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# State of the City Food System Report

Arusha



AfriFOODlinks



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## ACRONYMS

<b>AIVs</b>	African Indigenous Vegetables
<b>ASDP</b>	Agricultural Sector Development Programme
<b>ASFS</b>	Arusha Sustainable Food System
<b>ASFSP</b>	Arusha Sustainable Food Systems Platform
<b>CARMATEC</b>	Centre of Agricultural Mechanization and Rural Technologies
<b>CGIAR</b>	Consortium of International Agricultural Research Centres
<b>COSTECH</b>	Tanzania Commission for Science and Technology
<b>CSOs</b>	Civil Society Organizations
<b>CtCi</b>	City-to-City Food Systems Forum
<b>DHS</b>	Demographic and Health Surveys
<b>ESIA</b>	Environmental and Social Impact Assessment
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FBDGs</b>	Food-Based Dietary Guidelines
<b>FRESH</b>	Fruit and Vegetables for Sustainable Healthy Diets
<b>HSN</b>	Healthy, Sustainable and Nutritious
<b>ICLEI</b>	International Council for Local Environmental Initiatives
<b>IDA</b>	Iron Deficiency Anemia
<b>KEA</b>	Kilimo Endelevu Arusha
<b>KIA</b>	Kilimanjaro International Airport
<b>LPG</b>	Liquefied Petroleum Gas
<b>MUFPP</b>	Milan Urban Food Policy Pact
<b>MVIWAArusha</b>	Mtandao wa Vikundi vya Wakulima Mkoa wa Arusha
<b>MVIWATA</b>	Mtandao wa Vikundi vya Wakulima Tanzania
<b>NBS</b>	National Bureau of Statistics
<b>NGOs</b>	Non-Governmental Organizations
<b>NM-AIST</b>	Nelson Mandela African Institution of Science and Technology
<b>NMC</b>	National Milling Corporation
<b>PO-RALG</b>	President's Office - Regional Administration and Local Government
<b>PPP</b>	Public-Private Partnership
<b>RECODA</b>	Research, Community, and Organizational Development
<b>SACCOs</b>	Savings and Credit Cooperatives
<b>SAGCOT</b>	Southern Agricultural Growth Corridor of Tanzania
<b>SBCC</b>	Social Behaviour Change Communication
<b>SDG</b>	Sustainable Development Goal
<b>SDGs</b>	Sustainable Development Goals
<b>SFS</b>	Sustainable Food System
<b>SUA</b>	Sokoine University of Agriculture
<b>SUN</b>	Scaling Up Nutrition
<b>TAHA</b>	Tanzania Horticulture Association (TAHA)
<b>TARI</b>	Tanzania Agricultural Research Institute
<b>TBS</b>	Tanzania Bureau of Standards
<b>TCAS</b>	Tanzania Consumer Advocacy Society
<b>TCCIA</b>	Tanzania Chamber of Commerce, Industry and Agriculture
<b>TFNC</b>	Tanzania Food and Nutrition Centre
<b>TI3P</b>	Tanzania Inclusive Processor-Producer Partnerships
<b>TMDA</b>	Tanzania Medicines and Medical Devices Authority

<b>ToC</b>	Theory of Change
<b>TOSCI</b>	Tanzania Official Seed Certification Institute
<b>TPHPA</b>	Tanzania Plant Health and Pesticide Authority
<b>TPRI</b>	Tropical Pesticides Research Institute
<b>TRA</b>	Tanzania Revenue Authority
<b>UA</b>	Urban Agriculture
<b>UCL</b>	University College of London
<b>UN</b>	United Nations
<b>UNICEF</b>	United Nations International Children's Emergency Fund
<b>UPC</b>	Urban Planning for Community Change
<b>VICOBA</b>	Village Community Banks
<b>WFP</b>	World Food Program
<b>WHO</b>	World Health Organization



# 1. Document Profile detail



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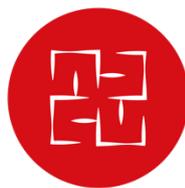
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# LINCS Value Framework



	<p><b>Learning</b></p> <p>The project stresses the value of experiential learning and that multiple ways of knowing are welcomed, deemed of equal value, and can be connected to enhance understanding. "NEA ONNIM NO SUA A, OHU" - "He who does not know can know from learning"</p>	<p><b>Inclusivity</b></p> <p>and deliberate engagement and empowerment of communities will enhance their agency and participation in decision-making for a people-centred and informed research, policy and practice. "FUNTUNFUNEFU-DENKYEMFUNEFU" - "Unity in diversity"</p>	<p><b>Novelty</b></p> <p>represents the embracing of the new or unexpected, which necessarily requires diverse expertise, skills and perspectives. It includes the dismantling of inappropriate systems in favour of traditional or indigenous practices. "UAC NKANEA" - "UAC lights" symbolises technological advancement.</p>	<p><b>Collaboration</b></p> <p>To successfully ensure transdisciplinary work, societal actors must be continuously engaged to co-define the research objectives and questions, and to continuously contribute to meaning-making with the researcher as the research progresses. "BOA ME NA ME MMOA WO" - "HELP ME AND LET ME HELP YOU".</p>	<p><b>Sustainability</b></p> <p>is articulated both as the overarching global imperative to ensure economic, environmental and social wellbeing, and as the ethos that every project intervention must aim to become self-sustaining. "SANKOFA"- The backwards turning bird symbolises returning while looking forward</p>
<p><b>How does this deliverable contribute to each of the values?</b></p>	<p>This has involved a deep learning process connecting food systems understanding to urbna systems understandings</p>	<p>The report entailed less engagement and a surface review but consultations with diverse stakeholders will now take place</p>	<p>This is one of the first reviews to connect urbna systems and food systems knowledge and to assess the food system of a city as embedded in both the urban, the policy and the infrastructural contexts</p>	<p>This work involved convening different food systems knowledge specialists. More collaborative work will commence with this report service as the site of conversation</p>	<p>This report serves a key sustainability position. The wealth (per a broad definition) of society is embedded how society functions and that is embedded in context and the environment. The intersections between these sphere also needs mediation and governance. This report seeks to understand this process as a primary entry point to ongoing food system engagement.</p>
<p><b>How did you practice this value in this deliverable?</b></p>	<p>Through the initial brief and active engagement through the development of the report.</p>	<p>This process built the foundation for more inclusive conversations with diverse actors who impact the food system across the city</p>	<p>This report is novel and pushed researchers to engage diverse systems at the urban scale – food, urban, governance, health, policy, politics, etc.</p>	<p>This report was collaborative in terms of how it brought researchers together. However, it is a key tool upon which collaborative processes are now built</p>	<p>This report sought to offer greater understanding about the intersections of the three spheres and how these are mediated through the sphere, who governs these processes and how these enable or constrain outcomes.</p>

## 2. EXECUTIVE SUMMARY

The current report has been able to provide necessary preliminary information for understanding the city of Arusha, which is one of the Sharing Cities of the AfriFOODlinks study project. According to ICLEI, other Sharing Cities in the project include Windhoek, Lusaka, Quelimane, Antananarivo, Bukavu, Tamale, Dakar, Chefchaouen, Niamey, and Bruges, Montpellier, Lisbon, and Milan. Essentially, this report covers two main parts namely the **Introductory Information** and **Baseline Information** of the Arusha city.

The **Introductory Information** part of the report provides brief history of Arusha city - including the food history, and the city's governance structure that is embedded within the national structures. Other parts of introductory information include brief economy of the city, infrastructure, food and nutrition security, culture of the city and relationship with its food system, and challenges faced in the city. The history shows that the town started as a small center of the German colonizers in the 19<sup>th</sup> Century which then grew as a trading post, and now it is a famous international center. Administratively, Arusha city is one of the seven administrative districts of Arusha region in Tanzania, which is under the direction of the City Council. Like many other cities in Africa and developing countries, the city of Arusha is experiencing rapid population growth due to rural-urban migration, which involves mainly younger people moving into the city. However, due to unavailability of reliable jobs in the city, non-agricultural informal economy employment is dominant. The capacity of the city's infrastructure facilities for the water supply, solid waste management, transportation, and energy are stretched to limits and various initiatives are being taken to improve the situation. So far there are no established maps of food flows into the city of Arusha.

The city residents have a wide range of different food staples including cereal grains (maize and rice), potatoes, green bananas, leguminous grains (kidney beans, cow peas and lentils), and vegetables and fruits. Stiff porridge (*Ugali*) from mainly maize flour is by far the most common dish in the city. The city of Arusha is quite food resilient because it is well linked by good road networks to the surrounding districts, regions and the rest of the country allowing for reliable food supply. There are concerns that despite of the emphasis put on consumption of vegetables and fruits for improving nutrition of the people, the ways in which the vegetables are produced and handled or marketed, are quite unhealthy leading to substantial biological as well as chemical contaminations. Despite having knowledge of the contamination health risks, many consumers choose to buy food based on price due to poor purchasing power (low income earning). The most nutritionally vulnerable population groups that face difficulty in accessing the Healthy, Sustainable and Nutritious (HSN) foods are the youth and female-headed households who earn low incomes and lack support from families. Food culture and challenges faced in the city revealed that food consumers spend a large portion of their budget on food whereby majority of low-income earners were spending more than half of their total budget on food. Perhaps the most effective initiative to address the above-mentioned food systems related challenges in Arusha city has been the formation of a multi-stakeholder platform known as the Arusha Sustainable Food Systems Platform (ASFSP).

The second part of the report incorporates the Arusha city's **Baseline Information** covering some key aspects of the Arusha city including the food systems stakeholders, policy and regulatory environment, production environment, and food diversity and staple foods. Others include typical food basket for different income categories, nature of the economy, and formal and informal economy. Also issues on food access strategies of households, food systems assets, and food safety, infrastructure, interventions, and city and regional scale development challenges and current responses. The food systems stakeholders in Arusha have been identified to include the private sector (farmers of all types and pastoralists, processing companies, financial institutions, inputs and service providers, exporters and transporters, traders, and consumers); NGOs and CSOs – local, national, and international; public sector – Government ministries (agriculture, livestock, fisheries, health, trade and industries, finance and planning, President's Office – Regional Administration and Local Government), and various Government agencies; and research and development institutions – both national and international. Policy and regulatory environment indicate that nutrition has been high on the national agenda, with efforts directed at multi-sectoral and multi-

stakeholder approaches, but trickling down at district and sub-district levels is challenging. However, there is much hope on the recent Arusha Food Strategy to provide an opportunity for advancing integrated food policy actions, but only if it is given more footing and funding.

Arusha city is characterized by many food outlets such as shops, markets, and business centers. This provides an excellent condition for accessing diverse type of foods. Much of the staple foods commonly consumed in Arusha city by all income categories include maize (*ugali*), rice and bananas/ plantains. The differences are only found in the accompanying ingredients, which determine the dietary diversity. People with higher incomes are more likely to consume more diversified meals consisting of animal source foods, fruits, and vegetables. It was also noted that high-income consumers have more preference for processed foods compared to the low-income earners.

It is noted that to guide the designing of interventions to promote Arusha's city-region nutritious and resilient food systems, it is necessary to use a **Theory of Change** that is based on two problems related with the existing food system in Tanzania that contribute to malnutrition. The problems include lack of access to affordable healthy, sustainable, and nutritious (HSN) food among the mainstream consumers, and their lacking awareness about the need to consume such foods in daily diets to meet nutritional needs. To address the challenges around access, one should focus on strengthening the value chains of HSN foods to improve availability, affordability, stability of prices, and quality of the commodities. Addressing the challenge of lack of awareness of the importance of consuming HSN foods for good health and nutrition, one should develop targeted marketing and behavioral change communication campaigns to create demand for such foods.

### 3. Introduction to the City

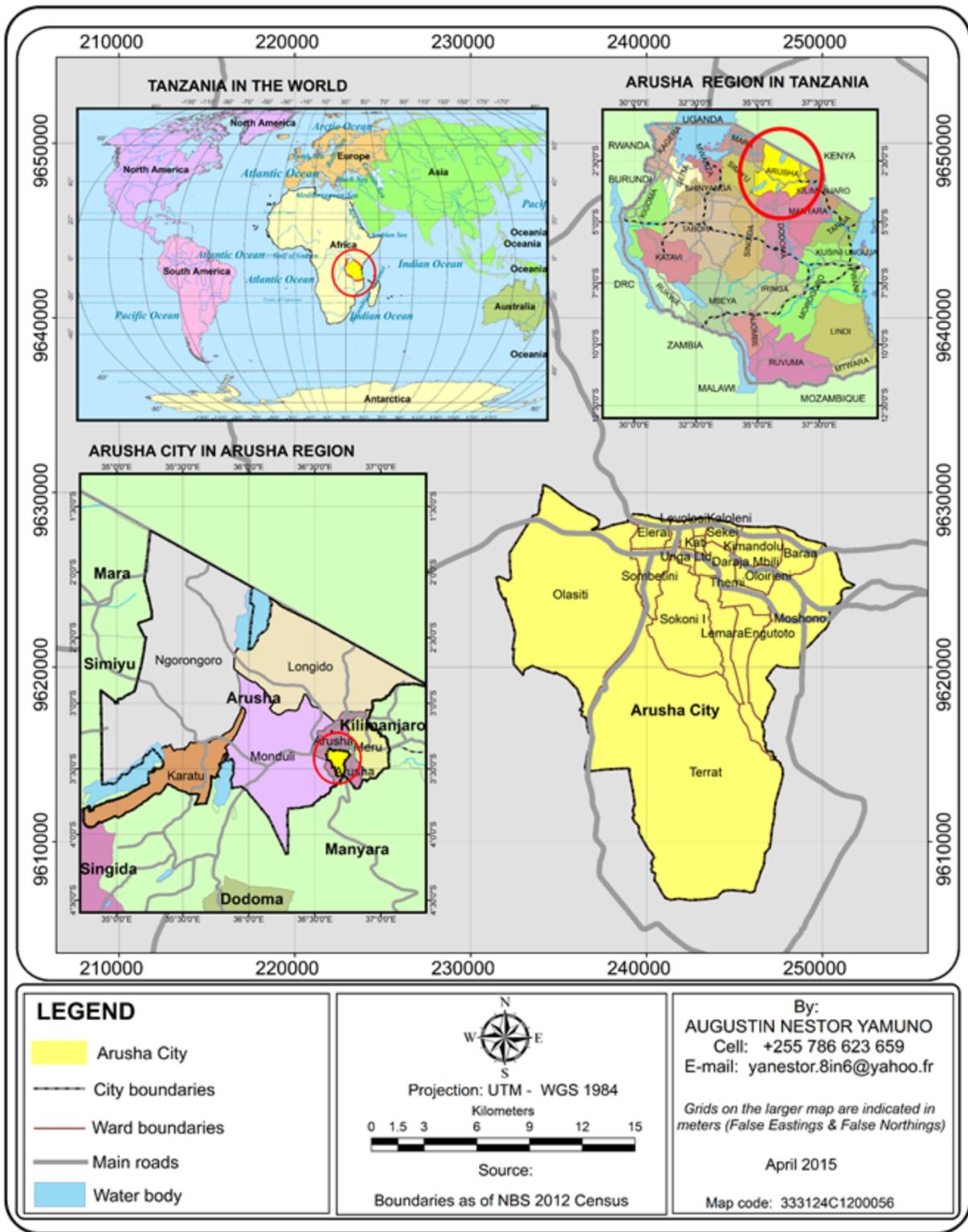


Arusha city is situated in northern Tanzania lying halfway between Cairo and Cape Town. According to the official website [1] of the Arusha city Council, this fast growing city has a population of 617,631 from the national population census of 2022. Arusha has long been the ideal gateway to East Africa's most famous tourist attractions such as National Parks, Masai culture, and it is now also a popular centre for International meetings, conventions, and conferences. The city is close to Serengeti National Park, the Ngorongoro Conservation Area, Lake Manyara National Park, Olduvai Gorge, Tarangire National Park, Mount Kilimanjaro, and Mount Meru. For some years Arusha has been the trading centre for Tanzanite, a unique gemstone mined only in northern Tanzania. The city area covers an area of 267 square km and has an average elevation of 1,331 m above sea level. The city district has two rainy seasons, with brief rains from October through January and extensive rains from March through May. The annual rainfall varies from 500 millimeters to 1,200 millimeters, with an average of 844 millimeters. The temperature ranges from 17°C to 34°C, with mild and cold temperatures being predominant. The cold season lasts from mid-April to mid-August, with pleasant weather the rest of the year.

