AfriFOODlinks

Case study report

Arusha

Hildagard Okoth

October 2024

Document profile detail 1
AfriFOODlinks Project 2
Abstract 3
RÉSUMÉ 3
Overview of the City 5
Overview of the City Food System 5
INTRODUCTION 6
CASE STUDY METHODOLOGY 6
Data Collection and General Methodology 6
Process to select the case studies 6
CASE STUDIES 7
Strengthening Food Governance in Arusha – The Case of Arusha Sustainable Food Systems Platform (ASFSP) 7
Description of the Case and the Food System Challenges Addressed in it 7
Description of the Key Findings 9
Views from Stakeholders 9
Assessment From Results of a Focused Study 10
Case Analysis and Discussion 11
Strength and Potential of the ASFSP 11
Strength 11
Potentials 12
Likely Challenges to the Functioning of the ASFSP 12
Summary 13
Appendices 14
The Business Case for Integrating Food Safety in Traditional Markets in Arusha City 17
Description of the Case 17
Description of the Food System Challenges Engaged in this Case Study 17
Description of the Key Findings 18
Case Analysis and Discussion 19
Recommendations 19
Summary 22
REFERENCES 23

Document profile detail

Publisher: AfriFOODlinks @2025

By: Hildagard Okoth

All rights reserved. Licensed to the European Union.
For more information, address: afrifoodlinks@iclei.org

Publication date: 2025
Author: Hildagard Okoth

Design AfriFOODlinks and ICLEI-Africa
In text image credits Per the cited sources in the document

As at 2026

Cite this document as: Okoth, H. (2025). Arusha City Case Studies. AfriFOODlinks Case Study Series, AfriFOODlinks, Cape Town.

This publication is produced by Hildagard Okoth, under the framework of the AfriFOODlinks project. AfriFOODlinks is funded by the European Union (EU). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

Funded by the European Union

Coordinated by ICLEI Africa

AfriFOODlinks Project

Launched in December 2022, AfriFOODlinks is a European Union (EU) funded project that set out to improve food and nutrition security, while delivering positive outcomes for climate and the environment, and building social and ecological resilience in 65+ Cities in Africa and Europe. Coordinated by ICLEI Africa, the project gathers 33 partners across the African and European continents.

The project set out to improve food security and urban sustainability in African cities by: applying an urban food systems lens to promote shifts to healthy, sustainable diets; transforming urban food environments through real-world socio-technical experiments; promoting inclusive multi-actor governance to empower public officials, small businesses and communities with ownership and agency to shape their food systems; accelerating innovative, women- and youth-led agri-food businesses to support local value addition and inclusive economic participation.

AfriFOODLinks places particular emphasis on five African "hub cities": Cape Town, Tunis, Kisumu, Mbale and Ouagadougou.

Over and above the work in the Hub cities, the urban food systems research is further deepened through work in partner "sharing cities" which include: Windhoek, Lusaka, Quelimane, Arusha, Antananarivo, Bukavu, Tamale, Dakar, Chefchaouen, Niamey, and Bruges, Montpellier, Lisbon, Turin and Milan.

Acknowledgements

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union

This discussion paper is the first in the AfriFOODlinks Discussion Paper series available at: https://afrifoodlinks.org/knowledge-Hub/

The French Abstract used was generated through the use of Google Translate. Any errors are as a result of the use of this tool and no disrespect is intended to any party.

Abstract

Urban food systems in rapidly growing African cities face intertwined challenges of governance, food safety, and equitable access to nutritious food. This paper presents findings from two case studies conducted in Arusha City, Tanzania, under the AfriFOODlinks initiative. The studies were designed to deepen understanding of priority pathways identified in the Arusha City Council Food System Policy Framework, namely food system governance and food safety. Using a qualitative case study approach, data were collected through document reviews and interviews with key stakeholders, including city officials, civil society organizations, traders, producers, and consumers. The first case study examined the Arusha Sustainable Food Systems Platform (ASFSP), a multistakeholder mechanism established to coordinate and advance food system transformation in the city. Findings revealed that the platform has created opportunities for collaboration, knowledge sharing, capacity building, food safety awareness, urban greening, and food waste valorisation initiatives. However, its effectiveness is constrained by challenges including limited financial sustainability, uneven stakeholder participation, weak private-sector and consumer representation, power imbalances among actors, and the absence of monitoring indicators and coordinated implementation plans. Despite these limitations, the platform demonstrates significant potential to strengthen food governance through inclusive and locally grounded approaches. The second case study explored the business case for integrating food safety into traditional food markets. Evidence from previous studies and stakeholder consultations highlighted widespread biological and chemical contamination of fruits and vegetables, with many products exceeding internationally accepted pesticide residue limits and showing high rates of pathogenic bacterial contamination. While consumer awareness of food safety risks is increasing, consumers remain unable to distinguish safe from unsafe products and are often constrained by affordability considerations. The study proposes a shared-responsibility approach involving government, producers, vendors, and consumers, supported by improved market infrastructure, participatory food safety assurance systems, consumer information mechanisms, designated safe-food market spaces, and stronger vendor associations. Together, the case studies demonstrate that transformative urban food systems require both inclusive governance structures and integrated food safety interventions to enhance sustainability, public health, and resilience in rapidly urbanising contexts.

RÉSUMÉ

Les systèmes alimentaires urbains dans les villes africaines en pleine expansion sont confrontés à des défis interdépendants en matière de gouvernance, de sécurité sanitaire des aliments et d'accès équitable à une alimentation nutritive. Ce document présente les résultats de deux études de cas menées dans la ville d'Arusha, en Tanzanie, dans le cadre de l'initiative AfriFOODlinks. Ces études visaient à approfondir la compréhension des axes prioritaires définis dans le cadre politique du système alimentaire du conseil municipal d'Arusha, à savoir la gouvernance du système alimentaire et la sécurité sanitaire des aliments. À travers une approche qualitative, des données ont été recueillies par l'examen de documents et des entretiens avec des parties prenantes clés, notamment des responsables municipaux, des organisations de la société civile, des commerçants, des producteurs et des consommateurs. La première étude de cas a porté sur la Plateforme pour des systèmes alimentaires durables à Arusha (Arusha Sustainable Food Systems Platform – ASFSP), un mécanisme multipartite mis en place pour coordonner et faire progresser la transformation du système alimentaire dans la ville. Les résultats révèlent que cette plateforme a favorisé la collaboration, le partage des connaissances, le renforcement des capacités, la sensibilisation à la sécurité sanitaire des aliments, le verdissement urbain et la valorisation des déchets alimentaires. Toutefois, son efficacité est limitée par des obstacles tels qu'une viabilité financière restreinte, une participation inégale des parties prenantes, une faible représentation du secteur privé et des consommateurs, des déséquilibres de pouvoir entre les acteurs, ainsi que l'absence d'indicateurs de suivi et de plans de mise en œuvre coordonnés. Malgré ces limites, la plateforme présente un potentiel significatif pour renforcer la gouvernance alimentaire grâce à des approches inclusives et ancrées dans le contexte local. La seconde étude de cas a examiné les arguments en faveur de l'intégration de la sécurité sanitaire des aliments dans les marchés alimentaires traditionnels. Les données issues d'études antérieures et de consultations avec les parties prenantes ont mis en évidence une contamination biologique et chimique généralisée des fruits et légumes ; de nombreux produits dépassent les limites internationales autorisées pour les résidus de

