

# International Journal of Nutrition and Agriculture Research

Journal home page: [www.ijnar.com](http://www.ijnar.com)

<https://doi.org/10.36673/IJNAR.2023.v10.i01.A01>



## AFRICA'S AGRIFOOD SYSTEM NEEDS TRANSITION; AN ECONOMIST'S PERSPECTIVE ON THE MATTER

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### ABSTRACT

Agrifood system transitions are the essential adjustments required for Africa's agricultural and food systems to convert to sustainable ones. Agricultural food systems research is still a relatively new topic with few clear boundaries. This review presents a critical analysis of the primary areas of attention and exposes gaps and views from the economic point of view to clarify its dimensions. As of this review, it is crucial to identify gaps by assessing how the current changes coincide and by evaluating the significance, necessity, modelling transitions and problems, and future goals of the field. Particularly in rural nations like Africa, agricultural transitioning is one of the most important cornerstones of sustainable economic growth and poverty reduction. Important policy concerns also include supporting value-added enterprises, facilitating financial services and encouraging agricultural economics practices. Achieving these objectives, however, will require striking a careful balance between economic expansion and environmental preservation in addition to encouraging community participation in the system's transitional decision-making processes. Simultaneously, agricultural transitioning depends on adopting cutting-edge methods, sustainable practices, and new technologies. Inclusive strategies, long-term vision, and cooperation across multiple sectors are necessary for agricultural food policy to be successful. As a result, it's critical to concentrate on closing agrifood transition gaps to meet Africa's future needs.

### KEYWORDS

Food system, Economics, Transitioning and Africa.

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### INTRODUCTION

The Food Chain an alternate future known as the "transitioning pathway" is characterized by a global commitment to establishing a food system that is environmentally sustainable, health-promoting, and inclusive. All nations progressively shift their diets during the next thirty years to include more fruits, vegetables, nuts, legumes, and whole grains in place

of empty calories and animal-sourced proteins. By taking decisive action, hunger will be eradicated by 2050, saving 640 million people from the agony of going to bed hungry or worrying about what their kids will eat for breakfast. "Everything from actors to their interconnected value-adding activities involved in the production, aggregation, processing, distribution, consumption, and disposal of food products that originate from agriculture, forestry, or fisheries, and parts of the broader economic, societal, and natural environments in which they are embedded" is the definition of Agrifood systems (FAO 2018).

Incremental change is insufficient to address sustainability issues because of its qualities (such as ambiguity, interconnectivity, complexity, and multidimensionality). Consequently, systemic change that is revolutionary is required, including significant adjustments to the patterns of production and consumption. The term "sustainability transition" was created to embrace the objective of moving towards sustainable systems (Lachman, 2013, Grin 2010).

During the past 20 years, transitions have grown and prospered. The research agenda, which offers insightful perspectives to define the sustainability transitions research field, reflects this. It talks on the following subjects: Knowing transitions; putting management strategies into practice; politics, power, and governance; the role of businesses and industries in transitions; the role of civil society, culture, and social movements in transitions; sustainable consumption: transitions in daily life and practice; the geography of transitions; and the modelling of transitions created by the Sustainability Transitions Research Network (2010),

A significant change in farming systems and agricultural transformation includes modernization, innovation, and sustainability. This approach involves using cutting-edge technologies, increasing output, and implementing eco-friendly habits. The need to meet the world's rising food demand, maintain food security, and strengthen rural economies is what is driving this shift. The goals of agricultural transformation are to improve farmer lives, decrease post-harvest losses, and increase

efficiency. It is irrefutable that strengthening Africa's food systems' resilience and sustainability is necessary.

The African Agriculture Status Report's key takeaway was that the continent's food systems have remained fragile, with farmland expansion accounting for over 75% of agricultural production growth and yield improvements for barely 25% (AGRA, 2021). The research also showed that, between 1980 and 2018, cereal yields in sub-Saharan Africa increased by just 38% over a 38-year period, while the region's forest cover decreased from 31.6 % in 2000 to 26.6 % in 2018. Sub-Saharan Africa has also seen a decline over time in resilience and sustainability indicators, such as the proportion of households living on degraded soils, the water stress ratio, and energy depletion. These challenges necessitate an urgent transformation of Africa's production systems in a way that achieves productivity growth to meet the food needs of a growing population, without further compromising environmental sustainability.

To achieve this challenging objective, nature-positive production is encouraged. It provides a model that can assist the continent combat the effects of climate change, produce better food, and safeguard the environment as an alternative to traditional agriculture (Gaupp *et al*, 2021). The likelihood of accomplishing the necessary transition at scale, however, is still hotly contested in the narrow field of policymaking. This research delineates the outlines of this gap in the literature by emphasizing the primary gaps in the area and evaluating whether and how it covers the issues of the transitioning future focus agenda.

This review article's aim is to assess and review the Africa's Agrifood system transition from the economic point of view and provide readers with a comprehensive overview of the current Agrifood production system and future transitioning options. The fundamental information was evaluated based on earlier works.