Arusha is a multicultural city with a majority Tanzanian population of mixed backgrounds: indigenous African, Arab-Tanzanian, and Indian-Tanzanian populations, plus a small European and North American minority population, with the indigenous Africans (Maasai and Meru people) being the natives of Arusha city. The religions of the Arusha city population include Christianity, Islam, Sikhism, and Hinduism.

Figure 1: The Arusha city





Source: Furaha Germain Abwe (2020) [2]

### 3.1. History of the City, including a specific section detailing the food history of the city and region

According to the Arusha city Council's website, the town has a history that commenced in the 19<sup>th</sup> Century when Captain Johannes built a fort at the foot of Mount Meru to facilitate the German colonization of what later became known as Tanganyika. From the little fort, which still stands and has become converted into a museum of natural history, the town of Arusha grew; first as a trading post for the local people, and now into famous centre for various international activities. Arusha was declared Township Authority in 1948 with population of 5,320 inhabitants. In 1980 was upgraded to Municipality and acquired a City Status in 2012. As the hub of the country's tourist industry, Arusha is the starting point for many wildlife and mountain climbing safaris in the northern circuit of Tanzania wildlife sanctuaries. The city is connected to the rest of the world by Kilimanjaro International Airport (KIA), and the great Northern road that cross through Tanzania from Nairobi. Several International Airlines that use KIA include KLM, Turkish Air, Air Uganda, Qatar Airways, Ethiopian Airlines, Rwanda Air, Precision Air, Condor Air, Kenya Airways and Air Tanzania. A number of domestic airlines connect Arusha with other main towns of Tanzania. Some of these are Regional Air, Northern Air, Coastal Aviation, Zan Air and Air Excel.

Arusha is accessible by road from virtually any corner of the country. First the road from Dar es salaam to Nairobi, via Moshi goes through Arusha and is well served by a number of buses, shuttles, as well as the intercity public buses. The intercity buses also connect Arusha with the current Tanzanian political centre of Dodoma, and the coastal town of Tanga. Most of the roads are passable all over the year. Arusha city is also connected to the rest of the country by a single railway line to Moshi leading to the important ports of Tanga and Dar es Salaam. However, the railway is currently not operating due to some technical constrains.

The Arusha city Council's strong political commitment to improved food security is demonstrated by signing the Milan Urban Food Policy Pact (MUFPP) in 2015. Accordingly, the arrangement provides resources and a city-to-city network across the world from which all cities can benefit and share resources and learnings in their efforts to realise more inclusive, sustainable, and resilient food systems [3]. Currently, activities such as road construction and maintenance, improvement of storage facilities, modernizing of abattoirs, and construction and restoration of urban markets have received high priority. The council is also trying to establish strong relationships with multiple actors working towards shaping a sustainable food system and has requested support in developing and transforming an urban food policy. However, translating these priorities into meaningful actions has been slow due to high capital investment costs and complexity of planning which often involves multiple departments locally and even across government levels and sectors – considering that there is great need for involvement of public-private partnership (PPP) in the whole setup.

### 3.2. City's Governance Structure (embedded within national structures)

Administratively, Arusha city is one of the seven administrative districts of Arusha region in Tanzania, with 25 wards. Under the direction of the Hon. Mayor, councilors manage the City Council's administrative operations. The day-to-day management of the city is carried out by the City Director, with assistance from the heads of departments and sections. When interviewed as one of key informants, the City Council's Economist explained in detail the governance structure of Arusha city. The city is led by the Mayor who also serves as the chairperson of the city council, who is elected by the councilors of all the wards of the city. He emphasized that the main task of the Mayor and his council is to ensure that the guidelines are followed and

that all projects set are implemented timely and efficiently. The City Director, as the chief executive of the City Council, has various departments of the Council, which are led by departmental heads. Those departments, according to City Council's Economist, include Environmental Management and Sanitation; Natural Resources; Culture, Sports, and Arts; Finance and Accounting; Legal Services; Internal Audit; Procurement Management; and Council's Information Technology.

The City Council's Economist pointed out that, like all the Local Governments, the City Council is managed under supervision of the President's Office - Regional Administration and Local Government (PO-RALG), which oversees the implementation of policies, laws, and regulations related to local governance. The City Council also receives financial and technical support from the Ministry of Finance and other central government ministries and agencies for its development projects and service delivery. With respect to food issues, the city council's Health Officer in-charge for food quality and safety indicated that various departments are involved in ensuring people in the city have food and nutrition security. He mentioned the departments involved to include those responsible for health, livestock, fisheries, agriculture, trade and industries, as well as the environment and sanitation. They jointly work to prepare education materials for sensitizing the residents about the importance of abiding to the food and nutrition protocols and guidelines and also to use the recommended practices in the production, transportation, processing, handling, storage and preparation. In that respect, the city authority is attempting to reduce and prevent nutrients losses, food wastage, and foodborne diseases for the whole food chain.

### 3.3. Overarching report on economy of the city

Like many other cities in Africa and developing countries, the city of Arusha is experiencing rapid population growth due to rural-urban migration. According to statistics from the Tanzania Metro Area Population [4], the population of Arusha city in 2024 is estimated to be 554,000 – which is a growth from 535,000 in 2022 and 505,000 in 2020 (see Table 1)<sup>1</sup>. Since migration is often linked to employment opportunities, it is mostly the youth who move to the city, therefore it is not surprising that Arusha city has a large youth population but with no reliable jobs. A recent joint study [5] in Arusha city by Ghent University in collaboration with two Arusha-based organizations (Rikolto and Iles de Paix) showed that about 60% of the inhabitants older than 15 years were employed while 40% were not. On the other hand, the report also indicated that more than three quarters of non-agricultural employment (mostly in urban areas) in Tanzania is taking place in the informal economy, which includes 83% female and 71% male, whereby street vending (known as *Machingas* in Tanzania) takes an important share of this. The situation in Arusha is no exception. However, these street vendors are highly vulnerable to shocks and stress due to the challenges they face daily. Apart from dealing with high competition and unstable prices, they are additionally, often the victims of evictions, relocations, and penalties from local authorities. Local regulations in the Arusha city do not allow street vendors to sell their goods at certain markets, outside other shops and close to hospitals, health centers and schools. Since November 2021, food vendors have been relocated to an open area next to Kilombero Market. Most people working in the informal economy are poor, and they are mainly women and people with low levels of education [6].

The interviewed Arusha city Council's Economist, had the opinion that the informal sector helps low-income citizens secure food at an affordable price and stimulates and contributes to the growth of the formal sector by increasing sales and purchases of their food products since the actors in the informal economy are in great numbers. He also added that the informal sector actors are involved not only in the trading and hence distribution of food products, but also in the food production which ensures the availability of food in the city.

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<sup>1</sup> Note that the population size cited in Section I.1 appears to be large than the figure here. This is not surprising because the latter source has considered only the 'inner' part or actual part of the city (i.e., the metropolitan) while the former includes all the administrative areas.

Apart from the informal economy of Arusha city, which is dominated by street vending businesses, the city has over 50 large and medium-sized manufacturing industries. The manufacturing industries that are key employers in Arusha city include Tanzania Breweries Ltd, Tanzania Pharmaceutical Industries, A to Z Treated Mosquito Net Manufacturing Company, National Milling Corporation, Arusha Meat Company, Sun Flag Textiles Company, and CARMATEC Machinery. In addition to these, the town is home to more than 200 other small-scale businesses, including food processing firms dealing with meat and dairies, baking, and confectioneries. The entrepreneurial traders deal with everything from handicrafts to tourism-related businesses like tour operators and currency exchanges. Additionally, there are financial institutions, an international conference center, hotels and restaurants, and retail and wholesale stores. About 10 marketplaces that sell mostly food commodities can be found in the city. They include Central Market (Soko Kuu), Kilombero, Samunge, Sanawari, Soko Mjinga, Soko Mbauda, Kwa Mrombo, Soko Mapunda, Sombetini, Kijenge, and Elerai. The two largest markets in the list are Central and Kilombero.

A study in Arusha by the Urban Planning for Community Change (UPC) [2] and Health Bridge Foundation of Canada published in March 2020 showed that local public markets serve the Arusha community in several ways, including provision of both an economic and social good. The study noted that people earn a living, have access to fresh local food, the safe open area to engage in physical activity, and a social space in neighborhoods for locals to meet and interact with one another. Local public markets also foster sustained links between rural and urban communities, and that they help to make local produced food visible in the public space on a regular basis. They are places in a city that build a sense of community, culture, social capital, and community revitalization, and also facilitate an improvised and spontaneous synergy of urban residents and communities, which is at the core of everyday life of the city. Given the trends of changes in lifestyles and in people's diet in Arusha as in other cities and towns in Tanzania, and the pressures from both urbanization and globalization, they serve as important places for these functions. However, it was also noted that there is a great need to reinforce the implementation of national urban policies and emphasize on the importance of investing in and strengthening already existing local public market infrastructures for them to continue to serve local urban residents.

In general, the mentioned study found out that local public markets in Arusha have many community benefits including the following:

- **Health:** Local public markets help create food environments that encourage healthy eating whereby they play a vital role in promoting urban public health through access to healthy food. They are the main distributors of healthy foods particularly for the urban poor who easily access fresh fruits and vegetables at affordable prices.
- **Livelihoods:** Local public markets are important for the livelihood of traders and small local retail businesses. They are preferred by small traders, especially when compared to shopping centers that favor larger businesses. They offer job opportunities for the poor, especially women, such as rural women migrants to the city. In that respect, local public markets are useful in improving urban livelihood activities and create active public spaces.
- **Affordability:** It was noted that urban residents have preference for local public markets, not only because of their ability to obtain healthy fresh foods, but also because of the affordability of the foods available. The urban poor, for example, rely on local public markets to be able to buy smaller food quantities, negotiate lower prices and request for credit opportunities.
- **A place for people:** The study also noted that local public markets in Arusha serve as *places for people* that support social inclusion, which can be considered as playing a role of social spaces. In other words, the local public markets bring people together, foster public life, and act as places to mingle and socialize in areas that lack such facilities. For example, it is common for interaction, seeing and being seen, and to have informal conversations ahead of buying and selling of fresh produce.
- **Urban tourism:** Local public markets in Arusha are increasingly becoming sites for urban tourism. It is described in the study that the local marketplaces are offering what many tourists now feel is missing from huge conventional supermarkets – “food with a face”. For example, Kwa Mrombo Market has become popular for its meat roasting stalls popularly known as *Nyama Choma*, which

tends to attract many people from outside Arusha to visit the area. Others are curio markets for selling traditional Maasai souvenirs, which are found scattered in several locations of Arusha city.

- **Food visibility and security:** Local public markets make locally produced food visible and available in a city’s public space on a regular basis thereby contributing to the community’s food security. A good example in Arusha is the wide availability of traditional meat roasting (*Nyama Choma*) which reflects the pastoralist economy of the surrounding community. Similarly, consumption of dishes made from *black nightshade* leafy vegetable, locally known as *mnavu*, has brought about attention of many people to eat this vegetable in Arusha, and beyond the region, which has made it more viable to produce and easier to sell.
- **Linking rural and urban communities:** It has also been noted that local public markets also provide benefits that extend beyond the individuals and their households who frequent them. Traditional markets foster sustained links between rural and urban communities, via flows of goods and migrants who journey between the two, either regularly throughout the year, or seasonally. In Arusha city, for example, many people from the nearby rural areas regularly bring their commodities such as live goats and sheep, fresh bananas, and various types of vegetables to the various weekly markets that are scattered at several points in the city for selling.

Table 1: Growing population trend of the Arusha city

Year	Population size	Year	Population size
2024	554,000	2014	434,000
2022	519,000	2012	415,000
2020	493,000	2010	397,000
2018	473,000	2000	280,000

Source: <https://www.macrotrends.net/global-metrics/cities/22893/arusha/population>

### 3.4. City Infrastructure report

Like many cities, Arusha is primarily dependent on food that is produced outside its administrative borders, therefore the quality of road infrastructure, markets, transportation, and other supply chain systems are of major importance to the city’s food security, and in ensuring the safety and nutritional quality of food that is brought into the city. Environmental and Social Impact Assessment (ESIA) [7] report by PO-RALG provides a good baseline situation of different infrastructure facilities found in Arusha city based on water supply, solid waste management, transportation, and energy.

- **Water Supply** – Arusha city needs to supply about 42 million litres of water per day from its main sources which include boreholes and several springs. However, the actual supply is estimated to be an average of 31 million litres resulting in a deficit of 11 million litres. Major causes of the deficit are mentioned to include frequent power cut-offs and drought periods which normally occur between the months of September and March. Planned strategies to improve water supplies to the city are underway including installation of reservoir tanks for exploitation of gravity water sources of Nduruma and Mlala rivers.
- **Solid Waste Management** – Refuse generated is estimated at an average of 380 tons per day whereby only 274 tons (approximately 72%) is collected and disposed. The remaining 28% is not collected due to limited financial resources required for purchasing of refuse collection trucks and other equipment. Management of liquid waste in unplanned areas is more difficult due to poor inaccessibility of cesspit emptier, little space for erection of pit latrines and high water-table. In planned settlements, 84% of total households use septic tanks, 2% use pit latrines, and 14% use the conventional central sewerage system. Such situation causes environmental hazards through

water and food contamination and consequently risks of diseases such as cholera, typhoid, dysentery, diarrheas, and worm infections. Some initiatives are taken all over the country, including Arusha - especially through waste recycling, guided by the National Solid Waste Management Strategy of Tanzania [8], which aims to minimize generation of waste; ensure proper handling of waste; reduce the volume of waste requiring disposal and maximize the economic value of waste; establish proper disposal facilities and practices across the country; develop and adopt environmentally sound treatment and disposal; and ensure key stakeholders of waste management systems play their roles and responsibilities effectively.

- **Transport** – Arusha city is connected to other parts of the country and the outside world by various means of transportation including road network, air and railway – as described earlier in section 1.1.
- **Energy** – Energy is a known prerequisite for proper functioning of all sectors of economy whereby its availability and quality can determine the success or failure of development activities. Like in many parts of Africa (both rural and urban), the main source of energy for both industrial and domestic use is fuel wood and petroleum products and electricity (thermal and hydro). The above-mentioned report indicated that electricity in Arusha city is supplied from the National Grid System. Fuel wood in the form of charcoal and firewood is common for domestic heating and cooking. It is said that fuel wood is also used in brick burning, which is becoming a more common building material. Fossil fuel and firewood, including charcoal, are the main sources of domestic energy in Arusha city. Biogas energy technology has been introduced in the city for domestic use, but it has not become common. A study in two locations in Arusha city with mixed income levels (low and middle) namely Darajani and Kaloleni conducted by researchers from University College of London (UCL) investigating the use of ‘modern’ fuels (electricity, gas and kerosene) and ‘non-modern’ fuels (firewood and charcoal) has shown some interesting findings. Of the three modern fuels used, electricity is the fuel aspired to by all categories of households (poor and non-poor). However, its expense tends to limit the poor households from using it for cooking although nearly all of them are connected to electricity. Households are often not willing to use gas which they perceive as unsafe because of past accidents. Kerosene, the most easily available fuel, is popular for cooking and lighting amongst all the household groups. On the other hand, charcoal and firewood are used by nearly all households for some cooking and, in poorer households, for ironing. In general, the findings showed that the most used fuel for cooking was firewood (75%) followed by kerosene (11%) and charcoal (10%). The remaining few were using other fuels including electricity, gas (both LPG and biogas) and some unconventional fuels.

### 3.5. Food and nutrition security

To understand the food and nutrition security in Arusha city, it is important to have a good picture of the food environment of this city, which tends to have major influence on the food consumption and consumer characteristics. A review of this subject by Molina et al. (2020) [10] describes food environment as the physical, economic, political, and socio-cultural context in which consumers engage with the food system to make their decisions about acquiring, preparing, and consuming food. On the other hand, they describe consumer characteristics as reflecting the choices and decisions made by consumers, at the household or individual level, on what food to acquire, store, prepare, cook, and eat, and on the allocation of food within the household, all this encompassing purchasing power, preferences, time, and knowledge.

Referring to the situation in Arusha city, Rikolto in East Africa had commissioned an interesting study on Contextual Analysis of Urban Food Environments of Arusha and Mbeya Cities in Tanzania [11] back in November 2020. From the findings, it was clear that there were no established maps of food flows in the city of Arusha and that residents have a wide range of different food staples including cereal grains of maize and rice, potatoes, green bananas (including plantain), leguminous grains of kidney beans, cow peas and lentils, and vegetables and fruits. Stiff porridge (*Ugali*) from mainly maize flour was by far the most common dish in the city. It was also noted that the city of Arusha is well linked by good road networks connecting it

with the surrounding districts, regions and the rest of the country allowing for reliable food supply, making it quite food resilient.

