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Science & Technology in childhood Obesity Policy**



Science and Technology in  
childhood Obesity Policy

# Science & Technology in childhood Obesity Policy

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## **D9.4: Policy briefs to support the adoption and implementation of key policy actions by relevant actors**

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**Dissemination Level**

<b>PU</b>	Public	<input checked="" type="checkbox"/>
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Abbreviation	Definition
AFR	WHO African Region
AMR	WHO Region of the Americas
CHD	coronary heart disease
CRC	Convention on the Rights of the Child
CVD	cardiovascular disease
EMR	WHO Eastern Mediterranean Region
EU	European Union EU
EUR	WHO European Region
FOPL	front-of-pack labelling
GINA	WHO Global database on the Implementation of Nutrition
IFBA	International Food and Beverage Alliance
NCD	noncommunicable diseases
NGO	nongovernmental organization
OECD	Organisation for Economic Co-operation and Development
OSH	out-of-school-hours
PE	Physical education
PHO	partially hydrogenated oils
QPE	Quality physical education
SDGs	Sustainable Development Goals
SEAR	WHO South East Asia Region
SFA	saturated fatty acids
SSBs	SSB sugar-sweetened beverages
STOP	Science & Technology in Childhood Obesity Policy
TFA	<i>trans</i> -fatty acids
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
VAT	Value-added tax
WHA	World Health Assembly
WHO	WHO World Health Organization



Scien  
child

**WPR**

WHO Western Pacific Region

**WTO**

World Trade Organization



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## 1 Background

Today, unhealthy diets are a leading cause of death and disability and currently cause 8 million premature deaths globally every year<sup>1</sup>. Childhood overweight and obesity are increasing global public health challenges. In 2020, 38.9 million children under 5 years of age were estimated to be overweight<sup>2</sup> while over 340 million children and adolescents aged 5 - 19 were overweight or obese in 2016<sup>3</sup>.

A major driver of the increases in obesity<sup>4</sup> are current food environments, with increasing availability, accessibility, affordability and marketing of foods<sup>5</sup> that are high in saturated fats, trans fats, sugars and sodium/salt and are usually highly processed<sup>6</sup>. To enable consumers to make healthier dietary decisions therefore requires creating a food environment that promotes healthy diets. There is a package of policy actions which governments can implement to create enabling food environment to promote healthy diet. The policy actions include ensuring informative and accurate nutrition labelling, reformulating food to reduce the levels of sodium/salt, sugars, saturated and trans fats in processed food products, protecting children from the harmful impact of food marketing, taxing unhealthy options and subsidising healthy options, and nudging to promote healthy diets in schools.

In addition to creating enabling food environment to promote healthy diets, increasing physical activity plays an important role in preventing and controlling childhood overweight and obesity. Global estimates indicate that over 80% of young people in school are not meeting the global recommendations of 60 minutes of moderate-to-vigorous physical activity per day<sup>7</sup>. Integrating physical activity into school settings can play a key role in promoting physical activity and reduce sedentary behaviour among children and young people.

As part of the objectives of the Work Package (WP) 9. Policy Analysis Methodology and Knowledge Translation of the STOP project, six policy briefs were developed to provide and devise policy toolkits and policy guidance which relevant actors (i.e. policy-makers and programme managers, health professionals and advocates) can adopt and implement in addressing childhood obesity. These policy briefs are on: 1. Nutrition labelling; 2. Reformulation; 3. Marketing restriction; 4. Fiscal policies; 5. Physical activity; and 6. Nudges.

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<sup>1</sup> Collaborators GRF. Global burden of 87 risk factors in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*. 2020; 396:1223-49.

<sup>2</sup> World Health Organization, United Nations Children's Fund, Bank W. Joint Child Malnutrition Estimates (JME). 2021.

<sup>3</sup> Collaboration NRF. Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults. *Lancet*. 2017;390(10113):2627-42.

<sup>4</sup> Murray CJL, Aravkin AY, Zheng P, Abbafati C, Abbas KM, Abbasi-Kangevari M, et al. Global burden of 87 risk factors in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*. 2020;396(10258):1223-49.

<sup>5</sup> "Food" refers to any food or non-alcoholic beverages.

<sup>6</sup> Swinburn BA, Sacks G, Hall KD, McPherson K, Finegood DT, Moodie ML, et al. The global obesity pandemic: shaped by global drivers and local environments. *Lancet*. 2011;378(9793):804-14.

<sup>7</sup> Guthold R, Stevens GA, Riley LM, Bull FC. Global trends in insufficient physical activity among adolescents: a pooled analysis of 298 population-based surveys with 1.6 million participants. *Lancet Child Adolesc Health*. 2020;4(1):23-35.



## **2 Approach to develop the policy briefs**

For policy briefs to be useful and effective, they need to provide practical guidance to the target audience (e.g. policy-makers and programme managers, health professionals and advocates) for designing and implementing effective policy actions. Therefore, OECD, Imperial College and WHO jointly organized STOP meetings of national public health agencies in 2018, 2019 and 2020, at the occasion of the OECD Expert Group Meeting on the Economics of Public Health (EGEPH) meetings where representatives of various national public health agencies participated. At these meetings, inputs were obtained from the representatives from the national public health agencies, as well as from the Ministries and Departments of Health on what kind of information such policy briefs should contain. Views were expressed that the policy briefs should include information on country experiences on the factors influencing successful development and implementation of the policy actions, based on the needs of respective country contexts including stakeholder dynamics, and implementation challenges and barriers that may exist, as well as how countries have addressed those bottlenecks and challenges. It was also stated that recommendations coming from recognized international agencies such as WHO are powerful and convincing when advocating for proposed policy actions at the national level.

To ensure that the policy briefs are based on robust and solid evidence-base, the best-available evidence was sought and used to prepare respective policy briefs. These include findings that were produced by the STOP systematic reviews and other relevant studies in respective WPs, and the existing guidelines, guidance, standards, and tools of WHO, Codex Alimentarius and other international organizations.

After policy briefs were drafted, they were then circulated for a peer-review by experts at academic institutes and national public health agencies involved in the STOP project. Based on the comments and inputs received, the briefs were revised and finalized. All names of the authors and reviewers are cited in the acknowledgement sections of the briefs (see appendixes 1-6).

## **3 Deliverables – six policy briefs**

Following are the titles of the six policy briefs that were developed:

1. Nutrition labelling: policy brief
2. Reformulation of food and beverage products for healthier diets: policy brief
3. Protecting children from the harmful impact of food marketing: policy brief
4. Fiscal policies to promote healthy diets: policy brief
5. Promoting physical activity through schools: policy
6. Nudges to promote healthy eating in schools: policy brief

The text version of the policy briefs is appended to this report (Appendixes 1-6).



## 4 Dissemination

The policy briefs are uploaded on the website housed within the following STOP website, and are publicly available: <http://www.stopchildobesity.eu/policy-briefs/>.

A launch of the policy briefs is planned at a session of the Policy symposium on NCD prevention, scheduled to be held in Brussels, Belgium on the 14<sup>th</sup> to 16<sup>th</sup> of June 2022. This is a joint symposium co-hosted by STOP, PEN, CO-CREATE and Best-ReMap, which convenes stakeholders of the four projects as well as policy-makers from countries of the European Union, thus creating a great opportunity for these policy briefs to be widely disseminated for adoption and adaption by relevant policy-makers and other stakeholders.

Around the time of the launch at the joint symposium, a news article would be prepared to support the launch and a press release to be disseminated to media contacts on the date of the launch.

Other dissemination opportunities (e.g. conferences, webinars) will also be sought as appropriate.

In advance of the publication of the policy briefs, practice abstracts on four policy areas (i.e. marketing restriction, fiscal policies, physical activities and nudging) were also prepared and submitted in February 2022. The STOP practice abstracts consisted of summaries on the policy briefs, and practical recommendations (i.e. what could be the main added value/ to the end-user if the generated knowledge is implemented? How can the practitioner make use of the results?).



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## 5 Appendix

The following appendixes present the text version of the six policy briefs:

**Appendix 1.** Nutrition labelling: policy brief

**Appendix 2.** Reformulation of food and beverage products for healthier diets: policy brief

**Appendix 3.** Protecting children from the harmful impact of food marketing: policy brief

**Appendix 4.** Fiscal policies to promote healthy diets: policy brief

**Appendix 5.** Promoting physical activity through schools: policy

**Appendix 6.** Nudges to promote healthy eating in schools: policy brief

The policy briefs are also accessible on <http://www.stopchildobesity.eu/policy-briefs/>.





## Appendix 1. Nutrition labelling: policy brief

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### Policy issue and context

Today, unhealthy diets are a leading cause of death and disability and currently cause 8 million premature deaths globally every year (1). Childhood overweight and obesity are increasing global public health challenges. In 2020, 38.9 million children under 5 years of age were estimated to be overweight (2) while over 340 million children and adolescents aged 5 - 19 were overweight or obese in 2016 (3). A major driver of the increases in obesity (4) are current food environments, with increasing availability, accessibility, affordability and marketing of foods<sup>8</sup> that are high in saturated fats, trans-fats, sugars or salt and are usually highly processed (5).

To enable consumers to make healthier dietary decisions therefore requires creating a food environment that promotes a healthy diet. Such a food environment includes nutrition labelling that informs the consumer of nutritional properties of a food to aide purchase and consumption decisions and prevents labelling in a manner that is false, misleading or deceptive, or is likely to create an erroneous impression about any characteristics of the product.

Acknowledging that nutrition labelling policies have a dual purpose (i.e. to protect the health of consumers and to ensure fair practices in food trade), this policy brief focusses on nutrition labelling policies as a tool to promote healthy diets<sup>9</sup>. It provides policy makers and programme managers, health professionals and advocates with information and options for nutrition labelling policies, including policies on **ingredient lists, nutrient declarations, supplementary nutrition information** (e.g. front-of-pack-labelling, or FOPL) and **nutrition and health claims**.

### Background

The current food retail environment offers an unprecedented selection of heavily processed packaged foods that may undermine healthy diets. Sales of such foods are rapidly increasing (6), their retail shelf-space typically exceeds that of unpackaged mostly healthier food options (7, 8) and store promotions tend to favour the unhealthier packaged foods (9-11).

Labelling of packaged food is considered to be “the primary means of communication between the producer and seller of food on one hand, and the purchaser and consumer on the other” (12). Numerous global documents endorsed by the World Health Assembly (WHA) have proposed nutrition labelling as an important policy tool to improve nutrition and promote healthy diets (13-18). Also, the Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health (2008–2014) called on governments to adopt, implement and enforce nutrition labelling policies with a view to respect, protect and fulfil the right to health (19). Nutrition labelling has the potential to help rebalance a food retail environment (20) currently skewed towards foods that undermine healthy diets, by providing information on the nutritional properties and the quality of foods to aide purchase and consumption decisions.

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<sup>8</sup> “Food” refers to any food or non-alcoholic beverage.

