INTRODUCTION TO UPF
The African Centre for Biodiversity (ACB) is committed to dismantling inequalities and resisting corporate industrial expansion in Africa’s food and agriculture systems.

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What is ULTRA-PROCESSED FOOD?

UPF is defined as formulations of ingredients, mostly of exclusive industrial use, that result from a series of industrial processes and contain little or no whole foods (Monteiro et al., 2019).

Besides often being high in salt, sugar, and unhealthy oils, UPF includes ingredients with no or rare culinary use, which you would never find in any kitchen. These cheap additives, which themselves were subjected to intensive industrial processes, are used to extend product shelf life and make the final product hyper-palatable and in some cases addictive (Monteiro et al., 2019.; Steele et al., 2016; Kruger et al., 2023).

These include varieties of sugars (fructose, high-fructose corn syrup, ‘fruit juice concentrates’, inverted sugar, maltodextrin, dextrose, lactose), modified oils (hydrogenated or interesterified1 oils), and protein sources (hydrolysed proteins, soya protein isolate, gluten, casein, whey protein and ‘mechanically separated meat’), and cosmetic additives, used only in the manufacture of UPF. Cosmetic additives include flavour enhancers, colourants, emulsifiers, emulsifying salts, sweeteners, thickeners, foaming, anti-foaming, bulking, carbonating, gelling and glazing agents.

The processes to manufacture UPF involve several steps and different industries. It starts with the fractioning2 of whole foods into substances that include sugars, oils and fats, proteins, starches and fibre. These substances are often obtained from a few so called high-yielding crops (maize, wheat, soya, sugarcane or beet), responsible for large scale land-cover change, linked to industrial agricultural production, as well as from puréeing or grinding animal carcasses, usually from intensive livestock farming, which uses animal feed from, again, the same crops (Leite et al., 2022; Leite et al., 2018; Borges et al., 2021; Fardet and Rock., 2020, 2021). Some of these

1. interesterification is a process that rearranges the fatty acids of a fat product.
2. A process whereby a substance is separated into individual compounds or fractions.
substances are then submitted to hydrolysis, hydrogenation, or other chemical modifications. Subsequent processes involve the assembly of unmodified and modified food substances with little, if any, whole food and using industrial techniques such as extrusion, moulding and pre-frying. Colours, flavours, emulsifiers, and other additives, as described above, are then frequently added. Processes end with sophisticated packaging usually made with industrially-produced synthetic materials.

UPF is increasingly becoming the backbone of what is being called a ‘globalised diet’, dominating the global food supply. While UPF tends to be associated with diets in higher- and middle-income countries, increasingly, low-income countries are shifting towards diets with more UPF, due to their relative affordability, accessibility, and status associated with changing food environments, social relations, and economic conditions.

This is primarily due to urban migration, increased income, increased wage labour reliance, and limited time for food preparation (Turner et al., 2018; Constantinides et al., 2021; Reardon et al., 2021). We are witnessing increasing consumption of UPF across the African continent as well, with dietary patterns shifting towards more processed and less diverse diets (Leite et al., 2022; Knorr et al., 2020).

3. The chemical breakdown of a compound due to reaction with water.
4. The reaction between unsaturated liquid oil and hydrogen absorbed on a metal catalyst.
Food processing, i.e. the conversion of raw materials to edible, functional, and culturally-acceptable food products, has been historically practiced by many traditional communities with long-established dietary patterns all over the world, many of which are known to promote long and healthy lives (Knorr et al., 2020). Many foods have been processed in some form, often to preserve foods that are produced seasonally, to ensure year-round food supply. Fundamentally, food processing, in household, artisanal or factory settings, aims to ensure product safety, digestibility and palatability, as well as improving shelf life and simplify meal preparation (Braesco et al., 2022., Augustin et al., 2016). There are many benefits to processing foods, such as preservation and fermentation, as examples, including making food more digestible and available, and increasing dietary diversity and food security. Monteiro et al (2019: 939) emphasise that the main problem is not the processing but rather the increasing consumption, dominance and reliance on ultra-processed, pseudo-foods, which in many cases should not be considered food at all (Van Tulleken, 2023).

The NOVA system of classification is the most commonly used to characterise the nature, extent and purpose of the industrial processing of foods, and includes all physical, biological and chemical methods used during food manufacturing, including the use of additives (Monteiro et al., 2019; Monteiro et al., 2018). It assigns foods to one of four groups:

- **NOVA1** contains “unprocessed or minimally processed foods”; namely, the edible parts of plants or animals that have been taken directly from nature or that have been minimally modified/preserved, such as removal of inedible or unwanted parts, drying, crushing, grinding, fractioning, roasting, boiling, pasteurisation, refrigeration, freezing, placing in containers, vacuum packaging or non-alcoholic fermentation. None of these processes add salt, sugar, oils, or other food substances to the original food. Their main aim is to extend the life of grains/cereals, legumes/pulses, vegetables, fruits, nuts, milk, meat, and other foods, enabling their storage for longer use, and often to make their preparation easier or more diverse.