### 3.5.1. Current food and nutrition security responses

The previously mentioned study by Rikolto in East Africa of 2020 on Contextual Analysis of Urban Food Environments of Arusha and Mbeya Cities in Tanzania revealed the most vulnerable population groups that traditionally struggle to acquire Healthy, Sustainable and Nutritious (HSN) food to be the young individuals who earn low incomes, and who are lacking family supports. The main cause for their vulnerability is lack of awareness about what foods are more appropriate for their health, as well as lack of affordability to acquire them. The root causes preventing access to HSN food by mainstream consumers were identified to be lack of knowledge about healthy and nutritious foods, and high post-harvest losses, especially for vegetable and fruit commodities – which tend to lead to high and unaffordable prices. Given the known vulnerability of the female-headed households, they are most likely to fall under this category. Apart from foods of animal origin (such as meat, milk, eggs, and fish), the most relevant and potential HSN foods in Arusha city were identified to include vegetables, fruits, and unrefined grain cereals.

Positive examples of initiatives that deliver affordable HSN food (vegetables, fruits, and unrefined grain cereals) to mainstream consumers were identified nationwide to be the recent programmes by the Ministry of Health in form of campaigns that have included intensive Social Behavior Change Communication (SBCC) strategies on eating habits by increasing awareness in the population about the importance of consuming such foods. As a result, three positive interests were emerging:

- Selling and consuming plates of mixed fruit pieces in common and popular eating places;
- Eating indigenous and traditional vegetables in commercial eating places because of the newly formulated or modified dishes incorporating the vegetables; and
- Eating unrefined whole grain cereal flours (i.e. *'dona' 'ugali'* and brown bread), which is gaining popularity

Several key informants were interviewed during fieldwork in Arusha city to give their views about the different actions and interventions to improve food and nutrition security in the city. The Livestock Officer, the Agricultural Officer, the Health Officer and the Nutrition Officer in the City Council indicated that there are various initiatives taken aimed at improving the availability of food for the residents of Arusha city. They all pointed out that some actions were initiated by individual organizations, and others were initiated by the administration of the city council. One of the examples of individual organization's initiatives is the Tanzania Inclusive Processor-Producer Partnerships in Dairy Projects (TI3P), which is managed by the Land O' Lakes venture under the support of the Bill and Melinda Gates Foundation. This initiative aims to increase the value chain of milk and its products while reducing milk losses. This claim was also echoed by a Livestock Officer at Sakina Ward. The Officer emphasized that apart from the T13P project, there are other initiatives in the council such as small processors of dairy products, keeping of small livestock such as chicken, and provision of subsidies for dairy cows for small-holder livestock keepers in the city and peri-urban areas under support of the Arusha city Council. These initiatives are meant to create opportunities for employment and increasing incomes.

Other initiatives include the Arusha Sustainable Food Systems Platform which is made up of actors in the food system including public institutions or governments, research academia, private sector actors, civil society organizations and NGOs. The key actors have included the Arusha city Council and the Nelson Mandela African Institution of Science and Technology (NM-AIST) in Arusha, in collaboration with Rikolto, TRIAS, IDP, MVIWAArusha, RECODA, and the World Vegetable Centre. The platform facilitates multi-stakeholder dialogues that address food system changes within Arusha. This is followed by another initiative in 2023 known as the Food Action Cities - Pathway to an Urban Food Policy in Arusha, Tanzania [12]. This is a multistakeholder platform coordinated by the Arusha city Council for implementing various actions, which include developing food pathways for governance, promoting good agricultural practices, raising awareness of sustainable food systems, sensitizing consumers about food safety, supporting youth

agrifood entrepreneurs, and facilitating linkages between farmers and market vendors for safe and accessible food. These initiatives aim to transform the food systems in Arusha and improve food security and nutrition. Another initiative worth mentioning is by Rikolto together with the City Council intends to increase food safety in grains and horticulture sectors, leading to better market opportunities for the farmers and healthier food for the people in and around Arusha [13]. The Arusha Edible Gardens (also known as S.A.F.E gardens) [14] is another initiative that aims to promote urban agriculture and agrobiodiversity both as a means for domestic food provisioning and as a route to self-employment in urban horticulture. Vulnerable local women, female entrepreneurs and students learn about indigenous edible plants, how to grow them and how to cook healthy plant-based meals.

### 3.5.2. State of nutrition transition

The Health Officer for the council had the opinion that the state of food consumption and production has changed a lot compared to the past two or three decades. She pointed out that currently most of the foods eaten are those that have been processed in factories, and which she considers to be unhealthy to the consumers. The Agricultural Officer was concerned that despite the emphasis put on consumption of vegetables and fruits by the people in general, the ways in which the vegetables are produced are quite unhealthy to the consumers because of the extensive use of chemicals, from planting to the storage<sup>2</sup>. He remarked that it is no wonder that prevalence of cancer cases has increased significantly - which were unheard of in the past. The Business and Trade Officer also contributed on the subject by noting that traditionally many foods consumed were of good nutritional and health qualities, such foods had included indigenous vegetables which were organically grown and whole meal or unrefined cereal grains. However, such foods are currently only eaten by older people while the younger ones prefer to consume fast and highly processed food products such as fried potato chips, ice cream, sodas, and polished grain flours. The development and booming of tourism activities were also blamed for changing the people's eating habits - shifting from eating more of the traditional dishes to consumption of the so-called modern foods. The emergence of restaurants and hotels that serve foreign cuisines together with increasing number of supermarkets have greatly affected the purchasing and eating behaviors of consumers in Arusha city. Unfortunately, the street food vending business is also turning to the same westernized food dishes. One respondent was surprised that even when some of the visiting tourists in Arusha ask to try the traditional local dishes, they only get the famous 'nyama choma' (barbecued beef or goat meat), but none of cooked *mnaifu* vegetable or Maasai's *loshoro!* However, some positive shifting where people are becoming more conscious of what they eat has recently been observed in Arusha [5].

### 3.5.3. Nutritional deficiencies

Like in many parts of Tanzania, there are several common nutritional deficiencies that are known. The Health Officer for the city council indicated that the prevalent nutritional deficiencies in Arusha city Council include vitamin A deficiency, folate deficiency, and iron deficiency. The Health Officer appreciated that there are ongoing efforts being made by the Tanzanian Government and various non-profit organizations to address the nutritional deficiencies through public health initiatives, education, and supplementation programmes. He remarked that, however, more resources and interventions are needed to effectively combat these deficiencies and improve the overall health and well-being of the people. He noted that iron deficiency is a common problem in Arusha, particularly among children and pregnant women, which leads to anemia, fatigue, weakness, and impaired cognitive development. For vitamin A deficiency, he had the opinion that it is a problem especially in children, which leads to impaired vision, weakened immune system, and increased risk of infections. Poor dietary intake of foods rich in vitamin D and iodine were blamed for the vitamin D and iodine deficiencies, respectively. The officer emphasized that, to a greater extent, improper eating behaviors, diseases, food insecurity due to poverty, and lack of

<sup>2</sup> A study commissioned by Rikolto in 2019 found out that 75% of the locally produced fruits and vegetables in Arusha had levels of pesticides residues that surpassed the WHO permissible threshold.

nutritional education were the main causes of these deficiencies. However, it was noted that the council, through the health department, has been trying for years to provide nutrition education on various methods of food security practices and safety, proper eating behaviors, organic farming, and proper storage methods.

### 3.5.4. Vulnerable groups

As mentioned earlier in section 3.5.1, the most vulnerable population group that face difficulties in accessing the Healthy, Sustainable and Nutritious (HSN) foods are the young individuals and female-headed households who earn low incomes and lack support from families. Lack of knowledge about healthy and nutritious foods, and high post-harvest losses<sup>3</sup>, especially for vegetable and fruit commodities, leading to unaffordable pricing are the main causes for their vulnerability. The interviewed Health Officer of the Arusha city also included pregnant women, children of below the age of five, and elderly people to be predominantly affected by Vitamin A and Folate deficiencies, as well as Iron deficiency anemia. Accordingly, nutritional deficiencies can have significant and distinct impacts on women and children due to their unique physiological needs and vulnerabilities. For women, nutritional deficiencies can pose serious risks to maternal health during pregnancy. For instance, IDA increases the risk of maternal mortality and complications during childbirth, while folate deficiency increases the risk of neural tube defects in newborn. However, the officer insisted that the major causes of such nutritional problems among the identified groups in Arusha city to be inadequate dietary intake, poor quality of diet, food insecurity, limited access to healthcare and pre-natal care, together with economic and social factors.

## 3.6. Culture of the City and relationship with its food system

Findings from the previously mentioned study in Arusha city (see section 1.4) by Ghent University in collaboration with two Arusha-based organizations gives an insight of culture of the city and relationship with its food system. The survey had focused on the food consumers as well as the food vendors. For food consumers, the survey investigated their socio-economic status, employment prospects, spending patterns, food sourcing habits, market experiences, food preferences, and food safety concerns. The findings revealed that consumers spend a large portion of their budget on food and have high willingness to pay more for safe food products although budget constraints limit their ability to do so. A study on exploration of Arusha's foodscape which also assessed household food budgets and spending patterns indicated that 71% of all interviewed consumers who were buying food items from the local marketplaces spent more than half of their total budget on food [5]. The study also noted that 23% of those consumers were spending even more than 75% of their budget on only food products. Most consumers source their food from local public markets and are generally satisfied with their market experience. However, there were differing opinions on market experiences based on the location. The top food preferences were starch foods, followed by vegetables and fruits, while proteins and processed foods do not rank high. Additionally, the population does not consume enough vegetables for a healthy diet. Based on the qualitative analysis and results, the study concluded that food safety awareness was increasing among market consumers in Arusha, particularly among the youth. However, there were still some misconceptions about food safety, with many consumers interchanging food safety with food quality. It was noted that consumers primarily assess food safety based on food quality factors, which can indicate biological contamination, but rarely consider chemical contamination. Despite having knowledge of health risks, many consumers choose to buy food based on price, often resulting in them not choosing to buy from clean market stalls. Personal health and family health are the main reasons consumers were willing to pay a higher price for safe food, while

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<sup>3</sup> This is mainly due to inefficiencies in the food supply chain caused by lacking storage facilities (e.g. cold rooms) and poor transportation system (including poor handling practices together with poor roads).

their economic situation was the main reason for not being willing to do so. It was noted in overall that price was a significant limiting factor for consumers when buying safe food.

On the other hand, few individuals were also interviewed to give their personal opinions about food and culture in Arusha city. The Health Officer believed that food is a big part of the culture of the city of Arusha in general because it attracts all kinds of people. For example, she pointed out that every time someone comes to Arusha, he/ she would wish to visit the famous 'nyama choma' places at Morombo Market to eat roasted meat. Another city official, the Culture Officer, believes that the foods that still identify the city of Arusha culturally are meat, milk, and bananas. She however noted that *loshoro*, a traditional Maasai delicacy, has perhaps remained the only dish that is cooked in a natural and traditional ways - using clay pots on open firewood cooking places. The City's Economist also agreed that *loshoro* and roasted meat have a cultural identity with Arusha. But the city's Culture Officer remarked that in various community celebrations held in the city people prefer to prepare *loshoro* as an identity that they are in Arusha, however the main users of this dish are always the elderly people, that it is too difficult to see a young person choosing to eat *loshoro*!

In the discussion, the respondents were concerned that unlike in the past, foods produced are no longer natural and fresh. They noted that, there is a generational change from farming to meet the needs of household where varied crops were grown for consumption, but now with the commercial farming, farmers only produce for selling. For example, now farmers are farming to get profit by cultivating short-term crops for the food system. The city's Culture Officer remarked that: "*Even the methods of food processing have changed, now people are processing using special machines that did not exist before...., even the traditional vegetables such as amaranths, black nightshade, and pumpkin leaves are being dried and packaged, and not consumed fresh*".

### 3.7. Challenges faced in the city

As pointed out earlier in section 1.4, the city of Arusha is experiencing rapid growth of population due to rural-urban migration, and that it is mostly younger people who move to the city whereby majority of them end up in informal economy working as street vendors. Therefore, the first challenge faced in the city is lack of reliable and gainful employment – and hence widespread poverty and crime among residents of this city. A study conducted in three urban centers [15] of Arusha, Dar es Salaam and Mtwara revealed that people living in urban areas were more concerned about crime and safety than those in the rural areas. There were also variations among the three surveyed areas where people in Dar es Salaam and Arusha were more worried about crime and safety than those in Mtwara. Similarly, approximately half of the respondents living in urban neighborhoods thought crime had increased, compared to only 28% in rural areas. Burglary was perceived to be most common in Arusha while in Mtwara it was crop theft, and in Dar es Salaam was robbery. Sixty percent of people in Arusha felt very unsafe walking alone at night compared to 40% in Dar es Salaam and only 16% in Mtwara. Most respondents in Arusha (78%) and Dar es Salaam (77%) reported that their behavior has changed in the last three years because of crime, compared to only 36% in Mtwara. The study also noted motive for crime to be largely 'need' rather than 'greed'. In all three sites, respondents identified unemployment as the key reason for crime, followed by a lack of alternative means of survival, such as subsistence agriculture. In the current fieldwork key informant interviews in Arusha city, one respondent, the Business and Trade Officer, had also the opinion that lack of farming areas is a challenge in the city of Arusha. This is due to the increase in population in the city, therefore constructed buildings and other structures are increasingly replacing the farmland areas.

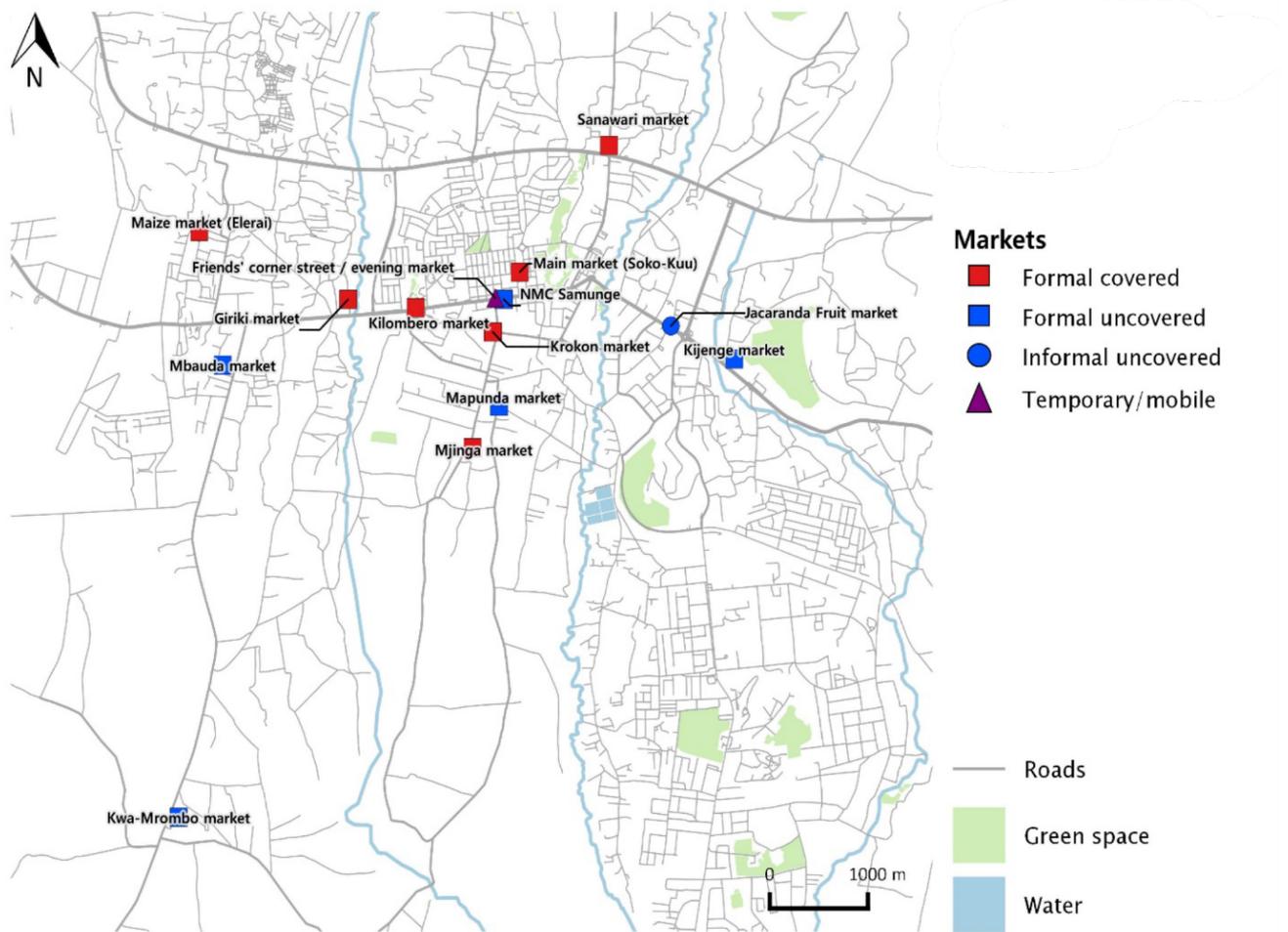
On the other hand, the city's Health Officer as well as the Economist considered the challenges faced in accessing food by the residents. For them, the issue of affordability was critical especially with respect to frequent increases in food purchasing prices, which limits some people from acquiring sufficient and nutritious foods. The most victims are people in the low-income levels. The Health Officer was also concerned about the negative impact of climate change on food production and distribution. A study by Molina et al. (2020) reported on another aspect of challenges faced by food consumers in Arusha city. Food samples taken from nine major markets in Arusha, and in the areas where food for these markets was produced, 63.2% were found to have biological contaminants (mostly *Pseudomonas Aeruginosa*,

*Citrobacter, E. coli and Enterobacter*), while 47.5% of all vegetable samples contained chemical contaminants (pesticide residues) of which 74.2% were above Codex MRL standards. The numbers indicate that the consumption of vegetables sold at these markets can cause health complications for consumers among which include risks of foodborne diseases and gastrointestinal disorders.

