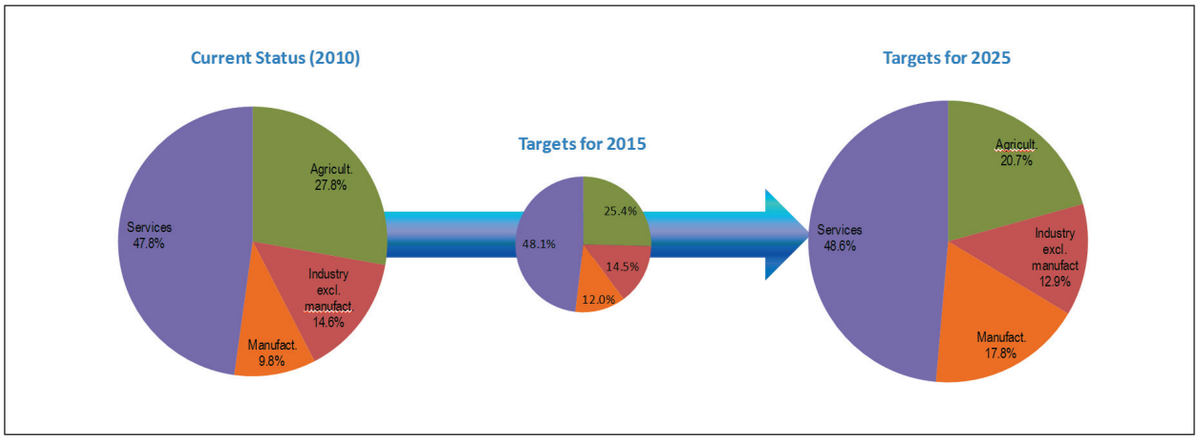


Source: Industrial Development Report 2013, UNIDO

Non-manufacturing industries (mining, utilities, and energy) show the highest relative productivity at all levels of development, driven mainly by the high capital intensity of mining and public utilities. But the size of this sector is limited, as is its capacity to absorb labour.

Tanzania's LTPP's strategy is underpinned by such evidence, envisaging the following structural transformation supported by quantifiable targets as expressed in terms of percentage contribution of main sectors to GDP:

Figure 4 LTPP targets for contributions of economic sectors



The LTPP is very clear in disaggregating the industrial sector among the manufacturing and non-manufacturing sub-sectors, showing that the envisaged structural transformation is all focused on increasing the share of the manufacturing sector from 9.8% in 2010

to 17.8% in 2025, mostly at the expense of agriculture (decreasing in the same period from 27.8% to 20.7%) and non-manufacturing industries (from 14.6% to 12.9%) whereas services are foreseen to remain relatively stable.

LTPP goes even deeper, setting targets also for structural transformation of employment in sectors, and envisaging even more drastic changes along the lines of sector's contribution to GDP.

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LTPP goes even deeper, setting targets also for structural transformation of employment in sectors, and envisaging even more drastic changes along the lines of sector's contribution to GDP [8].

The LTPP is very clear in placing emphasis on transforming the country's resources through the development of the industrial sector, by enhancing value addition to primary products. It envisages strong forward linkages from the natural gas industry to the manufacturing sector, particularly agro-industry, though attention should also be paid to medium tech industries.

The Integrated Industrial Development Strategy (IIDS) 2025 goes further, indicating Agriculture Development Led Industrialization (ADLI) as pivotal to achieving TDV goals, by building on Kilimo Kwanza and initiatives like the Southern Agricultural Growth Corridor programme, to develop integrated agricultural production systems that include modern and commercialized agricultural production, backward linkages to production and supply of inputs and forward linkages to agro-processing, packaging and marketing.

This report places significant emphasis on prioritized resource-based, low-tech sectors dedicating an entire section to sector performance and value chain analysis for sunflower oil and cotton, investigating in particular their export performance in terms also of value addition. Similar value chain, sectoral reports are envisaged to be published by the Ministry of Industry, Trade and Investment in the next years, to monitor the performance of prioritized value chains.

Again, recent empirical evidence from UNIDO IDR 2013 supports with facts and data such national strategies, suggesting a gradual path of industrialization from resource-based, low tech manufacturing, to medium and high tech, though the process is acknowledged not be always linear. In particular, the IDR 2013 recognizes LICs have immense potential for industrialization in food and beverages (agroindustry), and textiles and garments, with good prospects for sustained employment generation and higher productivity.

More specifically, food and beverages' (major manufacturing subsector in Tanzania, linked to agro-industry) contribute to value added and employment throughout different level of incomes per capita, though value-added growth is slightly higher than employment, resulting in sustained labour productivity gains. This means that investing in the expansion of the food and beverages' subsector represents a sustainable strategy of raising GDP per capita and employment levels, even when Tanzania will reach middle-income status.

This does not completely hold true in the case of textiles and wearing apparel, showing a progressive reduced impact on value added and employment as countries move into upper middle and high incomes, but textiles can prolong the growth of value added after the industry starts reducing employment – and

8 Boxes 4 and 5 in Section B provide further insight into structural transformation of Tanzania Mainland and Zanzibar economies by comparing them with Vietnam and Mauritius respectively

thus increasing productivity–due to its ability to substitute capital for labour. Moreover, upgrading to higher value added garments-related niches, like fashion, can contribute to maintain higher levels of value addition coupled with sustained levels of employment.

Structural Change and Employment Generation

Naturally, the concentration of efforts of the Government of Tanzania on industrial development, and in particular on labour-intensive sectors, stem, among others, from the firm belief that this will positively impact on the employment, particularly in qualitative terms on enhancement of productivity, and preferably by reducing youth unemployment. As mentioned earlier, the LTPP clearly indicates a progressive shift of labour force from agriculture to industry, particularly manufacturing.

This report dedicates a special section (E) on employment trends across the economy, with a particular focus on trends within manufacturing, in terms of absolute numbers and of productivity and elasticity.

UNIDO IDR 2013 was specifically dedicated to the role of manufacturing and structural change on sustaining employment growth. Here it is worth citing a passage from the report [9]:

Manufacturing – more than agriculture or services – performs a particularly important engine of growth role at early stages of development. It helps raise people's living standards by enhancing their ability to acquire goods and services and to invest in education and health. It allows enterprises to accumulate capital, which can then be used to further improve technology or realize new investment opportunities. At the same time, it provides new jobs for the population at large. Rising employment and incomes, additional productivity gains and the generation of new economic activities become a major source of economic growth and prosperity. Agriculture and services, while providing employment opportunities, do so at lower productivity levels and hence makes it more challenging for economies to accumulate capital and sustain structural change, growth and employment in the long run.

This is very clear for countries at low-income levels. The methodological issue that UNIDO IDR 2013 raises pertains to more advanced economies where it is difficult to assess the real indirect impact of manufacturing on related services (e.g. multiplier effect). Here, the phenomenon of manufacturing enterprises outsourcing their non-core operations is much stronger.

At low income levels, and at earlier stages of manufacturing development, it is relatively easier to assess such impact as most jobs created originate directly from manufacturing and indirect multiplier effects are lower. However, even for LICs, any assessment of the scale of manufacturing's employment creation based purely on data from industrial surveys will heavily downsize its true size. According to the same UNIDO Report, employment data from these sources will represent, at best, half of the total number of jobs directly and indirectly created by manufacturing.

9 IDR 2013, p. 8.

B

The competitive industrial performance of URT

B.1. Recent dynamics in the competitive industrial performance of URT

This section of the report updates the previous TICR findings focusing on the recent trends as observed in the period between 2010 and 2013. While there were no major structural changes in the economy in these four years compared to the previous decade it is still important to obtain a useful indicative trajectory of industrial performance using this report. More importantly the report allows us to observe if the positive trends identified between the years 2000 and 2010 have sustained and evolved into more viable structural features in the manufacturing sector. Such observations are critical to correct for the specific characteristic of developing countries which is that, given their limited manufacturing base, a few major investments can skew observations significantly and give the impression of relatively broader macro changes. Moreover, in keeping with the previous Competitiveness Report published in 2012 Tanzania's current industrial competitiveness is benchmarked against other relevant economies in order to assess its relative performance.

The report does indeed capture some worrying trends for the period 2010-13. With respect to industrial production, the average annual growth rate in Tanzania's MVA has declined from roughly 9 % during the first decade of 2000 to under 6 % for the years between 2010 and 2013. During the same period, the export performance of manufactured products, which achieved an impressive average annual growth rate of 45 percent between 2005 and 2010, has registered a substantial decline of 5 % per annum. Of course part of this slow-down can be attributed to the global recession and the resultant downturn in global trade. However, it also highlights the need for an analysis of the process of structural transformation experienced by the Tanzanian economy since 2000 – its breadth, quality and depth – and, ultimately, if this process can lead Tanzania towards a sustainable pathway of economic development.

Within this scenario, the report also identifies a number of positive trends like an increase in the share of medium and high tech products in the composition of manufactured exports. This is due to both reductions in exports of resource-based and low-tech products as well as increases in medium and high tech exports. In particular, within the Regional Economic Communities, Tanzania has succeeded in increasing its manufactured exports to the South African Development Community (SADC), though it has experienced a slight decrease in manufactured exports to the East Africa in the period 2010-2013. Moreover, Tanzania is still facing stiff competition in meeting demand from landlocked markets in

the African continent, not only from Kenya and South Africa, but also from newly emerging competitors.

This section compares the industrial performance of Tanzania by benchmarking it with 14 countries: Uganda, Kenya, Burundi, Rwanda, South Africa, Ghana, Ethiopia, Zambia, Malawi, Mozambique, Vietnam, Malaysia, Chile, and Brazil. The basic criteria used to identify these countries as benchmarks were: **neighbouring countries** that share the same geographical advantages and have similar production structures; **immediate competitors** that, given similar factor endowments, specialize in the same industrial sectors; **future competitors** that are likely to pose a competitive threat in sectors of comparative and competitive advantage; **role models** that suggest obtainable goals for industrial development.

Criteria	Countries
Immediate competitors	Uganda, Kenya, Burundi, Rwanda
Neighbouring countries	Zambia, Malawi, Mozambique
Role models	South Africa, Vietnam, Malaysia, Chile, Brazil
Future competitors	Ghana, Ethiopia, Mozambique

The analysis in the following sections is based on the main indicators of UNIDO´s Competitive Industrial Performance (CIP) index to assess the latest trends (2010 – 2013). This assessment includes the capacity of the country to produce and export its manufactured products; the impact of Tanzanian performance as well as its competitors' on world MVA and global trade in manufactures; industrialization intensity and structural change. Finally, the industrial competitive position of Tanzania in the EAC and SADC is assessed to observe performance, opportunities and challenges for industrial development.

B.2. Latest trends in industrial production: The manufacturing value added performance of URT

Manufacturing Value Added (MVA) is a key indicator for measuring industrial performance as it captures the sector's depth and the existence of industrial capabilities at the macro level. The growth rate of MVA in Tanzania was significant and stable at an average of around 8 percent per year from 2000 to 2010. In the second half of the period (between 2005 and 2010) the average growth rate reached 8.96 %. However, from 2010 to 2013, there has been a slowdown, with MVA growing on average at 5.84 % annually. Such a slowdown is not generally observed at an early stage of industrial development like in Tanzania's case and nor has this been observed in the manufacturing sector of Tanzania's competitors. Table 1 shows MVA figures for Tanzania and several comparator countries for selected years since 2005 and average growth rates for the periods 2005-2010 and 2010-2013.

Cross-country comparisons provide useful data on the macro-performance of the Tanzanian manufacturing sector, as represented by its growth in MVA, and help us reassess its performance in the global context. The underlying assumption, drawn from the UNIDO Industrial Development Report 2013, and other relevant literature, is that at the lower income levels of Tanzania and other Sub-Saharan countries we would expect a

higher absolute level of growth in MVA though this can often be volatile, in both cases due to structural reasons, vis-à-vis low middle-income countries such as Vietnam. Higher growth rates are more difficult to achieve for already mature and high-productivity industrialized economies.

Table 1 MVA values and growth rates (2005-2013)

	Manufacturing Value Added constant 2005 USD (in million)				Compound Annual Growth Rate (%)		
	2005	2010	2011	2012	2013	2005-2010	2010-2013
Ethiopia	601	944	1,031	1,153	1,348	9.46%	12.61%
Vietnam	10,848	16,897	18,756	19,844	21,320	9.27%	8.06%
Zambia	820	1,029	1,111	1,191	1,245	4.65%	6.56%
Rwanda	145	197	213	226	236	6.34%	6.14%
Tanzania	1,235	1,897	2,029	2,112	2,249	8.96%	5.84%
Mozambique	924	1,109	1,129	1,237	1,263	3.72%	4.43%
Kenya	1,974	2,332	2,501	2,487	2,626	3.39%	4.04%
Uganda	632	883	952	978	954	6.93%	2.59%

Source: World Development Indicators

Vietnam has however been the exception in this context as its MVA continues to outpace that of other Sub-Saharan countries and Tanzania now that it is a low middle income country and it had rates of MVA growth even when it was at the income levels of Sub-Saharan Africa (henceforth SSA). In the current period Vietnam's MVA has grown at 8.06% and one of the reasons for this performance has been well managed policies for industrialization. Indeed, Vietnam can provide significant learning opportunities for a country like Tanzania. Ethiopia is another country that provides an example of how industrial development can be supported for positive economic growth outcomes (see Box 2 below). Albeit very different from Vietnam in its current growth trajectory from a very low industrial base, Ethiopia's MVA growth rate was in double-digits between 2010 and 2013. This has ensured that the gap between Tanzania (and other SSA countries) has been reduced significantly with the likelihood that Ethiopia will catch up with the region in the next five to ten years, if it manages to sustain current levels.

The data from the report suggests that Tanzania might be following the same pattern as Kenya (and Uganda), with an initially volatile phase of growth that settles down to a moderate level, quite unlike the trajectory of industrial development in Vietnam. This will also not fulfil the aim stated in the National Vision document that envisages middle income status for Tanzania by 2025. On the other hand, even though it is still too early to judge, Ethiopia and Rwanda might be on a growth pattern that is both higher and more sustainable. The next sections will explore different metrics of industrial performance in greater detail, starting with per capita levels of manufacturing value added.

Box 2: Ethiopia's growth in manufacturing: Government initiatives

The Ethiopian economy is still heavily dependent on agriculture and manufacturing contributes to only 5% of its GDP. Despite this the country has been drawing the attention of those studying economic development and policy making and investors. The reason has been its average growth rate of GDP of over 10%--one of the highest recorded globally.

These growth rates are mainly largely attributed to a combination of investment and structural reforms, as the government aims to transform Ethiopia into a middle income country by 2025 (similar to Tanzania). Poverty reduction, economic growth and structural transformation have been the focus of policy makers in the Ethiopian government since the 1990s but policies were planned strategically with learnings from previous experiences taken into adequate consideration. The first among such policy documents was the Agricultural Development Led Industrialization (ADLI, same as in Tanzania Integrated Industrial Development Strategy) and it was formulated in the first half of the 1990s. It was however not as successful due to sustained droughts and conflicts. The Sustainable Development and Poverty Reduction Program (SDPRP) 2002/3 and the Plan for Accelerated and Sustained Development to end Poverty (PASDEP) 2005/6-2009/10 that followed were designed however using the ADLI as reference. The main areas of focus were food security and agricultural productivity for economic growth. This included a focus on product diversification, a shift to higher-value crops and effective integration of farmers with local and international markets. During this period, a significant portion of the budget was also allocated to infrastructure development, including roads, water, sanitation, telecommunication and energy.

Economic growth during the first decade of the 2000s was in double digits and all sectors experienced high growth rates, with industry growing at 10 %. This was however still below expectations as the targets for the sector were set at 11% for the lowest growth rate and 18% as the highest. In 2010 the Ethiopian government launched the Growth and Transformation Plan (GTP) which was a medium term strategic framework for the period between 2010/11 and 2014/15. As the Vision statement states, the country should develop "an industrial sector that plays a leading role in the economy", and because the earlier targets were not met, the GTP places more importance on industrial development than was previously done. The Plan focuses on export-oriented sub-sectors where Ethiopia has competitive advantage, similar to Tanzania, namely leather and leather products, textiles and garment and agro-processing. These are labour and natural resource-intensive sectors, which require mostly low-skilled workers and are more suitable for broad based employment provision and therefore inclusive growth.

The GTP also focuses on capital-intensive sectors like cement, steel & engineering, fertilizers and pharmaceuticals in order to increase domestic production in these key sectors. Problems related to micro, small and medium enterprises (MSME) and larger firms are treated separately and while sets of strategies depended on the development of industrial clusters and privatization. The seven objectives for Ethiopia's industrial development strategy are the following:

1. Creation of a broad-based foundation for competitive domestic industrial and private sector development
2. Employment opportunities and poverty reduction
3. Supporting sustainable development of agriculture
4. Full utilization of industrial capacity
5. Use of domestic raw materials and labour (for medium and large industries)
6. Create a strong foundation for the sector to start playing a leading position in the national economy, employment generation, and foreign exchange earnings and savings
7. Local production of equipment, machinery and spare parts

The GTP includes very precise and numerical targets, even for sub-sectors of manufacturing, hence in principle allowing regular monitoring of performance.

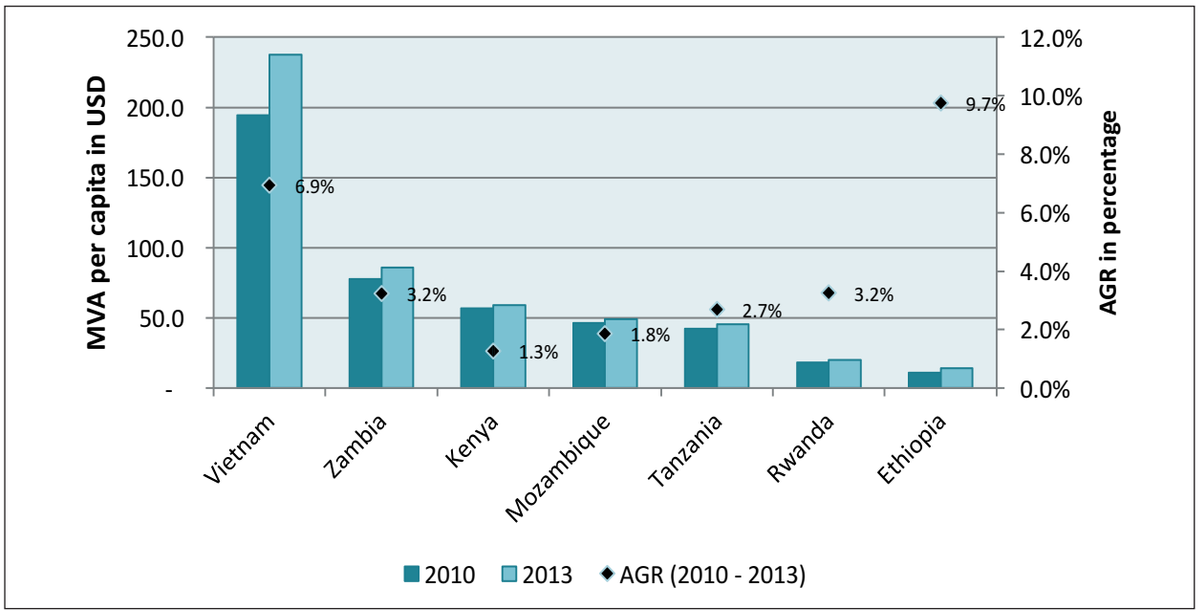
Indeed, between 2010 and 2013 Ethiopia's manufacturing sector grew at a faster pace than it did previously, as did industry as a whole (13 % and 20 % respectively per annum between 2010 and 2013 at constant prices). Foreign investment highly contributed to this growth. Investors' interest, in turn, was whetted by high growth rates, relative political stability, and a political structure that helps to sustain economic growth. Significant investment in infrastructure, such as the first electrical railway system in Addis Ababa and the Grand Ethiopian Renaissance Dam, which should contribute to improving water supply while also being the largest hydroelectric power plant in Africa, were also key drivers of industrial performance. For the leather sector in particular, the development of an industrial park and inviting a shoe making company from China has led to a doubling of leather shoe exports and a significant increase in employment in the sector.

Structural change for LDCs can generally be defined as the change in contribution to GDP from a low value added agricultural sector to a higher value added manufacturing sector (although this change can be in-sector too). The Ethiopian economy is still far from making this shift and for this reason the upcoming Five Year Development Plan places manufacturing as one of its priority areas.

B.2.1. Industrial Capacity

MVA per capita captures a country's capacity to add value in the manufacturing process. Adjusting for population ensures the comparison of manufacturing production across countries correctly measures the *ability* of a country to produce manufactured products. In other words, it becomes possible to compare the MVA of large countries with that of smaller countries. While Tanzania's MVA per capita in 2013 stood at 46 USD, Kenya's was 59 USD and Vietnam's was 238 USD. Zambia's and Mozambique's manufacturing production capacities are also higher than in Tanzania (Figure 5).

Figure 5 Manufacturing value added per capita for Tanzania and Comparators (2010-2013)



Source: World Development Indicators

Observing MVA per capita highlights the trends that we briefly identified in the preceding paragraphs. While the growth rate of Tanzania's MVA per capita is slightly faster than that of Mozambique and Kenya between 2010 and 2013, more significantly and in line with the absolute MVA growth levels observed earlier, it has seen a decline in its growth rate from 5.4 % in 2005-2010, to 2.7 % in the past three years. This means the majority of the comparator countries are growing faster than Tanzania at present. This is likely to lead to an increased gap between Tanzania's capacity to manufacture on one hand and Zambia's and Vietnam's on the other. Again, in line with the previous findings for MVA at absolute levels, Rwanda and Ethiopia, currently exhibiting lower production capacities than Tanzania, have experienced a higher growth rate in recent years in this regard.

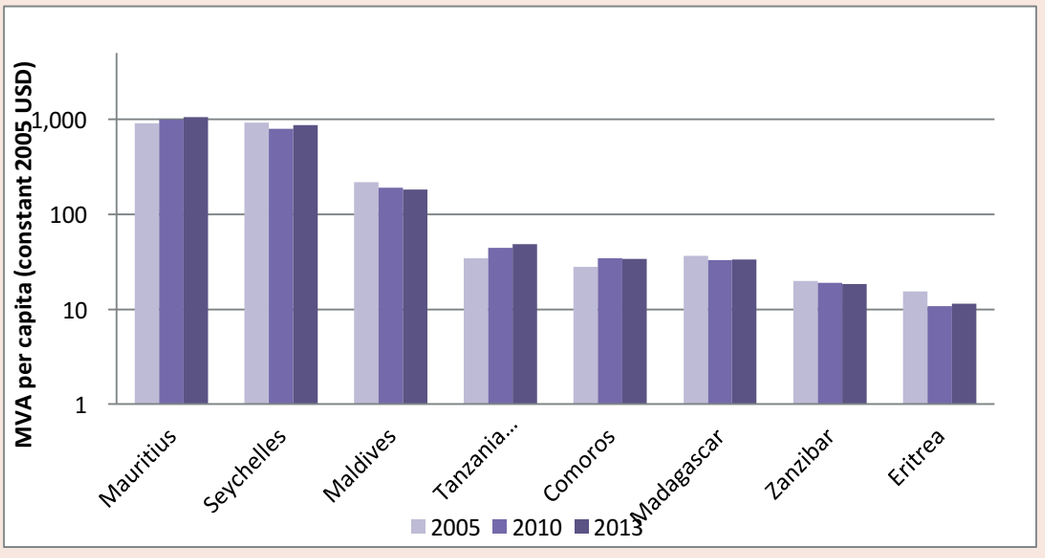
Comparisons by country and time periods contextualize and put into correct perspective the apparently positive trends of Tanzania's general performance in MVA. In order to avoid remaining trapped in a sluggish and vicious circle of low growth in MVA, Tanzania needs to boost and accelerate its strategies for industrial development to sustainably increase its manufacturing value added.

Box 3: Industrial capacity of Zanzibar and Comparator Countries

Zanzibar's industrial competitiveness can be measured separately from that of the Tanzanian mainland and it is more meaningful to compare its performance with economies similar to its own, in addition to the rest of Tanzania. Benchmarking countries in this exercise therefore include small island economies as well as other economies in the region which are of similar size. The following analysis can be drawn from Figure 6:

- Zanzibar's capacity to produce manufactured goods is lower than that of mainland Tanzania (18.5 USD versus 48.3 USD per capita in 2013). While this was true in earlier years as well (see also TICR 2012), Figure 6 illustrates that since 2005 Zanzibar has been experiencing a gradual decrease in MVA per capita of 1 % on average per annum, causing the gap between its MVA per capita with that of mainland Tanzania to increase further (mainland Tanzania has had an increase of 4.3 % per annum). This was reported in the TICR 2012 where it was clear the slowdown in Zanzibar had begun from the early 2000s. One of the reasons for this reduction in Zanzibar's production capacity is because its MVA has been growing slower than its population (2 % and 3 % respectively per annum between 2005/2010 and 2013).
- The industrial performance of the selected benchmarking countries can be categorized into three groups: the highest performers, which are Mauritius and Seychelles, with MVA per capita values of just under 1,000 USD. Although these values are significantly higher than those of Zanzibar, they can also be seen as (far away) role models for Zanzibar. This is especially true for Mauritius due to its continuing increase in production capacity. The Maldives is alone in the category of intermediate performers as it has been experiencing a reduction in manufacturing capacity of -2.2%. The group of weaker performers in terms of industrial capacity includes Comoros, Madagascar, Zanzibar and Eritrea. Tanzania (mainland), due to its high growth rates, is trying to push itself out of the latter group but these countries are nonetheless considered to be in direct competition with Zanzibar. However, as some of these remain more competitive, it is important to compare their industrial development strategies to evaluate whether any lessons can be learnt.

Figure 6 Industrialization level of Zanzibar and comparator countries (20005-2013)



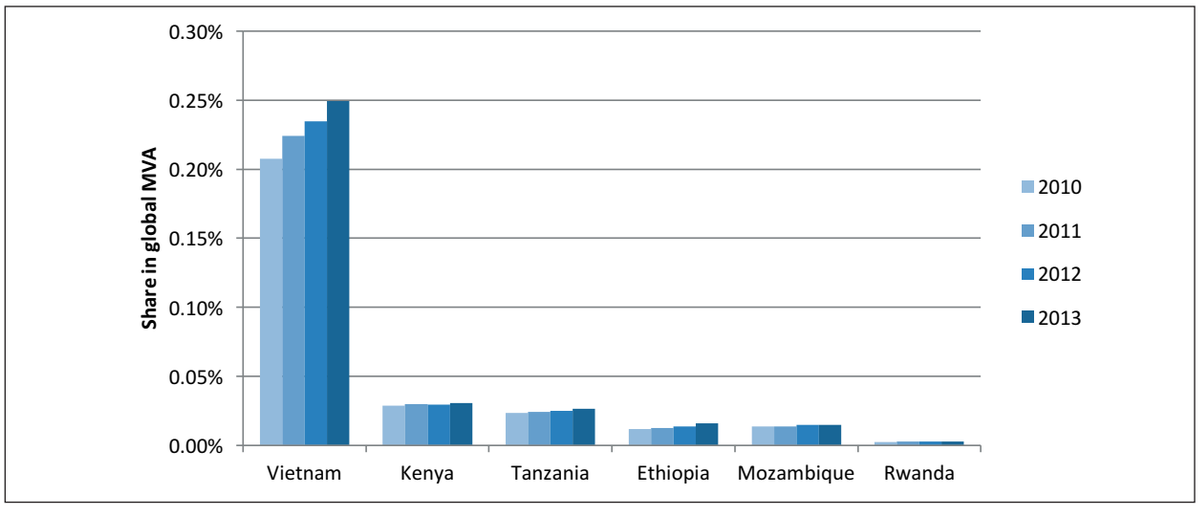
Source: UNSD National Accounts

B.2.2. Tanzania's impact in global production

The impact of a country on global production is measured by its share in world MVA. This depicts the relative performance of any given country, taking into account total volume of manufacturing production. Figure 7 presents the contribution of Tanzania and comparator countries to world MVA. Although the share of Tanzania in global production remains small over the years, and below Kenya's share, the

country has managed to slightly increase its impact in world production continuously throughout the years from 2010 to 2013. This means its MVA growth rate, though lower in recent years, is still higher than the world average (which was 1.62% between 2010 and 2013).

Figure 7 Tanzania and comparators: Impact in the world industrial production (2010-2013)



Source: World Development Indicators

Tanzania is not an exception in terms of increasing its share in world production. All countries presented in Figure 7 were able to do so. Ethiopia's growth in contribution to world MVA, in particular, has been significant compared to others. This highlights once again Ethiopia's potential to be a competitor for Tanzania.

B.2.3. Structural change of industrial production in Tanzania

Economic growth and development are intrinsically linked to the transformation of the structure of the economy. At a macro-level, structural change refers to long-term changes in the relative importance and shares of economic sectors (i.e. agriculture, industry and services) in terms of production and share of capital and labour. This can happen through diversification, upgrading and deepening, depending among other factors on which stage of development a country is in. Furthermore, structural change can occur across sectors (e.g. primary to manufacturing) or within a sector as well (e.g. transition from low tech to medium/high tech manufacturing).

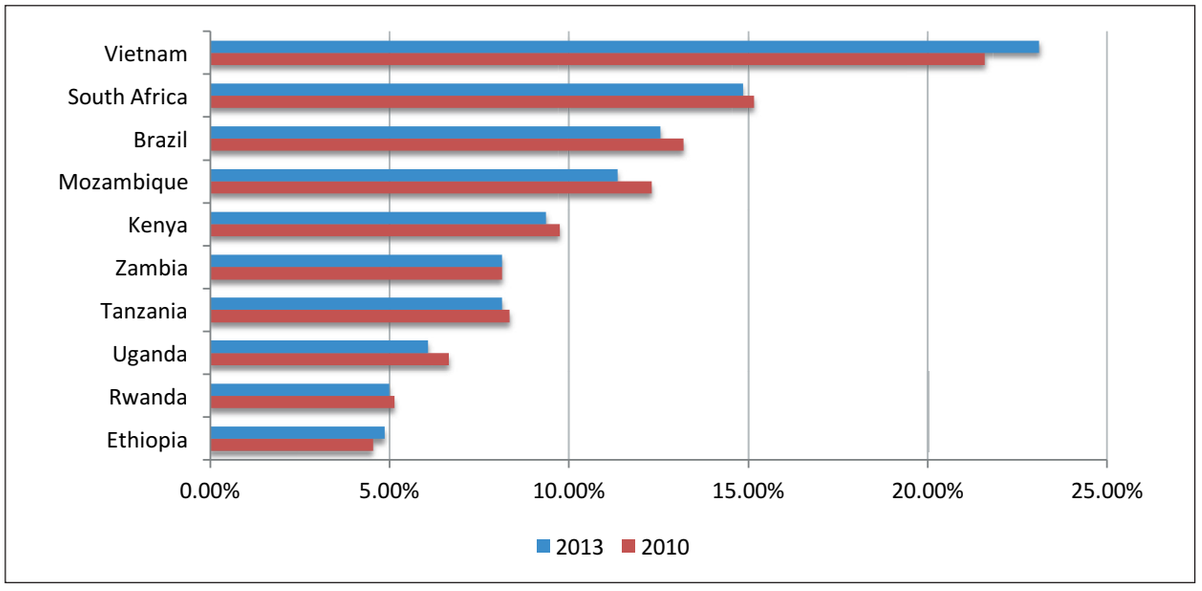
More importantly, structural change of the economy towards manufacturing figures as a prominent element in LDCs' (industrial) national development strategies, as a means to broaden the employment base, enhance productivity and ultimately achieve economic development and poverty reduction. This is because a shift towards manufacturing accelerates productivity growth and therefore growth through competitiveness (due to Kaldorean virtuous cycles of growth and productivity growth). The Tanzanian Vision 2025 and Long Term Perspective Plan are no exception, as we shall see in more detail.

Structural change is measured in this report by the share of MVA in GDP. This captures the role of manufacturing in the economy. Additionally, the technological complexities of different manufactured products are considered in order to identify what share of total MVA is derived from the production of medium and high tech goods. In 2013 the contribution of manufacturing to the economy was at 8.13% for Tanzania. This is lower than other countries such as Kenya (9.4%), South Africa (14.9%) and Mozambique (11.4%), and this figure is particularly far behind its role model, Vietnam (23.1%). Additionally, the

role of manufacturing in Tanzania's economy has been declining slightly since 2010, when its share was 8.34 %. The service sector, which is the largest sector of the economy, is continuing to increase its share in GDP, as its average growth rate has been 7.5 % between 2010 and 2013. The share of the agricultural sector in Tanzania has been declining in terms of value added (average growth rate of 3.3 %).

Tanzania is not the only country which is experiencing a decline in the role of the manufacturing sector in GDP. Figure 8 illustrates that most countries – with the exceptions of Ethiopia and Vietnam– have seen the contribution of manufacturing to GDP declining since 2010. However, at its current stage of development a growth in the share of manufacturing would be much to Tanzania's benefit. In fact, empirical evidence shows that for low income countries, there is a positive correlation between GDP growth and an increasing role of the manufacturing sector in the economy. This is due to the fact that, when the sectoral contribution of manufacturing changes, productivity growth is higher because of higher scientific inputs, innovations, learning by doing and importantly due to significant linkages with the agricultural and service sectors where it can provide inputs. While this is acknowledged in Tanzania's Long Term Perspective Plan, the share of manufacturing in the economy has yet to increase in a commensurate manner.

Figure 8 Contribution of Manufacturing to GDP for Tanzania and comparators (2010 & 2013)



Source: World Development Indicators

The continuous growth in the share of the manufacturing sector in Vietnam – a country already at a relatively higher level of industrial development – is worth closer analysis. This indicates that the country's continuous efforts to boost industrial development have been successful as the sector seems on a sustainable growth trajectory.

Box 4: Structural Change and a comparison between Tanzania and Vietnam

Tanzania recognizes the fundamental role of structural change in driving development in its main national planning documents, including the Development Vision 2025 (TDV 2025), the Long Term Perspective Plan (LTPP) 2011/12-2025/6 and in the Five Year Development Plans (FYDPs). However, it is the LTPP that directly tackles the issue of structural change providing strategic direction to the Five-Year Development and the TDV by including concrete indicators with baseline and targets.

Vietnam provides a very interesting benchmark to assess the performance of Tanzania in terms of achieving structural change, for instance:

1) Both countries have had experience with socialist planning and have since 1986 embarked on a series of economic reforms to bring about a transformation towards a market-oriented economy;

2) The economic structure of both countries was very similar in 1986;

3) The objectives for structural change as laid out by the LTPP to be achieved in 15 years (2010-2025) strikingly mirror what Vietnam achieved in the past 15-20-years.

Comparing Vietnam and Tanzania's structural change trajectories (1986-2012)

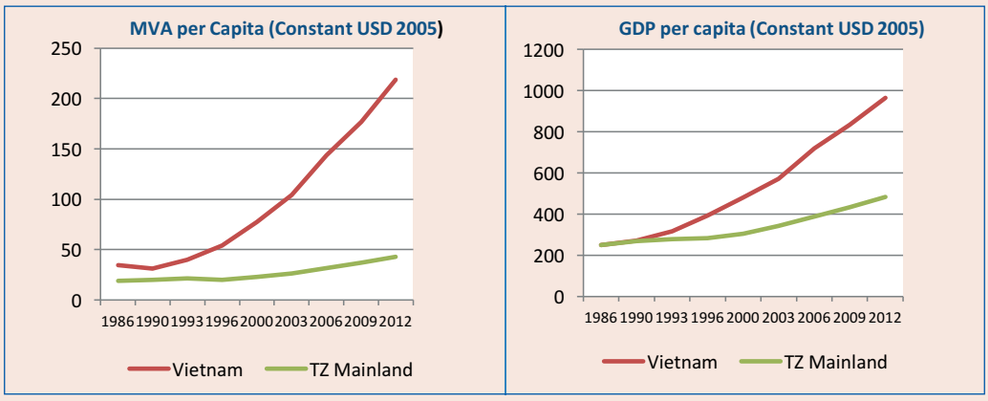
At the beginning of the planned economic transformation, and before embarking on a series of reforms towards a market-oriented economy which involved greater involvement of the private sector, Vietnam and Tanzania shared a similar economic structure. A majority of the population (around 3/4) was employed in agriculture which contributed to a large share of GDP (around 1/3). However, Vietnam went through a difficult phase of transition between 1986 and 1990 when manufacturing growth collapsed due to the dismantling of the country's state owned enterprises. Manufacturing-led recovery and growth drove the economy from the mid- 1990s and especially since 2003. On the other hand, Tanzania's efforts at accelerating manufacturing growth have been fairly recent after the formulation of the FYDPs and LTPP.

After an initial period of slump Vietnam's manufacturing sector underwent a significant turnaround with the contribution of the sector growing at a time when agriculture and other non-manufacturing based industrial sectors weren't growing as fast and growth in services remained more or less stable, especially since 2003. In the case of Tanzania some changes in economic structure were observed from 1996 when the mining, utilities and the construction sectors increased their share of GDP with a moderate increase in the share of manufacturing and services while the share of agriculture eroded. However, this was not close to Vietnamese levels and did not drive the kind of structural change Tanzanian planners had hoped for especially in terms of helping Tanzania to move up to middle income, semi-industrialised status by 2025.

By comparing the trends observed in the process of economic transformation in Vietnam and Tanzania with the growth of GDP per capita in the same period, we can mark some obvious similarities in the sort of acceleration Vietnam went through and what the plans envisage for Tanzania suggesting the policies for developing the manufacturing sector are the right ones.

To better illustrate this, MVA and GDP per capita since 1986 until 2012 are compared for the two countries (Figure 9):

Figure 9 Evolution of MVA and GDP per capita in Tanzania and Vietnam (1986-2012)



Source: UNSD Data

The steep increase in MVA per capita for Vietnam particularly after 2003 coincides with the acceleration in the growth of GDP per capita and in the structural change observed earlier in Figure 8.

Tanzania's MVA and GDP per capita growth do not witness the same accelerations, thus seeming to confirm the empirical evidence from IDR 2013 that for low-income countries the services sector and non-manufacturing industrial sectors do not initially contribute as much to development and GDP per capita, having a more limited impact on productivity increase and in expanding the employment base.

The similarities between the structural change envisaged by Tanzania in 15 years in the LTPP from 2010 to 2025 and what has been achieved by Vietnam in 15 years from 1996 to 2011 (Table 2) are an indication that the projections for Tanzania are, at least, achievable if policies are implemented effectively.

Table 2 Contribution of the value added of the main sectors to GDP: Tanzania LTPP Targets vs Vietnam

	Vietnam 1996	Tanzania 2010-LTPP	Vietnam 2011	Tanzania 2025-LTPP	% Change Vietnam	% Change Tanzania
Agriculture	27.8	27.8	20.1	21	-7.7	-6.8
Non-manufacturing industries*	14.6	14.6	19.9	13	5.3	-1.6
Manufacturing	15.2	9.8	18	18	2.8	8.2
Services	42.5	47.8	42	49	-0.5	1.2

Sources: WDI (Vietnam) and LTPP (Tanzania) *Calculated as the difference between industry and manufacturing

Whereas the contribution of the services sector to GDP maintains a fairly similar share across the two periods considered for the two countries and accounts for 5-7% more in the case of Tanzania, the structural change achieved by Vietnam in 15 years from agriculture to industry is almost the same as envisaged by Tanzanian LTPP, with the primary sector reducing its contribution to GDP from 27.8% to around 20% and the industrial sector taking the whole of this share.

Within the industry, the goal that the LTPP sets for the manufacturing sector in Tanzania (18% contribution to GDP with an increase of more than 8 % from 2010) across 15 years is what Vietnam achieved in 2011 (18%).

The use of country cases as comparators for policy analysis and industrial projections is always problematic as a number of contextual factors are difficult to control for and isolate. Despite that, as the Vietnam case has shown, structural transformation seems to be characterised by a number of generalizable features. Moreover, many countries tend to face similar challenges at initial stages of industrial transformation. The following Box 5 provides an in-depth comparison between Zanzibar and Mauritius. An analysis of structural change in Mauritius was already partially covered in the last TICR (2012) but the process still makes for a pertinent comparison with Zanzibar.

Box 5: Structural Change comparison between Zanzibar and Mauritius

Though more developed than Zanzibar in terms of industrialization, Mauritius provides an apposite case study for Zanzibar as it faced similar challenges at the outset of its industrialization process and shares similar structural characteristics like:

- Similar population and size
- Limited domestic market
- Importance of tourism as a growth driver

Some of the challenges Mauritius shared with Zanzibar at the outset of its industrialization process were:

- Dependence on monocrop (sugar) plantation before 1968.
- Small domestic market which hindered the industrialisation process.

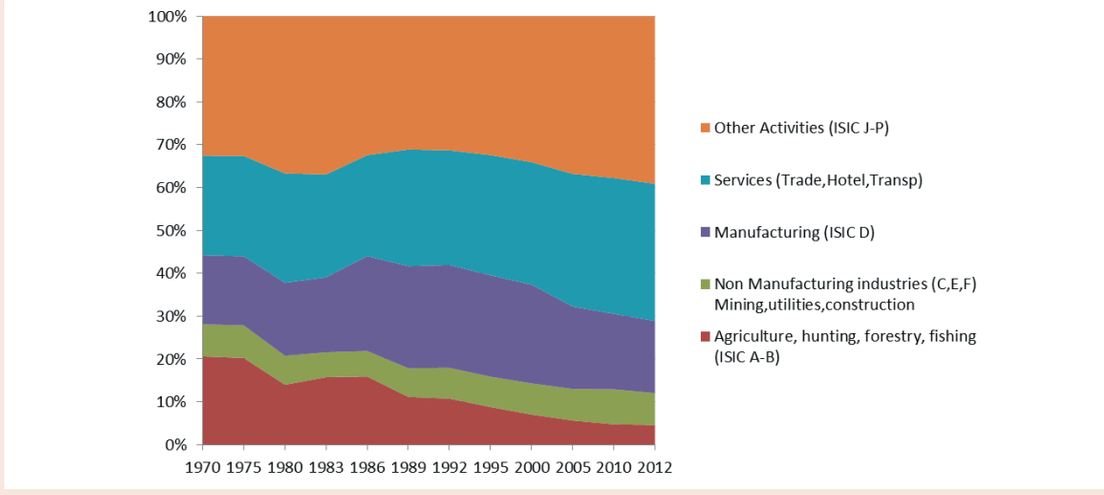
- Large geographical distances that separated Mauritius from the sources of raw materials abroad and from the possible foreign markets.
- Apart from the sugar industry, the rest of the Mauritian economy suffered from a shortage of management and technical skills and capital for investment purposes
- Social or sociological factors such as the absence of an industrial "culture" or ecosystem

Like Zanzibar which also depends significantly on a few products (e.g. spices), Mauritian policy makers were determined to diversify its economy to higher value-added manufacturing sectors. After Import-substituting Industrialization strategies under the UK were unsuccessful, the independent government then opted for export-oriented industrialization. The Export Processing Zone (EPZ) Act No.51 was passed in 1970 and an Export Processing Zone was created. At the start, the EPZ policy concentrated on a few specific areas of the island, but no law prevented investors from setting up export oriented production in other parts of the island. The focus was initially on textile/apparel, taking advantage of demand for textiles and apparel in the EU and United States. However, a boost came also from investors based in Hong Kong who were seeking to move capital and factories out of Hong Kong in anticipation of its reunification with China. In the meantime, tourist arrivals increased from 10,100 in 1966 to 422,500 in 1995 and reached 1 million in 2013.

Comparing Zanzibar and Mauritius' structural change trajectories (1970-2012)

The following figures illustrate Mauritius' structural change pattern:

Figure 10 Contribution to GDP in Mauritius (1970-2012)



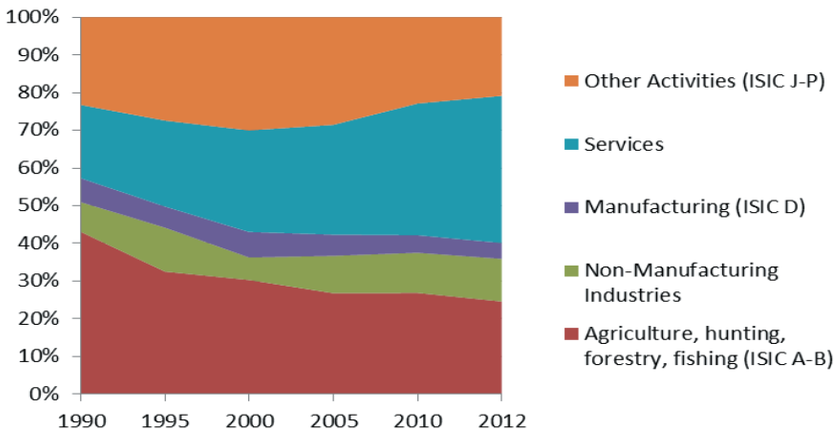
Source: UNSD Data, constant USD

Since the EPZ Act in 1970, Mauritius witnessed a gradual and continuous expansion of the manufacturing sector relative to the other sectors of the economy until approximately 1995, when the services sector started gaining share (Figure 10). Indeed, since the mid-90s the country started diversifying into Business Process Outsourcing (BPO), financial services, and information technology sectors. Emphasis was placed on improving the business environment: The Business Facilitation Act of 2006 provided a streamlined legal framework for business operations in Mauritius. The traditional sugar and textile and apparel sectors were not abandoned in the process of remaining globally competitive, with the textile sector moving into higher end manufacturing and the sugar sector moved up to refined sugars.

The Mauritian case study confirms the policy discourse that at initial low levels of GDP per capita it is manufacturing, preferably diversified and partly export-oriented (depending on size of a mature domestic market) that needs to be given importance to increase in GDP per capita levels, even in small-island states, while only later other sectors such as services, can make a significant contribution to economic growth.

The trajectory of structural change in Zanzibar instead follows the path of minimal and even a shrinking contribution from the manufacturing sector to GDP in the past 25 years. Services, in particular tourism, have instead gained shares against agriculture. The discovery of oil and gas might also contribute to an expansion of non-manufacturing industries vis-à-vis agriculture.

Figure 11 Contribution to GDP in Zanzibar (1990-2012)



Source: UNSD Data, constant USD

Lessons to be learnt for Zanzibar from Mauritius case study

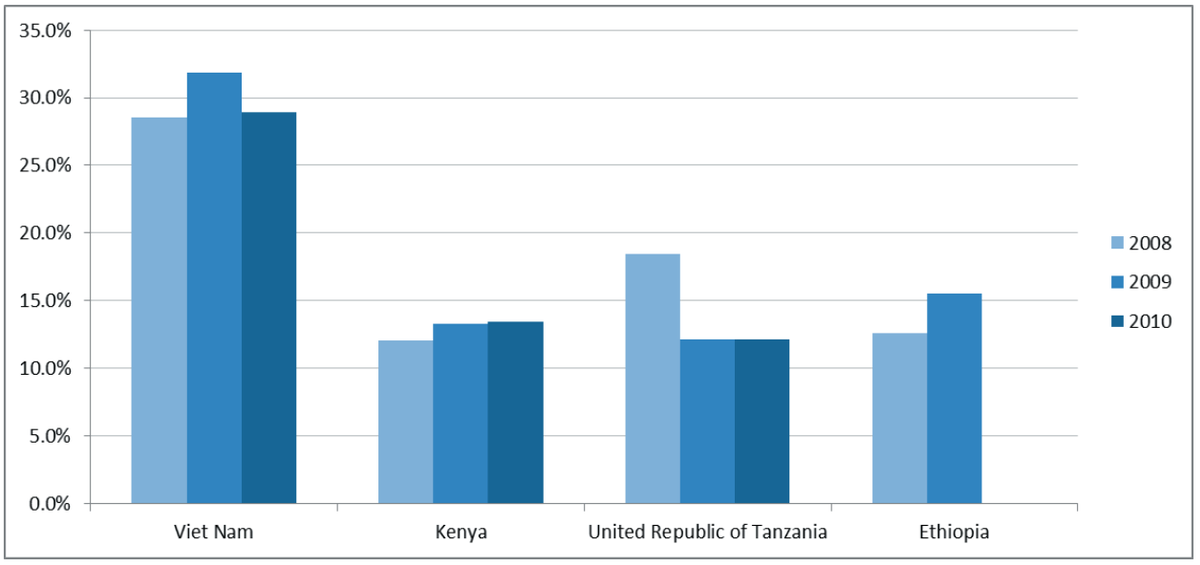
Below is a list of some of the major lessons that Zanzibar could learn from Mauritius:

- Successfully diversify the economy and drive structural change towards manufacturing and services (e.g. helped by sugar prices in mid 70s) by prioritising and targeting sectors
- Given limited scale of domestic market, incentivise EPZs in low-tech manufacturing
- Take advantage of favourable trade agreements with developed economies and strengthen ties with traditional international trade partners (e.g. Oman, U.A.E, Turkey, etc.)
- Focus on transformation of products with better comparative advantage and with ready, expanding markets, such as spices, and seaweed
- Continuously upgrade industrial/growth strategies, taking into account new challenges at each step of structural transformation (IDR 2013) and new drivers of economic growth
- Improve business environment
- Deepen backward and forward linkages with tourism

Building on our first evidence of structural change in Tanzania, in Figure 12 we assess the nature of this process by looking at the shares of medium and high tech goods in the respective countries' manufacturing sectors[10]. Analysis at this level is often difficult due to lack of disaggregated and recent industrial data at the national level. Nonetheless, it is evident that the African countries in the sample produce significantly less sophisticated products than Vietnam. In 2010 Kenya boasted only a slightly larger share of medium and high tech in its MVA than Tanzania. However, while Kenya has gradually been increasing its share, Tanzania witnessed a significant drop from 2008 and no change thereafter. This drop was generated by the slashing of production of chemicals and chemical products, and rubber and plastics – both product groups together accounted for 95 % of all medium and high tech production in 2008. However, more recent data from latest ASIPs and the new census of industrial production might show a different picture, in line with encouraging findings from export trends in the period 2010-2013.

10 Disaggregated data on MVA is available from UNIDO's INDSTAT database, where the latest year with data for Tanzania is 2010 at the point of the production of this report.

Figure 12 Share of medium and high tech products in MVA for Tanzania and comparators (2008-2010)



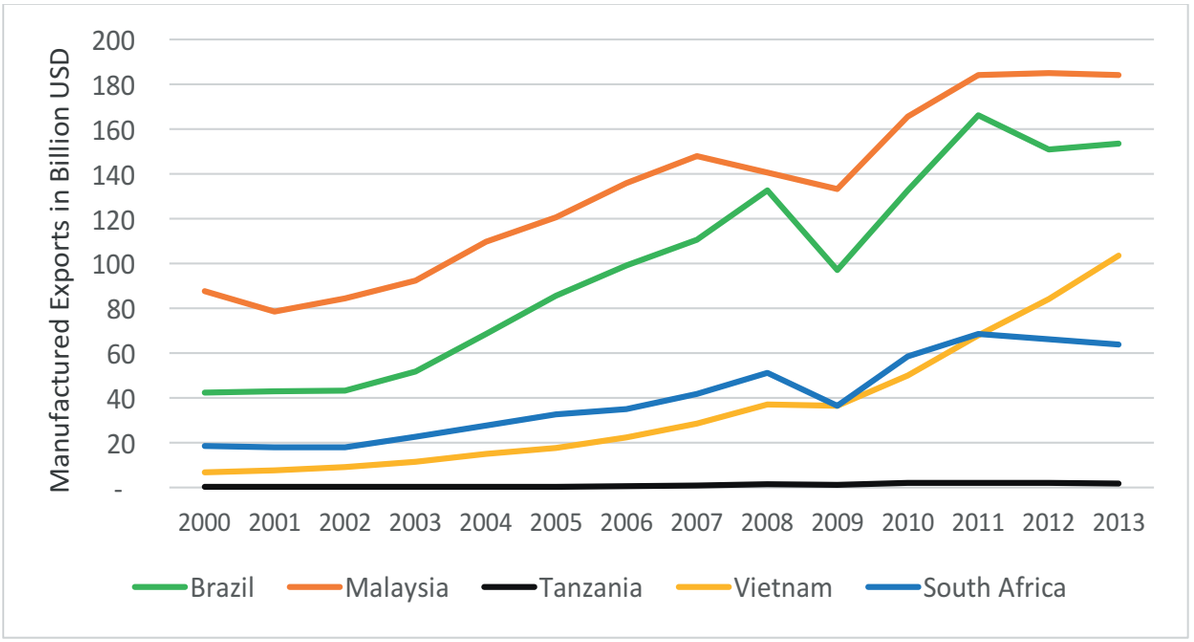
Source: INDSTAT

B.3. Latest trends in industrial trade: The manufactured export performance of URT

Manufacturing value added is the key variable with which to analyse industrial performance. It is a measure of manufacturing activity within the country and also provides an indication of how overall manufacturing growth is also a function of domestic demand. The extent to which manufacturing growth translates into increasing export performances is another key policy dimension. First, because increasing manufacturing export in total export is a sign of reduced dependence on agricultural commodities and natural resources, and a more diversified and high-value export basket. Second, better export performance generally reflects increased capabilities in manufacturing with relatively higher quality goods. This section deals with manufactured exports which help evaluate a country's ability to sell manufactured products in the global market and provides a measure of the country's competitiveness.