pesticides et présentent des taux élevés de contamination par des bactéries pathogènes. Bien que les consommateurs soient de plus en plus conscients des risques liés à la sécurité sanitaire des aliments, ils restent incapables de distinguer les produits sains des produits qui ne le sont pas, et sont souvent limités par des contraintes budgétaires. L'étude propose une approche fondée sur la responsabilité partagée — impliquant les pouvoirs publics, les producteurs, les vendeurs et les consommateurs — soutenue par une amélioration des infrastructures de marché, des systèmes participatifs de garantie de la sécurité sanitaire, des mécanismes d'information des consommateurs, la création d'espaces dédiés aux produits sains au sein des marchés, et le renforcement des associations de vendeurs. Dans leur ensemble, ces études de cas démontrent que la transformation des systèmes alimentaires urbains nécessite à la fois des structures de gouvernance inclusives et des interventions intégrées en matière de sécurité sanitaire des aliments, afin de renforcer la durabilité, la santé publique et la résilience dans des contextes marqués par une urbanisation rapide.



Overview of the City

The town of Arusha started as a small centre of the German colonisers in the 19th 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 has a status of City Council. Like many other cities in Africa and developing countries, the city of Arusha is experiencing rapid population growth mostly due to rural-urban migration, which involves mainly younger people moving into the city. However, due to the unavailability of reliable jobs in the city, non-agricultural informal economy is dominant. According to statistics from the Tanzania Metro Area Population (*https://www.macrotrends.net*), the population of Arusha metropolitan area is estimated to be 554,000 in 2024 – which is a growth from 397,000 in 2010 and 280,000 in 2000 (see Table 1). The capacity of the city's infrastructure facilities for the water supply, solid waste management, transportation, and energy are, however, stretched to limits, and various initiatives are being taken to improve the situation.

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*

Overview of the City Food System

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, legume grains (kidney beans, cowpeas, 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 the emphasis put on consumption of vegetables and fruits for improving the nutrition of the people, the ways in which the vegetables are produced, 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).

INTRODUCTION

The Arusha State of City Food System Report[1] as well as the Rikolto's commissioned study[2] have clearly indicated that the city depends much, though not exclusively, on the food from outside the city. In that situation, therefore, infrastructure, markets, transportation, and supply chain systems present major challenges to the food security within the city. It is therefore important to develop case studies that can be used to deepen knowledge about the food system of this AfriFOODlinks city. Accordingly, the case study processes are intended to build on and support the first phase of the project, which sought to capture and engage the so-called surface knowledge, or the general knowledge about the food system. The current phase seeks to now focus with depth on aspects of the food system that are deemed to require greater understanding.

CASE STUDY METHODOLOGY

Data Collection and General Methodology

Data collection involved desk reviews 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 (ACC) and member CSOs of the ASFSP, traders and officials of selected marketplaces, food producers, 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. All research ethics were followed during the interactions with the informants, including signing of consent forms.

Process to select the case studies

In identifying relevant case studies for the Arusha City, the draft policy framework known as the Arusha City Council Food System Policy Framework (ACCFSPF) developed by the city council in collaboration with ICLEI Africa and RUAF was followed. This policy framework aims towards a food system for Arusha city that is safe, nourishing, economic, inclusive, and based on partnering. Accordingly, the framework consists of eight important pathways that need to be adopted. As instructed, case study determination was to be agreed through a collaborative process between the AfriFOODlinks aligned Arusha city council officials, the city coordinator, and the researchers conducting the study together with other relevant stakeholders in Arusha. Two pathways from the Arusha City Council Food System Policy Framework were selected for case studies, namely the Governance of the Food System and Food Safety. The other remaining six

[1] AfriFOODlinks PROJECT: Arusha State of City Food System Report. 20 City Research Initiative - City Research for Arusha Sharing City. ICLEI and Rikolto. May, 2024
[2] Contextual Analysis of Urban Food Environments of Arusha And Mbeya Cities In Tanzania – Report Submitted to Rikolto-East Africa by Diligent Consulting Limited, November 2020.

pathways are namely: food nutrition, school feeding programs, commercialisation and economic opportunities, awareness and food identity, waste management, and environmental stewardship.

Similarly, the case studies conformed with key requirements of:

- Being of utility to the partner cities and allowing for engagement and learning about the city's urban food system;
- Should align with the three key AfriFOODlinks thematic areas of inquiry, namely, multi stakeholder platforms, agri-food system innovation, and food environments;
- Builds on and supports wider work of partners such as MUFPP, ICLEI-Africa, ICLEI-Global, etc.; and
- Should have a wide local interest and link to polit sites.

CASE STUDIES



Strengthening Food Governance in Arusha – The Case of Arusha Sustainable Food Systems Platform (ASFSP)

Description of the Case and the Food System Challenges Addressed in it

Essentially, the need for good governance of the food system in Arusha city aims to develop a mechanism that will coordinate the city's food policy initiatives. As mentioned earlier, Arusha city depends much on the food from outside the city, and therefore infrastructures, markets, transportation, and supply chain systems, though very important, they are bringing challenges in ensurng safety and quality of food. On the other hand, food production in the city also forms part of the city's food systems, which also presents numerous challenges, including protecting the land from urban encroachment, protecting the tenure of farmers, and keeping wastes clear. However, what is more worrying is the fact that while many actors are involved in the food system of the city by fulfilling different roles, their engagement in planning and implementation of food system components has been noted to be in piecemeals lacking coordination. There is therefore a great need to develop more coordinated, sustainable, and resilient food systems.

The administration of the Arusha City Council (ACC) has shown commitment to more improved situation by, among others, the signing of the Milan Food Policy Pact (MFPP) in 2017. This is an international protocol that calls for cities to develop sustainable food systems that grant healthy and accessible food to all, provide diverse diets, and reduce food waste. The ACC is also known to carry out various activities that are geared to improving food systems, such as road construction and maintenance and urban market construction and/or rehabilitation. In attaining all these aims, the ACC is known to collaborate with various institutions and NGOs.