Bad conditions of the major food markets in Arusha city were also mentioned to be among major challenges faced by residents in the city. The major food markets of concern are namely: Central Market (also known as Soko Kuu), Kilombero, Samunge, Kwa Mromboo, and Kijenge Kati. The concern for each market is described below.

- **Soko Kuu Market** – The Secretary of the Traders Association for Soko Kuu gave his opinion that the market is easily accessed though it requires some maintenance, especially during the rainy season because roads that enter the market become so muddy and very unpleasant. He added that *“the parking lots do not meet the needs of the market.” This is because there are customer cars and cargo trucks coming from different parts of Tanzania, making the place so crowded*”. He also complained about poor and unclean water and toilet facilities at Soko Kuu. For example, he cited the sewage system of the market which is very often blocked and overflowing especially during the rainy season when water seeps into the market areas.
- **Samunge Market** – Chairperson of the traders at Samunge Market expressed her concern that although the market is easily accessible by customers as well as vehicles that bring goods to the market, the roads inside the market are not good. During rainy seasons it is difficult to enter the market without wearing rain shoes or gum boots. She added that the market floor gets muddy during the rainy season because it is not made of concrete. Some traders in the market also added by saying that some areas in the market are leaking, or not roofed, making their commodities wet and spoiled during the rainy season. They remarked that proper storage facilities for their perishable goods such as cold rooms were unheard of in almost all the markets in Arusha city, including the Samunge Market where they do their businesses.

Figure 2: The food markets in Arusha city



Source: Furaha Germain Abwe (2020) [2]

- Kilombero Market** – The Chairperson of Kilombero Market had a lot to say about his market – but his major complaint was that most of the corrugated iron sheets that cover the market structure were so old and perforated that they leak when raining. He also added that the roads inside the market are impassable at some seasons of the year, and that formed water ditches cannot drain properly. Besides, the Market Secretary complained about lacking a special place to throw waste, and therefore each business operator in the market has to retain his/ her garbage for some days or weeks before the garbage truck comes to pick it. A prominent trader at Kilombero Market complained about poor electrical system whereby some parts of the market have no lights or power at all.
- Kwa Morombo Market** – Much of the complaints for Kwa Morombo Market came from the Chairperson especially about poor conditions of the market infrastructure. He pointed out that traders have been in that market for a while now, but they still don't know their fate in terms of formalization from the authorities (the City Council). It appears that although the Kwa Mrombo market has become prominent especially for its *nyama-choma* business, the authorities have not yet decided to formalize it, or construct permanent structures at the place. The current structures and facilities have been put up by the traders themselves, and therefore they are of low investment. For example, it was pointed out that the marketplace lacks drainage and garbage collection systems that can withstand the volumes of wastewater and garbage that are being generated.

- Kijenge-Kati Market** – Major complaint from businessmen and woman about the Kijenge-Kati Market included isolation of the market from potential customers. They blamed the location to be too hidden for the visitors who are not familiar with the area to reach, and that no road signs have been put to guide the visitors. Concern about poor road entrance to the market was also raised whereby it is said that heavy trucks cannot enter the marketplace because the road entrance to the market is too narrow. Very often traders are forced to hire services of small pick-ups or vans to facilitate their goods to reach their market stalls, which adds so much to their transportation costs, and therefore to the selling prices.

Figure 3: The Arusha Sustainable Food Systems Platform



In addressing the above-mentioned challenges related with the food system in Arusha city, some stakeholders took an initiative to form a platform known as the Arusha Sustainable Food Systems Platform (ASFSP) in a multistakeholder process. Ms. Hildagard Okoth from Rikolto has been one of the frontrunners in this process. She noted that following the Arusha’s signing of the Milan Urban Food Policy Pact in 2015 and a city-to-city exchange with Antananarivo of Madagascar in 2018, food safety was identified as a key entry point for food systems transformation. Given the complexity involved in attempting to address the problem of food safety, it was necessary to call upon various

stakeholders in the food value chain, from production to consumption, to act together – which led to formation of the Arusha Sustainable Food Systems Platform in 2020. Accordingly, members of the platform represent government, consumers, informal market workers, market vendors, transport unions, city planners and logistics, and the youth who are described as being strong agents of mobilization. Coordination of the platform has been provided by Rikolto with the intention that Arusha city Council will take on the role. The platform has five thematic working groups, namely the consumer sensitization, food safety standards, safe production, youth in agriculture, and city planning and logistics. According to RUAF [16], the successes of the platform include being able to organize and deliver trainings on safe production, link food producers to urban markets, sensitize consumers through radio shows, develop a participatory food safety scheme that connects local farms to ensure compliance with food safety standards, mobilize and empower active youth participation in agri-food business and food system discourses, organize biodiversity campaigns on tree perennial tree plantings, and promote investment in the circular economy.

### 3.8. Methodology and ethical considerations

This phase of the study's approach involved a desk review of various documents, including policy papers, scholarly materials, and research reports. To facilitate triangulation and cross-examination of information, a cross-sectional qualitative study was conducted to gather supplementary information from key informants. These key informants included officials from the Arusha city Council, marketplace officials, selected traders, and food consumers in Arusha city.

The study protocol received ethical clearance from the Tanzania Commission for Science and Technology (COSTECH), as indicated by the issuance of Research Permit No. CST00000202-2023-2024-00027 dated 03/01/2024. Approvals were also obtained from the President's Office, Regional Administration and Local

Government (PO-RALG) and the Arusha Regional Secretariat. Copies of these approvals are included in Annex 2. During the interactions with the informants, the project's purpose and their participation were explained, ensuring they understood their right to participate and exit at any time without consequences. These explanations, along with assurances about the secure storage and exclusive use of their data for this research, were provided through consent forms that each participant signed upon agreeing to participate (Annex 1).



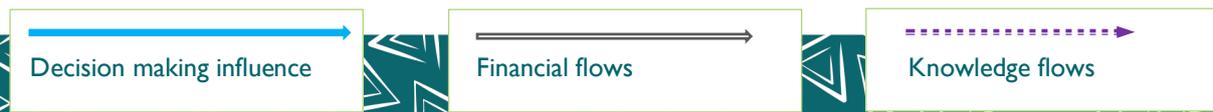
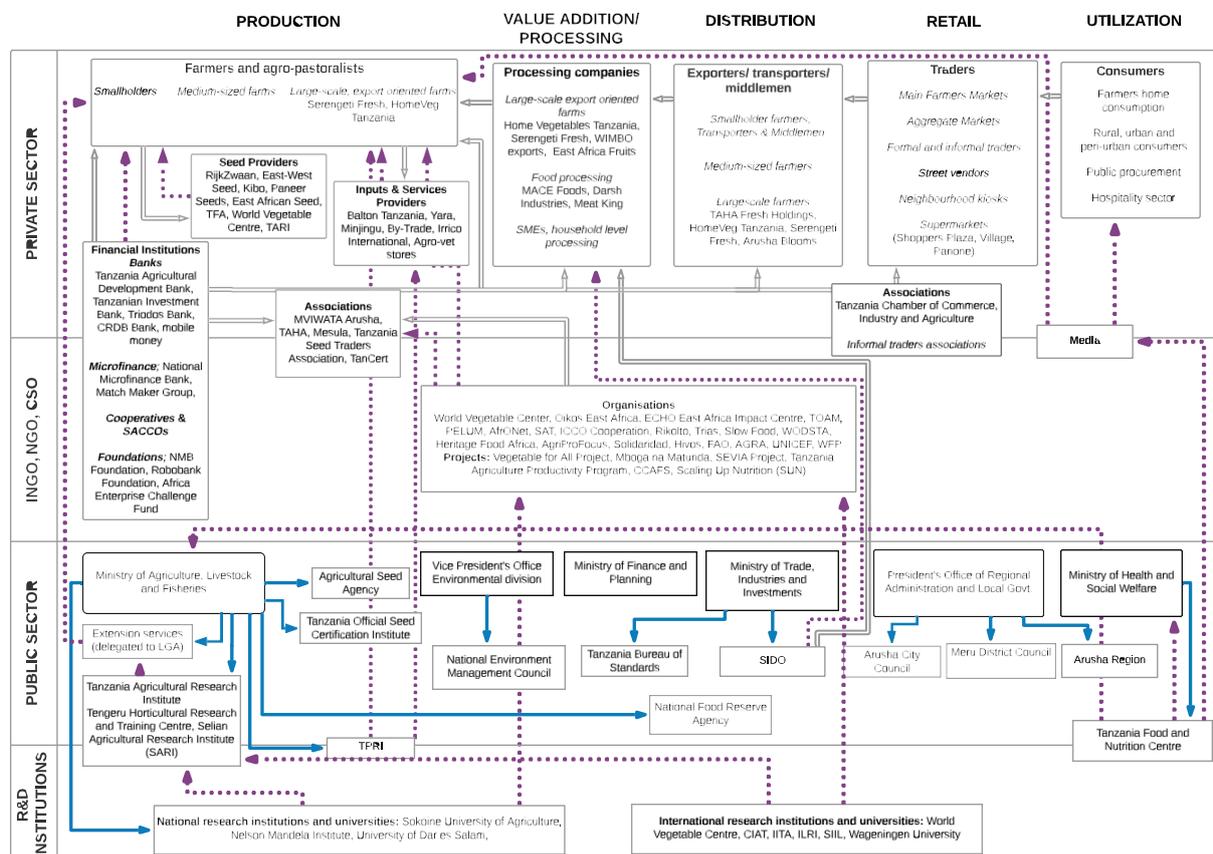
# 4. City Baseline Information

## 4.1. Food systems stakeholders

Molina *et al.* (2020) reported a detailed mapping of main actors of food systems in Arusha (Figure 4). Accordingly, many actors in the food system make decisions that influence the way food is produced, processed, marketed, as well as its consumption. The actors include farmers, agribusinesses, transporters, traders, financial institutions, food industries, wholesalers, retailers, restaurants, and consumers. The researchers noted that each of these actors engages in a variety of practices and relationships that, consciously or unconsciously, regulate how the food system functions, ultimately determining its outcomes in terms of economic, social, and nutritional status of the consumers. Categorization of such actors can be production and processing (or value addition), distribution, trade, retail, consumption or utilization, and provision of enabling environment. Figure 4 shows that the actors can also be categorized as:

- Private sector (farmers of all types and pastoralists, processing companies, financial institutions, inputs and service providers, exporters and transporters, traders, and consumers);
- NGOs and CSOs – local, national, and international;
- Public sector – Government ministries (agriculture, livestock, fisheries, health, trade and industries, finance and planning, President’s Office – Regional Administration and Local Government), and various Government agencies;
- Research and development institutions – both national and international.

Figure 4: Main actors in the Arusha food system and their interlinkages



Source: Molina et al. (2020) [10] Pg. 71

## 4.2. Production and processing

The previously reported study by Rikolto on contextual analysis of urban food environments of Arusha and Mbeya cities in 2020 had noted that much of the main food products consumed in the city of Arusha are produced outside of the city regions, except for some green vegetables that are produced from urban and peri-urban farming. For example, maize in the city comes from Karatu which is another district in Arusha region, Babati in Manyara region, as well as from Shinyanga, Kilimanjaro and Mara regions. On the other hand, sweet and round potatoes are brought to Arusha from Arumeru and Manyara regions, while green bananas are obtained mainly from Arumeru district and Kilimanjaro region. Much of the rice consumed in Arusha city comes from Manyara, Shinyanga and Mbeya regions. On the other hand, fruits consumed in Arusha, include mangoes, pineapples, oranges, ripe bananas and watermelons. While oranges and pineapples are brought from the coastal regions of Tanga and Pwani, the other types of fruit are produced locally within the surrounding districts. Focusing mainly on the vegetables value chain, Molina *et al.* (2020) noted that the sector is dominated by **small-scale producers** with plots smaller than two hectares while **large-scale producers** are very few. They also noted that, generally, there is a low level of farmer organization in Tanzania with no exception for Arusha, although some cooperatives, self-help groups and marketing associations are active in the region. **MVIWATA** is the national network of farmers' groups which has a branch office in Arusha that operates at district and regional levels. It is a member-based association, whose main objective is to strengthen institutionally their member groups and advocate specifically for small-scale farmers and farmer groups, plus providing capacity building and training to foster knowledge about market prices. **Tanzania Horticulture Association (TAHA)** is another a member-based private sector organization dealing with vegetables, fruits, spices, and flowers. TAHA focuses its capacity building and advocacy efforts mostly on improving market access, production and productivity of their members, lobbying governments at different levels to improve the business enabling environment and strengthen institutional capacity.

The production category also includes **input providers** in Arusha mainly the **agro-dealers** such as **By-Trade, Yara, Minjingu** and **Balton**, who supply horticultural producers with a range of pesticides, fungicides and fertilizers. As for seeds, several **seed companies** operate in Arusha such as **RijkZwaan** and **East-West Seeds**. Many of the improved varieties of indigenous vegetables grown in Arusha have been developed by the **World Vegetable Centre**. The **Tanzania Official Seed Certification Institute (TOSCI)**, which is a semi-autonomous government agency has the role of testing and certifying the production of seeds by seed companies. The main actors that are relevant for the production part from the public sector are firstly the **agricultural officers** and the **extension services**, which is part of the ministry of agriculture but also falling under the local governments (Arusha city Council). Extension services aim at improving production, productivity and food and nutrition security. On the other hand, the **Tropical Pesticides Research Institute (TPRI)** is mandated to enforce proper use and handling of chemical inputs.

According to the Business and Trade Officer, Arusha has several food processing and transformation industries such as grain milling, bakeries, meat and dairy processing, and tomato processing. The Officer pointed out some companies that were involved to include grain millers (e.g., Nyile Company for finger millet processing and NMC Millers for maize flour), Darsh Industries for tomato processing carrying a Red Gold brand name, and meat processors (e.g. Meat King). The agriculture and livestock officers also considered dairy industries (Serengeti Diaries, Kilimanjaro Fresh Limited, and Asili Diaries company). The Health Officer remarked that unlike the unprocessed foods sold in Arusha city, most of the processed foods

are relatively more expensive and therefore they are predominantly purchased by middle and high-income earners.

### 4.3. Distribution, trade, and retail

According to the contextual analysis of urban food environment of Arusha city, the distribution and trade part of the Arusha food system is characterized mostly by informal traders. Majority of consumers obtain their various food products from the big markets found in the city which are managed by market authorities. On the other hand, supermarkets and specialized stores are increasing catering for the high-income consumers.

