

## CHAPTER 5

# Food Environments Improving Their Healthfulness

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### KEY MESSAGES

- Food environments in low- and middle-income countries (LMICs) are undergoing dramatic changes. Their important role warrants attention from researchers to better understand how they are impacting diets, and from decision-makers to develop policies and actions for food environments that promote sustainable healthy diets for all.
  - Ultra-processed foods are now ubiquitous and heavily consumed in both urban and rural areas. These cater to increasing demand for convenience from busy consumers and are heavily marketed, especially to children and adolescents.
  - Fruits, vegetables, and other nutrient-dense fresh foods are often available from informal vendors in LMICs, but food safety remains a serious challenge, and availability is subject to high postharvest losses, deterioration in quality, and seasonal fluctuations.
  - Online grocery and food delivery services are changing how consumers engage with food environments, while social media is opening up new avenues for marketing and advertising of (primarily unhealthy) foods that are difficult to monitor and regulate.
- A variety of policies and actions can improve food environments to promote sustainable healthy diets:
- Mandatory front-of-package labeling systems and taxes have reduced consumption of unhealthy foods and beverages in LMICs, particularly in the Americas, and could be expanded to other regions.
  - Restrictions on marketing of unhealthy products, especially to children and adolescents, hold promise for reducing consumption of ultra-processed foods but require further evaluation.
  - To address new threats created by the digital food environment, valid metrics for monitoring and research are urgently needed to assess the impact on dietary habits and to inform effective, enforceable regulation of marketing.
  - Policies and actions designed to promote access to healthy foods, including fresh produce and animal-source foods, require further research in LMICs. Studies examining subsidies for healthy foods and retail-level interventions such as product placement have been limited to high-income countries, and those for retail-level interventions are still inconclusive.



The food environment is the setting in which people choose what to eat, where they buy those foods, and where, when, and how they eat. It is more formally defined as the place where people interact with and access food within the wider food system.<sup>1</sup> Researchers have identified different types of food environments, which can be broadly grouped into either wild and cultivated food environments or built food environments (also referred to as market food environments).<sup>2</sup> This chapter focuses on the latter, using the term food environments. Key characteristics of food environments include types of foods available, their quality, safety, price, and convenience; the types of vendors; and promotional activities. How a consumer interacts with the food environment is determined by characteristics such as their access to foods, income, and preferences. Food environments are dynamic – they both shape and are shaped by consumers’ food choices<sup>3</sup> – and consumers’ interactions with the food environment are complex, with a range of factors influencing their decision-making when choosing foods. Policies and other interventions can be used to reshape food environments in order to promote healthier diets.

Food environments around the world are changing rapidly in response to the evolving needs and lifestyles of consumers, and as a result of transformations along agrifood value chains.<sup>4</sup> This chapter examines some of the key challenges and opportunities for food environments amid the rapid transitions occurring in low- and middle-income countries (LMICs). We present illustrative examples of evidence-based food environment policies and actions that are being implemented to promote diet quality in a diverse range of countries. Our conclusions reflect on potential policies for improving diets through changes in food environments, and discuss actions needed to move forward in strengthening the healthfulness of food environments in LMICs.

## FOOD ENVIRONMENTS IN LOW- AND MIDDLE-INCOME COUNTRIES

Though many households in LMICs still produce much of their own food, they purchase most of the food they eat. Recent data from 11 African countries show that rural families purchase 56 percent of their food on

average, challenging the notion that subsistence farming is the predominant source of food in rural areas.<sup>5</sup> This trend is well advanced among rural populations of other regions as well,<sup>6</sup> meaning that an increasing number of people rely on markets, and thus food environments, to access their food.