Since 2018, an innovative multi-actor platform was created around the topic of food safety in Arusha, called Arusha Food Safety Initiative, a multi-actor initiative that included: TAHA, Rikolto, Arusha City Council, Tanzania Bureau of Standards, AgriProFocus, TRIAS, TPRI, Coleacp, Solidaridad, and MUVIKIHO. With time, the platform has gathered interest from diverse stakeholders from the private sector, public institutions, research, and civil society organisations, as well as NGOs, to work on the broader food system agenda, hence the multi-stakeholder platform called the Arusha Sustainable Food Systems Platform (ASFSP). The platform is a critical vehicle in bringing transformative change in the food systems through promoting shared understanding and ambitions, collaboration, and collective action as well as innovation. The platform is also a forum for advocating for an enabling environment for food system transformation. According to the Terms of Reference prepared for guiding the ASFSP, it aims to engage all interested actors from research and academic institutions, the private sector (including farmer organisations), public and government institutions, and civil society organisations, whereby the geographical scope of the platform is the city areaof Arusha. The overall objective of the ASFSP is to contribute towards food systems transformation in the City of Arusha by catalysing collective action among food systems actors.

The specific objectives include:

- To generate evidence in the food system transformation and enhance the capacities of food system actors through learning exchanges and knowledge sharing;
- To advocate for an enabling environment for food systems transformation; and
- To build complementarities and synergies towards transformation of the Arusha food systems.

The governance structure of ASFSP is described in the Terms of Reference as being an informal one with membership from institutions and organisations working in the food systems. The platform follows informal consensus approaches for decision-making, where the rights of individual partners must be derived from their specific organisations or institutions scope and agreed roles and responsibilities. The platform is comprised of five Technical Working Groups (TWGs), which are all coordinated by a single coordinator (see Figure 1.1).



Figure 1: Members and Format of the Arusha Sustainable Food Systems Platform

The TWGs are made up of members implementing initiatives around the different themes. Each TWG has a sub-lead who works closely with the platform coordinator to facilitate the dynamics and coordinate various activities of the group. The five TWGs work on the following issues: safe production, consumer sensitisation, food safety standards, youth in agriculture, and city planning and logistics. As of now, the platform is being coordinated by both the Arusha City Council and Rikolto, who take up the role of secretariat and operational aspects of the platform, such as facilitating meetings and learning events. Currently, the ASFSP is comprised of 17 members, as listed in Box 1.1 below.

Box 1: Members of the Arusha Sustainable Food Systems Platform

Public Sector	*Private Sector*	*CSOs & NGOs*
• Arusha City Council • Tanzania Plant Health and Pesticides Authority (TPHPA) • Tanzania Chamber of Commerce, Industry, and Agriculture (TCCIA) • Tanzania Bureau of Standards	• MUVIKIHO • Glen Mesula Farms • Tanzania Horticulture Association (TAHA) *Research & Academia* • World Vegetable Centre	• TAFONEGO • RECODA • ECHO • FEPT • Trias • Iles de paix • MVIWA Arusha • Urban Planning for Community Change • Rikolto

Description of the Key Findings

In attempting to seek ways of assessing the performance of the ASFSP, the researchers consulted various stakeholders (as key informants) for their views as well as results of a focused study by Rikolto[3].

Views from Stakeholders

Among the stakeholders consulted included officials of the ACC and relevant representatives of the ASFSP partner members.

- The interviewed ACC's Trade Officer and the Health Officer pointed to the anticipated strength and potential of the ASFSP:
    - First, the platform is encouraging involvement of diverse actors, something that can lead to innovative solutions and shared resources. They indicated, for example, that the ACC, which ideally should take the lead, does not have the required capacity in terms of skilled manpower as well as economic resources. Those gaps could be filled by the collaborating partners.
    - Secondly, ASFSP can specifically tailor interventions that are culturally appropriate and context-sensitive to the needs and situation of Arusha. In other words, it can focus on the local needs and conditions of Arusha. In that respect, this is different from trying to adapt to some of the international policies or frameworks.
    - Thirdly, the platform is likely to emphasise training and capacity-building initiatives for its member partners, as well as empowering local communities to adopt sustainable practices – including the food producers and consumers.

    - On the other hand, the interviewed representative traders in Kilombero and Soko Kuuu (Main Market) were optimistic that the initiative can provide them with good market access. In other

[3] Rikolto's Study using a Multistakeholder Platform Assessment Tool - Version of 11/4/2022

words, the platform can allow them to link with other markets to sell their produce at better prices, something that is crucial for improving their livelihoods.
- A representative from the partner NGOs/ CSOs was also optimistic that the platform can play an important role in fostering networks among various stakeholders and enabling collaboration on projects that address food security and sustainability.

On the other hand, concerns about the likely challenges were also raised. Three issues were pointed out as following:

- The two interviewed officials of the ACC were concerned that while the initiative requires consistent funding for impacting the platform's long-term sustainability, this may take a long time before it is effectively achieved. This concern was also emphasised by the current coordinating representative from Rikolto, who clearly indicated that so far there is no concrete strategy for resource mobilisation from the members to facilitate the initiative.
- Representatives of vegetable food producers (farmers) from MUVIKIHO were concerned that while it is important to engage all stakeholders effectively for the initiative to be successful, especially smallholder farmers, this can be quite difficult, particularly in rural areas where the levels of understanding and awareness are still very low. They insisted that most of the farmers in Arusha are not aware of the importance of such a platform.
- The ACC officials also raised another critical challenge pointing out to the importance of aligning local actions with national policies and strategies. They noted that such alignment can be quite complex due to differing priorities. For example, while the ASFSP may prioritise building or renovating market structures, the government may put priority on constructing new schools or renovating and/or furnishing the existing ones.

Assessment From Results of a Focused Study

To verify the information from the interviewed stakeholders, results of a focused performance assessment that was conducted by the then-coordinating organisation (Rikolto) in 2022 are reviewed here. The assessment was conducted using a special assessment tool known as the Multistakeholder Platform (MSP) Assessment Tool. The tool is based on participatory evaluation of five key issues by the partner members. The issues are, namely:

- Shared vision and collaboration
- Systems Thinking
- Stakeholder engagement
- Multistakeholder Platform governance system
- Learning and change

The assessments were done using a scoring system of a 4-point Likert scale from 0 to 3. Results of each key evaluation issue are presented here.

Shared vision and collaboration: Four sub-issues were included in this assessment, namely: (i) Stakeholders have agreed upon a common vision and strategy; (ii) existence of an annual Multistakeholder Platform (MSP) action plan; (iii) the extent to which last year's work plan was aligned with the MSP's strategy and vision; and (iv) number of initiatives that have emerged from the MSP involving at least 2 members of the MSP, to implement practices or policies that the MSP promotes. Details of the assessment results are given in Table 1 in the Appendices.

For the first sub-issue, it appears that there was somehow a common vision existing and written down in the ToR (a score of 1 in the scale), while an action plan did not exist by 2024, nor the workplan been aligned (both scored zeros) for the second and third sub-issues, respectively. Five initiatives were identified for the sub-issue number four. The initiatives are:

- Participatory food safety system = Rikolto, Arusha city council, TCCIA Arusha, TAHA
- Consumer sensitization on food safety = MVIWA A, IDP
- Agroecology = IDP, MVIWA A, ECHO, Farm Radio

- Food Kiosk = TAHA, TRIAS
- Urban farming demonstration centre = IDP, Rikolto, Arusha city council.