Molina *et al.* (2020) noted that most of the farmers sell their produce at farm-gate rather than carrying it to nearby markets, and that it has been difficult to establish formal organizations of informal actors, which could help reach economies of scale, overcome coordination problems and voice collective interests. The Business and Trade Officer remarked that there are a few **traders' associations** that offer a platform for more informal traders at the market level. However, more formalized traders and shopkeepers in Arusha are served by a branch of the **Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA)** with a goal of stimulating the local government to consider the interests of small-scale entrepreneurs. The Arusha branch of TCCIA works together with the NGO Trias on developing and providing business development services to entrepreneurs in Arusha city. On a different note, the Nutrition Officer reported Samunge market to be the main source of fresh fruit and vegetables for rich and poor households in the city of Arusha where even the small-scale vendors obtain their vegetable trading commodities from this wholesale market.

### 4.4. Consumption

Molina *et al.* (2020) have noted that in Tanzania, as in many other East African countries, organized consumer interests are non-existent or at a very early stage, and that currently in Arusha there are no consumer organizations that can play a role in safeguarding consumer interests. However, there are some hopes from a private, voluntary, non-governmental, non-partisan and non-profit making organization known as the **Tanzania Consumer Advocacy Society (TCAS)** [17] that was officially registered in July 2007. The TCAS's **Vision** is a Tanzania where consumers are aware of their rights and have ability to claim their rights, and where markets are accountable and more responsive to consumer's needs and interests. The organization's claimed **Mission** is to provide advocacy platform that would make consumers voices heard, raise consumer's awareness of their rights, build consumer's ability to claim their rights and make markets accountable and more responsive to consumer's needs and interests. However, it was noted that currently the organisation has not yet reached Arusha.

Community health workers play important role in nutrition awareness. Social and behavioral change have been part of some programmes or projects that have been implemented nationwide in Tanzania. Increasingly, social media platforms play a role in informing consumers about health and food safety. The local radios and newspapers are important source of information for consumers. The local radios are mostly linked to religious communities whereby the Nutrition Officer had the opinion that such community radio stations have considerable reach and impact in awareness around food safety, nutrition, and even agricultural and environmental issues. It was noted that the World Vegetable Centre, which is based in Arusha, has used community radio successfully to raise awareness of the nutritional value of indigenous vegetables. However, she remarked that while local newspapers are an important source of information, they are mostly for urban, middle-class consumers, and less reach in the rural areas.

Another potential initiative is on provision of safe food for Arusha residents by the **Arusha Sustainable Food Systems Platform (ASPF)**. This platform, which is made up of various actors in the food system, facilitates multi-stakeholder dialogues that address food system changes within Arusha. According to

Rikolto [18], the platform has managed to set up interactive radio campaigns on healthy, sustainable, and nutritious diets to create more awareness about the consumption of healthy and safe foods. They also engaged TAHA to improve food safety standards of fresh fruits and vegetables at the retail level, especially in the markets, through the adoption of a Kiosk-model.

## 4.5. Provision of enabling environment

Several stakeholders such as the regulating bodies, research infrastructure, transport networks and institutional arrangements are part of the enabling environment. According to Molina *et al.* (2020), these can be public or private actors or organizations that are not directly involved in the production, processing, distribution, or trade, but have an essential role in the functioning of the business and enable the food system to operate efficiently. First of all, the government ministries setting policies relevant to the food system are an important part of the enabling environment. The roles of the local government including the Arusha city Council is quite crucial here. Others are the regulating and certifying agencies including TOSCI, Tanzania Plant Health and Pesticide Authority (TPHPA), Tanzania Bureau of Standards (TBS), Tanzania Medicines and Medical Devices Authority (TMDA) and the Tanzania Revenue Authority (TRA) mandated with setting and collecting taxes throughout the country. Others are the financial services such as banks. Research institutions in the agricultural sector are quite important including Sokoine University of Agriculture (SUA), and the Tanzania Agricultural Research Institute (TARI). International and local NGOs and other types of civil society organizations (CSOs) are active in the Arusha food system. They include Oikos East Africa, Slow Food Tanzania and Heritage Foods Africa, Rikolto and Trias. At national level, UN agencies such as FAO, the World Food Program (WFP) and UNICEF, as well as bilateral and multilateral organizations are important partners for agricultural development and nutrition.

Interviews with key informants in Arusha city also identified some of the above-mentioned stakeholders of the city's food system, especially the food producers and processors. However, they could not think of those in the provision of enabling environment. The Arusha city Council's officer in charge of businesses and trade gave a general observation that despite the City Council being an important stakeholder in the food system, there are also others such as farmers, markets, transporters, and consumers.

## 4.6. Policy and regulatory environment – food related governance and city food system

Molina *et al.* (2020) noted that the Arusha food system is influenced by a vast array of policies, regulations and institutional frameworks which span across different sectors and government levels. [Figure 5](#) provides a summary overview of the Arusha food system policy landscape. The policies are focusing on the nutrition, agriculture, as well as the environmental and climate domains. The researchers observed that while nutrition has been high on the national agenda, with efforts directed at multi-sectoral and multi-stakeholder approaches, agricultural policies are often inconsistent and influenced by conflicting interests of political and economic elites and ideas around the role of the state and market. Numerous environmental and climate-related policies and strategies are in place but trickling down at district and village level is challenging. There is still much hope on the recent initiative known as the Arusha Food Strategy to provide an opportunity for advancing integrated food policy actions, but only if it is given more footing and funding. Further exploration is attempted next in the following two sub-sections focusing on the nutrition policies as well as other related policy situation.

### 4.6.1. Nutrition policies

The government of Tanzania has demonstrated a strong commitment to ending malnutrition for decades whereby progress has been made in reducing undernourishment, but, as remarked by Molina *et al.* (2020), the decline is too slow and malnutrition remains high, placing Tanzania off-track to reach SDG 2. Another remark given is that Tanzania has developed an enabling environment for nutrition action through substantial policy and institutional development and innovation, however, stronger domestic investments, strengthened coordination at different government levels and greater political space to hold the government accountable on its nutrition commitments are needed (te Lintelo *et al.*, 2020) [19]. Tanzania was one of the first countries to join the Scaling Up Nutrition (SUN) Movement in 2011. The President also formed the High-Level Steering Committee for Nutrition, convened in the Prime Minister's Office and involving multiple ministries and stakeholders. Each Ministry has a nutrition contact point, and the coordination for nutrition is housed at the Prime Minister's Office to ensure mandate across sectors. Most of the practical implementation at the local level is overseen by the President's Office, Regional Administration and Local Government (PO-RALG) – which includes the Arusha city Council authority. Concluding about nutrition policies in Tanzania in general, Molina *et al.* (2020) had the following to say: “Nutrition in Tanzania is high on the political agenda, but it is still faced with implementation challenges!” Currently, much of the interventions to improve food and nutrition situation in country are being guided by the 5-year National Multi-sectoral Action Plans whereby the first one was implemented between 2016 and 2021, and the second one is now in place from 2021 to 2026. The action plans are meant to complement the policy within the Government's Five-Year Development Plan by addressing malnutrition in all its forms and contribute to economic growth and sustainable development. The plans were formulated by recognizing that malnutrition in all its forms, is a developmental challenge, and a national threat to achieving the national socio-economic objectives, especially of being an industrial, knowledge driven Middle Income Country by 2025 (United Republic of Tanzania, 2016) [20].

On the other hand, although there is good progress in reducing the prevalence of stunting in the country, the rapid increase in overweight and obesity adds a new dimension to the strategies for addressing malnutrition. Some of the contributing factors to this scenario include changing consumption patterns and lifestyles, especially of those living in urban areas including the Arusha city. In response to this, the Ministry of Health, through the Tanzania Food and Nutrition Centre (TFNC) and the Food and Agriculture Organization of the United Nations (FAO), has developed the first national Food-Based Dietary Guidelines (FBDGs) [21] for a Healthy Population through a broad consultative process. These FBDGs are meant to serve as technical recommendations official manual addressing the principles and recommendations of a healthy diet and lifestyle. Accordingly, it is an important tool to support food and nutrition information and educational activities in the country. The manual complements the existing efforts done through (i) nutrition-specific and nutrition-sensitive interventions, (ii) guidelines on improving micronutrient nutrition, (iii) Infant and Young Child Feeding Policy and Guidelines, and (iv) fortification strategies. It also supports the implementation of the National Multi-sectoral Nutrition Action Plan of 2021– 2026. The FBDGs technical recommendations manual is intended for technical people such as nutritionists, researchers, development partners, community nutrition educators, health personnel, teachers and other stakeholders working towards improving the nutrition and health status of the general population in the country, including Arusha. The Nutrition Officer had the opinion that the guidelines will greatly help her when preparing nutrition educational messages for the community members.

#### 4.6.2. Other related policy situation

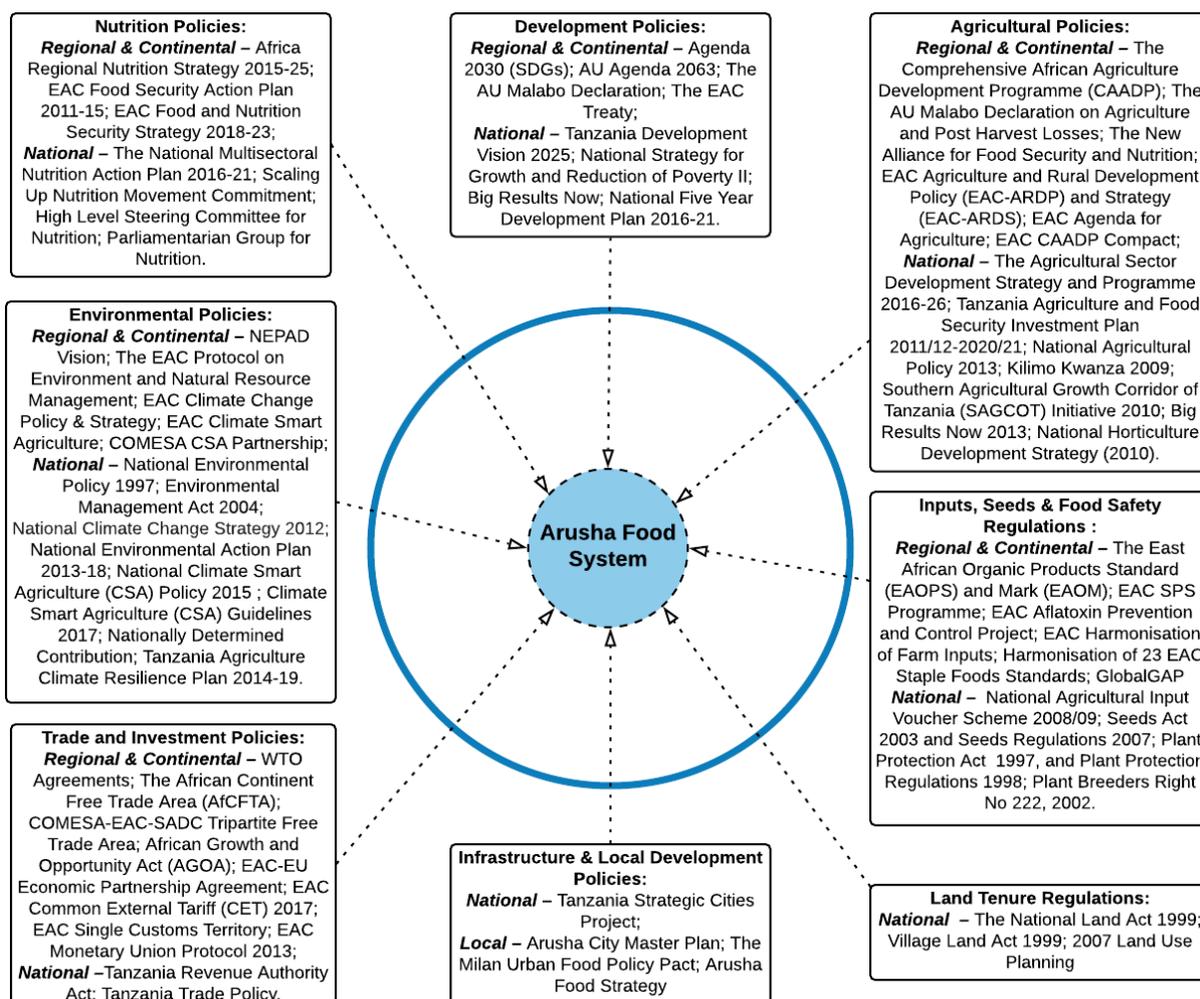
Molina *et al.* (2020) noted that although Tanzania is governed by a principle of Decentralization by Devolution, and hence the local governments in Arusha have considerable authority over budget administration, however, policy guidance and resource allocation remains largely centralized, and the autonomy of urban and rural councils is limited by capacity and resource constraints. Only through concrete projects, resources can be allocated directly to sub-national levels and local policies and strategies can be created. Arusha city had joined the Milan Urban Food Policy Pact in 2015, signed by 115 cities worldwide and promoting city-to-city learning on developing and implementing sustainable food policies. A few years later, in 2018, the City Council – supported by the Belgian NGOs Rikolto and Trias, the Dutch NGO Solidaridad, the Tanzania Horticulture Association (TAHA), and the network of local governments

ICLEI – drafted an Arusha Food Strategy aimed to provide healthy food to the consumers in and around Arusha while increasing market opportunities for farmers (Rikolto, 2018) [22]. However, the implementation of the Arusha Food Strategy is described by Molina *et al.* (2020) to be slow because of lack of funding.

It is noted by Molina *et al.* (2020) that agricultural and rural policy in Tanzania has revolved around a tension between different visions: one oriented towards attracting large-scale investment in commercial agriculture; the other prioritizing government investment in small-scale producers. They cite the Agricultural Sector Development Programme (ASDP) that reflects the former vision, while Kilimo Kwanza initiative assigned a prominent role to the domestic private sector in driving agricultural growth. Similarly, the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) initiative is strongly oriented towards private sector-led agricultural development geared towards attracting investments from foreign companies. Moreover, as in other East African countries, Tanzanian policies have focused mostly on crop agriculture and intensive livestock keeping systems, while neglecting the importance of pastoralism for economic growth, livelihoods, and sustainable land practices.

Some interviewed respondents in Arusha city had varied opinions and perceptions about how regulations and policies related to food are enforced or implemented. The Business and Trade Officer felt that food inspections in the city markets are always conducted to ensure that food products with strong agricultural chemicals or residuals are prohibited to enter the markets. However, this person could not explain how the inspections are conducted. A businessman from Soko Kuu, confirmed the inspection by saying that one cannot get a contract to sell food products to the hotels if the goods have not been approved by the market authority to be safe. But again, he could not describe how the inspection is usually conducted, apart from insisting that food products are usually inspected before allowed into the marketplace! On a different notion, the Health Officer pointed out that vehicles that transport food products such as meat are required by law to be registered and labelled as either “*food-only*” or “*meat-van*” and strictly prohibited from transporting other kind of products. The Livestock Officer revealed that animals must be inspected thoroughly by a designated officer before slaughtering to ensure they meet health standards. He emphasized that all these measures are intended to ensure food safety for the consumers in the city. However, the Health Officer admitted that despite such rules and regulations, sometimes it is difficult to strictly practice them, while the Livestock Officer added that majority of traders in Arusha don’t have special food-only vehicles but rather use other means of transport like motorbikes (commonly known as *boda-boda*).

Figure 5: Overview of continental, regional, national, and local policies in Tanzania with direct and indirect impact on the food system in Arusha



Source: Molina et al. (2020) [10]

## 4.7. Production environment

Much of the review on production environment has been captured earlier in [Section 2.1](#). Interviewed individuals including the Agricultural Officer for the city indicated that the agricultural production environment in Arusha and surrounding areas such as Moshi, Kondoa, Karatu, Manyara and Arumeru has the characteristics of good soil for cultivating various crops such as maize, rice, beans, sunflowers, bananas, potatoes, green vegetables, and fruits such as avocados, cucumbers, and watermelons. He emphasized that much of the production is done by smallholder farmers. Some challenges faced were also noted including climate change effects, rising prices of agricultural inputs, and shortage of farming land because of competing uses especially with the current expanding urbanization. The officer also pointed out that there

are some initiatives being taken to promote sustainable agriculture or alternative farming practices that are introduced to increase and sustain agricultural production in the areas.

### 4.7.1. Food diversity and staple foods

According to the various City Council officials interviewed as key informants, including the Livestock Officer, Health Officer, Agriculture Officer, and the Business and Trade Officer, Arusha city is characterized by many food outlets such as shops, markets, and business centers. This provides an excellent condition for accessing diverse type of foods. They gave examples of the commonly eaten food varieties to include leafy vegetables, fruits, animal-source foods (meat and milk), grain cereals, plantains, legumes, and roots and tubers. The market leaders of the Soko Kuu and Samunge markets agreed that the varieties of foods available in the city depend much on the seasons and the place where they are sourced. For example, fruits such as oranges come from Tanga, mangoes are from Tanga and Mombasa in Kenya, bananas are mostly from Kilimanjaro, while avocados are from Kilimanjaro, Arusha, or Manyara, and pineapples are from the Coast (Bagamoyo). Others are cowpeas, lentils, green peas, cassava, taro, pumpkins, groundnuts, broccoli, and grapes. All these are available at different seasons and periods of the year in their respective localities.