In recent years, manufactured trade has grown faster globally than MVA due to the fragmentation and internationalization of industrial activity (TICR, 2012). Tanzania still lies far behind its role models in terms of manufactured export values. Whereas in 2013 Tanzania exported manufactured goods worth 1.62 billion USD, South Africa exported 64 billion USD and Vietnam's export for manufactures peaked already at 104 billion USD. Figure 13 illustrates Tanzania and its role models, where it can be seen that Vietnam recorded the steepest increase since 2010 and a continuous growth from 2012 to 2013 – in contrast to all the other economies observed. Since 2011, Brazil, South Africa and Malaysia experienced a reduction in manufactured exports, confirming an "identity crisis" for some middle-income countries facing the difficult challenge to climb up the global technology ladder in manufacturing.

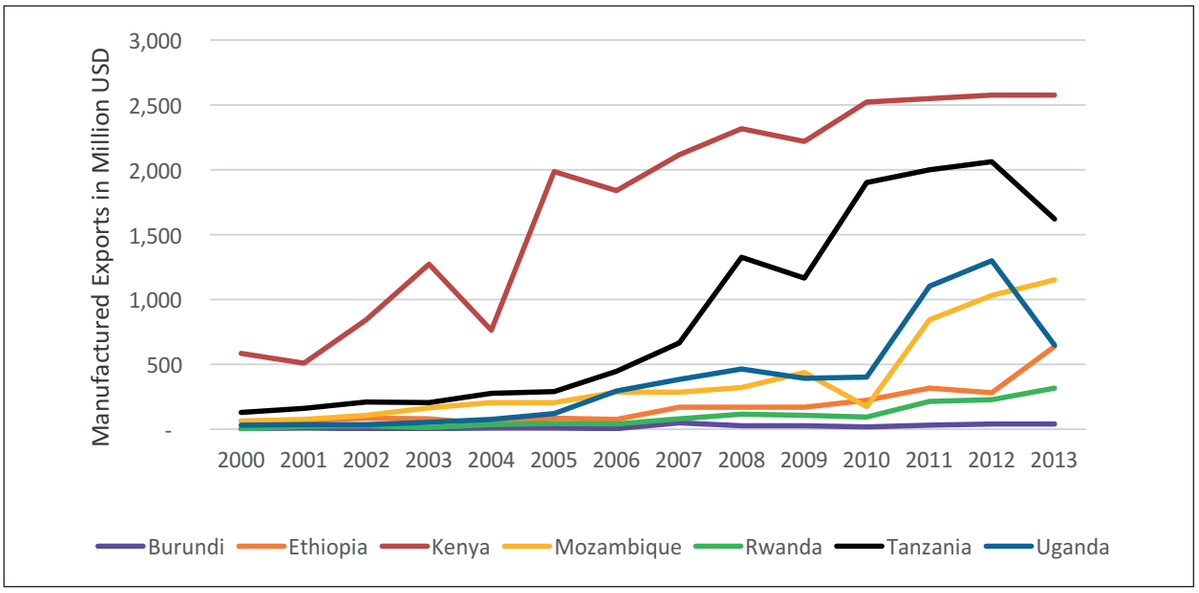
Figure 13 Manufactured Export Performance, Tanzania and role models (2000-2013)



Source: UN Comtrade

When comparing Tanzania's manufactured exports performance to that of countries at a similar level of economic development Tanzania ranks second, after Kenya (Figure 14). From 2000 to 2010 Tanzania's manufactured exports have been growing rapidly at 31% annually on average. This is the fastest growth of all the comparator countries in Figure 14. However, while between 2010 and 2012 Tanzania's manufactured exports continued to grow, they dropped significantly between 2012 and 2013. This has caused a negative average annual growth rate of – 5% since 2010. While Tanzania, Uganda and most of the role models were suffering from declining manufactured exports most recently, other comparators from Africa have been succeeding in selling more manufactured products abroad, such as Mozambique, Ethiopia and Rwanda.

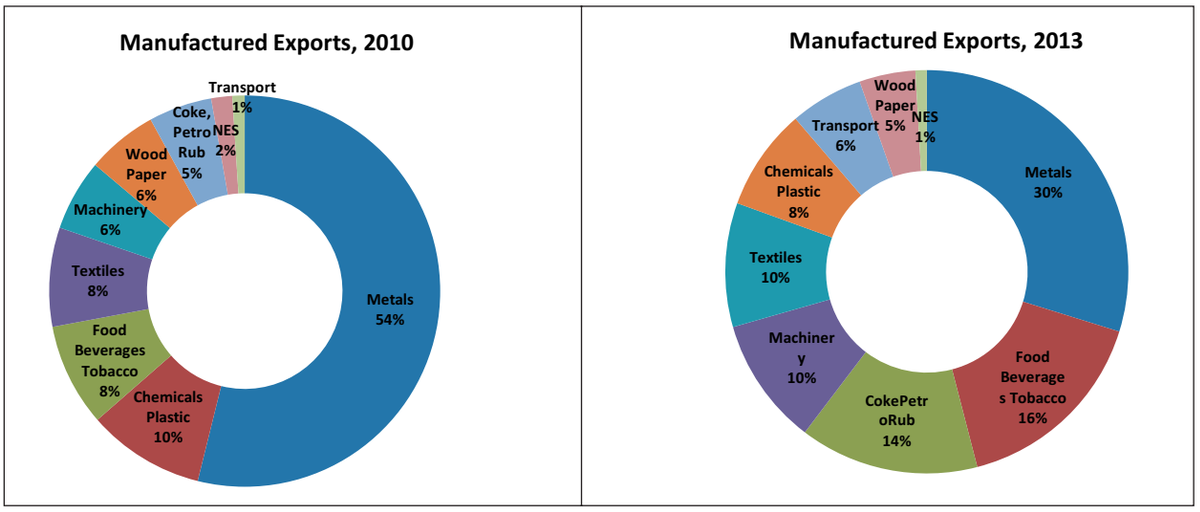
Figure 14 Manufactured Export Performance, Tanzania and comparators (2000-2013)



Source: UN Comtrade

Figure 15 illustrates the main product groups exported by Tanzania in 2010 and in 2013, when different forms of metals played the largest role by far. While in 2010 metal products made up a substantial proportion of manufacturing exports (54 %), in 2013 they only contributed to 30 % of total manufactured exports.

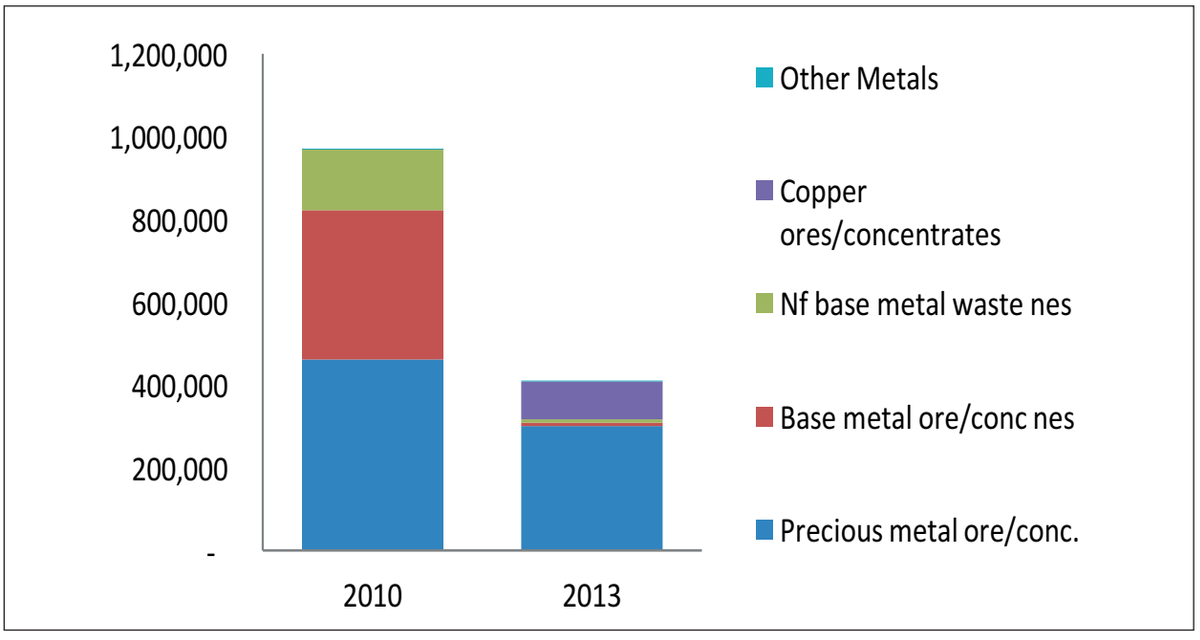
Figure 15 Shares of Tanzania's main manufactured exports (2010-2013)



Source: UN Comtrade

The shrinking of metallic sector exports is due to declining base metals exports from 27 % in 2010 to 1 % in 2013, as well as exports in metal waste. Additionally, the exports of precious metals fell by roughly a third. This trend in the metal sector is the largest contributing factor to the reduction of manufactured exports during this period. Figure 16 presents a breakdown of the metal exports.

Figure 16 Tanzania's metal exports (2010 & 2013), in 1000 USD



Source: UN Comtrade

Box 6: Base metal export performance of Tanzania

The decline in Tanzania's export performance was caused by a significant fall in the export of base metals from 2010 to 2013. Within this product group, manganese ore/concentrates and non-ferrous metal waste were among the top exports of Tanzania. In 2010, these two product groups formed 97% of total base metal exports. In 2013, however, they only contributed to 7 % of base metal exports (trading partners for Tanzania.

Table 3).

Moreover, there were only four major trading partners for these two products: China, Japan, Germany and Switzerland. The fall in base metal exports in 2013 was caused by the drop of exports to all these countries. Significantly for Tanzania these countries did not decrease their base metals exports but continued to import large amounts from other countries. While this shift needs closer analysis what it immediately highlights is the need to diversify trading partners for Tanzania.

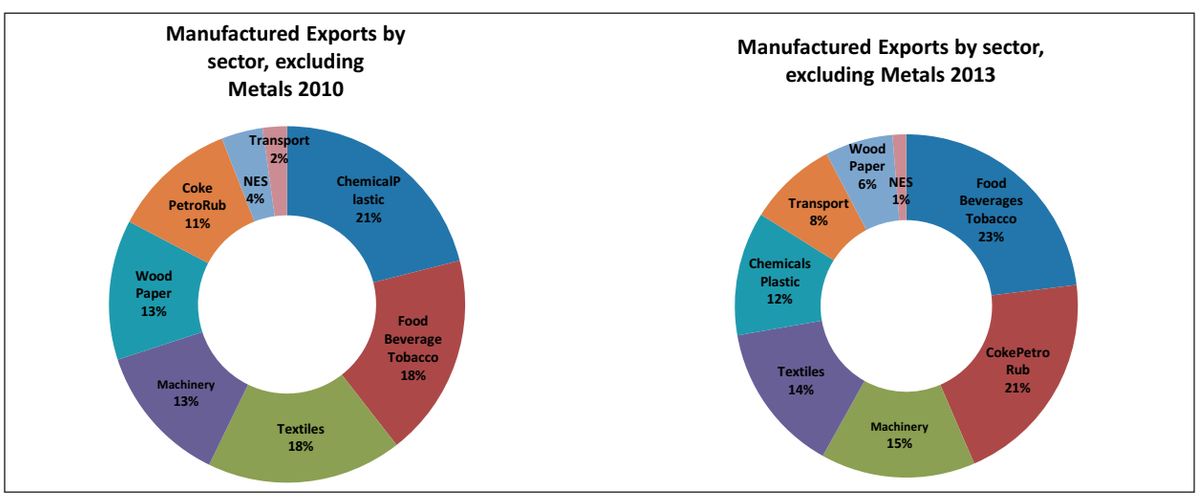
Table 3 Tanzania Base metal products exported to major trade partners (2010 –2013)

Destination	Base metal exports	2010 (in 1000 USD)	2013 (in 1000 USD)
China	Manganese ore/conc.	231,530.31	181.08
Japan	Manganese ore/conc.	80,877.25	-
Germany	Manganese ore/conc.	44,356.40	-
Switzerland	Non-fer metal waste nes	138,876.23	16.79
China	Non-fer metal waste nes	4,499.86	1,506.23
	Subtotal (Manganese and Non fer) (A)	**500,140.04**	**1,704.10**
	Base Metal total exports (B)	**513,294.53**	**23,969.12**
	Percentage contribution in total export (A/B)	**97%**	**7%**

Source: UNCOMTRADE

Figure 17 below analyses Tanzania's exports other than metals between 2010 and 2013. This allows us to observe any changes in shares of the remaining sectors exported. After metals, the manufactured food, beverages and tobacco sector was the most important sector for Tanzania in terms of its exports in 2013, contributing to 23% of the remaining manufactured products. The contribution of this sector has increased by 5% percentage points since 2010. In 2010 the main exporting sector was chemicals and plastics. The larger role of the food beverages and tobacco sector is mainly due to the steep growth of the sugar and honey product group, whose exports grew at 95 % per annum since 2010 (on average).

Figure 17 Manufactured exports by sector, excluding metals (2010 & 2013)



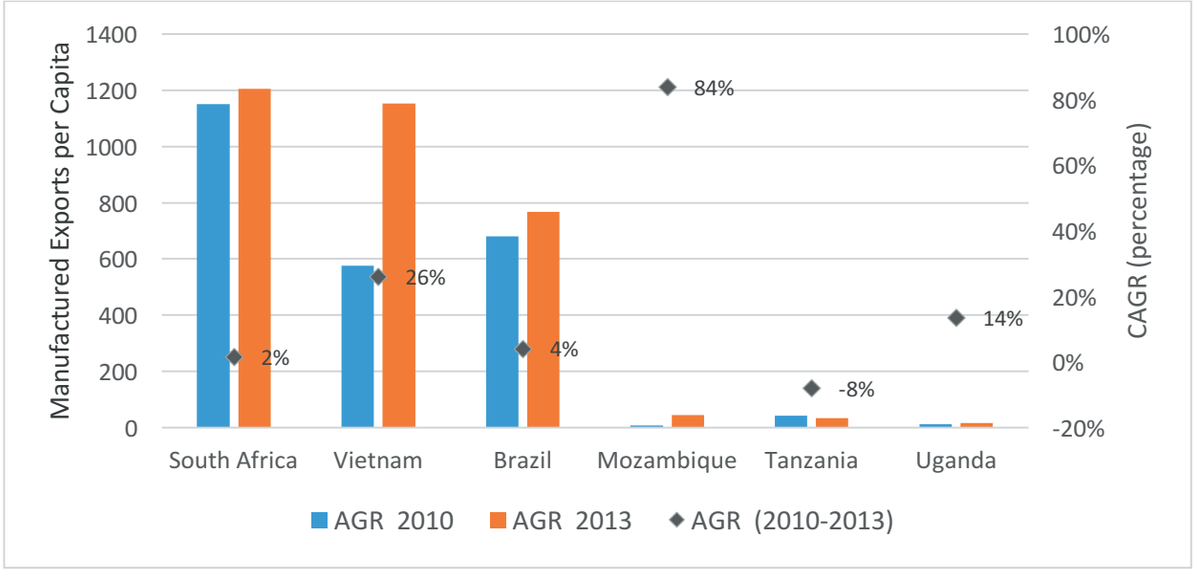
Source: UN Comtrade

An increase of 10 percentage points can be observed in the contribution of the coke, refined petroleum, non-metallic mineral products and rubber product group. When disaggregating this sector further, we find that petroleum products witnessed an export growth of 81 % on average per year since 2010. In addition, there was a 20% increase in the export of precious stones per annum. The transport sector, although relatively smaller, has increased also its contribution to manufactured exports, due mainly to the boom in ships/boats exports. The chemicals and plastics sector, by contrast, experienced a large contraction throughout this period.

B.3.1. Manufactured export capacity

In an ever more globalizing world, the capacity to export is a key ingredient for economic growth and competitiveness. Manufactured export per capita is the basic indicator of trade competitiveness: it shows the capacity of countries to meet global demands for manufactured goods in a highly competitive and changing environment. Figure 18 indicates that Tanzania and its African comparators (with the exception of South Africa) still display very low levels of manufactured exports per capita. However, while Mozambique, Uganda and Vietnam have achieved impressive average growth rates per annum from 2010 to 2013, Tanzania's manufactured exports per capita have decreased by 9 USD in the same time span. More recently its manufactured export capacity stood at 33 USD. In this short period both Uganda and Mozambique managed to catch up and become direct competitors to Tanzania. In fact, Mozambique has succeeded in overtaking Tanzania in this respect. Additionally, as countries with a higher manufactured exports capacity have been improving their performance in this period, Tanzania is falling behind. Furthermore, it becomes evident that Vietnam's success in manufacturing production also translated into success in manufactured exports.

Figure 18 Manufactured exports per capita (2010-2013)



Source: UN Comtrade

Box 7: Zanzibar's Manufactured Export Capacity

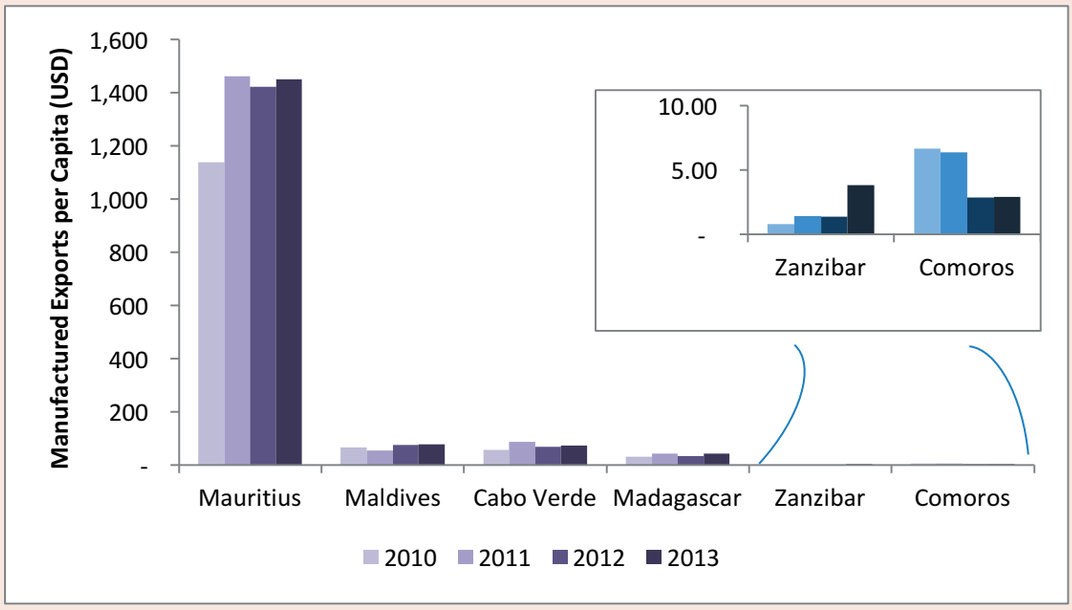
Zanzibar's capacity to export its manufactured products is significantly lower than its capacity to produce. Nonetheless, it has succeeded in improving its manufactured exports per capita from 0.80 USD in 2010 to 3.85 USD in 2013. Throughout the same period URT as a whole has seen its manufactured exports decreasing. Even so, Tanzania as a whole has a capacity to export manufactured goods almost 10 times that of Zanzibar.

The figure below ((Figure 19) illustrates that while Zanzibar is still struggling to have the ability to export manufactured products, countries such as Madagascar, Cape Verde and the Maldives have been more successful in tapping into some of the international markets.

Recent years have seen a significant jump in Zanzibar's manufactured exports per capita. This, combined with the sharp drop of Comoros' manufactured exports, makes Zanzibar more competitive than its nearby archipelago yet this in itself is not a very encouraging benchmark.

The main products contributing to this growth were mainly wood and wood products, followed by manufactured food, beverages and tobacco. The food, beverages and tobacco sector is expected to grow further in the coming years, due to the recent reopening of the dairy product factory producing about 200,000 cubic litres of whole milk per day, upgrading of the Wawi distilleries which process clove stems and other spice plants into essential oils, and the soon-to-come reopening of a sugar factory which was closed down as machinery was outdated, costing the company too much to operate.

Figure 19 Manufactured Exports per Capita, Zanzibar and comparators (2010-2013)



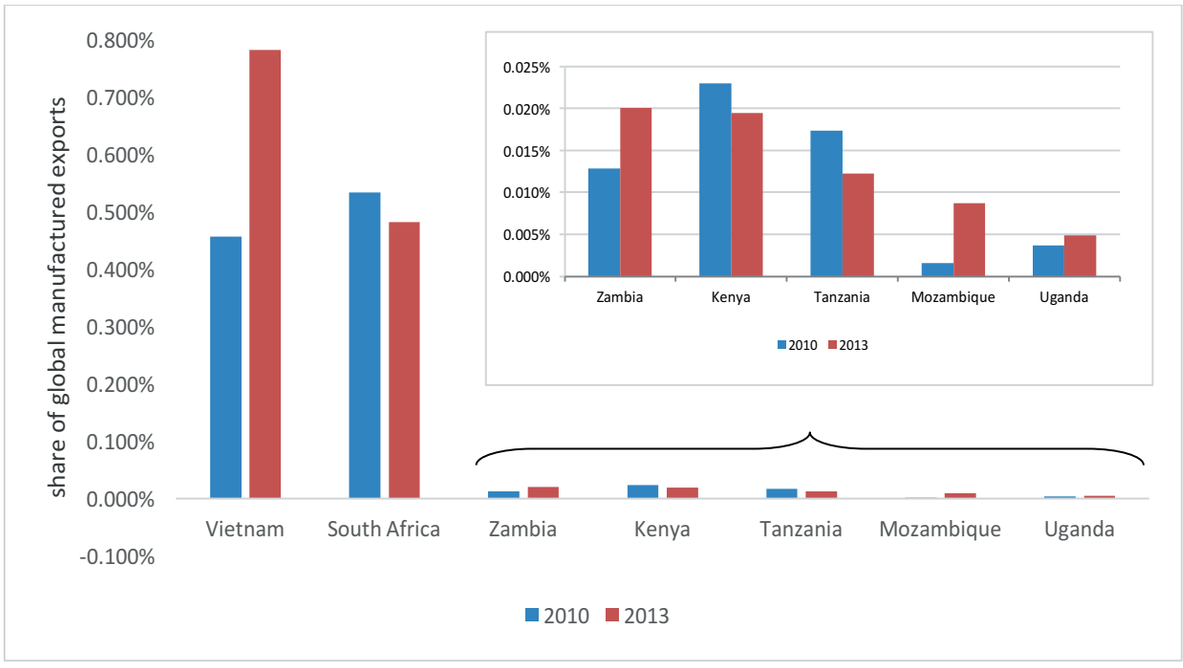
Source: UN Comtrade

B.3.2. Tanzania's impact on global industrial exports

The impact of a country on global trade in manufactures gives an indication of its competitive position in international markets relative to others. This is measured by its share in the world manufactured exports. Gains in world market shares reflect improved competitiveness while losses signal a deterioration of a country's competitive position. From 2000 – 2010 Tanzania increased its shares of manufactured exports in the world significantly, from 0.0026 % to 0.017 %. This trend has reversed in recent years and from 2010 to 2013 Tanzania's share of manufactured exports to the world has decreased by 0.005 percentage points (from 0.017 to 0.012% respectively) (Figure 20). This comes as no surprise when we remember the trends presented earlier in this section. Indeed, the world manufactured exports

have been increasing at the same time when Tanzania's values have been declining. This trend will need to be observed very closely in the coming period to understand whether it represents just a temporary interruption or a longer-term negative trend for the country.

Figure 20 Share of world manufactured exports (2010 – 2013)



Source: UN Comtrade

Mozambique is projected to catch up with Tanzania as it is evident from Figure 20, following significant growth in its world market share. During the same period, Zambia has managed to overtake Tanzania in terms of world market share of manufactured products. Meanwhile, the more advanced African economies of the sample, South Africa and Kenya, have experienced a similar situation as Tanzania, with decreasing world market shares. The Vietnamese economy seems to be on a sustainably increasing trajectory in terms of industrialization making it a more important player in world markets.

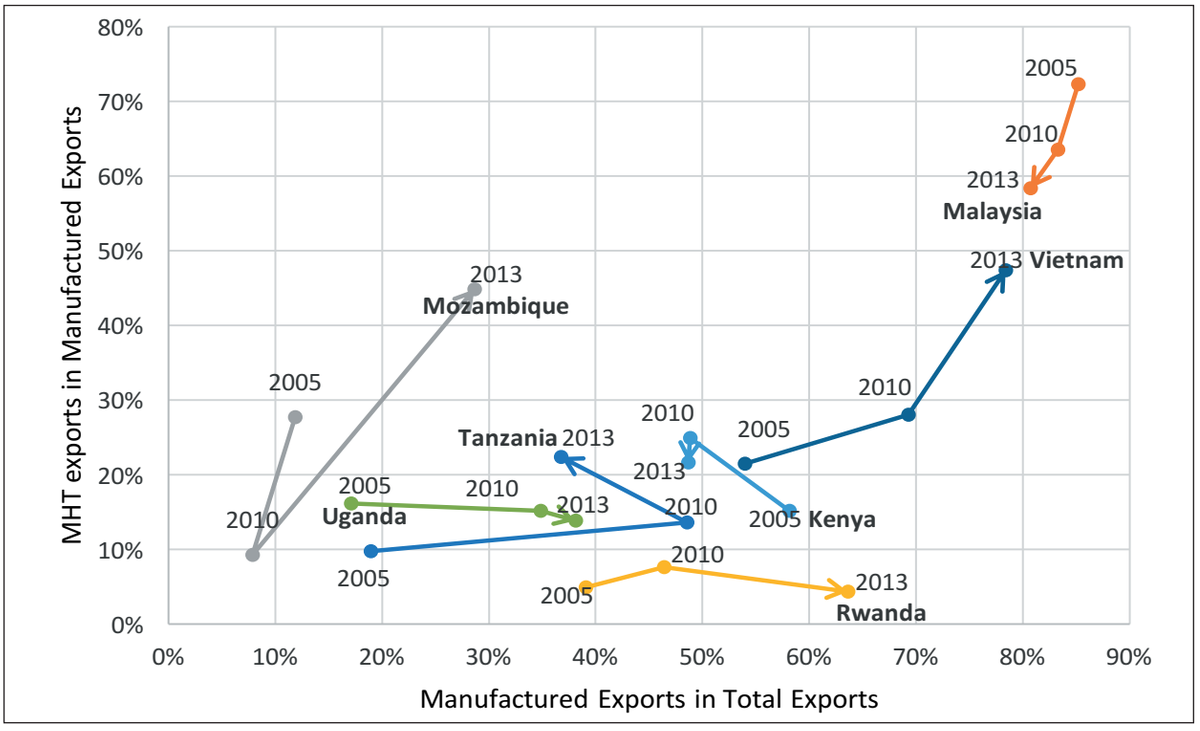
B.3.3. Structural change of industrial exports of Tanzania

The type of products exported matters, particularly as Tanzanian exports of manufactured goods are currently contracting. Export structure is measured by the share of manufactured exports in total exports and by the share of medium and high tech products in manufactured exports. The reasoning for looking at these two indicators is similar to that of industrialization intensity. While the share of manufactures in total exports captures the role of manufacturing in export activity, the share of medium and high tech products captures the technological complexity of exports. These two observations together capture an economy's structural change in exports.

As shown in Figure 21, Tanzania's exports include a low share of manufactured products (roughly 38 %) compared to the other countries in the graph, as well as a low portion of medium and high tech products among the manufactured exports (25 %). Furthermore, Tanzania shows a declining share of manufactured exports in total exports from 2010 to 2013. This trend differs from what has taken place in the period of 2005-2010, where the share of manufactured exports had been increasing. In the last period (2010-2013), however, the level of sophistication (medium and high- tech in manufacturing exports) of Tanzania's manufactured exports has been

rising, and it has succeeded in increasing significantly faster since 2010 compared to the previous period. Following a comparison of trends with other countries, more details will be provided for Tanzania.

Figure 21 Export structures and changes for selected countries (2005, 2010 & 2013)



Source: UN Comtrade

Mozambique showed impressive trends in terms of the structure of its exports. In 2010 its manufactured exports contributed to less than 10 % of its total exports and a similar share was observed for medium and high tech products in manufactured products. By 2013, though, almost 30 % of its exports were manufactured, and out of these, roughly 45 % were medium and high tech products. It needs to be added, however, that in very small economies these shares can fluctuate dramatically, even as a result of the production or exports from just one large company. Uganda and Rwanda have not improved their performance as much as Mozambique but both increased their shares of manufactured exports since 2010, overtaking Tanzania.

Box 8: Mozambique's industrialization path

In recent years Mozambique has achieved significant changes in its economic structure, both towards a larger role of manufacturing in its exports, as well as having a significantly larger share of medium and high tech products contributing to the sector. Table 4 presents a list of the top ten exports of Mozambique in 2013. It shows their export values in 2010 and 2013, their share in total manufactured exports and the average annual growth rate. Some of Mozambique's manufactured exports have experienced very high growth rates. These are particularly the medium and high tech products, such as products of the ships and boats sub-sector, chemical products and measure/control applications. The ships and boats products, which fall under the medium tech category, have become Mozambique's number one manufactured export product, contributing to 20 % share.

Table 4 Top 10 exports of Mozambique (2013)

		Export Values (1000 USD)		Share in mnf exp		CAGR
Tech class.	**Product**	**2010**	**2013**	**2010**	**2013**	**2010-2013**
MT	Ships/boats/etc.	51	224,308	0.0%	19.5%	1537%
RB	Sugar/molasses/ honey	9,238	190,471	5.4%	16.5%	174%
RB	Base metal ore/ concnes	21,217	154,904	12.3%	13.4%	94%
RB	Heavy petrol bitum oils	19,240	97,306	11.2%	8.4%	72%
HT	Measure/control app nes	270	63,489	0.2%	5.5%	517%
MT	Misc chemical prods nes	5	52,688	0.0%	4.6%	2063%
MT	Civil engineering plant	1,647	48,867	1.0%	4.2%	210%
LT	Iron/steel pipe/ tube/etc.	1,935	36,626	1.1%	3.2%	167%
RB	Wood simply worked	45,054	34,416	26.2%	3.0%	-9%
RB	Ferrous waste/ scrap	8,303	19,176	4.8%	1.7%	32%
	Manufactured exports	**172,198**	**1,152,705**			**88%**

Source: UN Comtrade

Table 5 provides a summary of the types of manufactured products that Mozambique is exporting. Although in 2013 almost half of the manufactured exports were resource-based, 45 % were medium and high tech products. This is very different to the composition of exports in 2010 where resourced based exports constituted 84 % of all manufactured exports of the country, and medium and high tech products together contributed to only 10 %. The last column of the Table illustrates how medium and high tech exports have been growing significantly faster than the resource-based and low-tech sectors. The experience of Mozambique which has been able to generate manufacturing growth through medium and high tech products could be valuable for Tanzania to learn from.

Table 5 Mozambique's exports by technology classification (2010 & 2013)

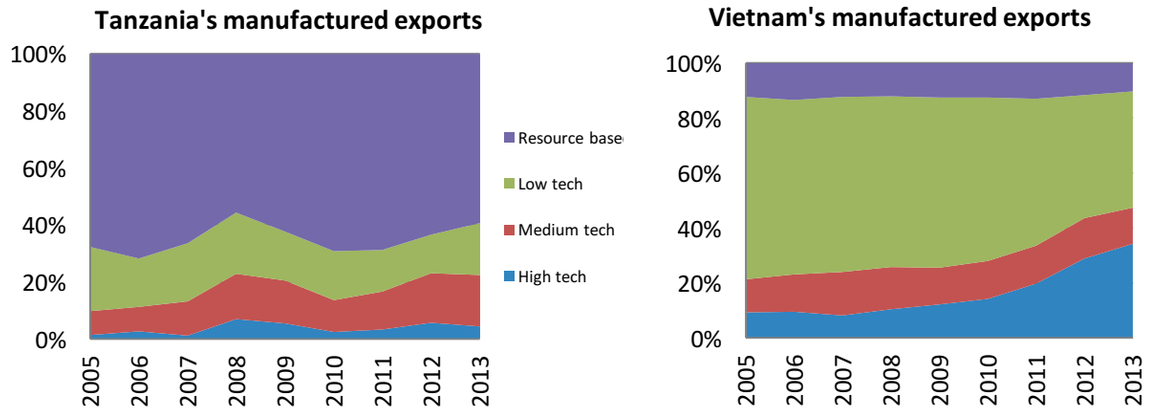
Technology Classification	2010 (in 1000 USD)	2013 (in 1000 USD)	2010 Share in mnf export	2013 Share in mnf export	CAGR 2010-2013
Resource-based	144,862	557,687	84%	48%	57%
Low tech	11,363	78,454	7%	7%	90%
Medium tech	14,898	426,760	9%	37%	206%
High tech	1,189	89,804	1%	8%	323%
Total Manufactured exports	172,198	1,152,705			

Source: UN Comtrade

Further structural change in terms of higher proportion of manufacturing and complexity is also possible for countries that are already at a further stage of industrial development, such as Vietnam. Not only does it continue to export a larger share of manufactured products, but it is also focusing on increasing the share of its more sophisticated exports.

Figure 22 compares Tanzania's and Vietnam's manufactured exports in more detail. It becomes clear that while Vietnam has been focussing on developing its high tech sectors, and managed to improve this in a sustained manner (and particularly so since 2010), Tanzania has been struggling to export more sophisticated products, with the shares of medium and high tech exports fluctuating. Nonetheless, since 2010 the share of medium and high tech exports has been increasing again. Furthermore, for Tanzania the majority of its manufactured exports are resource-based, while for Vietnam the largest share is that of low-tech products.

Figure 22 Structure of Tanzania's and Vietnam's manufactured exports (2005 – 2013)



Source: UN Comtrade

While the shares indicate the contribution of the different product types to overall manufactured exports, they do not provide an explanation on the trends in absolute export values. Table 6 presents the compounded annual growth rate of the different exports based on technological classification. Within the group of manufactured exports, the increasing share of medium and high tech products since 2010 is caused by a simultaneous increase in medium and high tech exports of 12 % on average per annum, coupled with a decrease in both resource-based products and low tech products. These figures raise key policy questions, in particular with respect to the potential of different sectors to increase the contribution of manufacturing to the overall export performance of the country. Given its strengths in the agricultural sector, a first candidate for Tanzania would be agro-processing. However, other medium and high tech products have shown interesting performances which suggest potential opportunities.

Table 6 Growth rates of Tanzania's manufactured exports by technological classification (2010-2013)

Technological Classification of manufactured exports	Compound Annual Growth Rate of Exports (2010-2013)
Manufactured Exports (total)	-5%
Resource-based	-10%
Low tech	-3%
Medium tech	11%
High tech	15%
Medium and high tech (combined)	12%

Source: UN Comtrade

Box 9: Structural change in Zanzibar

The role the manufacturing sector in Zanzibar's economy is still small. MVA accounts for less than 4 % of the island's GDP, and manufactured products make up 13 % of total exports. These shares are lower than in Tanzania and all other comparator countries, with the exception of Maldives whose share of MVA in GDP is slightly lower than in Zanzibar.

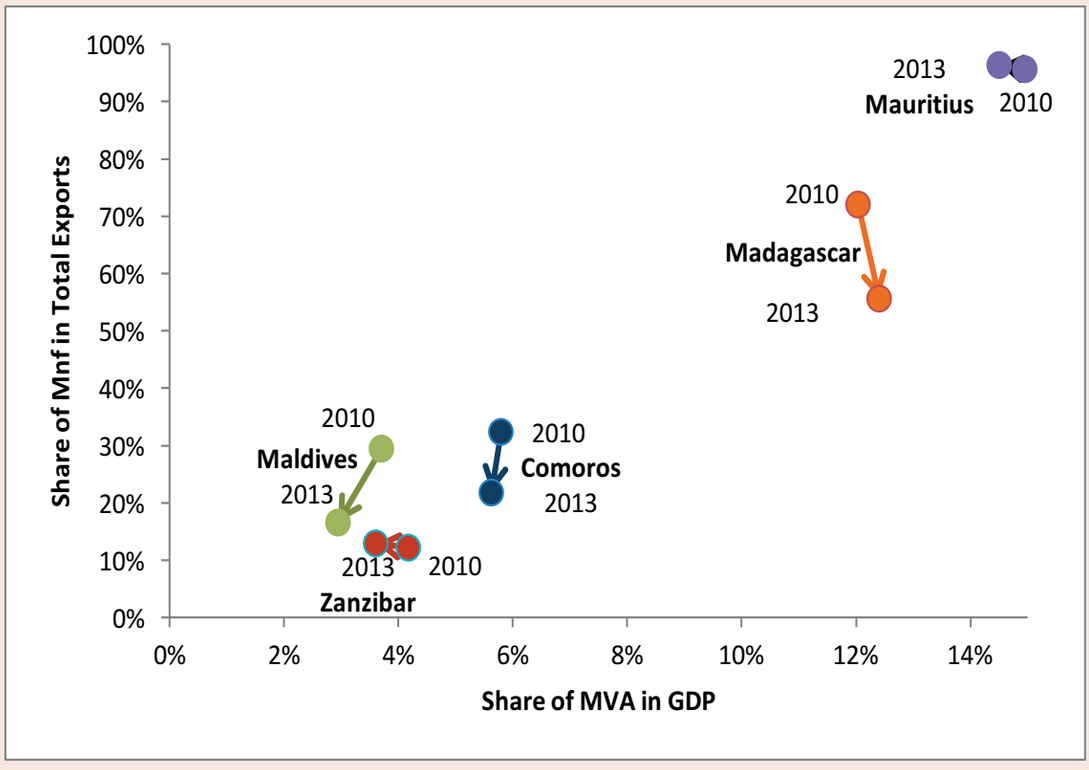
Analysing economic trends after the TICR 2012 was published, it is still not possible to observe a first tier of structural change in Zanzibar, that is, structural change from the primary sector towards industry. The economy relies heavily on the service and primary sectors.

Zanzibar's exports, however, have been performing better in recent years. Between 2010 and 2013, total exports increased by 70 % on average per year. A large contributing factor has been in particular the exports of seaweed, which has been targeted by the Government as one of the priority sectors in several strategy and development plans. However, there was little transformation of seaweed which was exported mainly as a primary product. Nonetheless, at the same time there has been an increase in the exports of a number of manufactured product groups (most notably in wood and wood products, manufactured food, beverages and tobacco and machinery). This has led to a 73 % average annual growth rate in manufactured exports, resulting in the slight increase of the share of manufactured exports in total exports of the island.

Figure 23 illustrates that other resource-rich and small island economies have indeed been able to experience structural change towards manufacturing, with the obvious example being Mauritius. Mauritius' structural change journey was driven by the expansion of the food and textile and wearing apparel sector, which still dominates its MVA today (together they make up roughly 76 % of MVA). Mauritius' manufacturing sector demonstrates how a small island economy has the potential to add value to primary products and ensure its economy taps into international markets.

Nonetheless, Zanzibar has recently put efforts into accelerating its economic growth agenda through the formulation of MKUZA II (the Zanzibar Strategy for Growth and Reduction of Poverty, 2010) to achieve the objectives of the Zanzibar Vision 2020 which aims to transform the economy from a predominantly rural, subsistence-based one, to a diversified and semi-industrialized one. It might, therefore, be able to learn some lessons from the case of Mauritius.

Figure 23 Structural change in production, Zanzibar and comparators (2010 - 2013)



Source: UN Comtrade and UNSD National Accounts

How can Tanzania increase its share of manufactured pro ducts in its total export basket? The potential for agro-processing

As previously observed, manufacturing exports have been declining from 2010 to 2013. This was primarily due to the sudden drop of base metal exports. Simultaneously, the absolute values of primary exports and that of other transactions (for Tanzania this is non-monetary gold) have increased in this period with annual growth rate of 6 per cent and 17 percent respectively. The combination of these factors, especially the drop in base metals exports, has caused the share of manufactured exports to decrease since 2010.

Primary products are important exports for Tanzania and they continue to grow. Since 2010 some of these products like oil seeds, animal feeds, fruits and nuts, and coffee recorded high average annual growth rates. This can be seen in Table 7.

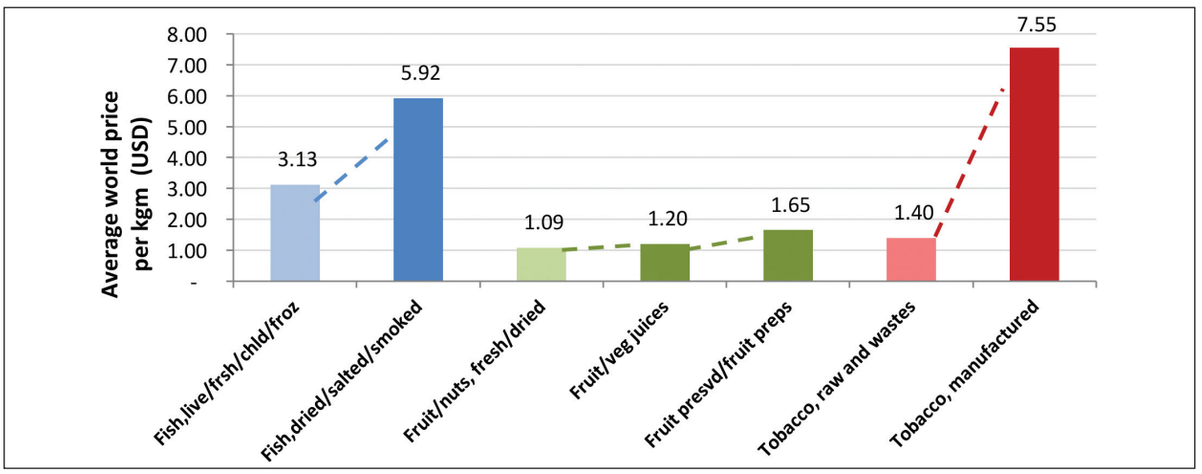
Table 7 Tanzania's top 10 primary exports (2010 & 2013)

Product exported	Share in total primary exports		Compound Average Growth Rate (10-13)
	2010	2013	
Fruit/nuts, fresh/dried	12%	16%	15%
Coffee and coffee substitute	11%	13%	11%
Oil seeds etc. - soft oil	5%	11%	33%
Fish	12%	9%	-2%
Vegetables	10%	9%	2%
Cotton	9%	9%	6%
Tobacco, raw and wastes	12%	8%	-9%
Tea and mate	5%	4%	5%
Animal feed	2%	4%	35%
Crude veg materials	7%	4%	-14%

Source: UN Comtrade

Primary exports, however, tend to be highly vulnerable to market shocks and instabilities due to volatile international demand and price changes beyond domestic control, and their values are generally lower than that of processed goods. Figure 24 below provides three examples of average world prices of products highly exported by Tanzania. The lighter colour represents products which are considered primary, while the stronger colour represents manufactured products.

Figure 24 Average unit prices of selected product groups by level of processing (2013)



Source: UN Comtrade

Figure 24 supports the oft-promoted and usually effective strategy of value addition through processing of agricultural products. The strategy of achieving structural transformation by capitalizing on agro-industries at an initial stage and later expanding into other, more sophisticated sub-sectors has been used by many industrialized and emerging economies. Tanzania can hope to achieve some of its industrial goals and vision by following a similar strategy.

How much is Tanzania already exporting of the processed forms of the same raw materials? Table 8 looks at these export values for 2010 and 2013, taking some examples from the products presented in Table 7. The Table suggests that there are probably a number of agricultural products which can be further processed, but are still mainly exported in their raw forms by Tanzania.

Table 8 Examples of Tanzania's unprocessed vs processed (semi-processed) exports (2010 & 2013)

Examples of Tanzania's Unprocessed vs Processed (semi-processed) Exports (1,000 USD				
Classification	**Product Group**	**Exports 2010**	**Exports 2013**	**CAGR 10-13**
PR	Fruit/nuts, fresh/dried	**127,447**	**193,755**	**15%**
MNF	Fruit presvd/fruit preps	503	2,611	73%
MNF	Fruit/veg juices	386	1,325	51%
PR	Oils seeds, soft oil	**54,365**	**129,052**	**33%**
PR	Crude Veg Oils	12,425	10,763	-5%
MNF	Refined Veg Oils	2,622	1,796	-12%
PR	Fish, live/frsh/chld/froz	**121,423**	**114,528**	**-2%**
MNF	Fish, dried/salted/smoked	11,780	6,991	-16%
MNF	Fish/shellfish, prep/pres	49	410	103%
PR	Vegetables, frsh/chld/frz	**99,041**	**104,999**	**2%**
MNF	Veg root/tuber prep/pres	1,995	13,661	90%
PR	Cotton	**88,391**	**104,577**	**6%**
MNF	Textile yarn	12,426	7,635	-15%
MNF	Cotton fabrics, woven	4,717	4,722	0.04%
PR	Tobacco, raw and wastes	**129,187**	**96,958**	**-9%**
MNF	Tobacco, manufactured	12,013	32,119	39%

Source: UNCOMTRADE

If, as described in this section, moving to higher-value products at the macro level becomes one of the main goals for industrialization in the next FYDP, the same aim can be set at the micro level by firms. An individual firm might question the following: is there demand, and a growing demand for the targeted processed products? How high will initial investments be to engage in such processing activities? What other, regular costs will be incurred? Are the skills and technology available adequate? Are the infrastructure requirements met (e.g.

constant supply of energy)? If the products are expected to be exported, do they comply with the required standards? The public sector will want to similarly consider the issues of demand, feasibility, extent of value addition and so forth. Additionally, however, they may also want to look at broader effects this may have on the economy, such as employment creation opportunities, linkages and effects on other sectors, implications on the balance of trade, possible spillovers of skills, knowledge and technology, environmental implications and so forth.

While it will not be possible to address the majority of these factors in this report, two case studies (sunflower oil and cotton) are presented in Section C, which provide a preliminary analysis on the attractiveness of processing and exporting raw material.

Which of the medium and high tech products have experienced growth in exports?

This section focuses on the products that Tanzania is exporting in the medium and high tech sectors and that are growing fastest in term of exports. We already know that the decline of resource-based and low-tech products was mainly caused by the fall in base metals. Table 9 presents the leading exports in medium and high tech product groups represented as percentage shares in total medium and high-tech of Tanzania's exports with their average annual growth rates for the period 2010-2013. Ships/boats, civil engineering plants and manufactured fertilizers are the most exported products among those considered medium or high tech, although this group of products is very diverse. While some of the products listed in Table 9 recorded low or negative average growth rates of their exports, others have been growing impressively fast, namely ships and boats, special industrial machines, air- and spacecraft, and electrical equipment. All of the ships/boats exports were exported to Singapore. This raises the question whether other product groups are also being exported to a single country therefore making them very vulnerable as well. Will these product groups continue growing and can their growth create positive spillover effects for others as well? What other product groups might have high potentials for growth? These are some of the questions which should be asked and require further analysis.

Table 9 Tanzania's top 10 medium and high tech exports (2010 & 2013)

		Share of product in MHT		
Product Description	**Technology Classification**	**2010**	**2013**	**CAGR (2010-2013)**
Ships/boats/etc.	Medium Tech	0.3%	11%	292%
Civil engineering plant	Medium Tech	5.0%	9%	38%
Manufactured fertilizers	Medium Tech	23.0%	8%	-21%
Special industmachnnes	Medium Tech	1.0%	7%	163%
Aircraft/spacecraft/etc.	High Tech	1.0%	6%	113%
Goods/service vehicles	Medium Tech	2.9%	6%	43%
Soaps/cleansers/polishes	Medium Tech	7.0%	5%	3%
Measure/control app nes	High Tech	3.0%	4%	13%
Rotating electr plant	High Tech	6.6%	3%	-11%
Electrical equipment nes	Medium Tech	0.4%	3%	111%

Source: UN Comtrade

Another important consideration needs to be taken into account. While the section has been focusing on the structure of exports, it is important to compare these figures and trends with the data on the structure of production. Increasing medium and high tech exports without increasing the national production of medium and high tech sector's means that very little value is added to the medium and high tech products which are exported. Hence, profits would not be recorded in the exporting country and other benefits such as positive spillovers in terms of skills and technology would not be felt. Although data is not yet available for years more recent than 2010 for Tanzania, the trend has been a decreasing one in terms of the share of value added generated from medium and high tech sectors.

B.4.Latest trends in Tanzania's role in Eastern and Southern African industry

B.4.1. Why regional industry matters for Tanzania

The regional economic communities (RECs) have the potential to assist the Member States in achieving the national industrial development objectives. Due to globalization, competition in the global (and domestic) markets is becoming more and more intense. Some of the challenges most African countries have to overcome in order to increase their industrial competitiveness include reducing costs, both direct and indirect, increasing productive efficiency as well as improving product quality. Indirect costs are those caused by poor infrastructure, political instability and regulatory burden, for example (Ramachandran et al, 2009 and Bigsten et al, 2009 as cited in UNCTAD, 2011).

The main objective of RECs is to foster economic growth within the region and to address the main constraints shared by Member States through regional integration, implementing regional initiatives (e.g. reducing regulatory burdens to firms) and in developing regional policies or strategies. This is, of course, in addition to ensuring peace and security within the region.

Pooling together efforts, skills, technology and other resources from different neighbouring countries will lower costs and hasten the process of improving infrastructure for industrial competitiveness within and outside the region. When a country like Tanzania decides to unilaterally invest in infrastructure development to facilitate industry it has to bear all costs and this would be less efficient than if the same investment was made along with other member countries.

Furthermore, export promotion through RECs is critical for industrialization. Most African countries including Tanzania have relatively small domestic markets for their manufactured products, and hence access to external markets, both regional and global, is crucial in order to sustain industrialization efforts. Large external markets can provide opportunities for Tanzania to expand its production and exports and to increase the foreign exchange reserves needed to import intermediate inputs and capital goods for domestic industries. Thus it is important for Tanzania to be gainfully integrated into the global economy in order to foster the process of domestic industrial development. Such integration into the world market is facilitated by participating in RECs.

RECs comprising countries at similar levels of industrialization provide an opportunity for them to move up the value chain together by accessing less competitive markets for medium and high tech products. Figures 27 and 28 (in Section B.4.3 below), showing the structure of Tanzania's manufactured export by destination, reveal that Tanzania's exports to the EAC and SADC are significantly more

diversified and have a higher share of medium and high tech products than to the rest of the world.

The agreements reached within the RECs, including EAC and SADC, cover tax harmonization, regulation of investment, and rules of origin, helping to lower transaction costs through increased trade facilitation. Transaction costs create significant barriers on trade and exports. This challenge is addressed within the REC through the creation of a free trade area which aims to enhance trade including in manufactures and hence should contribute to industrialization in the Member States. However, while lowering transaction costs might help increase market access and can be classified as increasing static allocative efficiency it does not provide the dynamic efficiency that is needed to increase industrial growth through externalities and spillovers. Creating these dynamic efficiencies has to be part of national capacity building that can ultimately lead to the production of goods and services that will then determine the extent to which these market opportunities are exploited by exporting countries.

One of the factors which led to an increase of Foreign Direct Investments (FDI) to Tanzania is regional integration. Members of RECs can agree to have collective FDI policies which should theoretically increase FDI inflow. Such collective policies can put the Member States in a stronger position during negotiations with foreign firms. According to the Tanzania Investment Report (TIR) of 2012, FDI to East Africa, led by Tanzania and Uganda, increased by 8.1% between 2010 and 2011. Furthermore, the UNCTAD – World Investment Report (2014) revealed that Tanzania outranked its fellow East African countries by having a total inward FDI stock of USD 9.2 billion in 2011. Some of these inflows can also be ascribed to the discovery of gas and minerals in the country and it is imperative that the country uses these inflows judiciously to increase domestic linkages.

Why do some members not succeed economically in spite of regional integration?

The exports of the majority of Member States in SADC, EAC, including Tanzania, involve a high share of primary products and/or a large part of their manufactured exports are resource-based products. Many countries lack the industrial capacity to diversify their manufacturing sector, and are faced with inadequate infrastructure to support trade (Economic Commission for Africa, 2010). This shows that, despite their engagement in different RECs and the resultant opportunities, industrial performance has been relatively low.

The WTO paper on Regional Integration in Africa paper (2011) lists non-tariff barriers (NTB) among the most critical factors frustrating the impact of regional integration. The most important NTBs affecting trade in the East and Southern African region (COMESA, the EAC and SADC) include customs procedures and administrative requirements, technical standards and the lack of physical infrastructure. Similarly, Viljoen (2011) lists cumbersome documentation requirements, stringent standards and inefficient road and rail networks as increasing the cost of intra-regional trade. These procedural matters are indeed important to address but infrastructural development, as also noted by such literature, and the need for policies that aim for sustainable industrial development through creating dynamic efficiencies are equally important and is often not highlighted in standard literature on regional trade integration.