<sup>9</sup> Information about allergens, food additives, date marking or country of origin or labelling requirements for foods for special dietary or medical purposes are beyond the scope of this brief.



However, labelling is also used as a marketing tool by the food industry, giving impetus to the general principle of nutrition labelling that the labels shall not describe a product or present information about it which is in any way false, misleading or deceptive, or is likely to create an erroneous impression regarding its character in any respect<sup>10,11</sup>. In some circumstances, labelling may also encourage reformulation of foods, as manufacturers would want to have their products fall in the categories that are defined as “healthier” by the labels. This policy brief on nutrition labelling focusses on **ingredient lists, nutrient declarations, supplementary nutrition information** (including front of pack labels) and **nutrition and health claims**, which serve different purposes and for which the Codex Committee on Food Labelling has developed guidance<sup>12</sup>.

The **list of ingredients** is a mandatory requirement for the label of all pre-packaged foods (except for single ingredient foods), as described in a general Codex standard. All pre-packaged foods must carry a list of ingredients, in descending order of weight.<sup>2</sup> **Nutrient declarations** are a standardized listing of the nutrient content of a food and are usually positioned on the back or side of the package<sup>13</sup>; **supplementary nutrition information**, provides additional information of the food nutritional value; **nutrition claims** are claims made on nutritional properties of food, and **health claims** suggest or imply a relationship between a food or a constituent of that food and health<sup>14</sup>.

The purpose of **nutrient declarations** should be to provide consumers with a “suitable profile of nutrients contained in the food and considered to be of nutritional importance”. **Supplementary nutrition information**, including FOPL, is intended to “increase the consumer’s understanding of the nutritional value of their food and to assist in interpreting the nutrient declaration”. The specific purpose of supplementary nutrition information varies and can include providing an overall summary score about the healthfulness of a food or informing consumers about high levels of nutrients of concern. Nutrient declarations support implementation of supplementary nutrition information, and enable the implementation of nutrition and health claims, as all foods which carry such a claim should include a nutrient declaration. Nutrition and health claims are also used as a marketing tool by the food industry.

Countries typically have a number of nutrition labelling rules and regulations. Governments adopt nutrition labelling policies depending on their requirements, their legal environment (taking into consideration, e.g. policies related to food and nutrition, consumer protection, or commerce and trade), the implementing agency or authoritative body responsible for enforcing the policies and the defined policy objectives. There is typically also no single agency or body across countries that implements all activities related to nutrition labelling policies. Examples can include food and drug authorities, consumer affairs agencies, food standards agencies, ministries of economy or primary industries. While the details nutrition labelling policies will depend on the country context, most countries adapt the labelling provisions of Codex Alimentarius, as the Codex Alimentarius Commission is the recognized international authority for food standard setting. Codex standards and guidelines are also used as a reference point for international trade agreements of the World Trade Organization (WTO). Relevant Codex guidance on nutrient declarations, supplementary nutrition information and nutrition and health claims is discussed in the next sections of this brief. Importantly, the nutrition labelling policies discussed in this policy brief are not meant to be implemented

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<sup>10</sup> Codex Alimentarius General Standards for the Labelling of Prepackaged Foods [CXS 1-1985](#)

<sup>11</sup> Codex Alimentarius Guidelines on Nutrition Labelling [CAC/GL 2-1985](#)

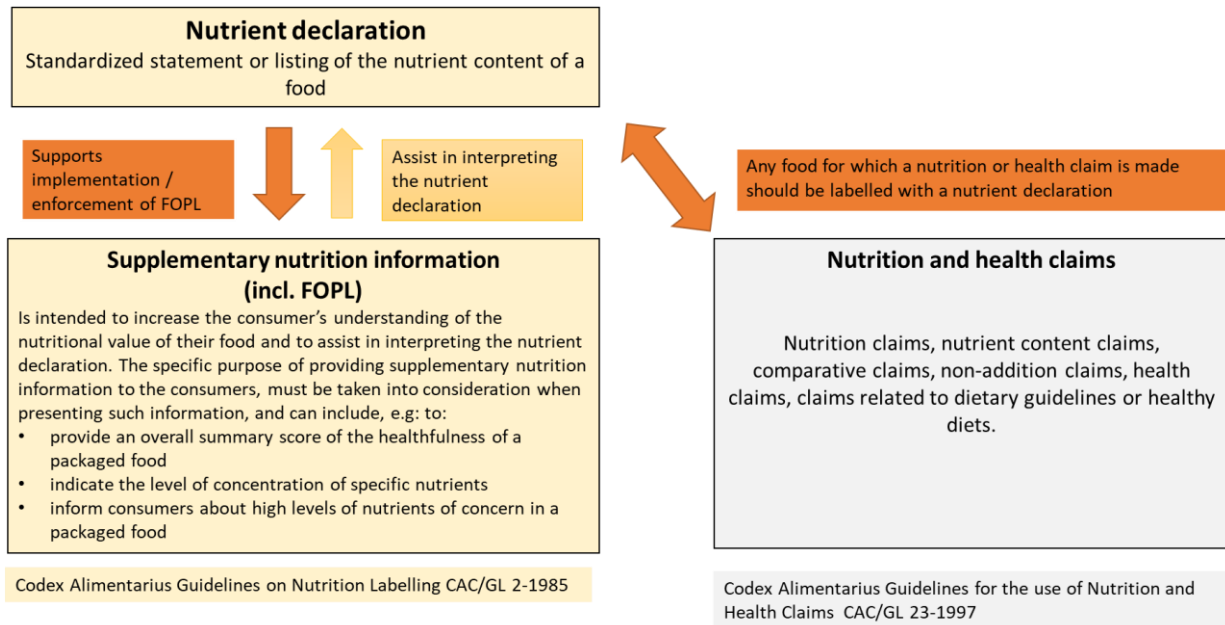
<sup>12</sup> Relevant Codex Alimentarius standards and related texts on labelling can be found at the website of the [Codex Committee on Food Labelling](#).

<sup>13</sup> Codex Alimentarius Guidelines on Nutrition Labelling [CAC/GL 2-1985](#)

<sup>14</sup> Codex Alimentarius Guidelines for the use of Nutrition and Health Claims [CAC/GL 23-1997](#)

independently from one another, but rather require coherent implementation. Their interdependence is visualized in figure 1.

**Figure 1:** Nutrient declarations, supplementary nutrition information and health and nutrition claims



## Codex guidance on nutrient declarations, supplementary nutrition information and nutrition and health claims

### Nutrient declarations

Nutrient declarations should be mandatory for *all* prepackaged foods for which nutrition or health claims are made. However, irrespective of whether claims are made, when implementing nutrient declarations, the declaration of the following should be mandatory:

- energy value
- protein
- carbohydrate (i.e. dietary carbohydrate excluding dietary fat)
- fat
- saturated fat
- sodium<sup>15</sup>
- total sugars

Previously, saturated fatty acids (SFA), sodium and total sugars were not included as the mandatory nutrients to be declared. However, as part of the efforts in implementing the Global Strategy on Diet, Physical Activity and Health adopted by the 57<sup>th</sup> World Health Assembly in 2004 (21) also through the work of Codex, Codex agreed in 2013 to include SFA, sodium and total sugars as the mandatory

<sup>15</sup> National authorities may decide to express the total amount of sodium in salt equivalents as "salt".



nutrients to be declared in a nutrient declaration. Accordingly, Codex then developed the nutrient reference values relevant for the prevention of noncommunicable diseases (NRVs-NCD) based on the WHO guidelines (Box 1), to be used for the purposes of nutrition labelling and relevant claims.

**BOX 1: Nutrient Reference Values for the prevention of NCDs**

**Intake levels not to exceed**

Saturated fatty acids: 20 g<sup>16,17</sup>

Sodium: 2000 mg<sup>19</sup>

**Intake levels to achieve**

Potassium: 3500 mg<sup>18</sup>

To date *trans*-fatty acids (TFA) is not included as a mandatory nutrient to be declared in nutrient declaration. However, it is noted that countries where the level of intake of TFA is a public health concern should consider including the declaration of TFA in nutrition labelling.<sup>7</sup>

### **Nutrition and health claims**

As stated in the Codex Alimentarius Guidelines for the use of nutrition and health claims, “nutrition claims should be consistent with national nutrition policy and support that policy. Only nutrition claims that support national nutrition policy should be allowed”. Furthermore, “health claims should be consistent with national health policy, including nutrition policy, and support such policies where applicable. Health claims should be supported by a sound and sufficient body of scientific evidence to substantiate the claim, provide truthful and non-misleading information to aid consumers in choosing healthful diets and be supported by specific consumer education”. Guidance exists on the use of claims in general<sup>20</sup>, and for the different types of nutrition and health claims<sup>21</sup>, including for example nutrient content claims, comparative claims or claims related to dietary guidelines or healthy diets. For health claims, Codex defined recommendations on the scientific substantiation of health claims which are intended to assist competent national authorities in their evaluation of health claims to determine their acceptability for use by the industry.

Codex has also defined conditions that nutrient content claims for “low”, “free” or “very low” should not exceed for energy, fat, saturated fat, cholesterol, sugars and sodium. For example, solids in which saturated fat does not exceed 1.5g per 100g can be labelled with the claim “low” in saturated fat. However, a footnote indicates that in the case of the claims for saturated fat, *trans*-fatty acids should be taken into account where applicable. Or, solids in which sugars do not exceed 0.5g per 100g can be labelled with the claim “free”. Importantly, no claim shall be misleading or deceptive.

### **Supplementary nutrition information (including FOPL)**

In recent years, various front-of-pack nutrition labelling (FOPL) systems have been developed and used as supplementary nutrition information in different countries. There is less consensus globally on the use of FOPL, however, the Codex Guideline on Nutrition Labelling in Annex 2 now provides

<sup>16</sup> This value is based on the reference energy intake of 2 000 kcal.

<sup>17</sup> The selection of this nutrient for the establishment of an NRV was based on “convincing evidence” for a relationship with NCD risk as reported in the report Diet, Nutrition and the Prevention of Chronic Diseases. WHO Technical Report Series 916. WHO, 2003.

<sup>18</sup> The selection of these nutrients for the establishment of an NRV was based on “high quality” evidence for a relationship with a biomarker for NCD risk in adults as reported in the respective 2012 WHO Guidelines on sodium and potassium intake for adults and children.

<sup>19</sup> The selection of these nutrients for the establishment of an NRV was based on “high quality” evidence for a relationship with a biomarker for NCD risk in adults as reported in the respective 2012 WHO Guidelines on sodium and potassium intake for adults and children.

<sup>20</sup> Codex Alimentarius General Guidelines on Claims [CAC/GL 1-1979](#)

<sup>21</sup> Codex Alimentarius Guidelines for the use of Nutrition and Health Claims [CAC/GL 23-1997](#)



guidelines on front-of-pack nutrition labelling, to assist countries in the development of FOPL consistent with their national dietary guidance or health and nutrition policy.