They noted that leafy vegetables are available throughout the year in the city because they are produced from urban farming within the city and its peri-urban areas. The most consumed leafy vegetables in the city are spinach, pumpkin leaves, cabbage, cowpea leaves, amaranths, nightshade, sweet potato leaves, and cassava leaves. Other types of vegetables include eggplants, carrots, onions, tomatoes, red pepper, and African egg plants. Staple foods consumed in Arusha city include maize (*ugali*), rice, plantains, beans, as well as round and sweet potatoes. Animal source foods such as meat (beef, goat, mutton, chicken, and pork), milk, eggs and fish are also quite common. However, they insisted that the availability of foods in the city is one thing, but accessing the foods is another thing!

Chairperson of the Kilombero market remarked that his market is the '*mother of all markets*' in Arusha city when it comes to food supply because it serves as a hub of all the foods eaten in the city. All markets within the Arusha council obtain their supplies of food commodities from the Kilombero market buying in whole sales before distributing in retailing. He noted that Kilombero market is used by people from all levels of income (low, middle, and high) compared to Soko Kuu market which is mostly dominated by middle- and high-income people.

## 4.8. Typical food basket for different income categories

As described earlier in [sections 1.6 and 1.7](#), much of the staple foods commonly consumed in Arusha city by all income categories include maize (*ugali*), rice and bananas/ plantains. The differences are only found in the accompanying ingredients, which determine the dietary diversity. People with higher income levels are known to consume more diversified meals consisting of animal source foods, fruits and vegetables compared to the lower income levels. It was also noted that high-income consumers have more preference for processed foods compared to the low-income earners. The interviewed key informants in the city showed similar opinions. The Health Officer and the Business and Trade Officer, two prominent persons in Arusha city, had the opinion that food choices are determined by awareness about important nutrients as well as the affordability, which is a factor of income level. The city's Economist insisted that a person's income greatly determines his/ her choice of food in Arusha city.

Again, as reported earlier in [section 1.6](#), low-income consumers in Arusha spend a large portion of their budget on food products of up to 75% and that most consumers source their food from local public markets. It was also noted that the top food preferences were starch foods, followed by vegetables and fruits, while proteins and processed foods do not rank high. While the low-income consumers may have sufficient knowledge of health risks on the foods they buy, many of them choose to buy food based on price. In other words, price is a significant limiting factor for consumers when buying food.

## 4.9. Nature of the food economy

The earlier part on the overarching report on economy of the city ([Section 1.4](#)) pointed out one of the main characteristics to be experiencing rapid population growth, and that the non-agricultural sector is dominated by the informal economy. Both the city's Business and Trade Officer and the Economist indicated that the Arusha's food economy is influenced by several factors, including geographic location, agricultural practices, trade networks, demographics, and cultural factors. Below are some key aspects of Arusha city's food economy mentioned by the two officers in the city:

- **Agriculture:** Arusha city council is rich in different varieties of crops grown in the surrounding area, such as fruits and vegetables, maize, plantains, beans, and so forth.
- **Trade and distribution:** Arusha's food economy is characterized by tremendous trade networks that connect local producers with urban consumers and export markets. Food products from Arusha and surrounding regions are distributed through various channels, including wholesale markets, retailers, cooperatives, and informal street vendors.
- **Food processing and value addition:** In addition to primary agricultural production, Arusha city has a growing food processing and value-addition sector. Local private entrepreneurs and cooperatives engage in activities such as milk processing, maize processing, meat processing, and vegetable preservation, adding value to agricultural commodities and creating employment opportunities.
- **Tourism:** The tourism industry plays a significant role in Arusha's food economy, as the city serves as a starting point for many safari tours and outdoor adventures. Hotels, lodges, and restaurants in Arusha accommodate both international tourists and domestic travelers, offering a variety of culinary experiences that showcase local flavors and ingredients.

### 4.9.1. Formal food economy

The council's Business and Trade Officer and the Economist asserted that the formal food economy of Arusha city includes various fields that operate under the rules and regulatory frameworks of the city council. The formal food economy comprises organized businesses, institutions, and value chains involved in food production, processing, distribution, and retail. Examples of the formal food economy of Arusha city are large-scale plantations, commercial farms, formal processing facilities, and agribusiness enterprises engaged in crop cultivation, livestock farming, and horticulture; formal wholesale markets and distribution centers; formal retail outlets, supermarkets, and specialty food shops; and the hospitality sector, such as hotels, restaurants, cafes, and catering services that provide meals, beverages, and culinary experiences to residents, tourists, and visitors. [Section 1.4](#) also pointed out the manufacturing industries that are key employers in the city.

## 4.9.2. Informal food economy

Section 1.4 has clearly indicated that majority of the residents in Arusha city are absorbed into the informal economy, especially working as street vendors commonly known as *Machingas*. The city's Business and Trade Officer echoed the same by pointing out that the informal economy plays a significant role in meeting the daily food needs of individuals and households. The city's Economist also asserted that many vendors in Arusha's informal economy also include small-scale farmers, rural producers, and petty traders who bring their agricultural produce and homemade goods to sell directly to consumers, including fresh fruits, vegetables, grains, legumes, spices, meat, poultry, fish, dairy products, and baked goods. Traditional and homemade snacks are also commonly found in these markets.

Arusha's informal food markets are accessible to a wide range of consumers, including residents from both the formal and informal settlements – and those of different income levels. The affordability of products and flexible pricing arrangements make these markets essential sources of affordable food for many people, especially those with limited financial resources. Accordingly, the economy operates through trading practices characterized by direct transactions, bargaining, and face-to-face interactions between buyers and sellers. Despite its economic and social contributions, the informal food economy in Arusha city often faces regulatory challenges related to licensing, and lack of infrastructure, sanitation, and hygiene standards. In coping with the situation, the involved traders have adopted to doing their activities in temporarily make-shift facilities such as kiosks constructed from used boxes and cartons or carrying their goods along the streets on their heads or backs. This tends to increase the hardship of their work – and probably adding more work costs, which must be compensated by the prices they offer to buyers. But, since low-income buyers can only afford low prices, the danger of compromising with the quality is obvious.

## 4.9.3. Barriers to the development of profitable and sustainable small scale and informal agri-food businesses

The contextual analysis of the urban food environment in Arusha city by Rikolto (2020) identified consumption of fruits and indigenous vegetables to be the healthiest, sustainable, and nutritious (HSN) food by the mainstream consumers. This is by considering that Tanzanian diets are characterized by high levels of starchy foods with low dietary diversity, which contributes to high levels of food insecurity and malnutrition, particularly high levels of stunting. Increasing consumption of fruits and vegetables provides an opportunity to diversify diets and improve the country's nutritional outcomes. Indigenous vegetables contain many of the micronutrients, fiber, vitamins, and minerals that are crucial during pregnancy and early childhood development. It was therefore noted that promoting their consumption is a sustainable strategy to combat micronutrient malnutrition and associated health problems, particularly for the poorer segments of the urban and rural population.

In that respect, identification of barriers to the development of profitable and sustainable small scale and informal agri-food businesses have focused on the value chain of African indigenous vegetables that are familiar in the Arusha urban food system. This considers the concept of Sustainable Food System (SFS) i.e., a food system that continuously provides affordable, healthy, nutritious food for all, and does so in an economically, socially, and environmentally sustainable manner, and contribute significantly to achievement of the Sustainable Development Goals (SDGs). Given the eating behavior among the **'mainstream consumers'** in Arusha city, African Indigenous Vegetables (AIVs) fulfil the criteria. AIVs are defined as those vegetables whose origin is known to be in Africa, but also those introduced species which due to long use have become part of the culture.

The contextual analysis of the urban food environment in Arusha identified three factors constraining consumption of AIVs in the area. The three factors were namely:

- **Lack of food knowledge** – the evidence available indicates that the low daily use and consumption of indigenous vegetables is largely a problem of low consumer awareness about the importance of AIVs for nutrient provision. This is likely due to lack of nutrition education, including misconceptions, and low awareness of proper cooking techniques, cultural perceptions e.g., AIVs perceived as 'poor people's food', and deep-rooted food taboos concerning the effects of certain vegetables on male reproductive ability.
- **Accessibility** – affordability and access of nutrient-dense food in local formal and informal markets are important drivers of consumers' demand for, and ultimately consumption of, indigenous vegetables. However, it is suggested that cost is not necessarily a barrier to consumption of AIVs in Arusha, and that affordability of vegetables is seasonally dependent and crop specific. Moreover, spatial disparities exist, with urban households often having lower intakes of vegetables, and increasingly favoring convenient highly processed foods.
- **Food safety concerns** – there is widespread concern for food safety hazards of vegetables, particularly high levels of pesticide residuals. This is partly caused by farmers' limited knowledge regarding the correct use of pesticides or herbicides, the risk of biological contamination is also significant due to absence of suitable storage facilities and poor hygienic conditions provided by the existing market infrastructure. There is a general lack of dedicated standards for indigenous vegetables, combined with the limited enforcement of food safety requirements for fresh produce in Tanzania, whereby the responsibility of different public authorities regarding enforcement of food safety regulations is fragmented and of low capacity, targeted more towards the export and processed food sector.

#### 4.9.4. Document business and investment cases along key food value chains contributing to nutrition and circularity

In 2021 Rikolto East Africa commissioned a study titled *"Investment Opportunities in Arusha's Urban Food System (FS-Invest)"* to assess the needs and opportunities in the City of Arusha and develop investment cases for most appropriate interventions [23]. The goal of the project was to promote Arusha's city-region nutritious and resilient food systems approaches in the local government. A Theory of Change (ToC) was formulated to guide the designing of interventions based on two problems related with the existing food system in Tanzania that contribute to malnutrition (Rikolto, 2021) [23]. First is the lack of access to affordable healthy, sustainable and nutritious (HSN) food among the mainstream consumers. Second, there is a lack of awareness among the mainstream consumers about the need to consume such foods in daily diets to meet nutritional needs. The study suggested that in order to address the challenges around access, one should focus on strengthening the value chains of HSN foods to improve availability, affordability, stability of prices, and quality of the commodities. Accordingly, the process calls for two important actions to take place. First is the improved capacity for production and processing of HSN foods, which the target actors should essentially include farmers and processors together with all the facilitating stakeholders such as input suppliers and extension services. On the other hand, strengthening of value chains for HSN foods requires an improved marketing and distribution of the foods, which involves the market infrastructures and facilities, transportation system, storage and vending. Investment support for both financial and technical aspects from both the private as well as the public sectors is also an important ingredient. It was emphasised that once production and processing systems are functioning well together with an improved system for marketing and distribution, eventually supply of HSN food will increase, and hence more affordable HSN food to the consumers.

The study noted that addressing the challenge of lack of awareness of the importance of consuming HSN foods for good health and nutrition, one should develop targeted marketing and behavioural change communication campaigns to create demand for such foods. The improved knowledge of need to consume variety of safe local HSN foods will lead to increased demand for such foods, and coupled with increased

supply and improved distribution, ultimately increased consumption of quality HSN foods by the mainstream consumers will result.

According to the proposed ToC, increasing access to HSN foods through improved availability and affordability, and increasing the awareness about the benefits of their consumption by increasing the understanding of the need to consume safe HSN foods, the interventions can contribute to improved health and nutrition among families of mainstream consumers.

## 4.10. Food access strategies of households

Like other expanding cities, Arusha is facing the challenge of meeting the food and nutrition needs of its growing population. In this context, informal street food vendors provide crucial access to food to low-income consumers, many of whom cannot afford fuel, have no time for cooking, or lack storage or cooking facilities. Vending of prepared food, which is a recent phenomenon in the country, also provides livelihoods for low-income residents, particularly women who are single mothers. As pointed out in sections 1.6 and 1.7, these changes in eating habits have been accompanied by dietary shifts whereby traditional dishes such as maize *ugali* and *loshoro* are being slowly replaced by convenience foods such as fried potato chips and baked wheat products. The city's Nutrition Officer observed that more and more people in Arusha city are eating prepared foods on the streets indicating that food vendors are playing a significant role in citizen's health. The city council's Economist noted that most of the retail markets in the city have side stalls selling cooked food. For many low-income workers, the food offered here is an affordable alternative to the restaurants and other formal eating places found in the city. This situation appears to be quite similar as reported from a project titled "*Sustainable Diets in the Informal Economy*" [24] implemented in several cities and towns across Africa, South America, and Asia. However, despite its role in feeding some of the most vulnerable communities, the city council's Business and Trade Officer remarked that street food vending faces various challenges whereby some perceive the food to be unhealthy and unsafe, and therefore the vendors are often harassed by authorities because, according to the law, they occupy public spaces illegally. He also noted that vendors are poorly organized, and therefore have no voice!

Another common strategy used by residents of Arusha city to access food in their households is that of Urban Agriculture (UA) which involves keeping of livestock and growing food crops [25]. While some households consume such foods directly, some depend on selling those food products to obtain cash for buying other food items, and others rely on both – i.e., consuming and income earning through selling. The type of livestock commonly kept include poultry, goats and sheep, as well as dairy cows. Experience has shown that many low-income households tend to keep indigenous breeds of chicken in free range involving minimum costs of putting up a shed at the backyard. These are usually raised by feeding on left over foods and scavenging from open areas including garbage pits – and are kept primarily for household consumption. Usually due to limited space and resources within such households, the number of such birds kept per household is very minimal – hardly exceeding five. On the other hand, the well to do households tend to maintain commercial chicken (egg layers as well as broilers for meat production), which require huge investment in terms of feeding, land space for construction of the necessary housing shed, as well as the cost of construction materials. Very often such chicken requires provision of essential drugs and nutrient supplements. The interviewed Livestock Officer noted that commercial chicken keeping in Arusha is only possible in low and medium density housing areas of the city where plots have sufficient space. Crops that are grown include mostly vegetables such as amaranths, black nightshade (*mnavu*) and kale (*sukuma wiki*), but also fruit trees such as paw paws, guavas, bananas, and avocados. According to the interviewed Agricultural Officer, only few households manage to keep home gardens for growing such crops, mostly those who own land plots, unlike the tenants who only rent the houses or rooms, and therefore have no land ownership. Apart from the home gardens, vegetables are also produced by few commercial urban farmers in open land spaces within the city, who sell in local markets. The Agricultural Officer<sup>4</sup> has the

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<sup>4</sup> It should be noted that according to the setup of the Government of Tanzania, the Ministry of Agriculture is responsible for formulating relevant national policies and guidelines on agricultural activities. However, it is the

opinion that while urban farming is acknowledged by policy makers to provide important means of livelihood to a substantial number of urban residents, the regulation of these activities using by-laws and national regulations always change and have never appeared to support them.

## 4.11. Nutritional deficiencies (2012-2022)

It is important to note that the standardized nutrition surveys for Tanzania are provided by the Demographic and Health Surveys (DHS) and by the National Nutrition Surveys conducted jointly by the National Bureau of Statistics (NBS) with technical support from several technical organizations. Usually, such surveys are conducted after every five years. One big limitation of such standardized surveys is that the sampling is only done at the regional level, and they don't provide information about the sub-regional levels such as district, cities, towns, wards or villages. In that respect, obtaining standardized nutrition data specifically about the situation in Arusha city is not possible. Otherwise, the descriptions provided in sections 1.6.2 to 1.6.4 can help to highlight the nutritional deficiencies situation.

## 4.12. Vulnerable consumers – school and food retailer environments in agreed areas

The Rikolto's study on contextual analysis of urban food environment in Arusha city also explored the way school children obtain their meals at school. It was noted that most of the foods in which pupils consume at school are from different food vendors who sell a variety of food products around school premises during break time. Some are homemade (e.g., buns, and fried cassava and sweet potatoes) while the majority are packaged industrial food items such as biscuits, crisps, ice lollies, candies, and sugary bottled beverages. Some shops and kiosks around school compounds also sell some food items such as biscuits, cakes, bottled beverage drinks, etc. These shops and kiosks are open throughout the day when children are around in school. Some few children also bring food from home, including packed meals or snacks. However, it was reported that most parents prefer to give pocket moneys to their children so that they buy food in school, but surprisingly, children don't get supervision or advice on how to select good and healthy products when buying foods.

