



TRADE POLICY TECHNICAL NOTES

TRADE AND FOOD SECURITY

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INTRODUCTION

The relationship between trade, food security and nutrition is attracting growing attention within the trade and development agendas. The Sustainable Development Goals (SDGs) cite trade as an important means to achieve the goals related to food security and nutrition. In addition, the Rome Declaration on Nutrition and the Framework for Action of the Second International Conference on Nutrition (ICN2) acknowledge that trade can play an important role in reaching nutritional targets.¹ How then does international trade actually influence nutrition, and how can the positive impacts of trade on nutrition be maximized?

This technical note explores the impact of trade on nutrition, addressing the role of trade in the “nutrition transition” and the extent to which trade policies affect nutritional objectives. Recognizing that the relationship between trade and nutrition is complex and requires an in-depth understanding of food systems and their evolution, this note also highlights critical knowledge gaps that should be addressed to support evidence-based decision making.

NUTRITION AND DIETS IN A CHANGING FOOD ENVIRONMENT

Malnutrition, in its various forms, continues to be a global cause for concern. The ‘triple burden’, which consists of undernutrition, micronutrient deficiencies, and overweight and obesity, affects a large share of the world’s population. Although there have been positive developments, such as the global share of the undernourished population declining from 14.7 percent in 2000 to 11.0 percent in 2016,² there are

growing concerns about the rise of overweight and obesity in the population. The global prevalence of obesity among adults more than doubled between 1980 and 2014. In 2014, more than 600 million adults were obese, equal to about 13 percent of the world’s adult population. At the same time, 155 million children under five (23 percent) are stunted (FAO *et al.*, 2017). The rise in overweight, obesity and diet-related chronic disease – including diabetes, cancer and cardio-vascular disease – is such that dietary risks are among the leading factors contributing to early deaths (The Lancet, 2017), and the costs associated with obesity are calculated at approximately USD 2 trillion per year – equivalent to 2.8 percent of global GDP (McKinsey, 2014).

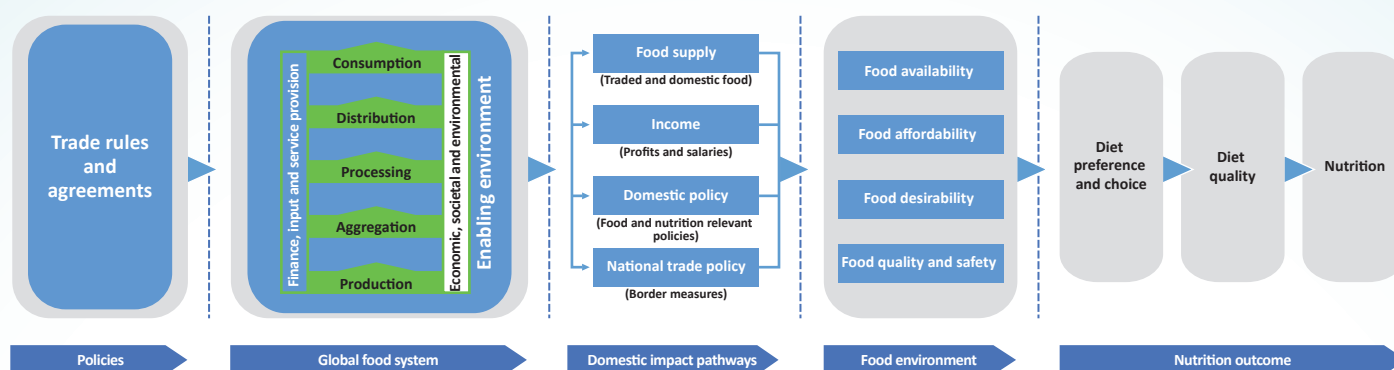
Dietary changes, as part of broader lifestyle changes, explain these trends. Indeed, while there have been significant increases in overall calorie availability globally, these have been accompanied by reductions in the shares of calories from cereals, roots and tubers, and increases in the shares of livestock products, vegetable oils and processed foods, which tend to be high in fat, salt and sugar. These shifts are common across all regions and while international differences in the composition of diets persist, there appears to be a global convergence towards so-called “western diets”. Overall, it can be said that the improved food security situation has not necessarily resulted in healthy diets – which are those diets characterized by a balanced consumption of fresh fruits and vegetables, whole grains, roots and tubers, nuts, and animal source foods, and limited intake of saturated fats, salt and refined sugars.