Southern African Development Community (SADC)

Formerly known as the Southern African Development Co-ordination Conference (SADCC), the organisation was formed in Lusaka, Zambia on 1 April 1980. The Declaration and Treaty establishing the Southern African Development Community (SADC) which

replaced the Co-ordination Conference was signed at the Summit of Heads of State or Government on 17 August 1992, in Windhoek, Namibia. Currently the SADC region has fifteen Member States which include Angola, Botswana, Democratic Republic of the Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. The main aim of SADC is to create a community providing regional peace and security, and an integrated regional economy.

The SADC has developed the SADC Industrial Development Policy Framework with the aim of promoting the development of an integrated industrial base within region by leveraging regional synergies in value-added production and enhancement of export competitiveness. The Member states have identified several variables that effect industrial development and which need to be addressed. These include productivity and competitiveness; standards and quality; infrastructure; mining; employment and labour.

Product competitiveness

Together with the benefits of increasing the market within the region, Member States decided to put special emphasis on product competitiveness as reported in the Activity Report of the SADC Secretariat (2011-2012). They adopted strategies with the aim of fostering industrial deepening, product diversification and enhancing product value, in addition to simply increasing volume, as a means of taking advantage of the free trade area. This should contribute to the Member States boosting their exports (both regionally and internationally) and maximizing their gains from these exports. This should materialize by means of implementing the SADC Industrial Development Policy and through the implementation of the Industry Upgrading and Modernisation Program (IUMP) which will be carried out alongside infrastructure-related projects. For the pilot phase of IUMP, the committee of the Ministers of Trade have identified agro-processing, mineral processing & beneficiation, and pharmaceutical sectors as focus areas.

East African Community

The history and goals of the East African Community (EAC) have already been outlined in the TICR of 2012. The integration was formerly agreed between Tanzania, Kenya, and Uganda, while Rwanda and Burundi joined in 2007. The regional integration process of the EAC reached its second phase in 2010 where the partner states signed a Common Market Protocol for the purpose of accelerating regional economic growth and development through the free movement of goods, persons, labour, capital and services, as well as the right of establishment and residence. With reference to industrialisation, the main objective is to create a market-driven competitive industrial sector based on the competitive and comparative advantages of the EAC region which will accelerate the structural transformation of the Partner States' economies (EAC Industrialization Policy 2012 – 2032).

Like SADC and any other regional integration efforts in Africa the EAC Industrialization Policy targets diversifying the manufacturing base so that members can move away from exporting largely products of the same nature--basically primary and resource-based manufactures, to a broader range, including low- medium and high tech products. Additionally, the policy targets raising the value added content of exports, in particular of resource- based products from 8.62 percent to 40 per cent by 2032.

Intra-regional trade within EAC, SADC and Sub-Saharan Africa

Intra-regional manufactured trade in the EAC displayed a healthy trend between 2000 and 2010, when the annual growth rate averaged 16.4 %. However, in the period between 2010 and 2013 the average annual growth rate dropped to 4.1 % resulting in intra-regional manufactured trade amounting roughly to USD 1.9 billion in 2013. The share of manufactured products in total products

exported within the region decreased from 78 % in 2010 to 76 % in 2013 (see Table 10). While this share is higher than in Sub-Saharan Africa in general, the decline should be raising concerns. More recently the EAC has also seen an increase in the share of resource-based manufactured products exported within the region, at the expense of low, medium and high tech products. Resource-based products represent almost half of the manufactured exports within the region, while medium and high tech products constitute a quarter in the latest year.

Meanwhile, the distribution of intra-regional exports in SADC in terms of sectors and technological classification has not changed as much. Manufactured exports represented three quarters of total exports in 2013, resulting in a 1% decrease from 2010. Medium and high tech products are more widely exported within SADC than the EAC, contributing to 42 % of manufactured exports in 2013. This is not surprising given the participation of some of the more advanced African economies in this REC. In Sub-Saharan Africa as a whole, the share of manufactured products in its intra-regional trade is somewhat lower than within the EAC or SADC, at 65 %. Nonetheless, the trend since 2010 has been positive. The share of medium and high tech exports has also been increasing and accounts for 44 % of manufactured exports, which is higher than for any of the two RECs observed.

Table 10 Intra-regional trade by category: EAC, SADC and SSA (2010 – 2013)

Product	EAC-EAC		SADC-SADC*		SSA-SSA	
	2010	2013	2010	2013	2010	2013
Manufacturing, share of total	78%	76%	76%	75%	63%	65%
MHT, share of MnfExp	30%	25%	42%	42%	39%	44%
LT, share of MnfExp	31%	29%	22%	18%	21%	17%
RB, share of MnfExp	39%	46%	37%	40%	39%	39%

* For Cameroon, 2014 values were used, for Lesotho and Mali 2012 values were used for 2013.

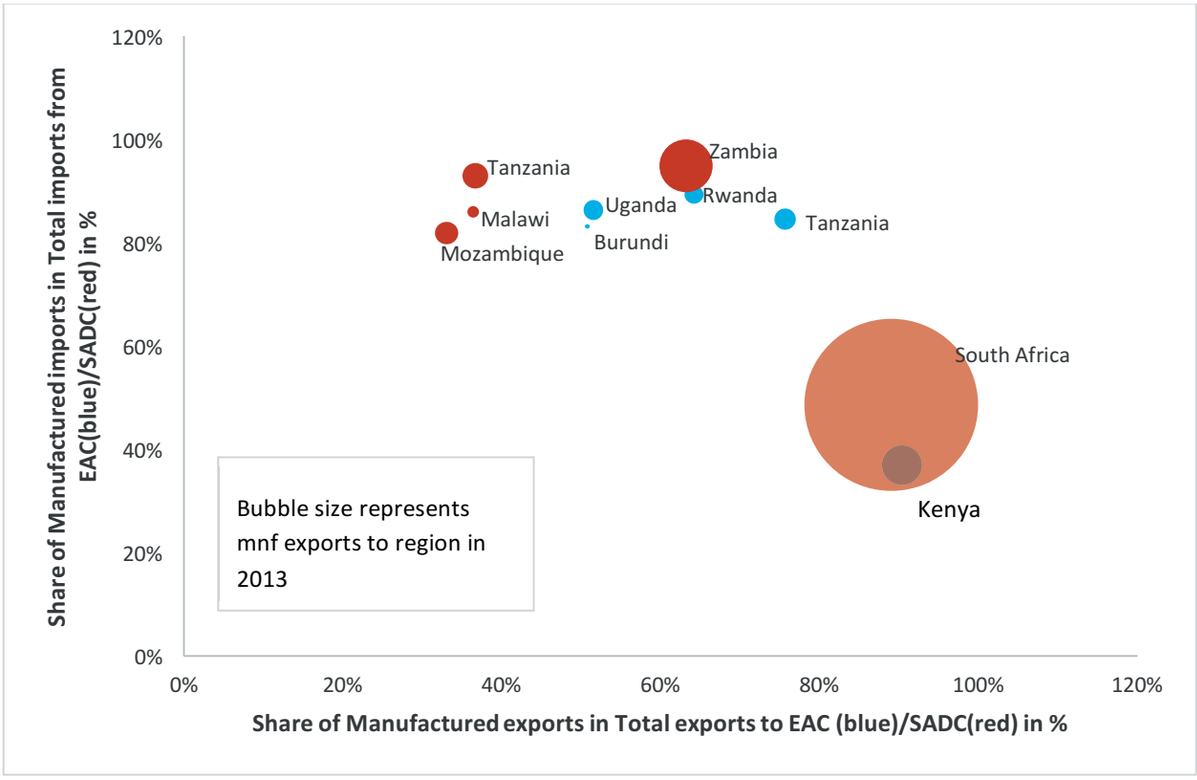
Source: UN Comtrade

B.4.2. Trends in the division of labour in the manufacturing sector in the EAC and SADC

The effects of regional integration on Tanzania's industrial exports

Tanzania's manufactured exports to the EAC and the SADC together make up 48 % of its global exports of manufactured products in 2013. This illustrates a significant increase from 31 % in 2010. This means that almost half of the total manufactured exports from Tanzania are traded within these regional markets. Such regional economic communities often act as markets for products which globally face stiff competition and they can therefore help countries to initially diversify their exports, including towards more sophisticated products. Figure 25 illustrates the share of manufactured products in intra-regional exports and imports for selected EAC and SADC member states.

Figure 25 Share of manufactured exports/imports in total exports/imports in EAC (blue) and selected SADC countries (red) in 2013



Source: UN Comtrade

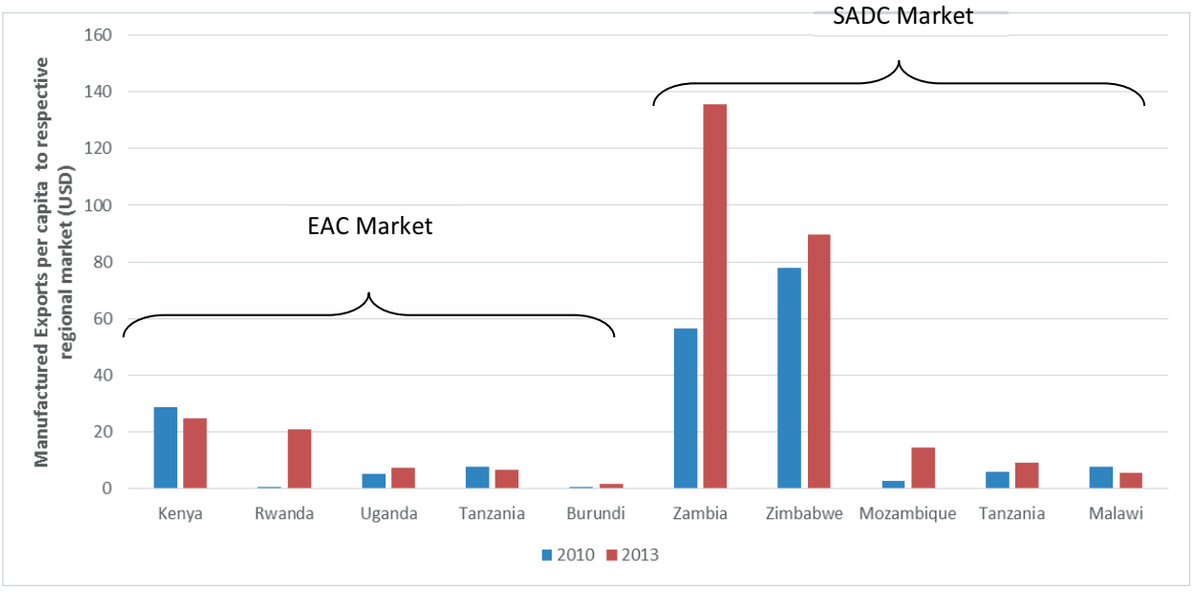
The strongest of these economies in terms of industrial development benefit most from regional integration in terms of the types of products they can export suggesting integration needs to be calibrated along with domestic industrial development. In the EAC we find that in 2013 90 % of Kenya's exports to the region are manufactured, while a significantly smaller amount of its imports are manufactured products – an observation in line with the findings in the TICR 2012 for previous years. For SADC, South Africa offers a very similar picture. The remaining countries of both regional economic communities import over 80 % manufactured products and export a lower share of manufactured products to their respective regions (between 35 % and 80 %).

Tanzania has performed far better in terms of its share of manufactured exports to total exports in the EAC market (almost 80 %) than in the SADC (below 40 %). This is a likely consequence of lower competition and lower standard required in the former. Tanzania still imports more manufactured products than primary from both regions. Whereas Tanzania witnessed a strong increase in the share of its manufactured exports to the EAC between 2000 and 2010, as seen in the TICR 2012 (from 44 % to 70 %), this share has since then increased to 76 % in 2013, extending the previous positive trend. At the same time, it was able to slightly reduce its dependence on manufactured imports from 90 % in 2010 to 85 % in 2013.

Figure 26 indicates that Tanzania's capacity (as measured by manufactured exports per capita) to export manufactured products to SADC is only somewhat larger than to the EAC, though in both cases it is still low compared to the other member states. Rwanda, Uganda and Kenya have greater capacities than Tanzania in the EAC. At the same time, in SADC even Mozambique, which in 2010 had a significantly lower capacity than Tanzania, has now overtaken Tanzania. Considering that SADC is a significantly larger market, the fact that Tanzania showed a similar capacity in

both SADC and the EAC indicates that it was generally more difficult for Tanzania to capture the SADC market. Nonetheless, since 2010 Tanzania's capacity to export manufactured products to the EAC has been decreasing, while it has been increasing within the SADC region.

Figure 26 Manufactured exports per capita to EAC and SADC markets (2010 & 2013)



Source: UN Comtrade

Table 11 and Table 12 show the trend in manufactured exports and imports of selected SADC and EAC member states. The performance of the countries in terms of intra-regional trade of different product categories (based on the technological classification) can be assessed from these as well as by comparing trade balances. Tanzania's manufactured exports to the SADC countries have been increasing at an average annual growth rate of 20% between 2010 and 2013 whereas in the EAC the trend was negative (-3%), at the same time when Uganda, Burundi and Rwanda have been growing significantly. Part of the good news related to trends in SADC is that Tanzania boosted its medium and high tech exports at an average annual growth rate of 29 % and 56 % respectively. An inverse trend again is observed in the EAC where Tanzania's high tech exports have been decreasing at 15 % per annum whereas its medium tech exports remained relatively stable at a mere 3 % growth.

Table 11 Intra-regional manufactured exports and imports of selected SADC member states by product category (2010-2013)

SADC (selected countries)	Product Category	Exports in 1000 USD		CAGR of Exp	Imports in 1000 USD		CAGR of Imp	Net Trade (in 1000 USD)	
		2010	2013	(2010-2013)	2010	2013	(2010-2013)	2010	2013
Mozambique	**Manufactured trade**	**65,776**	**372,485**	**78%**	**1,085,880**	**2,904,065**	**39%**	**-1,020,104**	**-2,531,580**
	High Tech	676	62,902	353%	66,318	1,125,222	157%	-65,642	-1,062,320
	Medium Tech	9,616	51,724	75%	219,358	440,937	26%	-209,742	-389,212
	Low Tech	5,401	160,348	210%	407,801	958,608	33%	-402,399	-798,261
	Resource based	50,956	97,510	24%	392,403	379,298	-1%	-341,448	-281,787
Malawi	**Manufactured trade**	**115,152**	**92,700**	-7%	**757,941**	**1,040,896**	11%	**-642,789**	**-948,196**
	High Tech	1,237	6,920	78%	29,695	37,863	8%	-28,458	-30,943
	Medium Tech	33,560	31,771	-2%	255,724	348,134	11%	-222,164	-316,362
	Low Tech	31,677	22,264	-11%	113,140	134,690	6%	-81,462	-112,425
	Resource based	48,677	31,745	-13%	359,382	520,211	13%	-310,705	-488,466
Tanzania	**Manufactured trade**	**263,251**	**458,596**	20%	**828,059**	**881,416**	2%	**-564,808**	**-422,820**
	High Tech	8,811	33,442	56%	36,321	88,590	35%	-27,510	-55,148
	Medium Tech	50,761	108,750	29%	274,954	333,437	7%	-224,192	-224,687
	Low Tech	77,419	137,004	21%	201,706	169,583	-6%	-124,287	-32,579
	Resource based	126,259	179,400	12%	315,079	289,805	-3%	-188,819	-110,405
South Africa	**Manufactured trade**	**17,617,305**	**20,912,038**	6%	**2,244,880**	**3,440,752**	15%	**15,372,425**	**17,471,286**
	High Tech	1,262,935	1,289,386	1%	136,282	30,940	-39%	1,126,652	1,258,447
	Medium Tech	6,852,454	8,515,692	8%	551,369	577,830	2%	6,301,085	7,937,862
	Low Tech	3,934,957	4,089,011	1%	441,800	727,601	18%	3,493,158	3,361,410
	Resource based	5,566,959	7,017,950	8%	1,115,430	2,104,382	24%	4,451,530	4,913,568
Zambia	**Manufactured trade**	**749,004**	**1,973,647**	**38%**	**2,941,487**	**5,026,929**	**20%**	**-2,192,484**	**-3,053,282**
	High Tech	8,409	52,207	84%	111,158	176,629	17%	-102,750	-124,422
	Medium Tech	176,866	416,917	33%	1,051,695	1,688,371	17%	-874,829	-1,271,454
	Low Tech	105,568	203,214	24%	348,062	724,135	28%	-242,494	-520,922
	Resource based	458,161	1,301,309	42%	1,430,572	2,437,794	19%	-972,411	-1,136,485

Source: UN Comtrade

In terms of trade balance, Tanzania shifted from a positive trade balance in the EAC in 2010 to a negative one in 2013 partly as a consequence of emerging competition in particular from Uganda and more recently Rwanda. Kenya is currently the only country boasting a trade surplus in manufactured products in the region but it has been slightly decreasing in the period between 2010 and 2013. Tanzania reduced its trade deficit with the SADC in 2013, though still significantly larger than in the EAC. Within SADC, South Africa is the only country showing a trade surplus. Tanzania will need to investigate how to best strengthen its intra-regional manufactured exports, in order to reduce the trade deficits, obtain a positive balance and further exploit the benefits of regional integration. This seems achievable in both cases. The deficit with the EAC is currently low, and Tanzania is moving in the right direction by trying to minimize the deficit with the SADC.

Table 12 Manufactured exports and imports of EAC member states by product category (2010-2013)

EAC	Product Category	Exports in 1000 dollars		CAGR of Exp	Imports in 1000 dollars		CAGR of imp	Net Trade (in 1000 USD)	
		2010	2013	(2010-2013)	2010	2013	(2010-2013)	2010	2013
Burundi	**Manufactured trade**	**6,836**	**15,119**	**30%**	**74,048**	**142,385**	**24%**	**-67,211**	**-127,266**
	High Tech	265	44	-45%	3,945	7,926	26%	-3,680	-7,882
	Medium Tech	1,386	4,764	51%	12,789	36,651	42%	-11,403	-31,887
	Low Tech	423	2,155	72%	28,521	53,738	24%	-28,098	-51,583
	Resource based	4,762	8,157	20%	28,792	44,071	15%	-24,030	-35,914
Kenya	**Manufactured trade**	**1,177,578**	**1,095,133**	**-2%**	**131,871**	**123,628**	**-2%**	**1,045,707**	**971,504**
	High Tech	86,696	61,049	-11%	7,583	3,577	-22%	79,114	57,472
	Medium Tech	279,724	256,141	-3%	21,030	11,416	-18%	258,695	244,724
	Low Tech	344,634	381,749	3%	39,573	40,448	1%	305,061	341,302
	Resource based	466,524	396,194	-5%	63,686	68,187	2%	402,838	328,006
Rwanda	**Manufactured trade**	**7,179**	**243,981**	**224%**	**283,547**	**354,617**	**8%**	**-276,368**	**-110,636**
	High Tech	738	2,406	48%	13,047	11,156	-5%	-12,309	-8,750
	Medium Tech	2,799	5,965	29%	70,873	81,485	5%	-68,074	-75,520
	Low Tech	1,462	22,769	150%	67,914	79,594	5%	-66,452	-56,825
	Resource based	2,181	212,969	360%	131,713	182,382	11%	-129,532	30,587
Tanzania	**Manufactured trade**	**345,658**	**319,091**	**-3%**	**265,942**	**336,009**	**8%**	**79,715**	**-16,918**
	High Tech	25,744	15,825	-15%	34,213	54,177	17%	-8,470	-38,353
	Medium Tech	85,781	94,041	3%	81,894	114,890	12%	3,887	-20,849
	Low Tech	141,223	94,700	-12%	59,631	60,490	0%	81,592	34,209
	Resource based	92,910	114,526	7%	90,204	106,452	6%	2,707	8,074
Uganda	**Manufactured trade**	**183,153**	**270,591**	**14%**	**513,619**	**531,528**	**1%**	**-330,465**	**-260,937**
	High Tech	4,002	6,750	19%	45,240	35,044	-8%	-41,239	-28,294
	Medium Tech	29,860	37,522	8%	100,525	125,957	8%	-70,665	-88,435
	Low Tech	39,971	65,817	18%	123,716	162,573	10%	-83,744	-96,757
	Resource based	109,568	160,503	14%	244,138	207,954	-5%	-134,570	-47,451

Source: UN Comtrade

B.4.3. Trends in Tanzania's participation in regional markets for manufactures

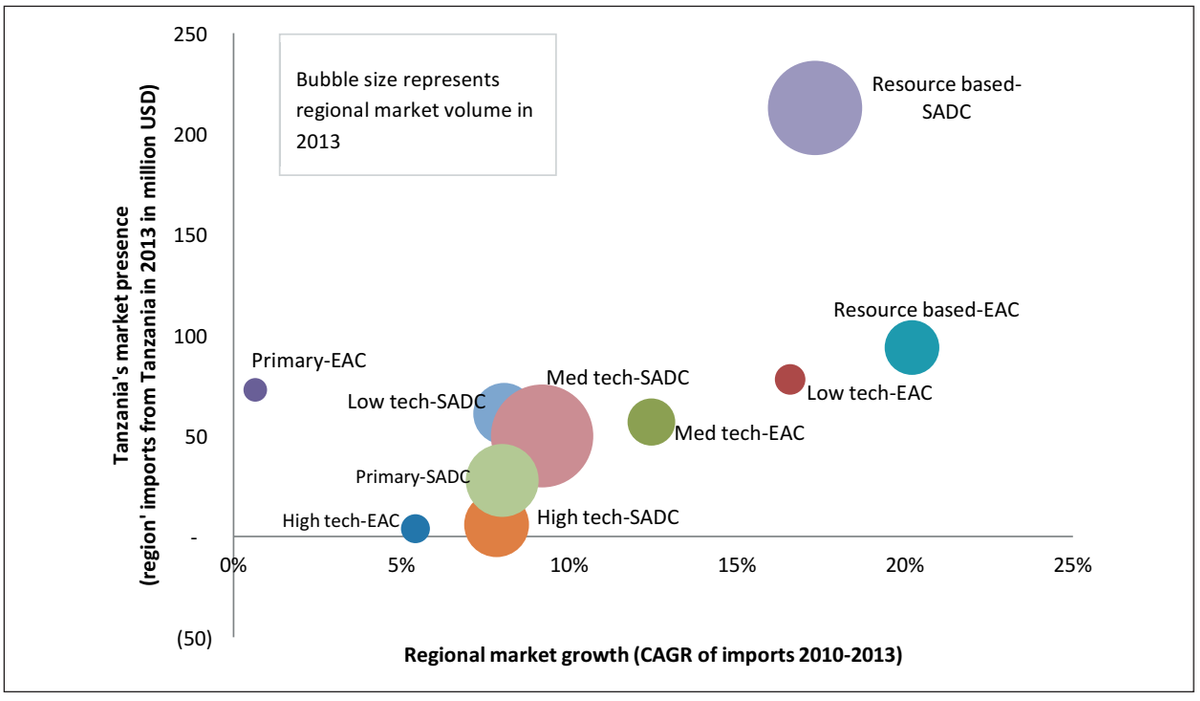
Future opportunities for Tanzanian manufacturing in EAC and SADC by product category

Market success ultimately depends on whether Tanzania is exporting what the region is demanding. Serving regional markets rather than focusing only on the broader international market brings certain benefits. In particular, the significantly lower competition in these markets, especially for medium and high tech products, as well as lower standards required for exporting are two key points in this regard. Figure 27 illustrates the demand of the EAC and SADC for exports of products based on their level of technology, and provides an indication of the extent to which Tanzanian exports match this demand. SADC has the largest demand for medium tech products followed by resource-based products, while the EAC has the highest demand for resource-based exports followed by medium tech goods. In both cases, the demand for resource-based products is increasing at a faster pace. Although this was also the case for the period between 2000 and 2010, both average growth rates for EAC and SADC have been slightly higher since 2010. Tanzania is currently well positioned to capture this growing demand for resource-based products (with a focus on value addition), as this is the product group it exports most to the region.

Most other types of exports were in sectors that witnessed slower demand growth. Within the EAC, the demand for medium and high tech products has been increasing at slower rates between 2010 and 2013 than in earlier periods. The demand for high tech products was growing at a rate of about 17 % per annum on average in the first decade of 2000, whereas between 2010 and 2013 it slowed down to over 5 %. In the case of SADC, the demand

for low, medium and high tech products have all been growing at a slower rate since 2013. This highlights how the desired structural change has yet to take place in the region and this is one more reason why this region could become less competitive in the future. The growth in demand for primary products has been slower in both regions since 2010 particularly in the EAC (growing at just 1% per year). With the demand for resource-based manufactured products increasing, in general we can observe at least a shift from primary to manufactured products, even if mainly to agro-based or similar products.

Figure 27 Market growth and Tanzania's presence in EAC and SADC markets for manufactured products (2010-2013)



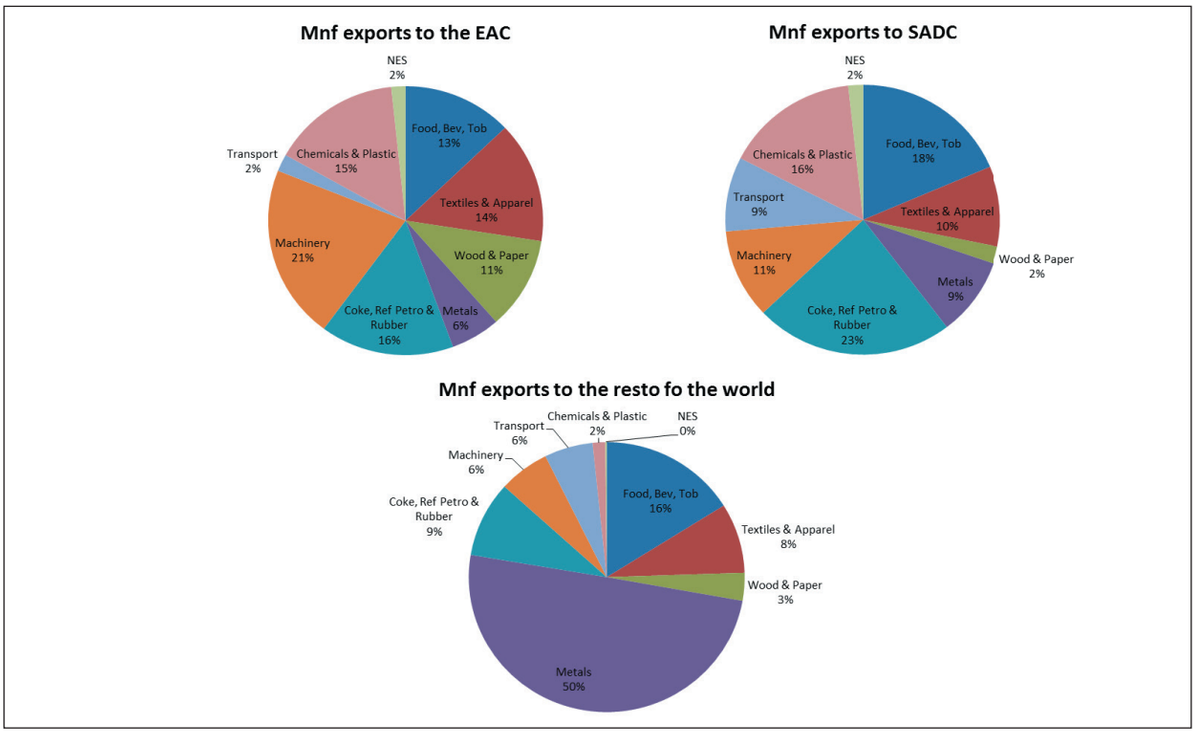
Source: UN Comtrade

Diversified exports in the EAC and SADC

Some further observations on how Tanzania has been able to benefit from exporting to its neighbouring regional economic communities can be seen in Figure 28. In addition to the fact that manufactured exports account for a significantly higher share of Tanzania's exports to the EAC and SADC than the share in its exports to the rest of the world, it can be noted that the country has been able to diversify its exports considerably more so within the RECs, than in the rest of the world. The exports to the two regions are not dominated by any particular sector, but are distributed more equally, signalling a less vulnerable market presence in both the EAC and SADC. Conversely, Tanzania's exports to the rest of the world continue to rely heavily on the metal sector, which accounts for half of its exports.

Tanzania has been able to increase its medium and high tech exports to the SADC significantly. Figure 24 illustrates how medium and high tech products accounted for 38 % of Tanzania's total manufactured exports to the EAC and 35 % to SADC, while making up just 13 % of the manufactured exports to the rest of the world. As already mentioned above, this is most likely due to lower requirements in terms of standards and less competition within the regions.

Figure 28 Structure of Tanzania's manufactured exports by destination (2013)



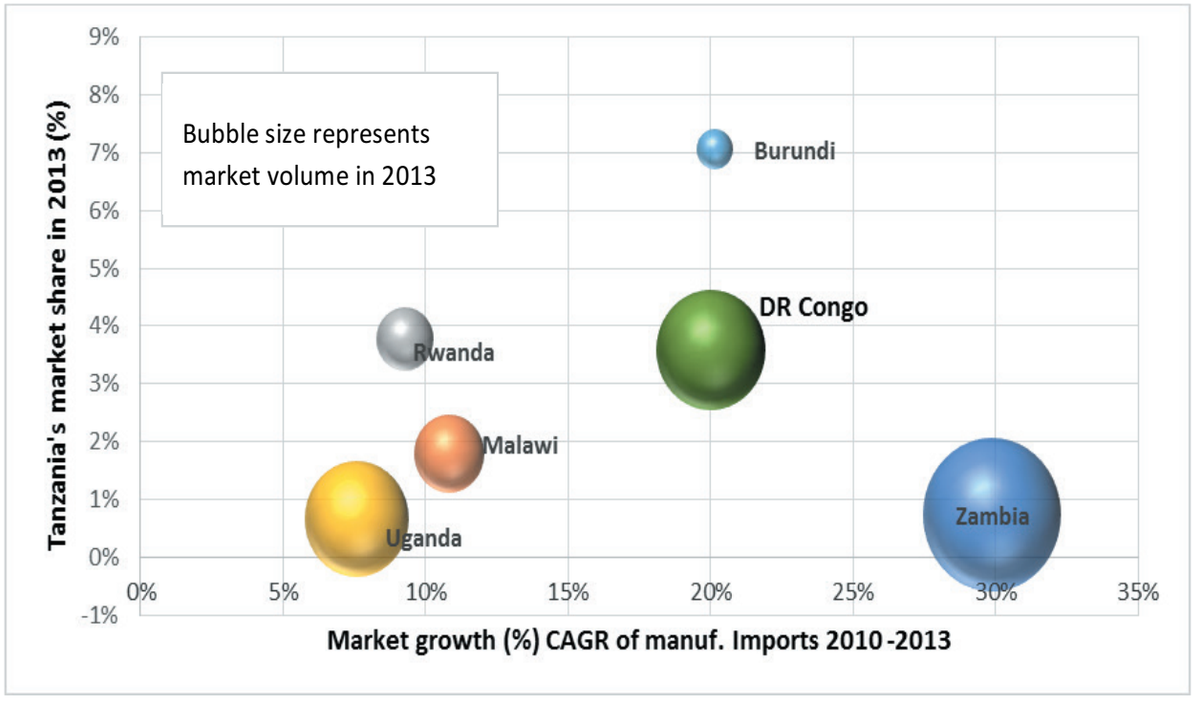
Source: UN Comtrade

The Market of Landlocked Neighbours for Manufactured Products of Tanzania, 2010 - 2013

In spite of technological improvements in transport, landlocked developing countries continue to face challenges when accessing world markets. As a result, landlocked countries often lag behind their maritime neighbours in overall development and external trade. As the relatively poor performance of many such countries can be partially attributed to their distance from the coast, it is argued that several aspects of dependence on neighbours are important. The dependence is based on neighbours' infrastructure; on sound cross-border political relations, on the neighbours' peace and stability, and on neighbours' administrative practices, (Faye M. et al, 2004). Tanzania, as a country endowed with a coast and surrounded by a number of landlocked neighbours, can take this as the opportunity not only to increase its gross exports and so improve the balance of trade, but also to build strong overall economic relationships with its neighbours.

Figure 29 compares the markets for manufactured products of landlocked countries around Tanzania and observes Tanzania's market presence in these. Firstly, it can be seen that most of the landlocked markets have been growing at very high rates. The highest rates are observed for Zambia (roughly 30 % per annum), DRC and Burundi (both roughly 20 % per annum). Zambia, Uganda and the DRC are also the largest landlocked economies of this sample and are therefore interesting partners for Tanzania. Tanzania, however, has the largest market share in Burundi (7 %), which is one of the smallest markets (with Rwanda). However, it needs to be said that Tanzania's market share in Burundi was 13 % in 2000. It therefore lost almost half of its share to other countries. Tanzania should then consider expanding its presence in countries like Zambia, the DRC and others which are large and fast growing markets.

Figure 29 Markets for manufactured products in Tanzania's landlocked neighbours (2010 – 2013)



Note: Mirrored data was used for DR Congo and Rwanda

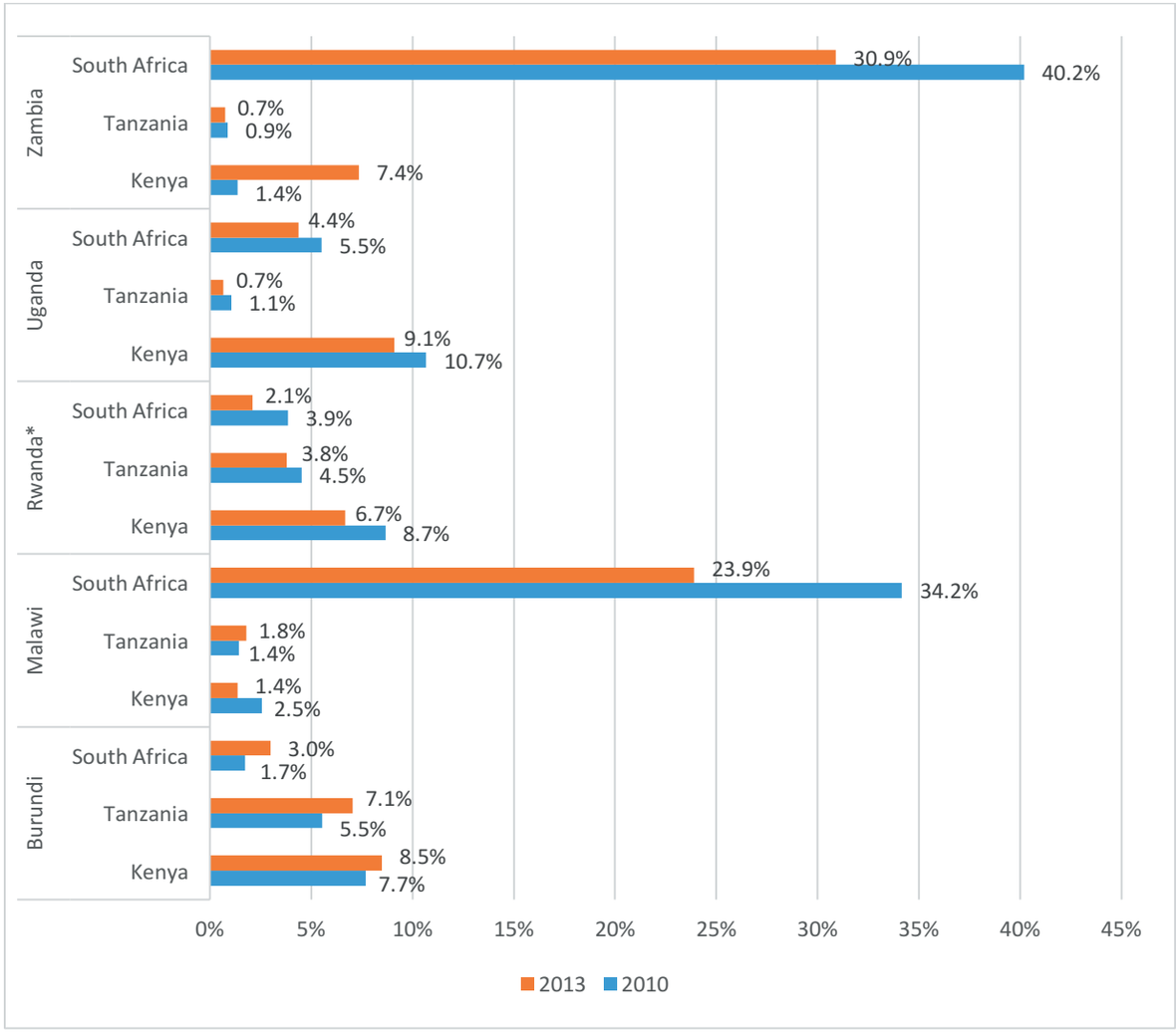
Source: UN Comtrade

Competition from the Region: Kenya and South Africa

Tanzania faces strong competition from other countries in the region. It is therefore important to understand how some of the main competitors are doing in markets which are of interest to Tanzania. For this purpose, Figure 30 compares the market shares of manufactured products of Tanzania, Kenya and South Africa in landlocked countries within EAC and SADC in 2010 and 2013. This graph is an update to that provided in the TICR 2012, and with the first longitudinal analysis, valuable conclusions can be drawn. In the EAC, Kenya boasts the largest market share among the three countries observed, though capturing slightly less than 10 % of the market in both Uganda and Rwanda. In the landlocked SADC markets, South Africa is the largest player, holding 24 % and 31% of the markets in Malawi and Zambia respectively.

All three countries (South Africa, Kenya and Tanzania) experienced some difficulties in expanding their export shares to these landlocked countries. In Uganda and Rwanda, for example, none of the three economies were able to gain market shares in the past years. Nonetheless, in Zambia, Kenya has been able to increase its market share from 1 % to 7 %, while South Africa's decreased from 40% to 31% in 2010. Tanzania's share remained constant.

Figure 30 Comparison of market shares for manufactured products in landlocked neighbours (2010 – 2013)



Note: DR Congo and Rwanda with mirrored data, Malawi data: 2010 and 2011 only.

Source: UN Comtrade

In Burundi South Africa, Tanzania and Kenya all increased their market shares, though only by about 1% each. While Kenya and South Africa experienced a decline in their share of exports to Malawi, Tanzania was able to increase it from 1 to 2 %, overtaking Kenya. Overall, Tanzania holds a low market share in these landlocked economies and the recent growth of its share is not yet significant. However, as these economies are growing at a fast pace Tanzania needs to investigate the kind of products being demanded, as well as gain an understanding of what Tanzania's key constraints are in exporting to these countries.

Tanzania exports in selected global emerging markets, 2010 - 2013

While there are certain opportunities in neighbouring and regional markets that Tanzania should make the most of, the importance of other markets outside the region should not be underestimated. Large domestic economies and faster growth rates of demand for certain products from these markets make them very attractive for Tanzania. Furthermore, the products they demand will differ from that of neighbouring countries. This makes these economies the export destination for certain

products that may not find a large market regionally. As pointed out in the TICR of 2012, among the selected global emerging markets, Tanzania exported most of its manufactured products to China. While Tanzania's exports to this economy are substantial, in absolute terms Tanzania is still a small trading partner to China.

More importantly, while China continues to be the principal recipient of Tanzania's manufactured exports, there has been a continuous decline in export values since 2010 with a particularly large drop between 2012 and 2013 (Table 13 Tanzanian manufactured exports to selected global emerging markets (2010 – 2013)). While Tanzania exported manufactured goods to China worth 611 million USD in 2010, these shrank to 175 million USD in 2013 – a decrease of 34 % per annum, a major factor contributing to Tanzania's decline in overall manufactured exports. The decrease of Tanzanian exports to China is largely due to the fall exports of its largest traded product group, base metals. This fell by 90 % per annum during the period. The 30 % annual reduction in the exports of precious metals, which was Tanzania's main export to China from 2014, also contributed to this decline.

Better news come from India, the second largest destination of Tanzania's manufactured products among emerging markets, where imports from Tanzania have increased in the period between 2010 and 2013. Among the main manufactured products exported to India, the list includes wood simply worked, pearls and precious stones and base metals waste. The United Arab Emirates and South Africa are two other trading partners from emerging markets where imports increased from Tanzania between 2010 and 2013 but with a drop in 2013. Tanzania's sudden rise of exports to Brazil in 2013 was mostly related to measure/control apparatus products.

The picture above may hint at some degree of market diversification in Tanzanian exports, reducing dependence on China. This finding will need to be confirmed by following further industrial competitiveness reports. Market diversification reduces risks from exogenous economic shocks and therefore vulnerability. This however is desirable when it is not accompanied by an overall decrease in manufactured exports. Table 13 Tanzanian manufactured exports to selected global emerging markets (2010 – 2013) and highlights the key global emerging markets for Tanzania's manufactured products.

Table 13 Tanzanian manufactured exports to selected global emerging markets (2010 – 2013)

Emerging Market	Exports in 1000 USD				CAGR
	2010	2011	2012	2013	2010-2013
China	611,265	598,253	412,279	175,341	-34%
India	29,746	38,583	40,010	47,892	17%
United Arab Emirates	21,024	23,590	30,277	28,551	11%
South Africa	21,004	34,143	31,826	23,736	4%
Vietnam	16,137	2,776	819	1,774	-52%
Korea, Rep.	242	189	716	1,522	85%
Brazil	37	117	51	1,495	243%
Indonesia	1,809	195	194	425	-38%
Russian Federation	63	245	702	367	80%

Source: UN Comtrade

Table 13 provides information on Tanzania's manufactured exports values and its growth rate for the period. The countries in the table were selected based on the same criteria as for the TICR 2012: the size of demand for manufactured imports; the growth dynamics of the markets, and the performance of Tanzanian manufactures in the respective markets.

Tanzania exports in selected advanced economies, 2010 - 2013

This section would be incomplete without taking a closer look at Tanzanian manufactured exports to selected advanced economies as these are the most important destinations of Tanzania's exports given the size of their markets.

Table 14 Tanzanian manufactured exports to high income economies (2010 – 2013)

High Income Economy	Exports in 1000 USD				CAGR
	2010	2011	2012	2013	2010-2013
Japan	162,751	283,047	204,499	152,012	-2%
Germany	97,148	194,487	247,981	112,155	5%
Singapore	1,125	920	12,129	41,761	234%
United States	15,508	16,871	30,732	27,337	21%
United Kingdom	6,392	11,288	13,477	26,224	60%
Hong Kong, China	6,168	6,313	13,600	19,670	47%
Switzerland	151,891	18,611	31,786	13,895	-55%
Netherlands	20,325	8,533	14,646	7,110	-30%

Source: UN Comtrade

In this group of countries Japan was the main destination for Tanzania's manufactured exports in 2013, followed by Germany. The main product groups exported to these countries were precious metals and copper for Japan and base metal and copper for Germany. The decline in Japan's market is in part due to the sharp drop of base metal exports, which in 2011 reached 121 million USD but thereafter dropped significantly. The majority of the countries listed in the table reported an increase of products originating from Tanzania in the recent years (Germany, Singapore, US, UK and Hong Kong) with the most prominent emerging market being Singapore due to exports of ships/boats and, accounting for over 97 % of the Tanzanian exports to that market in 2013. Singapore is the only country globally that imports ships/boats from Tanzania, and this has contributed significantly to the rise of Tanzania's medium tech export values in 2013.

On the other side, imports from longstanding trading partners like Netherlands and Switzerland registered a significant contraction after 2010. For instance, in 2010, exports to Switzerland reached 152 million USD– almost the same as Japan in 2013. As in the case of China, the sharp decrease in exports to Switzerland was due to the contraction in the exports of base metal waste. In 2010 this amounted to 139 million USD but has become negligible since then. Though the above analysis shows a certain degree of market diversification for Tanzanian exports it also confirms a low degree of product diversification with a low range of products exported to countries outside the region. This leads to greater vulnerability and may cause undesired fluctuations in manufactured exports over the years.

C

Case Studies on Sectoral Value Chains and Value Addition Dynamics

The following section looks at two agro-processing value chains which are relevant for Tanzania's manufactured exports (sunflower oil and cotton textiles). Observing each value chain in turn using export data, the aim is to understand how Tanzania is performing in the exports of these products, and to identify and analyse the potential for exporting products within the same chain though of higher value. It also carries out a market analysis to identify relevant destinations for the exports.

C.1. Sunflower Oil Value Chain

The production of sunflower oil, and in general edible oils, ranks among the priority areas for industrial development in Tanzania and this has been mentioned in many reports like in the Integrated Industrial Development Strategy 2025. In this sub-section[11] the value of exporting sunflower seeds at various levels of processing is analysed. The product groups examined are as follows:

Product Name	Product Code (SITC Rev 4)
Sunflower seeds	2224
Sunflower seed/safflower oil, crude	42151
Sunflower seed/safflower oil, refined	42159
Oilcake & other solid residues	08135

Source: UN Comtrade

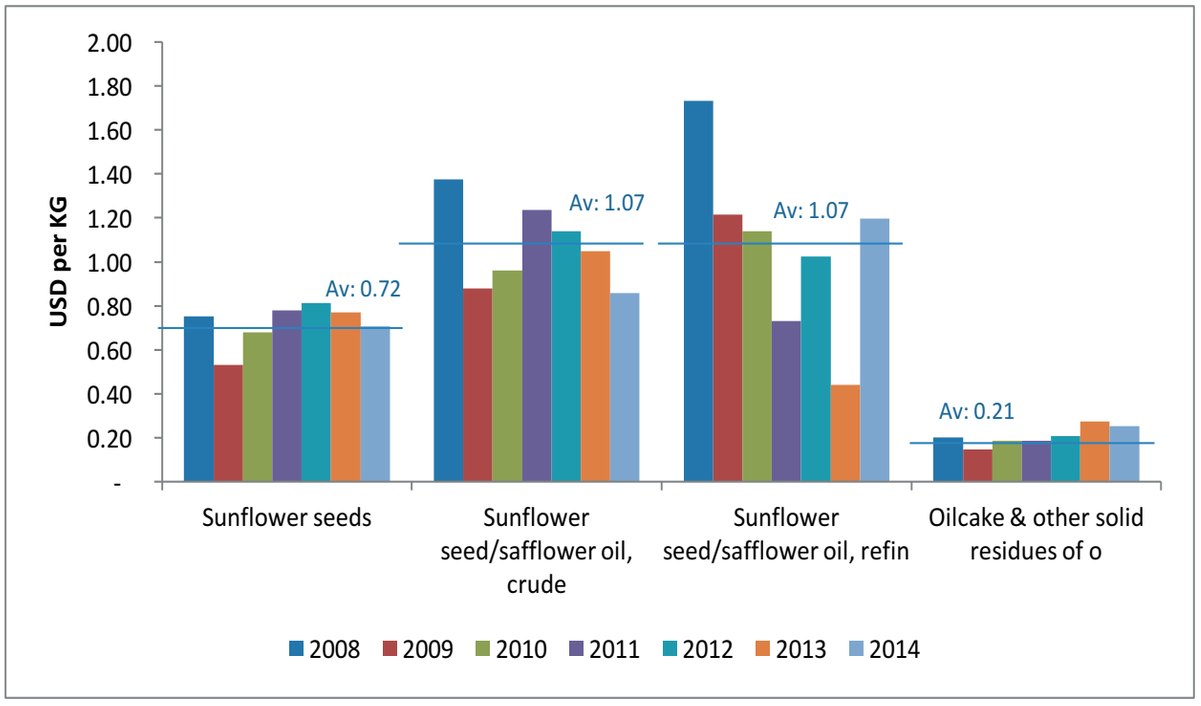
The analysis which follows will begin with an assessment of unit values of the different products, both globally and for Tanzania's exports. It will then observe global demand trends for these products, and compare these with Tanzania's trends, to assess the potential for expansion of exports. The next section analyses the exports of crude sunflower oil and refined sunflower oil in turn. It first looks at the main destinations for Tanzania's exports, and then discusses the main competitors Tanzania faces in each of these markets. Lastly, it presents the demand dynamism of other regions where Tanzania is still not exporting (significant amounts of) sunflower oil.

11 The assessment uses UNCOMTRADE data using SITC Revision 4, due to the higher level of disaggregation of sunflower oil-related products, compared to SITC Revision 3.

Unit Values of sunflower oil and related products

Figure 31 measures the global prices of the four identified sunflower-related products. As expected, the global price of oil seeds is lower than that of the processed oils produced from them. Less obviously, crude sunflower and refined sunflower oils have, on average, the same value. However, while there seems to be a decline in the prices of crude oil since 2011, the prices of refined oil were strongly fluctuating. Oilcake and other residues have the lowest unit price.

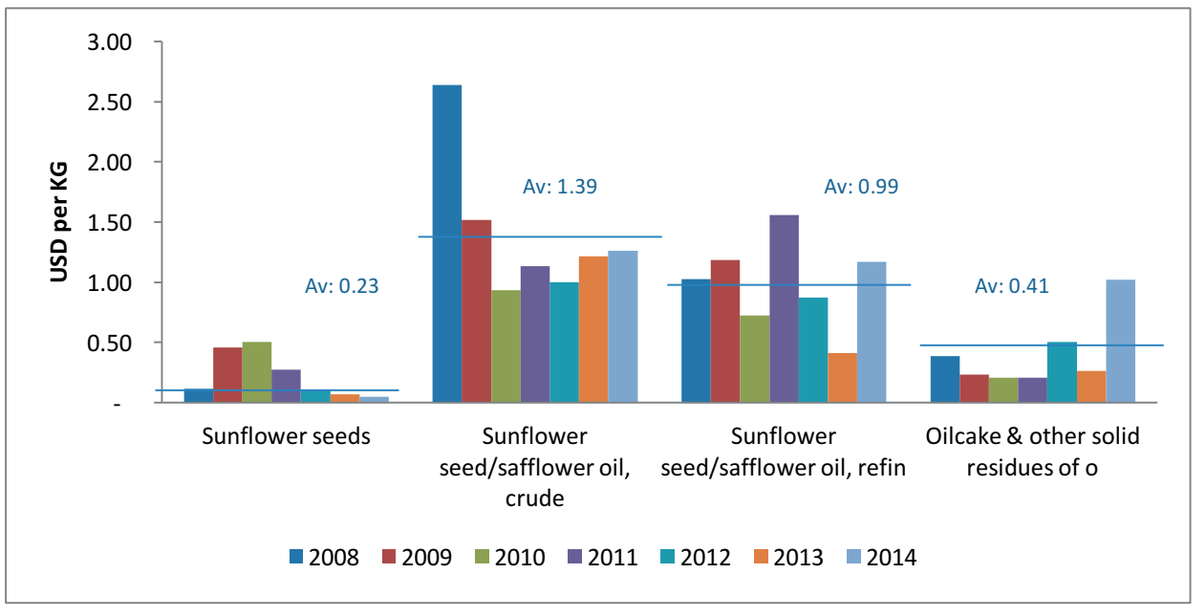
Figure 31 Global unit values of sunflower products (2008-2014)



Source: UN Comtrade

Figure 32 shows the unit prices for Tanzania's exports. The prices of crude sunflower oil exports seem, on average, higher than the value of the other related products (1.39 USD per kg). This is true even when disregarding the value for 2008 (1.18 USD per kg). An increase can be observed since 2012. This average price of crude sunflower oil is higher than the world average, which was 1.07 USD per kg for the same period. This higher price could be due to better quality or higher production costs but this analysis is not within the scope of the report. The price for refined sunflower oil is instead generally lower than the world average. Similarly, as global prices these were characterized by large fluctuations. Finally, the price for sunflower seeds is lower than world average and has been decreasing significantly since 2010. Oilcakes are also priced lower than the global average.

Figure 32 Unit values of Tanzania's exports of sunflower products (2008-2014)

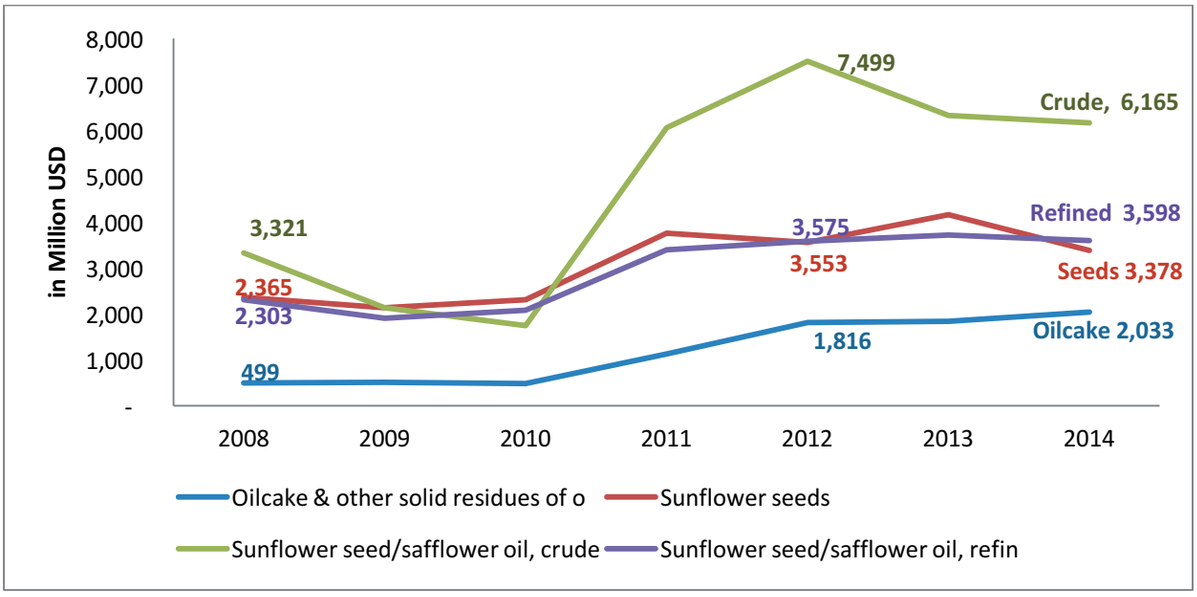


Source: UN Comtrade

Global demand versus Tanzania's exports of sunflower oil products

This sub-section analyses which of the sub-products of sunflower seeds are demanded more and the reasons for this. Figure 33 illustrates that since 2011 crude oil has been in higher demand than all other related products. This segment grew at 11 % since 2008. Refined sunflower oil demand is roughly half that of crude oil, around 8% on average throughout the period. However, while the demand for crude sunflower oil has somewhat declined since 2012, that of refined sunflower oil exhibited a constant increase – even if very modestly. The demand for sunflower seeds is strikingly similar to that of the refined oil.