- **NOVA2** contains “culinary ingredients”, such as salt, oil, sugar, or starch, which are produced from NOVA1 foods. Processes include pressing, centrifuging, refining, extracting, or mining, and their use is in the preparation, seasoning, and cooking of group 1 foods.
• NOVA3 contains “processed foods”, such as freshly-baked bread, canned vegetables or cured meats, which are obtained by combining NOVA1 and NOVA2 foods. These are products made by adding salt, sugar or other substances found in group 2 to group 1 foods, using preservation methods such as canning and bottling, and, in the case of breads and cheeses, using non-alcoholic fermentation. Food processing here aims to increase the durability of group 1 foods and make them more enjoyable by modifying or enhancing their sensory qualities.

• NOVA4 contains “ultra-processed foods”; namely, ready-to-eat industrially formulated products that are made mostly or entirely from substances derived from foods and additives, with little, if any, intact Group 1 food. UPFs are formulations of food substances often modified by chemical processes and then assembled into ready-to-eat, hyper-palatable food and drink products, using flavour enhancers, colourants, emulsifiers and a myriad other cosmetic additives.
Examples of UPFs

Some examples of UPF include:

- Ice cream
- Cakes and pastries
- Cakes and cake mixes
- Hot dogs and other reconstituted meat products
- Breakfast ‘cereals’
- Margarine and other spreads
- Burgers
- Sausages
- Sweet or savoury packaged snacks
- Powdered biscuits
- Pre-prepared pies
- Pasta and pizza dishes
- Mass-produced packaged bread and buns
- Sugar-sweetened beverages
- Desserts
- Chocolate
- Carbonated soft drinks
- and many other products

(Monteiro et al., 2019).

When one or more of the additives associated with NOVA4 class are included this would be considered an UPF.

It is necessary to make distinctions between the foods that may be either minimally processed, such as artisanal or freshly baked bread and industrially produced bread, and between unhealthy foods (whether traditional or not) and UPF, as in Figure 1.
The concerns around UPF extend beyond high levels of oil, sugar, and salt, but the extreme processing methods and additives used to create these products (Sulcas, 2023).

In fact, many UPF products claim to be healthy, such as protein and energy bars, yogurt, cereals, and breads, amongst many others, but are themselves subjected to a series of processes with unfamiliar ingredients, to increase aroma, texture, and shelf-life. It is also important to make the distinction between traditional fortification ingredients and non-UPF thickeners, versus unrecognisable and highly treated, industrially produced, edible substances associated with UPF5 (Van Tulleken, 2023).

5. Such as corn starch versus high fructose corn syrup.
Processes and ingredients used in the manufacture of UPF, made and promoted by transnational and corporate giants, are designed to enable overconsumption through their availability, hyper-palatability, poor satiability and displacement of wholefoods in diets (Monteiro et al., 2018). This is largely driven by the industrialisation, technologisation, corporatisation and globalisation of agricultural and food systems. The growing economic and political power of corporations and their supply, production, and distribution networks, as well as direct policy interference in some cases, undermines and displaces local foodways and food economies, and redirects vital finances away from the small-scale production of unprocessed and minimally-processed foods (Baker et al., 2020; Hadjikakou & Wiedmann, 2017; Monteiro et al., 2018).

A growing body of evidence reports that UPF consumption – typically comprising energy-dense products that are high in sugar, unhealthy fats and salt, and low in dietary fibre, protein, vitamins and minerals – is associated with a suite of illnesses (Elizabeth et al., 2020; Lane et al., 2021). UPF induces high glycaemic responses, has low satiety potential and creates a gut environment that selects microbes that promote diverse forms of inflammatory diseases (Zinöcker and Lindseth, 2018).
Increases in the dietary share of UPFs result in the deterioration of the nutritional quality of the overall diet (Monteiro et al., 2019) and increased obesity (Mendonça et al., 2016); hypertension (Mendonça et al., 2017); coronary and cerebrovascular diseases (Srour et al., 2018); dyslipidaemia (Rauber et al., 2015); metabolic syndrome (Lavigne-Robichaud et al., 2018); gastrointestinal disorders (Schnabel et al., 2018); breast cancer, type-2 diabetes, metabolic syndrome, irritable bowel syndrome, cancer, depression, and all-cause mortality (Rico-Campà et al., 2019); among others.