The “food environment” refers to the physical, economic, political and socio-cultural surroundings, opportunities and conditions that create everyday prompts, and shape people’s dietary preferences and choices as well as nutritional status (Swinburn *et al.*, 2014; Global Panel, 2017). It serves as an interface that mediates people’s acquisition of food within the wider food system (HLPE, 2017, p. 28). Key elements of the food environment that influence consumer choices and diets include: physical and economic access to food (food availability and affordability); food promotion, advertising and information

¹ Recommendation 17: Encourage governments, United Nations agencies, programmes and funds, the World Trade Organization and other international organizations to identify opportunities to achieve global food and nutrition targets, through trade and investment policies.
Recommendation 18: Improve the availability and access of the food supply through appropriate trade agreements and policies and endeavour to ensure that such agreements and policies do not have a negative impact on the right to adequate food in other countries.

² However, the number of undernourished people has been on the rise since 2014, and the prevalence of undernourishment has increased from 10.6 percent in 2015 to 11.0 percent in 2016.

Figure 1. Stylized channel of interaction between trade policy, the global value chain and nutrition



(influencing food desirability); and food quality and safety (ibid.). In turn, foods that are “available, affordable, desirable, of high quality and safe” depend on the choices and behaviour of a multitude of actors who shape the food system, which includes production, storage, processing, marketing and trade. In this setting, consumers respond to incentives and disincentives imposed by the context, including public policy (Figure 1). Trade rules and policies affect the global food system, which in turn influences domestic markets that together with public policies determine the food environment.

Food systems and environments are evolving quickly, under the influence of income growth, urbanization, infrastructure investments, lower transport costs, domestic and foreign direct investments (FDI) in food processing and retailing, labour market and lifestyle changes, public and private food standards and regulation, advertising, agricultural support policies, trade and trade liberalization. Reversing the trends in overweight and obesity, and accelerating efforts to reduce undernutrition, require “increasing incentives (and decreasing disincentives) for availability, access, and consumption of diverse, nutritious and safe foods through environmentally sustainable production, trade, and distribution.”³ The question then becomes what role can trade and trade policy play in this endeavour?

IMPLICATIONS OF TRADE FOR FOOD SECURITY AND DIETS

The empirical evidence on how trade and trade policies have actually changed the patterns of consumption is still rather limited. At the broadest level, it is acknowledged that trade can improve the availability and affordability of different foods, add to a wider choice for consumers, and help smooth food supply and buffer domestic production shocks (FAO, 2017; FAO, 2015). At the same time, trade influences consumer choices by affecting marketing practices and the relative prices of foods, which may result in the excess consumption of nutritionally inferior products that may gain a greater share in overall calorie intake (Traill, 2017; Shankar, 2017). Analyses are limited by the lack of data on individual food consumption⁴ and information on how trade affects household access to food (especially for the most food-insecure households).

Trade most directly affects food *availability*. Trade helps balance food deficits and surpluses across countries ensuring supplies and contributing to price stability. Considering the significant risks arising from climate change to agricultural production, trade is likely to become even more significant in the future as food demand grows in regions where productivity gains will not be enough to meet demand growth.

The income effect of trade on economic access to food can be substantial, with higher incomes triggered by economic growth and the change in relative prices inevitably affecting food consumption (Shankar, 2017). Greater openness to international markets can bring down the cost of food to consumers, but can also pose challenges. For example, imports that expose family farmers and domestic small-scale processors and retailers to greater competition may undermine their livelihoods and, as a result, their own nutritional outcomes (FAO, 2017). In the absence of policies that counterbalance these negative effects, food security and the development prospects of rural areas or even of agriculture-based countries can be compromised.

In terms of food *utilization*, trade has contributed to the observed trends in food consumption patterns by supporting increased daily energy intakes and the shift in diets away from carbohydrates towards fats and proteins. Increasing consumption of livestock products has been facilitated through direct imports and through livestock feed imports, permitting the expansion of domestic production (Guyomard *et al.*, 2013; Thornton, 2010).

The greater variety of food supplies that trade can bring broadens consumer choices thus promoting more diversified diets, especially of fresh and minimally processed foods such as fruits, vegetables, meat and dairy products. Imports can also be the source of a range of healthy processed foods that can add variety and palatability to meals. These foods are convenient to prepare and contribute, with their long shelf life, to offsetting seasonal scarcities of fresh foods.