## **METHODOLOGY**

### **Search strategies of this review**

The reviewer used the method to locate the pertinent book 'Let Africa Work' to start this review. The reviewer examined the whole book and abstracts, selected the title best fits this and imported the whole submissions for evaluation. The remaining papers' titles and abstracts were also used to establish their relevance. The reviewer also thoroughly studied the other papers' views, results and methodologies to make sure they met the requirements for this review. Data on the prevention of Agrifood transformation, policies, strategies, and needed technologies, as well as information on the articles' start date and duration, authors' names, and year of publication were taken from the papers that were chosen for this review. The selected papers were then meticulously examined to make sure they complied with the review's inclusion requirements. The review comprised publications that had been written and that concentrated on recent Agrifood system transitioning agendas.

### **Literature review on Agrifood system transitioning**

Characteristics of current literature and studies results included in this paper were cross-sectional and assessment papers. The majority of the papers in this collection are concerned with the sustainable transitioning of the agri-food system in Africa.

### **Approaches of the Food System Transitioning**

Five components define the methodology of the Food System analysis of the economics of the Food System transformation: An emphasis on creating and maintaining systemic change; an awareness that system transformation takes time and will be uneven; a focus on putting people at the centre of the transformation; an emphasis on integrating insights from a variety of economic approaches and an emphasis on the interdependencies between food systems and another system.

### **Condition to be met for successful transitioning; Economists view**

For successful Agrifood transitioning, the following condition are essential:

Stable framework of macroeconomic and political stability

Governance- Transforming Agrifood systems depends crucially on how people can promote and benefit from innovation in governance

An effective technology transfer system, research and extension

Access to lucrative markets and business

An ownership system

Employment creation on agricultural and non-agricultural sectors. The way we grow, sell, and consume food is a part of the political, social, economic, ecological and cultural fabric of our communities, thus changing the Agrifood system is imperative. Global progress has been uneven and recent changes in food systems have exacerbated some of the most serious issues facing humanity, such as chronic hunger, undernutrition, the obesity epidemic, biodiversity loss, environmental damage and climate change. More value is being destroyed by our food systems than is being created. Ignoring the repercussions of the current food systems sets the world on a path that will inevitably intensify their harmful effects. However, food systems have long been disregarded in many policy issues, including those pertaining to climate change. Minimal concern for the cost of food and the hundreds of millions of people who rely on food systems for their livelihoods. Policymakers now have the chance to increase the bar for ambition. Global food system transformation offers a remarkably effective way to solve climate change, environmental issues, and health crises while improving the lives of hundreds of millions of people. There is an immediate need for food systems to change. Our food systems have a significant role in the political, social, economic, ecological, and cultural aspects of our societies through the production, distribution and consumption of food. They have accomplished something of a miracle, keeping up with decades of population increase, lowering poverty, reducing malnutrition, and raising life expectancy all at the same time. However, global improvement has not been uniform. Furthermore, some of the biggest and most serious issues confronting humanity-such as chronic hunger, undernutrition, the obesity epidemic, biodiversity loss, environmental harm, and climate change-have been exacerbated by the recent

evolution of food systems. To put it succinctly, our food systems destroy more value than they produce. Ignoring the repercussions of the current food systems sets the world on a path that will inevitably intensify their harmful effects. However, food systems have long been disregarded in many policy issues, including those pertaining to climate change. Food systems are something of an exception due to a number of factors, including varied opinions among stakeholders about what constitutes a sustainable food system, concerns about food affordability and the livelihoods of hundreds of millions of people who depend on food systems and the influence of large-scale players. Policymakers now have the chance to increase the bar for ambition. Global food system transformation offers a remarkably effective way to solve climate change, environmental issues, and health crises while improving the lives of hundreds of millions of people.

#### **Guidelines for national food system transition strategies; Food system economists**

In actuality, changes to the global food system will occur at the local and national levels. Although there is not a set formula for how every change should look, national and local plans can be directed by five general themes worldwide. Combining policies into well-thought-out plans to attain these goals increases the possibility of success.

#### **Shifting consumption patterns towards healthy diets**

The main driver of the food system-transitioning pathway's benefits is the global movement toward healthier eating habits. Although it is difficult to change people's eating habits, there are some policies that have been proven to be effective. These include prohibiting the marketing of unhealthy foods to children, providing nutritional advice on the front of the pack, focusing on healthy options when purchasing food for the public, levying taxes on sugar-sweetened beverages and unhealthy foods and reformulating packaged foods. These regulations can be implemented widely, but additional research is required to determine which policies are most effective and why, as well as to develop innovative strategies for altering consumption habits and enhancing access to wholesome food.

#### **Resetting incentives: Repurposing government support for agriculture**

The majority of government support for agriculture goes to larger producers, and much of it has negative impacts on the environment, the climate, and human health. The hidden costs of the food system could be reduced by readjusting agricultural support such that it encourages decisions consistent with the transformation of the food system's objectives. For example, repurposed subsidies could help to enhance access to healthy foods and make them more affordable. Repurposing subsidies, however, may cause production to shift to less productive nations, worsening the effects on the environment. This necessitates making investments to raise productivity and reduce negative environmental effects, maybe through global redistribution. **Resetting incentives: Targeting revenue from new taxes to support the food system transformation**

Two major sources of benefits are lowering nitrogen pollution and converting food systems into net carbon sinks. Expert bodies have recommended taxing carbon and nitrogen pollution to assist accomplish these goals. However, new taxes need to be tailored to the regional environment. To ensure that the results are inclusive and to assist gain political support for a transformation of the food system, the monies that result should be directed toward direct and progressive benefits for lower-income households who might otherwise find it difficult to afford food (Dietz 2023).