Figure 33 Global demand for sunflower products (2008-2014)

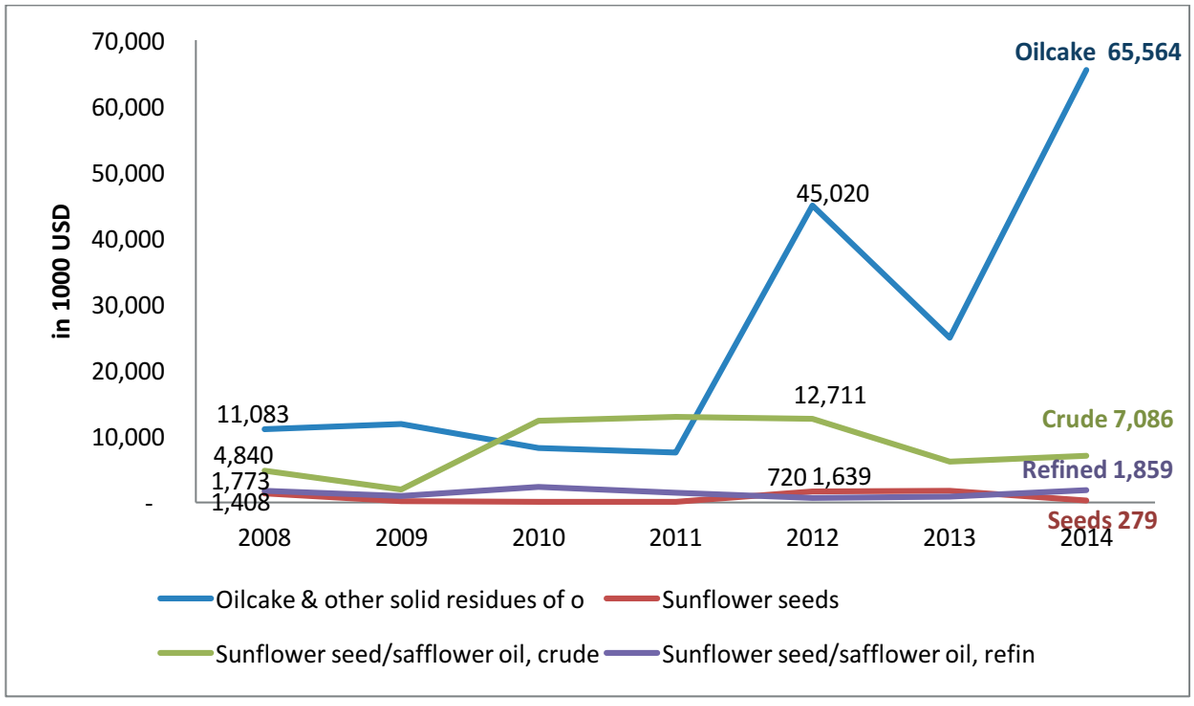


Source: UN Comtrade

Tanzania's biggest export in this segment regards oilcakes (Figure 34 below), increasing significantly since 2011, and in spite of the world demand mainly for crude sunflower oil. In terms of global prices, however, processed oils are the most expensive whereas oilcake has a significantly lower unit value and is least demanded globally out of the four products. Nonetheless, in growth terms, there has indeed been a steady increase of its exports in the last four years observed.

Tanzania's exports of crude sunflower oil registered a decline since 2011, but still ranked as the second most exported of these products. Refined sunflower oil exports recorded an increase since 2012, growing by 29 % between 2012 and 2013, and doubling the export value between 2013 and 2014 (growth rate of 101 %). In addition, for the first time since 2008 exports for this product group have been growing for two consecutive years. With unit prices of Tanzanian refined sunflower oil being lower than the world average, it is not unreasonable to expect these exports to continue growing. However, it will be necessary to closely follow the trends.

Figure 34 Tanzania's exports of sunflower products (2008-2014)



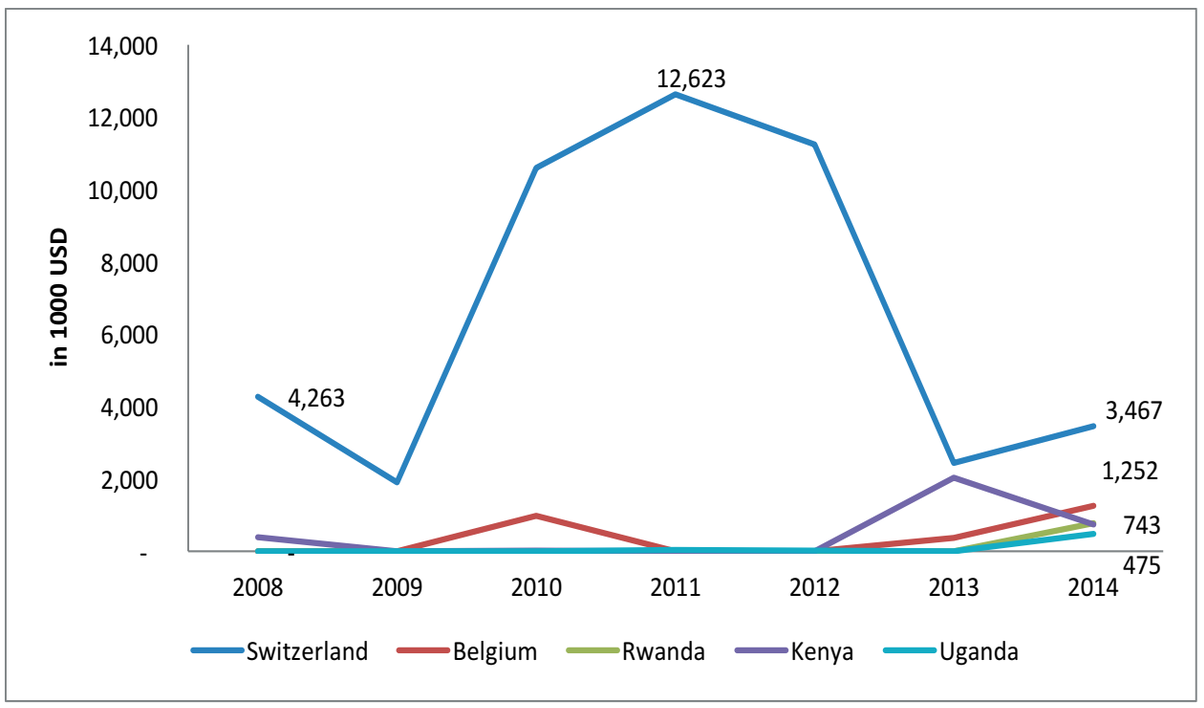
Source: UN Comtrade

The following analysis will focus on processed sunflower oils. These were selected as priority sectors for the nation (see, for example the Integrated Industrial Development Strategy 2025). Additionally, they are the products boasting a higher price both in Tanzania's exports and globally, and with a higher world demand.

C.1.1. Crude Sunflower Oil

In 2014 Tanzanian crude sunflower oil was exported to seven countries globally, within Europe and the EAC. The main market was Switzerland, followed by Belgium (see Figure 35). However, Rwanda Uganda and Kenya have been emerging as new markets for Tanzania since 2013/14. In fact, Tanzania is currently the largest exporter of crude sunflower oil in the EAC.

Figure 35 Main destination of Tanzania's crude sunflower oil exports (2008-2014)



Source: UN Comtrade

Who are the main competitors for Tanzania in its key markets?

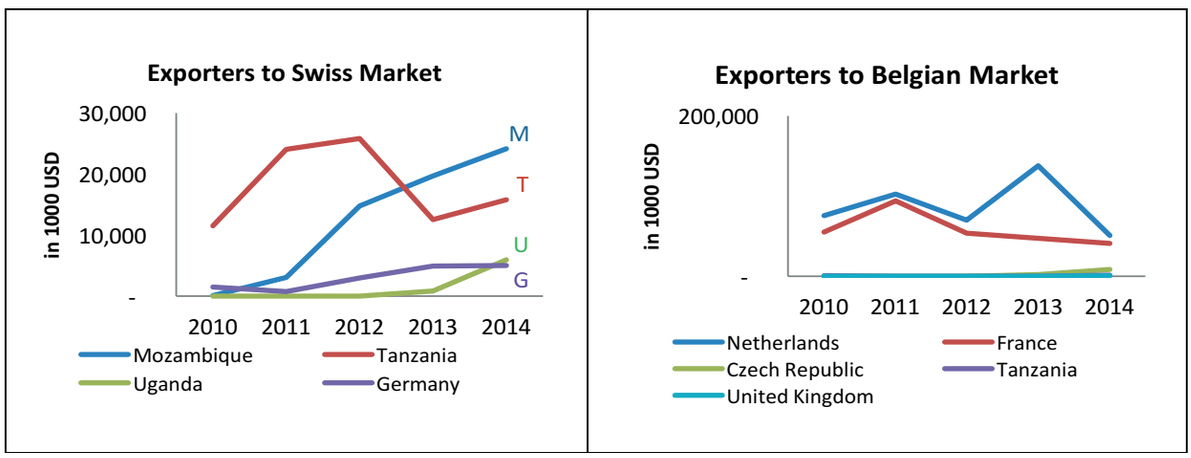
A number of markets have been studied below to better position Tanzania internationally (Figure 36).

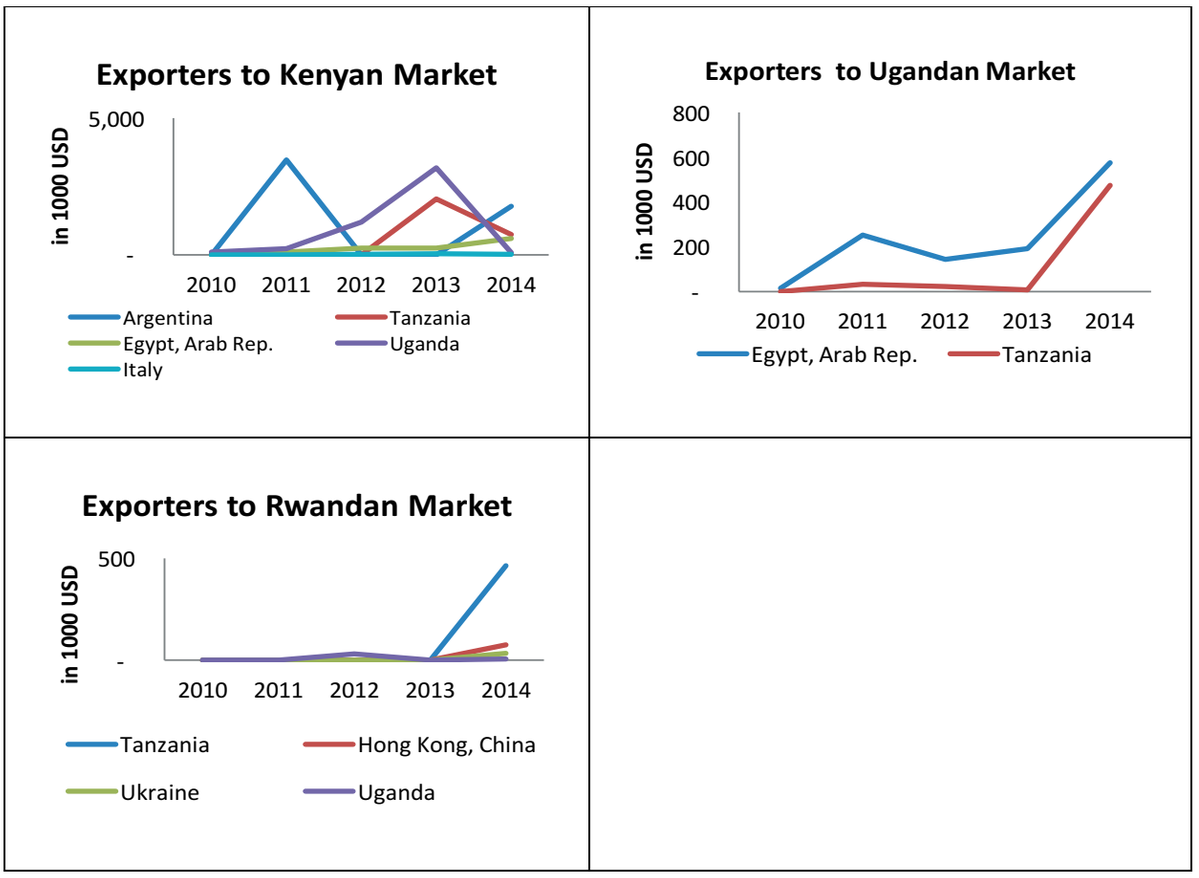
For the **Swiss** market, Tanzania ranked as the second most important source country in 2014 (27% of Switzerland's market), after Mozambique (41% of the market). Tanzania boasted the largest share between 2010 and 2012, but this was later lost to Mozambique.

In **Belgium**, Tanzania, with 1.2 % of market share in 2014, is its fourth largest supplier. Netherlands, France and the Czech Republic together make up 33% of Belgium's import market.

Rwanda only started importing crude sunflower oil in 2014 (previous imports were minimal), and Tanzania is the main provider with 79 % of market share in the neighbouring EAC country. The Rwandese market, however, is relatively small.

Figure 36 Main competitors in Tanzania's crude sunflower oil export markets





Source: UN Comtrade

In the **Ugandan** market the only current competitor for Tanzania is Egypt. In previous years, Egypt was a significantly more important exporter of crude sunflower oil to Uganda than Tanzania, holding between 85% and 100% of market share. However, in 2014 Tanzania succeeded in cornering 45% of the market, with Egypt covering the remainder. The proximity of Uganda to Tanzania, and the fact that both belong to the same common market, features among the reasons why Tanzania could have the potential to maintain or increase its market share in Uganda, unless the latter, which also exports crude sunflower oil, scales up its domestic production.

In the **Kenyan** market, Tanzania represented the second largest exporter of crude sunflower oil. In 2014 the main exporter was Argentina, but its exports to Kenya seem rather sporadic. Moreover, Tanzania has to face competition from Egypt and Uganda in the country. Egypt has steadily increased exports to Kenya, whereas Uganda was the main exporter to Kenya with significant market shares between 2009 and 2013. In 2014 its exports dropped significantly, allowing Argentina, Tanzania and Egypt to take over.

To conclude, whereas the European markets seem to be more volatile with regard to oil imports from Tanzania, the EAC markets provide a more reliable competing ground for Tanzania to gain sustainable shares.

Demand dynamism for crude sunflower oil

The analysis covering Tanzania's main destinations for crude sunflower exports concludes providing an overview of the overall growth rate of demand of these markets. Although this section looks at historical data, it can provide an approximate indication of whether it is a growing or shrinking market. Such information can be an input for shaping Tanzania's response in the market. Table 15 presents the annual average growth rates between 2008 and 2014. While we see a decline in imports of crude sunflower oil from

Belgium, the remaining countries showed an increase – even if just slightly. The EAC has, in general, higher growth rates, though this is also due to the extremely low initial figure. Nonetheless, there is clearly a growing market within the region which should be tapped into, while continuing to play an important role in European markets as well.

Table 15 Trends in demand for crude sunflower oil in Tanzania's main markets (2008 & 2014)

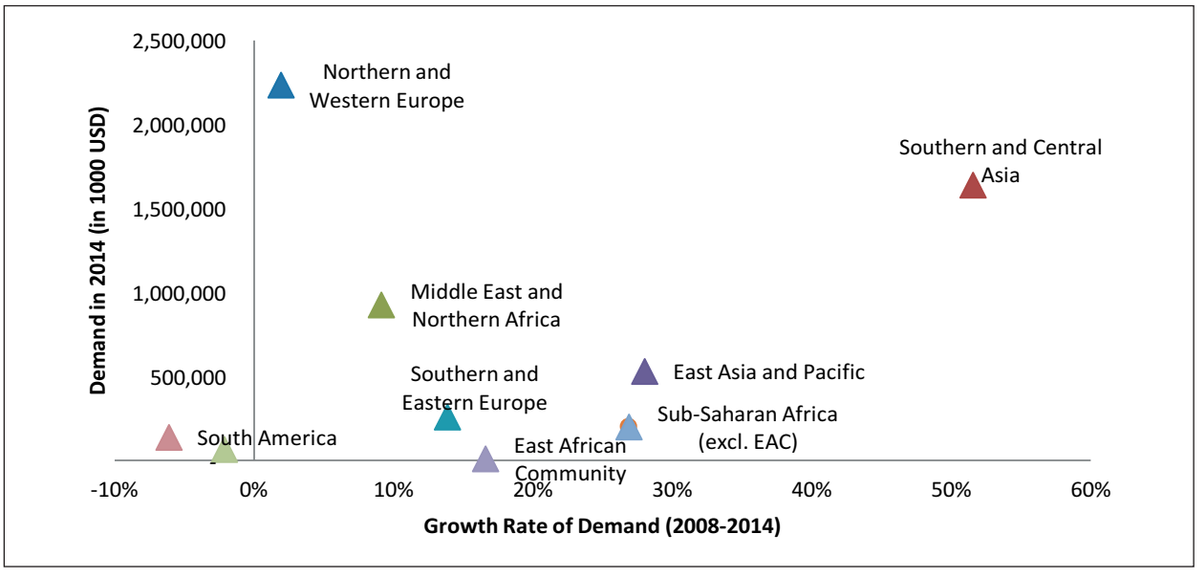
	2008	2014	CAGR (08-14)
Belgium	300,327	176,316	-8%
Switzerland	50,998	58,669	2%
Kenya	5,707	6,422	2%
Rwanda	1	585	231%
Uganda	269	487	13%

Source: UN Comtrade

While Tanzania has a strong position in the five markets analysed above, the identification of possible new markets for Tanzania is also important. Figure 37 below presents the size and growth in demand of crude sunflower oil per region. Whereas Northern and Western Europe show the highest absolute demand, Southern and Central Asia display the fastest growing demand and they are still significant in market size.

The EAC as a whole, although representing a small market as mentioned above, ranks fourth among the considered regional blocks, with its demand growing at 17 % on average. This is below the growth in demand from other countries in Sub-Saharan Africa which should be examined as export destinations.

Figure 37 Regional demand for crude sunflower oil (2008-2014)



Source: UN Comtrade

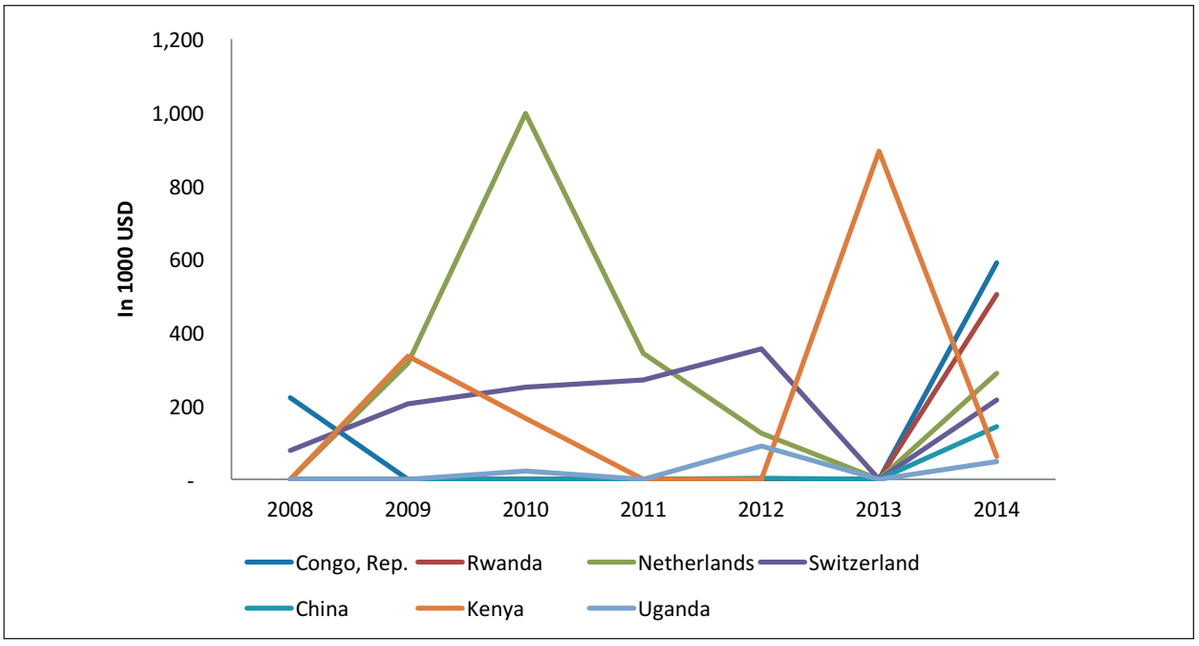
C.1.2. Refined Sunflower Oil

Tanzania exports a significant lower value of refined sunflower as compared to crude sunflower oil but in 2013 and 2014 exports of refined oil increased. The extent to which this more processed form of sunflower oils is exported, to what destinations and the main competitors are analysed in this sub-section.

Figure 38 looks at the main destinations for Tanzania's refined sunflower oil exports. These are, according to latest data, the Republic of Congo, Rwanda, Netherlands, Switzerland, China, Kenya and Uganda (in order of export values). Four out of the five countries that imported crude sunflower oil from Tanzania in the past years are also among the main importers, with Belgium being the exception. Exports of refined sunflower oil are going to the same regions, though the more processed form, refined sunflower oil, is also sold to China which does not import much crude oil. Congo, China and the Netherlands are importers only of the refined versions. Tanzania has been experiencing a lower export growth in Switzerland and the Netherlands.

All in all, however, while there are strong fluctuations in the exports of refined sunflower oil from Tanzania, recent years have shown its ability to tap into a group of new markets, as well as boosting exports to previous markets, altogether increasing its refined sunflower oils exports considerably in 2014. Furthermore, exporting to a range of countries is promising in terms of reducing market vulnerability.

Figure 38 Main destinations of Tanzania's refined Sunflower oil exports (2008-2014)



Source: UN Comtrade

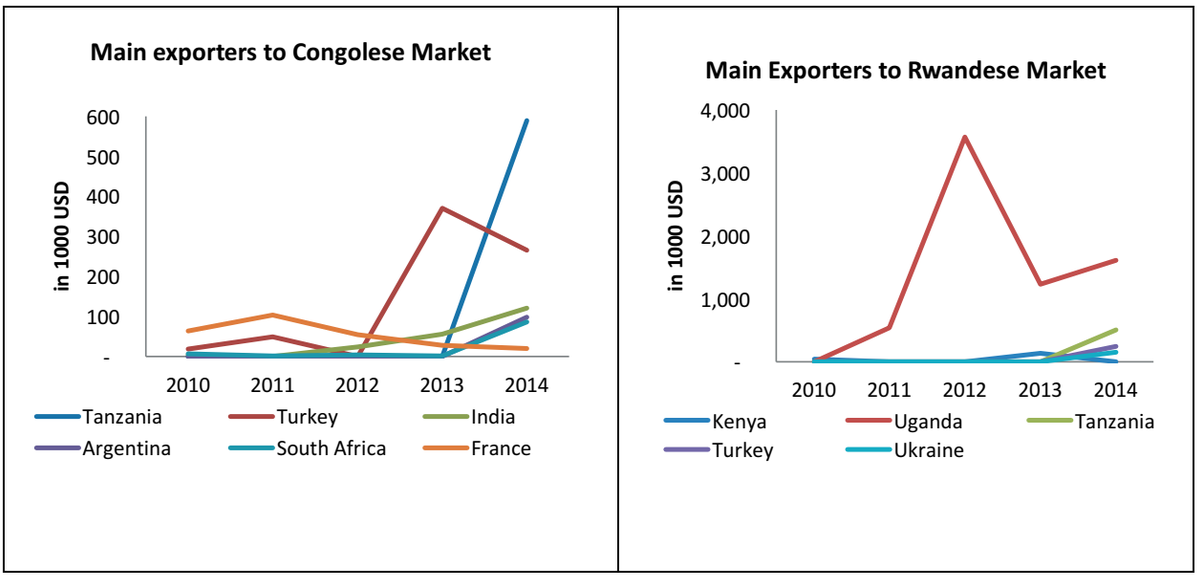
Who are the main competitors for Tanzania in its key markets?

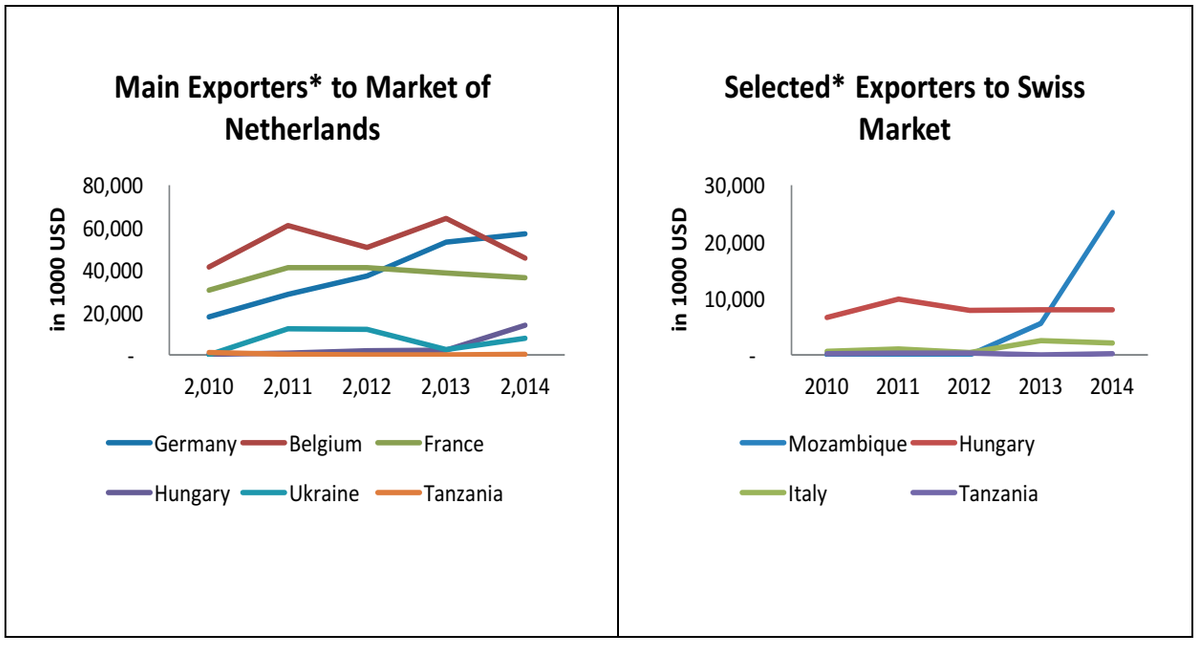
The seven Figures below (Figure 39) show the main competitors of Tanzania in each market for refined sunflower oil identified in Figure 38 earlier. Unlike in the case of crude sunflower oil, Tanzania is not among the top exporters in every market. Indeed, in Switzerland, China and the Netherlands it held 1 % or less of market share in 2014. Nonetheless, this may not necessarily mean that the competition is too fierce to gain market share as can be evinced by Mozambique's export performance. The Swiss market, for example, was for the majority of the period dominated by European exporters. In 2013, Mozambique entered the market and by 2014 had significantly overtaken all other countries in exporting refined sunflower oil to Switzerland.

The Tanzanian experience was similar in Congo. With no exports to the country in the years prior to 2014, it managed to become the main supplier of refined sunflower oil within one year. Other exporters are Turkey, India, Argentina and South Africa.

In addition to these new markets, there is a growing one within the Eastern African region. The second largest recipient of Tanzania's refined sunflower oil is Rwanda, where it gained a 20 % market share in 2014. The main supplier to Rwanda, however, remains Uganda, holding most of the market share. Kenya and even countries outside the region (Turkey and Ukraine) are increasing their presence in this market as well.

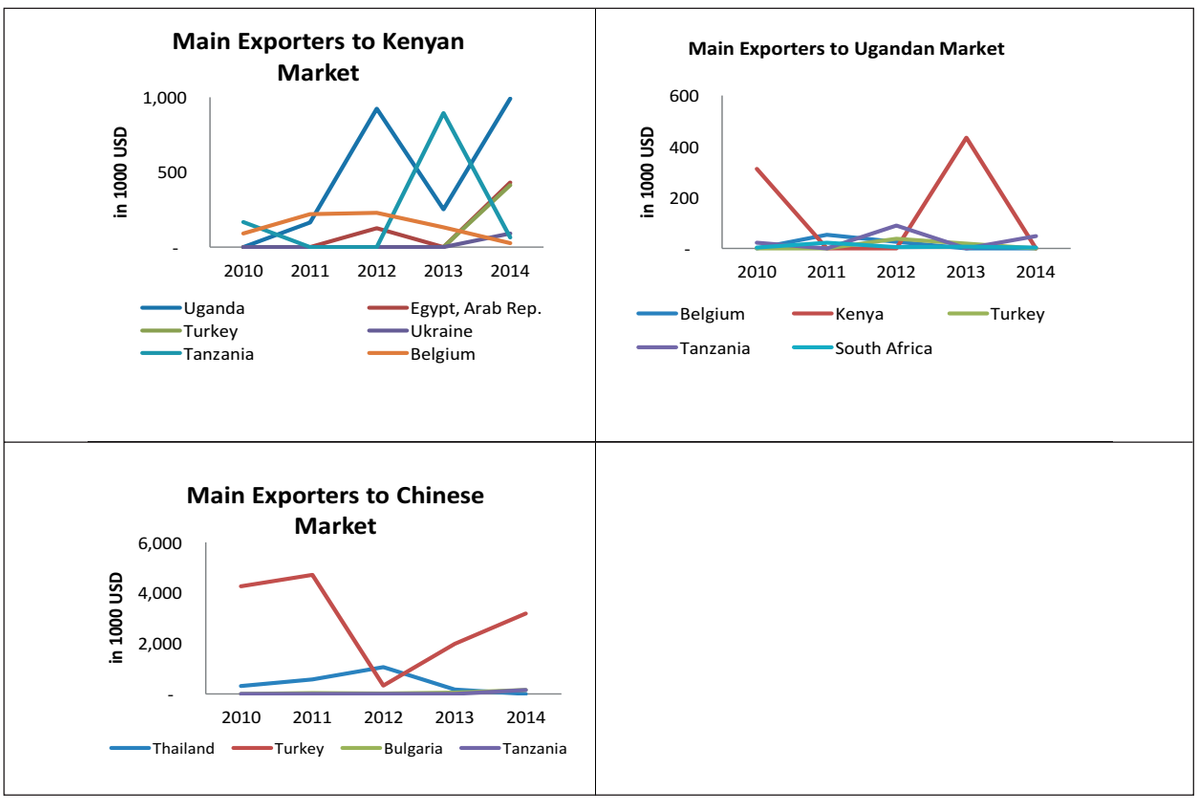
Figure 39 Main competitors in Tanzania's key refined sunflower oil markets (2010-2014)





By contrast, Tanzania holds 89% of the market share in Uganda. Nevertheless, the prime competitor is Kenya, which in the last year managed to export a significantly higher value than Tanzania did. This shows a very volatile situation. Tanzania and Uganda are direct competitors in the Kenyan market though Uganda had a significant lead in 2014. However, volatility characterized these EAC markets as Tanzania had the largest market share a year earlier. Egypt, Turkey and Ukraine have emerged as new suppliers to Kenya, reducing the importance of Belgium.

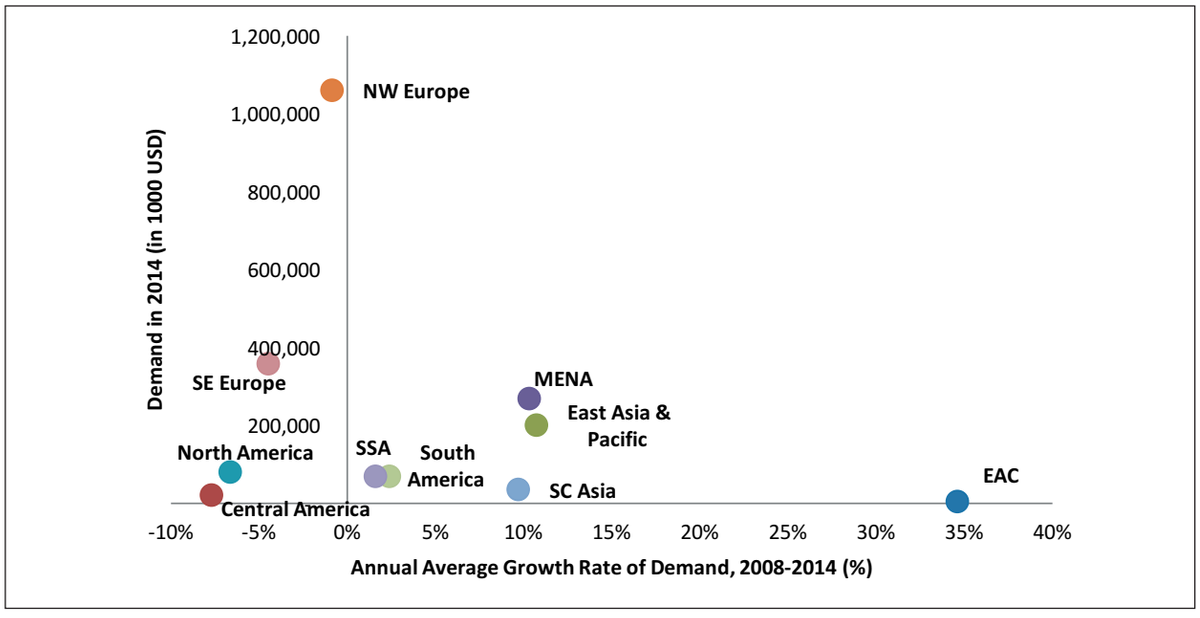
Figure 40 Main competitors in Tanzania's key refined sunflower oil markets (2010-2014) Cont.



Source: UN Comtrade

As in the case of the crude sunflower oil, an analysis of the demand for refined sunflower oil and on how fast it is growing is carried out also for regions not yet reached by Tanzania. Figure 41 illustrates this scenario. While demand is highest in Northern and Western Europe, they witnessed a decline in demand since 2008. The largest increase in demand comes from the EAC. Tanzania may therefore be interested in continuing and increasing its role as a supplier of refined sunflower oil to the region, along with crude oil.

Figure 41 Regional demand for refined sunflower oil (2008-2014)



Source: UN Comtrade

The following analysis addresses the issue of whether it would make sense to export refined sunflower oil to those economies where Tanzania is already exporting the crude form. Table 16 compares the growth in demand for crude and refined sunflower oil in Tanzania's key crude sunflower oil markets. In theory, in line with the idea of enhancing value addition of exports, it would make sense to explore the options of increasing exports of refined oils if demand for it is growing faster than that of crude sunflower oil. This, however, will again depend on a number of other factors, such as competition, quality and prices and possibility of reaching the markets. However, if there are already some exports of refined sunflower oil to these countries, this would be an indication that it is indeed possible.

From the table below we see that Kenya and Uganda present a higher growth in demand for refined sunflower oil. Kenya's growth is particularly strong. Both countries are already importing refined sunflower oil from Tanzania, which can only be expanded. Nonetheless, a more thorough observation of these demand trends is also necessary to build a more comprehensive picture.

Table 16 Growth in demand of Key markets of crude oil (2008-2014)

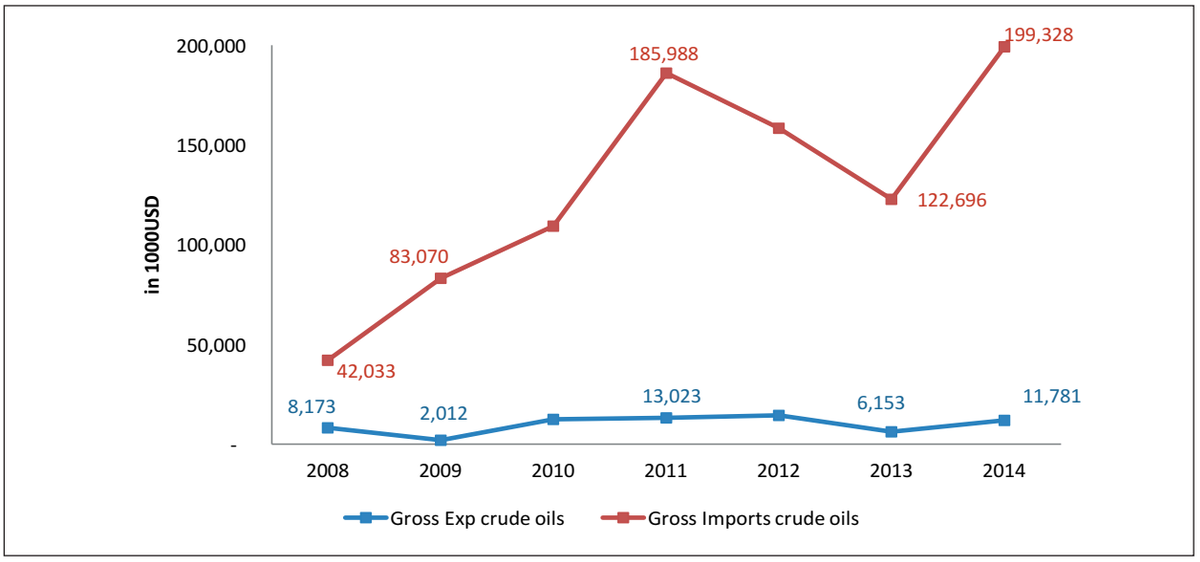
	Growth in Demand of key markets of Crude Oil (2008-14)	
	Crude Sunflower Oil	Refined Sunflower Oil
Belgium	-8%	-1%
Switzerland	2%	0%
Kenya (2008-2013)	2%	119%
Rwanda	231%	91%
Uganda	13%	23%

Source: UN Comtrade

Domestic demand for refined sunflower oil or substitutes

While waiting for disaggregated and recent national industrial data which can provide a more comprehensive picture of local production of sunflower oil, it is already possible to draw a preliminary analysis by cross-referencing export and import data as a proxy of domestic trends. As sunflower and palm oils (as well as others) are almost substitutes, they are grouped together here.

Figure 42 Tanzania's imports and exports of crude sunflower and palm oils (2008-2014)

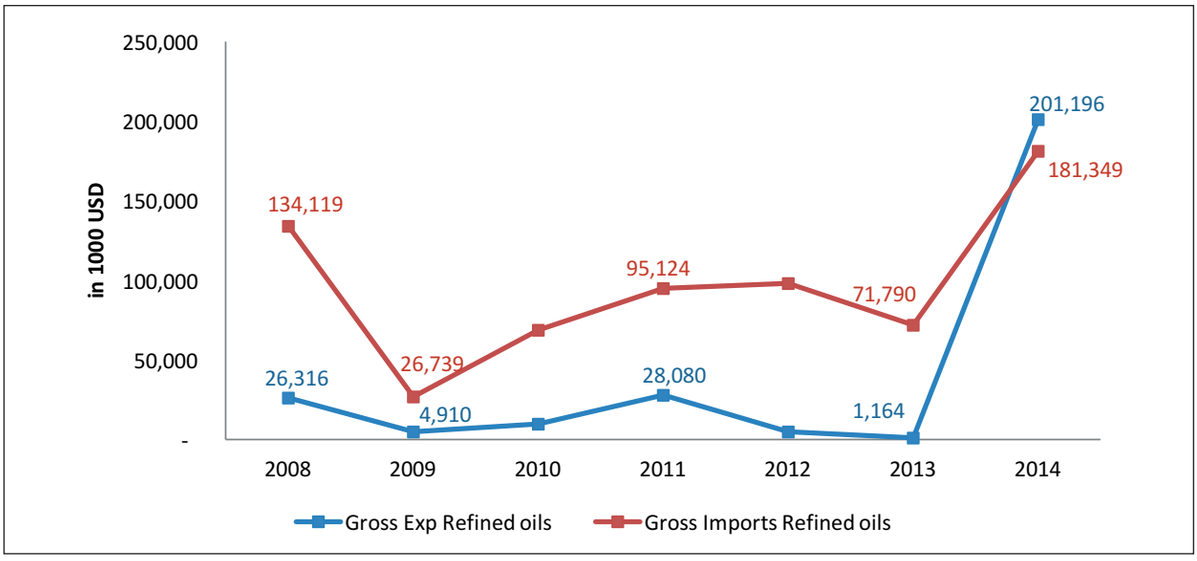


Source: UN Comtrade

Previous figure illustrates how the imports of crude oils are growing exponentially in Tanzania. While exports have also witnessed an increase, the gap between imports and exports has widened significantly. Noting that these imports have not (at least not largely) been used for re-exports or the exports of their refined forms, it can be assumed that these imports were indeed consumed domestically. National production should therefore cater significantly to this large and growing domestic demand as well.

When observing the trends of trade flows of refined sunflower and palm oils in Tanzania, we find that for the first time in 2014 Tanzania achieved a trade surplus. Indeed, until then (and since 2008) Tanzania had been importing more than it had been exporting. Nonetheless, we find that both imports and exports have a similar trend. This could mean that a part of these exports are indeed re-exports, while until 2014 the majority was still used domestically.

Figure 43 Tanzania's imports and exports of refined sunflower and palm oils (2008-2014)



Source: UN Comtrade

To conclude, Tanzania exports larger values of crude sunflower oil than refined, and it is a key supplier to a range of countries in Europe and Africa. However, it has only recently started to produce and export refined sunflower oil (since 2013/14). In the past years its exports have doubled. These are destined to a number of countries, rather than just one, including several African countries, Europe and China. From observing trends in demand, EAC seems to offer the most interesting and realistic market expansion prospects for Tanzania, both for crude and refined sunflower oils, although at the moment it is mainly focusing on the crude form, of which Tanzania is the leading EAC exporter. The fast growing market for refined sunflower oils within the EAC creates significant potential for further expansion of exports in the region. However, Tanzania faces strong competition from countries such as Uganda, Mozambique and Kenya, as well as from other countries outside the region, including Turkey, South Africa, Egypt and European countries. European markets and China should also continue to be targets for export expansion. Even if Tanzania's share in these markets is currently small, other examples have shown that countries can indeed catch up very quickly. Finally, the domestic market should remain a key destination for these products. Indeed, there is a very high national demand for such edible oils which is currently largely met by imports rather than national production.

C.2. Cotton Apparel Value Chain

Tanzania is among Africa's largest cotton producers. However, the processing of cotton within the country is limited. The Integrated Industrial Development Strategy states the need to focus on the exports of textiles. This sub-section will analyse the main products of the cotton textile value chain in terms of their exports. This exercise uses different product groups in the SITC Revision 3 classification. The breakdown of sub-products is illustrated as follows:

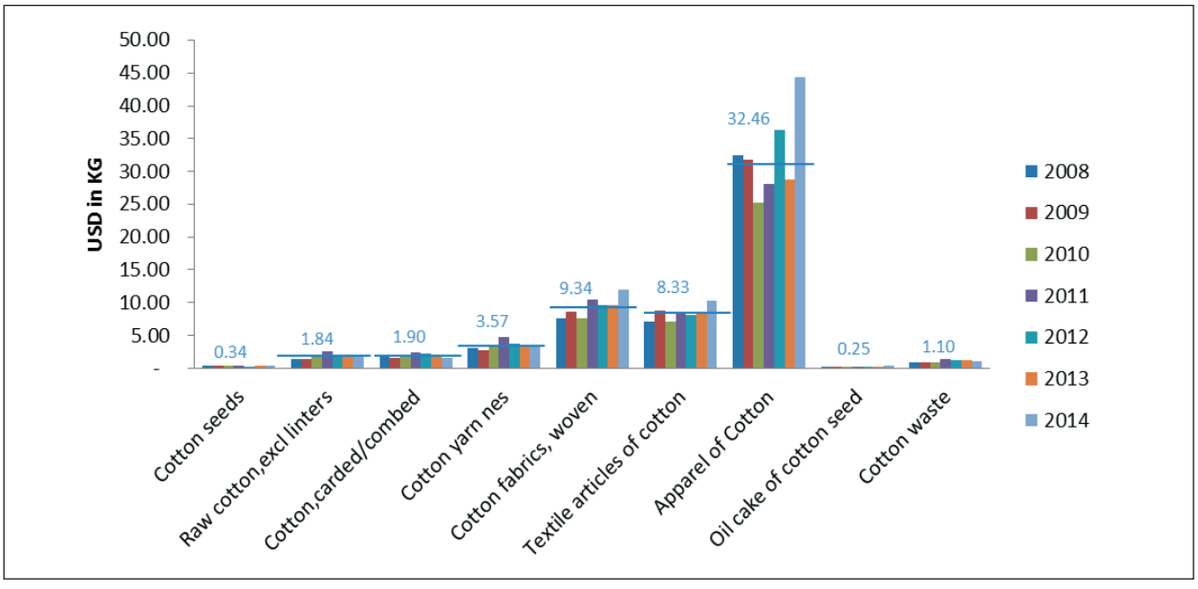
Product name	Product code in SITC Rev 3
Cotton seeds	2223
Raw cotton, excl linters	2631
Cotton, carded/combed	2634
Cotton yarn nes	6513
Cotton fabrics, woven	652
Textile articles of cotton	(Created product group: Cotton sacks/bags, cotton blankets, bed linen of cotton nes)
Apparel of cotton	(Created product group: Men/boy trousers cotton woven, men/boy trouser cotton k/c)
Oil cake of cotton seed	08133
Cotton waste	2633

The analysis in this sub-section will be shaped as follows. Firstly, it will compare the unit values of the different sub-products, and their trends over time. Global demand will then be analysed to understand which products are most requested and where demand is most dynamic. Thereafter, Tanzanian exports of these products will be compared to global demand. A more detailed analysis will then observe the destinations of raw cotton, cotton yarn, cotton fabrics and apparel of cotton.

Unit values of cotton and related products

The exporting of processed forms of cotton is high on the development agenda for Tanzania. For this reason, it is necessary to observe differences in prices of the products within the value chain. Figure 44 illustrates these.

Figure 44 Global unit values of cotton products (2008-2014)

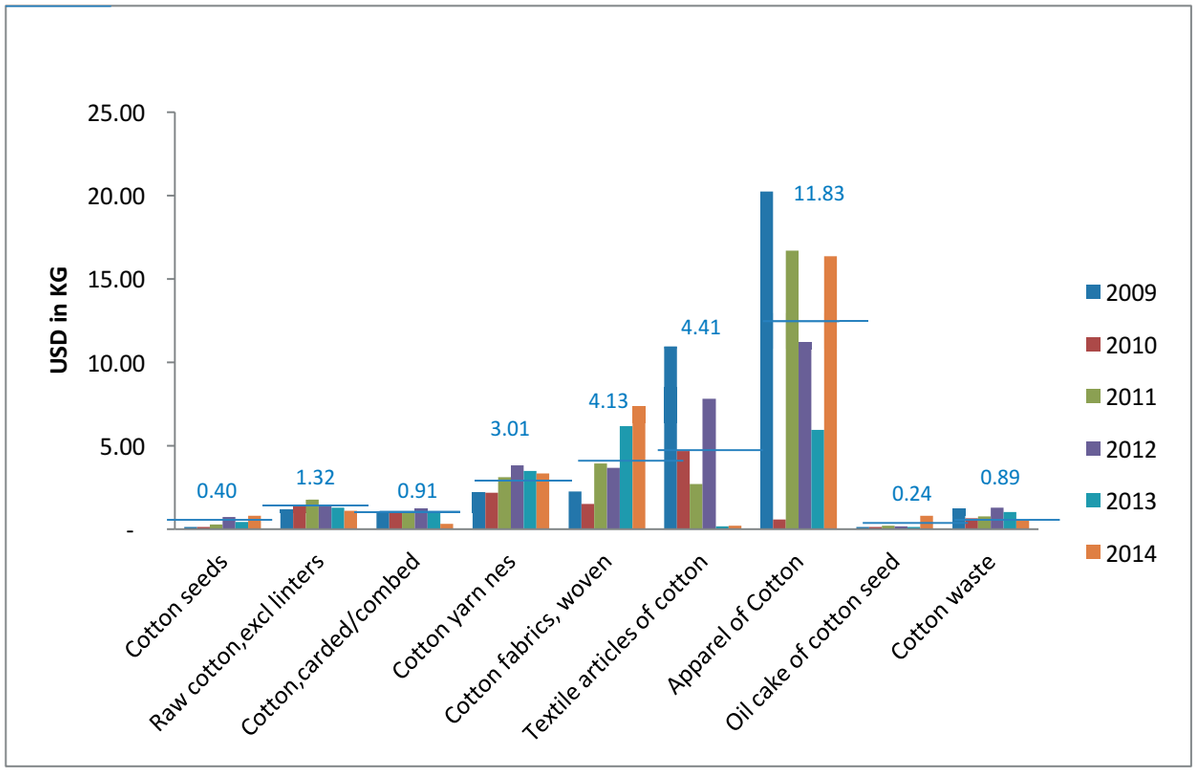


Source: UN Comtrade

On average, exporting products with some additional level of processing will increase the price. Apparel made of cotton has an average price which stands out from the remaining products in the chain. Cotton fabrics and textile articles have a higher price than cotton yarn, which in turn is more expensive than carded or combed cotton, and so on. Residuals such as oil cake from cotton seeds and cotton waste present lower values than the main products within the value chain. Throughout the years, we observe an overall increase in the prices of cotton fabrics, textiles and apparel (as well as oil cake of cotton seed), although with some fluctuations. Other cotton-related products have experienced a decline in prices since 2011.

The prices of the products exported by Tanzania (Figure 45) have been fluctuating to an even larger extent than the global prices, especially for apparel, textiles and fabrics products. Cotton apparel on average commands a higher price than less processed forms in Tanzania's exports as well. Nonetheless, Tanzania's prices of apparel, textiles and cotton fabrics are lower than world average prices. The price of raw cotton, Tanzania's largest cotton export (see below), is also declining, following global trends

Figure 45 Unit values of Tanzania's exports in cotton products

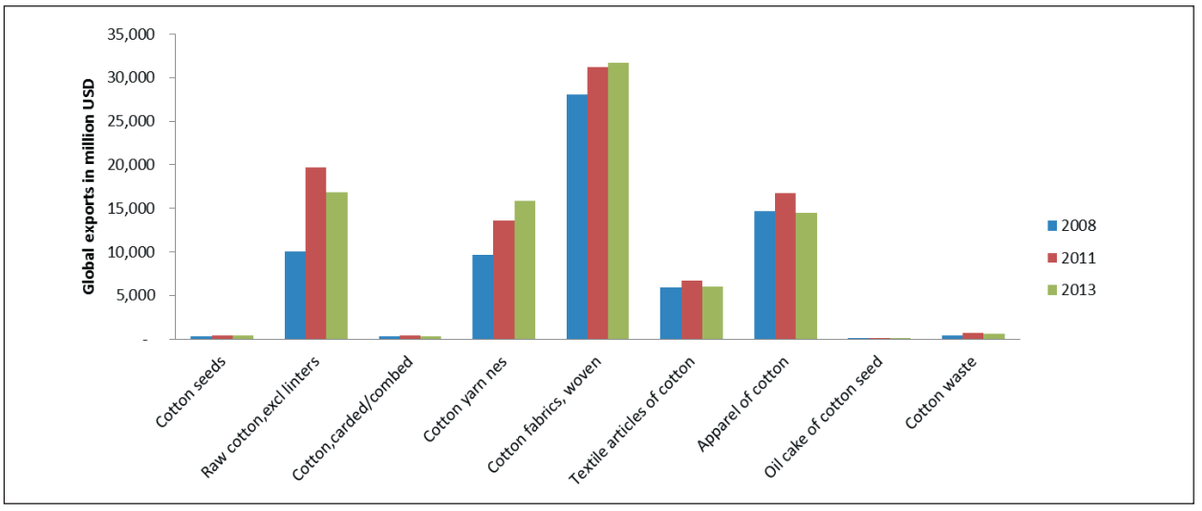


Source: UN Comtrade

Global demand versus Tanzania's exports of cotton products

Global demand is highest for woven cotton fabrics (Figure 46). This is followed by the demand for raw cotton, cotton yarn and apparel of cotton. While these large markets can be interesting, a (fast) growing market may be more attractive to tap into, as it provides an opportunity to capture a new market, one that has not yet been adequately supplied.