Systems thinking: Systems thinking was assessed by considering whether there is existence of a systems analysis as baseline of the MSP. Details of the results are shown in Table 2 in the Appendices. They showed that there was a system analysis by IDP (a member of the platform) which was going on.

Stakeholder engagement: Three sub-issues (Table 3 in the Appendices) were considered in assessing the stakeholder engagement in implementing the ASFSP initiative, namely: (i) The level of stakeholders in the ecosystem represented; (ii) level of participation: all members feel comfortable, participate and are heard in discussions; and (iii) the level of alignment of stakeholders' own organization's practices and policies and the practices and policies promoted by the MSP. Details of the results of the assessment are also shown in Table 3. Accordingly, the findings for sub-issue one show that the MSP has relevant actors from the government, research and development agencies, however, it misses representation from the private sector, media and consumers (score of 2 in the scale). The level of participation of members (sub-issue two) is good, however some inactive members exist (score of 2 in the scale). Assessment of sub-issue three showed that there is a relatively strong level of alignment of stakeholders' own organizations practices and policies. Only few members are not aligned (score of 2 in the scale).

Governance system: Six sub-issues were considered in assessing the governance system of the ASFSP initiative. The six sub-issues included: (i) State of the MSP governance system, (ii) The level of transparency of MSP's decision-making process, (iii) state of the MSP's finances, (iv) the level of trust in the platform's leadership, (v) The level of effectiveness of the MSP, and (vi) the extent to which the MSP can address members' concerns or solve conflicts. The results of the assessment are shown in Table 4 in the Appendices. Except for the state of the MSP's finances and the level of effectiveness of the MSP, which scored lowly (1 each), the remaining four sub-themes scored highly (either 2 or 3 on the scale).

Learning and change: Two sub-issues were considered in assessing the learning and change of the ASFSP initiative, namely: (i) existence of performance indicators of the MSP, and (ii) stakeholders keep each other informed, inspire and learn from each other. The results of the assessment are presented in Table 5 in the Appendices. While there were no indicators that have been formulated to track MSP performance (zero score in the scale), stakeholders often keep each other informed and learn from each other although there are still duplication of efforts taking place and learning exchanges have not so far taken place (therefore score of 2 on the scale of 0 to 3).

Case Analysis and Discussion

Based on the key findings presented above, this section attempts to analyse and discuss the strength and potentials of the ASFSP initiative, as well as the challenges faced by the platform in attaining its overall objective – that of contributing towards food systems transformation in the City of Arusha by catalysing collective action among food system actors.

Strength and Potential of the ASFSP

Two categories of potential and two categories of ASFSP's strength were identified by stakeholders. The strengths include the platform's encouragement to involve diverse actors and its focusing on local context, while the potentials are in its emphasis on capacity building of key stakeholders, and facilitating access to good markets.

Strength

i) Involvement of diverse actors: It is believed that involvement of diverse actors can lead to innovative solutions and shared resources by the collaborating partners such as helping each other in building capacity in terms of skills and experience as well as economic resources. They specifically cited the case of the

Arusha City Council (ACC), which they believe has the role of leading and guiding much of the necessary actions required to transform the Arusha's food system, but does not have the required capacity in terms of the skilled and experienced manpower, and the necessary economic resources. Such gaps can be fulfilled through collaboration of the member partners. It is encouraging to see that the key partners, such as Rikolto, are willing to provide support to the ACC – and that these partners can bring a wealth of skills and experiences. A good example is seen from the five initiatives that so far have been taken by the different partners namely: Participatory food safety system initiative (Rikolto, ACC, TCCIA-Arusha, TAHA), Consumer sensitization on food safety initiative (MVIWA A, IDP), Agroecology (IDP, MVIWA A, ECHO, Farm Radio), Food Kiosk initiative (TAHA, TRIAS), and Urban farming demonstration centre initiative (IDP, Rikolto, ACC).

ii) Focusing on local context: It is important that the resulting interventions from the ASFSP should consider the actual situation of the area. For example, a report by the AfriFOODlinks PROJECT on Arusha State of City Food System noted that there are only few traders' associations in Arusha that offer a platform for more informal traders at the market level whereby the Arusha branch of the TCCIA very often represents the more formalized traders and shopkeepers. It was 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 TAHA, there is only a very small number of food vendors that are part of an association. It was further 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 is probably because interest rates and demanded collaterals at banks are generally too expensive for vendors to comply. Two systems have been identified to serve as coping strategies, 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 divide the accumulated dividends proportionally. 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. Therefore, the ASFSP should consider all these prevailing conditions.

Potentials

i) Emphasis on capacity building of key stakeholders: Given the fact that most of the issues that are brought in by the ASFSP for transforming the city's food system are quite new to most of the key stakeholders, the platform is likely to attain much success by emphasizing on training and capacity-building initiatives of its member partners. This will include empowering of the local communities to adopt sustainable practices – including the food producers and consumers. Needs for training and building capacity was expressed by most of the interviewed representatives of key stakeholders. The observed lack of shared vision and collaboration among the member stakeholders reported earlier implies that there is still much to be done for this platform initiative to achieve its main objective or goal. This may call for strong capacity building actions for the key members and stakeholders.

ii) Facilitating access to good markets: As reported earlier above, the interviewed traders in the major food markets of Arusha city (Soko Kuu and Kilombero markets) expressed great wish for the platform initiative to provide them with good market access. Since traders and producers form a crucial part of key stakeholders, it is possible that the platform can provide an important avenue to connect the traders with producers, but also between traders of different categories.

Likely Challenges to the Functioning of the ASFSP

Four types of challenges that are likely to constraint the functioning of the ASFSP include doubtful consistent funding, poor engagement of stakeholders, and lack of alignment of local actions with national policies and strategies. Each challenge is briefly described here below.

i) Doubtful availability of consistent funding: As pointed out earlier in section 1.2.1 above, the initiative requires to have a consistent funding for impacting the platform's long-term sustainability. However, the interviewed respondents and the reviewed reports indicated that such a situation may take long time before it is effectively achieved. For example, so far there is no concrete strategy for resource mobilization that has been agreed upon and put to action by the participating members.

ii) Poor engagement of stakeholders: While it is important to engage all the stakeholders effectively for the initiative to be successful, especially smallholder farmers, it is noted that such a situation is not yet happening. For example, the levels of understanding and awareness about the importance of such a platform are still very low in the rural areas – as evidenced by the vegetable farmers from MUVIKIHO in Arusha. On the other hand, while relevant actors from the government, research and development agencies have relatively been active in their engagement, the private sector, media and consumers have not. It was also noted that poor engagement of some stakeholders and members was caused by their inadequate understanding of vision and mission of the platform. This is probably contributed by the way technical language is being used in advocating for sustainable food systems, leading to low interests among the participants and stakeholders.

iii) Alignment with the national policies and strategies: Aligning local actions of the ASFSP with some relevant national policies and strategies can bring about great strength to the effectiveness of the platform. However, such alignment has not been achieved because of complexity contributed by differing priorities. Some examples have been cited including the observation that while the ASFSP may give priority on renovating the existing market structures, which are in bad shape for offering safe and affordable food, the government may put priority on building schools or health facilities.