The increasing consumption of UPF in Africa is linked to what is called the dual, or even triple burden of malnutrition, where there is simultaneously a rising incidence of obesity, undernutrition and micronutrient deficiencies — leading to diet-related non-communicable diseases (Karanja et al., 2022; Reardon et al., 2021; FAO et al., 2020; HLPE, 2020; HLPE, 2017). Diseases related to over-nutrition, such as obesity and diabetes, are on the rise due to increased consumption of UPF, while diseases related to under-nutrition, such as wasting and stunting, persist (Mockshell et al., 2022; Reardon et al., 2021). Studies suggest that a limited decline in undernutrition in sub-Saharan Africa may be partially linked to the increasing consumption of UPF among infants and young children (Feeley et al., 2016; Nordhagen et al., 2019; Pries et al., 2019). In particular, the lifelong negative impacts of malnutrition at gestational and early childhood stages, associated with poor maternal health and nutrition and nutritionally weak complementary feeding, can be irreversible (Frayne & McCordic, 2018). This undermines the second and third United Nations Sustainable Development Goals—to end hunger and to ensure healthy lives.7

UPFs are also considerable drivers of environmental degradation (Anastasiou et al., 2022). Along their entire production and supply chain UPFs are counterproductive for the need to radically reduce the environmental impacts of the current industrial agricultural and food system.

Despite being completely superfluous and in fact, as described above, detrimental to human health, in a range of high-income countries, as outlined by Anastasiou et al. (2022), UPF accounts for:

- **17%—39%** of total diet-related energy use,
- **36%—45%** of total diet-related biodiversity loss,
- Up to **1/3** of total diet-related greenhouse gas emissions, land use and food waste, and
- Up to **1/4** of total diet-related water-use among adults

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7. The concept of healthier diets has gained traction in the international policy discourse and has been incorporated into the Sustainable Development Goals framework (SDG 2) and the UN Decade of Action on Nutrition 2016—2025, which provide global and national impetus to address malnutrition (Karanja et al., 2022).
Increased consumption of UPF, intricately linked to the industrialised and
globalised food system, is responsible for the expansion of industrial
agriculture, widespread land-cover change, and eutrophication due to excessive
agrochemical use. This has and continues to erode essential agricultural
biodiversity\(^8\) necessary for a resilient and sustainable food supply. Over and
above this, plastic and other pollution of the excessive synthetic packaging
associated with UPF has a range of other social, health and ecological impacts.

The intrusion of UPF into African diets, as a result of aggressive free-trade agreements
and marketing campaigns, has meant that many are now ubiquitous with increasingly
westernised lives and lifestyles. Yet, these foods threaten the future of African seed, food, and
knowledge systems, which are the foundation of African cultures, diets and economies, and
necessary in the context of rampant climate change and biodiversity loss.

Across the lifecycle of UPF, from the genetically-uniform, monoculture
production of a few industrial crops, to their chemical and carbon-intensive
manufacturing and distribution, the increasing accessibility and affordability of
UPF makes them an increasing threat to the health and well-being of people
and the planet.

\(^8\) The variety and variability of animals, plants and
microorganisms that are used directly or indirectly for food
and agriculture. Agrobiodiversity comprises the diversity
of genetic resources and species used for food, fodder,
fuel and pharmaceuticals. It includes the diversity of
non-harvested species that support food production, and
those in the wider environment that support and diversify
agroecosystems.
There is a critical gap in knowledge on consumers’ interactions with the food systems in Africa and, in particular, in the discussion on food system transitions on the continent (Battersby, 2019; IPES-Food, 2017).

An agroecological food system transition places smallholder farmers, territorial markets, traditional retailers, and the dynamic networks that facilitate the movement of produce at the centre, bridging the urban and rural landscapes.

Traditional retail, as described in greater detail in the following factsheet in this series, is intricately linked to rural networks, and the impact of shifting dietary patterns has impacts beyond the retail site, extending across the production, processing and distribution systems that they operate within.

Policies must aim to effectively enhance access to diverse foods and restrict the embeddedness of UPF, which is displacing more diverse diets dependent on diverse food systems, while strengthening local foodways and their ecological, social, and health benefits. In Africa the complexity grows, where increasingly globalised value chains create new and potentially useful income streams, particularly for women and small-scale businesses, and reduces the burden on women in terms of food preparation. This suggests an intersectional approach is needed when considering policies that increase access and affordability of un/minimally processed produce, and restrict access and affordability of UPFs. These issues will be expanded on throughout the UPF in Africa series.
References


IPES-Food. 2017. Unravelling the food-health nexus: addressing practices, political economy, and power relations to build healthier food systems.