Moreover, rules-based international trade can promote the implementation of stricter food safety controls in domestic production and distribution due to the spill-over effects of wider participation in global value chains, and more generally, the use of international standards such as those developed by Codex Alimentarius as referenced in the World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures.

³ FAO. 2015. Key Recommendations for Improving Nutrition Through Agriculture and Food Systems. www.fao.org/3/a-14922e.pdf

⁴ Analyses of dietary trends are based on estimates of food availability at the country level. While these are useful proximate indicators to monitor general dietary changes in a country, individual food consumption data is often scarce, especially in low-income countries, making it more difficult to refine analyses of dietary trends.

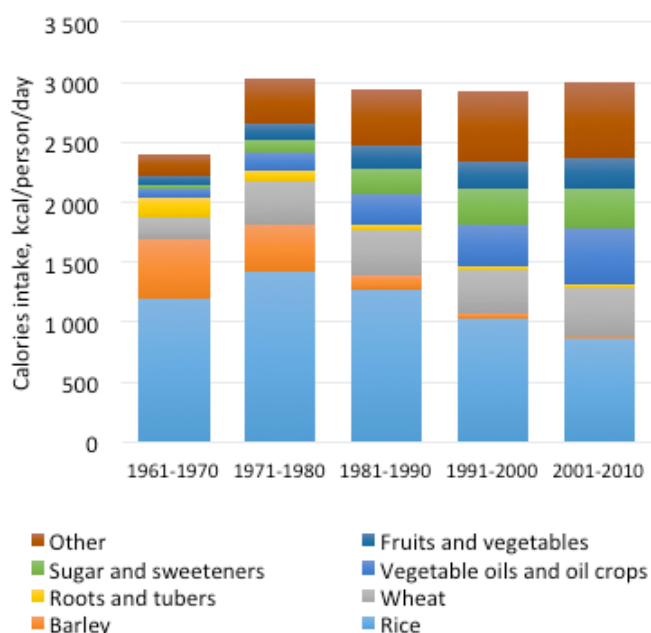
BOX 1: DIETARY SHIFTS IN THE REPUBLIC OF KOREA AND THE ROLE OF TRADE

FAO Food Balance Sheets show that from 1960 to 1970 the average daily caloric intake in the Republic of Korea increased substantially from 2 200 to 3 000 kcal/person. However, diet composition remained highly concentrated in this period, with rice accounting for almost half of all food supply measured in calories. Together, the main cereals (rice, barley, wheat and their derivatives) accounted for three-quarters of all food availability. The Herfindahl-Hirschman Index (HHI), which captures the concentration of food supply in calorie terms (with the value of one being equivalent to only one product available), was 0.30 in the decade 1961-70, indicative of a highly concentrated diet. Starting in the 1980s, significant changes in food availability and diet composition took place, stemming from rapid economic growth, enhanced purchasing power and associated dietary diversification towards other products, resulting in an HHI of 0.12 in the period 2001-10. The share of rice, wheat and barley in total food supply declined from 78 percent in 1961-70 to 42 percent in 2001-10, while the shares of vegetable oils and sugar increased dramatically. The share of fruits and vegetables in the overall calorie availability also increased, from 3 percent in 1961-70 to 8 percent in 2001-10.

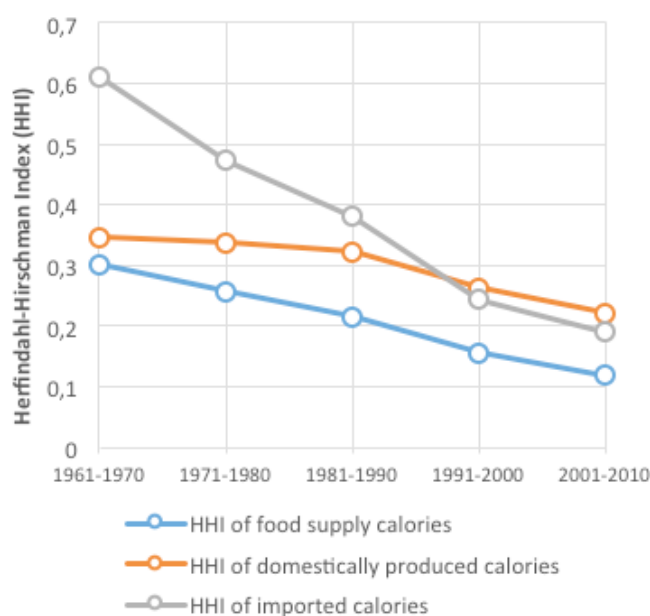
concentrated in a few products as evidenced by the HHI of 0.63. In the following decades both imports and production became substantially more diversified, although they were less diversified than the total food supply. This suggests that food imports complemented domestic food production with additional products, introducing a greater variety of foods to consumers.

