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Commentary

Avoid ultra-processed foods, not food processing: Why processed foods matter for nutrition security, economic growth, gender equality, and sustainability agendas in Africa

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Abstract

With rising levels of obesity and associated non-communicable diseases in Africa, there is an increasing concern with regards to ultra-processed foods. Whilst regulation of these foods is important, it can lead to the demonization of all forms of processed foods. However, healthy processed and minimally processed foods play a crucial role in reducing food loss and waste, improving food safety, and providing scarce nutrients otherwise inaccessible or unaffordable. Further potential lies in improving gender equality, and boosting economic opportunities through a growing agro-processing sector. A nuanced approach is therefore needed, leveraging the opportunities of (minimally) processed foods whilst discouraging sales and consumption of ultra-processed foods.

INTRODUCTION

As Africa's agrifood systems are transforming, value chains are becoming more complex and food environments are changing, with purchased, processed, and high-value food products accounting for larger shares of consumers' diets (Jenane et al. 2022). Rising incomes, rapid urbanization, and globalization contribute to a nutrition transition from traditional diets rich in cereals, roots, tubers, and vegetables, to diets high in fats, sugars, and salt (Hashad et al. 2024; Shekar & Popkin, 2020). As a result, the triple burden of malnutrition - the coexistence of underweight, micronutrient deficiencies, and overweight - is increasingly a challenge in African countries (Christian & Dake, 2022). Much of the recent discourse surrounding the triple burden of malnutrition in low- and middle-income countries (LMICs) focuses on the rising prevalence of obesity and nutrition-related non-communicable diseases (NCDs) (Agyemang et al. 2016; Ameye & Swinnen, 2019; Roberto et al. 2015). Further, studies emphasize the emergence and increasing reliance on ultra-processed foods (UPFs) in LMICs through the spread of supermarkets and fast-food chains (Mockshell et al. 2022; Reardon et al. 2021; Sauer et al. 2021).

Whilst these findings are important to address individual and public health concerns and must be considered a policy priority, it has also led to negative generalizations across all types of processed foods (Knorr & Augustin, 2021). While scientific discourse continues to grapple with precise definitions and categorizations of processed foods (Gibney, 2019; Sadler et al. 2021), research into consumer perceptions reveals a prevailing view that (all) processed foods are inherently unhealthy (Evans et al. 2010; Hässig et al. 2023; Hüppe & Zander, 2021). Note that most studies on consumer perceptions of food processing are conducted in higher income regions. Less is known about the associations in lower income regions, or Africa more specifically. However, as we will detail, distinguishing between (minimally) processed foods and UPFs is important, and crucial for designing targeted regulations and policies aimed at achieving nutrition security, with wider positive spillover effects to gender parities and economic growth.

PUBLIC HEALTH CONCERNS RELATED TO UPFS: OVERWEIGHT, OBESITY & NCDS

Although the prevalence of overweight in African children has stagnated in relative terms (at 5% between 2012 and 2022), this still entails a substantial increase in absolute numbers due to population growth (FAO et al. 2023). At the same time, the prevalence of adult obesity in Africa shows a steady increase, from 12.8% in 2012 to 16.2% in 2022, with large regional disparities (e.g., around 30% in Northern and

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Southern Africa, compared to about 10% in West, East, and Central Africa in 2022) (FAO et al. 2023). Particularly in urban settings, this increase is likely driven by an increased consumption of UPFs and more sedentary lifestyles (Demmler et al. 2018; Holmes et al. 2018).

Several food classification systems exist e.g., FoodEx (European Food Safety Authority), the EPIC system (Slimani et al. 2009), LanguaL (Ireland & Møller, 2010) and NOVA (Monteiro et al. 2019), of which NOVA is most commonly used (Sadler et al. 2021). The NOVA classification divides food into four categories according to the degree of processing: unprocessed or minimally processed foods; processed culinary ingredients; processed foods; and ultra-processed food and drink products. Processing increases the shelf life of foods and modifies or enhances their flavour and texture, often by adding salt, sugar, and/or fat. Ultra processed foods go beyond this to include artificial colours and flavours, preservatives, thickeners, emulsifiers, and artificial sweeteners that promote shelf stability, preserve and enhance texture, and increase palatability.

Reardon et al. (2021) show that while consumers in Africa have increasingly been consuming processed foods over the past 50 years, the trend has accelerated with a surge on the supply side through growing agro-processing small and medium-sized enterprises (SMEs) and large private food and beverage companies flooding the market with packaged UPFs and sugar-sweetened beverages. Increasingly, this has been coupled with aggressive marketing strategies and advertisements in the absence of targeted regulation (Bankole et al. 2023; Monteiro et al. 2019). UPFs are particularly concerning due to their heightened palatability, the increased calorie absorption from these foods (Hamano et al. 2024), and their lack of other beneficial nutrients like fibre, vitamins, and minerals (Maldonado-Pereira et al. 2022). It is, in particular, the overconsumption of ultra-processed foods that is linked to increasing levels of overweight, obesity and associated NCDs, such as type 2 diabetes, cancer, hypertension, cardiovascular disease, and overall mortality (Lane et al. 2021). However, this does not mean we should demonize food processing per se – (minimally) processed foods can provide many opportunities.