### DEMAND FOR CONVENIENCE AND THE PENETRATION OF ULTRA-PROCESSED FOODS

Urbanization and rural transformation have led to profound changes in consumer preferences, with concomitant changes in food environments. Economic growth in urban areas has generated new income-earning opportunities for both men and women, which has increased demand for convenience foods, as consumers spend more time away from home and have less time for food preparation.<sup>7</sup> As rural economies transform, growth in nonfarm employment for rural men and women has led to a similar increase in demand for convenience.<sup>8</sup>

The food industry has responded by introducing new technologies that increase the shelf life of products and reduce preparation times<sup>9</sup> and increasing availability of ultra-processed foods (UPFs). These industrially formulated foods are energy-dense and contain added sugars, oils and fats, salt, and other additives (see Glossary).<sup>10</sup> Examples of UPFs include sugar-sweetened beverages, sweet and salty packaged snacks, ice cream, sausages, and instant noodles. While urban households consume more UPFs than rural households, consumption of these foods is now common even in remote rural areas (Box 1).<sup>11</sup> The penetration of these foods is commonly associated with the expansion of modern retail outlets such as supermarkets, but UPFs are also sold in small shops, kiosks, and by street vendors.<sup>12</sup> Their shelf-stable nature makes them suitable for the fragmented supply chains where these small and medium enterprises (SMEs) operate, as well as for long-distance transportation, often without temperature control.

### AVAILABILITY OF FRESH FOODS IN INFORMAL RETAIL

Informal retail outlets, which include wet markets and many SMEs, have a larger market share than modern retail in many LMICs.<sup>13</sup> This is especially true for fresh foods, including fruits, vegetables, and animal-source foods.<sup>14</sup> In addition to offering these foods at lower prices, informal vendors offer several important advantages for consumers, including physical proximity (due to their density in poorer communities), the ability for customers to make purchases on credit, and the possibility of purchasing small quantities.<sup>15</sup> In contrast

#### BOX 1 ADOLESCENTS AND THE FOOD ENVIRONMENT

A study conducted in 2021 in 10 neighborhoods in Accra, Ghana, assessed how adolescents engage with their food environment. More than 60 percent of the total energy consumed by adolescents came from prepared and ready-to-eat foods obtained away from home, meaning directly from the food environment. Of these foods, two-thirds were consumed outside the home. Overall, foods consumed outside the home were much less micronutrient-dense than foods consumed at home. This pattern reflects the fact that the adolescents' food environment provided easier access to unhealthy options than to healthy ones. Nutrient-poor foods, ultra-processed foods, and sugar-sweetened beverages were consistently within closer proximity than healthy foods such as fruits.

In Viet Nam, a study conducted in an urban and peri-urban site and a rural town found similar results. Adolescents in all sites lived in a food environment that makes it challenging to avoid unhealthy options. In urban areas, for instance, most adolescents lived within 50 meters – or a 30-second walk – from the nearest vendor selling sugary drinks and ultra-processed foods. Across all sites, unhealthy foods were more accessible than healthy foods. Similar findings are also seen in recent research on adolescents and food environments in South Asia.

**Source:** Unpublished IFPRI research findings. For more on South Asia, see CGIAR, "Open-Access Agrifood Systems Data from 4,000 Households across Bangladesh, India, and Nepal," March 20, 2024. <https://www.cgiar.org>

to most UPFs, however, fresh foods are perishable. Supply chains are often long and fragmented, especially for informal retail, with poor temperature and storage conditions that result in losses in quantity and quality, which impact year-round availability.<sup>16</sup> Moreover, informal vendors may not adhere stringently to food safety standards. They typically operate without adequate access to electricity, water, or waste disposal, which leads to unhygienic food handling practices.<sup>17</sup> Though there are examples of positive engagement between governments and informal vendors on these problems, such as through training courses in hygienic practices, the relationship is often contentious. Informal vendors are subject to crackdowns, demolition of stalls, confiscation of goods, and financial penalties, which in turn affect food access for local consumers.<sup>18</sup>

## ADVERTISING OF UNHEALTHY FOODS AND BEVERAGES

Food marketing around the globe – across all settings and forms of media – is largely geared toward promoting UPFs and sugary beverages.<sup>19</sup> Children and adolescents in particular are exposed to high volumes of such marketing.<sup>20</sup> An emerging body of evidence, mainly from high-income countries (HICs), suggests that this exposure, whether through traditional or digital media, influences children and adolescents' food preferences, choices, and diets.<sup>21</sup> There is some evidence that socioeconomically disadvantaged groups in HICs are disproportionately targeted with child- and adolescent-focused advertisements for unhealthy foods and beverages.<sup>22</sup> For LMICs, evidence on the effect of marketing of unhealthy foods and beverages on food choices and diets is still limited.