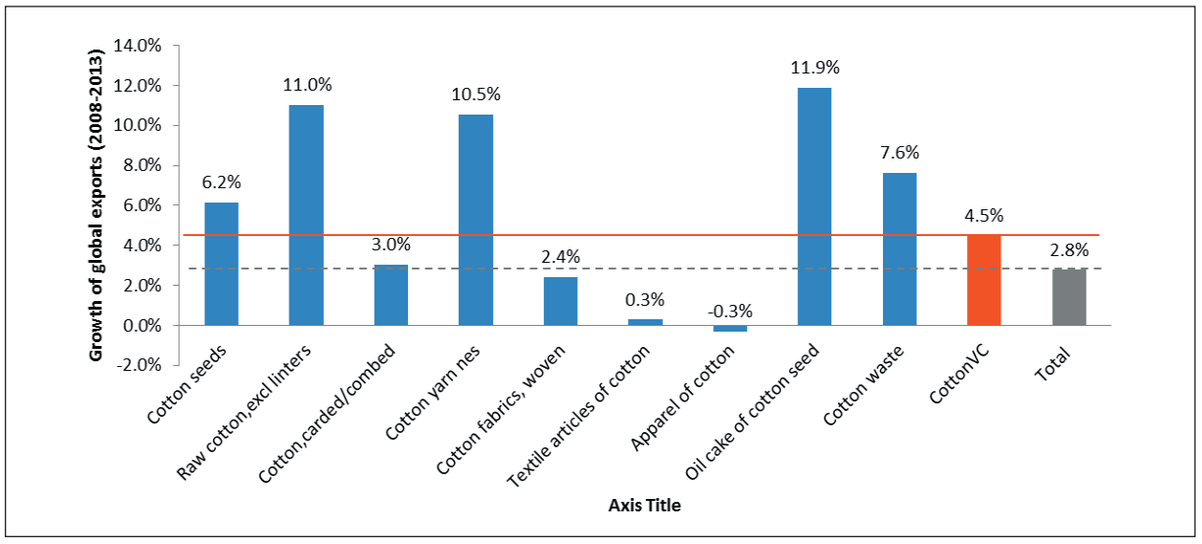
Figure 46 Global demand of cotton products (2008-2013)



Source: UN Comtrade

Figure 47 compares the growth rate in global demand for each product in the value chain with average growth in the value chain (orange) and the average growth in demand for all products traded. Between 2008 and 2013 both cotton yarn and raw cotton recorded growth in demand of over 10 %, far above the average of all products in the value chain. The high growth rate for demand for oil cake will be ignored in this analysis as the demand for this by-product is small. Most other products, including cotton fabrics, textiles and apparel have recorded slow or no growth at all.

Figure 47 Demand dynamism of cotton products (2008-2013)

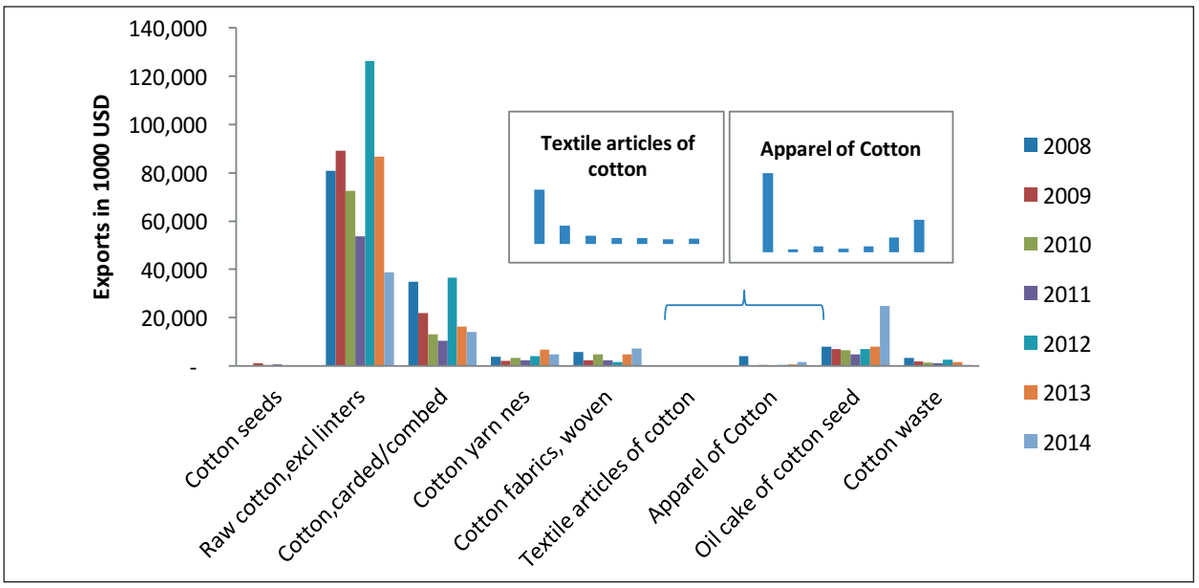


Source: UN Comtrade

Tanzania is exporting more raw cotton than any other cotton-related sub-products (Figure 48). In general, the higher the level of processing, the less Tanzania managed to export (with the exception of cotton seeds, and textiles, below apparel). Processing cotton into products with a higher value, and a larger (and growing) demand, would increase export earnings. The latest trends show Tanzania might be on the right track in terms of value addition in exports. Tanzania's exports in raw cotton have dramatically decreased throughout the last three years observed. While there was an increase of 12 % between 2008 and 2012, this was followed by a contraction of 45 % between 2012 and 2014 on average per year. At the same time, its exports of both cotton fabrics and apparel have increased, the latter

specifically since 2011. Although the absolute values may still be negligible, this indicates there is a movement (even if only slightly) in the direction of value addition.

Figure 48 Tanzania's exports of cotton products (2008-2014)



Source: UN Comtrade

Tanzania's markets for raw cotton

Tanzania's exports of raw cotton are mainly heading to Asia. Among the top ten destinations only one is not Asian, namely Mauritius. Most of the exports go to Thailand, followed by Vietnam. Both countries, as well as some of the others engage heavily in the textiles light manufacturing sector. While most of these countries increased their imports of raw cotton from Tanzania until 2012 (the exceptions being Thailand and Vietnam), Tanzania has since then been suffering from a contraction in demand from most of these Asian economies. China and Indonesia have particularly reduced their demand, at a rate of 80 % and 71 % per annum respectively.

Thailand, however, has been increasing its imports of raw cotton from Tanzania since 2012 by 41 % on average. Singapore has also significantly increased its demand by 158 % per annum. Nonetheless, global trend remains negative, and strong reliance on a small number of markets only increases vulnerability.

Table 17 Demand dynamism for raw cotton (2008-2014)

	Import in 1,000 USD			Growth Rate (CAGR)	
	2008	2012	2014	2008-2012	2012-2014
Thailand	7,501	4,859	9,662	-10%	41%
Vietnam	19,122	12,382	6,212	-10%	-29%
India	27,408	28,759	5,947	1%	-55%
Singapore	224	693	4,625	33%	158%
Indonesia	15,600	30,404	2,616	18%	-71%
Malaysia	1,710	5,749	2,224	35%	-38%
Bangladesh	1,140	5,363	1,947	47%	-40%
Mauritius	364	3,877	1,841	81%	-31%
China		29,354	1,168		-80%
Turkey	99*	549	770	77%	18%

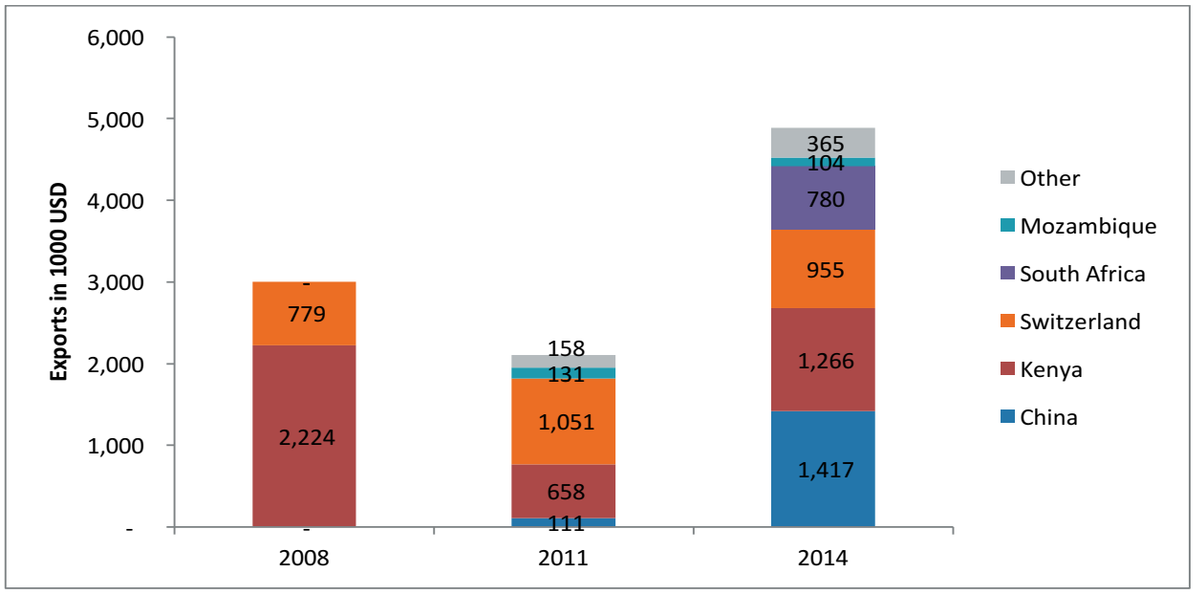
*Value for 2009 (2008 data missing).
Source: UN Comtrade

C.2.1. Cotton Yarn

With global demand of cotton yarn increasing faster than most other cotton products and the unit values being higher than that of raw cotton, an analysis of Tanzania's exports of these products as well as global demand trends is warranted.

Tanzania's main market for its cotton yarn exports is China (Figure 49). Nonetheless, this is a new market for Tanzania as it exports mainly to Kenya and Switzerland. 2014 was also the first time that Tanzania exported to South Africa. The five markets mentioned below made up 95 % of all of Tanzania's cotton yarn exports in that year.

Figure 49 Destinations of Tanzania's cotton yarn exports (2008-2014)



Source: UN Comtrade

Table 18 indicates that demand has expanded in the top five markets for Tanzania. Nonetheless, South Africa and Kenya exhibited only minimal growth of an average of 1 percent per annum. With 40 % of Tanzania's cotton yarn exports transported to Kenya (and 4 % to South Africa) the slow growth of the market is worrisome. Interestingly, while China is experiencing a strong decline in demand for raw cotton (Table 17), it is in fact increasing its imports of cotton yarn at a rate of 43 % on average per year. Tanzania was able to capture some – although a very small share – of this market, as it increased its exports of cotton yarn to China. The Chinese market is currently the largest globally.

Demand from Mozambique's – although significantly smaller – has also been expanding substantially (48 % per annum). With both these markets already being among the most important destinations for Tanzania, their high growth becomes particularly attractive.

Table 18 Demand trends of Tanzania's main cotton yarn export markets (2008-2014)

	Market for Cotton Yarn (1000 USD)			Tnz's market share (2014)
	2008	2014	CAGR (08-14)	
Switzerland	32,019	38,238	3%	3%
China	682,887	5,940,288	43%	0.02%
Kenya	3,023	3,182	1%	40%
Mozambique	122	1,299	48%	8%
South Africa	20,206	21,498	1%	4%

Source: UN Comtrade

Who are the main competitors for Tanzania in its key markets?

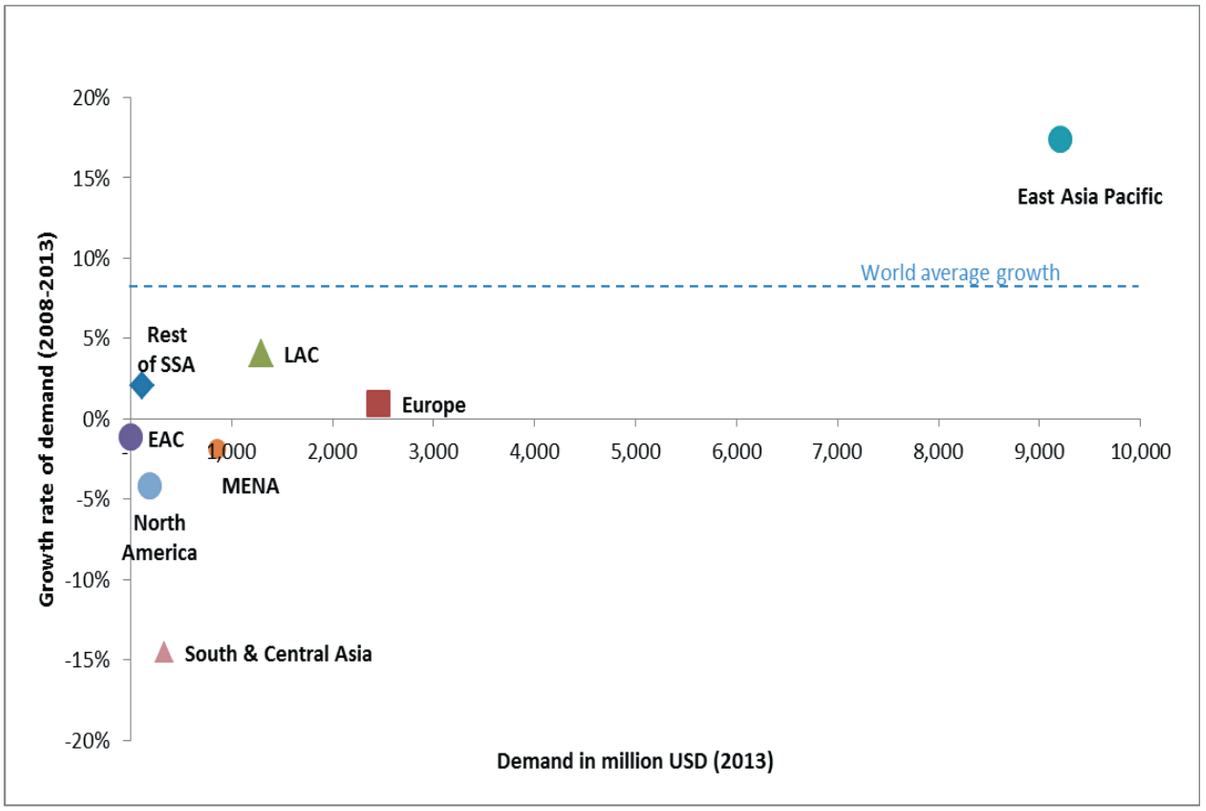
Tanzania is the 17th largest exporter of cotton yarn to China. The largest suppliers are mainly other Asian economies, particularly India (which caters for a quarter of China's demand), Pakistan, Vietnam, Hong Kong and Indonesia. Ethiopia is the only African economy that succeeded in shipping more cotton yarn to China than Tanzania, though Mauritius has managed to catch up with the same level as Tanzania in 2014. All major exporters of cotton yarn to China in 2014 also boasted very high export growth rates, with the exception of Japan (-11 % per annum).

Tanzania ranked as the third supplier to Mozambique after Zimbabwe and China, although China and Tanzania are exporting very similar values. Zimbabwe climbed to the number one exporter in this southern African market in 2012. Having maintained its leading position since then, it indicates it remains a strong competitor for Tanzania.

Regional Demand for cotton yarn

Figure 50 below provides an overview of the demand and demand dynamism for cotton yarn per region irrespective of whether Tanzania is an exporter to these markets. East Asia and the Pacific stand out as the region where demand is growing above world average. In addition, this region's absolute demand is significantly higher than that of any other region globally. In particular, 65 % of its demand comes from China, which is growing at 43% (see Table 18). There are a number of other markets in this region showing high growth rates as well, although their markets are significantly smaller. Vietnam, for example, has 7 % of the region's demand and has been growing at 51 % per annum since 2008.

Figure 50 Regional demand for cotton yarn (2008-2013)



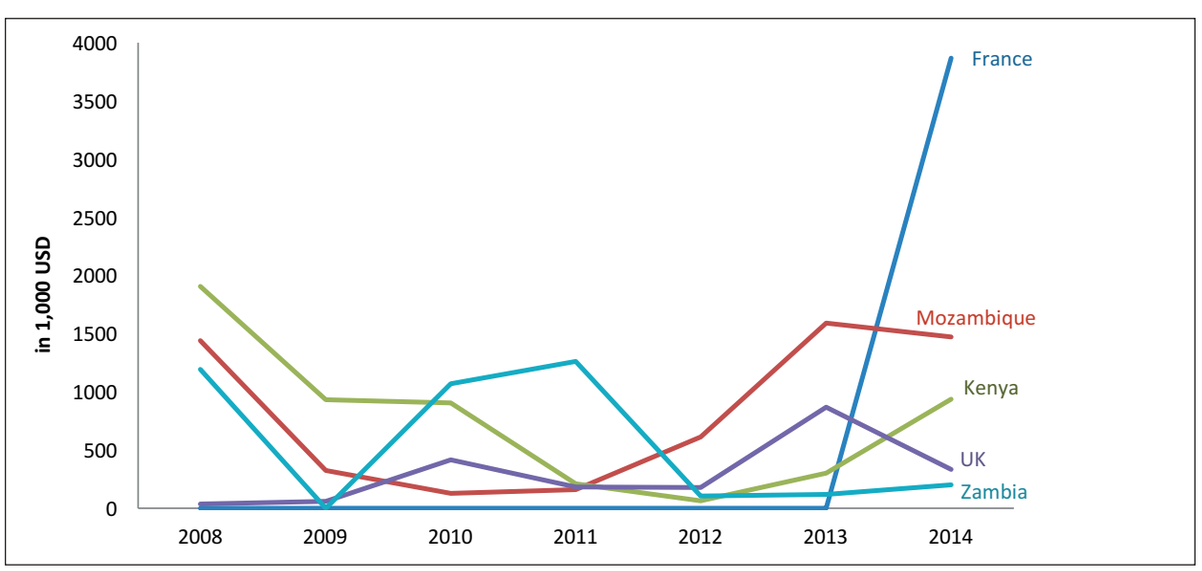
Source: UN Comtrade

C.2.2. Cotton Fabrics (woven)

Global demand for cotton fabrics ranked first among all types of cotton products along the chain. With prices generally higher than those of cotton yarn, this sub-section aims to understand Tanzania's markets and global demand.

Tanzania's most important external buyers of its cotton fabrics are its neighbouring countries, Mozambique, Zambia and Kenya, as well as France and the UK (Figure 51). In 2014 France suddenly became the main importer for Tanzania's products, from no or minimal imports before, confirming the volatility of such markets. Meanwhile, UK's demand has been fluctuating. Neighbouring countries seem to have a more constant demand for Tanzania's cotton fabrics. Kenya and Mozambique showed similar reciprocal trends, with a demand contraction in the first half of the period, followed by an increase thereafter (since 2010 for Mozambique and since 2012 for Kenya). Asian economies (mainly China), important importers of Tanzania's raw cotton and yarn, not surprisingly do not figure among main destinations for cotton fabrics, as they still represent important textile processing industries worldwide.

Figure 51 Main destinations of Tanzania's woven cotton fabrics (2008-2014)



Source: UN Comtrade

To gain further understanding of the potential to continue or increase exports to these main markets for Tanzania, Table 19 below presents the size and growth of the demand from them and compares this with trends of Tanzania's respective market shares.

Table 19 Demand for cotton fabrics of Tanzania's main markets (2008-2013)

	Cotton fabrics (woven) Imports in 1000 USD		CAGR	Tanzania's share in market		Change in Share
	2008	2014	2008-2014	2008	2014	
France	598,504	347,358	-8.7%	0.0002%	0.0044%	0.004%
Mozambique	3,116	12,774	26.5%	0.8854%	9.6238%	8.738%
United Kingdom	349,721	348,497	-0.1%	0.0099%	0.0900%	0.080%
Kenya	90,261	60,398	-7.7%	1.4579%	1.5248%	0.067%
Zambia	1,326	918	-5.9%	34.8614%	4.0247%	-30.837%

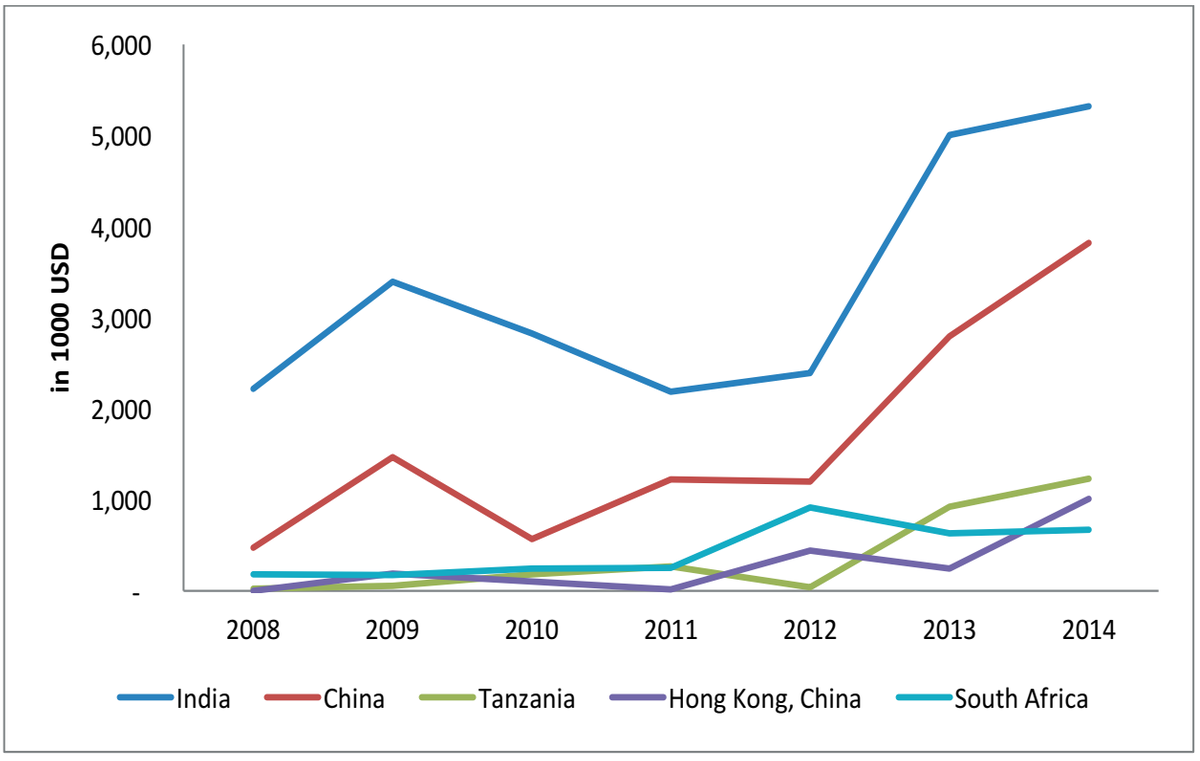
Source: UN Comtrade

France and the UK represent the largest markets, though they have been decreasing their demand for cotton fabrics since 2008. Kenya's and Zambia's demand has also contracted. This leaves Mozambique as the only country in this sample with a growing demand for cotton fabrics, at a rate of 26.5 % per annum on average, helping Tanzania to increase its market share almost up to 10 %.

Main Tanzanian competitors in Mozambique's market

Mozambique presents an interesting market to observe the performance of Tanzanian fabrics exports, being also a neighbouring country, fast growing and open to different competitors from South Africa and East Asia. Indeed, Mozambique's main suppliers of cotton fabrics are India and China, well ahead of Tanzania, Hong Kong and South Africa. Since 2012, imports from India, China and Tanzania peaked significantly (although Tanzania slowed down in 2014). Exports from Tanzania and South Africa followed a similar pattern between 2008 and 2011, with Tanzania overtaking South Africa since 2012 (Figure 52)

Figure 52 Main competitors for Tanzania in Mozambique's cotton fabrics market (2008-2014)



Source: UN Comtrade

Regional demand for cotton fabrics

In an attempt to identify which regions present the fastest growing (and largest) demand for cotton fabric products, we can observe an overall global decline in demand since 2008 (Table 20).

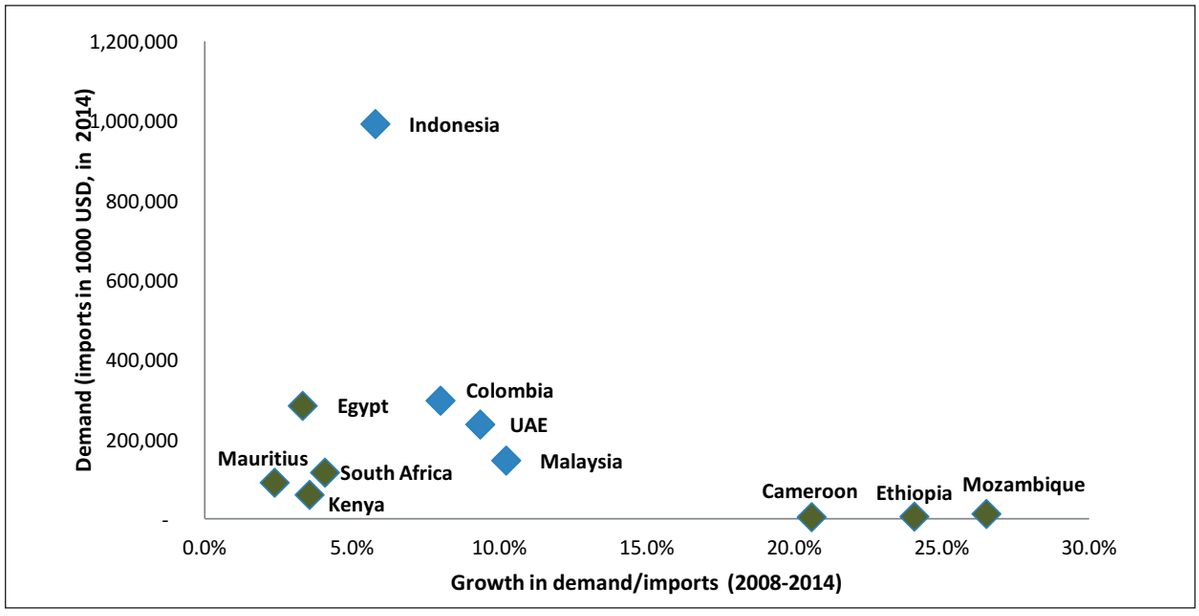
Table 20 Regional demand for cotton fabrics (2008-2014)

Cotton Fabrics (woven) Demand	2014 (1000 USD)	Growth (CAGR) 2008-2014
East Asia & Pacific	4,658,897	-7%
Northern & Western Europe	4,068,916	-4%
Southern & Eastern Europe	2,005,657	-4%
MENA	1,899,504	-8%
North America	995,821	-2%
South America	940,618	-2%
Central America	919,426	-3%
South and Central Asia	824,653	-16%
SSA	523,773	-19%

Source: UN Comtrade

Figure 53 illustrates in more detail the 2014 trends in selected economies worldwide, which recorded the highest demand growth rate above the world average (in blue). It also includes the African countries experiencing a growth in demand, regardless if it's higher than the world average (in green). These together represent some of the most promising markets for Tanzania.

Figure 53 Demand trends in selected fast growing markets for cotton fabrics (2008-2014)



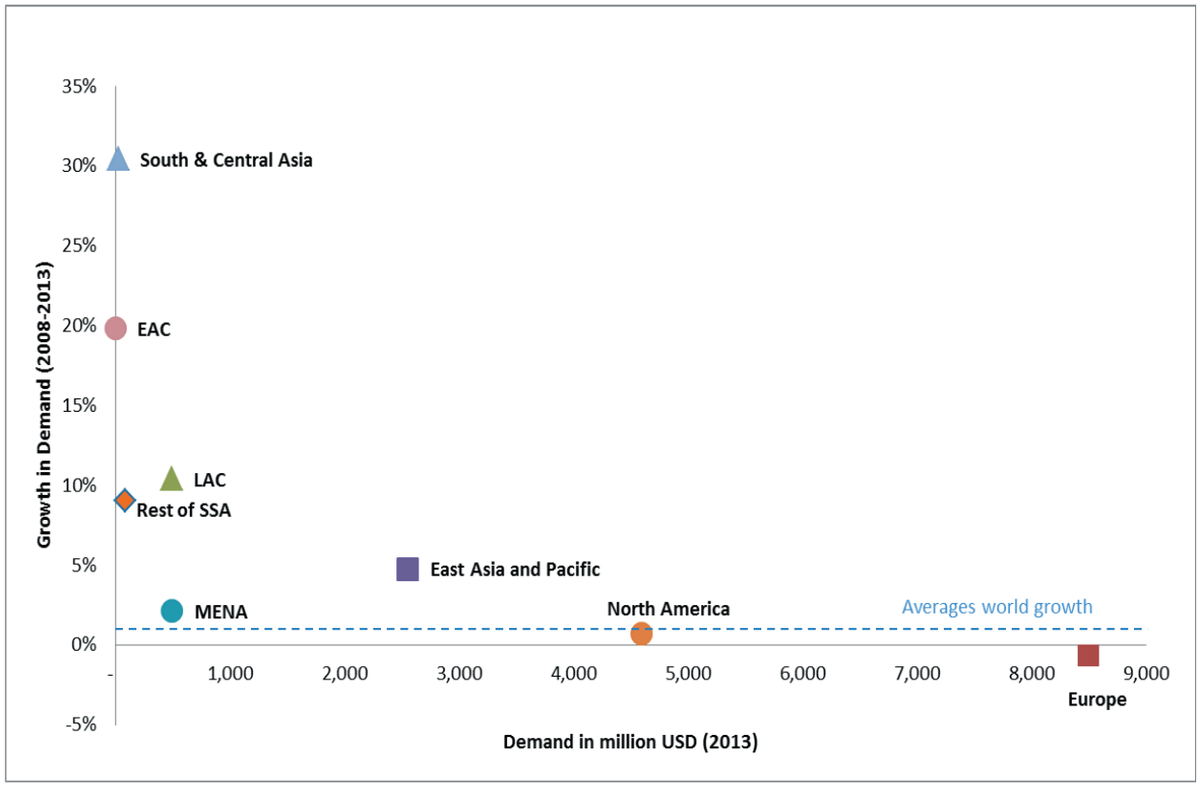
Source: UN Comtrade

As expected, whereas most of the African economies present smaller markets, some, especially in Mozambique, Ethiopia and Cameroon show strong demand dynamism for cotton fabrics. Conversely, the non-African countries in the figure record higher absolute demand than most of the African economies observed, in particular Indonesia, but are accompanied by lower growth rates of between 5 to 10 percent.

C.2.3. Cotton Apparel

Exports of cotton apparel are minimal in Tanzania, though the value obtained from it is the highest. Earlier in the section it was observed that global demand has not been growing in this sector and even underwent a slight contraction. This calls for an identification of markets that are still growing in their demand for cotton apparel. Disaggregating the demand by regions, it becomes clear that there are a number of smaller regions where demand is still growing at a fast rate. EAC's demand is growing by roughly 20 %, whereas in the rest of Sub-Saharan Africa by 9 %, South and Central Asia by 30 % and East Asia and the Pacific by roughly 4 %. It becomes evident that the global picture presented earlier was strongly influenced by the developments in Europe and North America, where demand seems to be saturated (see Figure 54).

Figure 54 Demand for cotton apparel by region (2008-2014)



Source: UN Comtrade

Tanzania's export markets for cotton apparel

Tanzania's modest exports of cotton apparel are concentrated in a handful of markets. Just under half of the apparel is exported to South Africa, another 27 % to the US whereas the rest mostly goes to Switzerland, Kenya and Zimbabwe (Table 21). These five countries together import 98 % of Tanzania's cotton apparel exports. At the same time, however, due to the low export values of these products, Tanzania's market share in these countries is small, with the largest being 3 % for Zimbabwe, followed by just over 1 % for Kenya. While this illustrates Tanzania's struggle to be competitive in this sector, the fast demand growth in both these East and Southern African economies indicate a potential to expand its presence. Meanwhile, the fact that over a quarter of its exports goes to a shrinking market (the US), plans to further diversify Tanzanian export markets of cotton apparel need to be considered.

Table 21 Top five markets for Tanzania's cotton apparel (2008-2014)

	Demand in 1000 USD			Tnz exports to market in 2014		Share of total Tnz exports of cotton apparel
	2008	2014	CAGR (08-14)	Value (1000 USD)	Market Share	
South Africa	67,709	99,857	6.7%	809	0.81%	49%
United States	3,573,122	3,524,456	-0.2%	448	0.01%	27%
Switzerland	191,737	222,184	2.5%	197	0.09%	12%
Kenya	2,265	12,870	33.6%	136	1.06%	8%
Zimbabwe	133	1,085	41.9%	32	2.99%	2%

Source: UN Comtrade

Within the EAC 95 % of cotton apparel demand comes from Kenya and Tanzania itself. While this indicates that there is domestic demand in Tanzania which would require some attention, other Partner States' markets seem to be less promising at present. At the same time, however, there are a number of African economies showing a large and (fast) growing demand - the main ones being Sudan, Angola, Ghana and Namibia, after South Africa.

Essentially while prices and demand are higher for cotton products with more value added, Tanzania is still mainly exporting raw cotton – and it does so mostly to Asian economies. Undertaking activities that will lead to cotton yarn can create substantially more revenue due to higher prices and large and fast growing demand. At present Tanzania is exporting cotton yarn to countries in different continents, including to China and Mozambique, which are both expanding markets with growth at over 40 % per annum. Tanzania's main competitors in the Chinese market are other Asian economies and Ethiopia, while in Mozambique it is Zimbabwe and China.

The main destinations for Tanzania's cotton fabrics (which is globally sold at a slightly higher price) do not include Asian economies, but instead include France, Mozambique, Kenya the UK and Zambia. Out of these, Mozambique's seems to be the most promising, as its growth in demand sailed recently at 27 % per annum. Additionally, out of all destinations, Tanzania has the largest market share in its neighbouring country which provides the basis for further expansion. However, the main competitors are India and China, Hong Kong and to a lesser extent South Africa. In sum, Mozambique can provide the perfect testing ground to assess the performance of Tanzania's capacity in cotton export as first step before hopefully expanding at a global scale.

Tanzania's exports of cotton apparel, though only recently showing signs of recovery, are mostly reaching markets in South Africa, the US, Switzerland, Kenya and Zimbabwe (hence, similar regions to those of cotton fabrics). Among these countries, the highest growth in demand is from Kenya and Zimbabwe. Indeed, while demand for these products are dropping in Europe and stagnant in North America, the importing of cotton apparel in Sub-Saharan Africa, especially in the EAC, is on the rise, as it is in South and Central Asia and in Latin America and the Caribbean.

In order to increase revenues from exporting cotton products, it is necessary for Tanzania to maintain and improve its strong position in some of its current markets, as well as identify economies with dynamic demand into which it can diversify so that Tanzania can take advantage of high demand elasticities. Such diversification will not only increase income but also reduce vulnerability.

D

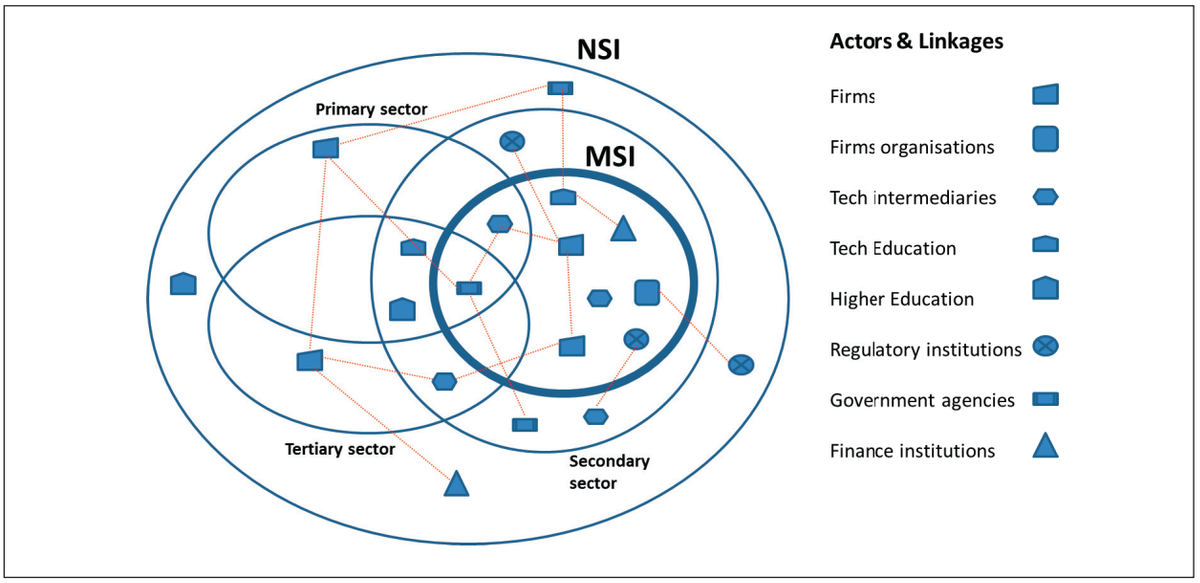
The Tanzanian Manufacturing System: Industrial Drivers, production linkages and public technology intermediaries

Tanzania is a fast growing economy, with rates of growth above the average sub-Saharan Africa since 2005. As discussed in Section B, Tanzania aspires to enter a new path of manufacturing development and, thus, to become a middle-income country by 2025. Manufacturing industries are critical for the achievement of sustained and more inclusive growth, as well as for increasing value addition in the agricultural sector which is still dominant in the country. This developmental process involves multiple actors within the economic system. Alongside private companies, Universities and vocational schools play a critical role in conducting basic research and developing a skilled and technically capable workforce. A number of other intermediate institutions such as sector and technology-focused applied research centres present in Tanzania support firms and farms in the absorption of technologies and innovation, in increasing productivity and process efficiency as well as in reaching international product standards. Productive companies are the cornerstone of the industrial capabilities' development process, as they have to continuously invest in their internal resources, scale up production and introduce new products if they want to create and capture more value in the domestic and international markets. Investments in technology and sustained innovation require financial credit, regulatory frameworks and various forms of public support, especially in its infant stages. Therefore, banks, government departments and a number of other public and private institutions can also play a critical developmental role. All these actors, infrastructure and institutions constitute the *National System of Innovation* (NSI) (Freeman, 1987; Lall, 1992; Malerba and Mani, 2009).

Within a country's national system of innovation there are a number of actors primarily involved in the transformation of its manufacturing sector. The government can play a developmental role in the construction of a sectoral system of innovation supporting the increasing competitiveness of its nascent manufacturing industries – *Manufacturing System of Innovation* (MSI). The Manufacturing system of innovation includes primarily private manufacturing companies, but also a number of public institutions supporting technology development, products and processes upgrading. Each actor in this system is endowed with different sets of production, technological and innovation capabilities and make investments contributing to the overall fixed capital formation in the country. Manufacturing firms from different sectors

and of all sorts, domestically or foreign owned, private or public, are connected by multiple types of linkages. These are mainly production linkages – both backward and forward, but also technological linkages where it comes to technology diffusion and adaptation (Andreoni and Gregory, 2013; Andreoni and Chang, 2016). Figure 55 provides a graphical representation of these different production systems and their actors.

Figure 55 National (NSI) and Manufacturing (MSI) System of Innovation



There is plenty of historical evidence – for example among the country comparators selected in section B – suggesting that all countries that managed to industrialise and increase the overall competitiveness of their economy and growth potential, experienced two fundamental processes (Bairoch, 1993; Chang, 2002; Reinert, 2007; Khan, 2013; UNIDO 2013; Andreoni, 2015). First of all, they managed to expand their overall production capacity via sustained investments in capital goods and infrastructure and, even more critically, they succeeded in building their industrial capabilities consistently over time. These are the two main industrial drivers underpinning processes of structural change and manufacturing development. The second process characterising successful catching up economies is related to the increasing diversification of the productive economy and, more critically, the increasing deepening and multiplication of the backward and forward linkages between productive companies within the country (Hirschman, 1958 and 1977; Andreoni, 2016). These linkages are valuable relationships in the sense that through them domestic value addition is increased over time and the overall value creation and capture opportunities are expanded for all the domestic productive companies.

For these reasons it is important to assess to what extent Tanzania has been able to develop its industrial capabilities and intensify its domestic linkages towards increasing value creation, addition and capture. Given the limited availability of consistent and updated data, we will focus on the medium-long term cycle of industrial capabilities development and accumulation for Tanzania in view of extracting evidence on the general trends. This analysis is a starting point for designing policies supporting the development of the Tanzanian manufacturing system.

D 1. Industrial Capabilities in Tanzania

Countries' industrial capabilities are various types of firms' competencies (associated with production and its organisation, technological change and innovations) as well as firms' production capacity (determined by investments in machines, equipment and other capital goods). Countries' industrial capabilities also relate to the physical and institutional infrastructure supporting the overall productive economy. This is why countries' industrial capabilities are the main 'drivers' and 'enablers' of countries' industrial competitiveness (Lall, 2001; Andreoni, 2011). The following table 22 provides a first taxonomy of the different and complementary set of industrial capabilities at both the country and sector level. In fact, the majority of these industrial capabilities are sector specific, that is, they allow the performance of different production, organisational and technological functions in different sectors.

Table 22 Industrial capabilities taxonomy

Industrial capabilities taxonomy	
COUNTRY-LEVEL INDUSTRIAL CAPABILITIES OWNED BY FIRMS (AND OTHER TECH/RESEARCH FOCUSED ACTORS)	
Production capacity	Scale-appropriate assortment of equipment, machinery and other capital goods
Production capabilities	
- *Individual capabilities*	Skills, experiences and productive knowledge that workers/individuals require to choose, install and maintain capital goods, and to operate various technical functions
- *Organisational capabilities*	Skills, experiences and productive knowledge that organisations require to operate technical and organizational functions; perform and monitor the execution of a set of interdependent productive tasks given certain time and scale constraints
Technological capabilities	Capabilities needed to generate, absorb and manage technological and organisational change
Innovation capabilities	Capabilities needed to innovate across different organisational and technological functions
COUNTRY-LEVEL INDUSTRIAL CAPABILITIES RELATED TO PHYSICAL AND INSTITUTIONAL INFRASTRUCTURE	
Infrastructure capabilities	Different types of physical and institutional infrastructure reducing learning and transaction costs for the overall economy

Source: Mahmood, Andreoni and Chang, 2016

According to the amount and quality of the industrial capabilities available in a certain country, and given the ability of its entrepreneurs to identify and capture productive opportunities, productive firms will undertake production processes in a certain combination of sectors and industries. They will also experience cumulative processes of learning and capabilities building triggered by 'internal compulsions' in production, that is, the need to solve production, technical and organisational problems (Andreoni, 2014). As a result of these dynamics, a certain amount of industrial capabilities develops and accumulate within firms, while others are simply transformed or even lost. In turn, these new developed capabilities are continuously deployed into production and affect the same learning processes from which they have been originated – i.e. there are feedback mechanisms.

What are the production and organisational capabilities of Tanzanian manufacturing firms?

Firms' capabilities are personal and collective competencies, skills, productive knowledge and experiences needed for firms to perform different productive tasks as well as to adapt and undertake in-house improvements across different technological and organizational functions. From a *'static efficiency' point of view, production and organisational capabilities* are *competencies, skills, productive knowledge and experiences* whereby productive agents and organisations select, install and maintain capital goods; operate technical and organisational functions; perform and monitor the execution of a set of productive tasks (Andreoni, 2011; Khan, 2013).

Workforce skills constitute that know-how base on which firms rely for absorbing and adapting technologies to local conditions, modifying organizational practices and new work methods: from the simple re-arrangement of production tasks up to the introduction of information technologies for process control, inventory systems and quality management. The education system, from primary up to tertiary education, as well as technical and vocational schools are the main suppliers of skills. The table 23 below shows the share of secondary and tertiary educated in the total population. Tanzania has increased its share from 1.12% in 1990 to 2.56% in 2010, although not as significant as other countries: Kenya (3.27% to 16.7%), Rwanda (2.42% to 6.69%), South Africa (11.49% to 54.22%), and Vietnam (4.33% to 22.7%).

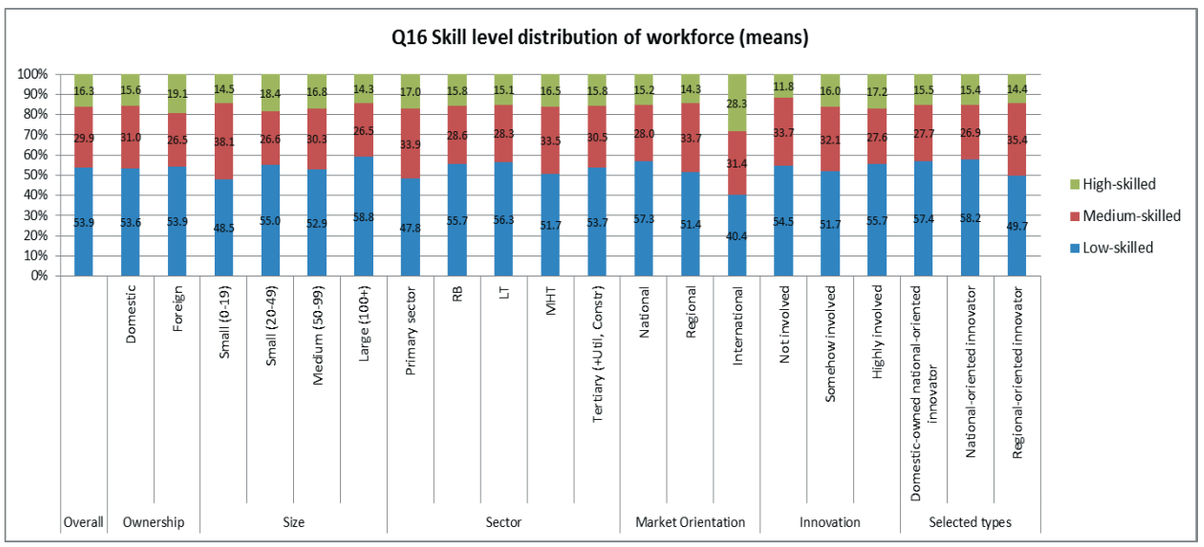
Table 23 Share of Secondary and Tertiary Educated in Total Population

	1990	1995	2000	2005	2010
Tanzania	1,12	1,23	1,05	1,44	2,56
Kenya	3,27	4,97	7,78	12,36	16,7
Rwanda	2,42	3,06	3,86	5,16	6,69
Burundi	1,83	2,43	2,92	3,86	5,51
Uganda	1,63	2,78	3,76	5,9	7,25
Mozambique	1,01	1,09	1,58	2,12	3,64
Senegal	3,93	4,37	3,8	3,81	3,44
Ghana	12,27	14,07	16,96	19,09	19,94
South Africa	11,49	26,78	18,99	31,32	54,22
Vietnam	4,33	7,7	11,56	16,79	22,7

Source: UNESCO

The TICR 2012 provided an in-depth analysis of the skills situation in Tanzania. The UNIDO skills survey revealed how skills were distributed differently across sectors but that there were fundamental problems of skills gaps and quality across all sectors as well as problems related to the mismatch between skills demand and supply (Figure 56).

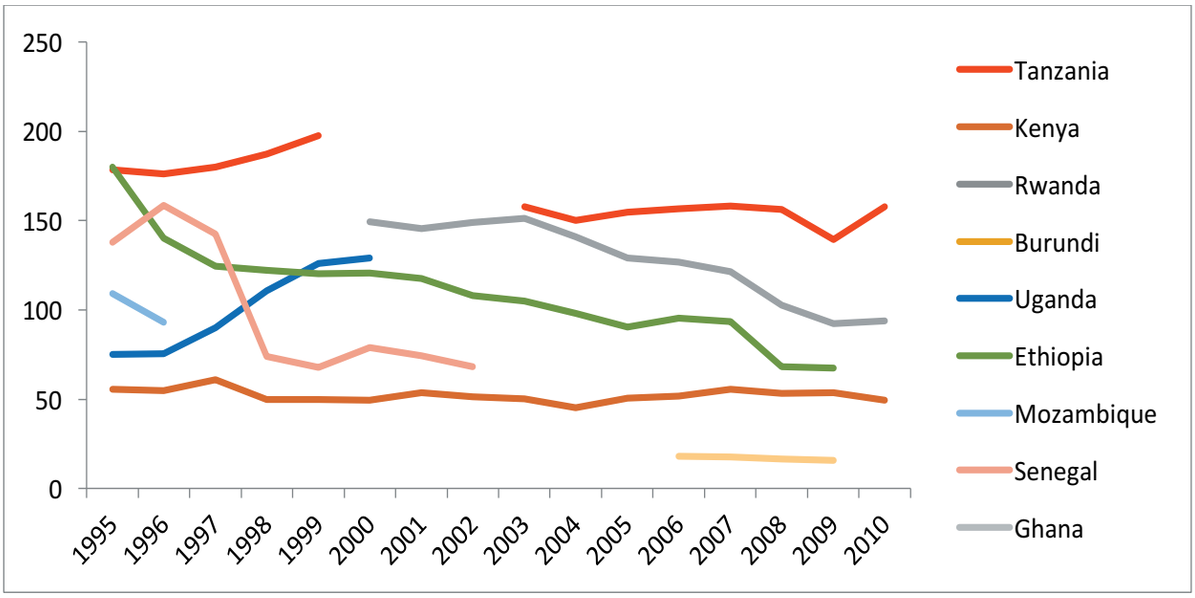
Figure 56 Skills level distribution of the workforce in 2011



Source: MIT and UNIDO, 2012

Industrial skills however do not simply develop via formal education. Various forms of learning at work and re-skilling, particularly in manufacturing industries, are also important for 'experience-based technical skills' development as well as for the transformation of 'formal education-based skills' in production capabilities. This means that with the expansion of manufacturing employment, countries tend to experience an increase in the workforce skills as an increasing number of people have the opportunity to develop their skills in the manufacturing shop floor (Lall, 2001). Figure 57 below shows the number of employees per manufacturing establishment. We observe that Tanzania (dark blue line) has an above average and stable amount of employees in manufacturing firms (around 160 between 2003 and 2010), whereas other countries show declining numbers (e.g. Vietnam from 150 in 2000 to 93 in 2010), while some other show steady low numbers of employees per establishment (e.g. Kenya; around 50 per establishment). Section E provides more detailed information on employment trends.

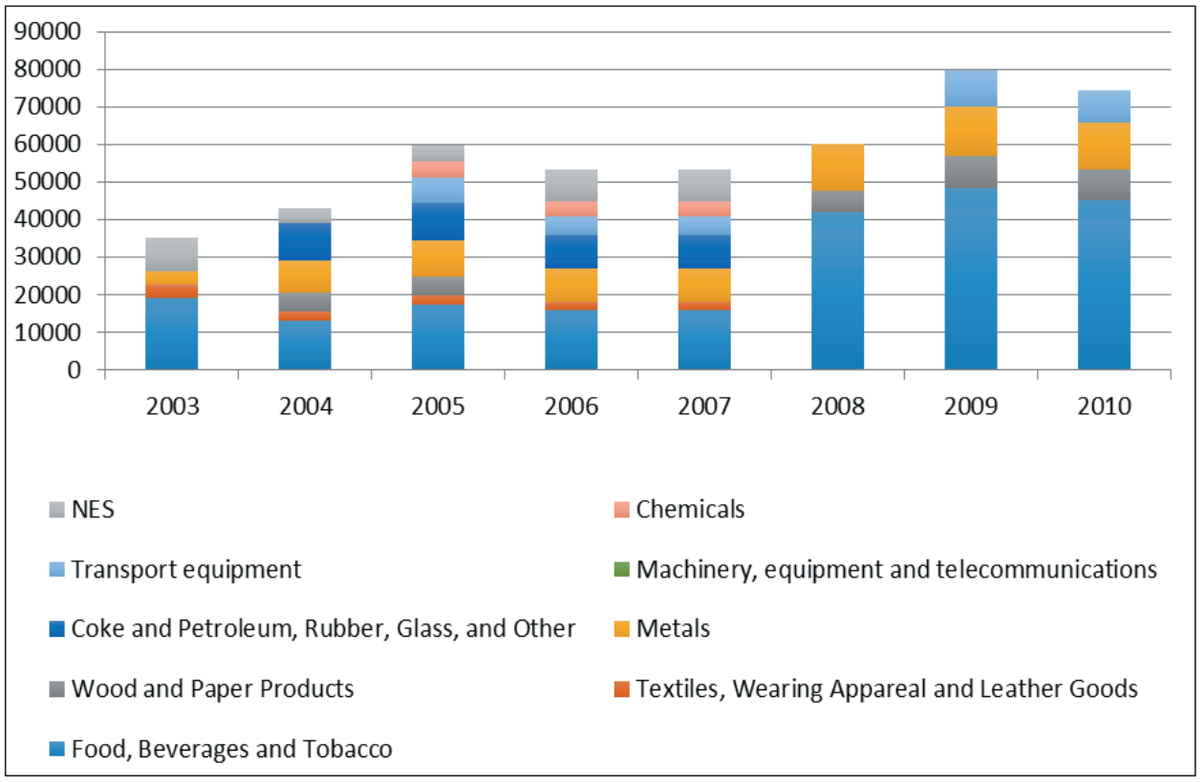
Figure 57 Employment per Manufacturing Establishment – Tanzania and Comparators



Source: UNIDO INDSTAT

The increasing skills of the workforce tend to be reflected in the wages per worker and generally show different patterns according to the increase in value addition and productivity in different sectors of the economy (Figure 58). The graph below shows the wages per worker in each of the manufacturing sectors in Tanzania. We observe how the overall wage increase has been for the most part been due to increases in wages in the food sector. But also the metals sector shows some increase in the wages provided. This suggests how these two sectors have been the two most important ones in terms of increasing skills and productivity at the shop-floor level.