Annex 2 of the Codex Guideline provides principles for the establishment of FOPL and is in line with the WHO Guiding principles and framework manual for FOPL (22) (See Box 2), which provides a framework for the development, implementation, and monitoring and evaluation of a FOPL system. Importantly development and implementation of any supplementary nutrition information, including front of pack labelling, must consider the local context, including for example, the current nutritional situation, dietary customs as well as the availability of foods.

The WHO Guiding principles and framework manual for FOPL defines FOPL as “nutrition labelling systems that are presented on the front of food packages (in the principal field of vision) and can be applied across the packaged retail food supply”, to present simple, often graphic information on the nutrient content or nutritional quality of products. A FOPL system should be based on an underpinning nutrient profile model that considers the overall nutrition quality of the product **or** the nutrients of concern for NCDs (or both). Nutrients of concern for NCDs include saturated fats, *trans*-fatty acids, sodium and total sugars.

Box 2: WHO Guiding principles and framework manual for FOPL

#### **Overarching principles**

1. The FOPL system should be aligned with national public health and nutrition policies and food regulations as well as with relevant WHO guidance and Codex guidelines.
2. A single system should be developed to improve the impact of the FOPL system.
3. Mandatory nutrient declarations on food packages are a prerequisite for FOPL systems.
4. A monitoring and review process should be developed as part of the overall FOPL system for continuing improvements or adjustments as required.
5. The aims, scope and principles of the FOPL system should be transparent and easily accessible.

#### **Principles for a collaborative approach to FOPL development**

6. Government should lead the multisectoral stakeholder engagement process for the development of trusted systems, including nutrient profiling criteria.

#### **Principles for FOPL system format**

##### **Design**

7. The FOPL system should be interpretive, based on symbols, colours, words and/or quantifiable elements.
8. The design of FOPL systems should be understandable to all population subgroups and be based on the outcome of consumer testing, evidence of system performance and stakeholder engagement.

##### **Content**

9. Content should encompass nutritional criteria and food components that aim to inform choice and enable interpretation of food products against risks for diet-related noncommunicable diseases (NCDs) and for promoting healthy diets.
10. The FOPL system should enable appropriate comparisons between food categories, within a food category, and between foods within a specific food type.



### Principles for the implementation of FOPL systems

11. Uptake of the FOPL system should be encouraged across all eligible packaged foods, either through regulatory or voluntary approaches.
12. Early engagement of industry groups and the development of guidance documents (i.e. style guide) are necessary in facilitating the implementation of the FOPL system.
13. Engagement with key opinion leaders (including food and nutrition experts and the media) and consumers is essential and should be well managed.
14. Well-resourced public education campaigns and consumer education with special consideration of techniques to target at-risk groups are necessary for improving nutrition literacy and consumer understanding and use of the FOPL system.
15. Baseline data should be collected to support monitoring and evaluation of the impact on consumers and reformulation of food products.

The two main categories of FOPL systems are: interpretive and non-interpretive systems. **Interpretive systems** provide at-a-glance guidance on the relative healthfulness or unhealthfulness of a product. Interpretive systems may provide a summary indicator of the healthfulness of a food (e.g. using letters or symbols to rate the food according to its healthfulness). Examples include the Nutri-Score system (France), Health Star Rating (Australia and New Zealand), and multiple traffic light labelling system (United Kingdom). Another interpretive system is the warning system (Chile), which provides an indicator of high levels of nutrients that increase the risk of diet-related NCDs. In contrast, endorsement logos, such as the Heart Symbols (e.g. Finland), Green Keyhole (e.g. Sweden), provide an indicator of the relative healthfulness of a food, with no indication of unhealthfulness. **Non-interpretive systems**, such as Guideline Daily Amount (GDA), provide nutrient content information with numbers rather than graphics, symbols, colours with *no specific advice or judgement on the overall nutritional value of the food*.

The underpinning nutrient profiling model varies depending on the FOPL system. For example, a model that sets threshold amounts that meet a nutrition guideline is used in interpretive nutrient-based systems, an algorithm for food products' overall nutrition profile is used in interpretive non-nutrient based indicator systems and a model basing criteria on nutrient reference values is used in non-interpretive nutrient-based systems.

What system to use, depends on the country context. Some countries will create their own system, whereas other countries may adapt an existing system. No matter what system is used the content should encompass nutritional criteria and food components with the aim of informing choice and enabling interpretation of food products against risks for diet-related NCDs, and of promoting healthy diets; and the FOPL system should enable appropriate comparisons between foods. Consumer research will indicate whether people understand and change their purchasing decisions in response to the label.

### Elements that impact implementation of nutrition labelling policies

Elements that facilitate or hinder implementation of labelling policies depend on the policies' details and purpose and on the country's existing infrastructure to implement food-related policies. For example, implementation of a "use by" date on foods which are highly perishable and are likely to constitute an immediate danger to human health after a certain period of time, is accepted and expected. However, there are likely to be differing opinions and interests, when a country decides to



update its nutrient declaration to include added sugars, or to develop an interpretative front of pack labelling system.

A review of factors that may impact the development and implementation of nutrition labelling policies identified elements that support or hinder development, implementation, monitoring, evaluation and enforcement (53). Overall, facilitators included for example strong political leadership, supporting evidence, intersectoral collaboration, transparency of the process and – in particular for FOPL - pilot-testing the proposed FOPL systems (54-58). Governments seeking to revise existing or develop new nutrition labelling policies reports, can solicit feedback from the public and other actors allowing for an opportunity to provide inputs (59-67) and possibly increasing acceptability of the policy. Making submissions to the consultations publicly available increases transparency in the policy-making process (53). Some countries provide implementation guidance to industry of a new or revised nutrition labelling policy (68-73), which can help increase understanding and compliance.

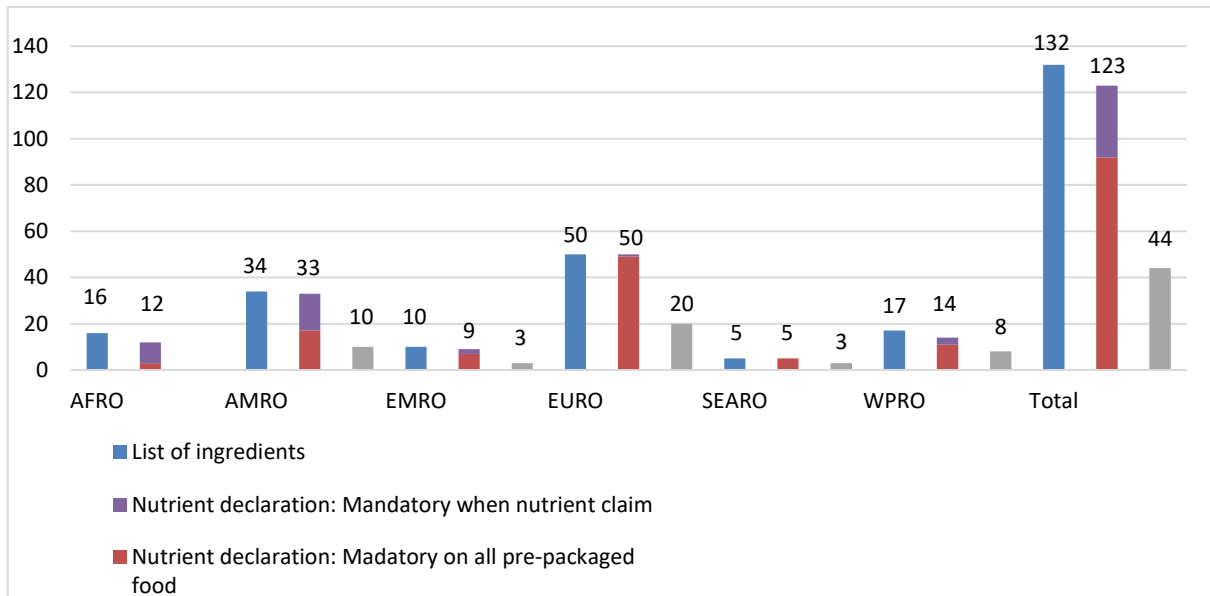
Challenges or barriers included conflicting interests and interference in the policy process, and the potential complexity of developing a labelling system (including nutrient profiling aspects, defining “unhealthy”, and deciding on the optimal system for a given context) (55, 56, 74-77). A wide range of literature has identified industry interference and opposition as major barriers to the development and implementation of nutrition labelling policies, which may affect the feasibility of such policies (57, 58, 75, 78, 79). Costs associated with changes in existing or with new labelling policies might be cited as a concern for food manufacturers, and providing sufficient transition times for phasing new requirements might help to better manage possible cost implications (80-83).

Monitoring, evaluation and enforcement are key elements for regulatory action, including for nutrition labelling policies. Lack of appropriate monitoring and evaluation measures with a labelling policy can inhibit compliance, lead to inconsistency in implementation and limit the potential effectiveness of nutrition labelling (84). Ensuring that these are integral components of the policy affects overall feasibility of policy action (14, 20, 85-88). For example, a study on regulations to limit SSB consumption in South America concluded that most labelling regulations lacked implementation and monitoring structures, although formal sanctions were referred to in the regulations on FOPL of Chile, Ecuador, Mexico and Venezuela (89).

### Country implementation

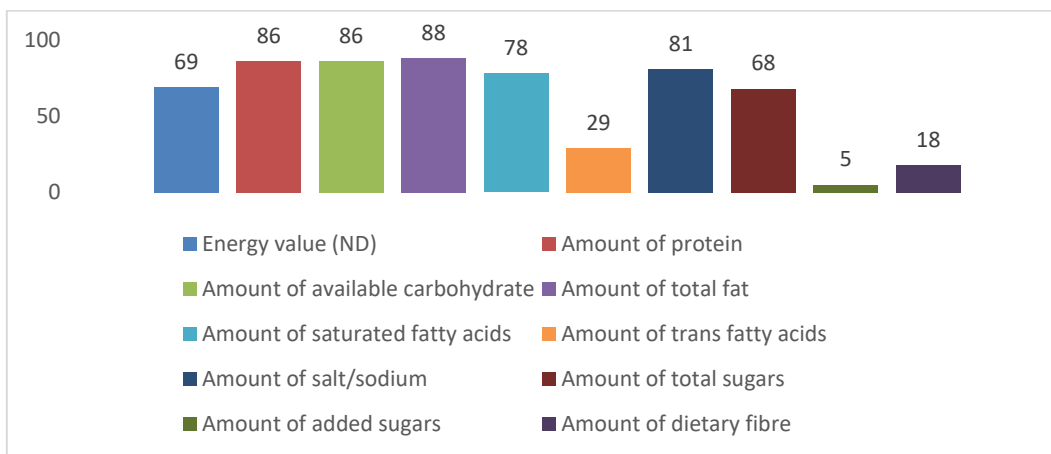
Countries have made progress on implementing nutrition labelling policies (90). As of May 2022, 132 WHO Member States with data on legislative and other measures have adopted nutrition labelling policies. Globally, the most common components of nutrition labelling of pre-packaged foods and beverages are ingredient lists and nutrient declarations, especially in the WHO regions of the Americas and Europe (Fig. 2). In several countries in the WHO regions of Africa and the Americas, implementation of nutrient declaration was only mandatory for food products bearing a nutrient content claim. Figure 3 shows nutrients to be declared in 92 WHO Member States as mandatory measures to implement nutrient declarations on all prepackaged food.