#### **Innovating to increase labor productivity and workers' livelihood opportunities, especially for poorer workers in food systems**

There are currently more novel food system technologies being created than ever before. Currently, the private sector is mostly responsible for this. Public institutions at the national and international levels can play a significant role in accelerating the creation and spread of innovations that address the needs of less fortunate producers and removing obstacles to their acceptance. Enhancing plant breeding in low- and middle-income countries; promoting ecologically sustainable, biodiversity-friendly, and low-emission farming systems by, for example, customizing public procurement and

extension services; and creating digital technologies helpful to small farmers, like information systems based on remote sensing, in-field sensors, and market access apps, are among the priority areas for public research and innovation.

### **For the poorest**

Creating and bolstering safety nets is essential to ensuring that changes to the food system are both politically and inclusively achievable. The COVID pandemic's cash transfer experience has changed what is feasible in terms of efficiently transferring funds digitally and focusing on vulnerable groups. Since children's nutritional needs are closely linked to their lifetime successes, countries should choose to focus their limited transfer resources on meeting their needs while simultaneously mobilizing additional resources and implementing more extensive safety nets. Change will be impeded if the conflicts surrounding the restructuring of the food system are not addressed head-on. Although there are many advantages to changing the food system, there will inevitably be conflicts between the winners and losers. Implementing policies in novel ways is necessary to manage these contradictions. If they are not dealt with, Issues likely to require management include:

### **Fears of food price rises**

Social unrest can result from growing hunger and deteriorating food insecurity brought on by increased food costs, particularly when politically influential populations are impacted. Governments and opposition parties view the cost of food as a key indicator of their chances of winning reelection or an election, and with good reason. A fear of food prices in the future might stymie reforms in the food system and lead to unfavorable policy reactions like export prohibitions. To remove this obstacle to change, the food system economists suggests putting in place strong safety nets, for a short time to empower them, not continuously.

### **Fears of job losses**

Jobs in the food production sector can be quickly reallocated by transforming food systems. Modifying food systems can have serious local effects if it influences the primary means of subsistence. Particularly in low-income nations, developing

downstream food system segments can aid in the creation of jobs for farm workers displaced by changes in the food system. The same can be achieved by implementing nature-based agriculture techniques like agroforestry. It is also possible that the change to healthier eating will result in job growth.

### **Policy siloes**

Food systems are influenced by several government ministries and departments. They frequently pursue divergent, overlapping, and perhaps incoherent policy objectives, and they seldom ever consider the opinions of other stakeholders when making choices. While most governments now acknowledge that food system reform is urgently needed, in order to assure success, they must organize more inclusive food system governance structures, create long-term plans with transparent accountability, and coordinate the implementation of their policies.

### **Global inequalities**

There are conflicts on how the advantages and costs of the food system change are distributed, despite the fact that it is unquestionably a global success. The necessary change in diet will cause production patterns to shift, perhaps concentrating most of the expenses in certain producing nations. Although wealthier producing nations are able to control and lessen adjustment costs, many low-income nations cannot pay them. To ensure that progress occurs at the required pace and scale, food system reforms must be given top priority in climate finance, international public health agreements and interventions, and on the agendas of multilateral development banks.

### **Entrenched vested interests**

Power, information, and accountability asymmetries are prominent features in food systems. Strong firms frequently use their clout in the policymaking process to water down or postpone changes that they see as posing a risk to shareholder wealth. Food system economists provides three strategies for expressing the public's interest in food system reform, all of which are based on instances of effective change-making.

### **Modeling the Agrifood System Transitioning**

By combining food system transitioning with specific models of the energy system (Baumstark *et al*, 2021), the climate system (Meinshausen *et al*, 2020), and public health (Springmann *et al*, 2018), its modeling capabilities are increased. Food System generates economic valuations of the net and gross economic benefits of the food system modifications that they capture using the pathways that are produced. This concentrates on two avenues. "Current Trends" (CT) is an extension of the current trends defining food systems. A global initiative known as the "Food System Transformation" (FST) also aims to replace the world's current food systems with one that feeds the hungry and impoverished while meeting the requirements of those employed in agriculture and producing wholesome food without compromising a habitable environment. The optimistic assumptions for future GDP and population growth as well as the ongoing energy transition is also considered.

Huge tracts of natural ecosystems are kept safe from development, and between now and 2050, massive reforestation and expansion projects aim to add 2.5 million hectares of new managed forest per year. By combining these initiatives with technical advancements that lower agricultural pollution, the land-use sector will become a net carbon sink by 2040. Successful campaigns to combat poverty in the agriculture industry provide livable pay for the over 400 million workers in the field. Concurrently, the shift from costly and inefficient diets, along with the reallocation of carbon levies, ensures that food stays under budget. The economics of changing food systems are evaluated using two different but complementary methodologies in The Gross and Net Economic Benefits of the Food System Transformation: an aggregate top-down approach and a detailed bottom-up approach. The top-down method (Dietz 2023) expresses changes in social welfare in monetary terms by calculating the cumulative effects of the Food system transitioning (FST) in terms of income, the environment, and health. Lord 2023 employs a bottom-up technique to quantify the hidden costs averted by the FST, encompassing health, environmental, and poverty-

related expenses. The bottom-up method calculates the potential economic losses due to environmental contaminants such as greenhouse gas emissions or excess nitrogen, as well as bad health. Although both approaches are based on welfare economics, the bottom-up strategy concentrates on concrete, itemized expenses, while the top-down method strives for a comprehensive measure of society well-being. Taken as a whole, they offer a thorough grasp of the global food system transformation's economic effects.