Figure 58 Wages per worker (USD), sectoral distribution

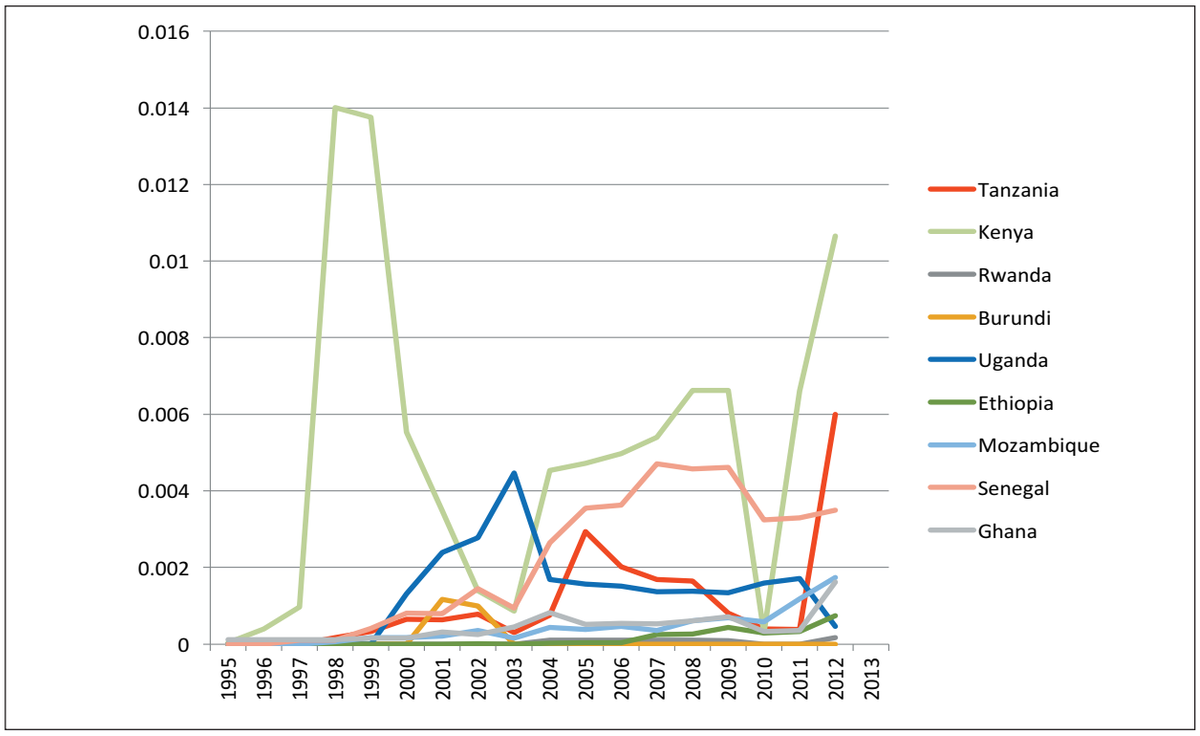


Source: UNIDO INDSTAT

Manufacturing production is a collective process to the extent that the execution of interdependent sets of production tasks requires organisational forms, plans and capabilities. The development of organisational capabilities is particular critical with relatively more complex production activities involving more advanced technologies or operations. The lack of such collective forms of capabilities often has a negative effect on the quality standard of production and the possibility of acquiring international certifications. The latter are very important, especially for productive companies interested in linking up as first or second tier suppliers with major companies in Tanzania or directly sell their products in the international market.

In Tanzania the number ISO 9001 certificates have been fluctuating, with significant increase between 2003-2004 and 2011-2012, but also a decline in 2005 (from 0.003) to 2010 (0.0005). In comparison with other countries we also find high fluctuations, but one can conclude that Kenya and Senegal had on average had a higher number of certificates per 1,000 people than Tanzania (Figure 59). In turn Tanzania showed a higher average than Mozambique, Ghana and Ethiopia. In particularly between 2004 and 2008, the rate of certificates per 1,000 people have been increasing for Tanzania, just as in Ethiopia and Vietnam, while in the same years the share for Rwanda, Uganda, and Ghana displayed an opposite trend.

Figure 59 ISO 9001 Certificates per 1,000 People – Tanzania and Comparators



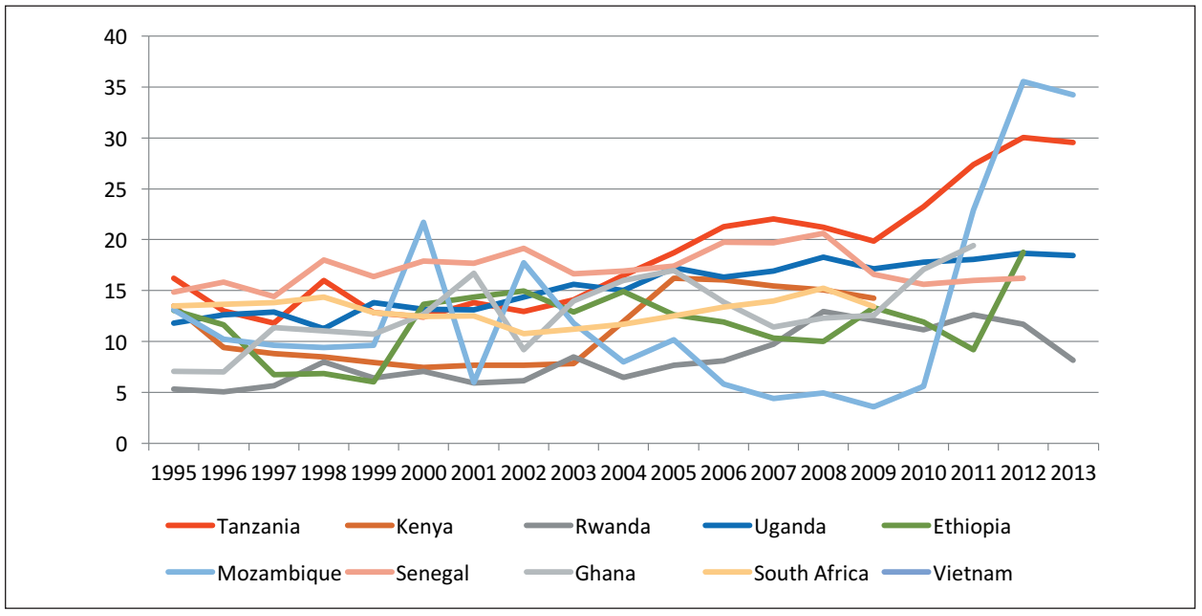
Source: ISO

Is Tanzania expanding its manufacturing production capacity?

So far we have focused on the people skills and their capacity to work in an organised manner. In fact, performing a set of interdependent productive tasks does not only require capable agents and functioning organisations – that is, individual and collective agents endowed with productive knowledge and relevant skills; it does require the establishment of a certain ***production capacity*** as well, that is, of *a scale-appropriate assortment of equipment, machinery and other capital goods.* The share of manufacturing in total gross fixed capital formation of Tanzania has been declining from around 20% between 1995 and 2000 to around 7% or 8% between 2003 and 2010 (Figure 60). It is however higher than Ethiopia's share which has remained stable around 4%. Notwithstanding the share of private gross fixed capital formation in GDP has been gradually increasing until 2012, but then to come to a halt in 2013 at 30% of GDP. In 2013, only Mozambique (light blue line) had a higher share of around 32%. Other comparator countries have shown little growth over time, remaining in 2013 at shares of between around 20% and 10%.

The graph below (Figure 61) shows the share of manufacturing in total capital formulation for Tanzania at the sectoral level. We observe that the share has increased in 2007, particularly because of the food, beverages and tobacco sector. We also observe that the shares of Textiles, Wearing Apparel and Leather Goods have declined over time. This is an alarming result as these sectors can play a very important role in the initial stages of structural transformation. However, to do that, they require significant investments in equipment, technologies and establishments.

Figure 60 Share of Private GFCF in Gross Domestic Product (GDP) – Tanzania and Comparators

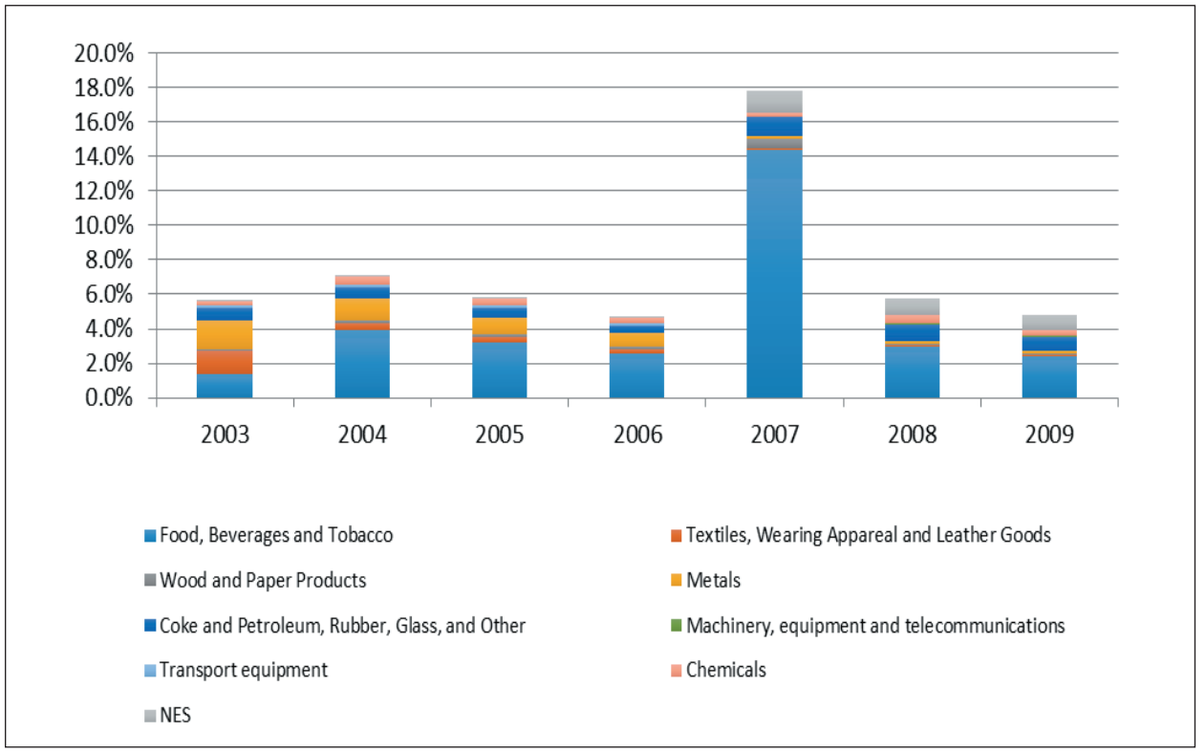


Source: World Development Indicators

Are Tanzanian companies absorbing and developing new technologies?

From a 'dynamic efficiency' perspective, the *absorption, adaptation and improvement of given productive techniques,* as well as *innovations across different organisational and technological functions,* mainly depend on the availability of two specific subsets of industrial capabilities owned by firms and other technology/research focused actors. They are ***technological capabilities*** and

Figure 61 Share of Manufacturing in Total GFCF



Source: UNIDO INDSTAT

innovation capabilities. Capabilities needed to generate, absorb and manage technological and organizational change may differ substantially from those needed to operate existing production systems (Lall, 1992 and 2001; Andreoni, 2011).

The table below (Table 24) shows that expenditure on R&D in Tanzania has increased over time (from 4.9 in 2009 to 6.5 in 2010), but not as much as in many other countries (e.g. Kenya, Uganda, Mozambique). In South Africa, the R&D expenditure per capita has actually been decreasing. However, in terms of the share of R&D expenditure that the government takes, Tanzania shows a slight decline and lower levels than Ghana, but its share is higher than all other comparator countries (Ethiopia showing similar levels).

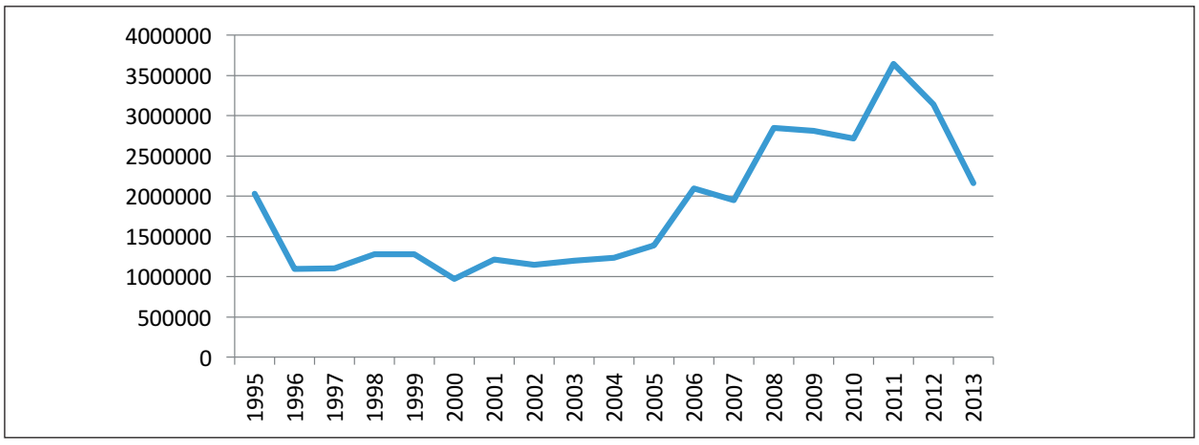
At initial stages of manufacturing development countries rely on foreign technologies, especially production technologies such as machine tools and other production equipment. The graph below (Figure 62) shows how capital goods imports had been gradually increasing between 1996 and 2011, but have been declining since. In comparison to other countries, Tanzania (dark blue line) has been importing more capital goods than many other comparator countries, but less than Ethiopia and Vietnam.

Table 24 Gross Expenditure on Research and Development (GERD) per capita and Share Government-Financed GERD in Total GERD – Tanzania and comparators

Gross Expenditure on Research and Development (GERD) per capita (USD)						Share Government-Financed GERD in Total GERD
	2006	2007	2008	2009	2010	2010
Tanzania		4,9			6,5	57.5%
Kenya		6			14,4	26%
Burundi		0,9	0,7	0,7	0,7	-
Uganda	2,9	3,9	3,5	4,5	6,3	21.9%
Ethiopia		1,2			2,2	56%
Mozambique	3,7		1,3		3,7	18.8%
Senegal			6,1		9,1	47.6%
Ghana		3			5,6	68.3%
South Africa	81,9	84,2	86,9	79	70,4	44.5%
In PPP$, constant prices = 2005						

Source: UNESCO

Figure 62 Capital Goods Imports – Tanzania



Note: Capital goods imports (current US Dollars) over GDP per Capita (current US Dollars).
Source: World Development Indicators

In terms of growth rates, capital goods import have particularly increased in Tanzania between 2004 and 2008, although Rwanda shows a higher growth rate during the same period. More recently the imports have been decreasing by 5.1%, while Mozambique has seen a significant increase (Table 25).

Table 25 Capital goods growth rates

	1994-1998	1999-2003	2004-2008	2009-2013
Tanzania		-1,3%	18,2%	-5,1%
Kenya		2,3%	9,8%	
Rwanda		4,8%	37,4%	1,8%
Burundi	-4,4%	-8,1%	8,0%	
Uganda	-0,1%	6,6%	13,0%	-1,8%
Ethiopia		5,6%	4,6%	
Mozambique			3,8%	18,0%
Senegal		1,2%	10,1%	
South Africa	3,2%	3,6%	10,7%	5,1%
Vietnam			7,9%	

Note: Capital goods imports (current US Dollars) over GDP per Capita (current US Dollars).

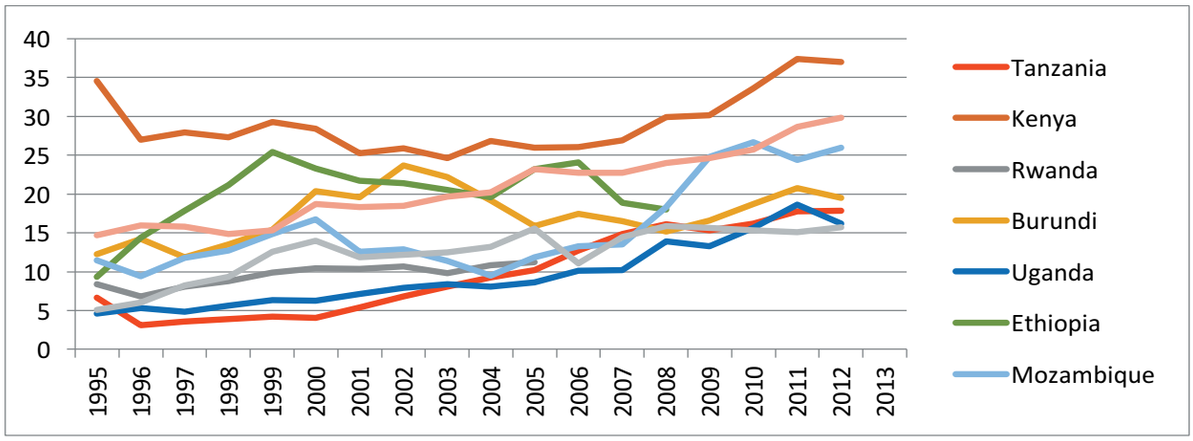
Source: World Development Indicators

There is a strong positive correlation (0.80) between capital goods imports and the manufacturing value added per establishment. This suggests that as capital imports have increased, so has the manufacturing value added per establishment. Correlations between capital goods imports and value added per capita, exports per capita, and share of medium and high manufacturing value added in total manufacturing value added show similar high and positive relations. These correlations are not claims of causality, however they suggest how all these variables are fundamentally interlinked and how they affect each other in the overall cumulative process of industrialisation.

The firm-level process of industrial capabilities development and accumulation, its speed, effectiveness and multi-directionality, are affected by the presence (or absence) of a series of 'mediating/facilitating factors' which are country-specific. These mediating factors, mainly infrastructures such as roads, railways, port, network systems, public research infrastructures and ICTs, rather than directly entering in the firm-level process of capabilities development and accumulation work as mediating/facilitating factors. In other words, by reducing transaction costs (e.g. transportation costs of machinery or technicians exchange as well as output export) and learning costs (e.g. increasing absorption capacities with ICTs, faster diffusion of productive best practices) these factors enable firm-level processes of capabilities building and accumulation. There are different types of countries' infrastructure capabilities. Among them, financial and technological infrastructure play a critical role in increasing the country's industrial competitiveness.

Starting with financial infrastructure, the graph below shows that the domestic credit flowing towards the private sector has been increasing over time, from 3% of GDP in 1996 to 18% of GDP in 2012. In comparison to other countries, Tanzania has in 2012 provided a higher share of GDP in credit to the private sector than Uganda and Ghana, but not close to other comparator countries: South Africa and Vietnam (excluded from this graph), Kenya, and Senegal (Figure 63).

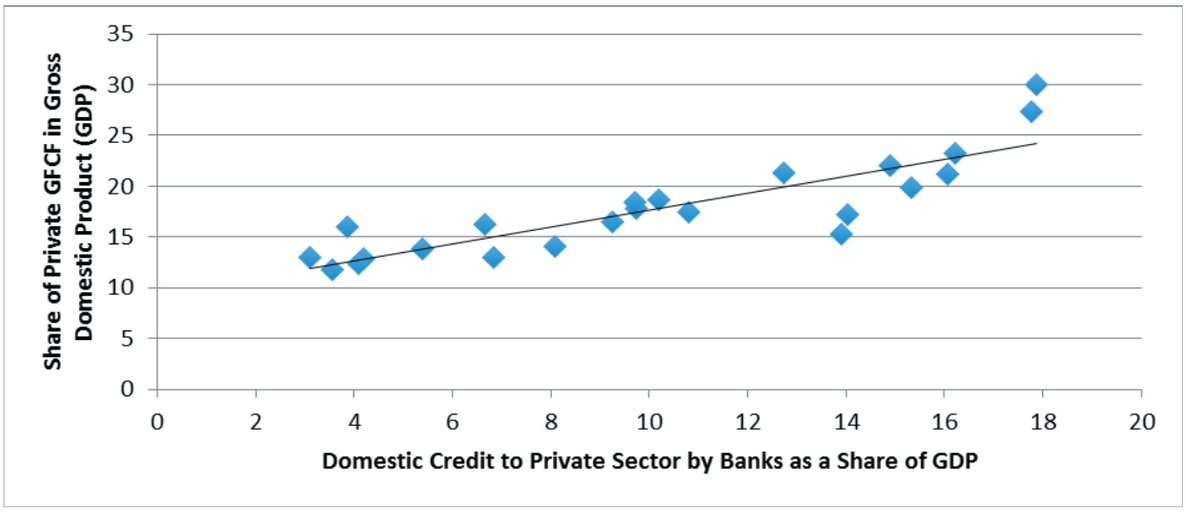
Figure 63 Domestic Credit to Private Sector by Banks as a Share of GDP



Source: World Development Indicators

The graph below shows the correlation between the domestic credit provided to the private sector as share of GDP with the share of private capital formation as share of GDP. We observe that there is a high and positive correlation between the two suggestion that as credit to the private sector increases, the share of private capital formation also increased, and vice versa. Correlations between credit to the private sector and value added per capita and exports per capita show similar high and positive relations. The correlation with the share of medium and high manufacturing value added in total manufacturing value added shows a low but positive correlation (Figure 64).

Figure 64 Correlation between private GFCF and domestic credit to private sector



Note: correlation is 0.86. Left axis reflects Domestic Credit to Private Sector by Banks as share of GDP; right axis refers to Share of Private GFCF in GDP.

Source: World Development Indicators

The public technology infrastructure includes primarily various types of *public technology intermediaries* (PTIs) such as industrial research and manufacturing centres, technology transfer offices, production extension services, bureau of standards and related labs/facilities, investment promotion centres, incubators etc. These PTIs are supposed to perform three fundamental functions (Andreoni and Chang 2014; Andreoni, 2016; Andreoni et al, 2016):

1) Providing quasi-public good infratechnologies and related infrastructure services including measurement methods *(metrology),* testing facilities *(conformity*

assessment), specifications and quality control techniques (standards), evaluated scientific and engineering data and technical dimensions of product interfaces

2) Providing "translation research": translate new findings and discoveries from fundamental research into engines of innovation and, thus, new industrial products, processes and services and their scale up/manufacturability.

3) Bridging and transferring knowledge across different sectors and, thus, facilitating various forms of inter-sectoral learning

The Tanzanian Manufacturing System presents a wide variety of PTIs clustered in four main sectoral groups. COSTECH plays a coordinating role although each institution has a different mandate and relies on a mix of public and private funding, on average 80% public and 20% private (Table 26).

Table 26 Public Technology Intermediaries (PTIs) in Tanzania

1. AGRICULTURE AND LIVESTOCK INSTITUTIONS
• Animal Disease Research Institute (ADRI)
• Mikocheni Agricultural Research Institute (MARI)
• Sugarcane Research Institute Kibaha (SRI-KIBAHA)
• Agricultural Research Institute KATRIN, IFAKARA. (ARI KATRIN IFAKARA)
• Ilonga Agricultural Research Institute (ARI ILONGA)
• Agricultural Research Institute (ARI) UKIRIGURU
• Tanzania Coffee Research Institute (TACRI)-LYAMUNGU
• Agricultural Research Institute – SELIAN
• Tengeru Agricultural Research Institute (HORTI TENGERU)
• Mlingano Agricultural Research Institute
• Agricultural Research Institute (ARI) UYOLE
• Tanzania Pesticide Research Institute (TPRI).
• National Livestock Research Institute Mpwapwa (NLRI).
• Tea Research Institute Maruku (TRIT)
• Agricultural Research Institute Maruku (ARI-MARUKU)
• Tobacco Research Institute Of Tanzania (TORITA)
• Cholima Research Centre, DAKAWA
• Agricultural Research Institute – Naliendele
• NaliendeleCashewnut Research Centre
• Agricultural Research Institute – Kizimbani
• Central Veterinary laboratory
• Livestock Research Centre
• Livestock Production Research Institute
• Livestock Research Centre (LRC), West Kilimanjaro
• Tsetse and Trypanosomiasis Research Institute (TTRI)
• Livestock Research Institute, Mabuki
• Livestock Research Institute Uyole
• Livestock Research Institute, Naliendele

2. INDUSTRY AND ENERGY INSTITUTIONS

- Tanzania Bureau Of Standards (TBS)
- National Construction Council (NCC).
- National Housing and Building Research Agency (NHBRA)
- Tanzania Automotive Technology Centre (TATC)
- Tanzania Engineering and Manufacturing Design Organization (TEMDO)
- Tanzania Atomic Energy Commission (TAEC).
- Centre for Agricultural Mechanization and Rural Technology (CAMARTEC)
- Tanzania Industrial Research and Development Organization (TIRDO)
- Small Industries Development Organization (SIDO)

3. NATURAL RESOURCES INSTITUTIONS

- Tanzania Fisheries Research Institute (TAFIRI)
- Tanzania Forestry Research Institute (TAFORI)
- Tanzania Wildlife Research Institute (TAWIRI)
- Ngorongoro Conservation Area Authority (NCAA)

4. MEDICINE AND PUBLIC HEALTH INSTITUTIONS

- National Institute for Medical Research (NIMR HQ)
- Ifakara Health Institute (IHI)
- Amani Medical Research Centre (Part of Tanga Medical Research Centre)
- Mwanza Medical Research Centre (Part of NIMR)
- Tukuyu Medical Research Station (Part OF NIMR)
- Tanzania Food and Nutrition Centre (TFNC)

The existence of this dense network of intermediate institutions supporting various productive sectors of the economy is encouraging. They can play an important role in the development of a domestic production system. In particular, they can help SMEs in linking up with medium and big enterprises who are traditionally the main drivers of the economy in terms of value addition, export and technology upgrading. The establishment of a denser network of linkages in the domestic economy is a key feature of an economy undergoing a sustained process of structural change. The more domestic companies intensify their supplying relationships and, as a result, develop technology collaborations and other forms of stable linkages, the more the domestic economy is able to create manufacturing value and value addition. Therefore, the analysis of the unfolding industrial linkages within the Tanzanian Manufacturing system complements the macro-level analysis of industrial capabilities. It focuses on the extent to which industrial capabilities development in the different sectors is triggering new linkages within the economy and leading to higher domestic value addition.

D. 2. Industrial Linkages: private sector missing linkages and value addition

Albert Hirschman famously characterised the development process in the following terms: *"development is essentially the record of how one thing leads to another"* (Hirschman, 1958 and 1977; Andreoni, 2016). Manufacturing is linked to the other productive sectors through a bundle of different relationships:

- *Production:* quantitative interdependencies across more or less complementary sectors (intermediate demand) and along vertically disintegrated sectors in global production networks (increasing complexity);
- *Technological:* triggered by the distinctive capacity of manufacturing to 'transfer' technological change across sectors (in particular industrialisation of agriculture and resource-based industrialisation);
- *Fiscal:* related to the use of rents generated in the resource sector to develop industries which are either unrelated to the resource sector or only marginally related to it;
- *Employment:* related to direct, indirect and induced effects that different sectors may or may not have on the others and the rest of the economy as a whole.

These linkages reflect the main processes of qualitative transformation and quantitative expansion of the productive structure of a country. A useful way to visualise developmental linkages is to think of a *matrix of inter-sectoral inter-dependencies,* that is a matrix defined by both supply side and demand side linkages among different sectors (Andreoni, 2016). Inside the matrix, production activities within the manufacturing sector are characterised by a comparatively higher density of inter-industry and inter-sectoral forward and backward linkages, albeit to different degrees. Now these intersectoral linkages are destined to change and "vary according to the particular phase of the development process and as structural conditions and international circumstances change" (Kay, 2009:116).

Despite these sectoral specificities which change in historical time, all sectoral activities persistently affect the rest of the economy through both direct and indirect linkages which accumulate in successive rounds of intersectoral expansion of the productive matrix. Therefore, structural change does not simply imply a process of *sectoral transition* but also one of *sectoral deepening* (that is, a technological transformation of production processes performed in each sector) and intersectoral deepening (that is, an unfolding of increasingly denser linkages between related production activities and sectors).

At earlier stages of structural change, the industrial systems of economies like Tanzania present similar features (Andreoni, 2016).

First, the foreign owned companies generally bigger in size and more technologically advanced produce in the country as "cathedrals in the desert". This means that they find difficult to link down with the local suppliers given their lack of capabilities, especially with respect to guaranteeing certain quality and process standards. The backward production linkages remain limited and often foreign companies import raw materials for processing in the country.

Second, domestic large scale companies are limited. Similarly, to foreign companies, they find simpler to rely on import of semi-processed raw materials and intermediate products and re-export without involving forward companies. As a result of that, both backward and forward production linkages remain limited as well as the value addition per unit of produce. Their dominant role in the market and the possibility of extracting

value chain rents do not favour significant technological investments as well as the development of a capable and resilient local chain of certified suppliers.

The third feature of these industrial systems is the lack of medium-size manufacturing companies. The so called 'missing middle' phenomenon is particularly problematic as these are exactly those companies that have generally reached the scale to supply large local companies as well as the export market. The limited presence of medium-size enterprises is another critical factor reducing the opportunities for local backward and forward linkages development.

Fourth, the small enterprises are unfit, lack the scale to supply reliable intermediate products and components and invest in technology upgrading. As a result, these companies remain isolated from the rest of the economy or linked by low value linkages, that is, production relationships involving only very limited value-addition activities.

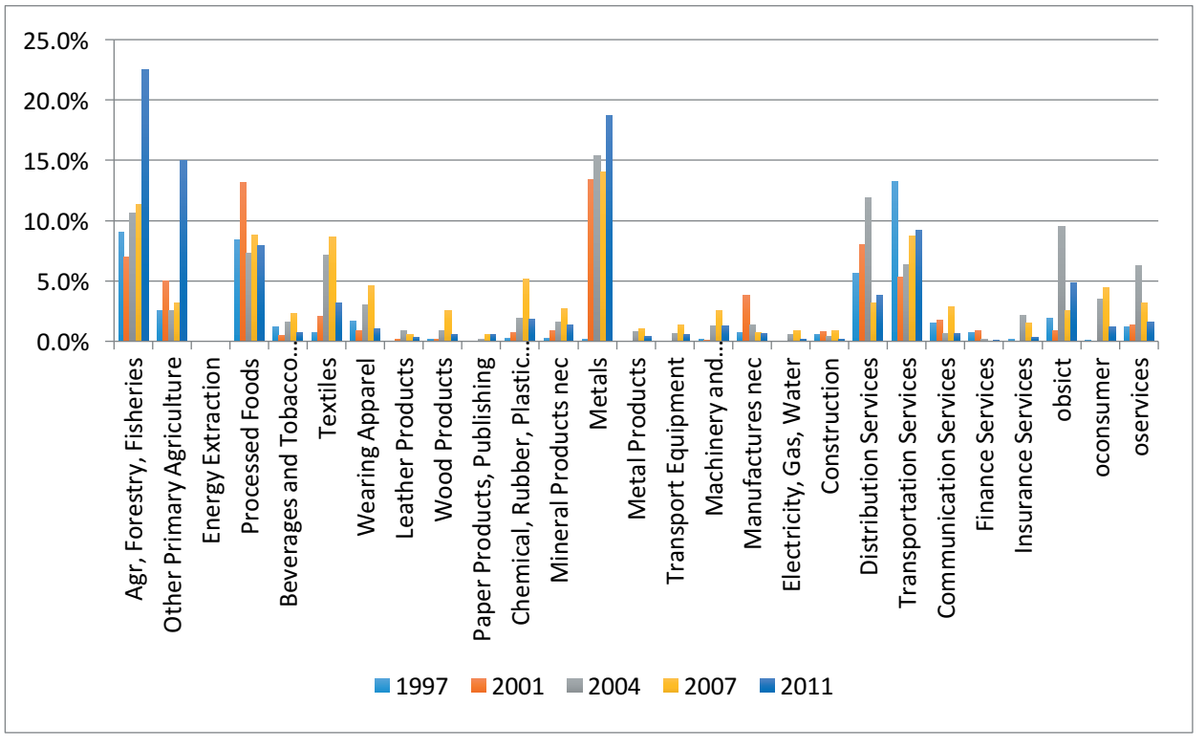
The above mentioned features are reflected in the value addition dynamics and unfolding linkages within the economy, both in terms of trade with other countries and in terms of internal production system development. The recent World Bank's Export Value Added Database uses input-output data from the Global Trade Analysis Project (GTAP) to construct country-specific measures of the direct and indirect contribution of 27 different sectors (nine commercial service sectors, three primary sectors, and fourteen manufacturing sectors) to the value-added contained in a given country's domestic production and exports. The cross-country database covers about 100 countries with consistent observation points from 1997 to 2011. The data base contains two main set of information, namely an export value-added table and a domestic value-added table. In the following two sections we rely on these tables respectively to shed light on the value addition dynamics in the Tanzanian economy from 1997 to 2011.

Value addition dynamics in the import-export scenario

This section discusses the value creation from the perspective of imports and exports for Tanzania. In particular, it discusses the findings for Tanzania in terms of backward and *forward linkages.* In this context *backward linkages* refer to the value that is created in other countries and that flows towards various sectors in Tanzania. On the contrary, forward linkages refer to the value created for exports in each of the sectors of Tanzania.

The graph below (Figure 65) shows the *relative* backward linkages in the economy of Tanzania between 1997 and 2011. In other words, it shows the relative importance of inflows of value into the Tanzanian sectors over time. This graph allows us to see which sectors in Tanzania receive relatively high amounts of value from other countries. Note how for example the Agro, Forestry and Fisheries (first sector on the left), has seen an increase in value from abroad moving into the sector, particularly from 2007 to 2011 (the distinctive blue spike).

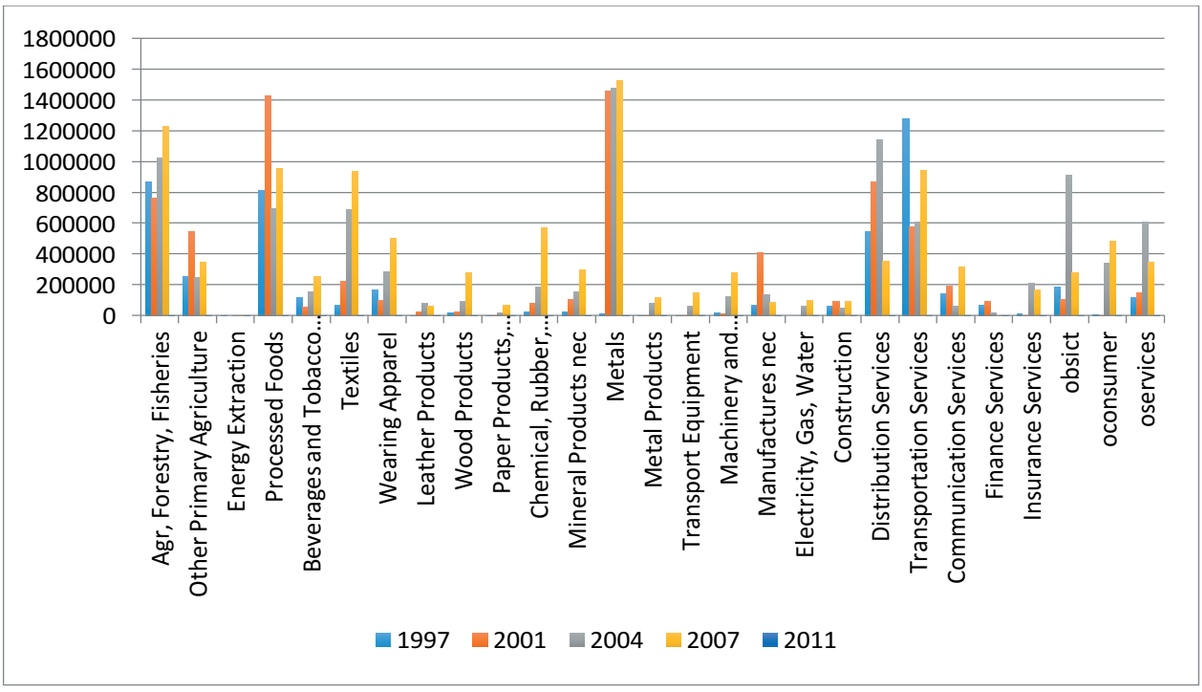
Figure 65 Relative backward linkages for Tanzania between 1997 and 2011



Source: EVAD, World Bank

In contrast to the graph above, the graph below (Figure 66) shows the absolute value that entered each of Tanzania's sectors from other countries. Comparing the graph above and below allows checking whether the relative importance of value inflow also corresponds with the absolute values of that inflow. For example, we see that in the case of the Agro, Forestry and Fisheries sector, the increase in absolute value from 2008 to 2011 is not as considerable as the relative values indicate in the graph above.

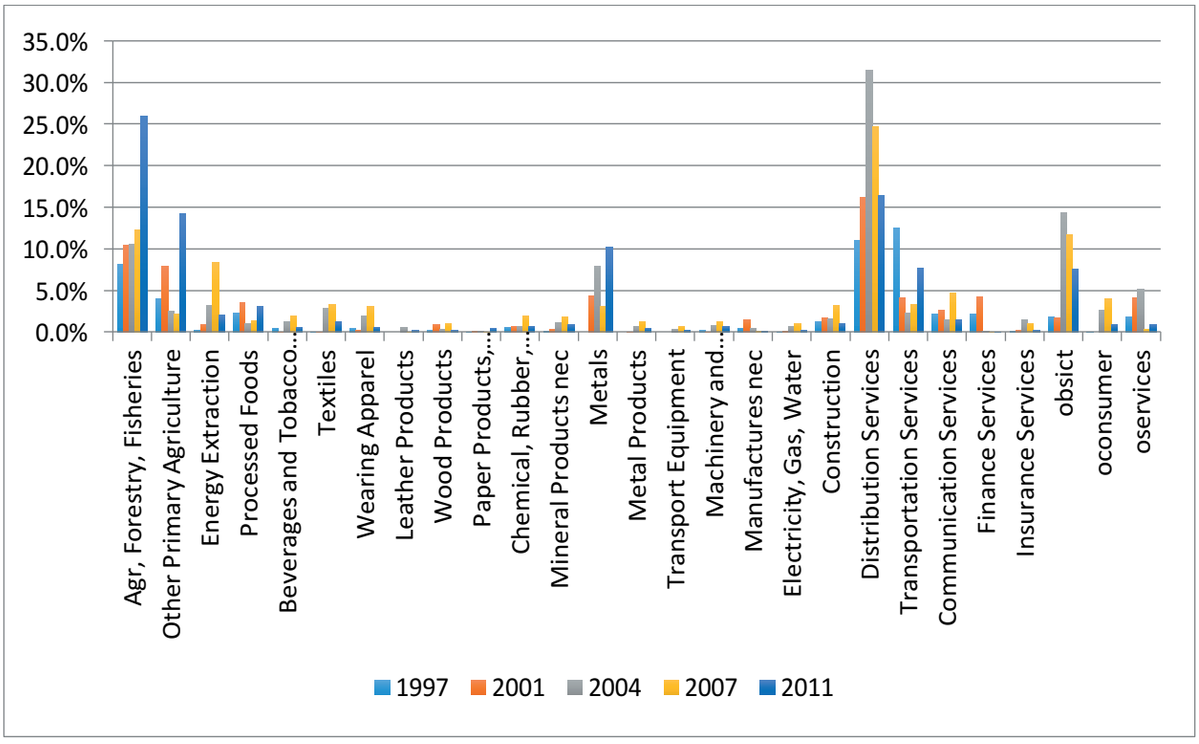
Figure 66 Absolute backward linkages for Tanzania between 1997 and 2011 (USD)



Source: EVAD, World Bank

Figure 67 shows the relative forward linkages from the economy of Tanzania to other countries between 1997 and 2011. It thus shows which sectors in Tanzania produce relatively high amounts of value that flows into other countries. It illustrates for example that the Agro, Forestry and Fishery sector (first on the left) is one of the most important sources for value created in Tanzania and which is (through exports) used in other countries. We can also conclude that this importance has increased over time.

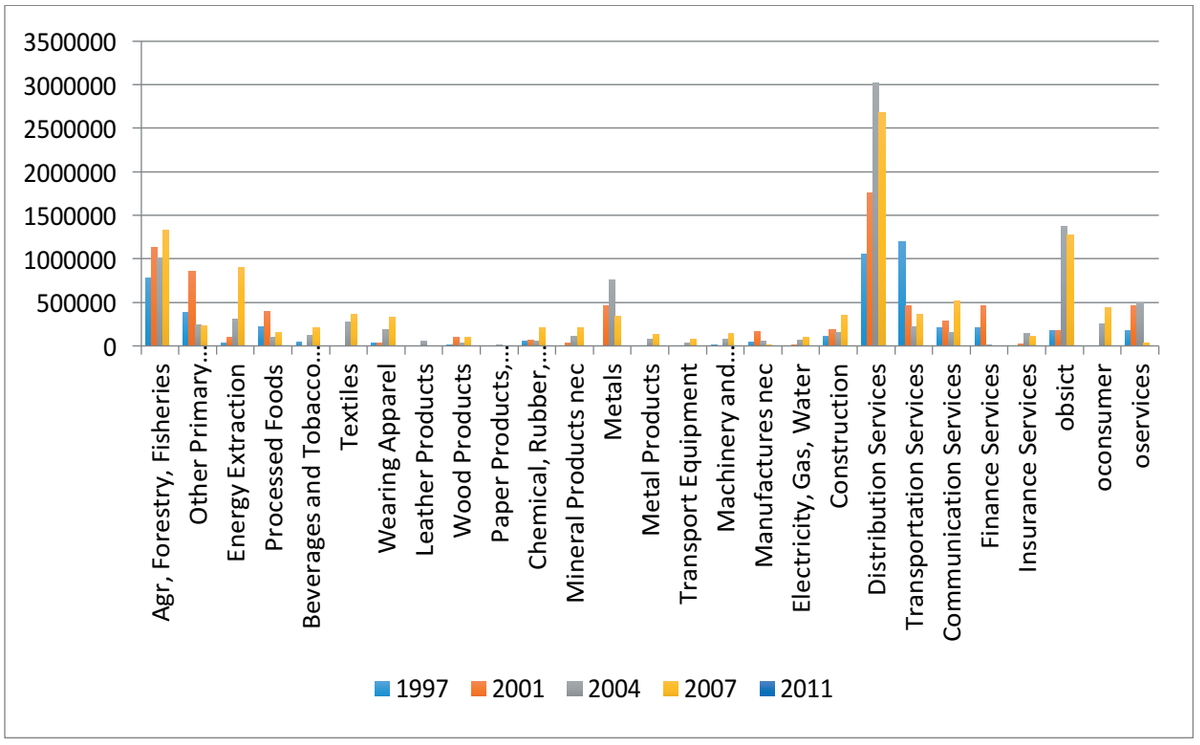
Figure 67 Relative forward linkages for Tanzania between 1997 and 2011



Source: EVAD, World Bank

The graph below (Figure 68) shows, for the forward linkages, what absolute amount of value was created by each of the sectors in Tanzania and which was exported to other countries. We can see for example that despite the relative surge of importance of the Agro, Forestry and Fishery sector between 2007 and 2011, the absolute value actually decreased. Note that generally the shift from 2007 to 2011 highlights a drop in value created in each of the sectors. It implies that the value created in Tanzania's economy (subsequently flowing towards other countries) has been considerable smaller in 2011 than in the previous years.

Figure 68 Absolute forward linkages for Tanzania between 1997 and 2011 (USD)

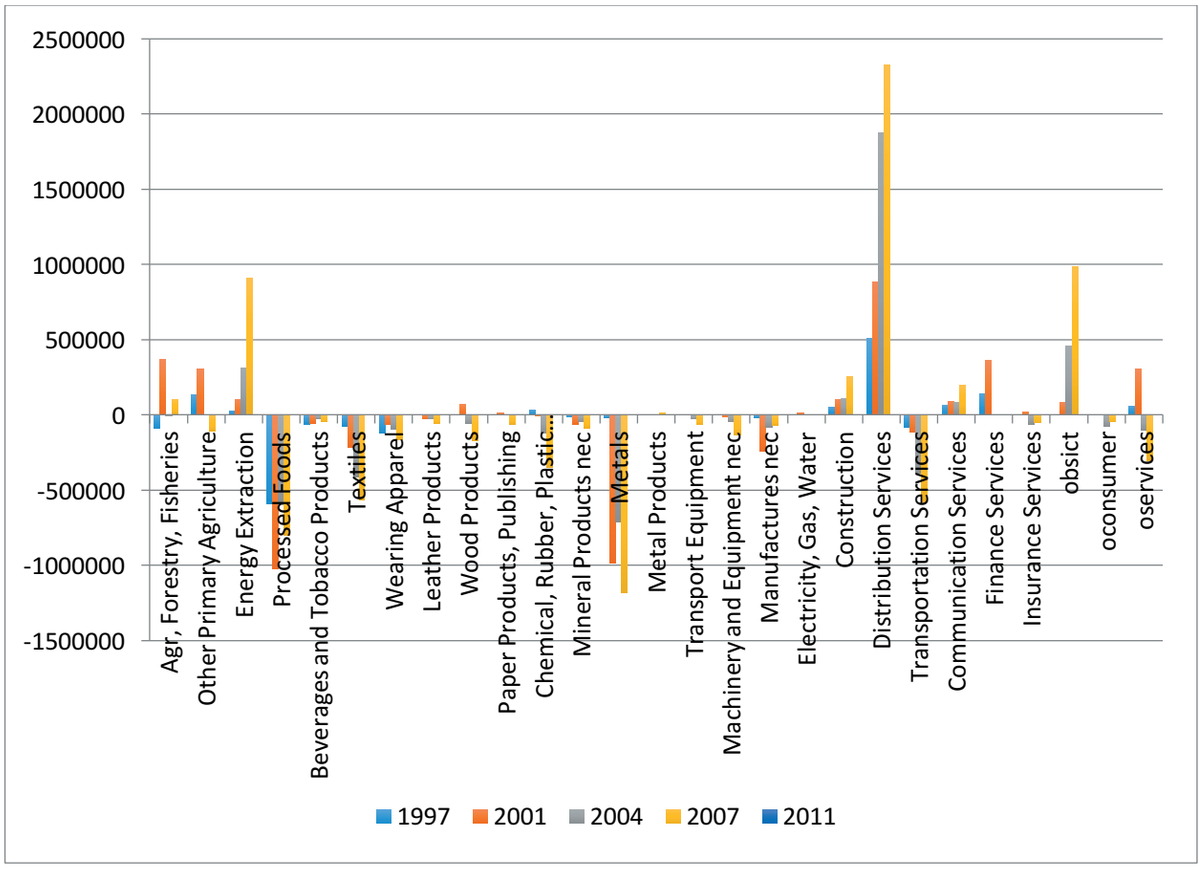


Source: EVAD, World Bank

The graphs above have shown merely the influx of value into - or outflow of value from - the Tanzanian economy.

The final graph below (Figure 69) combines the information on backward and forward linkages and shows to what extent inflow is balanced by outflow of value. It thus allows you to get a sense of the dependence or importance of sectors in Tanzania. For example, the processed food sector (fourth from the left) has, between 1997 and 2011, been dependent on value created abroad. In other words, the value that the processed food sector in Tanzania produces for exports to other countries is significantly lower than the value that the same sector receives from other countries. In contrast, the distribution services sector (eight from the right) has increasingly created more value to other countries than what it received from other countries.

Figure 69 Inflows and Outflows of Value for Tanzania between 1997 and 2011 (USD)



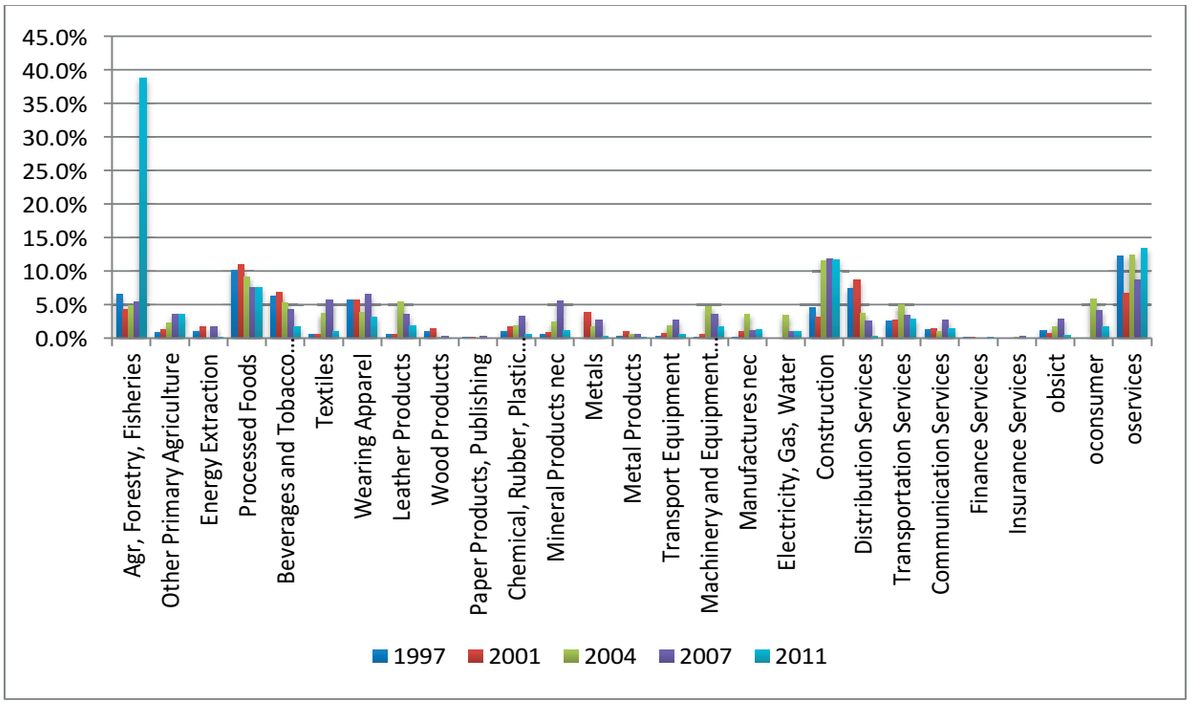
Source: EVAD, World Bank

Value addition dynamics within the domestic scenario

The section above discussed the backward and forward linkages in terms of exports and imports. This section discusses the same linkages but looks at the dynamics within Tanzania. In other words, it looks at which sectors in Tanzania created value for other sectors in Tanzania and which specific sectors absorb internally generated value.

Figure 70 shows the relative importance of value added flowing into each sector. In other words, it shows which sectors received relatively high levels of value created within the Tanzania economy. For example, we see that the processed food sector (fourth from the left) has seen a decrease in the relative value that it absorbed between 1997 and 2011.