THE OPPORTUNITIES OF PROCESSED FOODS

While a diet composed of whole foods, fresh fruits and vegetables remains best for human health, it is important to acknowledge that food processing plays a crucial role in extending shelf life, reducing food loss and waste, improving food safety, and providing important nutrients to communities that are either unable to afford or access a continuous and reliable supply of fresh foods. In addition, processed foods present a range of further opportunities for gender equality and economic growth, particularly in the context of Africa's rapidly transforming agrifood systems. See Figure 1.

NUTRITION SECURITY

It is estimated that almost 5 billion people are affected by micronutrient deficiencies globally (Passarelli et al. 2024). Particularly concerning in Africa is the underconsumption of vitamin B12, riboflavin, vitamin E, folate, iron, iodine, selenium, and calcium. Many of these nutrients are derived from animal-sourced foods, often unaffordable (Hirvonen et al. 2020) and associated with food safety concerns in LMICs (Dzudzor et al. 2024). Due to this, consumers often prefer packaged/processed foods (Liguori et al. 2022). This can include processed foods that are naturally nutrient-dense, such as canned tomatoes or tomato paste (vitamin A, vitamin C), cheese (calcium, zinc, riboflavin), and tinned fish, like sardines, (calcium, zinc, vitamin B12). Besides these processed foods, fortification of foods can also make scarce nutrients more readily available, for example in the forms of iodized salt, iron-fortified bouillon cubes (e.g. Maggi), and vitamin A-fortified cooking oil.

Figure 1. Opportunities of processed foods in Africa

Traditional dietary patterns across the globe, particularly those associated with long and healthy lives - such as those found in Mediterranean countries and East Asia - may include moderate amounts of lightly processed foods (Santacroce et al. 2024). Pickled or fermented foods are associated with favourable health outcomes and are valuable sources of often scarce nutrients. Typically protein-rich examples in Africa include 'Iru/Dawadawa', 'Tempeh', 'Netetu', and 'Soumbala' (Nigeria, Ghana, Senegal, Burkina Faso, respectively) produced from African locust beans, or fermented dairy products such as 'Nunu' (Nigeria, Ghana), 'Pendidam' (Cameroon), 'Fene' (Côte d'Ivoire, Mali), 'Suusac' (Kenya, Somalia), 'Wara' (Nigeria, Togo), 'Gariss' (Sudan), 'Nyamie' (Ghana), 'Leben/lben' (Tunisia) and 'Kulenaoto' (Kenya) (Obafemi et al. 2022).

Industrial food processing has furthermore increased the safety and stability of the food supply in many regions (Floros et al. 2010). Particularly during acute shocks or seasonal variations in food availability, these foods can become important dietary supplements. Adaptable to each context, (bio)fortification and preservation of foods through food processing can aid in achieving nutrition security (Knorr & Augustin, 2021).

FOOD LOSS AND WASTE

Food loss and waste (FLAW) is a major challenge in African agrifood systems. Von Braun et al. (2023) have described the

simultaneous coexistence of FLAW and the prevalence of hunger, undernourishment, and malnutrition as a failure of contemporary food systems. Food losses in the production, processing, and marketing segments of agrifood systems contribute significantly to FLAW. In urban food systems, however, food waste at the retail, household, and restaurant levels has become an increasingly serious challenge. In Africa, FLAW constitutes 40% of waste, while it accounts for over half of the solid waste generated in urban areas, resulting in substantial environmental, financial, and social challenges for cities (Silpa et al. 2018). If left unaddressed, FLAW will continue to increase as urbanization continues to rapidly increase.

Food processing can be instrumental in mitigating FLAW by extending the shelf life of perishable goods. Methods such as drying and fermenting offer cost-effective means of conserving fresh foods, whilst canning, freezing, dehydration, and fruit coating effectively preserve the nutritional content of many types of food, enabling longer storage and facilitating broader distribution, particularly to remote areas with limited access to markets and nutritious foods (Augustin et al. 2016; Glatzel et al. 2024). In countries like Malawi, food markets - particularly in rural areas - experience significant market failures in providing nutrient-dense, perishable foods (Hülsen et al. 2024). In such contexts, food processing can serve as a valuable tool for preserving items that are prone to spoilage and carry a high risk of foodborne diseases. As such, food processing can play a crucial role in promoting sustainability and efficiency within the agrifood value chain.