There have been many reports on food systems transformation highlighting key transitions, strategies, and actions needed to shift towards healthy diets, promote sustainable production practices, protect and restore nature, and reduce food waste and loss. Economists must adopt the food systems approach, and emerging economies must engage in setting the global food systems agenda over several years. Nonetheless, a thorough economic examination of the suggested plans of action is typically lacking. This is a missed chance for the reform of food systems and for economics.

Furthermore, despite rapid ascension in global food production, consumption, trade and investment, the voices of emerging economies including China, India and Brazil are largely limited focus in setting the global food systems agenda. This will hinder the transitioning of their own as well as the global food systems.

**Transforming food systems into net carbon sinks and reducing nitrogen pollution** are two important sources of benefits.

Targeting resulting revenues towards direct and progressive benefits for poorer households that might otherwise struggle to afford food can ensure its outcomes are inclusive and help to win political support for a food system transformation.

Innovating to increase labor productivity and workers' livelihood opportunities, especially for poorer workers in food systems.

An unprecedented number of new food system technologies is being developed.

Currently this comes largely from the private sector. National and international public institutions can do a lot to speed up the development and diffusion of

innovations that meet the needs of poorer producers and remove barriers to their adoption.

Priority areas for public research and innovation include: improving plant breeding in low- and middle-income countries; supporting environmentally sustainable, biodiversity-friendly, and low-emission farming systems by, for instance, tailoring public procurement and extension services; and developing digital technologies useful to small farmers, such as information systems based on remote-sensing, in-field sensors and market access apps.

### **What Should Economists to do on this**

The suggested plans of action and solutions typically lack a thorough economic examination. Both economists and the transformation of food systems have lost out on this. It is critical to comprehend transition economics. Furthermore, rising economies like China, India and Brazil have little say in defining the global food systems agenda, despite the tremendous rise in global food production, consumption, trade, and investment. This will make it more difficult for both their own and the world's food systems to change. Protecting and restoring production systems, building resilience, reducing climate change and increasing biodiversity are the main objectives of nature-positive agriculture. The yield benefits of regenerative methods may not become evident right away. However, because of their socioeconomic status, smallholder farmers sometimes put short-term gains ahead of long-term gains. But most developing nations' financial systems are ill-equipped to finance the transition to sustainable Agrifood systems. The cost of adopting environmentally friendly methods may influence the choices made by African smallholder farmers in the absence of adequate credit and inclusive financing. An idea of the funding requirements should be obtained by evaluating the farm-level expenses associated with implementing and sustaining regenerative agriculture practices. Based on this data, policy tools can be created to lower adoption risks and allow farmers with limited resources to embrace nature-positive farming practices in a sustainable manner. Fundamentally, economics is the study of both public and private choice in times of

scarcity, including the regulations required to encourage socially optimal practices related to sustainable food production and consumption. There are five major contributions that economists can offer to the study of food systems. Metrics and techniques can be created by economists to take into consideration of the actual cost of food systems. In order for food prices to accurately represent the true costs to the environment, climate change, and human health, the costs must be internalized through taxes and regulations. Economists are able to find connections between the objectives of social inclusion, sustainability, efficiency, and health. These include trade agreements that lower consumer food costs and stabilize prices, steps taken to prevent food waste and loss, cutting-edge technologies that boost productivity and encourage more varied diets and production methods, and infrastructure investments that may support several food system objectives and aid in the development of policies and strategies that minimize trade-offs between them (Lord 2023).

Economists are able to analyze potential solutions for failed policies. To the disadvantage of varied diets and health, for instance, subsidies in the food and agriculture industries distort both local and international food markets, encourage excessive use of water, land, and chemical inputs, raise greenhouse gas emissions, and skew resource allocation across foods (Meinshausen *et al*, 2020).

Economists have the ability to enhance comprehension of political decision-making procedures. Understanding the motivations of interest groups within entire food systems is crucial. These interest groups include those arising from technological advancements (such as biotechnology, genetically modified or edited crops, and regenerative agriculture), multinational corporations, the food retail industry, and environmental organizations (Baumstark *et al*, 2021).

Finally, economists can provide a diverse and rigorous toolkit for understanding choice under scarcity and the trade-offs between different system objectives, including microeconomic analyses of consumer and producer behaviours, meso-level analyses of markets and value chains, and macro-level modelling of entire economies and the global

food system as a whole. However, economists should not work alone or in silos. It is more important than ever to work together across disciplines such as natural resources, environment, climate, nutrition and health (Springmann *et al.*, 2018).

Fundamentally, economics is the study of both public and private choice in times of scarcity, including the regulations required to encourage socially optimal practices related to sustainable food production and consumption. There are five major contributions that economists can offer to the study of food systems. Food systems contribute to the breach of most planetary boundaries and have enormous externalities. To take into consideration the full cost of food systems, economists can create measurements and procedures. In order for food prices to accurately represent the true costs to the environment, climate change, and human health, the costs must be internalized through taxes and regulations (Dietrich *et al.*, 2019).