## THE EXPANDING DIGITAL FOOD ENVIRONMENT

The internet has added a layer of complexity to food environments by opening new avenues for both the retail sale and marketing of food. Online grocery retail and mobile applications for food delivery are growing globally and accelerated especially during the COVID-19 pandemic.<sup>23</sup> These new digital access points for food increase convenience and reduce the time burden associated with food shopping. However, studies from HICs and Brazil suggest that most of the foods available through food delivery applications, which allow users to order from restaurants using their mobile phones, do not align with healthy eating recommendations.<sup>24</sup>

As with traditional media, social media platforms are increasingly used to advertise sugar-sweetened beverages, fast food, and other unhealthy foods, and they frequently target children and adolescents.<sup>25</sup> These platforms also provide food companies with new, sophisticated methods for gathering data on their target consumer groups and interacting with them at a low cost. A common strategy is the use of “influencers” who share positive reviews, photos, and other content, sometimes in return for payment from food and beverage companies.<sup>26</sup> Emerging evidence from several HICs suggests that adolescents exposed to food advertisements through social media are more likely to recall unhealthy food advertisements and those involving celebrities, and that this exposure influences their food choices.<sup>27</sup> The use of social media and other types of advertisement to create demand for healthy foods has been explored, but rigorous evidence on their effectiveness is missing.<sup>28</sup>

## VULNERABILITY TO SHOCKS

Food environments, especially those that serve low-income consumers, are sensitive to shocks. The COVID-19 pandemic, for example, rapidly led to restrictions on the mobility of farmers, transporters, and other workers; closures of food processing facilities, which created stock shortages; reduced product offerings; and higher retail prices.<sup>29</sup> Some studies suggest that informal retail was disproportionately affected by the impacts of the pandemic. In a survey of informal milk vendors in Nairobi conducted four months after the pandemic's onset, for example, a third of respondents blamed difficulties in stocking milk on pandemic-related transportation issues and restrictions on business operations.<sup>30</sup> Higher prices resulting from these shocks have the most detrimental impact on poor households, who spend a large portion of their income on food and may lack sufficient coping mechanisms.<sup>31</sup>

## MAKING FOOD ENVIRONMENTS MORE HEALTHFUL

Several policy options have been tested to make food environments more conducive to healthy eating.<sup>32</sup> These include providing information to consumers on the content of packaged foods, restricting advertising of unhealthy foods, and introducing fiscal measures to nudge consumers away from unhealthy foods and toward healthier options. Retail-level interventions to improve availability, access, safety, and promotion of healthy foods have also been tested. To enable dietary change, additional actions are needed that improve affordability of healthy options (see Chapter 4) and consumer knowledge about healthy eating (see Chapter 3).

### FRONT-OF-PACKAGE LABELING

Clear and comprehensive labeling on food products can empower consumers to make informed choices. Strong evidence suggests that mandatory front-of-package labeling systems are most effective at guiding consumers toward healthier purchases, whereas voluntary labeling systems allow food companies to opt out of placing labels on products with poor nutrient profiles.<sup>33</sup>

The Americas have been at the forefront of mandatory front-of-package labeling policies. In Mexico and Chile, mandatory policies require that stop-sign-shaped warning labels be placed on products that exceed certain thresholds for energy, sugar, saturated fat, and salt content. These labeling requirements were implemented together with strong public awareness campaigns. Evaluations of the policies' impacts in both countries have shown positive results: households in Mexico and Chile are buying fewer unhealthy products,<sup>34</sup> and the food industry quickly responded by reformulating products to reduce energy, sugar, saturated fat, and salt content below the threshold requiring a label.<sup>35</sup> In addition, the cut-offs have helped guide government procurement policies at the institutional level (for example, in schools)<sup>36</sup> and informed decisions about which foods can be purchased or offered in food assistance programs.<sup>37</sup>