At the same time and in the midst of economic growth, globalization and lifestyle changes, it is important to acknowledge national efforts to promote locally grown foods and traditional preparation methods (Kim, Moon and Popkin, 2000; IFPRI, 2015, p. 88). As a consequence of this positive mix of openness to trade and government support of local production, the most healthful elements of Korean traditional diets have been retained and the increase in the prevalence of obesity in the Republic of Korea has been much less pronounced than in other countries in the region with a similar socio-economic profile.

Republic of Korea - Change in the diet structure and diversity



Republic of Korea - Diet diversity



The role of imports in shifting diets in the Republic of Korea is evident from the fact that starting in the 1960s and over the next four decades, the share of imports in the domestic calorie supply gradually increased from 5 percent to 40 percent. In the 1960s, Korean food imports were highly

By integrating national and international food markets, trade can help absorb domestic supply and demand shocks that could otherwise result in excess domestic food price volatility, contributing greatly to the *stability* dimension of food security. Global markets are less prone to policy or weather-induced shocks than domestic markets. At the same time, importing countries may be vulnerable to changes in trade policy by exporters and disruptive import surges if they are frequently exposed to fluctuating levels of trade flows.

However, trade and FDI in food production and distribution contributed to increasing the availability and decreasing the prices of nutritionally unbalanced processed and ultra-processed products⁵, and fast foods with large portion sizes and high energy density, speeding up a “nutrition transition” towards foods that are higher in calories and saturated fat, sugar and salt. Trade contributed to changes in traditional consumption patterns, sometimes resulting in less healthy diets since nutritionally damaging products find markets in low-income countries (Friel *et al.*, 2013). One example is the Pacific Islands, where imported foods have altered the traditional diet, particularly by increasing fat consumption through the use of high-fat meat cuts such as mutton flaps (e.g. Friel *et al.*, 2013; Thow *et al.*, 2017).

More generally, trade plays a role at all stages of the food value chain, from primary production to final consumption. It can affect, but it is also affected by, changes in market structures, productivity, the composition of agricultural output, the variety, quality and safety of food products, and therefore the composition of diets.

THE ROLE OF GLOBAL VALUE CHAINS IN THE RELATIONSHIP BETWEEN TRADE AND NUTRITION

The global agri-food industry significantly influences the relationship between trade and nutrition. Indeed, trade policies affect the behaviour of both global and national players in the agri-food industry and vice versa. Furthermore, the behaviour of global food firms affects the behaviour of small and medium-sized agri-food businesses (SMEs) in national economies, even if they are not directly involved in the (cross-border) trade of food products. These changes at the firm level affect, through various direct and indirect pathways, how end-consumers buy, prepare and consume food, and thus impact nutritional outcomes.

Large multinational players increasingly dominate the global food system. They have emerged at each stage of the global food value chain (GFVC): from seed, fertilizer and chemical giants at the production stage, over commodity traders and brand-manufacturers in the middle stages of the value chain, to supermarket and fast-food restaurant chains at the downstream end. It is therefore the trade in each of these products (inputs, raw agricultural produce and processed food products) that affects the food system’s structure, conduct and performance, including in terms of nutrition.

There are two broad categories of GFVCs. First, there are the export market-oriented chains which take raw agricultural materials or intermediate processed food products to the global processing and distribution facilities. Trade is increasingly important to such firms as competitive pressure, climate change, and land and other resource constraints force them to expand the geographic reach of their procurement systems. Second, there are the domestic market-oriented chains, in which global and national agri-business firms shift over time from trading shelf-ready food products across borders to manufacturing their products locally. Regional trade agreements have a strong effect on global players. Such agreements create larger markets (larger volumes traded and a greater number of buyers) attracting more FDI through which global firms become directly present in these markets (as opposed to market presence through imports of their products).