The following five objectives should be taken into account by economists when analyzing future food systems: *Diets*: Everyone should have a healthy diet. Strong livelihoods across the food chain, trade liberalization, rising agricultural wages and capital replacements. *Biosphere*: preserving intact land, restoring degraded land, cutting emissions, conserving water and land. *Production*: Using sustainable practices to produce food across the food chain. Crop rotation, land and nitrogen management, and *Resilience*: In the short and long terms, resilient food systems ensure the security of food and nutrition. For effective transitioning strategies in the food system, economists should take into account this integrated approach. These include the creation of policies, rules and incentives that promote positive externalities while lowering negative ones, innovation, investment, strong institutions and ideas and information.

#### **Interventions approaches for future Agricultural Transitioning**

**Infrastructure development**: Access to basic infrastructure such as roads, electricity, water supply and communication networks is a foundational aspect of rural development

**Human Capital Investment**: Education and healthcare are vital for human capital development in rural communities

**Technology Adoption**: The integration of modern agricultural technologies can significantly enhance productivity and efficiency in rural areas

**Sustainable Agricultural Practices**: Promoting sustainable agricultural practices is essential for long-term environmental and economic viability.

**Access to Finance**: Limited access to credit and financial services often hinders agricultural and rural development.

#### **Value-Added Activities**

**Market Linkages**: Efficient market linkages are essential for connecting rural producers to urban consumers and international markets.

**Land Tenure and Property Rights**: Clear and secure land tenure is fundamental for incentivizing investment in rural areas

#### **Social Inclusion and Empowerment**

**Local Governance and Participation**: Local communities should be actively involved in decision making processes related to rural development

**Environmental Sustainability**: Balancing agricultural growth with environmental preservation is crucial

**Risk Management and Resilience**: Rural communities are often vulnerable to various risks, including climate-related disasters, price fluctuations, and health emergencies.

**Capacity Building and Extension Services**: Effective extension services can bridge the gap between scientific knowledge and practical application in agriculture

**Cross-Sectoral Collaboration**: Rural development and agricultural transformation do not occur in isolation

#### **Looking ahead: Opportunities and threats for current Food System**

##### **Climate Shocks to Food Systems**

In Sub-Saharan Africa, severe weather, violence, and the epidemic outbreaks have caused over 50 million more people to experience acute food insecurity since 2019. Furthermore, the frequency of climate-related shocks to the food system has increased from an average of once every 12 years to around once every 2.5 years. Because this happens too frequently



for nations, regions, or farms to adequately recover between shocks, strengthening the resilience of the food system will be essential to enabling the area to adapt to difficulties more swiftly and skillfully.

### **Global Price Shocks**

Global shocks to food systems also affect countries in Eastern and Southern Africa. These shocks include fluctuations in commodity markets, rising energy and fertilizer prices, trade disruptions, and the continuing events in Ukraine. Due to families' struggles to make ends meet, these shocks have caused sharp increases in food costs throughout the region and a rise in food insecurity.

### **Undernourishment**

Acute hunger or famine are only one aspect of food security; another is chronic undernourishment that has a negative impact on health. The percentage of undernourished individuals in Eastern and Southern Africa is rising, rising from 21% in 2019 to over 25% in 2020. This has major implications for the health and well-being of the population in the region. Madagascar has the worst rates of malnutrition in Africa as well as ongoing food shortages. Roughly 25% of the population in the nation is undernourished and nearly half of children under five are stunted. The most impacted groups in Ethiopia are women and children, with 44% of the latter predicted to be stunted. Dietary diversity is frequently compromised first in emergency scenarios.

### **Opportunities for Action**

Despite challenging circumstances, enhancing the resilience of food systems in the Eastern and Southern Africa offers real opportunities to not only tackle food insecurity and ensure that everyone has enough to eat, but to also generate more jobs, promote trade and enhance resilience.

### **Jobs**

With the food and agriculture industry contributing close to 15% of the GDP of Eastern and Southern and central African nations in 2020, it continues to be a major driver of economic expansion and job creation. In 2019, the employment rate in the region's agriculture was 59%; in other countries, this percentage was considerably higher, including 86%

in Burundi, 80% in Somalia, 76% in Malawi, 70% in Mozambique, and 66% in Ethiopia and Zimbabwe. Therefore, there is a great chance that improving the agriculture sector will raise people's earnings and prospects throughout the region. Additionally, those with steady employment are better equipped to handle shocks without having to use money meant for food.

### **Trade**

Over the next few decades, as the population increases and cities grow, there will likely be a major increase in demand for food goods. Currently, 38% of Eastern, central and Southern Africa's GDP is derived from the food and beverage sector. Food value is predicted to rise by 800% in the industry by 2050, while commerce in processed foods may rise by up to 90%. Furthermore, increased trade not only creates more economic prospects but also contributes to the stabilization of food access and availability throughout the region. Other nations can increase their exports to make up for shortages caused by climatic shocks that affect one nation, such as the ongoing drought in the Horn of Africa or the regular cyclones that affect Madagascar.

