

Farmers' Seed System as the Bedrock of Food System Transformation





Acronyms

ASEAN	Association of Southeast Asian Nations
CBD	Convention on Biological Diversity
FAO	Food and Agriculture Organization
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
PGRFA	plant genetic resources for food and agriculture
SDGs	Sustainable Development Goals
TFBCs	transnational food and beverage corporations
UPFDs	Ultraprocessed foods and drinks
UPDs	Ultraprocessed drinks
UPFs	Ultraprocessed foods
WHO	World Health Organization



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Ultraprocessed foods and drinks (UPFDs) are rapidly changing food systems globally.

The NOVA Classification System¹, which groups all foods according to the nature, extent and purposes of the industrial processes they undergo, defines UPFDs as:

“[F]ormulations of ingredients, mostly of exclusive industrial use, typically created by [a] series of industrial techniques and processes thus the word, ‘ultra-processed’.”²

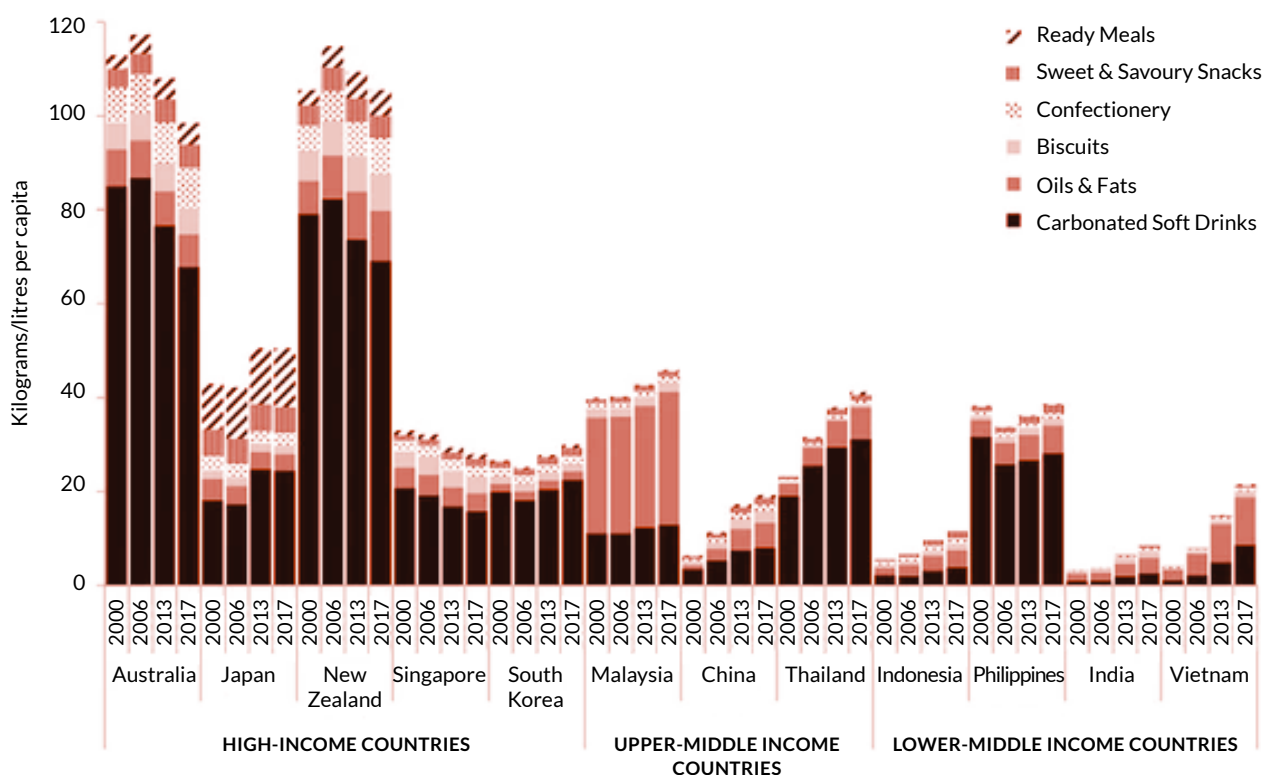
The consumption of ultra-processed foods high in fat, salt, and glycaemic load is increasing in Asia

The following are common examples of UPFDs: carbonated soft drinks; sweet, fatty or salty packaged snacks; candies (confectionery); mass produced packaged breads and buns, cookies (biscuits), pastries, cakes and cake mixes; margarine and other spreads; sweetened breakfast ‘cereals’, fruit yoghurt and ‘energy’ drinks; pre-prepared meat, cheese, pasta and pizza dishes; poultry and fish ‘nuggets’ and ‘sticks’; sausages, burgers, hot dogs and other reconstituted meat products; powdered and packaged ‘instant’ soups, noodles and desserts; baby formula, and other types of product.