Figure 2: Number of WHO Member States having adopted different types of nutrition labelling policies.



AFR, WHO African Region, AMR, WHO Region of the Americas, EMR, WHO Eastern Mediterranean Region, EUR, WHO European Region, SEAR, WHO South East Asia Region, WPR, WHO Western Pacific Region  
Source: WHO Global database on the Implementation of Nutrition (GINA)

Figure 3: Nutrients to be disclosed in 92 WHO Member States with mandatory nutrient declaration



Among countries that reported on nutrition and health claims to the second Global Nutrition Policy Review 2016-2017, measures to regulate or guide these claims were usually included in national labelling policies (90). Most nutrition and health claim policies were developed after 2007, and almost a quarter since 2013, when the Codex guidelines incorporated nutrient reference values for NCDs. An increasing number of countries are developing and implementing front-of-pack labelling (FOPL) systems. As of May 2022, 44 WHO Member States have adopted a variety of different (and sometimes multiple) FOPL systems. Most systems are voluntary, with different formats, graphics, content and underlying nutrient profile models.

### Evidence on the impact of nutrition labelling

Whether or not nutrition labelling is impactful depends on the multiple drivers of nutrition behaviour and food related decisions, including the taste, price, convenience, brand, cultural and/or family





preferences, etc. These factors, in addition to the attributes of the label itself, including its content, format and context, influence the extent to which the information on the label will be sought and used by the consumer.

The impact of nutrition labelling also depends on the specific labelling purpose and its regulatory objective, which makes comparisons between different labelling components (e.g. nutrient declarations and front of pack labelling) or between labelling systems (e.g. different front of pack labelling systems) problematic and in some cases inappropriate. Another challenge in assessing the impact of nutrition labelling is the variation in research methodology, including different experimental conditions, comparators, outcome of interest and different outcome measures. For example, there appear to be fewer studies using objective measures for the outcome on understanding of labelling by consumers, compared to self-reported understanding, and self-reported understanding is heavily over-reported. (23, 24).

Available evidence on the impact of nutrition labelling mostly comes from studies that assess the performance of nutrition labelling systems (25), or the impact of certain labelling design and content elements on behavioural outcomes (i.e. awareness, understanding, use, choice, purchase and dietary intake), that may inform the development or revision of labelling policies (26-33), rather than from evaluations of nutrition labelling policies as a whole. Few modelling studies are available that estimate the impact of labelling on health outcomes.

However, policy evaluations are starting to emerge on a diverse range of nationally implemented front of pack labelling systems, including for example in Australia (34, 35) and Chile (36).

There is typically high awareness of nutrition labelling (including nutrient declarations, FOPL and claims) (37-47), and awareness tends to increase over time, also with information campaigns (43, 44, 46, 47). Studies have shown that if claims are present, nutrient declarations are less referred to by consumers (48, 49). Evidence on consumer label use shows mixed results depending on the label assessed, how it is modified and whether a label is presented along another label. Whether or not supplementary nutrition information (such as FOPL) assists in interpreting nutrient declarations, depends on the FOPL. However, studies have shown that nutrient declarations presented together with FOPL improve attention to any nutrition information (27, 50, 51). To assess the use of FOPL, a number of studies are available that use measures, such as response time required for a task to compare FOPL (29-33), showing more favourable results for interpretive compared to non-interpretive FOPL systems. A 2011 review, for example, found that understanding of quantitative reference information (%DV, serving sizes) is poor and that front of pack labelling may aid understanding more than the nutrition information provided on the back of pack (52).

Such emerging evidence forms the basis for one of the WHO guiding principles, which states that FOPL systems should be interpretive, based on symbols, colours, words or quantifiable elements. Nonetheless, it is prudent for countries to undertake consumer testing of proposed FOPL systems to ensure their suitability for the target market.

Overall, available evidence to date suggests that nutrition labelling is indeed an important policy tool for promoting healthy diets. However, as no single intervention can address malnutrition in all its forms, the implementation of nutrition labelling policies is recommended as part of a comprehensive policy approach to creating a healthy and enabling food environment.

### **Call to action**

To reduce all forms of malnutrition, improve nutrition and promote healthy diets, governments are called upon to implement comprehensive policy approaches to create healthy food environments,



including nutrition labelling policies. Taking into consideration relevant global, regional and national legal frameworks and guidance from recognized authoritative bodies<sup>22</sup>, governments are called upon to implement nutrition labelling, first and foremost nutrient declarations followed by FOPL that informs the consumer of nutritional properties of a food to aid purchase and consumption decisions. Governments are also expected to regulate nutrition and health claims to prevent labelling in a manner that is false, misleading or deceptive, or is likely to create an erroneous impression about any characteristics of the product.

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<sup>22</sup> A Recognized Authoritative Scientific Body (RASB) is an organization supported by a government or competent national and/or international authorities that provides independent and transparent authoritative scientific advice (adapted from the definition provided by Codex Alimentarius in [CAC/GL 2-1985](#)).



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## **Appendix 2. Reformulation of food and beverage products for healthier diets: policy brief**

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Foods that are energy dense and nutrient poor are widely available, whether bought from retailers, takeaways or deliveries, or eaten at restaurants that are supplied by food manufactures. As a result, many people are eating large amounts of food high in fat, sugars and salt/sodium (1); this contributes to unhealthy diets, which currently cause 8 million premature deaths globally every year (2). In recent years, policy-makers have increasingly recognized that actions are needed to make the supply of foods and food environment healthier, in addition to increasing knowledge and providing information to educate consumers.

Measures are required to eliminate industrially produced *trans*-fatty acids (TFA) from the food supply, reduce the energy content per portion and lower the levels of saturated fats (SFA), sugars and salt/sodium in food. Food reformulation policies are an important part of a suite of policy actions to support healthy and sustainable diets. It can contribute to ensuring access to safe and nutritious food for all, and shifting towards healthier and sustainable consumption patterns, because individuals do not need to change what they buy or make a conscious effort to seek healthier options.

Food reformulation is the process of altering the processing or composition of a food or beverage product, to improve its nutritional profile or to reduce its content of ingredients or nutrients of concern (3). Reformulation of processed food can lead to products with a healthier profile; however, caution is warranted for increased processing. Therefore, consumption of fresh and home-prepared foods, ideally locally produced, should be prioritized over consumption of processed foods, including reformulated products. A recent review on the impact of food reformulation on food choices, nutrient intake and health status (4) was conducted as part of the STOP project. The review indicated the following:

- ▶ People usually accept, buy and consume reformulated products, resulting in an overall improvement in the nutritional composition of food purchases. Salt reduction in particular has higher acceptance by consumers.
- ▶ Overall, food reformulation tends to lead to improved nutritional intakes. Analysing studies from Europe and the United States (US), the review found that daily population-wide salt intake after reformulation was 0.57 g lower than before. Similarly, product reformulation to reduce TFA content results in reduced TFA intake; for example, an overall decrease in intake of 38–85% was reported in Costa Rica, North America and the United Kingdom of Great Britain and Northern Ireland (United Kingdom).
- ▶ After limiting industrially produced TFA, or banning partially hydrogenated oils (PHO) in processed and restaurant foods, there was a reduction of 4.3–6.2% in mortality from cardiovascular disease (CVD) in Austria, Denmark, Costa Rica and the US. One British study on sodium reduction in foods showed a positive effect on blood pressure. Only three studies investigated the effect of reformulation on children and adolescents; they found similar results to those seen in adults.



<Box>

Today's food systems are simply failing to deliver healthy diets for all<sup>1</sup>. In addition to the suffering this causes to individuals and families, the economic costs to society due to the health and environmental impacts of current dietary patterns are heavy, and often hidden. If food systems are transformed, they can become a powerful driving force towards ending hunger, food insecurity and malnutrition in all its forms. There is no single solution, but coherent portfolios of policies, investments and legislation prioritise health. At the same time, it is also important to ensure a fair price for the producer and reflect the true environmental, health and poverty costs.

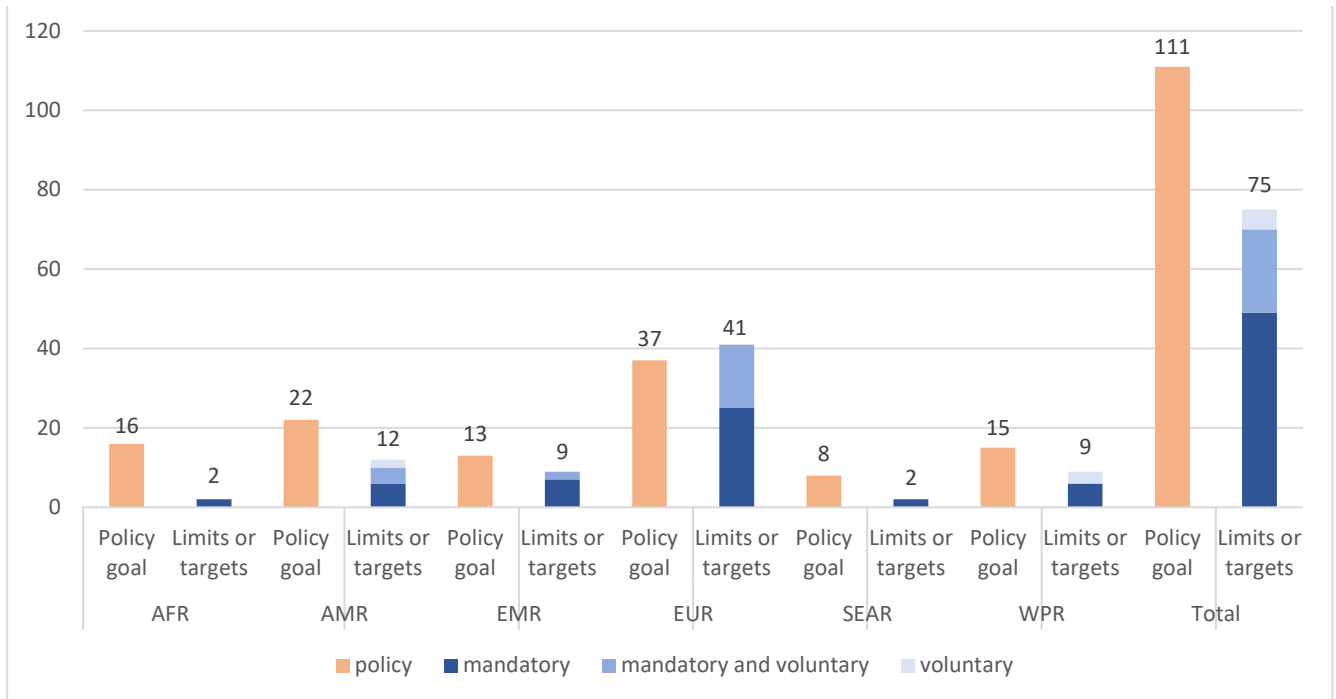
WHO's Food Systems for Health narrative highlights five different ways in which food systems impact on health and embraces the interconnectedness of humans, animal, and the planet (1). The malnutrition pathway comprises the aspects of food systems that lead to unhealthy diets or food insecurity and therefore contribute to malnutrition in all its forms. Malnutrition and hunger pose the highest risks to human health in terms of death and illness and include obesity, micronutrient deficiencies, stunting, wasting, communicable and noncommunicable diseases and mental illness.