Summary

The ASFSP, which is important for strengthening the food governance in the city of Arusha was adopted as a case study that requires further investigation. The overall objective of the ASFSP is to contribute towards food systems transformation in the City of Arusha by catalysing collective action among food system actors. The platform is part of efforts to implement the draft policy framework known as the Arusha City Council Food System Policy Framework developed by the city council in collaboration with ICLEI-Africa and RUAF. This policy framework aims towards a food system for Arusha city that is safe, nourishing, economic, inclusive and based on partnering. Undertaking of this case study was agreed through a collaborative process among various relevant stakeholders including the AfriFOODlinks aligned Arusha city council officials, the city coordinator and researchers.

It is clear from the description of findings and the discussion that if the current situation continues with the kind of challenges pointed out, the intended objective of the initiative is likely not to be attained. Some of the threatening challenges include those of power imbalance among the stakeholder members limiting effective collaboration & synergies, sometimes leading to duplication of efforts, inactiveness of some actors, limited involvement of the private sector (including the informal sector and consumers), and lack of promising strategy for resource mobilization. However, some success stories of the ASFSP have also been noted including great extent of consumer sensitization on food safety, food safety awareness and potentiality for capacity building and collaborations among the platform's key actors, greener spaces initiative in the city through planting of fruit trees, and waste management initiatives involving a private company to convert food waste into nutritious protein for animal feeds.

Appendices

Table 1: Results on assessment of shared vision and collaboration among stakeholders of the ASFSP

Assessment sub-issue	Assessment criterion	Explanation of the score
Stakeholders have agreed upon a common vision and strategy	*[Likert scale of 0 – 3]* = ***1*** 0 = No common vision or strategy made explicit 3 = Common vision or strategy is written down, shared and owned by all stakeholders and regularly updated	1 = a common vision exists and written down in the ToR
Existence of an annual MSP action plan	*[Likert scale of 0 – 3]* = ***0*** 0 = The MSP does not have an action plan 3 = The annual action plan is developed by the steering committee and presented and approved at the general assembly	0 = an action plan did not exist by 2024
The extent to which last year's work plan was aligned with the MSP's strategy and vision	*[Likert scale 0 – 3]* = ***0*** 0 = Not at all 3 = Completely aligned	0 = The workplan has not been aligned
Number of initiatives that have emerged from the MSP, involving at least 2 members of the MSP, to implement practices or policies that the MSP promotes	*Five initiatives have been identified:* • Participatory food safety system = Rikolto, Arusha city council, TCCIA Arusha, TAHA • Consumer sensitization on food safety = MVIWA A, IDP • Agroecology = IDP, MVIWA A, ECHO, Farm Radio • Food Kiosk = TAHA, TRIAS • Urban farming demonstration centre = IDP, Rikolto, Arusha city council	

Table 2: Results on assessment of Systems Thinking among stakeholders of the ASFSP

Assessment sub-issue	Assessment criterion	Explanation of the score
The existence of a systems analysis as baseline of the MSP	*[Likert scale 0 – 3]* = ***1*** 0 = Lacking a system approach (and analysis) 3 = A system approach (and analysis) that support the MSP's engagement with the food system it seeks to support is available, regularly updated and leading the MSP's discussions and decisions	1 = a system analysis is going on, which is conducted by IDP (a member of the platform)

Table 3: Results on assessment of Stakeholder engagement among members of the ASFSP initiative

Assessment sub-issue	Assessment criterion	Explanation of the score
The level of stakeholders in the ecosystem represented	*[Likert scale 0 – 3]* = ***2*** 0 = Crucial stakeholders are missing 3 = All stakeholders are involved	The MSP has relevant actors from the government, research and development agencies. It misses private sector representation, media and consumer representatives.
Level of participation: all members feel comfortable, participate	*[Likert scale 0 – 3]* = ***2***	The level of participation of members is good, however some inactive members exist.

and are heard in discussions	0 = Not all members feel their voice is heard or considered in MSP conversations and working groups or feel comfortable sharing information 3 = All members feel their voice is heard and considered in MSP conversations and working groups	
The level of alignment of stakeholders' own organization's practices and policies and the practices and policies promoted by the MSP	*[Likert scale 0 – 3]* = ***2*** 0 = Weak level of alignment: practices and policies promoted by MSP do not align with own organization's concerns 3 = Strong level of alignment	There is a relatively strong level of alignment of stakeholders' own organizations practices and policies. Only few members are not aligned.

Table 4: Results on assessment of MSP governance system of the ASFSP initiative

Assessment sub-issue	Assessment criterion	Explanation of the score
State of the MSP governance system	*[Likert scale 0 – 3]* = ***3*** 0 = There is no clearly defined governance system 3 = The MSP has a clearly defined governance system; all roles and responsibilities of the different bodies are well spelled out and are updated regularly	The MSP has a clearly defined governance system that consists of 5 working groups. The roles and responsibilities of the members is clearly stated in the ToR which has been agreed by the platform members
The level of transparency of MSP's decision-making process	*[Likert scale 0 – 3]* = ***2*** 0 = There is no clearly defined decision-making process 3 = The decision-making process is transparent and integrated in the governance system	The decision-making process is led by the members. However, it is not clearly stipulated on paper
State of the MSP's finances	*[Likert scale 0 – 3]* = ***1*** 0 = There are insufficient resources to cover basic functioning of the MSP 3 = MSP has a multi-year financial planning and a strategy to mobilize additional resources	The coordination of the MSP is financed by contribution of members. The platform does not currently have a financial plan and resource mobilization strategy
The level of trust in the platform's leadership	*[Likert scale 0 – 3]* = ***2*** 0 = There is low trust in the MSP's leadership 3 = There is high trust in the MSP's leadership above the common interest of all members	Members do trust the leadership of the platform; however, they want the Arusha City Council to co-coordinate the platform together with Rikolto
The level of effectiveness of the MSP	*[Likert scale 0 – 3]* = ***1*** 0 = The MSP does not (yet) achieve its mission; meetings are not effective, no clear decisions and follow-up actions are formulated, no impact is realized	The MSP

	3 = The MSP achieves its mission, which means meetings with stakeholders are effective, and the leadership follows through on the agreed-upon actions and decisions, which create impact	
The extent to which the MSP can address members' concerns or solve conflicts	*[Likert scale 0 – 3]* = 2 0 = There are no spaces for this 3 = Existence of spaces/channels where members can address complaints/ suggestions/ conflicts within the platform, they function properly	Members can reach out to the leadership of the MSP to address complains, concerns, and suggestions through assessments, emails or phone calls