### **Resilience**

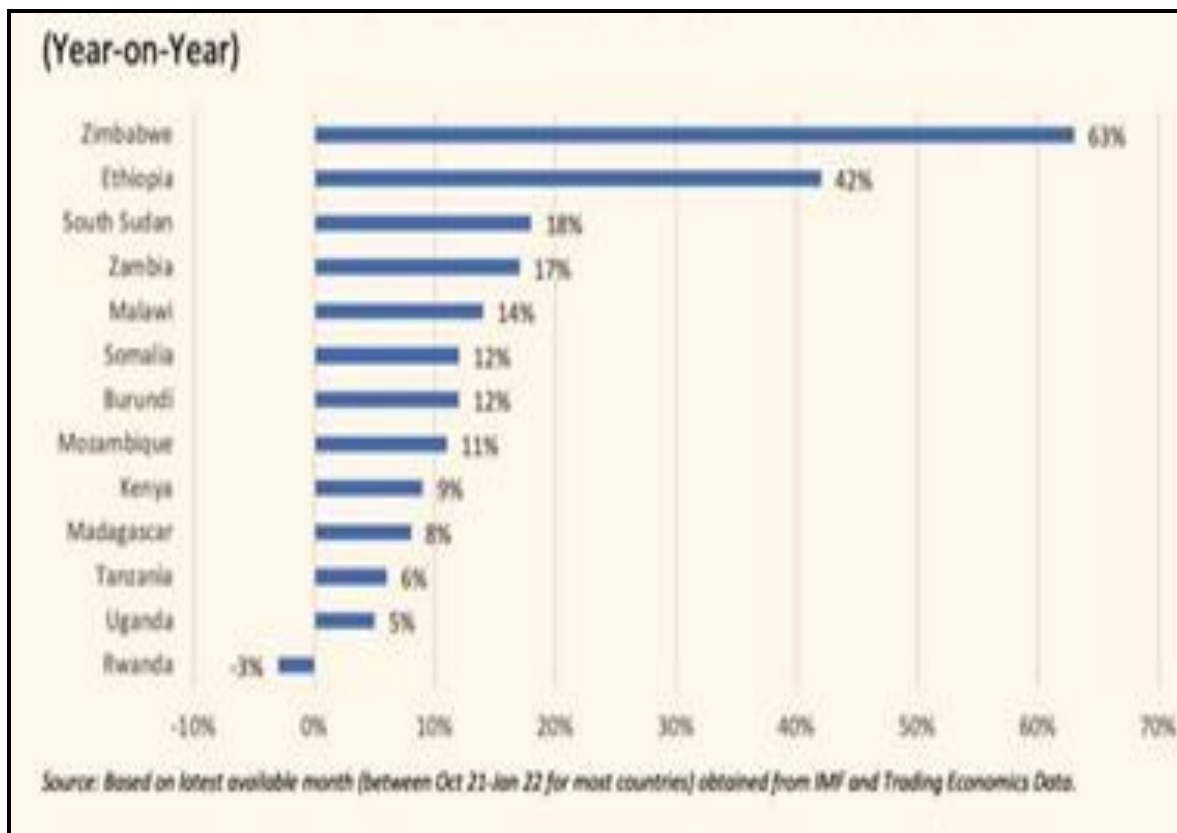
Innovation holds great promise for improving climate resilience and agricultural output. Enhancing farm inputs and production methods, optimizing the use of water and soil resources, and restoring natural capital and ecosystems could potentially triple agricultural productivity in Eastern and Southern Africa. Digital solutions for climate risk monitoring can help respond to climate shocks in a way that increases resilience by anticipating their arrival. Drones, soil sensors, and automated watering systems can increase agricultural efficiency.

**Table No.1: Research strategies and focuses on agri-food system transition**

S.No	Strategy for researches	References
1	Transitions have to be developed and flourished	Sustainability Transitions Research Network (2010)
2	Transitions tended to focus on mobility and energy systems	Hinrichs, 2014, Markard <i>et al</i> , 2012; Truffer and Markard, 2017).
3	The current food system needs a significant transformation if it is to feed a growing population	Elzen <i>et al</i> , 2017, Gladek <i>et al</i> , 2016; IPES-Food, 2015).
4	Increasing attention both in academic literature and policy	Lachman, 2013, Loorbach <i>et al</i> , 2017, Markard <i>et al</i> , 2012
5	Transitions initially referred to large-scale transformations during which the structure of society fundamentally changes	(Rotmans <i>et al</i> , 2001
6	Governing transitions is considered as a separate research theme	STRN, 2017),
7	Transitions imply a restructuring of power relations and politics	Avelino <i>et al</i> , (2016
8	Biofuels may create sustainability trade-offs in Agrifood systems.	Partzsch (2017
9	Power relations determine whether agro-ecology conforms to the dominant regime or transforms it	Levidow <i>et al</i> , 2014)
10	Transition politics and governance in agriculture show that politics may constructively interfere with the dynamics of transition	Grin (2012)
11	Transitioning compares agricultural intensification with agro-ecology	Ely <i>et al</i> , (2016)
12	Understanding actors' relations and power dynamics at different levels is fundamental to fostering transition.	Sherwood and Paredes, 2014)
13	Rooting sustainable practices in everyday action and politics is needed	Minh <i>et al</i> , 2014
14	Agents such as civil society organizations and public institutions in Agrifood sustainability transitions	Stahlbrand (2016)
15	A strategic practice management approach is needed to transition urban food systems	Cohen and Ilieva (2015)
16	The clashing of different knowledge systems (based on distinct values, beliefs and epistemologies) is one of the factors	Maye (2018)
17	Analysis of the relationship between institutionalized politics and the rise and fall of the New Food Frontier is needed	Crivits <i>et al</i> , (2018)
18	Eating practices lead to transitioning	Vinnari and Vinnari (2014)
19	Civil society organizations as one of the stakeholders in food transitions	Davies and Doyle (2015)
20	'Food for Life' to conceptualize scaling as a form of policy transfer.	Lawhon and Murphy (2012)
21	'Strong colonization of agriculture', through agro-ecological transition	Duru <i>et al</i> , (2014)
22	Agrifood transitions uses different modelling approaches such as agent-based models	Davies, 2014, Davies and Doyle, 2015, Quist, <i>et al</i> , 2011)