GENDER DISPARITIES

In many regions, women still bear primary responsibility for food preparation (Ruel & Alderman, 2013). At the same time, urbanization, globalization, and economic growth raise the opportunity costs of housework and cooking. Female time poverty - the competing demands on a woman's time - increases trade-offs between income-generating and domestic/childcare activities (van den Bold et al. 2021), especially as more women are pursuing job opportunities outside their homes, villages, or regions. This rising strain can negatively impact diets by shifting away from traditional, home-cooked meals to a typically higher intake of energy, sugar, and fat-dense convenience foods and snacks (Yiga et al. 2020).

Food processing provides two key opportunities in this space: (1) reducing time pressures on women by increasing convenience or reducing preparation times of healthy foods, and (2) maintaining female, child, and household nutritional requirements by increasing shelf-life and reducing substitution to less nutrient-dense foods. An important example is that of pre-cooked canned legumes, which substantially reduces soaking and cooking time. Cereal-based products such as ready-to-cook/eat millet, sorghum, and teff can also provide important nutrients in minimal cooking times. These products can be further enhanced with the addition of naturally protein- or micronutrient-dense foodstuffs e.g., cowpea-blended maize porridge (Ngoma et al. 2018) or pasta from yellow cassava and leafy vegetables (Lawal et al. 2021). Important challenges exist in maintaining the attractiveness of traditional eating patterns, often more nutrient-dense than 'Westernized' or current convenience diets (Cabral et al. 2019). Here, healthy processed foods are an enabler and address potential trade-offs so that women can exercise agency and more freely decide to pursue education or employment opportunities.

ECONOMIC GROWTH

The midstream segments of agricultural value chains are becoming increasingly important in response to heightened demand for more and more varied food. The growing demand for processed foods and the sharp increases in the volume of food handled have led to a rapid growth in the number of firms investing in midstream segments, such as processing and packaging (Reardon et al. 2015). Africa's agrifood processing sector is central to these trends, and its growth will significantly determine whether the rising demand from urban food markets is met through local production or imports (Ellis et al. 2022). Moreover, the processing sector serves as a vital link between smallholder farmers and consumers. The commercialization of Africa's agro-processing sector can hence play a crucial role in enhancing income opportunities for farmers and generating employment along food value chains (Jenane et al. 2022). In fact, studies suggest that commercialized agriculture can lead to benefits at multiple levels, extending beyond rural production areas to the economy as a whole (Kubik et al. 2022). At the farm level, commercialization enables smallholder farmers to increase their incomes, enhancing their resilience. The income earned from selling produce can stimulate further production and additional income, which, when spent on local goods and services, stimulates the off-farm sector and promotes growth in the broader rural economy, benefiting the rural population at large. At the national level, agricultural commercialization serves as a key catalyst for economic transformation and growth, as revenues generated in the agricultural sector drive demand for goods throughout the economy and provide financial resources for public investments (Badiane et al. 2022).

Moreover, local foods, including traditional staples and often highly nutritious underutilized crops, are becoming more widely available in processed forms within urban markets. Retail inventories conducted in Mali, Ghana, and Tanzania have documented the availability of locally and regionally processed food products made from local staples, such as fermented milk products, fufu flour, maize flour, and plantain chips (Theriault et al. 2017). Yet, a large share of processed food products is still being imported, and much untapped potential remains for local producers and agro-processors to enter expanding urban markets.

Africa remains a net food importer, with annual food imports estimated at approximately USD 80 billion compared to food exports valued at USD 61 billion. Its annual food import bill is projected to rise to USD 90 billion by 2030 (African Union/AUDA-NEPAD, 2021). Moreover, the share of processed foods in Africa's food imports rose from 28% in 2000 to 33% in 2020 (UNCTAD, 2024). In addition, the increasing consumption of food away from home, ready-made meals, and snacks (Ignowski et al. 2023) provide a low-hanging fruit for local agro-processing sectors. A greater availability of healthy, processed foods and snacks can also promote the use of underutilized crops, as well as traditional

staples, and animal-sourced foods in convenient and less perishable forms, enabling consumers to integrate nutritious options into their busy lifestyles (Glatzel et al. 2024).

CONCLUSION

There is significant potential to tap a wide range of opportunities and strategically support Africa's emerging agro-processing sector to deliver healthy diets, reduce FLAW, generate employment and economic growth opportunities, and strengthen gender equality. Whilst the consumption of UPFs is concerning and should be regulated, it is important to separate these foods and their negative impacts from the potential benefits that healthy (minimally) processed foods offer. A continued emphasis should remain on the creation of micronutrient-dense foods - whether these be ingredients to add to existing recipes through traditional processing techniques or the use of technological advances such as biofortification, or healthy ready-to-eat meal and snack options.

AUTHOR CONTRIBUTIONS

HA: Conceptualization, Writing- Original draft preparation, Writing- Reviewing and Editing, Visualization, Project administration. KG: Conceptualization, Writing- Original draft preparation, Writing- Reviewing and Editing. Both authors approved the final verson and consent for the publication.

CONFLICT OF INTEREST

The authors declare that they have no other potential conflicts of interest.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN SCIENTIFIC WRITING

No generative AI or AI-assisted tools were used in the preparation of this work.

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