The analysis of school food chains revealed that the ingredients for the home-made foods are obtained from markets and shops. They are then cooked and brought to school premises in plastic containers by the food vendors either hand carried or ferried on bicycles. Much of the industrial processed foods are manufactured in Dar es Salaam (e.g., Azam biscuits and beverage drinks) and supplied through wholesalers and retailing shops who supply the school food vendors. Further analysis of the situation revealed that apart from general advertisements in the public media (radios and TV), there were no marketing actions that were identified to be directed towards the school pupils in Arusha city. However, children appeared to be quite familiar with few of the popular advertisements appearing in the media about some of the food snacks and beverages that are also sold to the public, including in school premises.

The city council's Health Officer showed concern that the foods sold in school premises were of poor nutritional quality (mostly junk foods) and generally unhealthy due to the unhygienic conditions of the selling environment. She also added that there are no guidelines set for traders who sell foods in school premises, or any regulations set on doing food vending in schools. The Government of Tanzania has recently launched a National Guidelines on School Feeding [26]. While the guidelines stipulate the various sources of food stuffs for students the commitment has been quite low. The stipulated sources include the following: (i) Government for public boarding schools; (ii) Private school owners for both day and boarding schools; (iii) Parents/ guardians with students in public day schools; (iv) Education stakeholders; (v)

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**Local Government Authorities such as the Arusha city Council, that are responsible to provide and oversee the implementation of activities and services, including the extension.**

Development Partners; (vi) Private sector; and (vii) Schools through production projects such as farming, poultry and beekeeping, aquaculture, animal husbandry and gardening.

The Rikolto's study in 2020 on Contextual Analysis of Urban Food Environments indicated that nearly all primary schools in the City of Arusha had shown interests to participate in the school feeding programme. The objective of the programme was to encourage school attendance and reduce rate of dropouts to motivate academic excellence. Accordingly, there was a policy that directed schools to provide lunch to the pupils, but the planning and implementation is left on the hands of individual school committees. The City Council through its education department in collaboration with private donors was providing meals (lunches) to some primary schools in the city. While the lunch was for all school children, priority was given to those who live in difficult environment such as the poorest, orphans and those who were known to have chronic sicknesses. Individuals in the community were also encouraged to contribute freely by cost sharing. However, experience showed that the demand was so huge, and difficult to meet fully, and that some parents were reluctant to contribute because the Government had initially declared that education was free for all. Mount Meru Millers (a private company) was mentioned to have donated foods to most of the schools in the city as a gesture of a good will. Similarly, iThemba Foundation donated food to Baraa Primary School for disabled, sick, orphans and those who lived in vulnerable conditions.

## 4.13. Food systems assets

As part of the CGIAR Research Initiative on Fruit and Vegetables for Sustainable Healthy Diets (FRESH), a study conducted in Arusha identified various assets relevant to food systems [27]. These assets are described as the resources of a person, and they are subdivided into five types, namely physical, human, social, natural, and financial assets. Physical assets refer to infrastructure and public goods; human assets include skills and knowledge; social assets reflect norms, networks, and relations that facilitate social organization and access to information; natural assets refer to the natural resource stock upon which production is based; and financial assets refer to actual or accessible income, savings, and credit.

### 4.13.1. Food processing firms

The city council's Economist reported that there are several food processing firms operating in Arusha city. They include livestock industries like King Meat, which processes meat; Kilimanjaro Fresh, which processes milk and milk products; Arusha Meat Company, which processes meat and sausages; Serengeti Diaries, which processes milk; and AfriMeat also dealing with meat processing. Other food processing firms include grain millers Nyile Farm, which process finger millet, NMC millers for maize and wheat flour, and several small and medium size baking facilities. Tomato and chill processing Red Gold Company as well as beer making were also mentioned. It was noted that food products that are processed in Arusha city are sold within and outside of Arusha city.

### 4.13.2. Food system organizations and trade associations

Molina *et al.* (2020) reported that there are a few traders' associations in Arusha that offer a platform for more informal traders at the market level. Representing often more formalized traders and shopkeepers is the Arusha branch of the Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA). The TCCIA's goal is to stimulate the local government to consider the interests of small-scale entrepreneurs. They support people on issues around registration, taxation, for example by providing information on regulations around import and export and other issues. The city council's Economist noted that while the interests and rights of the large traders and businesses in Arusha are being defended by the TCCIA and those of the horticulture sector are taken care by the Tanzania Horticulture Association (TAHA), there is only a very small number of food vendors that are part of an association. It was however noted that there

have been some attempts in the past to start a bottom-up association, but it proved very difficult to manage as it was hard to find unity among members.

Survey results from the FRESH project (earlier mentioned in this section) noted that food vendor associations that do exist are mostly focused on financial transactions particularly in formal and informal microfinancing systems to secure investment capitals. This was because interest rates and demanded collaterals at banks are generally too expensive for vendors to comply. Two systems were identified namely the Village Community Banks (VICOBA) and KIBATI. The former is a type of registered community microfinance groups with a clear group constitution whereby members pay a weekly contribution in return for the possibility to take credit from the VICOBA when necessary. Members do pay a small interest rate, and at the end of the year members get back their share and the interest they paid. The second system (KIBATI) is described to be working in the same way but is more informal whereby members agree on the conditions among themselves and there is no formal registration. However, this second system was also noted to be riskier because there is not much to do if some members break the rules.

Results from the FRESH project also observed that brokers do play a key role in the fruit and vegetable trading. Accordingly, they are the ones who match varying supply from a multitude of small farmers that are geographically dispersed. This function is combined with transport, grading, and often financing. Brokers have their own networks whereby all crop collectors sell their collected produce to this association, which then sells to wholesalers and retailers. This makes it almost impossible for farmers to directly sell in the market. It was noted that many farmers complain that collectors and brokers do collude on price agreements. The interviewed market leaders admitted that markets in Arusha are often partly governed by market traders' associations for serving their interests. For example, the Kilombero Market Traders Association has always been lobbying for lower market fees and market facility improvements.

Some members of the Arusha Sustainable Food System Platform (ASFSP), including Rikolto, are suggesting a need to explore possibilities of using the existing initiatives such as association of market traders as entry points for to strengthen and empower traders, including vendors, in transforming the existing food system in Arusha city. This also includes the Savings and Credit Cooperatives (SACCOs). These are community membership-based financial institutions that are formed and owned by members in promotion of their economic interests. An example that we can explore here is the Kilombero Multipurpose SACCOs, an association of wholesalers in Kilombero market. Traders at Samunge Market are also known to have an association though relatively weak compared to one at the Kilombero market. Additionally, vendors (popularly known as *Machingas*) are also said to have an association, which is also worth exploring.

### 4.13.3. Local food production/ harvest assets (lakes, forests, peri-urban land)

The interviewed city council's Agricultural Officer and the Livestock Officer reported that there are agricultural areas in the city (urban farming), although they are not large areas, that are used to grow vegetables sold and consumed in the city. They also reported that there are ponds in the city that are used for small-scale fish farming. The Agricultural Officer had an opinion that these natural assets are very helpful, not only as source of livelihood to the producers and vendors, but more important for ensuring availability of fresh foods, especially vegetables to the residents in the city. The Agricultural Officer was however concerned that these areas are being taken over other urban investments that are given higher priorities.

## 4.14. Food safety

Molina *et al.* (2020) reported that attention for and investments in food safety standards and regulations is gaining momentum in sub-Saharan African countries, including in Tanzania. Several reasons are given for this,

including an increasingly globalized food production, consumers' demand for better quality, the rise in fresh produce trade, foreign investments and enhanced technical and scientific knowledge. The team noted that food safety standards and regulations in Tanzania suffer from a lack of regulatory enforcement, scattered division of responsibilities, and inadequate coordination mechanisms for implementation, especially regarding the use of pesticides. They also noted that food safety issues around vegetables, especially pesticide residues, remain a problem difficult to tackle in Tanzania. It appears that regulations are focusing mainly on processed and imported products, but locally consumed vegetables and other fresh unprocessed produce are not considered. Findings of the study conducted between 2019 and 2021 by the Tanzania Plant Health and Pesticide Authority (TPHPA) revealed that 63 percent of vegetables and fruits produced and consumed in Arusha are contaminated with bacteria, and that samples gathered from marketplaces had higher contamination levels compared to those collected from farms.

A survey by a team of researchers from Ghent University in collaboration with Rikolto in East Africa, cited earlier in this report, indicated that there was generally high food unsafety situation for vegetables in Arusha in terms of biological and chemical contamination [5]. This was mostly due to poor food handling, insufficient market infrastructure and incorrect and very often overuse of pesticides. The findings also reported a growing knowledge about food safety among consumers in Arusha, which appeared to be brought about by education and information campaigns. Many consumers were willing to pay a higher price for safe food because of their personal health and the health of their families. However, it was noted that currently, there is no way that consumers can know or assess the actual biological or chemical contamination of fresh food products, even if they are aware of the health risks. In that respect, the main determinant to inform consumers' decisions was mostly the price before considering the quality. In this current study, the interviewed city council's Health Officer and Nutrition Officer were all concerned that although regulations on food handling and standards have been stipulated by the government, the capacity to enforce them has always been challenging. They gave an example of meat selling business in the city whereby regulations require that the owner must subject the slaughter animals for health check and inspection before slaughtering. However, they were aware that occasionally some butchery dealers were not conforming to this regulation. It is the responsibility of the city council's health workers to inspect and monitor all the food selling and eating premises, which is very difficult for them to attain given their small numbers and lack of working facilities. For example, they are required to inspect regularly all the salts sold in the shops to ensure they are iodized, but very often workers don't have the necessary test kits!

In trying to reduce the problem of unsafe food in Arusha city, Rikolto is implementing a project known as **Good Food** [28], which is part of the larger initiative of Arusha Sustainable Food System Platform in the city of Arusha. The initiative has planned to achieve the following:

- Conduct an analysis of food safety risks (chemical, biological, physical) throughout the vegetable chain to identify the hotspots for action.
- Develop a risk-based communication strategy towards consumers to increase their awareness on food safety issues.
- Make recommendation of a **protocol** for the government on how to handle the food safety of fresh fruit and vegetables.
- Develop a **national food safety standard** tested in Arusha to guarantee the production of safe vegetables and fruits.
- Implement the **KIOSK model**: food stalls in local markets sell safe vegetables that comply with the food safety national standards and will serve as an information hub on food safety to raise consumers' awareness. Moreover, training on food safety will be given to food vendors.
- Advice on local **regulations and policies** on food safety.
- **Jointly develop programme** to address hotspots and divide roles for the implementation of the programme.
- Build an **inspirational and scaling up model** for the entire country.

## 4.15. Food systems infrastructure

The Michigan Good Food Work Group [29] describes Food System Infrastructure to cover everything needed in the supply chain of activity between the consumer and the producer, be that a farm, fishery or community garden. The supply chain involves such businesses and resources as seed, feed and compost suppliers; equipment repair and fabrication services; food processors; distributors; retail outlets; professional services such as logistics managers and waste handlers; surplus food rescue; and financial, workforce, civic, and land and energy resources. For the case of Arusha, considering the existing supply chains, the important facilities will include road networks from the farming areas where food commodities are produced to the marketplaces where the commodities are made available to the consumers. Others are the marketplace structures and accompanying facilities such as the stalls, storage facilities - including the cold rooms for fresh products, warehouses for bulk storage of dry commodities such as grains, and water and electricity power availability. Apart from just presence of the roads, one has to consider the actual condition of those roads – e.g. are they passable for the whole year? Availability and suitability of vehicles for transportation of food goods is also important to consider. Facilities for handling food materials also form an important part of food systems infrastructure for Arusha city.

The Health Officer for the city council was of the opinion that to transport food from the farm to consumers, many factors need to work together. She pointed out to the importance of having reliable transportation systems, which include roads and vehicles (trucks of varying types and sizes) that can enable the transportation of safe foods from the producers to the markets and reach the consumers. A prominent trader at Kilombero market, noted that despite the efforts taken by the city council authority through the user fees charged to the traders, things get bad during rainy seasons when roads entering the marketplace become almost impassible for heavy trucks that bring the commodities. To get goods to the warehouses and selling stalls, traders have to hire small pickup trucks to shuttle the goods in small quantities. This extra costs have to be born by the ultimate consumers by charging more than the usual prices. Both the market secretaries for the Kilombero and Soko Kuu (Central Market) markets pointed out that marketplaces in Arusha do lack proper storage facilities for storing their fresh foods (e.g. vegetables and fruits), which cause great losses of quality and also affecting the food safety of foods they are selling to consumers. They were concerned that to compensate for the heavy postharvest losses occurring to the fruits and vegetable commodities, prices tend to go up tremendously making them unaffordable to many consumers. This presents an opportunity for food rescue interventions and strategies for waste resources utilization.

Traders at Kilombero and Samunge markets, complained about lacking proper and reliable sewerage systems for releasing wastewater from the market facility, something that was causing the water to stagnate and create unhealthy situation for traders and customers who come to the market. According to these traders, this situation was sometimes keeping away their customers.

## 4.16. Food interventions (2012-2022)

To build a resilient urban food system, literature review shows the need for seven necessary food intervention aspects to be considered. The seven necessary aspects are as following:

- **Promoting urban agriculture:** Encouraging the cultivation of fruits and vegetables in urban spaces can help increase access to fresh, locally grown produce and reduce the reliance on imported food.
- **Supporting community gardens:** Community gardens provide residents with a space to grow their own food, promote social connections, and build resilience in the face of food insecurity.

- **Increasing access to healthy food options:** Improving access to affordable, nutritious food through farmer’s markets, community-supported agriculture programmes, and healthy corner stores can help ensure that all residents have access to the food they need.
- **Implementing food waste reduction strategies:** Addressing food waste at the consumer, retail, and institutional levels can help reduce the strain on the food system and ensure that food is utilized efficiently.
- **Promoting food education and skills development:** Providing opportunities for residents to learn about gardening, cooking, and food preservation can help build resilience by increasing self-sufficiency and food security.
- **Supporting local food businesses:** Investing in local food businesses can help strengthen the local food system, create economic opportunities, and increase access to fresh, locally sourced food.
- **Encouraging food policy advocacy:** Advocating for policies that support a resilient urban food system, such as zoning regulations that promote urban agriculture or incentives for local food production, can help create a more sustainable and resilient food system.

Programmes and plans that incorporate the seven aspects necessary for resilient urban food system are stipulated in the next sub-sections.

### 4.16.1. Programmes

As a first step, the Arusha city Council signed the Milan Urban Food Policy Pact (MUFPP) in 2015. This was a necessary step that demonstrated the political commitment to improved food security for Arusha city. According to City to City Phase 2 Report [30], the council has then continued to build strong relationships with multiple actors working towards shaping a sustainable food system, and has requested support in developing an urban food policy. As a result, when the City-to-City Food Systems Forum was called in April 2018, Arusha city Council joined nine cities from six Eastern and Southern African cities for a City-to-City Food Systems Forum (CtCi). Focused on building capacity, learning and exchanging on city-region food systems, participating cities connected with each other on their shared similarities and differences. Arusha joined the event having self-identified its most pressing food system issues as being road networks, food system infrastructure, youth and women empowerment, and the need for a dedicated city food policy. One of such exchange collaboration has been the Arusha city Council and Commune Urbaine d’Antananarivo of Madagascar aiming at a learning policy dialogue between the two cities.

As a collective agreement the forum identified seven key food system focus areas for action and intervention: 1. Stakeholder engagement and partnerships; 2. Capacity-building, education and skills development; 3. Coordination (vertical-horizontal integration); 4. Infrastructure (roads, markets/ land, equipment); 5. Governance (management, enforcement); 6. Information (up-to-date data); and 7. Funding (internal budget and external sources). Arusha has been active in many of the above, however, the ultimate objective has always been to tie all of these together by developing and implementing a city-region food system policy – in conjunction with the city’s overall master plan. Progress made so far can be traced from the Arusha Food Safety Initiative that came about after the development of the food strategy and its evolution to ASFS platform which the city council is part of the coordinating team.

### 4.16.2. Plans

The City to City Phase 2 Report stipulates that the Arusha city Council is now putting priority on several activities including road construction and maintenance, improvement of storage locations, upgrading of abattoirs, and urban market construction and rehabilitation. The report has noted that implementation has however been slow due to high capital costs and planning processes. Arusha city Council has so far focused on social interventions improving revenue collection to support market function and to lend support to



vulnerable groups so that they can participate in food system activities. The council has built strong relationships with multiple actors working towards shaping a sustainable food system, and has requested support in developing an urban food policy.