⁵ According to one of the most widely used classifications (NOVA Food definition and classification system, developed by NUPENS), food can be distinguished as: 1. unprocessed foods: consumed shortly after harvesting, slaughtering, etc.; 2. processed culinary ingredients: products extracted and refined from constituents of foods such as oils, fats and sugar; 3. minimally processed foods: unprocessed foods altered in ways that do not add or introduce any substance, but that may involve subtracting parts of the food, for example through cleaning, peeling or pasteurization; 4. processed foods: made by adding a culinary ingredient to unprocessed or minimally processed foods, such as, for example, canned or bottled vegetables or legumes, or tinned fish preserved in oil; 5. ultra-processed foods: products which are formulated mostly or entirely from substances derived from foods, with little or even no whole food content and typically containing various combinations of preservatives, stabilizers, and/or emulsifiers, etc.

BOX 2: MARKET INTEGRATION AND THE NUTRITION TRANSITION IN DEVELOPING COUNTRIES – THE CASE OF VEGETABLE OILS AND THEIR ULTRA-PROCESSED DERIVATIVES

Globally, the share of calories from vegetable oils in total calorie consumption increased from 7.2 percent in 1980 to 9.4 percent in 2013 (FAOSTAT). In Brazil, China and India increased production and consumption of vegetable oils, and changes linked to market reforms, had the effect of integrating the three countries into the global soybean oil market, thereby facilitating the dietary convergence of soybean oil consumption worldwide. Soybean oil is not only used in cooking, but also for producing ultra-processed products through hydrogenation. This process creates trans-fats, which increase the risk of coronary heart disease. The World Health Organization (WHO) recommends replacing

saturated and trans-fats with unsaturated fats. In India, market liberalization in the mid-1990s stimulated a rapid increase in imports of low-priced vegetable oils, which corresponded to a simultaneous increase in consumption and stimulated a switch in the types of oil consumed, away from traditional peanut, rapeseed and cottonseed oils, towards imported palm and soybean oils. Refined, bleached and deodorized palm oil has a higher saturated fat content than other vegetable oils, and, when partially hydrogenated and used in processed foods, contributes to trans-fat intake.

Source: FAO, 2015. Adapted from Box 10, *State of Agricultural Commodity Markets 2015* – 16.

Both types of GFVCs affect nutritional outcomes through direct and indirect pathways. Direct pathways relate to the food products that such firms bring to end-consumers (supply-side factors). Indirect pathways include the impact they have on incomes and the structure of national food systems (supply and demand-side factors). The impact of GFVCs on nutrition is complex with positive and negative impacts along each of these pathways. The net impact may not always be obvious.

Playing into the changing needs of rapidly urbanizing populations, global agri-food firms can bring about many positive outcomes. For example, they might invest in – and thus increase the availability of and access to – food products that are safer, of higher quality, more readily available, lower-priced, more convenient (to purchase and prepare), more diversified, and so on. To deliver this value to consumers, these firms have established highly controlled supply chains that include demanding process and product standards, advanced logistics and communication systems, and sophisticated marketing strategies. In addition to public food standards and often complementing them, private standards set up by international firms often provide food safety and quality assurances in response to consumer preferences (Wieck, 2018). Through FDI, GFVCs can also bring decent employment opportunities and reliable, rewarding markets for local agri-food firms, both of which increase incomes. Local food SMEs may also benefit from advanced technology and business practice spill-overs from their large global counterparts. The latter can therefore positively affect both the demand for and supply of more nutritious foods.

At the same time, global agro-firms may bring various negatives. Less-processed and more nutritious food products in original diets may be replaced by more-processed and less-nutritious ones. As these global players typically make large investments in the marketing of their products they may contribute substantially to changing the food environment where less-nutritious food becomes widely available, affordable, convenient and desirable. Other potential negative impacts relate to the production side. Rather than offering opportunities for local food SMEs all along the value chain, they may push them out (e.g. through increased competition or through the acquisition of local businesses) or block their emergence. While private standards can help improve food quality and safety, they may also work as a de facto barrier for resource-poor producers and for many SMEs. GFVCs may displace informal cross-border trade value chains that are often critical to the income of women in low-income households. The net impact on (decent) jobs may be negative. GFVCs can therefore negatively affect both the demand for and supply of more nutritious foods.