**Table No.2: Model themes on the Research agenda of the Transitioning Agrifood system**

S.No	Research themes	References
1	Power and politics	Vitterso and Tangeland (2015), Ely <i>et al</i> , (2016), Meek (2016), Stahlbrand (2016), Crivits <i>et al</i> , (2018), Partzsch (2017), Rosin <i>et al</i> , (2017), Vivero-Pol (2017); Kuhmonen (2017)
2	Managing transitions	Cohen and Ilieva (2015), Van Gameren <i>et al</i> , 2015, Davies and Doyle (2015), Halbe <i>et al</i> , (2015), Rossi (2017), Van Den Heiligenberg <i>et al</i> , (2017), Crivits <i>et al</i> , (2018), Dedeurwaerdere <i>et al</i> , (2017), Hansen and Bjorkhaug, 2017
3	Civil society	Davies and Doyle (2015), Levidow (2015), Moragues-Faus and Morgan (2015), O'Rourke and Lollo (2015), Stahlbrand (2016), Pitt and Jones (2016), Prasad (2016), Dedeurwaerdere <i>et al</i> , (2017), Hauser and Lindtner (2017), Isgren and Ness (2017)
4	Firms	Slingerland and Schut (2014), Levidow (2015), Ferguson (2016), Langendahl <i>et al</i> , (2016), Randelli and Rocchi (2017), Rosin <i>et al</i> , (2017)
5	Sustainable Consumption	Clear <i>et al</i> , (2016), Jurgilevich <i>et al</i> , (2016), Liu <i>et al</i> . (2016), Mylan <i>et al</i> , (2016), Stahlbrand (2016), Ely <i>et al</i> , (2016), Paddock (2017), Rossi (2017), Wonneck and Hobson (2017), Dedeurwaerdere <i>et al</i> , (2017)
6	Geography	Santhanam-Martin <i>et al</i> , (2015), Hermans <i>et al</i> , (2016), Pitt and Jones (2016), Wonneck and Hobson (2017)
7	Environmental Modelling	Ghaffari <i>et al</i> , (2015), Moraine <i>et al</i> , (2016), Rodríguez Morales and Rodriguez Lopez (2017), Fauchald <i>et al</i> , (2017), Jacobs <i>et al</i> , (2017), Kuhmonen (2017)



**Figure No.1: Food price inflation in selected Eastern and Southern Africa Countries**

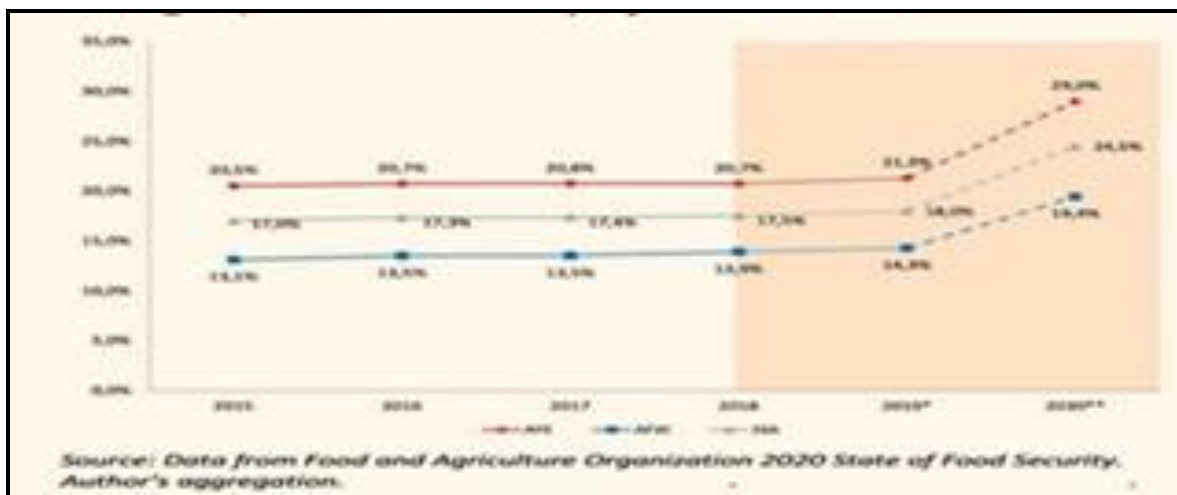


Figure No.2: Prevalence of Undernourishment in SSA by subregion, 2015-2019 with projections to 2030