Table 5: Results on assessment of Learning and change of the ASFSP initiative

Assessment sub-issue	Assessment criterion	Explanation of the score
Existence of performance indicators of the MSP	*[Likert scale 0 – 3]* = 0 0 = No indicators have been formulated to track MSP performance 3 = Indicators have been formulated and are monitored consistently and form the basis of broad MSP conversations to improve strategy and adjust action plans	No indicators have been formulated to track MSP performance
Stakeholders keep each other informed, inspire and learn from each other	*[Likert scale 0 – 3]* = 2 0 = The MSP's work is irrelevant for the priorities of the own organization, there is little inspiration 3 = The MSP's work is very relevant for the priorities of own organization, there is large learning and inspiration potential	• Stakeholders often keep each other informed and learn from each other. However, still duplication of efforts takes place • Learning exchanges have not so far taken place

\

The Business Case for Integrating Food Safety in Traditional Markets in Arusha City

Description of the Case

While we all enjoy eating delicious meals, we also need to ask ourselves if the food we eat is also safe for consumption. Food can be unsafe due to hidden biological or chemical matters that have contaminated it. Unfortunately, consumers cannot determine from the sight or smell whether the food on their plate or in the market is safe or not. However, scientific techniques such as the ones used by food scientists can help to determine. Several studies have recently been conducted on food safety of fresh fruits and vegetables in different parts of Tanzania, including Arusha (Mvungi, 2020; Kapeleka et al., 2020; Krottenthaler, 2022). The results have pointed out existence of many food safety challenges, with unsafe levels of biological and chemical matters detected in fresh fruits and vegetables. The most detailed analytical study by Kapeleka et al., (2020) investigated the risks of simultaneous exposure to pesticide residues and bacteria contaminants in locally produced fresh vegetables and vegetables in Tanzania. The study found out that overall, 47.5% had pesticide residues, 74.2% exceeded Maximum Residue Levels (MRLs) whereby organophosphorus, organochlorines, pyrethroids, and carbamates residues dominated. MRL values were mostly exceeded in tomatoes, onions, watermelons, cucumbers, Chinese cabbage, and sweet paper. Other chemicals were also identified to exceed the Maximum Residue Levels[4]. The study also reported high prevalence of bacterial contamination (63.2%). The types of bacteria were isolated and identified[5]. Furthermore, 46.4% tested positive for both pesticide residues and bacterial contaminants. Vegetables from farms (60.7%) contained more dual contaminants than market-based vegetables (41.8%). It is believed that excessive pesticide uses and unhygienic handling of fresh fruits and vegetables at production level can be the cause of the situation. Binary logistic regression showed that fresh fruits and vegetables with pesticide residues were more likely to have bacteria contaminants.

It is now well established by WHO[6] that eating unsafe fresh fruits and vegetables, often unknowingly, exposes people to many diseases such as cancers, food poisoning and typhoid. Food can only become safe when safe practices are employed across the food chain. A lot of work is needed by all actors from farm to plate. This must involve strengthening food safety regulations to ensure that the food on our plate is good food. Because food safety is everyone's business, it is necessary to design and set up a system where everyone is involved in guaranteeing food safety. Such a system is needed because commonly recognized certifications, such as Global Good Agricultural Practices Certification, are expensive, export-oriented and inaccessible to smallholder farmers. We need a mechanism that can work for the Tanzanian market that will also include training farmers and food handlers as a way of capacity and trust building.

Description of the Food System Challenges Engaged in this Case Study

While consumption of fresh vegetables is encouraged by governmental health agency campaigns as an important part of a healthy diet due to their protective health effects against non-communicable diseases and as a source of important micronutrients, there are great concerns about chemical and biological contaminations (Ndengerio-Ndossi and Cram, 2005; Mvungi, 2020; Kapeleka et al., 2020; Krottenthaler,

[4] Tetramethrin (0.0329–1.3733 mg/kg), pirimiphos-methyl (0.0003–1.4093 mg/kg), permethrin (0.0009–2.4537 mg/kg), endosulfan (beta) (0.0008–2.3416 mg/kg), carbaryl (0.0215–1.5068 mg/kg), profenofos (0.0176–2.1377 mg/kg), chlorpyrifos (0.0004–1.2549 mg/kg) and dieldrin (0.0011–0.5271 mg/kg) exceeded MRLs.
[5] *Enterobacter* (55.6%), *Pseudomonasa eruginosa* (32.4%), *E. coli* (28.2%), *Citrobacter* (26.8%), *Klebsiella oxytoca* (14.8%), and *Salmonella* (7.7%).
[6] https://www.who.int/news-room/fact-sheets/detail/food-safety

2022). Vegetables that are mostly eaten raw or semi-processed are at higher risk for contamination by pesticide residues and pathogenic foodborne microbes. The vegetables can be contaminated during cultivation, harvesting, transportation, and storage.

A survey in Arusha city by a team of researchers from Ghent University in collaboration with Rikolto and Iles de Paix indicated that there was generally high food unsafety situation for vegetables in Arusha in terms of biological and chemical contamination (Steyaert, A. and Kuyper, T., 2022). 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. They base their judgement on the means available such as freshness, colour, smell and relationships of trust with respective market vendors or market brokers. Such judgements are unreliable in assessing food safety. This implies that these vendors cannot be held completely accountable for guaranteeing food safety. In this sense, the government has an important role to play in offering safety guarantees.

Description of the Key Findings

A daily newspaper in Tanzania, the Citizen (of December 10, 2022) reported findings of a food safety study conducted in Arusha between 2019 and 2021by researchers from the Tanzania Plant Health and Pesticides Authority (TPHPA) titled "Assessment of the Food Safety Risks Along the Main Fruit and Vegetable Supply Chain in Arusha City". The study was aimed at establishing the safety levels of fruits and vegetables sold in the city. The fruits and vegetables involved in the study included tomatoes, onions, carrot, okra, black nightshade, curly kale, cabbage, spinach and watermelon among others. Fruit and vegetable traders, transporters, as well as storage value chain stakeholders were involved with Kilombero, Tengeru, Mto wa Mbu, Samunge and Ngaramtoni among markets earmarked for the study.

The findings showed that 63% of sampled fruits and vegetables were contaminated by at least one microbial contaminant. The study further noted that samples collected from marketplaces were having higher contamination levels compared to those collected from the farms. This was attributed to customers' behaviour, which involves touching the vegetables or fruits before purchasing and existence of poor hygiene in most markets. The study alleged that over 90% of the analysed bacteria were pathogenic (i.e. disease-causing) micro-organisms.

General observation of the main marketplaces in Arusha city by researchers (Steyaert and Kuyper, 2022; Krottenthaler, 2022) revealed that market environments are excessively dirty, with some commodities being arranged on bare ground, and sometimes close to dumps where garbage collection systems are not functioning. The interviewed Health Officer for the city also alleged that some of the markets have their sewerage systems blocked or not functioning while most of them lack storage facilities for perishable goods. According to the officer, vegetable farmers in the city are known to water their vegetable plots with waters that come from unsafe places, including from sewerage systems, which increases contamination levels.