IMPLICATIONS OF TRADE POLICY FOR NUTRITION

To understand the role of trade policy in addressing nutrition concerns, it is important to know the broader context of policies that influence the food system and shape the food environment. Indeed, different policies impact the various stages of food value chains from production through processing, trade, distribution and retailing to the final consumer, affecting nutrition outcomes through prices, preferences, access and availability. These policies include farm subsidies, market interventions such as public stockholding and local procurement, regulation of marketing activities, public research and development in agriculture, import tariffs and non-

tariff barriers, export subsidies and export restrictions. More general economic and social policies such as macroeconomic policies, rural development policies and education policies can also have nutritional implications.

Each of these policies is tailored towards specific objectives. Greater openness to trade, for instance, typically pursues the goal of an unimpeded flow of goods that would contribute to more efficient resource allocation and productivity gains. This, in turn, would foster economic growth. While trade and trade policies, together with other drivers, are shaping the environment in which consumers make their decisions, policies that affect agricultural producer prices, including trade measures, are a rather blunt instrument for changing final consumer demand. The effectiveness of agricultural trade policies, which usually target basic commodities, is limited particularly in environments where vertical price transmission and price elasticity of demand for food is low (rich countries) and where

The notion of “trade policies” refers to interventions that governments make to affect imports or exports. They usually denote government measures at the border that are applied when goods or services cross a country’s frontier, for example, import tariffs, export taxes or subsidies, quantitative restrictions on imports or exports, licensing or customs procedures. There are other policies that can also influence trade substantially, most notably domestic support to agriculture, since any government policy that affects production is also likely to affect trade flows (FAO, 2017).

the share of the primary product in the final consumer good is particularly low (for example, wheat – bread) (Rickard *et al.*, 2013).

WTO Commitments regulate national trade policy measures. The bulk of the world’s trading nations negotiate and sign these agreements, which provide the legal ground rules for international commerce. The need for consistency with WTO rules means that the use of tariffs to achieve nutritional goals is restricted within bound rates. Moreover, raising tariffs on foreign supplies provides implicit protection and support to domestic suppliers making the policy that targets healthier diets less effective if it encourages increased domestic production.

Measures such as food safety requirements, quality standards, and requirements for product composition or labelling can be important tools for addressing nutrition concerns, and at the same time have implications for trade. WTO rules, including the Agreements on Sanitary and Phytosanitary Standards (SPS) and Technical Barriers to Trade (TBT), regulate the use of such measures. The SPS and TBT Agreements balance WTO members’ rights to regulate for legitimate objectives, such as food safety and consumer protection, and ensure that these regulations do not become discriminatory barriers to trade. In recent years many countries have implemented nutrition labelling regulations, triggering discussions on these measures in the WTO TBT Committee. These discussions underline the importance of further work on a commonly agreed international set of standards and guidelines for labelling applicable to all foods (FAO and WTO, 2017).

DOMESTIC FOOD SYSTEM-RELATED POLICIES FOR NUTRITION

Framed by broader trade and macroeconomic policies, myriad domestic policy measures targeting the food system and food environments may complement or counteract the effects of trade policies.

Some of these policies are geared towards increasing the availability and affordability of nutritious foods. These include: diversification of local agricultural production and investments in the production of nutritionally superior food products; institutional procurement of nutritious foods (e.g. through school food programmes); and the facilitation of business investments in nutritious food products (e.g. through food innovation centres). Some others are directly geared toward reducing (increasing) the consumption of less healthy (more nutritious) foods by affecting markets (e.g. fiscal measures, regulation of school environments, and/or food reformulation including voluntary public-private schemes) or supporting more informed consumer choices (e.g. advertising restrictions, public information campaigns and social marketing, nutrition education and labelling regulations) (Mazzocchi, 2017).

Among the fiscal measures, taxes on products high in sugar, salt or fat would be preferable to import tariffs because they affect the overall consumption of a good, not just goods originating from foreign sources, and are consistent with WTO rules (Thow *et al.*, 2017). In fact, taxes on food and drinks that are high in sugar and unhealthy fats are becoming increasingly widespread in both developed and developing countries and recent studies suggest their effectiveness in reducing the consumption of such foods (Mazzocchi, 2017). “Nudging”, i.e. providing small incentives for healthy foods or small disincentives for unhealthy ones, can have a swift and significant impact on consumption patterns, at least for the product being taxed. Such policies should be coupled with information and education programmes to increase their effectiveness. While the taxation of food characterized by low demand elasticities may mean small changes in consumer behaviour, the large tax revenues they generate could be used to finance such programmes.