FIGURE 1

The study conducted by Baker and Fiel from 2000 to 2017 shows increasing consumption patterns of Ultraprocessed Foods and Drinks across Asia.



The corporate takeover of food systems in Southeast Asia

According to a 2016 research study,³ UPFDs now dominate the food systems of high income countries. Almost two thirds (61 percent) of energy food purchases by households in the United States come from UPFDs.

Asian markets are also being vigorously targeted by transnational food and beverage corporations (TFBCs). Consequently, the consumption of ultra-processed foods high in fat, salt and glycaemic load is increasing in the region.

On March 14, 2019, Wiley Obesity Reviews,⁴ a journal, published the results of a study of total food and drink volume sales per capita in 80 countries during the period 2002-2016.



TBFCs targeted Asian country markets for expansion given their high economic growth rates, rapidly urbanizing lifestyles, young and growing populations, and the adoption of export-led growth strategies favorable to foreign investment

It reported that volume sales of ultraprocessed foods (UPFs) were highest in South and Southeast Asia (67.3 percent) and North Africa and the Middle East (57.6 percent). Similarly, South and Southeast Asia dominated volume sales of UPDs, at 120.0 percent, with Africa ranking next, at 70.7 percent. The study also showed that in 2016, baked goods were the biggest contributor to UPF volume sales (13.1 percent to 44.5 percent), while carbonated drinks were the biggest contributor to ultraprocessed drink (UPD) volume sales (40.2 percent to 86.0 percent).

TBFCs began their foray into the Philippines in 1912, with the introduction of Coca Cola, a sugary carbonated drink. Progressively thereafter, particularly starting in the 1980s, TBFCs targeted Asian country markets for expansion given their high economic growth rates, rapidly urbanizing lifestyles, young and growing populations, and the adoption of export-led growth strategies favorable to foreign investment.

Trade and investment liberalization in Asia such as those that are covered by bilateral and regional agreements at the Association of Southeast Asian Nations (ASEAN) have also helped to reduce barriers to the movement of investments, technologies, production capacity, raw materials and final products across borders. These allowed TFBCs to more easily penetrate the Southeast Asian markets (Baker and Friel, 2016).



Consequences of corporate takeover of food systems: Sick people and environmental destruction

The consumption of UPFDs has been associated with a range of health problems, including obesity and various chronic diseases such as cardiovascular disease and dementia. A study of over 20,000 Italian adults found that participants who consumed the highest amounts of ultra-processed foods had an increased risk of dying prematurely from any cause.

Another study of over 50,000 male health professionals in the United States reported that a high consumption of UPFs was linked to a greater risk of colon cancer. The consumption of UPFDs has likewise been found to trigger inflammation of body parts. The human body responds to components of UPFDs in the same way that it does to foreign substances—like bacteria—and mounts an inflammatory response. This reaction has been referred to as 'fast food fever,' which increases inflammation throughout the body as a result⁵.

Additionally, the production and consumption of UPFDs have had adverse environmental impacts⁶. The production of UPFDs utilizes only a few crops. An ongoing study of 7,020 UPFs sold in major supermarket chains in Brazil has found that their five main ingredients included food substances derived from sugar cane (52.4 percent), milk (29.2 percent), wheat (27.7 percent), corn (10.7 percent) and soy (8.3 percent).

In Australia, the top ingredients in the 2019 packaged food and drink supply (numbering 24,229 products, most of which were ultra-processed), included sugar (40.7 percent), wheat flour (15.6 percent), vegetable oil (12.8 percent) and milk (11.0 percent).⁷

This focus on a few crops to make UPFDs has downgraded other crops, along with the range of animals and microorganisms that have been traditionally used as food and make a more wholesome and healthy diet.