On the other hand, the TPHPA study also established that 47.5% of collected samples of fruits and vegetables contained pesticide residues. Both the interviewed Health Officer as well as the Agricultural Officer indicated that farmers have a habit of not following the instructions given for proper use of the chemicals such as allowing enough time after spraying before sending the produce to the market. They also noted that some farmers and traders have been carrying out secondary spraying of pesticides after harvesting fruits or vegetables, and when doing the packaging ready for transportation, to eliminate chances of further attack by pests before reaching the destined market. According to the above-mentioned study, when compared to the WHO pesticide residue tolerance, 75% of the locally produced fruits and vegetables surpassed the WHO permissible threshold. The study further alleged that women were more vulnerable because they tend to spend more time in fruit and vegetable plots than men.

Case Analysis and Discussion

The interviewed city council's officers (Health and Nutrition) were both 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 because they are very few and lack the necessary working facilities.

The Nutrition Officer for the city Ms. Namsifu Godson was very much concerned about the food safety of the vegetables sold or consumed by people in Arusha. She emphasized that the problem is probably much bigger than what is being observed. She noted that the assessments conducted in Arusha city on food safety of vegetables have focused more on vegetables sold in the major markets, but there are many other sources of vegetables such as the ones produced within the marginal and open areas of the city which are usually flooded with sewerage and other highly polluted waters. In other words, she alleged that there is a substantial portion of vegetables consumed in the city that come from other sources apart from the main markets. She was also concerned that there is an emerging habit of selling already chopped and sliced leafy vegetables such cabbage, spinach, amaranths and kale. She feels that the practice is putting the consumers at even higher risks because the chopped or sliced pieces tend to have more surface area exposed to contamination.

As noted earlier in this report, there is a growing knowledge and awareness about food safety among consumers in Arusha, which appear to be brought about by education and information campaigns in the country. In that respect, many consumers are willing to pay a higher price for safe food because of their personal health and the health of their families. However, the limiting factor is that there is no way that consumers can differentiate safe (or uncontaminated) from unsafe (or contaminated) vegetables. But there is also concern that despite having knowledge about health risks, many consumers still choose to buy food based on price due to poor purchasing power. That is, the low income earning tend to force many poor individuals or families in the city to consume unsafe vegetables because they are cheaper and probably easier to access.

The contamination levels of pesticide residues and bacterial contaminants could be perceived as a serious problem as most fresh fruits and vegetables recorded values of pesticide residues far above the Maximum Residue Levels (MRLs) with pathogenic bacteria isolated in higher proportions. MRLs were higher in most vegetables consumed raw or semi-cooked such as watermelons, carrots, cucumber, tomatoes, onion and sweet paper. There is an urgent need to develop pesticide monitoring and surveillance systems at farmer level, educating farmers and promoting the use of greener pesticides to mitigate the health effects of pesticides and bacterial contaminants.

Recommendations

The recommendations are based on the theory of Shared Responsibility for Food Safety by Miyagishima, et al., (1995) which shows that there are three primary stakeholders, namely the government, food industry and citizens, that substantially affect the entire chain and are responsible for ensuring food safety. Accordingly, they need to fulfil specific tasks to improve the food safety of the system as shown in Figure 2.1. An overview of the different responsibilities of the various actors is provided here, which will help to show the connection with the recommendations that will be given for Arusha.

- *The government*: To ensure food safety the government must establish health-related standards and codes of practice and ensure their enforcement. However, there is a general lack of enforcement in Tanzania (Molina et al., 2020; Kassim & Mkunda, 2021). Accordingly, the government must encourage the food sector, including primary producers like farmers as well as vendors, to implement voluntary measures that improve food safety since depending simply on rigorous inspection and laboratory analysis systems paired with sanctions for infractions is

ineffective. The government should help citizens acquire accurate knowledge about food consumption which enables individuals to make informed decisions about their food choices and contribute towards a safer food supply chain.

- *Food producers*: They have a fundamental responsibility to guarantee the safety of their food products. This can be achieved, in part, by developing a food safety culture in the company and by adhering to established codes of conduct and following any applicable rules and legislation imposed by the government (Miyagishima et al., 1995). Additionally, they may inform citizens by using advertising and labelling that adhere to accepted guidelines. In the context of Tanzania, fresh products are mainly produced by small-scale farmers and sold by vendors in local markets without any label. These actors have limited knowledge about food safety regulations and food safety risks, which include the use of pesticides and microbiological contamination and have limited capacity for advertising, labelling, and education.

- *Consumers*: Consumers or citizens play a crucial role in deciding and preparing food for consumption. It is therefore essential for them to have the needed skills for making informed purchasing, food preparation, food serving, and handling of residuals after consumption. Any inappropriate handling of food by consumers can nullify the efforts made by other stakeholders. It is important for consumers to not only follow proper food handling practices at home, but also get involved in community initiatives to support government efforts. Krottenthaller (2022) noted that when consumers make smart and informed decisions about the food they purchase, they can encourage the food industry to make sure the food they sell is safe. The awareness of consumers is also crucial in keeping policymakers attentive to food safety issues and for pushing the highest standards in the business and industrial sectors (Miyagishima et al., 1995).

Based on the theory of Shared Responsibility for Food Safety, and considering the prevailing situation in Arusha, the following can be recommended:

- Create a shared understanding of food safety – There is a need for a shared interpretation and operationalization of food safety between research institutions, government, civil society actors and food system actors. Since both consumers and market vendors have a growing awareness of food safety but lack any means to assess it, alternatives need to be developed where actors can assess or guarantee the safety of the products that they sell or buy. For example, a Participatory Guarantee System (PGS) where actors within the system (from production to consumption) collaborate and control each other and where relationships of trust are formalized. This system can be an alternative for technical food safety testing and/or organic certification of products. An important note here is that all actors participating in these systems must see personal benefits for changing their behaviour.

In creating a shared understanding of food safety, it is important to be aware of Gender Stereotypes in food purchasing and preparation by recognizing the significance of gender dynamics in food purchase and preparation practices. This is vital for designing effective food safety interventions and education programs. Since women are predominantly responsible for food shopping and are perceived to be more attentive to food quality and safety, interventions should focus on providing gender-sensitive food safety education. Such education should not only target women, but also include men to empower them with knowledge and skills related to food shopping and safe food handling and preparation methods. Promoting a shared understanding of food safety practices within families and communities can lead to safer and healthier food consumption practices.