Increasingly, countries are introducing legislation to eliminate industrially produced TFA (5), and there is growing momentum for implementation of reformulation programmes, particularly to reduce salt/sodium (6). Nonetheless, levels of unhealthy fats, sugars and salt/sodium remain too high in many products. There is an urgent need for accelerated regulatory action on TFA elimination and salt/sodium reduction, and more ambitious and wide-ranging reformulation programmes, including those to address sugars, SFA, energy and portion sizes, and restaurant, takeaway and home delivery food. Countries have committed to acting to promote healthy diets and addressing malnutrition in all its forms (7-9). The Framework of Action (from the Second International Conference on Nutrition, held in 2014) recommends "encouraging gradual reduction of SFA, sugars and salt/sodium and *trans* fat from foods and beverages" (10).

According to the World Health Organization (WHO) Global database on the implementation of Nutrition Actions (GINA), 111 countries have national policies, strategies and plans to implement food reformulation. Moreover, 75 countries have set mandatory limits or voluntary reformulation targets. Of these countries, 70 have set mandatory limits (21 of these countries also have voluntary targets) whereas five have voluntary targets only (Fig. 1). Among the countries that have set one or more mandatory limits, these are most commonly for industrially produced TFA. Many countries have set a policy goal to stimulate reformulation rather than adopting mandatory limits or voluntary targets for reformulation except in the WHO European Region, where the European Union (EU) TFA regulation is driving a higher number of countries with targets or limits rather than policy goals. In terms of WHO regions, only a few countries in the African Region and South-East Asia Region, and less than a third of countries in the Western Pacific Region implement mandatory limits or voluntary targets.

Fig. 1. Policy goals and measures with mandatory limits and/or voluntary targets by WHO region. Mandatory limits mean the country has one or more mandatory limit for unhealthy fats, sugars or sodium

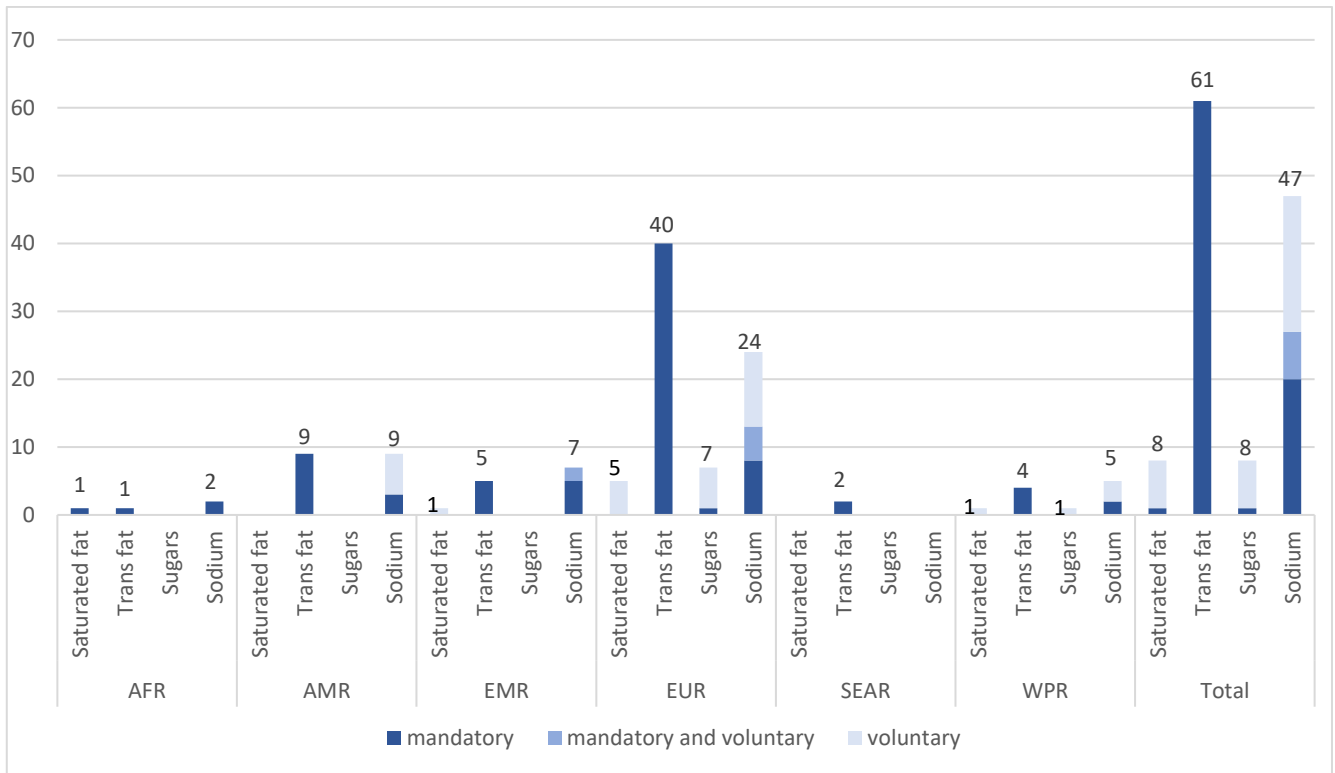




AFR: WHO African Region; AMR: WHO Region of the Americas; EMR: WHO Eastern Mediterranean Region; EUR: WHO European Region; SEAR: WHO South-East Asia Region; WPR: WHO Western Pacific Region; WHO: World Health Organization.  
Source: WHO Global database on the Implementation of Nutrition Action (GINA)

Elimination of industrially produced TFA from the food supply is a low-cost policy measure that is within reach and has significant long-term health benefits. Similarly, it is feasible to set maximum limits for the amount of salt/sodium in different food categories and reformulate them accordingly, to reduce salt/sodium intake. Both are recommended as effective interventions to reduce unhealthy diets and tackle noncommunicable diseases (NCD) (11). Countries have also taken action to reduce SFA and sugars in selected products (e.g. milk or dairy products with reduced fat, and beverages with reduced sugars levels), although these are less often assigned set limits or targets in national policies. Fig. 2 depicts the distribution of mandatory or voluntary approaches to reformulation for each of the nutrients of concern within the WHO regions. Elimination of industrially produced TFA has progressed the furthest, with 61 countries implementing mandatory limits globally. Sodium reformulation is also implemented by 47 countries, half of which are in the WHO European Region.

Fig. 2. Mandatory limits or voluntary targets by nutrient and WHO region



AFR: WHO African Region; AMR: WHO Region of the Americas; EMR: WHO Eastern Mediterranean Region; EUR: WHO European Region; SEAR: WHO South-East Asia Region; WPR: WHO Western Pacific Region; WHO: World Health Organization.

Source: WHO Global database on the Implementation of Nutrition Action (GINA).

### Why implement product reformulation policies?

The purpose of implementing food and beverage product reformulation policies is to deliver benefits for public health, individuals and businesses:

- **Public health:** By reducing excessive consumption of unhealthy fats, sugars or salt/sodium from processed food products, individuals and populations improve their diets; in turn, this reduces the risk of diet-related NCDs, disability and death, benefitting all socioeconomic groups.
- **Individuals:** Reformulation improves the nutrient quality of foods and gives individuals to benefit from healthier food products.
- **Businesses:** Reformulation targets or limits create a level playing field across the food-processing sector. Although there may be an initial investment in reformulation, developing products with a better nutrition profile offers businesses the opportunity to improve their brand and reach more consumers interested in their health. These products may also avoid being subject to taxation measures aimed at unhealthy products and may face fewer marketing restrictions and trade barriers.

### Eliminating industrially produced TFA from the food supply

High intakes of industrially produced TFA are strongly associated with increased risk of coronary heart disease (CHD), and TFA intake is estimated to be responsible for hundreds of thousands CVD deaths globally every year (12). WHO recommends reducing the intake of TFA to less than 1% of



the total energy intake, and using unsaturated fatty acids as a replacement (13). Elimination of industrially produced TFA is feasible and achievable – several countries have virtually eliminated industrially produced TFA from their food supply (12).

WHO recommends that countries implement either of the two best-practice policies: a mandatory national limit of 2 g of industrially produced TFA per 100 g of total fat in all foods; and a mandatory national ban on the production or use of PHO as an ingredient in all foods.

The WHO-recommended best-practice policies can virtually remove industrially produced TFA from the food supply. This can be done without increasing levels of SFA (14), while reducing TFA intake at the population level (15-17).

National or local policies that have succeeded in reducing industrially produced TFA intakes have led to favourable changes in population's lipid profiles (18, 19), and have reduced the prevalence of stroke (20) and CVD deaths (21, 22). In 2021, best-practice TFA policies had come into effect in 40 countries (covering 1.4 billion people) and six further countries had passed a best-practice TFA policy that will come into effect in the next 2 years (covering an additional 1.7 billion people); in combination, these policies will cover about 3.1 billion people (23). To eliminate industrially produced TFA, governments and industry, including suppliers of oils and fats, need to accelerate action.

### **Public health impact of Denmark's ground-breaking TFA legislation**

In 2003, Denmark became the first country in the world to regulate the TFA content of food products. The legislation came into force in January 2004 and almost eliminated industrially produced TFA from the country's food supply. Before 2003, trends in the prevalence of CVD deaths in Denmark were similar to those in other Organisation for Economic Co-operation and Development (OECD) countries. In 2007, cardiovascular mortality rates decreased on average by 14 deaths per 100 000 people per year compared with the populations of other OECD countries (21).

### **Reformulation to reduce the amount of salt/sodium in processed food**

Excessive intake of salt/sodium increases blood pressure and is associated with a higher risk of CVDs, including stroke and deaths from CHD (24). It is estimated that high salt/sodium intake is responsible for 3 million deaths globally every year (25). Reducing salt/sodium intake is an effective way to lower blood pressure and thus to reduce CVDs and related conditions (26). WHO recommends a reduction to less than 2 g/day sodium (5 g/day salt) in adults (26). In 2013, the World Health Assembly adopted a global target of a 30% reduction in mean population intake of salt/sodium by 2025 (27), but the world is not currently on track to meet this goal (28).