Food systems worldwide have become more processed and less diverse, leading to sick people and environmental destruction





It is time to move away from business-oriented and quick technofix mindsets and focus on and prioritize the development of farmer food systems

Related to this, the ever-increasing global consumption of UPFDs has caused the decline of agricultural biodiversity. Data from the Food and Agricultural Organization (FAO, 2019)⁸ showed that the biodiversity of food crops is declining. Starting with 7,000 edible plant species that had been used for human food since the origin of agriculture, only 200 species remained to be produced by 2014, and just nine crops accounted for more than 66 percent by weight of all crop production in the same year.

Ninety percent of humanity's energy intake comes from just 15 crop plants, and more than four billion people rely on just three of them: rice, wheat and maize⁹. Marrocos, et. al. (2022) cited a study from the 2021 Swiss Academy of Sciences which highlighted that the "decline in biological diversity in food systems disrupts and damages biospheric processes and ecosystems that support reliable and sustainable food production, decreases diet diversity and poses a barrier to healthy, resilient and sustainable food systems".

Marrocos, et. al. added:

"[T]he homogeneity of agricultural landscapes linked with the intensive use of cheap standardised ingredients is negatively affecting cultivation and consumption of long-established plant food sources, including rich varieties of grains, pulses, fruits, vegetables and other whole foods, commonly produced by agrobiodiverse production systems. Some commodities used in ultra-processed food production, such as cocoa and some vegetable oils, have particularly high per kilogram species extinction rates. Ultra-processed food production also uses large quantities of land, water, energy, herbicides and fertilisers; and causes eutrophication and environmental degradation from greenhouse gas emissions and accumulation of packaging waste (Anastasiou et al, unpublished data). As well as species loss, all this is liable to cause ecosystem collapse, further affecting biodiversity.

Ultra-processed reconstituted meat products, such as hot dogs and chicken nuggets, cause additional agriculture biodiversity loss. Such ingredients of animal origin usually come from confined animals (mostly from a small number of livestock breeds) fed on concentrates largely made with ingredients from the same few high-yielding crops used in the manufacture of plant-based ultra-processed foods. A study of the Brazilian agri-food system found that the production of beef uses pasture and feedlot rations from just six plant varieties: brachiaria (the most prevalent forage plant), corn, soybean, cotton, sorghum and wheat. Feedlot rations for US beef production rely on just five plant species (maize, sorghum, barley, oats and wheat). The high demand for pastureland and for monocultures required in the production of animal-sourced foods directly affects the production of other plant varieties. In Brazil, for example, staple food crops such as rice and beans have had their production areas reduced by around 43 percent and 30 percent, respectively, between 2008 and 2019. The area for the production of soy, which is largely used in livestock feed and as an ingredient in ultra-processed foods, increased by 69.9 percent in the same period.

The effect of ultra-processed diets on agricultural biodiversity urgently warrants further research. Preliminary findings from an ongoing study conducted with data from the Brazilian Household Budget Survey (2017–2018) to investigate the impacts of different patterns of food acquisition on the diversity of plant species used in their production, show that household food baskets with a higher content of ultra-processed foods were associated with significantly poorer agricultural biodiversity (Shannon Entropy, which reflects the diversity of species, decreasing by 13.8 percent from the first to the fifth quintile) (unpublished data)”.

The commodification and commercialization of food systems by TFBCs as well as the market-driven approaches adopted by governments in their food policies has also failed



Ultra-processed reconstituted meat products, cause additional agriculture biodiversity loss



to address world hunger. An ETC Group¹⁰ study stated that in 2019 or prior to the COVID-19 pandemic, an estimated 690 million people were hungry and upwards of two billion people lacked regular access to safe, nutritious, and sufficient food. COVID-19 added approximately 130 million people to the world's hungry, pushed uncounted millions more to the brink of hunger, and put one third of food and farming livelihoods at risk.