- Improve market infrastructure and working conditions together with the vendors – Market infrastructure improvements are urgently needed and should be co- designed in a participative manner with the vendors. This will increase feelings of shared ownership and responsibility and will avoid investing in so-called white elephants' investments whose costs are not in line with their usefulness or value. On a similar note, giving vendors a voice in further market planning and development is essential. Failure to involve the vendors in market reconstruction leads to problems related to the quantity, distance, and size of trading space. It was noted that the vendors in Arusha prioritize the reconstruction of drainage systems and the instalment of security gates and strongly

prefer not to be delocalized. Finally, a new bylaw could be created that obliges market vendors to sell only from elevated stalls. Improving the market infrastructure will ensure a clean and hygienic environment for both vendors and consumers. Consideration should be given to proper waste management, clean water supply, and adequate sanitation facilities to enable hygienic practices.

- Usage of labels to support consumers to be more informed – This can help consumers to make more informed choices and therefore gain control over the food safety of fruits and vegetables. Vendors shall display information about their produce's origin, handling practices and pesticide usage. Especially the pesticide usage seems important because this was the concern of most of the respondents. The context in Arusha City is different to the European context because labels for fruits and vegetables are not common and thus often not looked at and trusted and this must be kept in mind. It is important to educate the consumers about its benefits and create trust in the label and the institution behind the label. The visibility of the label must be clear – in terms of the language used and the type of fonts.

- Set up designated market spaces for safe food – Existing markets can designate certain spaces solely for safe food products. These spaces can simultaneously sensitize consumers, stimulate vendors to increase safety and promote sustainable food production techniques. However, when developing such spaces, vendors should be included and heard. Furthermore, it will be important to not reinforce the existing (higher) price perception of safe food. Developing designated market spaces therefore must be linked to consumer sensitization strategies that also focus on price and perception. To increase the availability of safe food, farmers need to be educated about good agricultural practices, especially how they can use less pesticides and vendors need to get training about food safety practices, hygiene, and product quality. A food safety culture and a sense of ownership and responsibility for food safety must be created. The Participatory Guarantee System includes training and exchange of information among different stakeholders and can therefore be a good approach. In addition, it is important to indicate clearly where safe food can be found, which can be done through dedicated stalls, labels and transparent information. Awareness of the locations of these stalls need to be raised as well. This should also involve understanding of price impacts of increased food safety to address the divided opinions on the impact of cleanliness and certifications on pricing. Market research can be conducted to understand the actual pricing practices. Such research can help design interventions that strike a balance between cost-effectiveness and maintaining food safety standards.

- Establish and support market vendor associations – There is a need to set up new governance structures to generate a shared understanding of food safety with market vendors. This should involve facilitating vendors to form their associations. The establishment and further support of market vendor associations can be a pathway to include vendors in decision making processes and give them a voice to feel that whatever is decided they are also part of the system. Vendors, through their associations, must be sensitised about food safety challenges, and be involved in co-designing market infrastructure improvements. Such associations can also help to link the vendors with various functional bodies such as the Arusha Sustainable Food Systems Platform, or the relevant government sectors.



Figure 2: Shared responsibility for food safety (Miyagishima et al., 1995)

Summary

Study Case Two is a business case for integrating food safety in traditional markets in Arusha City. This has come following a concern that while consumption of vegetables is encouraged by governmental health agency campaigns as an important part of a healthy diet due to their protective health effects against non-communicable diseases and as a source of important micronutrients, these vegetables have also been found to have high levels of chemical and biological contaminations. Several studies have recently been conducted on food safety of fresh fruits and vegetables involving Arusha. The most detailed has been the one by Kapeleka et al., (2020) which found out that overall, 47.5% had pesticide residues of which 74.2% exceeded Maximum Residue Levels (MRLs) with organophosphorus, organochlorines, pyrethroids, and carbamates residues dominating. MRL values were mostly exceeded in tomatoes, onions, watermelons, cucumbers, Chinese cabbage, and sweet paper. The study also reported high prevalence of pathogenic bacterial contamination (63.2%).

The study noted that although there is evidence of growing knowledge and awareness about food safety among consumers in Arusha, the limiting factor is that there is no way that consumers can differentiate safe (or uncontaminated) from unsafe (or contaminated) vegetables. But there is also concern that despite having knowledge about health risks, many low-income earning families and individuals tend to consume unsafe vegetables because they are cheaper and probably easier to access.

Based on the theory of Shared Responsibility for Food Safety that focuses on three primary stakeholders, namely the government, food industry and citizens (or consumers), several recommendations are given. They include creating a shared understanding of food safety, improve market infrastructure and working

conditions together with the vendors, usage of labels to support consumers to be more informed, set up designated market spaces for safe food, and establish and support market vendor associations.

REFERENCES

Kapeleka JA, Sauli E, Sadik O, Ndakidemi PA (2020) Co-exposure risks of pesticides residues and bacterial contamination in fresh fruits and vegetables under smallholder horticultural production systems in Tanzania. PLoS ONE 15(7): e0235345. https://doi.org/10.1371/journal. pone.0235345

Kiwango, Kassim, & Kimanya. (2017). The Risk of Dietary Exposure to Pesticide Residues and its Association with Pesticide Application Practices among Vegetable Farmers in Arusha, Tanzania. *Journal of Food Research, 7*(2; 2018). Retrieved from https://doi.org/10.5539/jfr.v7n2p86

Krottenthaler, M. (2022). *Citizens' Strategies to Gain Control over the Food Safety of Fruits and Vegetables – An Ethnographic Study in Arusha City.* UNIVERSITÀ CATTOLICA DEL SACRO CUORE, Faculty of Agricultural, Food and Environmental Sciences. Cremona: Laurea Magistrale in Food Processing, Innovation and Tradition and Sustainable Food Systems.

Manyilizu, W. B., & Mdegela, R. H. (2015). Self-reported health effects among short and long-term pesticide sprayers in Arusha, Northern Tanzania: A cross-sectional study. *Occupational Medicine & Health Affairs, 3*(6). Retrieved from https://doi.org/10.4172/2329-6879.1000223

Miyagishima, K., Moy, G., Miyagawa, S., Motarjemi, Y., & Käferstein, F. K. (1995). Food Safety and Public Health. *Food Control, 6*(5), 253-259. Retrieved from https://doi.org/10.1016/0956-7135(95)00039-T

Molina, P. B., Alessandro, C. D., & Marson, M. (2020). Sustainable food systems through diversification and indigenous vegetables: an analysis of the Arusha area Role of aid flows from China and DAC donors on Africa View project AgrInvest-Food Systems View project. Koen Dekeyser European Centre for Develoment Policy Management. Retrieved from http://www.researchgate.net/publication/340460681

Ndengerio-Ndossi, J. P., & Cram, G. (2005). Pesticide residues in table-ready foods in Tanzania. *International Journal of Environmental Health Research, 15*(2), 143-149. Retrieved from https://doi.org/10.1080/09603120500061922

Steyaert, A., & Kuyper, T. (2022). *An Exploration of Arusha's Foodscape – Listening to the Experiences of Market Vendors and Consumers.* Ghent University and Iles de Paix.

https://www.macrotrends.net/global-metrics/cities/22893/arusha/population#:~:text=The%20metro%20area%20population%20of,a%202.43%25%20increase%20from%202020.