In many high-income countries, and increasingly in low- and middle-income countries, a significant proportion of the salt/sodium in the diet comes from manufactured foods such as bread, cereal and grains, processed meats and dairy products (29). An effective way to reduce population salt/sodium intake is through lowering the sodium content of foods that are consumed frequently and therefore contribute to a high intake of this nutrient.

Country experience suggests that setting well-designed reformulation targets can lead to considerable progress in reducing salt/sodium levels in foods (30, 31) and population salt/sodium intakes (4, 30-32). At least 17 countries have reported reductions in population salt intake, with 12 countries reporting a substantial (>2 g/day) or moderate (1–2 g/day) decrease (32).



Many countries have implemented a stepwise approach by setting a series of progressively more ambitious targets for reformulation. Mandatory reformulation appears to achieve larger reductions in population-wide salt consumption than other interventions such as voluntary reformulation, school interventions, short-term dietary advice and nutrition labelling (31). Reformulation of food products to reduce salt/sodium levels is estimated to be a cost-effective strategy in countries of all income levels (11, 33). Current reformulation efforts, however, have been inconsistent in terms of measures adopted, food product categories targeted and level of the limits or targets; hence, such efforts have not yet fulfilled their potential. To drive progress on this issue, WHO has issued a set of global sodium benchmarks (34).

The following countries have set mandatory salt/sodium limits for various foods, such as bread, cereal products, processed meats, cheeses, crisps and snacks, soups and stocks, or tomato products: Argentina, Austria, Bahrain, Belgium, Bulgaria, Colombia, Croatia, Greece, Hungary, Iran (Islamic Republic of), Iraq, Jordan, Kiribati, Latvia, Malaysia, Mauritius, Montenegro, the Netherlands, Oman, Paraguay, Portugal, Saudi Arabia, Slovakia, South Africa, Spain, Uzbekistan and the West Bank and Gaza Strip.

### **WHO Global sodium benchmarks**

To accelerate progress on sodium reduction — and recognizing that the setting of appropriate national sodium targets is a highly complex, technical issue — WHO has established a set of global benchmarks for a wide range of food categories (34). The benchmarks were developed through consultation with experts and were informed by data collected on sodium targets set in 41 countries, one WHO region and one WHO subregion. Benchmarks are defined as maximum targets of sodium (in mg per 100 g/mL) for specific subcategories of food; in principle, they are based on the lowest value for each subcategory from existing national or regional targets. These benchmarks are intended to complement existing national and regional efforts and initiatives, and to serve as a reference for such initiatives.

### **Reformulation to reduce levels of sugars in foods and beverages**

WHO recommends limiting intake of free sugars<sup>23</sup> to less than 10% of total energy intake, and suggests a further reduction in the intake of free sugars to below 5% of total energy intake (35). Given the success with incremental reductions in salt/sodium levels through government-led reformulation programmes, a growing number of national authorities are applying the same approach to sugars reduction and have set targets for sugars levels in different food and beverage categories. Modelling studies predict reductions in energy intake from reformulation of sugar-sweetened beverages and sugar-dense foods, and predict associated health benefits (36). Results from the limited trials available to date suggest that consumption of sugar-reformulated products for 8–10 weeks can reduce sugars intake by around 12% and result in average weight loss of 1 kg (37).

The evidence base from real world experience of government-led initiatives for reducing sugars in foods is less well developed, but some modest to large reductions in sugars levels across the food

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<sup>23</sup> Free sugars include monosaccharides and disaccharides added to foods and beverages by the manufacturer, cook or consumer, and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates.



supply have already been seen (38). Other policy levers, such as taxation or nutrition labelling, can help to drive reformulation efforts. For example, following the introduction of a soft drink industry levy in the United Kingdom, the proportion of potentially taxable drinks with sugars levels above the lower levy threshold (5 g sugars 100 mL) fell by 34 percentage points, suggesting that the levy had incentivized manufacturers to reformulate their products (39). There was a 43.7% reduction in the total sugar content per 100ml between 2015 and 2019 for the drinks subject to the levy, and the total sugar purchased per household from drinks subject to the levy has also decreased across all socio-economic groups (between 32.7% and 38.5% reduction) (38).

### **Reformulation targets for sodium, sugars and SFA in Australia**

Launched in 2020, Australia's Healthy Food Partnership Reformulation Program has established voluntary reformulation targets for sodium, sugars and SFA (40). In 2021, targets for the maximum level of sugars were issued for breakfast cereals, flavoured milk, muesli and snack bars, non-alcoholic beverages and sweetened yoghurt, to be achieved by June 2025 or 2026, depending on the food category. SFA targets were set for sausages and savoury pastries (40).

### **Reformulation to reduce SFA levels in food**

Reduced intake of SFA is associated with a significant reduction in risk of CVD when the SFA are replaced with unsaturated fats. WHO suggests reducing the intake of SFA to less than 10% of total energy intake (13). Updated WHO guidelines suggest using polyunsaturated fatty acids as a source of replacement when reducing the intake of SFA. SFA can be replaced also by monounsaturated fatty acids from plant sources, or carbohydrates from whole grains, vegetables, fruits and pulses (41). Also, modelling studies and country experience suggest that reformulation could reduce SFA consumption with a potential impact on NCD deaths (36). Reformulation programmes need to be carefully designed to ensure that reduction of SFA levels does not lead to replacement with other nutrients of public health concern, such as free sugars.

### **Finland's long-term efforts to reduce SFA intakes and levels in food**

Public concern about high rates of CVD deaths among young men in Finland in the 1970s was the catalyst for the famous North Karelia project — later extended across Finland — which led to reductions in SFA intakes, blood cholesterol and ran 80% reduction in CVD deaths among people of working age (42). As part of this project, engagement with the Finnish food industry resulted in reductions in levels of total fat or SFA (or both) in a range of foods (43). More recently, the Finnish Food Authority has been encouraging the food industry to issue nutrition commitments – including on quality of fats – as part of the country's operational commitments for sustainable development. Priority food groups for reformulation to reduce SFA or TFA include dairy products, cheese, convenience foods, meat products, spreads and bakery products (44). One condition is that reducing SFA should not lead to a higher content of *trans*-fats, or added sugar, salt or energy.

### **Portion size and energy**

Portion sizes of processed food have increased over recent decades in many settings (45). Adults and children consistently consume more food and beverages when offered larger sized portions,



packages or tableware (45, 46). Sustained reductions may be effective to reduce average daily consumption of energy (45).

Limiting portion and package size to reduce energy intake and the risk of overweight/obesity is also a WHO-recommended intervention (11). Reducing portion sizes may also contribute to reducing intakes of sugars, salt and SFA. For example, modelling studies predict that measures to limit portion size of sugar-sweetened beverages would generate substantial health benefits and long-term cost savings (47, 48).

### **Energy reduction programme in the United Kingdom, building on successful salt reduction programme**

The United Kingdom launched a successful salt reduction programme that has set five waves of progressively more stringent sodium targets since 2004, leading to reductions of up to 45% in sodium levels in some products and a 15% drop in population salt intakes (49, 50). Alongside this programme, the United Kingdom aims to reduce the calories in a range of everyday foods consumed by children. In 2020, Public Health England set out the calorie reduction ambitions for different food sectors to achieve by 2024 – a 10% reduction in most manufactured foods and a 20% reduction for most categories in the eating out, takeaway and delivery sector – and published guidelines for the levels of energy in different food categories (51).

### **Reformulation and food safety**

Reducing the fats, sugars and salt/sodium in food often implies changing the way the food is processed or the amount or type of ingredients it contains. When these modifications are gradual, they do not impact the physicochemical and sensorial characteristics of the food or consumer acceptance in the short term. However, they may affect the label requirements and food safety (52).

Sugars (e.g. sucrose) and salt (sodium chloride) trap water, which diminishes the water available for the growth of microorganisms, including pathogens. Salt is traditionally an essential ingredient in preservation methods, and even at low concentrations it inhibits the development of microorganisms and some pathogens.

Reformulation to reduce energy density by replacing sugars or fats incorporates new ingredients into the food, potentially affecting their safety. Ingredients from novel sources or the same ingredients from different extraction processes or applied in a separate step in the processing can incorporate allergens and introduce physical, chemical or biological risks that were absent from the original formulation (53).

### **Guidance and implementation support**

Technical packages of resources and capacity-building support are available to help in implementing TFA elimination and salt/sodium reduction. For successful reformulation programmes, it is important to focus on the main food and beverage sources of the target nutrients, collect data on consumption and sales, set time-bound ambitious but achievable targets, and monitor and report on progress made by industry in an independent and transparent manner. It is also critical to include – as widely as possible – different sectors of the food industry (e.g. retailers, manufacturers, restaurants, takeaways and deliveries). One caveat is that gains obtained by



reformulation in certain food products can be cancelled out by increases in sales of other products or in portion sizes. Therefore, it is important to be vigilant against such increases so that the total level of intake does not increase (38).

### **TFA elimination**

REPLACE is an action package developed by WHO to provide guidance on the necessary steps to eliminate industrially produced TFA (14). These steps are as follows:

- *Review dietary sources of industrially produced trans-fats and the landscape for required policy change.*
- *Promote the replacement of industrially produced fats with healthier fats and oils. Legislate or enact regulatory actions to eliminate industrially produced trans-fats.*
- *Assess and monitor trans-fat content in the food supply and changes in trans-fat consumption in the population.*
- *Create awareness of the negative health impact of fats among policy-makers, producers, suppliers and the public.*
- *Enforce compliance with policies and regulations.*

WHO offers a technical framework and comprehensive implementation resources online (54). To support country assessments of TFA, a global laboratory protocol has been developed for measuring TFA levels in foods (55).

WHO is committed to providing technical support and building regulatory capacities help countries to accelerate best-practice policy development, implementation and enforcement. Regulatory and laboratory capacity-building trainings have been developed and delivered in several regions (23). Other resources developed by academia and nongovernmental organizations (NGOs), can complement these efforts.<sup>24</sup> For example, in 2019, the Knowledge Exchange Network on Trans Fat Elimination was established by the NCD Alliance; the network provides a virtual platform for civil society organizations working on TFA elimination to share experiences and lessons learned (57).

The WHO progress report describes the global, regional and national situations and progress made over the past year in countries and discusses challenges and opportunities for future action. The report is published annually in a countdown to the 2023 goal of global elimination of industrially produced TFA (58).

### **Reformulation to reduce salt/sodium**

In 2016, WHO issued guidance to support salt/sodium reduction – the SHAKE technical package – which sets out five key action areas (59):

- *Surveillance* — measure and monitor salt/sodium use.
- *Harnessing industry* — promote the reformulation of foods and meals to contain less salt/sodium.