### RESTRICTIONS ON MARKETING OF UNHEALTHY FOODS

In 2010 and 2023, the World Health Organization (WHO) approved recommendations to restrict the marketing of unhealthy foods and beverages to children,<sup>38</sup> but implementation of these recommendations at the country level has been slow. Evidence on the effectiveness of marketing restrictions is thus limited. As with food labeling, studies suggest that the best way to limit the marketing of unhealthy foods and beverages is through approaches that are mandatory, comprehensive (such as regulations on different media), and aligned with the WHO recommendations.<sup>39</sup>

Chile, Mexico, and Peru, among other countries, have used their front-of-package labeling guidance to mandate restrictions on child-directed food marketing. Products with warning labels cannot display cartoon characters, cannot be promoted or sold in schools, and cannot be marketed to children through traditional media such as TV and radio, in movie theaters, or online.<sup>40</sup>

With the global proliferation of digital services and their potential to reach wide audiences, especially through social media, regulation of digital marketing needs to be prioritized. However, the challenges in monitoring digital media are significant, especially considering the scope of digital marketing and the limited access to data for real-time monitoring.<sup>41</sup> Despite limiting advertisements of cigarettes and alcohol, social media platforms have yet to adopt restrictions on advertising unhealthy foods.<sup>42</sup>

### FISCAL POLICIES

Fiscal policies seek to nudge consumers into healthier eating by increasing the price of unhealthy options and lowering the price of healthy foods. Taxes on unhealthy foods and beverages have been implemented in nearly 60 countries and smaller jurisdictions worldwide.<sup>43</sup> The vast majority of these have targeted sugar-sweetened beverages. Evidence suggests these policies reduce the purchase and consumption of unhealthy foods and beverages.<sup>44</sup> Two years after Mexico implemented its tax on sugar-sweetened

beverages in 2014, for example, purchases of taxed beverages decreased by 7.6 percent on average. The decline was even larger (11.6 percent) for low-income households.<sup>45</sup>

National policies designed to lower the price of healthy foods are rare. A meta-analysis of interventional and observational cohort studies, mainly from the United States, found that a 10 percent decrease in the price of fruits and vegetables (the most commonly targeted foods) increased purchases by 14 percent. Interestingly, this effect was larger than the effect of a 10 percent price increase on unhealthy foods, which decreased purchases by 6 percent.<sup>46</sup> It should also be noted that subsidies (which effectively reduce prices) in the reviewed studies were often combined with other interventions, such as changes in availability of healthy foods, labeling, or educational approaches, which may have contributed to their impacts.

The introduction of policies on front-of-package labeling, restricting marketing, and taxing unhealthy foods and beverages has been challenging. Concerned about reduced sales and rising costs related to reformulating foods, the food industry has used a diverse set of strategies to oppose these policies (Box 2) (see Chapter 8).<sup>47</sup> Coordinated, sustained efforts and expertise of stakeholders from civil society, international organizations, academia, and government agencies are needed to successfully implement, monitor, and evaluate policies.<sup>48</sup>

## RETAIL-LEVEL INTERVENTIONS

Purchasing decisions in retail settings may be affected not only by price, but also by food availability, placement, and in-store promotions. Food manufacturers often seek placement of UPFs and snacks in prominent locations, for example, near store entrances or cash registers, at eye level on shelves, or in end-of-aisle displays, and may pay incentives to stores for this placement.<sup>49</sup>

A systematic review of studies from HICs examining the impact of interventions that include greater availability and more prominent placement of healthy foods, along with reduced availability and less prominent placement of unhealthy foods, could not draw firm conclusions due to methodological limitations

### BOX 2 INDUSTRY TACTICS TO CHALLENGE FOOD ENVIRONMENT POLICIES

The food industry has adamantly opposed the development and implementation of food environment policies, including those related to front-of-package labeling, taxes on sugar-sweetened beverages, and marketing regulations. Key strategies used to challenge the introduction of these policies include the following:

**Delay**—Opponents push for longer consultation periods, demand more research and evidence, and argue that implementation is difficult.