Ultimately, the choice of policies should be guided by the nature of the nutritional problems to be addressed and an understanding of the local food system (e.g. level of import dependency, production patterns and market access). Furthermore, an integrated set of policies within a strategic plan will likely have a greater impact than an isolated policy action.

CONCLUSIONS

Dietary trends towards more calories overall, and the rising consumption of processed foods, saturated fats, sugar and salt have been linked to health risks, obesity and non-communicable diseases and are justifiable grounds for concern. Relative price changes, income growth, urbanization, value chain and infrastructure investments, FDI in food processing and retailing, international trade and agricultural and trade policies are cited as influences on preferences, access and availability of food.

The empirical evidence on how trade has changed the patterns of consumption is still rather limited. At the broadest level, it is acknowledged that trade can improve the availability and affordability of different foods as well as providing more choices for consumers and thus helping to diversify diets. At the same time, the rise of the international food trade, especially through imports, is often associated with a greater availability of less healthy foods, including ultra-processed foods, to the detriment of dietary quality. The question is therefore not only what the net effect of trade has been in terms of diet composition, but also how and to what extent trade policies have shaped the food environment and thus consumer behaviour and dietary patterns.

GFVCs have become a main mediator linking trade and nutrition. It is important to know how to guide this major force in food system development toward achieving a better nutritional outcome at the end-consumer level. It is also important to understand how sophisticated GFVC production and marketing capacities can be harnessed to market food products that are more nutritious and have a net positive impact on society and natural resources. Given the complexity of the issues, a wide set of innovative policies relating to trade, value chain development, investment, nutrition and other areas, needs to be included in this process, and the convergence of these policies is essential for a sustainable impact at all levels.

There are myriad different policies, including in agriculture and trade, that affect the food system, its economic environment, prices, producers, processors and consumers. These policies can change access to food and the availability of food at all stages of the value chain from primary production to final consumption. Trade measures, as part of the broader package of economic policies, have an effect on consumer choices and the ultimate composition of diets. The potential long-term nutritional consequences of any major trade policy change should therefore be considered carefully before being introduced.⁶

To maximize the positive effects of increased trade for nutrition and to limit its adverse effects, trade reforms need to be complemented by targeted domestic policies designed to improve the nutritional status of the population, tailored to country specific needs. Among those, policies affecting the market environment such as fiscal measures (e.g. taxes), regulation of school environments, food reformulation (including voluntary public-private schemes), and policies supporting more informed consumer choices such as advertising restrictions, public information campaigns, social marketing, nutrition education and labelling regulations have proven to be effective. The combination of fiscal measures and adequately

funded information programmes could shift consumption in favour of healthier alternatives, provided these are readily available.

⁶ This would also call for strengthening the capacity of countries to analyse the coherence between trade and nutrition policies as well as their interplay with national dietary guidelines.

FUTURE RESEARCH NEEDS

There is a general consensus in the literature on the list of drivers that are changing food consumption patterns (i.e. income growth, urbanization, etc.). Price and income effects are relatively well-understood and empirical estimates of relevant elasticities are available. However, there is still uncertainty about the direction and causality of other drivers, including the impact of trade. Comprehensive analyses are needed to link trends in food availability with corresponding trends in domestic production and trade, to identify and understand key drivers and the role of trade and to better quantify policy implications and choices.

There is a need for more and better data to design more effective policy interventions for nutrition, in particular data on household and individual food consumption. For example, while food balance sheets provide useful information about levels and trends in average food availability, they say nothing about food access by different population groups (different socio-economic strata, age brackets and gender) nor do they reveal anything about actual diets and possible consumption shifts. Moreover, they reveal little about the increases in consumption of processed and ultra-processed foods which are seen as a key part of dietary trends. Trade data should be sufficiently disaggregated to cast some light on this but the overall limited availability of data on processed products is a major stumbling block. Given the concern that observed dietary trends involve a tendency towards increasing consumption of less healthy foods, it is useful to consider food composition and the availability of nutrients as well as the availability of the foods themselves.

There is also scope for improvement in the specification of econometric analyses especially with regard to estimating the impacts of trade liberalization and increasing FDI on developments along the value chain. While many factors along the value chain affect dietary change, few have been quantified. Finally, there is a need to take a more holistic policy approach. Food systems need to be looked at in their entirety, including the various policy measures taken at all stages of the value chain. Analytical tools to diagnose how trade policies influence food environments and interact with other nutrition-related policies need to be developed and applied⁷ to identify synergies and conflicts of different policies within a food system and to ensure policy consistency across different layers of the food system/stages of the value chain.