## **4.17. City and regional scale development challenges and current responses**

Related with rapid urbanisation, the city council's Economist was concerned that urbanisation trends and population growth have impact on the food system and sustainability in the city of Arusha because the areas that were used for cultivating food are rapidly disappearing. People have turned out to selling them for building houses and other investments. Also, the prevailing climate change effects are negatively affecting food security and sustainability in the city of Arusha.

However, the city's council Health Officer and the Agriculture Officer were optimistic with the challenges that are associated with the increased urbanization as well as the climate change effects. They think that there are strategies or initiatives that can be implemented so as to mitigate the effects. People can be taught to adopt some measures such as zero-grazing livestock keeping while using intensive cultivation methods such as the use of drip irrigation and green houses for producing vegetables and fruits. Both techniques (i.e. zero grazing livestock keeping and use of modern crop growing methods) do not require large pieces of land.

## **4.18. Other city-specific information**

It is important for the management of Arusha city Council to learn from other cities how they are tackling the challenges that Arusha is currently facing, especially the already identified ones. The presence of the City to City initiative should be a great opportunity for the management of the Arusha city Council.

# **5. Conclusion**

The current report has been able to provide necessary preliminary information for understanding the city of Arusha, which is one of the Sharing Cities of the AfriFOODlinks research project. According to ICLEI, other Sharing Cities in the project include Windhoek, Lusaka, Quelimane, Antananarivo, Bukavu, Tamale, Dakar, Chefchaouen, Niamey, and Bruges, Montpellier, Lisbon, and Milan. Essentially, this covers two main parts namely the Introductory Information and Baseline Information of the Arusha city.

The Introductory Information part of the report provides brief history of Arusha city - including the food history, and the city's governance structure that is embedded within the national structures. Other parts of introductory information include brief economy of the city, infrastructure, food and nutrition security, culture of the city and relationship with its food system, and challenges faced in the city.

The history shows that the town started as a small center of the German colonizers in the 19<sup>th</sup> Century which then grew as a trading post, and now it is a famous international center. Administratively, Arusha city is one of the seven administrative districts of Arusha region in Tanzania, which is under the direction of the City Council. Like many other cities in Africa and developing countries, the city of Arusha is experiencing rapid population growth due to rural-urban migration, which involves mainly younger people moving into the city. However, due to unavailability of reliable jobs in the city, non-agricultural informal economy employment is dominant. The capacity of the city's infrastructure facilities for the water supply, solid waste management, transportation, and energy are stretched to limits and various initiatives are being taken to improve the situation. So far there are no established maps of food flows into the city of Arusha. The city residents have a wide range of different food staples including cereal grains (maize and rice), potatoes, green bananas, leguminous grains (kidney beans, cow peas and lentils), and vegetables and fruits. Stiff porridge (*Ugali*) from mainly maize flour is by far the most common dish in the city. The city of Arusha is quite food resilient because it is well linked by good road networks to the surrounding districts, regions and the rest of the country allowing for reliable food supply. There are concerns that despite of the emphasis put on consumption of vegetables and fruits for improving nutrition of the people, the ways in which the vegetables are produced and handled or marketed, are quite unhealthy leading to substantial biological as well as chemical contaminations. Despite having knowledge of the contamination health risks, many consumers choose to buy food based on price due to poor purchasing power (low income earning). The most nutritionally vulnerable population groups that face difficulty in accessing the Healthy, Sustainable and Nutritious (HSN) foods are the youth and female-headed households who earn low incomes and lack support from families. Food culture and challenges faced in the city revealed that food consumers spend a large portion of their budget on food whereby majority of low-income earners were spending more than half of their total budget on food. Perhaps the most effective initiative to address the above-mentioned food systems related challenges in Arusha city has been the formation of a multistakeholder platform known as the Arusha Sustainable Food Systems Platform (ASFSP).

The second part of the report incorporates the Arusha city's Baseline Information covering some key aspects of the Arusha city including the food systems stakeholders, policy and regulatory environment, production environment, and food diversity and staple foods. Others include typical food basket for different income categories, nature of the economy, and formal and informal economy. Also issues on food access strategies of households, food systems assets, and food safety, infrastructure, interventions, and city and regional scale development challenges and current responses. The food systems stakeholders in Arusha have been identified to include the private sector (farmers of all types and pastoralists, processing companies, financial institutions, inputs and service providers, exporters and transporters, traders, and consumers); NGOs and CSOs – local, national, and international; Public sector – Government ministries (agriculture, livestock, fisheries, health, trade and industries, finance and planning, President's Office – Regional Administration and Local Government), and various Government agencies; and Research and development institutions – both national and international. Policy and regulatory environment indicate that nutrition has been high on the national agenda, with efforts directed at multi-sectoral and multi-stakeholder approaches, but trickling down at district and sub-district levels is challenging. However, there is much hope on the recent Arusha Food Strategy to provide an opportunity for advancing integrated food policy actions, but only if it is given more footing and funding. Arusha city is characterized by many food outlets such as shops, markets, and business centers. This provides an excellent condition for accessing diverse type of foods. Much of the staple foods commonly consumed in Arusha city by all income categories include maize (*ugali*), rice, and bananas/ plantains. The differences are only found in the accompanying ingredients, which determine the dietary diversity. People with higher incomes are more likely to consume more diversified meals consisting of animal source foods, fruits, and vegetables. It was also noted that high-income consumers have more preference for processed foods compared to the low-income earners.

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## 7. Annexures

### 7.1. Annex 1: Ethical Viability and Integrity (EVI) statement for AfriFOODlinks project

#### Introduction

The AfriFOODlinks project, conducted by Prime Expertise in collaboration with ICLEI Africa, Rikolto in East Africa, and the Arusha city Council, aimed to improve food and nutrition security while delivering positive outcomes for climate and the environment and building social and ecological resilience in the city.

This research focused on understanding and enhancing urban food systems in Arusha city and other African and European cities.

### **Informed consent**

Participants in this study were fully informed about the project's purpose, procedures, and their role within it. They were provided with a detailed consent form explaining the following:

### **Voluntary participation**

Participation was entirely voluntary. Participants had the option to choose to answer or skip any question and could withdraw from the study at any time without any consequences to their relationship with the community or any of the organizations involved.

### **Right to withdraw**

Participants had the right to stop participating at any time. Upon withdrawal, any information already provided by the participant could have been removed from the study records.

### **Confidentiality and privacy**

All information provided during the interviews was kept confidential. Participants' responses were recorded in password-protected files. Measures were taken to ensure that participants' privacy and the confidentiality of their information were protected to the fullest extent as per Prime Expertise's [Data Protection and Privacy Policy](#) and [Research Data Management Policy](#). In particular, Prime Expertise follows the CARE principles (*Collective Benefit, Authority to Control, Responsibility, and Ethics*) for data access, emphasizing Indigenous governance. As a result, data was de-identified as necessary, and third-party access to data is restricted.

### **Risk minimization**

The study was designed to minimize any potential risks to participants. The study focused on assessing and evaluating food-related governance and the dynamics of the food system in Arusha city, including barriers to the development of profitable and sustainable small-scale and informal agri-food businesses. Participants were not exposed to physical, psychological, social, or economic harm.

### **Fair participant selection**

Participants were selected based on their relevance to the study's objectives, ensuring an inclusive approach that respected the diversity of the community.

### **Ethical review and approvals**

The study received ethical clearance from the Tanzania Commission for Science and Technology (COSTECH), as indicated by Research Permit No. CST00000202-2023-2024-00027 dated 03/01/2024 (see Annex 2). Additional approvals were obtained from the President's Office, Regional Administration and Local Government (PO-RALG), and the Arusha Regional Secretariat.

### **Integrity and transparency**

The research was conducted with the utmost integrity and transparency. All data were accurately reported, and there were no potential conflicts of interest.

### **Respect for persons**

The study respected the dignity, rights, and autonomy of all participants. Special considerations were taken to ensure the protection and inclusion of vulnerable groups within the community in accordance with Prime Expertise's [Safeguarding and Child Protection Policy](#).

## 7.2. Annex 2: Ethical approvals

The below space is intentionally left blank; please see the next pages.



UNITED REPUBLIC OF TANZANIA  
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY  
TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY



**RESEARCH PERMIT**

Permit Number: CST00000202-2023-2024-00027  
Date issued: 03/01/2024  
Researcher Name: Charles Barnabas Kagiye  
Nationality: TANZANIA, UNITED REPUBLIC OF  
Research Title: AfriFOODlinks Project, a 20-City Research Initiative: City Research for Arusha Sharing City  
Research Areas: Arusha  
Validity: From 03/01/2024 to 02/01/2025

Director Research Coordination and Promotion

Director General



DOI: B3BF 078E

### IMPORTANT INFORMATION

- 1. A PI who wishes to continue with a research beyond the expiry date of the research permit should write to COSTECH two months before the operational permit's expiry date, to request for an extension or renewal of the permit.*
- 2. Research permit that involves collecting human, plant or animal materials / data that will be exported outside Tanzania must submit a signed Material Transfer Agreement (MTA), Data Transfer Agreement (DTA) between Tanzania host institution and the foreign counterpart. The MTA/DTA will indicate terms for collecting, storing/managing, transporting, disposal or returning of the materials/DATA to Tanzania after the closure of the research.*
- 3. Any patent or intellectual property and royalty emanating from any research approved by the National Research Registration Committee (NRCC) shall be owned as stipulated in the research proposals and in accordance with the IP policy of the respective research institutions.*
- 4. All researchers are required to report to the Regional Administrative Secretary (RAS) of the study area and present the introduction letter and activity schedule (plan) prior starting any research activity.*
- 5. All researchers are required to submit quarterly progress reports and all relevant publications made after completion of the research.*
- 6. Terms and conditions of the permit are found at [www.costech.or.tz](http://www.costech.or.tz)*
- 7. All communications should be addressed to COSTECH Director General through [rclearance@costech.or.tz](mailto:rclearance@costech.or.tz); [dg@costech.or.tz](mailto:dg@costech.or.tz) or +255 (022) 2700749; +255 (022) 2771358.*



UNITED REPUBLIC OF TANZANIA  
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY  
TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY



In reply please quote: CST00000202-2023

Date 03/01/2024

Permanent Secretary,  
President's Office,  
Regional Administration and Local Government,  
P.O Box 1923,  
DODOMA.

Dear Sir/Madam,

**INTRODUCTION LETTER ON RESEARCH PERMIT**

1. I wish to introduce Charles Barnabas Kagiye, citizen of TANZANIA, UNITED REPUBLIC OF who has been granted Research Permit No. CST00000202-2023-2024-00027 dated 03/01/2024.
2. The permit allows him/her to conduct research titled "AfriFOODlinks Project, a 20-City Research Initiative: City Research for Arusha Sharing City" under the terms and conditons as per the National Research Registration and Clearance Guideline of 2022. The research will be conducted in Arusha.
3. COSTECH is therefore kindly requesting you to introduce the researcher(s) to relevant Regional Administrative Officer(s) and support with any necessary assistance and guidance under national laws and regulations.
4. Thank you for your cooperation

Dr. Amos Nungu  
DIRECTOR GENERAL

**CC. Regional Administrative Secretary:**  
Arusha



DOI: B3BF 078E

Date 05/01/2024

Ref. CST00000202-2023

Permanent Secretary,  
President's Office,  
Regional Administration and Local Government,  
P.O. Box 1923,  
**DODOMA.**

Dear Sir/ Madam,

**REQUEST FOR INTRODUCTION LETTER TO THE REGIONAL ADMINISTRATIVE SECRETARY, ARUSHA REGION**

I am writing regarding the research project titled "AfriFOODlinks Project, a 20-City Research Initiative: City Research for Arusha Sharing City," for which I have obtained Research Permit No. CST00000202-2023-2024-00027 dated 03/01/2024 from the Tanzania Commission for Science and Technology (COSTECH).

I kindly request an introduction letter addressed to the Regional Administrative Secretary of the Arusha region to facilitate our engagement with relevant local authorities, ensuring the successful execution of our research project. Accordingly, our unwavering commitment remains to strictly adhere to all national laws, regulations, and guidelines outlined by COSTECH and the Government throughout our research activities in Arusha.

Your support in providing this introduction letter would be valuable, aiding us significantly in establishing vital connections and obtaining essential guidance necessary for the successful implementation of our research activities.

We eagerly anticipate your positive response and thank you for your attention and consideration in this matter.



Charles Barnabas Kagiye  
Managing Director



JAMHURI YA MUUNGANO WA TANZANIA

**OFISI YA RAIS  
TAWALA ZA MIKOA NA SERIKALI ZA MITAA**

Anuani ya Simu "TAMISEMI" DODOMA  
Simu Na: +255 26 2321607  
Nukushi: +255 26 2322116  
Barua pepe: [ps@tamisemi.go.tz](mailto:ps@tamisemi.go.tz)



Mji wa Serikali – Mtumba,  
Mtaa wa TAMISEMI,  
S.L.P. 1923,  
41185 DODOMA.

Unapojibu tafadhali taja:-

**Kumb. Na. AB.307/323/01/182**

**08 Januari, 2024**

Katibu Tawala wa Mkoa,  
Ofisi ya Mkuu wa Mkoa wa Arusha,  
S. L. P 3050,  
**ARUSHA.**

Yah: **KIBALI CHA KUFANYA UTAFITI KUHUSU AFRIFOODLINKS PROJECT,  
A 20-CITY RESEARCH INITIATIVE: CITY RESEARCH FOR ARUSHA  
SHARING CITY**

Tafadhali rejea somo tajwa hapo juu.

2. Ofisi ya Rais –TAMISEMI ikishirikiana na Tume ya Sayansi na Teknolojia (COSTECH) imetoa kibali kwa **Charles Barnabas Kagiye** kwa ajili ya kufanya utafiti tajwa katika Mkoa wa Arusha.
3. Muda wa kufanya utafiti huu ni kati ya tarehe 03 Januari, 2024 na tarehe 02 Januari, 2025. Ofisi ya Rais -TAMISEMI kwa kushirikiana na Taasisi nyingine za Serikali itafanya ukaguzi wakati wowote kujiridhisha na utekelezaji sahihi wa kibali hiki. Takwimu zitakazokusanywa kutokana na utafiti huu ni kwa ajili ya matumizi ya ndani tu na iwapo zitatakiwa kuchapishwa na kusambazwa kibali kutoka Mamlaka husika kitapaswa kuombwa.
4. Kwa barua hii, tafadhali waelekeze Wakurugenzi wa Halmashauri za Mkoa wako ili kutoa ushirikiano utakaohitajika na kukamilisha utafiti huu kama ulivyokusudiwa.
5. Ninakushukuru kwa ushirikiano wako.

John M. Cheyo

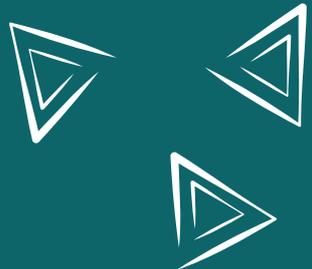
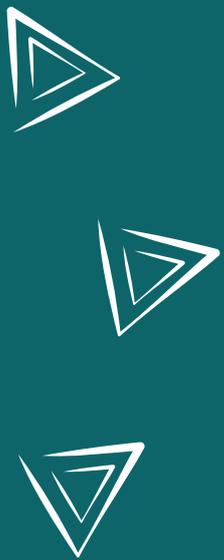
**Kny: KATIBU MKUU**

Nakala: Katibu Mkuu Kiongozi,  
Ofisi ya Rais,  
IKULU,  
1 Barabara ya Julius Nyerere,  
Chamwino,  
S. L. P. 1102,  
**40400 DODOMA.** (Aione RSO wa Mkoa wa Arusha).

Mkurugenzi Mkuu,  
Tume ya Sayansi na Teknolojia (COSTECH),  
S.L.P 4302,  
**DAR ES SALAAM.** (Rejea barua yenye Kumb Na. CST00000202-2023-  
2024-00027)

**Charles Barnabas Kagiye.** (Nakala ya taarifa ya utafiti iwasilishwe  
COSTECH, Ofisi ya Rais -TAMISEMI na  
Ofisi husika ya Mkuu wa Mkoa na  
Halmashauri. Kibali kinaweza kufutwa  
muda wowote endapo kutakuwa na  
ukiukwaji wowote au sababu nyingine  
yoyote)





AfriFOODlinks



Funded by  
the European Union



Coordinated by  
ICLEI Africa