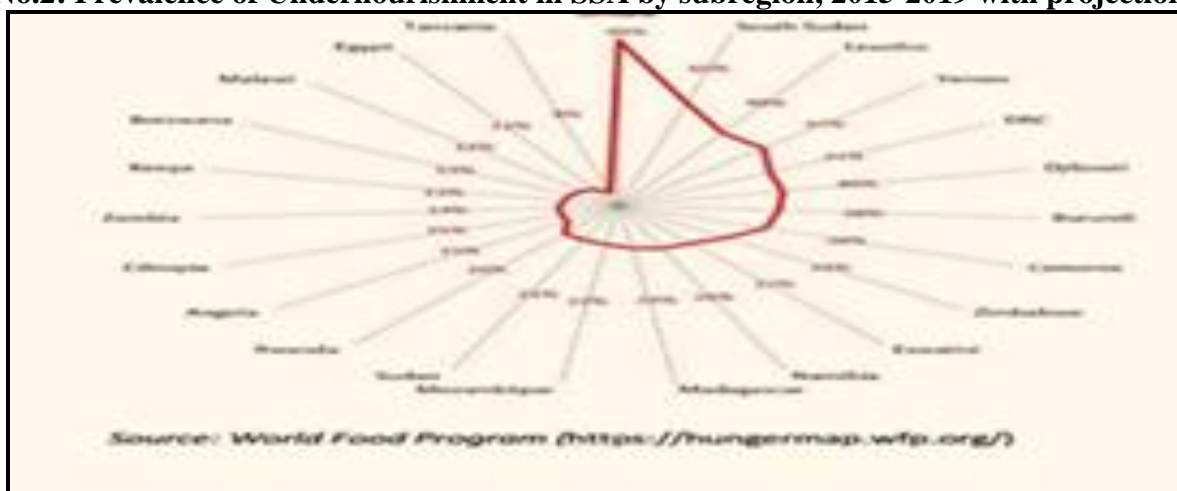


Figure No.3: Share of population with insufficient food consumption as of January 2022

## CONCLUSION AND THE WAY FORWARD

### CONCLUSION

Africa is not a problem to be solved, but is a business opportunity and a food to be embraced, but African agriculture is at a turning point. African countries must match their production goals with market demands, adopt up-to-date farming practices so that they can fully tap their natural production potential. A serious economic challenge currently facing Africa is its food sector, which is now one of the continent's top development priorities. African farmers and consumers need to address the challenge posed by the food sector. At present, 30% of the food consumed in Africa is imported, with cost of between 30 and 50 billion US dollars per year and according to the International Food Policy Research Institute, it could climb to 150 billion USD by 2030.

Food systems transformation requires farm-level changes in the way our food is produced. Considerable research is needed to understand the economics of it to form the basis for informed discourse whether nature-positive production is an attractive option for smallholder farmers. The research agenda needs to be much broader, to include bio economic models of farm households, whole-farm economic analyses of food systems adoption decisions, as well as more behavioural studies to understand the complexities of decision making at the farm level. Appropriate research might also include more meta studies, as well as systematic ex post impact evaluations of promising interventions. There is also considerable scope for drawing more systematically on the wealth of experience from previous and ongoing work by

agricultural researchers, grassroots NGOs, farmer organizations, rural financial organizations, and donor and government agencies who have long been engaged in redressing the problems of smallholder farmers in Africa.

Driving the Agrifood transitioning agenda requires an understanding of farmers' production priorities and ambitions, as well as their overall impressions of the anticipated managerial and technological changes. Research could benefit from the many experiences with related principles, such as organic and conservation agriculture, among others, even though data on nature-positive production is still generally lacking. This would help to understand the institutional, policy, and technical innovations required to achieve impact at scale. How will Africa meet its food needs in the upcoming years is the question.

The African continent has unique potential, it has “60% of the earth’s unused fertile land”, which represents 450 million hectares. Africa only uses 45% of this land and 2% of its renewable water resources, compared to a global average of around 5% and it has untapped land and water resources. Working on Agrifood Value chain with food system economics from agriculture production through to food consumption, energy consumed at each stage in the chain is crucial.

### **THE WAY FORWARD**

For successful future food system transitioning, the following areas need strong focus;

We need to design proper policy, regulatory and institutional incentives that create an enabling environment and de-risk the transition to nature-positive production systems.

The old ‘business as usual’ approach of government has to change

Data on analytics that provide more knowledge on the trade-offs and farmers’ multiple production goals with economic point of views.

Economists should have participated in each sector planning and economic policy formulation for successful intervention.

Focus and being open to international trade and capital, rather than aid.

Work on mechanized production system and improvement in technology

The sector leaders, experts and scientists should walk what they are talking alone at silo.

Connecting Africa to exchange products and resources within and abroad. Africa must patronize made in Africa goods and innovations to motivate African inventors.

### **ACKNOWLEDGEMENT**

The authors wish to express their sincere gratitude to Department of Agricultural Economics (Agrifood Management and Policy Program), Faculty of Agronomy and Forestry Engineering, University of Eduardo Mondlane (UEM), Mozambique for providing us necessary facilities and guideline to carry out this review work.

### **CONFLICT OF INTEREST**

The authors declare that there are no conflicts of interest related to this study.

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**Please cite this article in press as:** Teklu Gebretsadik and Rafael Uaiene. Africa's Agrifood system needs transition; An economist's perspective on the matter, *International Journal of Nutrition and Agriculture Research*, 10(1), 2023, 1-14.