REFERENCES

- FAO. 2015. *The State of Agricultural Commodity Markets 2015-16. Trade and food security: achieving a better balance between national priorities and the collective good*. Rome, FAO.
- FAO. 2017. *Strengthening sector policies for better food security and nutrition results*. Trade Policy Guidance Note No. 9. Rome, FAO.
- FAO, IFAD, UNICEF, WFP & WHO. 2017. *The State of Food Security and Nutrition in the World. Building Resilience for Peace and Food Security*. Rome, FAO.
- FAOSTAT. 2017. Food Balance Sheets.
- FAO & WTO. 2017. Trade and Food Standards. Rome, FAO/WTO. 72 pp. (Also available at www.fao.org/3/a-i7407e.PDF).
- Friel, S., Gleeson, D., Thow, A.-M., Labonte, R., Stuckler, D., Kay, A. & Snowden, W. 2013. *A new generation of trade policy: potential risks to diet-related health from the trans pacific partnership agreement*. Globalization and Health, 9: 46. <https://doi.org/10.1186/1744-8603-9-46>
- Global Panel. 2017. *Improving nutrition through enhanced food environments*. Policy Brief No. 7. London, UK: Global Panel on Agriculture and Food Systems for Nutrition.
- Guyomard, H., Manceron, S. & Peyraud, J.-L. 2013. *Trade in feed grains, animals, and animal products: Current trends, future prospects, and main issues*. Animal Frontiers, 3(1): 14–18. <https://doi.org/10.2527/af.2013-0003>
- HLPE. 2017. *Nutrition and food systems*. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.
- International Food Policy Research Institute (IFPRI). 2015. *Global Nutrition Report 2015: Actions and accountability to advance nutrition and sustainable development*. <https://doi.org/10.2499/9780896298835>
- Kim, S., Moon, S. & Popkin, B.M. 2000. *The nutrition transition in South Korea*. The American Journal of Clinical Nutrition, 71(1): 44–53.
- Mazzocchi, M. 2017. *Ex-post evidence on the effectiveness of policies targeted at promoting healthier diets*. Trade Policy Technical Notes, No. 19, November 2017. Rome, FAO.
- McKinsey Global Institute. 2014. *Overcoming obesity: An initial economic analysis*. Discussion paper.
- Rickard, B.J., Okrent, A.M. & Alston, J.M. 2013. *How Have Agricultural Policies Influenced Caloric Consumption in the United States?* Health Economics, 22(3): 316–339. <https://doi.org/10.1002/hec.2799>
- Shankar, B. 2017. *The Influence of Agricultural, Trade and Food Policies on Diets*. Trade Policy Technical Notes, No. 18, November 2017. Rome, FAO.

7 See recommendations from the SCN Policy Brief on "Enhancing policy coherence between trade policy and nutrition action" (2016) <https://www.unscn.org/uploads/web/news/document/ExSumm1-EN-WEBook.pdf>

Swinburn, B., Dominick, C.H. & Vandevijvere, S. 2014. *Benchmarking Food Environments: Experts' assessments of policy gaps and priorities for the New Zealand Government*. Auckland: University of Auckland.

The Lancet. 2017. *Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016*. The Lancet, 390(10100): 1345–1422. [https://doi.org/10.1016/S0140-6736\(17\)32366-8](https://doi.org/10.1016/S0140-6736(17)32366-8)

Thornton, P.K. 2010. *Livestock production: recent trends, future prospects*. Philosophical Transactions of the Royal Society B: Biological Sciences, 365(1554): 2853–2867. <https://doi.org/10.1098/rstb.2010.0134>

Thow, A.M., Reeve, E., Naseri, T., Martyn, T. & Bollars, C. 2017. *Food supply, nutrition and trade policy: reversal of an import ban on turkey tails*. Bulletin of the World Health Organization, 95: 723–725. <https://doi.org/http://dx.doi.org/10.2471/BLT.17.192468>

Trill, W.B. 2017. *Transnational corporations, food systems and their impacts on diets in developing countries*. Trade Policy Technical Notes, No. 17, November 2017. Rome, FAO.

Wieck, C. 2018. *International Trade Rules for Food Safety and Food Quality*. Handbook of International Food and Agricultural Policies, pp. 277–308. World Scientific.