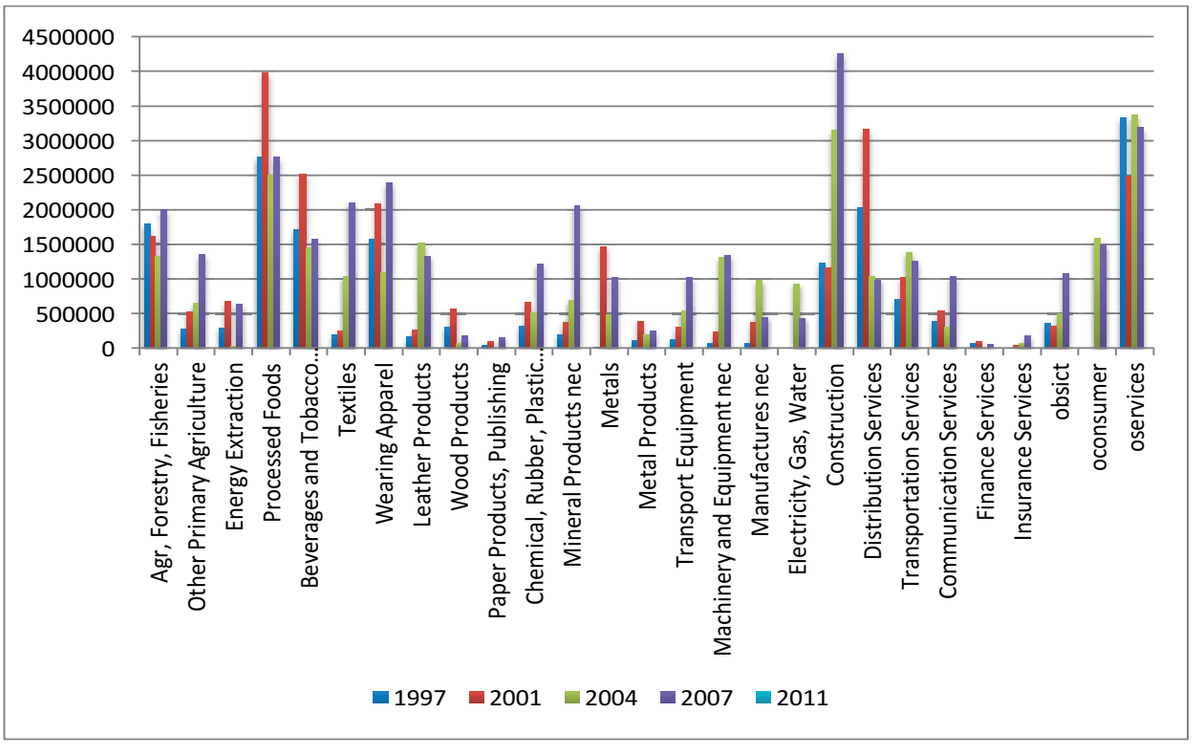
Figure 70 Domestic relative backward linkages for Tanzania between 1997 and 2011



Source: EVAD, World Bank

In contrast to the previous graph, Figure 71 shows the absolute value that went into each of the sectors in Tanzania. That is, it shows how the absolute value created in Tanzania was distributed among different sectors. We see for example that the value towards the processed food sector has not been consistently declining between 1997 and 2011, but instead that there was a temporary surge in value in 2011 that went towards it.

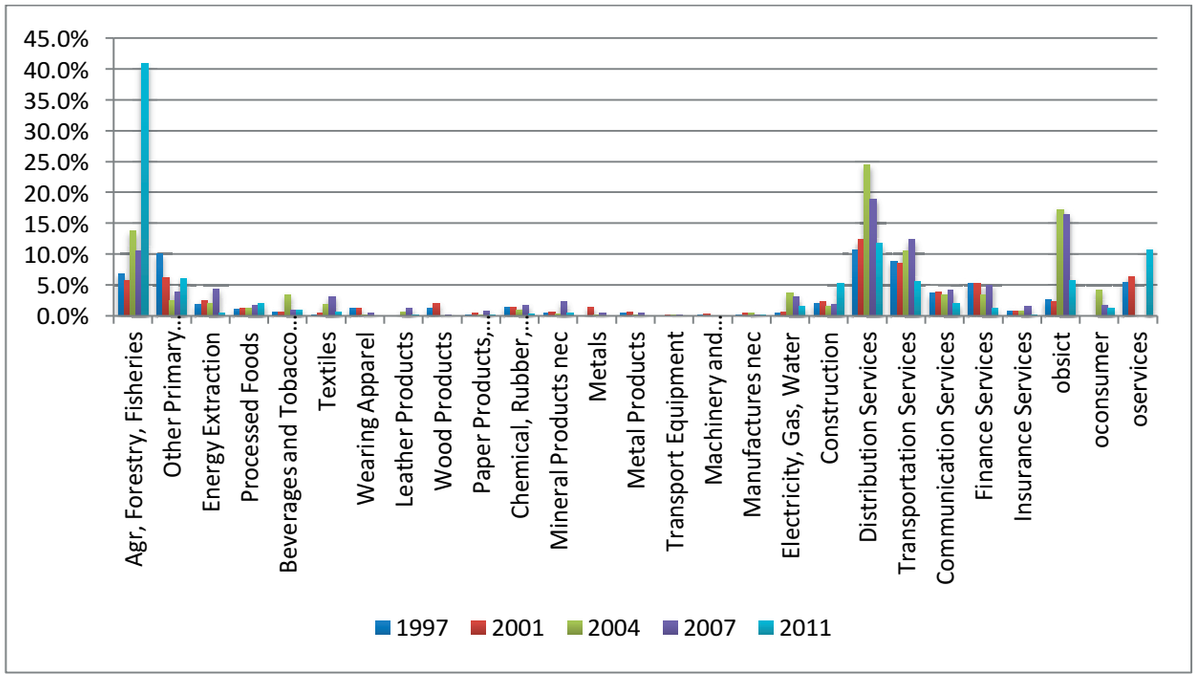
Figure 71 Domestic absolute forward linkages for Tanzania between 1997 and 2011 (USD)



Source: EVAD, World Bank

The graph below (Figure 72) shows the relative forward linkages, which is the value that a particular sector in Tanzania creates for all other sectors in Tanzania. In other words, it shows which sectors are relatively important in terms of the value they create for the domestic economy. If we compare a previous graph on relative backward linkages with the graph below, we can conclude that the Agro, Forestry and Fishery sector absorbs a relatively high degree of value created in the Tanzanian economy, and at the same time (as the graph below shows), this sector also produces the majority of the value used within the domestic economy.

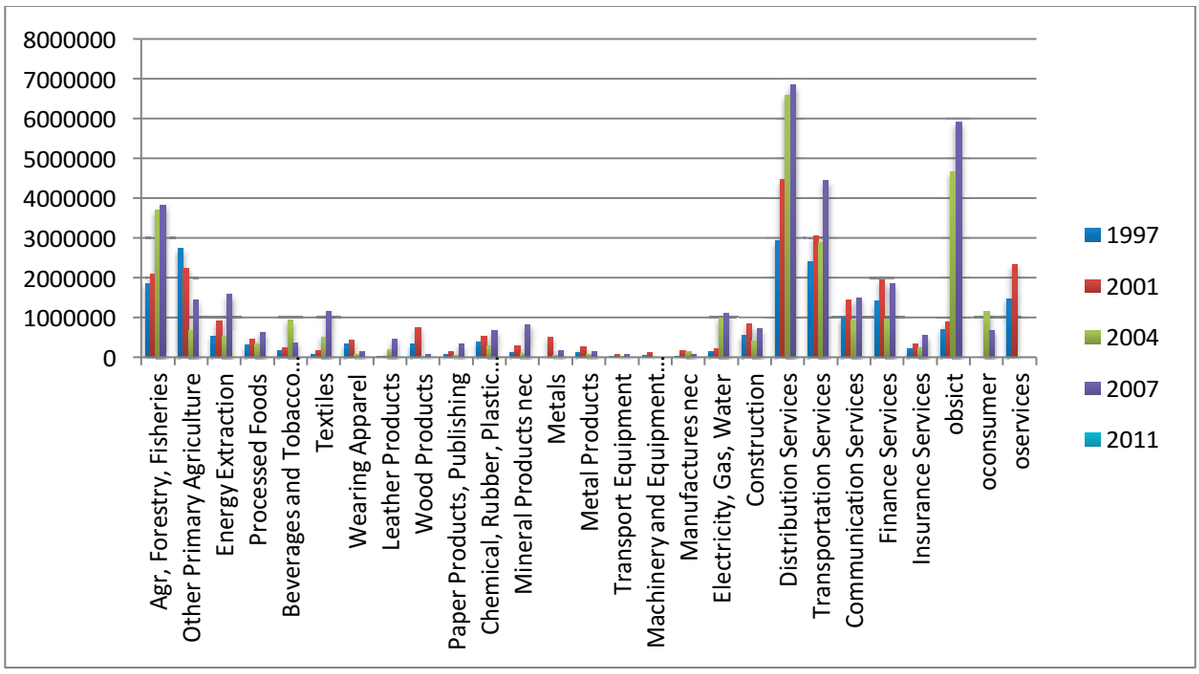
Figure 72 Domestic relative forward linkages for Tanzania between 1997 and 2011



Source: EVAD, World Bank

Finally Figure 73 shows the absolute backward linkages and allows reflecting against the relative forward linkages shown in the graph above. It thus shows the absolute value that each of the sectors in Tanzania create for other sectors in the domestic economy. We see for example, that in terms of absolute value (and in contrast to the relative value, see graph above) the distribution services sector (eight sector from the right, below) generates the highest value for other sectors in the Tanzanian economy, and this value has been considerably increasing from 1997 onwards.

Figure 73 Domestic absolute backward linkages for Tanzania between 1997 and 2011 (USD)



Source: EVAD, World Bank

The limited capacity of the industrial system to generate valuable linkages and, thus, increasing domestic value addition, among productive companies within the Tanzanian economy is partially reflected in the limited linkages between private companies and the public technology intermediaries. The following section provides first preliminary results about the functions, linkages and challenges that these institutions face within the Tanzanian manufacturing system.

D.3 The role of The Public Technology Intermediaries (PTIs) and their relationship with the private sector

Historically intermediate institutions have taken different 'forms' and have performed different combinations of 'production functions'. These institutions are called intermediate as they play a critical intermediary role between R&D, education, markets and on-farm agricultural production. They also bridge and transfer knowledge, technical solutions and innovations across different sectors and, thus, facilitate various forms of inter-sectoral learning (Andreoni, 2011b).

For example, the transformation of the agricultural sector can be facilitated and triggered by designing a whole range of intermediate institutions and organizations for the provision of innovative 'extension, production and technology services'. Traditionally, extension services aimed to 'translate' technological innovations originating in the manufacturing sector for use in agriculture. Moreover, they were meant to provide assistance to farmers for example in repairing new mechanical tools or in the utilization of chemical fertilizers. The idea of 'itinerant instructors' and more generally

extension services was successfully adopted in particular by Germany, Denmark, and Sweden in Europe, but also in US and Japan. Interestingly, these are among the countries which experienced the highest increase in gross output and total productivity rates during the years of the first green revolution (Andreoni and Chang, 2014).

Innovative extension, production and technology services may not only facilitate the application of new technologies, but also proactively involve farmers and manufacturers in the design, experimentation and improvements of new technologies. As these activities imply companies' direct involvement in processes of trials and errors, inverse engineering, redesign of production techniques, they would result in a sustained process of technological capabilities building. In particular, given the increasing complexity of technologies adopted in agriculture and manufacturing, small and medium producers are particularly in need of mastering technological innovations. Evidently, given the high costs of these activities and the 'public character' of some of them, there is a strong rationale in favour of public intervention.

The Tanzanian manufacturing system is equipped with a broad variety of public technology intermediaries. Among them, a critical role is played by the Tanzanian Bureau of Standards (TBS) and a number of sector-specific technology intermediaries. The following three boxes (Box 10, 11 and 12) provide in-depth information on the TBS and two public technologies intermediaries specialised in manufacturing industries and agro-technologies, TIRDO and CAMARTED respectively.

Box 10: Tanzanian Bureau of Standards (TBS)

Standards are the 'language of industry' and are critical to overcome problems associated with products reliability, interchangeability of parts, quality certification etc. The TSB's mission is to raise awareness and promote adoption of standardization and quality assurance by the industry and commerce sector with the view to complement national effort to offer quality products in internal and external markets. The organisation reports to the ministry of Industry and Trade. There are 9 branches which are located around Tanzania's boarder points. The reason for location is to ensure all boarder entry points for imports are controlled so that only the quality products enter Tanzanian market. The organisation is mandated to promote the industry and commerce sectors.

The TBS offers a number of services to its clients among which:

a. **Technology offering and services:** Standardisation; participation in trade fair/exhibition; award of "TBS" mark ceremony; standardisation day celebration; engagement through technical committee meetings with private sector; and market surveillance.

b. **Production and extension services:** Testing of products for quality compliance to standards; Product certification for compliance to standards; Industrial and scientific calibration of measurements; Diffusion of knowledge through trainings; Development of standards and code of practice.

c. **Training programmes and services:** Management systems training: ISO 9001, 14000, 22000, 17025; Standards requirements training; Quality assurance in laboratories training; Quality packaging training; Method validation measurements; Uncertainty auditing; System documentation & implementation to meet ISO 17025. They also offer training on various standards as per clients' request.

d. **Market development services:** Fairs and exhibitions, market analysis, export market promotion and stakeholder meetings. TBS identifies fairs/events/exhibitions to attend including costs for attendance.

The provision of these services relies on a specialised task force of technicians with competences spanning across different sectors and various types of equipment. TBS employs 121 workers where: 22 have a master's degree; 79 have an advanced technical specialisation and 20 have basic technical training. In particular, TSB technicians have specialised in fields such as: food science, biotechnology, public health, chemistry, environment, engineering, electrical, ecology, civil, textiles, mechanical food products, electricity, textiles, and environment. TBS provides its staff with continuous training opportunities such as master degrees, but the organisation is not linked with international researchers. The organisation is endowed with the following equipment: equipment and tools

for industrial products and components design, metrology instrumentation, testing facilities and validation laboratories, standardisation facilities, certification and conformity assessment equipment and instrumentation, equipment and tools for maintenance, repair and operations (MRO), data systems or data access for market analysis, training facilities, and market promotion and fair facilities.

The organization's major source of funding is from the government while donors funding is project base. In the financial year 2011/12 government contribution was only 18% of the organisation's budget and this increased to 20% in 2012/13. TBS reported that income from consultancy activities contributed to 1% and 0.43% annual turnover in 2011/12 and 2012/13 respectively. TBS portfolio of companies includes mostly manufacturing companies. The companies are mainly domestic (81.4%). Among them 243 over 307 registered SME are active clients, while 953 over 1561 large companies are active. The expressed popular needs of TBS's clients include increased testing capabilities and creation of standard criteria. SGS, Bureau Veritas and Intereck are some of the private firms that provide similar service offered by TBS.

Box 11: Manufacturing-focused technology intermediaries: the case of TIRDO

TIRDO's vision is to become a high-quality, environmentally friendly and demand driven research institute for competitive industry. To realise this vision TIRDO focus on applied research which promote the industrial utilization of local materials. It also supports industry in technology transfer and provides technical services. The organisation reports directly to the Ministry of Industry and Trade. TIRDO is located only in Dar es Salaam and this is because most manufacturing firms are based in Dar es Salaam.

TIRDO offers a number of activities and services to its clients as indicated in the list below:

a. **Technology offering and services:** Analytical services (Food, Microbiology and Chemical), Quality Assurance Services (Non-destructive and Destructed services), Energy and Environmental Auditing, Product Development and Product Design Services, Technical assessment and Feasibility study services, Cyber Security Training.

b. **Production and extension services:** Sample testing (Analytical and Engineering), Feasibility studies on scaling up production, Product re-engineering, Quality Assurance testing, Trainings.

c. **Training programmes and services:** Welders qualification testing training, Food processing training, Product development training, Cyber Security training, Mushroom farming training. The marketing and engagement strategy includes: Industrial visits to market our services, using our website, Organizational Flyers, Exhibitions.

There are some private companies that offer the same services as TIRDO, such as SGS (Environmental and Food Laboratory Services), Fabcast Technologies (NDT services), JONPE company ltd (NDT services), MTL (Environmental services) and BICO (engineering and NDT services).

TIRDO employs 78 workers of which 39 are technical staff. Out of the technical staff, 8 have a PhD, 14 have master's degree; 8 have an advanced technical specialisation and 9 have a basic technical training. The employees have specialised in fields such as: natural science, engineering and technology (Information Communication Technology) and agricultural science. TIRDO offers short term course training and sometimes long-term training. The organisation also has collaborations with CSIR India, COMSATS, WAITRO, SIRIM Berhard Malaysia in terms of Training, attachment programmes and research collaborations. TIRDO offers training opportunities such as staff exchange and attachment programmes. The organisation also has research collaborations and allows the usage of its available facilities for research for use by other stakeholders.

TIRDO is equipped with a broad set of machineries and tools, in particular equipment and tools for industrial products and components design, instrumentation for materials analysis for industrial applications, equipment and tools for components prototyping, equipment and tools for system products prototyping, equipment and tools for re-verse engineering and re-engineering, metrology instrumentation, testing facilities and validation laboratories, standardisation facilities, certification and conformity assessment equipment and instrumentation, simulation laboratories, pilot-lines for manufacturing scaling up, equipment and tools for maintenance, repair and operations (MRO), data systems or data access for market analysis, training facilities, market promotion and fair facilities, and financial services facilities/desk. The majority of these equipment is however very old, and some are inappropriate for addressing today's production needs.

TIRDO services different manufacturing companies such as cigarette companies, aluminium companies, cement companies, breweries and mining companies. Most these manufacturers are foreign owned (60%) while only 40% are domestic owned of their clients being. The most popular needs reported by the organisations are: analysis of heavy metal in food and water samples (lack of standards and training), NDT measurement in concrete (lack of training, equipment is available), pressure test (lack of equipment that is compressor and pump), vacuum box test (Lack of equipment – vacuum box pump), and food safety and analytical quality control services (lack of equipment).

TIRDO's major source of funding is the government followed by some support from international donors and other internal sources. However, TIRDO reported that although they request over 80% of budget support from the government, only 20% is made available. In addition, international donors also only make 10% available although they request over 40% of their total budget. This deficit is supplemented by relying on other sources which forms 40% of their actual budget. In addition, TIRDO generates about 20% of their annual income from consultancy activities. TIRDO has also engaged in a number of demonstration cases. For example, building on its work on the traceability of food products in most regions in the country, a new company GS1 Tanzania was created. This company registers Tanzanians Bar Codes in products. Before GS1, Tanzanian companies were buying bar codes from South Africa, Kenya and Europe. The company is in operational and is housed within TIRDO's premises.

Box 12: Agriculture-focused technology intermediaries: the case of CAMARTEC

CAMARTEC aims at becoming an innovation centre for testing and building agricultural machinery and rural technology. In this regard, its mandate is to disseminate improved technologies for agricultural and rural development. It also supports small enterprises that are embarking on innovating and marketing agricultural or rural technological products. The main goal of CAMARTEC is to boost agricultural production and improve the quality of life of rural Tanzanians. The organisation reports to the Ministry of Industry and Trade. It has two branches: the HQ in Arusha and the Nzega Branch in Nzega district in Tabora region. CAMARTEC is intended to serve the whole country. It is supposed to have eight branches in all eight agro ecological zone to assist the farmers and rural community; but this have not been achieved due to lack of resources.

CAMARTEC offers a number of activities and services to its clients as indicated below:

a. **Technology offering and services:** Agricultural mechanization (machinery, equipment and implements); agricultural animal drawn equipment and tools; rural technologies e.g. renewable energies esp. biogas; rural water supply and sanitation equipment and low cost rural housing technologies.

b. **Production and extension services:** Design and manufacturing; Training on the use, maintenance and repair of CAMARTEC technologies of the end users; Adaptation of foreign agricultural machineries, components, equipment and tools to suit our environment of use repair and maintenance; Testing and evaluation of agricultural machinery equipment and implements intended for use in Tanzania; Training of artisans on the use, repair, and maintenance of agricultural mechanization equipment, implements and tools.

c. **Training programmes and services:** Industrial training for Higher learning institution students; Expected registration candidates for engineering organisations.

d. **Market development services:** supportive services such as design & manufacturing of the items that cannot be attended by other manufacturing organization; Promotion of products through incubation activities and collaboration.

e. **Financial services:** Link with financial institution through provision of guarantee. Preparation of business plan through incubation programme.

CAMARTEC employs 72 technical staff where 4 have master's degree; 6 have bachelors, 4 have advanced technical specialisation, 12 have a basic technical training and 2 have direct industry training. The employees have specialised in fields such as agricultural engineering, civil engineering, mechanical engineering and business administration. CAMARTEC has collaborations with universities such as UDSM; DIT; Mbeya university of Science and Technology (MUST); UDO and SUA. The organisation owns no patent but in the process of owning some. In terms of equipment, CAMARTEC has tools for industrial products and components design, equipment and tools for components prototyping, equipment and tools for system products prototyping, equipment and tools for re-verse engineering and re-engineering, training facilities, market promotion and fair facilities, and financial services facilities/desk.

A large percent of the organization's funding is from the government which was 90% of CAMARTEC's funding (but not always provided according to the budget) with the rest coming from international donors. CAMARTEC undertakes consultancy activities related to agricultural Mechanization and Rural Technology from both the government and the private sector. This activity generates about 26 % of the annual budget especially in the area of renewable energy and agricultural mechanization.

CAMARTEC services rural workshops and artisans engaged in agricultural equipment and tools, and biogas installations companies. These companies are domestic companies with no export orientation. All the Biogas installation companies are privately owned [these are 65 companies] CAMARTEC links them with training in case there is modification of CAMARTEC's design. CAMARTEC offers VETA training of masons through their network and provision of industrial training & supervisions through the universities. The most popular need reported by the organisations is the registration of IPR for their inventions.

A number of these public technology intermediaries have reported important results in terms of technological collaborations and development (Table 27). The following table lists a number of important results obtained from the collaboration between these institutions and the private sector.

Table 27 Public technology intermediaries: demonstration cases

S/No	R&D Institution	Technology Developed
1.	Technology Development and Transfer Centre, University of Dar es Salaam	• Development and dissemination of oil expeller, • Small scale sugar production technology, • Amalgam retort for gold/sand separation, • Brick making machines, feed mixers, • Medical waste incinerator • Bi-diesel technology
2.	Tanzania Automobile Technology Centre	• Development and dissemination of transport technologies namely; 5 tonne truck fire-truck, • Water pumps, • Equipment for small scale cashew-nut processing, cassava processing equipment • A motorized hand driven tractor;
3.	Tanzania Industrial Research Development Organization	• Development and dissemination of extraction of dyes from barks of mangroves, • School chalk production, • Glue from cashew nut shell, • Liquid vegetable oil from indigenous plant and mushroom cultivation technologies
4.	CAMARTEC	• Development and dissemination of biogas technology, • Improved fuel wood and charcoal stoves and different farm implements
5.	TEMDO	• Development and dissemination of different designs, which led to manufacturing oil expellers, dryers and furnaces
6.	Tanzania Forestry Research Institute	• The production of *Boswellia* species and commercialization of frankincense in the dry lands of Eastern Africa • Use and conservation of indigenous fruits (AFORNET)
7.	Ifakara Health Institute	• Pesticides impregnated nets for Malaria control
8.	University of Dar es Salaam (Chemistry Department)	• Anti-malarial agents from medicinal plant products • Antirust polymer from cashew-nut shell liquid • Bio polymers from cashew nut shell liquid • Activated carbon from agricultural wastes • Natural insecticides
9.	Institute of Traditional Medicine	• New drugs from indigenous plants for treating skin diseases • Anti-malarial agents from herbal medicines • Nutritional supplements and immune boosters
10	National Institute for Medical Research Institute	• New Treatment for malaria • Mixtures for treating cough, asthma and peptic ulcers • Malaria vaccine testing
11.	Sokoine University of Agriculture	• New seed varieties for maize, beans, oranges, mangoes, tomatoes
12.	Tanzania Pesticides Research Institute	• Insect pesticides
13.	Tanzania Livestock Research Institute	• New species of cattle • Improved species of milking goats and cattle • Tsetse fly pesticide
14.	Institute of Marine Sciences, Zanzibar	• Development of seaweeds in Zanzibar • Pearl jewellery from sea shells

Source: MCST, 2012

However, a recent pilot industrial survey including 50 medium size manufacturing companies located around Dar es Salaam revealed how the majority of the private companies do not interact at all with these public technology intermediaries. According to the UNIDO preliminary piloting work, less than 20% of the interviewed companies have had any interaction with one of the above listed public technology intermediaries. In many cases the private companies were not aware of their existence and of the types of technology offering, production extensions and training services these institutions are able to offer. The capacity of the public technology intermediaries to link up with the private sector and support its technological development is also dependent of the availability of sufficient funding, adequate equipment and tools as well as conducive organisational structures. The lack of updated equipment, facilities, machineries and tools are critical issues reported by both the public technology intermediaries and the companies that have approached them to address their technological challenges. These preliminary findings suggest the need for a systematic revision of the public technology intermediary systems in view of establishing more and valuable linkages between these key actors within the Tanzanian manufacturing system.

E

Jobs and equality - what can industry contribute in URT?

E.1. Industrial policy objectives for the creation of employment in URT

To enhance the sustainable and inclusive development of the industrial sector, the government of Tanzania devised an industrial policy in 1996 whose main objective was to create employment opportunities and improve human development through industrialization. According to the policy, the role of the industrial sector in Tanzania is to create sustainable employment opportunities which in turn would increase effective demand through higher income. However, sustained job creation requires structural change, that is, the ability of an economy to constantly generate fast-growing activities characterized by higher value added and productivity as well as increasing returns to scale. One of the areas which requires structural transformation for achieving sustainable employment creation is transforming agricultural activities into manufacturing. The industrial sector in Tanzania is committed to achieving this national goal through the development of agro-allied industries like food, textiles, building materials, leather and leather products industries (SIDP, 1996). Other activities in support of this goal include the promotion of small scale industries and informal sector activities organized in all industrial sub-sectors. This is because these sectors employ a large share of Tanzanians.

It has been nineteen years since the industrial policy was formulated with the main goal of achieving industrial development in the country but the desired structural transformation has yet to take place. Apart from sustaining economic growth rates above 8 percent on average (in order to reach the low middle-income status), the aim was for Tanzania to transform from a mainly agricultural economy to a semi-industrialized one by 2025. This transformation, in other words, industrialization, will happen if the economy shifts from agricultural production to manufacturing production. Manufacturing offers an opportunity not only to re-balance the economy towards higher value-added sectors but also to provide a relatively wide employment base with higher than average labour productivity (IDR, 2013). Tanzania needs to undergo major structural transformation in order to meet the target outlined in the Long Term Perspective Plan for 2025, namely increasing industry's share of employment from 6 % in 2010 to 20 % by 2025 (see Table 28).

Table 28 Tanzania's Employment Targets (Long Term Perspective Plan)

	Baseline 2000	Status 2010	Targets for FYDP I 2015	Targets for FYDP II 2020	Targets for FYDP III 2025
Employment in Agriculture (% of total)	74.6	74.6	61	50	41
Employment in Industry (% of total)	5	6	8	12.5	20
Unemployment total (% of total labour force)	12.9	4.7	4	Below 5%	Below 5%

Source: Tanzania Long Term Perspective Plan

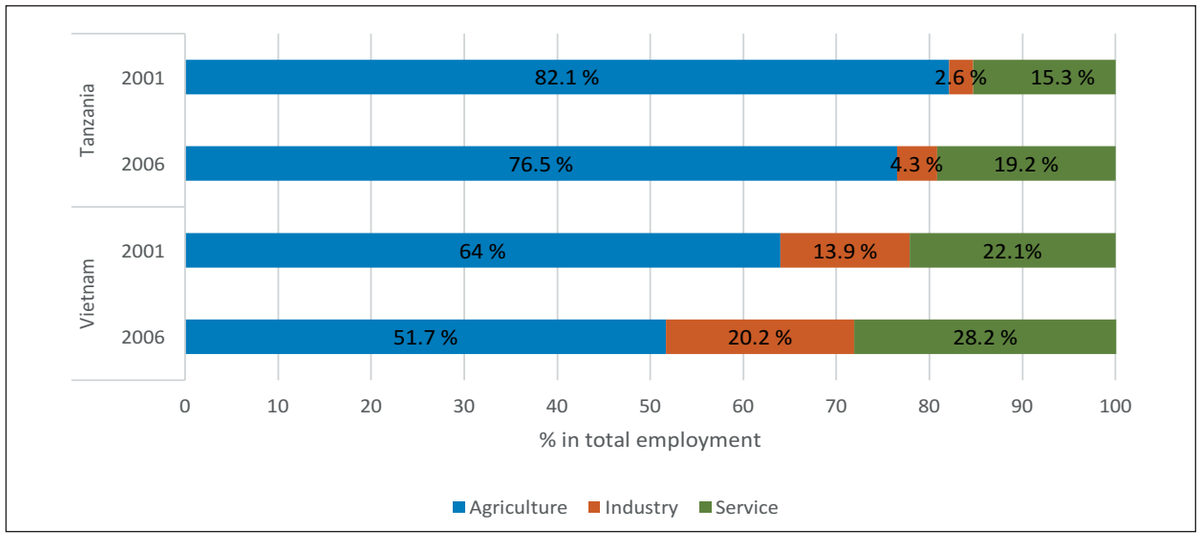
E.2. Manufacturing employment performance in URT

This section aims at providing an overview of employment levels and job creation in manufacturing relative to other sectors. The analysis will then go further into studying employment composition within manufacturing (i.e. looking at manufacturing sub-sectors).

E.2.1. Manufacturing employment trends

Figure 74 illustrates the percentage distribution of total employment across the main economic sectors for the years 2001 and 2006 for Tanzania and Vietnam. Vietnam is selected as a role model for Tanzania due to its ability to effect structural change despite being structurally similar to Tanzania in the 1990s (discussed in Section B). As can be noticed from Figure 74, the agricultural sector has the largest employment share (more than 50 percent of total employment) in both countries, followed by services. Industry, which includes manufacturing, has created the least jobs until now. While in Tanzania there has been a growing importance of the manufacturing sector in terms of employment (and a shift away from agriculture), the increase was modest. Vietnam has recorded a more pronounced trend, whereby the share of population employed in the agricultural sector declined by roughly 12 percentage points (from 64 percent in 2001 to 52 percent in 2006). Slightly over half of that (6.3 percentage points) was gained by the industrial sector over the same period. The larger gains in shares of employment in manufacturing experienced by Vietnam indicates that its industrial growth allows, relatively speaking, a larger share of the population to benefit from it.

Figure 74 Employment composition across sectors, Tanzania and Vietnam (2001 & 2006)



Source: World Development Indicators

While the data presented in Figure 74 observes a period from ten years ago, the National Bureau of Statistics provides more recent data for Tanzania on employment per sector (Table 29). These figures, however, differ from those of WDI as they refer to formal employment only, leading to the capture of a lower share of agricultural employment relative to the other sectors.

These statistics on formal employment which was compiled from the Employment and Earnings surveys (2012 and 2014) shows that the service sector consistently takes a lead in creating more (formal) employment followed by the manufacturing sector, agriculture and lastly other sectors (which include mining and construction). Education, public administration and defence sub-sectors have been large contributors in creating employment within the service sector.

Nonetheless, whereas the share of employment in other sectors has been decreasing, the manufacturing sector has been increasing its own one by 3% in these two years with an annual average growth rate of 28%. This is a good sign for a country like Tanzania which is focusing on creating more jobs within the manufacturing sector and on shifting from reliance on agriculture to other sectors in the economy.

Table 29 Composition of Tanzania Employment by sectors and average growth rate (2012 – 2014)

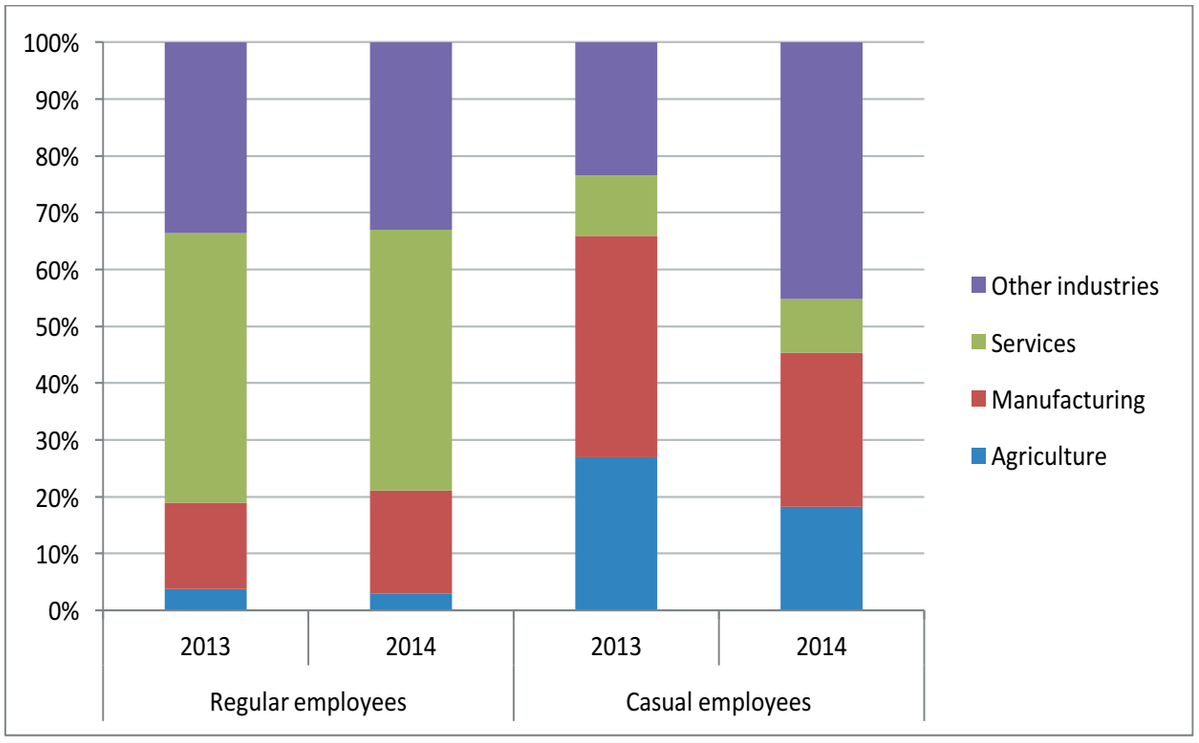
Sectors	No of employees 2012	Sub-Sector's percentage share in 2012	No of employees 2014	Sub-Sector's percentage share in 2014	CAGR (2012-2014)
Agriculture	96,101	6.2%	116,804	5.5%	10%
Manufacturing	260,403	16.8%	423,379	19.8%	28%
Service	1,133,063	73.1%	1,524,417	71.2%	16%
Other sectors e.g. construction, mining	60,450	3.9%	76,750	3.6%	13%
Total	**1,550,018**		**2,141,351**		

Source: Employment and Earnings Survey, 2012 & 2014

Regular versus Casual employees

According to the Employment and Earnings Survey, the composition of formal employment in Tanzania consists of regular and casual employees and the numbers for each differs across sectors. The term *regular employee* refers to all permanent and temporary employees who have been employed on a weekly or monthly basis for more than one month, while *casual workers* refers to all persons receiving daily wages and other employees who have not worked for the full month (EES 2012).

Figure 75 Regular (RE) Versus Casual Employment (CE) across sectors (2013 - 2014)



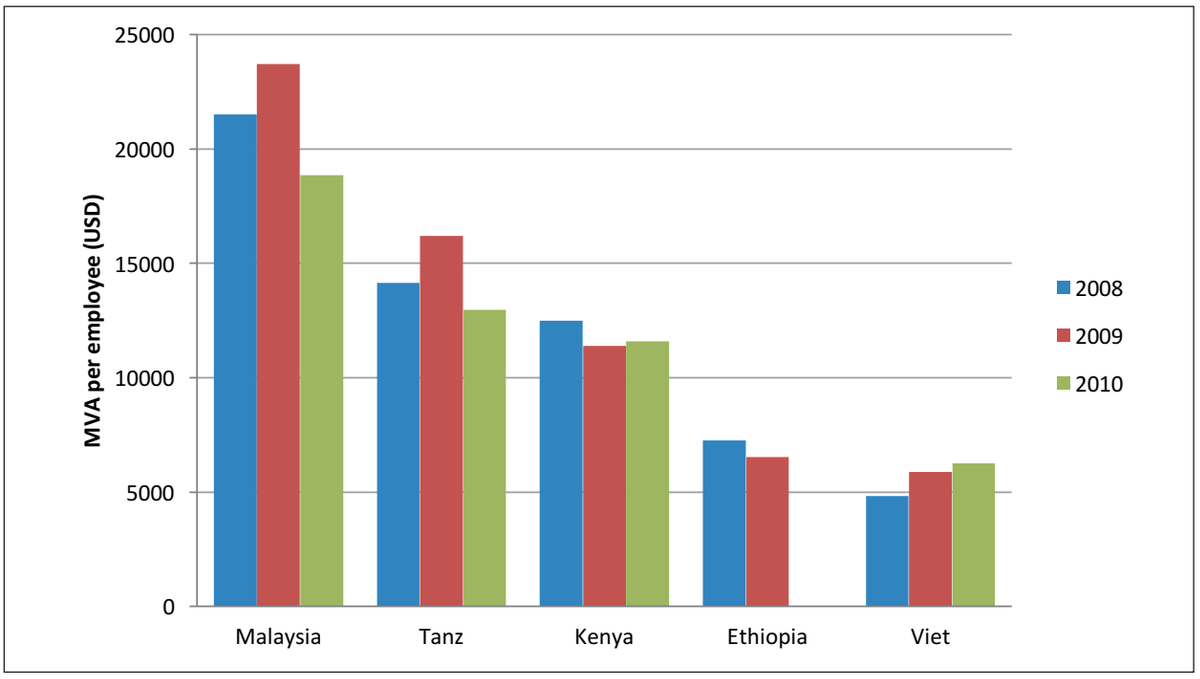
Source: Employment and Earnings Survey, 2014

Figure 75 illustrates the distribution of regular and casual workers based on sector employed (agriculture, manufacturing, service and other industries), in 2013 and 2014. In 2013 the manufacturing sector had the largest share of casual employees (39%) while having a significantly smaller share of all regular employees (15%). The sector succeeded in reducing its share of casual employees to 27.2% and marginally increased its share of regular employees by 3% from 2013 to 2014. The service sector reported the highest number of regular employees in 2014 (45%), while the agriculture sector had the smallest share of regular employees (2.9%) in the same year. The picture presented here is in line with the idea that certain sectors (particularly the agricultural sector) will have a larger share of employment in the informal sector and this can be read from the differences in the composition of employment found in Figure 74 and Table 29. While employing casual workers may be inevitable for some sectors, the working conditions, rights and wages of casual (and informal) workers are generally lower than those of regular (and formal) workers, making the observation of such data meaningful for policy design and implementation.

Manufacturing Productivity Trends

Labour productivity - measured by the ratio of manufacturing value added per employee - is often used as a proxy for (sectoral) competitiveness. Figure 77 shows the performance of Tanzania's employees within the manufacturing sector where, apart from Malaysia, their productivity was higher compared to other comparators.

Figure 76 Labour productivity in the manufacturing sector for Tanzania and comparators (2008-2010)



Source: INDSTAT

It needs to be taken into consideration that the data used (provided by INDSTAT) takes only formal firms with ten or more employees into account. The calculation of productivity is therefore undertaken with a sample of the manufacturing sector only, and there is a bias towards larger, more capital-intensive enterprises.

The productivity of these firms, however, has been decreasing between 2009 and 2010, while that of Vietnam has been continuously growing at 13.9 % on average per year in the period 2008-2010. This is due to its MVA growing at a rate of 20.3 % even though employment creation was slower at only 5.7%. The transition towards more sophisticated sub-sectors in manufacturing in these years may be a contributing factor to the greater productivity in Vietnam. As Tanzania continues to grow its manufacturing sector, the challenge lies in increasing productivity without harming employment growth.

E.2.2. Employment in sub-sectors of manufacturing

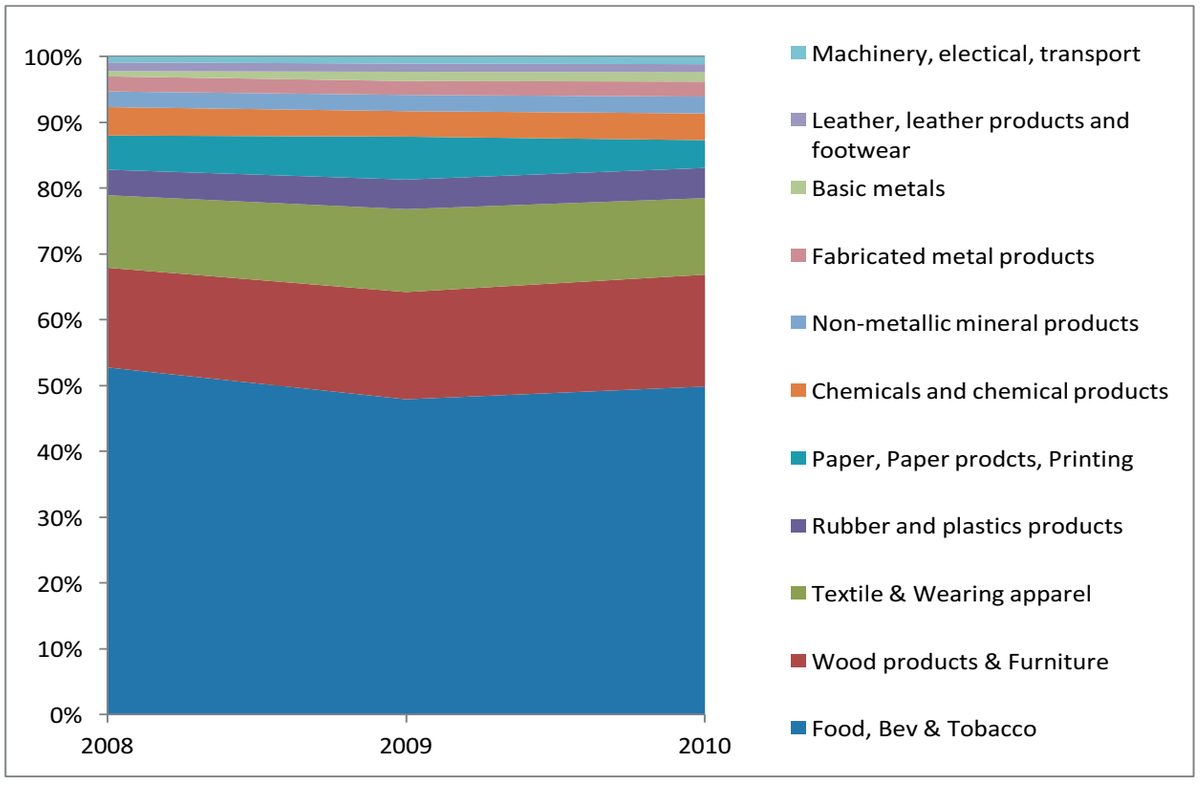
The analysis of employment at the sub-sector level shows how manufacturing employment is distributed across sub-sectors. It therefore establishes which sub-sectors are contributing positively to manufacturing employment creation and productivity, providing key information for policy and strategy formulation.

The composition of manufacturing employment for Tanzania, as shown in Figure 77, is dominated by the food, beverages and tobacco sub-sector. It provides over half of all jobs in manufacturing, though it has recorded a small decrease since 2008. The importance of the sector for employment is in line with its importance in creating value added for the country (55% of MVA in 2010).

Over 16% of employees in manufacturing are in the wood products and furniture sector, and more disaggregated data reveals that the vast majority of these work in the production of furniture (70%). Textiles, wearing apparel and leather together make up almost 14 % of manufactured employment, making it

the third most important sector in terms of employment. These three resource-based sectors, categorized as light manufacturing industries make up almost 80 % of total employment in manufacturing. The following sub-section discusses each of these in more detail.

Figure 77 Manufacturing sub-sector employment composition in Tanzania (2008- 2010) (USD)

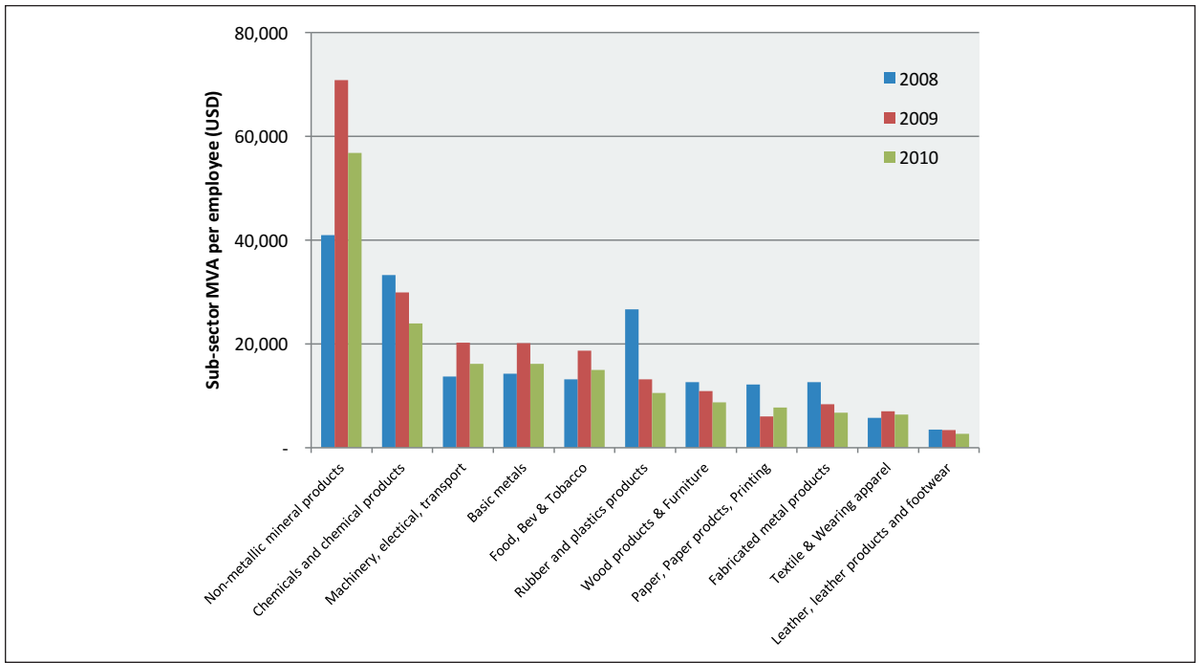


Source: INDSTAT

Productivity by sub-sectors

Figure 78 shows productivity in the given sub-sectors in 2008 to 2010. The sub-sectors which generate the most employment in manufacturing (as shown in Figure 77) are not the most productive sectors. Out of the three light-manufacturing sub-sectors mentioned above, food, beverages and tobacco had the highest productivity with less than 15,000 USD value addition per employee in year 2010. This is significantly lower than sectors such as non-metallic minerals, chemicals, basic metals and machinery, equipment and transport. The majority of sub-sectors which reflected higher productivity are from medium and high tech groups, generating higher value addition with fewer workers. This is different from light manufacturing industries which are highly labour intensive, that is, the value created is largely dependent on the number of employees. Furthermore, all the sectors apart from paper and paper products have recorded a decrease in productivity between 2009 and 2010, and around half have seen an overall decrease since 2008. This indicates that the overall decrease in productivity in the manufacturing sector of Tanzania seen in Figure 76 is not due to one particular sub-sector, but rather to the entire manufacturing sector.

Figure 78 Labour productivity by manufacturing sub-sector (2008-2010)



Source: INDSTAT

Employment elasticities of MVA

To complement the trends observed above on employment creation and productivity, the table below (Table 30) examines employment elasticity of MVA between 2008 and 2010. This indicates how much employment was generated for every percentage increase in value added in the period mentioned. While it uses historic data, elasticities are often used to indicate future developments. The following table presents the growth rates of employment and value added, and the employment elasticity for each sub-sector. This allows us to classify the sub-sectors into five major sub-groups: jobless growth, productivity-led growth, employment-led growth, unproductive employment growth and declining sectors.

Table 30 Employment elasticity of manufacturing sub-sectors, Tanzania (2008 – 2010)

Sector	Employment CAGR	MVA CAGR	Employment Elasticity	Sector Classification
Food, Bev & Tobacco	-3.73%	2.61%	-1.43	Jobless growth
Textile & Wearing apparel	1.55%	6.81%	0.23	Productivity-led growth
Leather, leather products and footwear	-4.88%	-16.42%	0.30	Declining sector
Wood products & Furniture	4.71%	-12.97%	-0.36	Unproductive employment growth
Paper, Paper products, Printing	-10.21%	-28.27%	0.36	Declining sector
Chemicals and chemical products	-4.72%	-19.14%	0.25	Declining sector
Rubber and plastics products	8.06%	-31.87%	-0.25	Unproductive employment growth
Non-metallic mineral products	1.96%	20.08%	0.10	Productivity-led growth
Basic metals	37.37%	46.22%	0.81	Productivity-led growth
Fabricated metal products	-0.66%	-27.46%	0.02	Declining sector
Machinery, electrical, transport	11.02%	20.56%	0.54	Productivity-led growth

Source: INDSTAT

The food beverages and tobacco (FBT) sector, which is by far the largest contributor to employment in manufacturing, has recorded a slight decrease in employment while it was increasing value added through the years. This can be considered to be as undergoing jobless growth. Contrary to what is happening in the FBT sub-sector, the wood products & furniture sub-sector, which is the second largest provider of employment in manufacturing, has been experiencing a decline in productivity along the two years, due to a contraction in value addition while its employment has been growing. The same was the case in the rubber and plastic sub-sector. These sub-sectors can be classified as undergoing unproductive employment growth.

It is also observed that there are sub-sectors which experienced a decline in both productivity and the capacity to generate employment in the two years analysed. This includes leather, paper, chemicals and fabricated metal sub-sectors, where these sub-sectors reflected a higher decline in value addition compared to employment.

While the basic metals sector was very successful in generating both employment and related productivity, other sub-sectors like textile, non-metallic mineral and machinery, equipment and transport sub-sectors report higher growth in productivity and a smaller increase in employment. Technological advancement is one of the contributing factors to this increase in labour productivity. Interestingly, the basic metals and machinery, equipment and transport sub-sectors had the largest employment elasticities during the three years.

All in all, the analysis on employment elasticities should be interpreted with care. Due to the lack of reliable and comparable data, this study was unable to use data prior to 2008. Normally elasticities are calculated over a larger time period, as it is assumed that there will be a lag between output/value added growth and employment creation.

E.2.3. Light Manufacturing for employment opportunities in Tanzania

Why Light Manufacturing?

Developing countries aim to progress to high value added sectors especially in the manufacturing sector. In order to achieve this a strategy that focuses on light manufacturing is useful especially for countries that are heavily resource-based. Sub-sectors which pertain to this group (such as agro-processing, textiles, leather, wood processing etc.) are generally labour-intensive and tend to capitalize on low skilled workers, helping to absorb a large portion of the labour force, and hence having a strong potential to have an impact on poverty reduction. The competitive advantage of these countries commonly lies in the abundance of natural resources and relatively low labour costs.

In the short term, it is generally more feasible for countries to develop these labour-intensive sectors due to the level of skills and technology already available, and the type of investment which these attract. While aiming to increase competitiveness of these light manufacturing sectors and ensure they achieve the anticipated social objectives, countries may decide to gradually invest in building the necessary conditions and develop a conducive business environment in order to simultaneously develop more sophisticated, capital and knowledge-intensive sectors in the future. This could be the case for countries whose medium term objective is to move to lower middle income status as investing in capital and knowledge is costly and takes time.

The light manufacturing industry led to economic transformation in many fast growing developing countries including China and Vietnam which began with a focus on low-skilled, labour-intensive sectors before they invested in more sophisticated ones to ensure continuous competitiveness and economic growth. Increased efficiency and sophistication can also be developed within sectors, by

using technology, skills and know-how to make production processes more efficient. A good example is Ethiopia which is currently focusing on Agricultural Development Led Industrialization.

In the Sub-Saharan region, the light manufacturing industry is characterised by relatively few medium-sized formal firms and a large number of small and informal firms, generally producing less efficiently. Product quality is often also less competitive and the products are mainly for the domestic markets (Dinh and Monga., 2013, see also Section D).

The Potential for Light Manufacturing Industry in Tanzania:

The light manufacturing industry needs to be competitive for it to stimulate the process of job creation. The Tanzanian economy like with many Sub-Saharan African countries possesses many characteristics that could enable it to be competitive in light manufacturing, for instance:

- A comparative advantage in low-wage labour
- Abundant natural resources
- Access to high-income markets for exports
- A large local and regional markets

Tanzania's abundant natural resources could allow it to make strides in the sector on the lines of many successful Asian economies but it is important to note that these economies did not have access to domestic natural resources on a similar scale as Tanzania's (Dinh and Monga, 2013). This could make Tanzania's transition, if managed effectively, easier. In Tanzania, the light manufacturing industry sub-sectors play a significant role for the economy, contributing to more than 70 % of both manufacturing production and employment. However, it is becoming a matter of some concern that the sub-sector is witnessing a decrease in productivity, employment and/or production in a number of cases.

Table 31 presents capacity utilization of the light-manufacturing sectors discussed earlier. The ASIP (2008) data shows significant under-utilization of capacity across the sectors. The manufactured beverages sector has the highest share, with 66 % of its production capacity being used, followed by the furniture sector (55 %). The remaining are well below half, with the tobacco industry making use of a meagre 25 % of its total capacity.

Table 31 Utilization of production capacity by activity

Activity	Capacity Utilization (%)
Manufacture of food products	44
Manufacture of beverages	66
Manufacture of tobacco products	25
Manufacture of textiles	34
Manufacture of leather and related products	36
Manufacture of wood and products of wood and cork, excl furniture	31
Manufacture of furniture	55

Source: Annual Survey of Industrial Production and Performance, 2008

Light Manufacturing Industry Sub-sectors in Tanzania: Opportunities and challenges

This section reflects on each of the four light manufacturing sub-sectors mentioned above. It discusses the challenges and initiatives undertaken by the government, as well as the opportunities which can be further exploited to foster production and create employment.

Agro-processing

The agro-processing[12] sub-sector is the largest manufacturing sub-sector in terms of contribution to production and employment. Tanzania has identified this sub-sector as a priority area for achieving sustainable industrial development in its policy framework and strategies due to the sub-sector's comparative advantage (since the country is richly endowed with the required natural resources); labour-intensive nature; and low technology required in production process (SIDP 1996).