**Divide**—Opponents develop and promote their own regulations (such as labeling, nutrient profiling, and marketing). These are usually less stringent than the ones proposed by governments and are voluntary as well as confusing or difficult to interpret. Opponents also privately lobby to stop regulation or make it less stringent.

**Deflect**—Opponents claim that the policy will have negative effects on trade and employment in manufacturing and agriculture. They argue that self-regulation is sufficient and that governments should not interfere with people's choices.

**Deny**—Opponents cast doubt on existing evidence or claim that the available evidence is inadequate, and they fund research that proposes less stringent alternatives.

**Source:** Based on World Cancer Research Fund International, *Building Momentum: Lessons on Implementing a Robust Front-of-Pack Food Label* (London: 2019).

of the included studies.<sup>50</sup> Adapation of such interventions to LMICs would need to consider the different types of vendors that consumers engage with, which are likely to be predominantly informal, and different store formats.

In Viet Nam and Nigeria, researchers have recently tested interventions that combine actions to improve the healthfulness of food environments with strategies to increase the affordability and accessibility of healthy foods.<sup>51</sup> The bundle of interventions included improvements in the display and marketing of fruits and vegetables; clean aprons for open-air fruit and vegetable vendors; delivery of nutritional information to consumers; distribution of coupons to purchase fruit; and campaigns to promote eating five servings of fruits and vegetables per day (400 grams). After the intervention, overall fruit and vegetable consumption did not significantly change in either country, but intake of specific fruits did increase.

### IMPROVING THE AVAILABILITY OF NUTRITIOUS, SAFE FOOD

A few projects have sought to combine retail and demand-creation activities with supply chain reinforcement, especially related to improving food safety, a particularly relevant challenge in LMICs. Evidence on the effectiveness of these projects is forthcoming.

The Global Alliance for Improved Nutrition (GAIN)'s Vegetables for All project in Kenya connects last-mile vendors, known as *mama mboga*, in low-income urban and peri-urban areas to suppliers who are compliant with good agricultural practices. In combination with marketing (using the FitFoods brand developed by GAIN and its project partners) and training provided to vendors, the project aims to increase the desirability of vegetables among consumers, as well as their freshness and safety at point of sale.<sup>52</sup> Also in Kenya, the More Milk intervention, a project of the International Livestock Research Institute, provided in-person trainings on milk handling, hygiene, and business skills to informal dairy vendors. It also supported vendors with marketing materials to promote children's milk consumption. MoreMilk increased the uptake of good milk handling practices by vendors and increased milk intake in children.<sup>53</sup>

## CONCLUSIONS

Food environments in both rural and urban settings in LMICs are undergoing a rapid transformation. Emerging evidence highlights the potential effectiveness of food environment interventions that influence people to limit their consumption of unhealthy foods and beverages. The rich experience of countries in the Americas in developing and implementing fiscal and mandatory front-of-package labeling policies should help countries in Africa and Asia to implement policies more efficiently, as consumption of unhealthy foods and beverages likewise presents an important challenge in these settings. However, important gaps remain in the evidence on effective strategies to promote fruits, vegetables, and other nutrient-dense foods as part of a sustainable healthy diet in LMICs. Other strategies, such as the prominent placement of healthy foods, have not been thoroughly studied in either HICs or LMICs.

The expansion of the digital food environment offers novel ways to acquire food but also presents new challenges, as it creates new threats to healthy eating and adds complexity to implementing and enforcing regulations. Valid metrics to monitor the digital food environment – such as assessing the nutritional content of foods promoted, the marketing techniques used, and exposure to marketing across different platforms – and research to assess its impact on dietary habits are urgently needed.

It is unlikely that interventions aimed only at increasing consumers' nutrition knowledge or at increasing the affordability of healthy foods will lead to a significant improvement in healthy diets. Tackling individual- and household-level barriers to healthy eating, in combination with mandatory policies and actions that improve the healthfulness of food environments and hold corporations accountable, will be essential.

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