The neglected environmental impacts of ultra-processed foods

What and how we eat have important environmental impacts, with 26% of anthropogenic greenhouse gas emissions globally attributed to the total food supply chain.[1] As a response to the urgent need to address the climate emergency, research assessing the environmental impacts of dietary intake have increased, informing recommendations on sustainable diets.[1,2] However, the majority of this work does not adequately address the role of food processing on the environment. We argue that food processing, and ultra processing in particular, should be an integral part of the way we think about food sustainability.

Ultra-processed foods (UPFs), as defined by the NOVA classification, are industrial food and drink formulations made of food-derived substances and additives, often containing little or no whole foods. Typical examples of UPFs are biscuits and confectionery, chicken nuggets, sugar-sweetened beverages, margarine, and many ready-made meals. The purpose of ultra processing is "to create branded, convenient (durable, ready-to-consume), attractive (hyper-palatable) and highly profitable (low-cost ingredients) food products often designed to displace all other food groups".[3] The rapid global growth in UPF consumption means that there is an urgent need to scrutinise the health and environmental impacts of UPFs. Although evidence that UPFs are harmful to health is accumulating,[4,5] we know little about the environmental impacts of UPFs and what, if any, role they should play in the transition to sustainable diets.

We identify several ways that ultra processing should be considered when estimating environmental and health impacts of diets. Many UPFs contain palm and soy oils, which have substantial negative health and environmental effects. However, the environmental impacts of UPFs go beyond the immediate resources used in the production of their ingredients. In previous work, such as the EAT-*Lancet* Commission on healthy diets from sustainable food systems,[2] the environmental impacts of diets are based on the effect of the production and demand of agricultural commodities. Environmental impacts of processed foods are poorly quantified, considering only the effects of the primary commodities used for their production (ie, vegetable oils and refined sugar). It is imperative that environmental considerations of diets capture the overall impact of UPFs from farm to fork, including the stages of processing, packaging, and distribution.

Established methods should specifically address ultra processing in their estimations, highlighting differential impacts compared with minimally processed foods. The lifecycle assessment method is the most commonly used method to investigate the environmental impacts of food.[6] This method can take into account all parts of the supply chain, including agriculture, processing, waste, retail, transport, and household use. However, existing evaluations of the environmental impact effects do not consider industrial processes and the large variety of components (eg, food additives) that these processes add to foods—eg, UPFs use extensive packaging, which is a major source of environmental waste production with pan-global disposal impacts. The packaging has also been postulated to contain compounds with carcinogenic and endocrine disruptor properties, such as bisphenol A. UPFs also contain many authorised, but often controversial, food additives with potential dual detrimental impacts on the environment and health. Similarly, these foods encourage overeating,[7] which can be a driver of diet-related disease and environmental harm, distorting global markets and driving land use change. Approaches to environmental impact assessment of foods should go beyond using data sources of conventional food group aggregation and prioritise using food ultra-processing classifications most relevant to human health, such as NOVA.

Estimations of the environmental impacts of food processing should take into account that UPFs are necessarily produced by large transnational corporations. The power of transnational corporations means they can dictate where and what is grown, produced, marketed, and sold in food systems globally. They can use aggressive marketing to drive up demand and create new food cultures, construct global supply chains to obtain cheap ingredients, and use extensive packaging that encourages mass production, long-distance transportation, and waste related to their consumption. The majority of junk foods or discretionary foods (ie, foods

For the **NOVA classification** see https://world.openfoodfacts.org/nova

not necessary to human diet) are categorised as UPFs.[8] Additionally, many UPFs such as ultra-processed bread or yoghurt can be easily replaced by their minimally processed counterparts. The discretionary nature of UPFs means that the environmental impacts of new food cultures created by transnational corporations could be entirely avoidable. The raw agricultural ingredients and other planetary resources currently deployed to produce UPFs could otherwise contribute to a healthy diet that promotes population health and equity in food security, while reducing environmental impact from food production.

Finally, the focus of the literature on providing quantitative measures of the environmental impacts of different types of UPFs can be used by corporations to promote some of their products as sustainable options.[9] For example, opting for more efficiently produced ingredients or technological methods of processing can be used as a claim of sustainability, although the overall environmental contribution of these products might remain unnecessarily high. Moreover, industry can use the lifecycle assessment method to argue in favour of food packaging, claiming it can reduce food waste, ignoring that packaging is what enables the manufacture, transport, and storage of UPFs in the first place. Efforts to offset environmental contributions, like Coca-Cola's attempt to compensate for its water use in Colombia,[10] can also be used as an industry tactic to confuse consumers and improve the sustainability profile of companies. Although quantification of environmental impacts can be complicated, especially given the complexity and diversity of the food system, it is important that future research provides transparency and makes it harder for the food industry to act against public health and the environment.

Current evaluations of environmental impacts of diets fail to adequately address the environmental impacts of UPFs. We have highlighted a number of recommendations on how to address important knowledge gaps in our conceptual and empirical understanding of food processing impacts on the environment. This would enable more effective policies towards the dual aim of healthy and sustainable diets.

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