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<sup>24</sup> See, for example, the LINKS toolkit (56). LINKS is a collaborative effort of WHO, the US Centers for Disease Control and Prevention (CDC) through the CDC Foundation, and Resolve to Save Lives (an initiative of Vital Strategies).



- *Adopt standards for labelling and marketing*— implement standards for effective and accurate labelling and marketing of food.
- *Knowledge* — educate and communicate to empower individuals to eat less salt/sodium.
- *Environment*— support settings to promote healthy eating.

A priority component of a successful reformulation plan is the use of maximum limits in food. Setting timebound limits for salt levels in foods and meals is an achievable goal for the food industry to implement.

WHO encourages countries and industry to implement the global sodium benchmarks (34). WHO's harmonized global benchmarks will show countries how they can progressively lower their targets based on their local food environments, and will encourage industry to lower the sodium content in processed foods accordingly.

Other resources developed by academia and NGOs complement the SHAKE package (see general resources section).

Universal iodization of salt is a recommended WHO intervention to eliminate iodine deficiency disorders. It is important that efforts to reduce sodium intake are coordinated with iodine deficiency elimination programmes to avoid jeopardizing the success of this intervention. In principle, if there is documented reduction in salt intake, it will be necessary to increase the concentration of iodine in salt to the levels that WHO recommends (60).

### Lessons learned from country experience

The following key lessons have emerged from implementing reformulation policies and programmes in different countries.

#### **1. Political commitment and longer-term vision are key**

Mid- and long-term political commitment is needed to initiate and sustain a reformulation and TFA elimination programme. Advocacy activities are important to raise awareness, foster political will and mobilize resources.

#### **Data-informed policy actions to reduce sodium intake in Brazil**

Estimating the health impact and costs to health systems and society of high salt/sodium intakes, or modelling the potential benefits of sodium reduction interventions can help to generate political support for strong reformulation programmes. For example, a study in Brazil examined the impact of salt/sodium reduction on mortality and costs related to CVD in the country. Every year, premature deaths caused by CVDs cost the Brazilian health system over US\$ 84 million and cost US\$ 827 million in lost productivity. The study found that 46 651 deaths could have been prevented if the population consumed an average of 2 g of sodium (5 g of salt) per day (61). This enabled estimation of the impact of different sodium reduction interventions – and even comparison of the impact of different salt/sodium reformulation target levels – and provided evidence to support a robust reformulation programme.





## **2. Clear government leadership and a transparent process are needed**

Reformulation programmes are most likely to be successful if led by the government. If government leadership is not possible, an NGO or civil society group could lead the work through a transparent process, with government support.

### **Government approval and monitoring of commitments in the Islamic Republic of Iran**

The Islamic Republic of Iran has implemented a government-led approach to reducing salt/sodium levels in a range of food and beverage products. In 2015, mandatory maximum salt levels were established for commonly consumed canned foods, salty snacks, sauces and all types of bread. The maximum levels for salt in bread were then further reduced to 1% in 2019 (62, 63). Permitted salt/sodium levels were also reduced in standards for several products including cheese, yoghurts and fermented drinks (63, 64). Over the same period, levels of SFA were reduced in oils, snacks, biscuits and confectionery, whereas TFA levels were reduced in food products and oils (62).

## **3. Access to accurate and reliable data is important**

Data on fats, sugars, and salt/sodium levels in foods are needed in order to monitor intakes; identify the key sources of unhealthy fats, sugars, and salt/sodium in the diet; establish baseline levels; set appropriate limits or targets and monitor progress. Where available, sales data are also important to help identify the biggest selling products and assess the overall impact of reductions. Data on population intakes are also important, but most countries are consuming well over the recommended amounts of salt/sodium, sugars and unhealthy fats; therefore, countries should not wait for intake data to be available before taking action.

It can be a challenge to access baseline data on the levels of sodium, sugars or fats in food and beverage products and to monitor changes with up-to-date data; hence, countries have adopted different approaches to data collection. Approaches include shop and restaurant surveys of declared levels (on labels or menus), direct chemical analyses and, in countries where online food shopping is common, extraction of nutrition data from retail websites. Publication and dissemination of the data are important to ensure transparency and accountability, and to incentivize efforts to gather data and monitor changes.

### **Robust data for monitoring progress towards Thailand's goal for sodium intake reduction**

CVD is responsible for almost one third (29%) of deaths in Thailand, and about one quarter of the population (25%) is affected by high blood pressure. Recognizing this high burden of CVD, in 2016 the National Health Assembly committed to reducing salt/sodium intake by 30% by 2025, in line with the global goal. To provide robust data for monitoring progress towards the national target, dietary sodium intake was estimated (using the gold standard 24-hour urine collection method) in a nationally representative sample of adults between April 2019 and May 2020. Average daily sodium intake was 3635 mg (equivalent to 9.1 g of salt/day). At nearly twice as high as the WHO-recommended level, this result indicates the need to accelerate implementation of Thailand's national salt/sodium reduction strategy (65).

## **4. A commitment to enforce, monitor and evaluate is vital**



It is important to include, from the outset, a plan to monitor changes or enforce compliance with limits or targets. Taking into account the data challenges outlined above, a pre-defined set of indicators (which could relate to the process as well as the targets and outcomes) and a mechanism for monitoring or enforcement are needed. Clear, transparent and independent monitoring of progress is important, and is preferable to self-assessment by companies.

### **Independent monitoring of government-approved voluntary commitments in France**

As part of the second National Nutrition and Health Programme in France, a system was developed for voluntary food industry commitment charters, including for reducing amounts of fat, sugar or salt, or for increasing the amount of fibre. Charters are required to meet certain criteria, including composition and nutritional criteria, and are reviewed by an external committee of experts to ensure that the proposed changes are significant. Approved charters are monitored by the government's Food Quality Observatory (66).

### **5. Engagement with food manufacturers is vital, with clear rules of engagement**

The government must set clear rules of engagement with the food manufacturer and, throughout the process, must ensure that decisions are made in the best possible interest of public health. Such engagement will require human resources (including legal capacities), which can be particularly challenging for countries. Any engagement with the food industry should be fully transparent. Canada, for example, has a mechanism to ensure transparency of all communications with stakeholders in relation to healthy eating initiatives, including TFA elimination and salt/sodium reduction. This mechanism includes a registry of all meetings and correspondence with officials, and a commitment that no correspondence is treated as confidential (67). Mechanisms to hold food companies to account on their commitments are also key. For example, the Norwegian Partnership for a Healthier Diet, which is based on an agreement between the Norwegian health authorities and the food industry, is externally evaluated by an independent research body that publishes its evaluation reports (68).

### **Engagement with food manufacturers for TFA elimination and reduction of sodium intake**

In May 2019, following dialogue with WHO, member companies of the International Food and Beverage Alliance (IFBA) – which account for about 13% of global packaged food sales – committed to not exceeding 2 g of industrially produced TFA per 100 g of oils and fats in their products worldwide by 2023 (69). Engagement with the international oils and fats industry to support a global supply chain that is free from industrially produced TFA is a WHO priority (58). Dialogue between WHO and IFBA on salt/sodium reduction is also ongoing.

### **Overcoming industry opposition in the Republic of Korea**

In the Republic of Korea, opposition from the food industry to a voluntary sodium reformulation programme was overcome by a process to facilitate industry engagement and ownership. Elements included meetings convened with industry, participation of industry representatives in educational



forums sponsored by NGOs, support for the Korea Food Industry Association in the development of a guideline for salt/sodium reduction in processed food, provision of research and development support for product reformulation and implementation of a stepwise approach. In addition, financial concerns were allayed by economic analyses showing the net fiscal benefit, whereas continuous publicity and communication efforts helped to build public support. The reformulation programme was part of a comprehensive, multipronged approach to reducing sodium intake, which decreased on average by 23.7% between 2010 and 2014 – changes that were associated with reductions in population blood pressure and prevalence of hypertension (70).

## **6. Choice between a mandatory or a voluntary approach is context dependent**

Approaches involving mandatory and voluntary targets have both been shown to work in different country contexts. WHO encourages countries to implement a mandatory policy measure that is in line with WHO best-practice policies to eliminate industrially produced TFA, because a mandatory approach (using legislation or regulation to define maximum limits) is often more effective, especially for industrially produced TFA.

Modelling exercises suggest that mandatory approaches would be more cost-effective (31, 71). In addition, mandatory approaches create a level playing field for food companies. However, mandatory programmes without enforcement are not effective in achieving targets.

Some countries have managed to achieve successful reformulation through a voluntary approach; for example, Finland (44). Also, the United Kingdom was able to reduce the content of TFA in the food supply using a voluntary approach. However, if voluntary measures are to be successful, there is a need for strong government leadership, regulatory threats imposed by the government, and robust monitoring and publication of results.

### **Mandatory sodium reduction targets in South Africa**

The Republic of South Africa opted for a statutory approach, introducing mandatory maximum limits for sodium content for products in 13 food categories in 2013, including, bread, breakfast cereals, margarines, meat products, snack foods and soup mixes (60). Food companies were given until June 2016 to meet the first set of targets, and until June 2019 to meet the second (less stringent) targets.

During the year leading up to the implementation date, a baseline evaluation was carried out using a database of nutrition label data gathered by in-store surveys and crowdsourcing of food labels, to assess the sodium levels of packaged foods and highlight the reductions needed to meet the targets (72). A modelling study, used to inform development of the legislation, estimated that a reduction in average daily sodium intake of 0.85 g could avert 7400 CVD deaths (6400 CVD deaths by reducing the sodium levels of bread alone) and 4300 nonfatal strokes every year, saving the South African health system US\$ 40 million annually (73).

### **Voluntary TFA reduction in the United Kingdom and the Netherlands**

In the United Kingdom, most supermarkets, many manufacturers and the bigger fast food chains agreed in 2012 to sign up to the voluntary Public Health Responsibility Deal agreement to remove



and not use industrially produced TFA (74). Through the combined efforts of the food industry, industrially produced TFA have largely been removed from food products without the need for a legal ban on industrially produced TFA.

Similarly, the Netherlands has achieved substantial reductions in industrially produced TFA in the food supply since 2003 via the Dutch Task Force for the Improvement of the Fatty Acid Composition (TFIFAC). TFIFAC members include major buyers and suppliers of vegetable oils and fats in a range of product categories. The initiative prompted manufacturers to reformulate and lower the industrially produced TFA content of products (75).

## **7. Other policy levers can drive food reformulation**

Several policy levers available to government have been shown to drive food and beverage product reformulation. These include healthy diet policy actions that are based on nutrient profile models, which establish specific cut offs for the nutrients of concern (e.g. fiscal measures, nutrition labelling, marketing restrictions, and public food procurement and service policies). Taxes on sugar-sweetened beverages, for example, that are tiered based on sugar content, or taxes on foods exceeding a certain level of unhealthy fats, sugars or salt/sodium content may induce the food industry to reformulate their products, to escape the tax. Similarly, implementation of mandatory nutrient declaration and introduction of mandatory interpretive front-of-pack nutrition labels (e.g. traffic light labelling, warning labels or summary scores) can incentivize food companies to reformulate their products.