Farmer food systems as a sustainable and healthy alternative to commodified food systems

The 2019 Global Assessment Report on Biodiversity and Ecosystem Services¹¹ warned that the present environmental destruction will “undermine progress towards 80 percent (35 out of 44) of the assessed targets of the Sustainable Development Goals (SDGs) related to poverty, hunger, health, water, cities, climate, oceans and land”. The report thus called for transformative change in valuing natural resources so that the needs of present and future generations can be sustained:

Societal goals, including those related to food, water, energy, health and the achievement of human well-being for all, mitigating and adapting to climate change and conserving and sustainably using nature, can be achieved in sustainable pathways through the rapid and improved deployment of existing policy instruments and new initiatives that more effectively enlist individual and collective action for transformative change. Since current structures often inhibit sustainable development and actually represent the indirect drivers of biodiversity loss, such fundamental, structural change is called for. By its very nature, transformative change can expect opposition from those with interests vested in the status quo, but such opposition can be overcome for the broader public good. If obstacles are overcome, a commitment to mutually supportive international goals and targets, supporting actions by indigenous peoples and local communities at the local level, new frameworks



Fulfilling farmers' rights and supporting traditional farmer food systems of indigenous peoples and local communities can reverse all the negative impact of commodified food and food systems



for private sector investment and innovation, inclusive and adaptive governance approaches and arrangements, multi-sectoral planning, and strategic policy mixes can help to transform the public and private sectors to achieve sustainability at the local, national and global levels.

In summary, food systems worldwide have become more processed and less diverse, leading to sick people and environmental destruction. This was caused by the industrialization of food systems, technological change and globalization, the expansion and growing market and political power of transnational food and beverage corporations, and their global sourcing and production networks. Developments in the retail sector have also contributed to growing and diversifying ultra-processed food markets, particularly in lower-income and middle-income settings (Maroccos, et. al., 2022).

There is need to de-commodify food and food systems, and to take back control from TFBCs. Fulfilling farmers' rights and supporting traditional farmer food systems of indigenous peoples and local communities can reverse all the negative impact of commodified food and food systems.

At the core of farmer food systems is the farmer seed system. Seed systems comprise all the processes in which seeds are produced, saved, exchanged, and sold. Farmers were the first to develop seed systems. For thousands of years, small farmers conserved, developed, used, exchanged and sold seeds—the bedrock of agricultural biodiversity.

The corporate takeover of seeds, including the imposition of proprietary rights over seeds, such as intellectual property rights and plant breeder's rights, is part of the commodification of food systems and needs to be addressed. Given the serious decline of ecosystems services available to people, and the health problems that come with it, it is time to move away from business-oriented and quick technofix mindsets and focus on and prioritize the development of farmer food systems.

At the core of farmer food systems is the farmer seed system





Diversity is important especially in the face of crop losses due to climate change and other human-driven risks such as wars and developed resistance of plants to chemical pesticides

There is a high degree of diversity of plant genetic resources for food and agriculture (PGRFA) in farms nurtured by smallholder and indigenous farmers. Diversity is important especially in the face of crop losses due to climate change and other human-driven risks such as wars and developed resistance of plants to chemical pesticides. Diversity provides the necessary resource so that other crops can be bred to withstand pests and diseases, or to withstand extreme heat or extreme cold. Seeds must be placed in the control of small farmers to combat these risks.

The study of IPES-Food in 2017 reported that farmers' seed systems contribute 80 to 90 percent of farmers' seed requirements, depending on the crop. Farmers growing local varieties and nurturing wild crop relatives ensure that seeds are selected and adapted to local soil and climatic conditions. There is a need to protect these farmer seed systems from corporate takeover to withstand the dangers posed by climate change.

The practice of smallholder farmers of continuously saving and storing, sharing, and re-using seeds inherently involves a process of selection and conservation to meet the food needs of the community. Small farmers understand the relationship between a sustainable and healthy environment and food needs. Consequently, small farmers use farming practices that do not destroy the environment. In contrast, corporate farming systems rely on a few monocrops, cause the extinction of other crops and destroy the environment, thus undermining the needs of future generations.

There is a need to move away from the commodification of food systems and from the corporate takeover of food. Instead, global agendas need to support farmers' rights to seeds so that the right of all persons to food and to a healthy and sustainable environment can be fulfilled.

Citing the "unprecedented rates of biodiversity loss, Marocco, et. al. (2022) emphasized the need for a rapid transition to dietary patterns that are rich in varieties of plant-sourced, fresh and minimally processed foods.

There is an urgent and continuing need to make people aware of the disastrous impact of UPFDs on people's health and on the environment. The FAO and the World Health Organization (WHO) have been warning about the effect of dietary patterns on human health and on ecosystems. Unfortunately, little has been done to safeguard the health of people, animals and the environment, all together”.