Even so, value added of the sub-sector was growing quite slowly and there has been a reduction in the number of workers between 2008 and 2010. In fact, while the food and beverages sector had a reduction of 1.7 % of employment, the tobacco sector lost 20 % of its workers in the same period.

Table 32 Distribution of employment within agro-processing (2008-2010)

Agro-processing Sub-sectors	Share of total FBT employment (2010)	CAGR (2008-2010)
Sugar	33%	8%
Tobacco products	8%	-20%
Soft drinks, mineral waters	7%	1%
Grain mill products	7%	28%
Cocoa, chocolate and sugar confectionery	6%	-11%
Processing/preserving of fish, etc.	4%	-27%
Vegetable and animal oils and fats	3%	31%
Malt liquors and malt	2%	3%
Distilling, rectifying and blending of spirits	2%	8%
Bakery products	1%	8%
Other agro-processing	26%	-12%

Source: INDSTAT

Table 32 further disaggregates the data, illustrating the share of employment in different product categories within agro-processing, and the growth rate of employment within each. It can be seen that sugar production employs the largest share, while the number of people engaged in the production of grain mill products and vegetable and animal oils and fats was growing fastest. Nonetheless, drops in employment in the manufacturing of tobacco, processing and preserving of fish, cocoa, chocolate and sugar confectionary and others, have caused the sector as a whole to have declining employment figures.

Considering Tanzania's level of per capita income, it is still at a stage where it should be able to further increase employment and MVA significantly. The Industrial Development Report 2013 reveals that countries are usually able to increase employment in the food and beverages sector until they reach the advanced stages of upper middle income status. Growth in the sector's MVA can however continue for a longer period due to the potential of higher productivity gains in the sector (Industrial Development Report 2013).

The potential for Tanzania to boost its agro-processing sector does, however, exist, particularly seeing that there is still ample scope to:

a) Reduce the trade deficit in agro-processing industries like dairy products and edible oils, and cater to the large domestic market

12 Agro-processing in this report refers to the food, beverages and tobacco sectors specifically.

b) Add value to agricultural products both consumed locally and exported, especially those with high growth rates.

Boosting agro-processing should result in job creation, and should contribute to reducing regional inequalities in Tanzania. Different strategies and initiatives are in place to increase the capacity utilization of the sub-sector, with four examples listed below.

- In the IIDS (2025) the targets selected in agro-processing industries include edible oil, cashew nuts, fruit processing, and milk and dairy products;
- The agriculture sector development program (2006-2013) prepared by the government to support green revolution within the sector;
- Kilimo Kwanza (2009), launched by Tanzania National Business Council, emphasizing a shift from subsistence to commercial farming and the participation of the private sector;
- The Southern Agricultural Growth Corridor of Tanzania Initiative (2010), which maps how private investment can promote commercial farming.

Further value chain analysis and investigation at product level would reveal the attractiveness and feasibility of processing and adding value to agricultural products of relevance to Tanzania. A special focus should be placed on ensuring this will result in raising (productive) employment in these specific value chains.

Textile and apparel

Tanzania was among Africa's top five cotton lint and cotton yarn producers in the years 2006/07 to 2010/11, (UNCTAD, Commodities at a Glance – 2011). Currently, there are more than 20 regions across Tanzania which cultivate cotton, including Geita and Simiyu, (Textile Development Unit Tanzania, 2015). As cotton growing has not been limited to just a few regions, focusing on developing this sector can further contribute to ensuring a more equitable development throughout the country.

Currently, more than 80% of cotton produced is exported without being further processed (refer to Cotton Value Chain case study in Section C for more information). However, the value chain for cotton processing is long, and the potential for value addition is 500 – 600%. Retaining more activities in this chain at the domestic level will allow the sector to create employment taking into account that it is highly labour intensive (Dinh and Monga, 2013).

Textiles and wearing apparel account for no more than 5.5 % of Tanzanian MVA in 2010, and to 11.6 % of manufacturing employment. Tanzania can still play a leading role as a cotton lint and yarn producer in the region, and there has been an increase in production, employment and productivity in this sector since 2008, offering a promising outlook. According to ILO (2015), the Textile, Clothing, Leather and Footwear sub-sector has the potential to provide employment opportunities to millions of workers worldwide, especially for young women. The Industrial Development Report 2013, in turn, highlights that there is still significant scope to further increase both value added and employment in the textiles sector until one country reaches the upper middle income status.

With global demand being highest for cotton fabrics, yarn and apparel of cotton among the product groups of this value chain (see the value chain analysis in Section C), and prices of these products being higher than cotton seeds, raw cotton and less processed forms, cotton yarn, fabrics and apparel present themselves as attractive product groups for Tanzania to promote and develop. Although Tanzania's exports of apparel are minimal compared to that of raw cotton, it has been steadily increasing since 2011. This indicates that we can be expecting to see growth in value added (and employment) in the years after 2010.

Further exploiting opportunities provided by agreements such as the African Growth and Opportunity Act (AGOA) and Economic Partnership Agreement (EPA) can allow easier access of Tanzania's products to international markets. This should come in addition to catering for the growing regional markets. Indeed, initiatives have been undertaken to ensure higher and stable yields in the sector as outlined by the Tanzania Cotton Board, 2014. Such a strategy would ensure a longer production chain as well as higher employment.

Leather and leather products

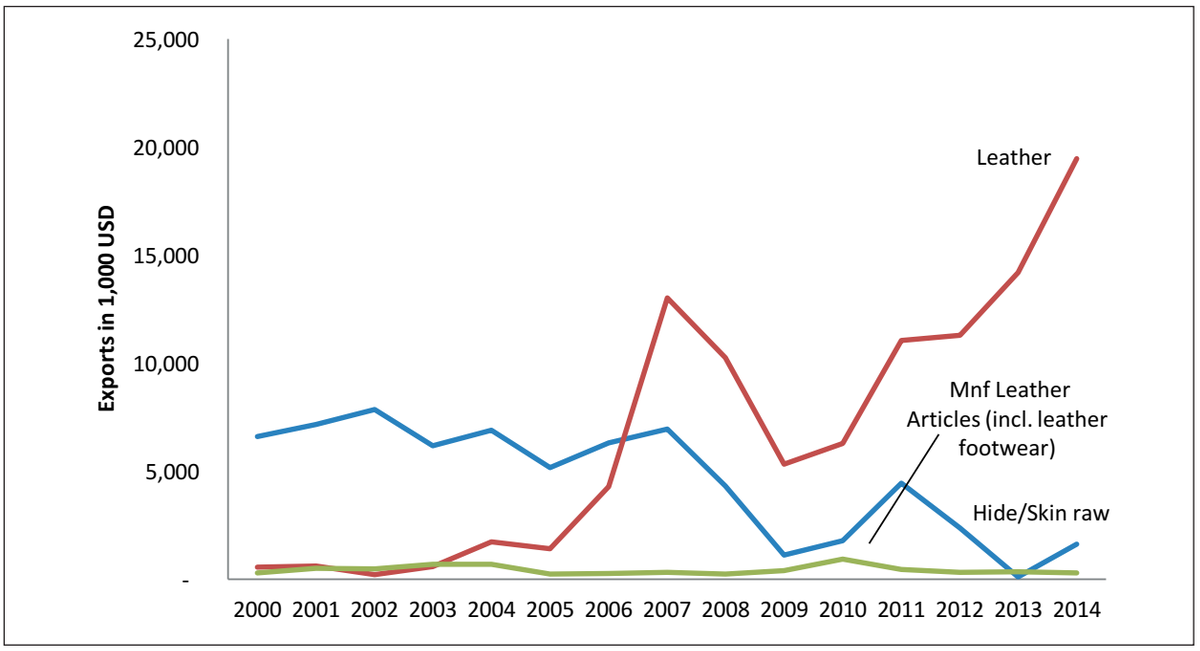
Tanzania has a livestock population of approximately 43 million heads which includes cattle, goats, sheep and pigs. This makes it the third largest cattle population in Africa, (NBS, 2012). The country has estimated that the annual "recoverable off-take" of hides and skins stands at 2.6 million and 2.5 million units respectively. In their report on the Tanzania Leather Sector Export Development Strategy (2004) the Board of External Traders Tanzania (BET) explained that since the 1990s when the privatization process in the sector began, until the 2000s, the performance of the sub-sector had been deteriorating with leather footwear and leather products production units collapsing. Additionally, in the early 2000's, 35% of the total off-take is estimated to have been exported informally to Kenya and Uganda without being processed into higher value-added forms of leather (BET, 2004).

Data for 2008 to 2010 from INDSTAT does not show a very different picture with a 16.4 % decrease of production annually through these years. This has also led to a reduction in employment by 4.9 % on average per annum during this period. According to an ILO report (2015), this sector should still be able to employ a large number of workers, and contribute to reducing gender inequality. There is an opportunity for the sub-sector to advance in both value addition and exports within a short period due to a few specific factors. These include processing the large quantity of raw materials available (off-take of hides and skins), dynamics of international markets (particularly leather footwear), existing government initiatives to develop the sector (referring to IIDS, 2012 – 2025), and the existing tanning capacity (BET, 2004).

As an initiative to develop the sub-sector, the government of Tanzania has adopted an integrated hide, skins, and leather strategy in 2007 which focuses on cluster formation, quality improvement, local investments and promotion. The sector was also selected as one of the priorities in Integrated Industrial Development Strategy (IIDS), 2012-2025. Nonetheless, to date little can be noticed in terms of the impact of these.

Tanzania's exports of hides and skins have decreased by 10 % per annum since 2000 while leather exports accelerated by 25 % per year (and by 29 % between 2009 and 2014). Exports of manufactured leather articles, of which 86 % is leather footwear, account for only 1 % of the entire sector and have undergone a minor contraction of 0.5 % since the turn of the century (Figure 79).

Figure 79 Tanzania's exports of leather and leather related products (2000-2014)



Source: UNCOMTRADE

The overall growth of exports in the sector hints that this may have gone hand in hand with new jobs being created, especially in activities related to leather, such as tanning. Nonetheless, the stagnant performance of the manufactured leather products suggests more assistance is required to promote the sector and boost revenue and employment levels. Indeed, since 2009 global demand for manufactured leather exports grew annually by 11.4 %, while Tanzania's exports contracted by 7.5 % in the same period. With prices of these goods being higher than the exporting of skins, hides or semi-processed leather, adding value to leather could prove to be attractive for the economy. Prices of footwear, for example, are more than double as high as leather. As the sector has a positive employment elasticity of 0.30, it is assumed that the sector could then increase employment.

Wood and wood products

Currently, almost 800,000 Tanzanian people earn their livelihoods from forest and wood products (Dinh and Monga, 2013). This is also reflected in the sub-sector's share of manufacturing employment (17% in 2010). The upstream segment of the value chain (milling and furniture manufacturing) is yet to be fully exploited, and this results in the Tanzanian trade deficit in furniture. In 2009 while Tanzania exported 37 million USD of wood products (furniture contributing to 3 million USD) it imported a total of 87 million USD of which 66 million USD was accounted for by furniture (Global Development Solutions – 2011 as cited by Dinh and Monga, 2013). This indicates there is local demand which is not met by production nationally.

Since the 1980s, different initiatives have been undertaken to improve the performance of the sub-sector, both in terms of value-addition and exports. Different strategies which have been implemented since the trade liberalization era (1987) seemed to have had a positive impact on the sector. These include the removal of trade distortions in the production and marketing of forest products to ensure effective market-determined prices, the removal of fiscal and non-fiscal barriers in forest trade and the promotion of forest-related sectors (UNEP, 2002). Indeed, Tanzania's world market share in wood and wood products expanded during the 2000's. Exports in this sub-sector grew at an average rate of 17 % per annum since 2000, while world exports grew at 6 %.

However, the production figures presented in the sub-sections above indicate that between 2008 and 2010 a decline of 13% was witnessed on average each year. At the same time, however, employment increased by 5%. The largest increase was found in wood products other than furniture (27.7 %), while furniture exhibited a growth of 3.4 % per annum. The more recent data available for exports indicates that national production of these goods has been growing in an upward trend in the last few years. The informal sector also makes up a large share of this sub-sector as a significant share of micro enterprises operate therein. This is one reason why the analysis of value added and employment generation may not be adequately reflected in a formal study of this sub-sector. Nonetheless, the latter records a trade deficit in Tanzania. Strategies to reduce the underutilization of capacity and available resources (e.g. hardwood for furniture) should be put in place, in order to both increase production and employment. This should serve for the domestic and international markets.

Box 13: Employment in Vietnam's manufacturing sector

Light Manufacturing Industry: Strengths, Performance and Challenges

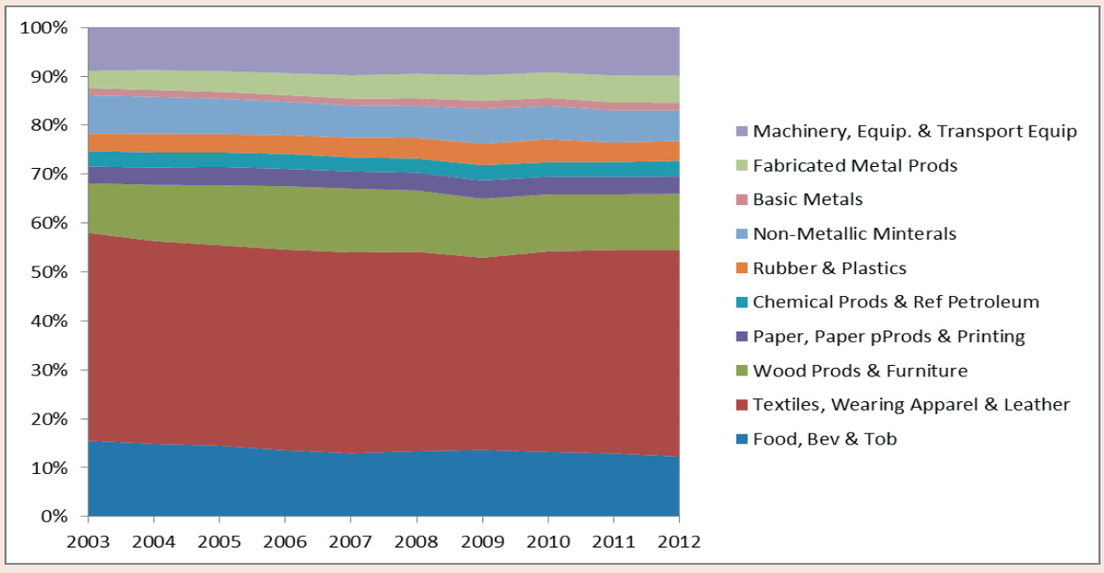
To facilitate the economic and structural transformation of the country, Vietnam has been implementing a wide-ranging reforms package including the "Doi Moi" (renovation) policy (McCaig and Pavcnik, 2013). The reforms targeted mostly at the export sector are also meant to contribute to the reallocation of labour from agriculture to manufacturing. Between 1986 and 2008, the export of light manufacturing goods increased in Vietnam while the share of light manufactured goods in imports decreased.

Vietnam, like most labour-intensive countries, has the potential to develop its light manufacturing sector. The country has a large young labour force whose productivity in well managed firms is higher than that of many other countries including China. The natural resources available are another advantage for the economy as they support expanding the manufacturing capacity to the extent of being able to cater new markets and reduce imports (Dinh, 2013). While the share of agriculture in GDP has decreased from 34% in the year 1986 to 17% in the year 2009, the manufacturing sector grew from 17 % to 25 %. These changes are also reflected in the structure of employment where the share of employment from agriculture has decreased from 73 % in the year 1990 to 54 % (in 2008). In the same period the share of employment in manufacturing has increased from 8 % to 14 %, (McCaig and Pavcnik, 2013). INDSTAT data reveals that more than 60 % of manufacturing employment takes place in the light manufacturing industries, as shown in Figure 77.

Vietnam, though, like other late developers investing in light manufacturing industries, still faces a challenge of competing globally in terms of price and quality. This requires developing productive firms with the required organizational capabilities to face competitive pressures from established firms. These include possessing the relevant skills required to organize and manage medium and large firms, difficulties that informal firms face such as the lack of access to land to expand operations, and the presence of a large number of state owned enterprises that could potentially be market distorting (Dinh, 2013). Some of these challenges also hold in the case of Tanzania.

Figure 77 shows the employment composition of Vietnam's manufacturing sub-sectors portraying the contribution of its light manufacturing industry. While the employment share of light manufacturing in Vietnam is only slightly lower than the share of light manufacturing in Tanzania, the composition differs. Vietnam's largest contributor to manufacturing employment is the textiles and apparel sector.

Figure 77 Vietnam manufacturing sub-sector employment composition (2003 -2012)



Source: INDSTAT

F

Policy Recommendations

The TICR represents a major data collection and analysis effort towards more effective and evidence based policy-making. Multiple data sets and methods have been deployed and triangulated. While section B has mainly relied on the consolidated UNIDO Competitive Industrial Performance Methodology, and section D has deployed state of the art industrial capabilities indicators and backward forward linkages analysis, the other thematic sections have combined a number of validated diagnostics for indicative and exploratory sectoral value chains and labour market analysis.

The goals of this policy recommendations section is twofold. By drawing on the updated analysis, in particular in section B, this section presents a synthetic assessment of the progress made in the implementation of the policy recommendations proposed in TICR 2012. Based on this longitudinal comparison a number of policy messages are sketched for further analysis. The second goal of this section is to build on these policy messages and construct a policy priorities list (termed 'gears') that aim at informing the design of the FYDP II and other relevant policy documents, plans.

F.1 Mapping the progress of implementation of policy recommendations proposed in TICR 2012

SECTION B: EVIDENCE	SECTION B: POLICY MESSAGES
Industrial Production: *Evidence 1:* Despite the increase observed in MVA absolute value, the annual average MVA growth rate has declined from 8.96% (2005 – 2010) to 5.84% (2010 – 2013) *Evidence 2:* Tanzania's capacity to produce (MVA per capita) has been increasing at decreasing rate when comparing the growth of 2005 -2010 (CAGR 5.4%) to that of 2010 – 2013 (CAGR 2.7%) *Evidence 3:* Although the country managed to slightly increase its industrial production impact to the world in 2010 – 2013, the impact is still very small. *Evidence 4:* The share of MVA in country's economy has decreased comparing 2010 and 2013 (8.34% and 8.13% respectively). In contrary, service sector continued to increase its importance in the economy while agriculture sector has also been diminishing.	Industrial Production: *Message 1:* The country should target key sub-sectors within manufacturing and fully exploit the strengths which the country has on the same sectors. This would ease the process of setting aside resources for diversifying and upgrading the overall manufacturing system. *Message 2:* As a strategy of taking advantage of other resourceful investors, the country should attract Foreign Direct Investors and encourage them in contributing to the development of domestic manufacturing sectors and product niches. *Message 3:* Within the identified/selected sub-sectors, the country should specify and focus on specific value chain node/s in the respective sub-sectors in which it has comparative advantage, while attempting to go beyond that with mission-oriented initiatives.

Trade: *Evidence 5:* The country's manufactured exports which were increasing until the year 2012, have dropped in the period of 2012 – 2013 (-5% CAGR for 2010 - 2013). The major drop was caused by the decline of base metals exports. *Evidence 6:* Excluding base metal, in the year 2013, the country was competitive in the food, beverage and tobacco sub-sector which covered approx. 23% of the total mfg exports. *Evidence 7:* The competitiveness of the country to export manufactured products has declined reflected under the respective trade capacity. The export capacity is even lower compared to production capacity noted before (33 USD and 46 USD respectively). *Evidence 8:* Since the world manufactured exports continued to grow in the year 2013 and those of Tanzania declined, the country's impact on the world market for manufactured products has also diminished. *Evidence 9:* In the structure of exports, almost 40% of the country's exports are manufactured, while 25% of the manufactured fall under MHT category. However, the country has not been consistent over the years, from 2000 to 2013 on moving to sophisticated products, but showing an unreliable trend. *Evidence 10:* Primary products exports have been increasing over the years. In that regard, there is an opportunity for further processing in order to increase manufactured exports and so MVA. *Evidence 11:* MVA in MHT country's products is very smaller compared to MHT exported products hence very low profit for the country's reported export value.	Trade: *Message 4:* Diversification of manufactured products and markets increase the country overall resilience and make it less exposed to unforeseen crisis. The country should have multiple options both for manufactured products to trade and the trade partners to cover for risks. *Message 5:* The country's Bureau of Standards should put more emphasis on the standards, certification and quality assurance of domestic production, especially in view of meeting international demand standards. *Message 6:* The price vulnerability of Resource-Based products should be addressed by firstly setting clear strategies/targets reducing their share in the export basket and, secondly, by increasing processing and resource beneficiation (increasing value addition). The rebalancing of the export baskets requires investing in the production of both low-tech and medium tech manufacturing products (decreasing dependence and moving towards higher value export product segments). *Message 7:* To take full advantage of the potential which the country has on the primary sub-sector, more investments should be promoted around agro-industries, including resource-based industries as well as relatively more advanced technological industries which produce machineries for agro-processing.
Within EAC & SADC: *Evidence 12:* Observing EAC, SADC and SSA markets, it was noted that different markets have different types of goods demanded. While RB products were highly demanded in the EAC market, MHT products were more demanded in SADC and SSA markets. *Evidence 13:* Despite that Tanzania share of manufactured export in EAC is higher and continued to increase from 2010 to 2013, the value of manufactured exports to the same market has slightly decreased in the same period which implies that primary exports have been increasing. *Evidence 14:* The SADC market for Tanzania manufactured products has grown faster than that of EAC (CAGR 20% from 2010 to 2013). *Evidence 15:* RB and LT markets are the potential growing markets which the country can exploit. *Evidence 16:* Tanzania's market share in landlocked countries has declined which is due also to the increasing competition from other countries apart from Kenya and South Africa whose share was also decreasing.	Within EAC & SADC: *Message 8:* The country should promote specific efforts for different markets depending on the quantity and composition of demand. In this regards, regional market segmentation should be adopted in relation to the nature of product and technology classification markets. *Message 9:* Infrastructures like ports, railways, roads should be improved to increase competitiveness of the country in the landlocked neighbouring markets. *Message 10:* Other regional member states policies which are not for industry but do affect industry welfare like tax policies, energy policies, infrastructure policies, etc. should be aligned and better coordinated to support the regional industry policies for fast regional industrial growth.

SECTION C: EVIDENCE	SECTION C: POLICY MESSAGES
Sunflower Oil Value Chain: *Evidence 17:* In the sunflower value chain, refined oil showed promising trends in terms of prices but with very high fluctuations. The same was observed for Tanzania refined oil prices. *Evidence 18:* Tanzania crude oil average prices for the period of 2008 to 2014 were higher than global average prices for the same product. This implies the country is competitive globally for the respective products. *Evidence 19:* Although crude oil is the product more highly demanded in the global market, Tanzania exports more oil cake, a product which has very low prices *Evidence 20:* Among the key markets for Tanzania crude oil, EAC market is where the country is the leading exporter, where Egypt is the main competitor. In other country's key markets like Switzerland, the country has lost almost 300% of the demand they were covering before. Larger percent of the market was lost to Mozambique. *Evidence 21:* EAC refined oil market has started to grow, particularly Kenya market which grew by 119% averagely in 2008 to 2014.	*Message 11:* The country's departments which deal with manufactured market researches should invest to research the potential for Tanzania crude oil product in the global market since the country has shown more competitiveness in sunflower value chain than other products. - Key markets which can be exploited should be identified. This includes new markets from Southern and Central Asia where the demand is growing fast. - Develop strategies of regaining lost key markets like Switzerland and innovate ways of maintain and sustaining the markets. *Message 12:* Since refined oil is still a product which is less competitive for Tanzania in the global market, Tanzania could decide to start exploiting the EAC growing market for the same product since there is minimal competition and the standards are easily adoptable.
Cotton Value Chain: *Evidence 22:* In the cotton value chain, the global prices for apparel are higher than for other cotton products. A similar picture is obtained for Tanzanian prices although in this case they are highly fluctuating. *Evidence 23:* Tanzania fabric prices in the global market are more stable than other cotton products *Evidence 23:* The global demand for fabrics as growing and the market is bigger than all other cotton products *Evidence 24:* The country exports more of raw cotton than all other products contrary to the global demand. The raw cotton exports are also highly fluctuating with Tanzania losing some of its key market.	*Message 13:* The country should invest on researching the potential of focusing more on fabrics production and export in the cotton value chain. *Message 14:* New markets for fabrics (which is the most demanded product globally) should be identified especially in the growing regional economies for diversification purposes.

SECTION D: EVIDENCE	SECTION D: POLICY MESSAGES
Industrial Capabilities in Tanzania: *Evidence 25:* Tanzania has increased its share of secondary and tertiary educated population from 1.12% in 1990 to 2.56% in 2010, although not as significant as other competing countries like Kenya, South Africa and Vietnam. *Evidence 26:* Tanzania has an above average and stable amount of employees in manufacturing firms (around 160 between 2003 and 2010) *Evidence 27:* The overall manufacturing wage has increased along the years, with most part been due to increases in wages in the food sector. The metals sector also shows some increase in the wages provided. *Evidence 28:* The share of manufacturing in total gross fixed capital formation of Tanzania has been declining from around 20% between 1995 and 2000 to around 7% or 8% between 2003 and 2010 *Evidence 29:* The share of manufacturing in total capital formation for Tanzania at the sectoral level has increased in 2007 due to the increase observed from FBT sub-sector *Evidence 30:* The capital goods imports have particularly increased in Tanzania between 2004 and 2008, although a decline was observed in the recent years to 2013 *Evidence 31:* There is a positive correlation between the country's domestic credit provided to the private sector as share of GDP with the share of private capital formation as share of GDP	Industrial Capabilities in Tanzania: *Message 15:* Since there is a strong positive correlation between capital goods imports and the manufacturing value added per establishment, more manufacturing capital imports should be encouraged to boost country's MVA. *Message 16:* Since the country's population is increasing daily, the country should set clear strategies to invest on education and technical skills which will impact on the productivity of the workforce. *Message 17:* More investments should be done on education and tertiary skills for Tanzanian labour force to increase the workforce in the manufacturing sector and other sectors in the industry. *Message 18:* Domestic credits to private sector from different financial stakeholders should focus on supporting investments in production capacity, technology import as well as process quality improvements (ISO certification). *Message 19:* Public technology intermediaries should be adequately financed to support the development and technology upgrading of the local production system.
Industrial Linkages in Tanzania: *Evidence 32:* Despite the fact that Tanzania Agro, Forestry and Fisheries sector receive significant value share from other countries, it is also a leading sector on forwarding value to other sectors in other countries in form of exports, of which the growing trend was observed *Evidence 33:* In terms of absolute value, agro, forestry and fisheries on the countries receive and forward less value than how it is reflected in the relative value share. *Evidence 34:* Most of Tanzania manufacturing sub-sectors receive more value from abroad than what they actually forward to abroad which implies the linkages are not valuable for the country	Industrial Linkages in Tanzania: *Message 20:* Strategies should be agreed to initiate linkages between private companies and public technology intermediaries (as identified in the report) to boost domestic value addition and so address the issue of limited capacity for Tanzania industry system. *Message 21:* Industrial policies, including FDI attraction, sector policies, subsidies and grants should target the development of backward and forward linkages within the domestic economy. *Message 22:* The development of certain industrial sectors and their value addition increases can be supported both directly and indirectly via sectoral linkages. *Message 23:* The development of valuable linkages should involve both the domestic and export backward and forward relationships between domestic productive sectors chains, importers and exporters.

SECTION E: EVIDENCE	SECTION E: POLICY MESSAGES
Evidence 35: Almost 20% of formal employments in 2014 were from manufacturing sector. However, WDI data which captures both formal and informal employments imply that agriculture has more informal employments than manufacturing *Evidence 36:* Tanzania labour productivity is higher than in most of its competitors. However, the data which was used to obtain MVA and employees number considered only firms with 10 employees and above. This creates bias since most of the Tanzania employments are generated from small scale firms, and large scale firms employ more machines than labour. *Evidence 37:* Within manufacturing, FBT, wood and furniture and textile & apparel sub-sectors alone contribute almost 80% of the manufacturing employments	*Message 24:* Since LTPP employment targets consider both formal and informal employees, NBS should come up with a methodology which can collect data from both formal and informal firms in the field. This will simplify the monitoring and evaluation process of different country's employment plans *Message 25:* Since light manufacturing sub-sectors are the largest potential employers, the priority sectors focusing on employment creation should be selected among them. Attention should also be given to other light manufacturing sub-sectors apart from FBT. *Message 26:* The country should take advantage of the abundant natural resources, low-wage labour comparative advantage and local and regional markets as an incentive of highly investing on light manufacturing sector. *Message 27:* In order to be able competing globally in light manufacturing industry, the country should start providing for challenges which can rise after a country decided adopting light manufacturing industrialization strategy like: - possessing the right skills required to organize and manage medium and large firms (since it's hard to compete once operating in small scale) - difficulties informal firms face such as the lack of access to land to expand operations

F.2 Shifting Gears Towards Inclusive and Sustainable Industrialisation

Drawing from the findings of this report, the policy recommendations are organised around fifteen evidence-based policy recommendations.

- **Gear 1: Exploit the country comparative advantage in natural resource-based sectors:** in the short-medium term, boost production output and value addition in those sectors in which the country has abundance of natural resources, such as agro-industries, extractives, cotton and wood products. Agro-industries development, downstream beneficiation of extractive resources and cotton processing are strategic activities to support the transitioning from a predominantly agricultural and resource based economy to one characterised by value addition in manufacturing industries economy (currently, over 70 % of the population is engaged in agriculture, mainly subsistence farming, while metals constitute one third of the export basket). The TICR shows how production has been decreasing in a number of these sectors over the last years, including the food, beverages and tobacco sector as well as the wood and wood furniture sector, while employment has also been declining in the former. This report has furthermore shown that there is significant underutilization of the existing production capacity and manufacturing processing remain still limited. For example, the vast majority of cotton and leather is still exported in its raw form. Processing these goods,

even if just into semi-finished products, would not only increase revenue, but create a large number of new jobs through backward and forward linkages. The value chain analysis in this report has stressed the attractiveness of Tanzania producing cotton yarn, fabrics, and apparel to increase revenue and create employment.

- **Gear 2: Capture learning and jobs-creation opportunities in light-manufacturing industries:** in the short-medium term, light-manufacturing industries should be supported as they offer Tanzania learning opportunities in production (such as development of technological capabilities in components production and organizational capabilities) and significant employment opportunities given the labour-intensive nature of the sector. In Tanzania, as well as globally, light manufacturing industries absorb large sections of the population. Particularly for low-income countries there is still much scope to increase productive employment in these sectors (empirical evidence was offered in the UNIDO IDR 2013).

- **Gear 3: Defy the country comparative advantage and build your competitive advantage:** In the medium-long run, the country shall ensure that the targeted sectors become more technology-intensive and internationally competitive, while the domestic production system is transformed towards increasing domestic addition and export basket diversification.

- **Gear 4: Build the country competitive advantage through specialization in sectoral value chain-stages:** Specific stages of sectoral value chains should be identified which are expected to support increasing value addition and capture. Each sectoral value chain at its different stages offer different opportunities for technological learning, value addition and labour absorption. Two priority sectors for the country to focus on in the medium term are the cotton apparel and sunflower oil value chains. The analysis of these sectoral value chains has clearly illustrated that identifying the most attractive stages of production for each value chain in terms of unit prices, demand and demand dynamism is an important starting point for steering firms' productive investments. As for cotton, for example, it was identified that over 80% of all cotton products exported was in raw form, however, producing and exporting cotton yarn, fabrics or apparel would lead to significantly higher returns and meet a large and growing demand. The report has also identified potential markets for these products. These structural transformations at the level of sectoral composition and sectoral value chain specialisation are critical for Tanzania to become a semi-industrialized country, as projected in its Vision 2025. The report has shown that there are already some medium and high tech goods and sectors where Tanzania is developing various types of production capabilities. These are manufactured fertilizers, transport vehicles and civil engineering plants. While resource based manufactured goods have seen a 10 % contraction of their exports, medium and high tech exports from Tanzania grew at an average of 12 % per annum.

- **Gear 5: Diversify national production and export basket by developing the country domestic production systems and linkages:** Tanzania should diversify in products similar to those it is currently producing and exporting, namely ones which are mainly resource-based, and whose production require a similar endowment of industrial capabilities. Investment should target and boost the development of different high-potential agro-industries and processed food products, while increasing their quality standards and exportability. In the short-medium term, Tanzania should also

diversify in complementary products by focusing on both backward and forward linkages development. The report has shown how the Tanzanian production system is still highly disarticulated and how cross-sectoral linkages among manufacturing industries have remained pretty weak, despite the growth in aggregate terms of MVA over the last years. The Tanzania Bureau of Standards and other public technology intermediaries can play a crucial role in this respect, especially for SMEs.

- **Gear 6: Increase the technology content of manufacturing products towards more value addition and capture:** In the medium-long term, the country needs to diversify the economy and engage with more complex sectors and technology-intensive productions (product diversification). Ultimately, this diversification will go hand in hand with the transformation of the Tanzanian domestic production system, the increasing emergence of medium size enterprises and domestic supply chains, towards sustained industrial competitiveness.

- **Gear 7: Identify markets potential for sectors development:** market diversification should be based on the findings of demand dynamism and an understanding of the feasibility of exporting to targeted export markets. The empirical evidence has shown how Tanzania exports the same product to very few countries resulting in large vulnerabilities. We have seen how the vanishing of base metals exports (which were directed to five economies only) led to a reduction in overall exports of manufactured products for the country. Tanzania's exports to China (its largest partner, accounting in 2010 for over 30 % of Tanzanian exports) dropped by 34 % per annum since 2010, slashing its revenue from the Asian giant by roughly two thirds, and significantly affecting the entire manufacturing sector. Products as well as market diversification are both critical targets for increasing the resilience of the country and sustained its manufacturing growth.

- **Gear 8: Develop strategically regional markets:** Tanzania should further benefit from being member (at the intersection) of two regional economic communities, EAC and SADC. These are not only important markets for the country (currently accounting for 48 % of manufactured exports), but there is also a lot of opportunities to grow in these. While the share of manufactured products out of all exports to the EAC is above 70 % for Tanzania, it does not even reach 40 % in SADC. It is therefore important that Tanzania focuses on increasing the level of manufactured exports to the SADC region. Tanzania is exporting a significant amount of resource-based products to both the EAC and SADC, which is catering for the current growth in demand in these regions. Nonetheless, demand dynamism in the region should be closely monitored to ensure the country caters to new trends, and does not lose market share, if and when demand shifts. Further emphasis on the exports of medium and high technology products should be placed, to reap the benefits of being part of such economic communities. More attention should be placed on strengthening Tanzania's presence in neighbouring landlocked countries, as a number of these are experiencing very high growth rate in demand (e.g. Zambia 30 %, DRC and Burundi 20 %, Malawi over 10 % per annum). In most of these, however, Tanzania accounts for less than 4 % of the market (with the exception of 7 % in Burundi), while its main competitors are Kenya and South Africa. Having a large coast in the Indian Ocean and bordering a number of landlocked economies, Tanzania should really work on exploiting its geographic location for economic benefits. Finally, for the region as a whole, further efforts to

deepen regional integration need to be taken. In particular, policies of member states which affect manufacturing performance should be aligned, so as to ease increasing production and exports in the region.

- **Gear 9: Match the increasing domestic consumption pattern with domestic production:** Domestic consumption should not be forgotten. Tanzania is in itself a large market. Many of the sectors that the country is currently engaged in can and should cater for the domestic market as well. Import data will reveal more on this aspect (which goes beyond the scope of this report), however one example was seen in the case of demand for sunflower oil. In order to capture this increasing internal demand, Tanzania companies should increase their production scale (thus, increasing their price competitiveness against imported products) but also reach higher level quality standards.

- **Gear 10: Invest in the technology infrastructure for SMEs development:** The Tanzania Bureau of Standards and other public technology intermediaries should be adequately equipped in view of supporting the local production system, especially those SMEs willing to reach international quality standards, diversify their products portfolio and explore potential new markets. The lack of updated equipment, facilities, machineries and tools are critical issues reported by both the public technology intermediaries and the companies that have approached them to address their technological challenges. The report has also shown how, despite Tanzania is already equipped with many sector-specific public technology intermediaries such as industrial research centres, technology transfer offices and extension services, these are often de-linked from the private sectors. According to the UNIDO-CTI preliminary survey and case study analysis presented in the report, less than 20% of the interviewed companies have had any interaction with one of the existing public technology intermediaries. These preliminary findings suggest the need for a systematic revision of the public technology intermediary system in view of establishing more and valuable linkages as well as providing more appropriate production and technology services to scale up manufacturing production and reach higher quality standards.

- **Gear 11: Develop the industrial capabilities of the workforce and align sectoral-skills policies:** Industrial capabilities' development needs to be boosted. There is a need to invest heavily on education and technical skills. This should include secondary and tertiary education in the traditional form (amongst all African comparators, Tanzania is the country with the lowest share of secondary and tertiary educated – 2.6 %, lower than Burundi and Mozambique) as well as technical vocational education and training (TVET) programmes, apprenticeships and other systems of learning which are of particular interest to manufacturing producers. There needs to be strong communication between the manufacturing sector and the Ministry of Education/TVET providers to ensure the particular skills needed by the sector will be developed.

- **Gear 12: Boost domestic and foreign investments in R&D and production capacity:** The government should increase spending on industrial research and development. While expenditure on R&D has increased between 2007 and 2010, it has done so only mildly, and significantly less so than other economies have, such as Kenya, Uganda and Mozambique. Furthermore, government financed Gross Expenditure on R&D is over 50 %, meaning firms are less willing/able to finance this

themselves. There is also need to push investment in the country via FDI attraction and via targeted intervention in finance-constrained sectors and infant industries. Tanzania needs to ensure there is a friendly business environment in the country, and one which is particularly supportive of the manufacturing sector. This would give opportunity to promote other industry factor markets like infrastructures, input supplies and technology.

- **Gear 13: Expand access to finance, especially for productive investments in SMEs with growth potential:** Access to finance is for many firms a key constraint. Although Tanzania exhibited a significant improvement in the share of domestic credit to the private sectors, from 3 % to 18 % of GDP between 1996 and 2012, it remains one of the countries with the lowest share among its comparators, with countries like Burundi, Mozambique, Senegal and Kenya giving out more credit to the private sector in relation to their GDP. The government should address the problem of financing for sectors that are languishing in the country because of high costs of working capital for firms or an inability of financial institutions to finance the period of 'learning', that is, the phase when firms are going through a period of loss-making as they actually learn how to organize production.

- **Gear 14: Support employment for inclusiveness and social sustainability today:** Tanzania should support those sectors that generate employment for those with low levels of skills and who have been working in the agricultural sector. Such sectors are light manufacturing sectors, such as agro-processing (especially food and beverages), textiles and wood products. Special attention should be also placed on the employment of women and youth, as well as disabled people, ensuring they are provided with adequate work conditions.

- **Gear 15: Create more and better jobs for sustained prosperity:** The shift towards more sophisticated sectors of manufacturing will require developing the relevant skills today for tomorrow. Tanzania should attack skills gaps and mismatches and pursue a strategic alignment between its skills development and sectoral development policies. The lack of skills hampers companies' opportunities, although skills development without employment opportunities creation is also problematic. Tanzania shall find and pursue a strategic alignment between its skills development and sectoral development policies. Finally, most people employed in the light manufacturing sectors are employed in SMEs, many of which are informal. It is crucial to support such firms in overcoming their main constraints and pushing firms towards jobs formalisation and increasing working conditions.

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ANNEX

ANNEX I. TECHNOLOGICAL CLASSIFICATION OF EXPORTS USING THE STANDARD INTERNATIONAL TRADE CLASSIFICATION (SITC) THREE DIGITS, REVISION 3

TECHNOLOGY CLASSIFICATION PRIMARY PRODUCTS		
	Product Code	**Product Name**
	001	Live animals except fish
A	011	Beef, fresh/chilld/frozn
A	012	Meat nes,fresh/chld/froz
A	022	Milk pr exc buttr/cheese
A	025	Eggs, albumin
A	034	Fish,live/frsh/chld/froz
A	036	Crustaceans molluscs etc.
A	041	Wheat/meslin
A	042	Rice
A	043	Barley grain
A	044	Maize except sweet corn.
A	045	Cereal grains nes
A	054	Vegetables,frsh/chld/frz
A	057	Fruit/nuts, fresh/dried
A	071	Coffee/coffee substitute
A	072	Cocoa
A	074	Tea and mate
A	075	Spices
A	081	Animal feed ex unml cer.
A	121	Tobacco, raw and wastes
A	211	Hide/skin (ex fur) raw
A	212	Furskins/pieces, raw
A	222	Oil seeds etc. - soft oil
A	223	Oil seeds-not soft oil
A	231	Natural rubber/latex/etc.
A	244	Cork natural/raw/waste
A	245	Fuel wood/wood charcoal
A	246	Wood chips/waste

TECHNOLOGY CLASSIFICATION PRIMARY PRODUCTS		
	Product Code	**Product Name**
A	261	Silk
A	263	Cotton
A	268	Wool/animal hair
A	269	Worn clothing etc.
A	272	Fertilizers crude
A	273	Stone/sand/gravel
A	274	Sulphur/unroastd pyrites
A	277	Natural abrasives n.e.s.
A	278	Other crude minerals
A	291	Crude animal mterial nes
A	292	Crude veg materials nes
A	321	Coal non-agglomerated
A	325	Coke/semi-coke/retort c
A	333	Petrol./bitum. oil,crude
A	343	Natural gas
A	681	Silver/platinum etc.
A	682	Copper
A	683	Nickel
A	684	Aluminium
A	685	Lead
A	686	Zinc
A	687	Tin

TECHNOLOGY CLASSIFICATION RESOURCE BASED		
	Product Code	**Product Name**
B	016	Meat/offal preserved
B	017	Meat/offal presvd n.e.s
B	023	Butter and cheese
B	024	Cheese and curd
B	035	Fish,dried/salted/smoked
B	037	Fish/shellfish,prep/pres
B	046	Flour/meal wheat/meslin
B	047	Cereal meal/flour n.e.s
B	048	Cereal etc. flour/starch
B	056	Veg root/tuber prep/pres
B	058	Fruit presvd/fruit preps
B	059	Fruit/veg juices
B	061	Sugar/mollasses/honey
B	062	Sugar confectionery
B	073	Chocolate/cocoa preps
B	091	Margarine/shortening
B	098	Edible products n.e.s.
B	111	Beverage non-alcohol nes
B	112	Alcoholic beverages
B	122	Tobacco, manufactured
B	232	Rubber synth/waste/etc.
B	247	Wood in rough/squared
B	248	Wood simply worked
B	251	Pulp and waste paper
B	264	Jute/bast fibre raw/retd
B	265	Veg text fibre ex cot/ju
C	281	Iron ore/concentrates
C	282	Ferrous waste/scrap
C	283	Copper ores/concentrates
C	284	Nickel ores/concs/etc.
C	285	Aluminium ores/concs/etc.
C	286	Uranium/thorium ore/conc
C	287	Base metal ore/conc nes
C	288	Nf base metal waste nes
C	289	Precious metal ore/conc.

TECHNOLOGY CLASSIFICATION RESOURCE BASED		
	Product Code	**Product Name**
C	322	Briquettes/lignite/peat
C	334	Heavy petrol/bitum oils
C	335	Residual petrol. prods
C	342	Liquid propane/butane
C	344	Petrol./hydrocarbon gas
C	345	Coal gas/water gas/etc.
C	411	Animal oil/fat
B	421	Fixed veg oil/fat, soft
B	422	Fixed veg oils not soft
B	431	Animal/veg oils proces"d
C	511	Hydrocarbons/derivatives
C	514	Nitrogen function compds
C	515	Organo-inorganic compnds
C	516	Other organic compounds
C	522	Elements/oxides/hal salt
C	523	Metal salts of inorg acd
C	524	Other inorganic chemical
C	531	Synth org colour agents
C	532	Dyeing/tanning extracts
C	551	Essent.oil/perfume/flavr
C	592	Starches/glues/etc.
C	621	Materials of rubber
C	625	Rubber tyres/treads
C	629	Articles of rubber nes
C	633	Cork manufactures
C	634	Veneer/plywood/etc.
C	635	Wood manufactures n.e.s.
C	641	Paper/paperboard
C	661	Lime/cement/constr mat"l
C	662	Clay/refractory material
C	663	Mineral manufactures nes
C	664	Glass
C	667	Pearls/precious stones
C	689	Misc non-ferr base metal

TECHNOLOGY CLASSIFICATION MEDIUM TECHNOLOGY		
	Product Code	**Product Name**
G	266	Synthetic spinning fibre
G	267	Man-made fibres nes/wast
G	512	Alcohols/phenols/derivs
G	513	Carboxylic acid compound
G	533	Pigments/paints/varnish
G	553	Perfume/toilet/cosmetics
G	554	Soaps/cleansers/polishes
G	562	Manufactured fertilizers
G	571	Primary ethylene polymer
G	572	Styrene primary polymers
G	573	Vinyl chloride etc. polym
G	574	Polyacetals/polyesters..
G	575	Plastic nes-primary form
G	579	Plastic waste/scrap
G	581	Plastic tube/pipe/hose
G	582	Plastic sheets/film/etc.
G	583	Monofilament rods/sticks
G	591	Household/garden chemcal
G	593	Explosives/pyrotechnics
G	597	Oil etc. additives/fluids
G	598	Misc chemical prods nes
G	653	Man-made woven fabrics
G	671	Pig iron etc. ferro alloy
G	672	Primary/prods iron/steel
G	678	Iron/steel wire
H	711	Steam generating boilers
H	712	Steam/vapour turbines
F	713	Internal combust engines
H	714	Engines non-electric nes
H	721	Agric machine ex tractr
H	722	Tractors
H	723	Civil engineering plant
H	724	Textile/leather machinry
H	725	Paper industry machinery
H	726	Printing industry machny
H	727	Food processing machines

TECHNOLOGY CLASSIFICATION MEDIUM TECHNOLOGY		
	Product Code	**Product Name**
H	728	Special indust machn nes
H	731	Mach-tools remove mtrial
H	733	Mtl m-tools w/o mtl-rmvl
H	735	Metal machine tool parts
H	737	Metalworking machine nes
H	741	Indust heat/cool equipmt
H	742	Pumps for liquids
H	743	Fans/filters/gas pumps
H	744	Mechanical handling equi
H	745	Non-electr machines nes
H	746	Ball/roller bearings
H	747	Taps/cocks/valves
H	748	Mech transmission equmnt
H	749	Non-elec parts/acc machn
H	761	Television receivers
H	762	Radio broadcast receiver
H	763	Sound/tv recorders etc.
H	772	Electric circuit equipmt
H	773	Electrical distrib equip
H	775	Domestic equipment
H	778	Electrical equipment nes
F	781	Passenger cars etc.
F	782	Goods/service vehicles
F	783	Road motor vehicles nes
F	784	Motor veh parts/access
F	785	Motorcycles/cycles/etc.
G	786	Trailers/caravans/etc.
G	791	Railway vehicles/equipmt
H	793	Ships/boats/etc.
H	811	Prefabricated buildings
H	812	Sanitary/plumb/heat fixt
H	813	Lighting fixtures etc.
H	872	Medical/etc. instruments
H	873	Meters and counters nes
G	882	Photographic supplies
H	884	Optical fibres
H	885	Watches and clocks

TECHNOLOGY CLASSIFICATION LOW TECHNOLOGY		
	Product Code	**Product Name**
D	611	Leather
D	612	Leather manufactures
D	613	Furskins tanned/dressed
E	642	Cut paper/board/articles
D	651	Textile yarn
D	652	Cotton fabrics, woven
D	654	Woven textile fabric nes
D	655	Knit/crochet fabrics
D	656	Tulle/lace/embr/trim etc.
D	657	Special yarns/fabrics
D	658	Made-up textile articles
D	659	Floor coverings etc.
E	665	Glassware
E	666	Pottery
E	673	Flat rolled iron/st prod
E	674	Rolled plated m-steel
E	675	Flat rolled alloy steel
E	676	Iron/steel bars/rods/etc.
E	677	Iron/steel railway matl
E	679	Iron/steel pipe/tube/etc.
E	691	Iron/stl/alum structures
E	692	Metal store/transpt cont
E	693	Wire prod exc ins electr
E	694	Nails/screws/nuts/bolts
E	695	Hand/machine tools
E	696	Cutlery
E	697	Base metal h"hold equipms
E	699	Base metal manufac nes
E	821	Furniture/stuff furnishg
D	831	Trunks and cases
D	841	Mens/boys wear, woven
D	842	Women/girl clothing wven
D	843	Men/boy wear knit/croch
D	844	Women/girl wear knit/cro
D	845	Articles of apparel nes
D	846	Clothing accessories
D	848	Headgear/non-text clothg
D	851	Footwear
E	893	Articles nes of plastics
E	894	Baby carr/toy/game/sport
E	895	Office/stationery supply

TECHNOLOGY CLASSIFICATION HIGH TECHNOLOGY		
	Product Code	**Product Name**
J	525	Radio-active etc. matrial
J	541	Pharmaceut exc medicamnt
J	542	Medicaments include vet
J	716	Rotating electr plant
J	718	Power generating equ nes
I	751	Office machines
I	752	Computer equipment
I	759	Office equip parts/accs.
I	764	Telecomms equipment nes
I	771	Elect power transm equip
I	774	Medical etc. el diag equi
I	776	Valves/transistors/etc.
J	792	Aircraft/spacecraft/etc.
J	871	Optical instruments nes
J	874	Measure/control app nes
J	881	Photographic equipment
I	891	Arms and ammunition

TECHNOLOGY CLASSIFICATION OTHER		
	Product Code	**Product Name**
K	351	Electric current
K	883	Cine fild developed
K	892	Printed matter
K	896	Art/collections/antiques
K	961	Coin nongold non current
K	971	Gold non-monetary ex ore

E	897	Jewellery
E	898	Musical instrums/records
E	899	Misc manuf articles nes

ANNEX II. TECHNOLOGICAL CLASSIFICATION FOR INDUSTRIAL INDICATORS (MVA, EMPLOYMENT, WAGES, ETC.) USING THE INTERNATIONAL STANDARD INDUSTRIAL CLASSIFICATION OF ALL ECONOMIC ACTIVITIES (ISIC), THREE DIGITS, REVISION 3

Technology Classification	ISIC Code	ISIC Definition
RB	151	Processed meat,fish,fruit,vegetables,fats
RB	1520	Dairy products
RB	153	Grain mill products; starches; animal feeds
RB	154	Other food products
RB	155	Beverages
RB	1600	Tobacco products
LT	171	Spinning, weaving and finishing of textiles
LT	172	Other textiles
LT	1730	Knitted and crocheted fabrics and articles
LT	1810	Wearing apparel, except fur apparel
LT	1820	Dressing & dyeing of fur; processing of fur
LT	191	Tanning, dressing and processing of leather
LT	1920	Footwear
RB	2010	Sawmilling and planing of wood
RB	202	Products of wood, cork, straw, etc.
RB	210	Paper and paper products
OTHER	221	Publishing
OTHER	222	Printing and related service activities
OTHER	2230	Reproduction of recorded media
LT	2310	Coke oven products
RB	2320	Refined petroleum products
MHT	2330	Processing of nuclear fuel
MHT	241	Basic chemicals
MHT	242	Other chemicals
MHT	2430	Man-made fibres
RB	251	Rubber products
MHT	2520	Plastic products
RB	2610	Glass and glass products
RB	269	Non-metallic mineral products n.e.c.

MHT	2710	Basic iron and steel
RB	2720	Basic precious and non-ferrous metals
RB	273	Casting of metals
LT	281	Struct.metal products;tanks;steam generators
LT	289	Other metal products; metal working services
MHT	291	General purpose machinery
MHT	292	Special purpose machinery
MHT	2930	Domestic appliances n.e.c.
MHT	3000	Office, accounting and computing machinery
MHT	3110	Electric motors, generators and transformers
MHT	3120	Electricity distribution & control apparatus
MHT	3130	Insulated wire and cable
MHT	3140	Accumulators, primary cells and batteries
MHT	3150	Lighting equipment and electric lamps
MHT	3190	Other electrical equipment n.e.c.
MHT	3210	Electronic valves, tubes, etc.
MHT	3220	TV/radio transmitters; line comm. apparatus
MHT	3230	TV and radio receivers and associated goods
MHT	331	Medical, measuring, testing appliances, etc.
MHT	3320	Optical instruments & photographic equipment
MHT	3330	Watches and clocks
MHT	3410	Motor vehicles
MHT	3420	Automobile bodies, trailers & semi-trailers
MHT	3430	Parts/accessories for automobiles
MHT	351	Building and repairing of ships and boats
MHT	3520	Railway/tramway locomotives & rolling stock
MHT	3530	Aircraft and spacecraft
MHT	359	Transport equipment n.e.c.
LT	3610	Furniture
LT	369	Manufacturing n.e.c.
OTHER	3710	Recycling of metal waste and scrap
OTHER	3720	Recycling of non-metal waste and scrap
	3999	Total manufacturing (D)