UPFDs are not discussed in the Convention on Biological Diversity (CBD), which imposes upon states the responsibility to sustain agricultural biodiversity for future needs. The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) also leaves out discussion on UPFDs and their impact on the conservation, development, and sustainable use of plant genetic resources for food and agriculture.

Promoting and supporting farmer food systems both at the local and national levels, can better protect the human rights of everyone to health, a healthy and sustainable environment and the accompanying right of people to a variety of ecosystems services.

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Endnotes

- 1 Monteiro, C.A., Cannon, G., Lawrence, M., Costa Louzada, M.L. and Pereira Machado, P. 2019. Ultra-processed foods, diet quality, and health using the NOVA classification system. Rome, FAO.
- 2 The manufacture of UPFDs involve several steps and different industries. Monteiro (2019) describes the procedure thus: “[UPFD production] starts with the fractioning of whole foods into substances including sugars, oils and fats, proteins, starches and fibre. These substances are often obtained from a few high-yield plant foods (such as corn, wheat, soya, cane or beet) and from puréeing or grinding animal carcasses, usually from intensive livestock farming. Some of these substances are then submitted to hydrolysis, or hydrogenation, or other chemical modifications. Subsequent processes involve the assembly of unmodified and modified food substances with little if any whole food using industrial techniques such as extrusion, moulding and pre-frying. Colours, flavours, emulsifiers and other additives are frequently added to make the final product palatable or hyper-palatable. Sophisticated and attractive packaging is used, usually made of synthetic materials.”
- 3 Phillip Baker and Sharon Friel Food systems transformations, ultraprocessed food markets and the nutrition transition in Asia., *Globalization and Health* (2016) 12:80 DOI 10.1186/s12992-016-0223-3. Published online on 3 December 2016.
- 4 Vandevijvere S, Jaacks LM, Monteiro CA, et al. Global trends in ultraprocessed food and drink product sales and their association with adult body mass index trajectories. *Obesity Reviews*. 2019;20(S2):10–19. <https://doi.org/10.1111/obr.12860>
- 5 Ultra-Processed Food Is Everywhere. The Health Risks Go Deeper Than We Realized. By Richard Hoffman, *The Conversation*. 13 September 2022. <https://www.sciencealert.com/ultra-processed-food-is-everywhere-the-health-risks-go-deeper-than-we-realized>
- 6 Fernanda Helena Marrocos Leite, Neha Khandpur, Giovanna Calixto Andrade, Kim Anastasiou, Phillip Baker, Mark Lawrence, Carlos Augusto Monteiro. Ultra-processed foods should be central to global food systems dialogue and action on biodiversity. February 2022. *BMJ Global Health*. <http://dx.doi.org/10.1136/bmjgh-2021-008269>
- 7 See endnote 6.
- 8 Food and Agriculture Organization. The state of the world's biodiversity for food and agriculture. In: Pilling JBD, ed. *FAO Commission on genetic resources for food and agriculture assessments Rome*. 572. Rome: FAO, 2019.
- 9 Food and Agriculture Organization of the United Nations (FAO). *The Commission on Genetic Resources for Food and Agriculture (CGRFA) Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture (PGRFA)*. Rome, Italy: FAO, 2012.
- 10 IPES-Food & ETC Group, 2021. *A Long Food Movement: Transforming Food Systems by 2045*.
- 11 IPBES (2019), *Global assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*, Brondízio, E. S., Settele, J., Díaz, S., Ngo, H. T. (eds). IPBES secretariat, Bonn, Germany. 1144 pages. ISBN: 978-3-947851-20-1

Promoting and supporting farmer food systems can better protect the human rights of everyone to health, a healthy and sustainable environment and the accompanying right of people to a variety of ecosystems services





Southeast Asia Regional Initiatives for Community Empowerment (SEARICE) is a regional non-government organization that promotes sustainable and resilient food systems through ecological agriculture with emphasis on the conservation and development of agricultural biodiversity; and advocates for policies that support, strengthen, and institutionalize community initiatives on sustainable and resilient food systems. It works in partnership with farming communities, local and national government units, civil society organizations, and academic and research institutions in Southeast Asia.

SEARICE is registered with the Philippines' Securities and Exchange Commission (SEC) as a non-stock and non-profit organization.

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