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<sup>25</sup> See <http://www.stopchildobesity.eu/>.



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### General resources

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Using third-party food sales and composition databases to monitor nutrition policies. WHO Regional Office for Europe, 2021 (<https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/publications/2020/using-third-party-food-sales-and-composition-databases-to-monitor-nutrition-policies-2021>).

### Useful resources on healthy diets and profile models

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## **Appendix 3. Protecting children from the harmful impact of food marketing: policy brief**

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### **Policy issue and context**

Childhood overweight and obesity are increasing global public health problems. In 2020, 38.9 million children aged under 5 years were estimated to be overweight (1), while in 2016 more than 340 million children and adolescents aged between 5 and 19 years were affected by overweight or obesity (2). A major driver of the increases in obesity that have been seen in almost all countries – which in turn contribute to the increasing global burden of disease associated with obesity (3) – is current food environments, which feature the increasing availability, accessibility, affordability and marketing of foods that are high in saturated fats, trans-fats, sugars and/or salt and are usually highly processed (4).

The United Nations (UN) Food System Summit was called to commit to bold new actions and game-changing solutions to transform today's food systems, which are failing to support the development of food environments that promote healthy diets and improve nutrition. Food environments are changing rapidly, especially in low- and middle-income countries, with the wide availability and heavy marketing of many products; in particular, those with a high content of fat, sugars or salt/sodium.

Healthy diets are being undermined by marketing practices, with a significant amount of marketing being for foods that contribute to an unhealthy diet<sup>26</sup> (5, 6). Evidence is unequivocal that food marketing to which children are exposed alters their food preferences, choice, purchases and intake (7-11). Food marketing also threatens children's rights, affecting their physical health as well as their emotional, mental and spiritual well-being (12, 13). Therefore, as noted by the commission set up by the World Health Organization (WHO), the United Nations Children's Fund (UNICEF) and the Lancet (the WHO–UNICEF–Lancet Commission) (12), "commercial governance" is essential to protect children from harmful marketing that encourages unhealthy diets.

This policy brief provides policy-makers and programme managers, health professionals and advocates with information and policy options to increase protection of children from the harmful impact of food marketing by reducing the power of, and exposure to children of, such marketing practices.

### **Background**

The need to protect children from the harmful impact of food marketing and to enable children to develop healthy food values and preferences has long been recognized. In 2010, the Sixty-third World Health Assembly unanimously endorsed the WHO *Set of recommendations on the marketing of foods and non-alcoholic beverages to children* (14), recognizing that a significant amount of marketing is for foods high in fats, sugars or salt and is widespread across the world. Resolution WHA63.14 on the marketing of food and non-alcoholic beverages to children (15) urges Member States to take the necessary measures to implement the set of recommendations, and to identify the most suitable policy approach given national circumstances. As noted in the set of recommendations, governments are in the best position to set direction and overall strategy to

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<sup>26</sup> Foods include both food and non-alcoholic beverages. In the context of food marketing, a food or non-alcoholic beverage is considered to contribute to an unhealthy diet if it exceeds the thresholds established in WHO region-specific nutrient profile models or if it belongs to a category for which all marketing is prohibited (and thus no thresholds are established). Such foods are typically high in fats, sugars and/or salt and are processed. WHO regional nutrient profiles were developed for all six WHO regions: the African Region, the Region of the Americas, the Eastern Mediterranean Region, the European Region, the South-East Asia Region and the Western Pacific Region.



achieve population-wide public health goals, and should therefore set the scope of a country's marketing restriction.

The set of recommendations defines marketing as “any form of commercial communication or message that is designed to, or has the effect of, increasing recognition, appeal and/or consumption of particular products and services” (14). Marketing includes advertising, promotion and sponsorship. The impact of marketing is a function of exposure to marketing and the power of each exposure. “Exposure to marketing” refers to the quantity, frequency and reach of marketing communications via a growing number of communication channels, among which digital media platforms have become of particular concern (16, 17). The WHO Regional Office for Europe has spearheaded the advancement of a focus on digital marketing and has developed methods to measure individual children's exposure to digital marketing across the European Region (18). “Power” is the extent to which each marketing item convinces its target audience to use the product; it is affected by content design, nature and execution of communication of marketing messages.

A policy response that provides the best protection for all children from the harmful impact of food marketing and is in line with Article 3 of the Convention on the Rights of the Child (CRC) to include children aged under 18 years (19), needs to be as comprehensive as possible, to reduce both the exposure of children to marketing and the power of that marketing. The WHO Commission on Ending Childhood Obesity underlines in its final report:

*Government and society have a moral responsibility to act on behalf of the child to reduce the risk of obesity. Tackling childhood obesity resonates with the universal acceptance of the rights of the child to a healthy life as well as the obligations assumed by State Parties to the Convention of the Rights of the Child (20).*

This new perspective offers some potential to increase the pressure on States to effectively address the various harms associated with the marketing of unhealthy, ultra-processed food to children.

The framework for implementing the set of recommendations (21) proposes the following **three comprehensive policy approaches** that are considered to have the highest potential to achieve the desired policy impact:

- eliminating *all forms of food marketing that is “high in saturated fats, trans-fatty acids, free sugars, or salt”* to which a broad range of children are exposed;
- eliminating *all forms of food marketing* to which a broad range of children are exposed; and
- eliminating *all forms of marketing* to which a broad range of children are exposed.

The framework for implementation acknowledged that some Member States may choose to start with a narrower, stepwise policy approach, and to restrict marketing of only certain foods and of some forms of marketing through some channels. However, experience since endorsement of Resolution WHA63.14 shows that such approaches leave children inadequately protected because exposure to food marketing that encourage unhealthy diets continues (22, 23). Narrow policy criteria allow for gaps that companies may use to shift their marketing investment from regulated to unregulated areas (24-26). Food marketing originating from sources outside a country's jurisdiction may be beyond the scope of a current national policy. This issue of cross-border marketing already recognized in Recommendation 8 of the WHO set of recommendations, is gaining importance, especially also with increased digital marketing. Countries within the European Union can capitalize on efforts by the European Union, which – in line with the various provisions of the EU Treaties and the EU Charter on Fundamental Rights and Freedoms has significant powers to regulate cross-border marketing within its borders.



As noted in the implementation framework, **the government's ultimate aim should therefore be a comprehensive policy approach**. In 2016, the WHO Commission on Ending Childhood Obesity noted with concern in its final report "*the failure of Member States to give significant attention to Resolution WHA 63.14 endorsed by the World Health Assembly in 2010 and requests that they address this issue*" (20). Furthermore, in 2018, the WHO Independent High-Level Commission on Noncommunicable Diseases called for an increase in effective regulation; in particular, that "*governments should give priority to restricting the marketing of unhealthy products (those containing excessive amounts of sugars, sodium, saturated fats and trans fats) to children*" (27).

To date, no country has implemented a comprehensive policy (28), despite evolving evidence on the harmful impact that food marketing can have on children of all ages, including those aged over 12 years (8, 9, 29), and despite the lack of evidence that stepwise approaches can reduce *both* exposure to and the power of food marketing, and have a positive impact on children's health.

As of May 2022, a total of 60 countries have adopted policies that restrict marketing of food and nonalcoholic beverages to children, especially in the Region of the Americas and the European Region. Twenty of these countries have mandatory marketing restriction policies and another 18 mandatory policies in the school setting. Several countries have multiple approaches, mandatory and voluntary and there is great variation in scope, such as channels or settings covered. Some policies cover all food and beverage products, others restrict marketing of products based on their nutrient content, and some focus on a specific product such as energy drinks or SSB. Furthermore, many countries have policies that do not cover children up to 18 years of age.

### **Elements to consider when implementing a comprehensive policy to protect children from the harmful impact of food marketing**

Given that the impact of food marketing is a function of exposure and power, all policies should **reduce both the exposure** of children to marketing **and the power** of that marketing. From the outset, it is crucial to clearly define the objectives of the marketing restrictions, to increase transparency and support for the policy. Governments are in the best position to define the scope of the policy and its components (14). Parliamentarians also play a unique role in advancing policies, including those to protect children from the harmful impact of food marketing through their mandates of representation, legislation, budget and oversight (30).

The policy should consider the following elements (21), in the best interests of **all children**, aged under 18 years (19):

- What **foods** are to be restricted from marketing?
- What marketing **types, techniques and channels** are to be restricted?
- Determining foods to be restricted

A critical step is to clearly define nutrient criteria or thresholds for foods to be restricted from marketing. To support countries in determining foods to be restricted from marketing, WHO has developed regional nutrient profile models (31-36) in line with international dietary guidelines, which governments can adopt and adapt, depending on their respective country contexts. The stricter the criteria and thresholds, the more foods are restricted from marketing. Models developed by the food industry as part of self-regulation tend to be less strict than those developed by WHO or national governments (37), and therefore provide less protection to children from the harmful impact of food marketing. Policies that have an underlying nutrient profile models may be more effective (38). Food marketing restrictions may be part of a wider package of policies to promote healthy diets; hence, although every policy will have its own distinct regulatory objectives, it is important to ensure alignment between policies – in particular in relation to the set nutrition criteria and thresholds.

### Determining marketing types, techniques and channels to reduce power and exposure



Marketing types include advertising, promotion or cross-promotion, and sponsorship. Techniques include the use of licensed or brand-equity characters, celebrity endorsers and incentives (e.g. toys), whereas channels include print, outdoor, broadcast and the Internet. Combining marketing types, techniques and channels can powerfully reinforce commercial messages, which makes it important to ensure the **broadest possible policy scope**. For example, “advergames” use engaging video games to advertise brand-name products by featuring them as part of an online game; direct advertising uses targeted emails or app notifications to children; influencers advertise and promote brand-name products by featuring them in online videos; and brand-name products are shown prominently during sponsored events.

### Country experiences

To date, no country is implementing any of the three comprehensive policy approaches proposed in the framework for implementation. Therefore, there is no available evidence on the effectiveness of a comprehensive approach.

Stepwise policy approaches are the most commonly implemented; they include both mandatory regulation and voluntary approaches, such as industry pledges. Examples of stepwise mandatory approaches include regulations of TV advertising for defined foods, marketing restrictions on children’s channels during children’s programmes or during a short, defined time-period where children make up the majority of the audience. Stepwise, or voluntary industry pledges that typically only restrict marketing directed to children aged under 12 years and are likely to have less strict nutrient criteria and thresholds. Such stepwise approaches only partially protect children (26), and are less likely to be effective (38).

Some countries are now broadening the scope of their policies and are implementing stronger policy elements that help to better protect children from the harmful impact of food marketing. These country example which are provided in Table 1, can serve as an inspiration to other countries.

**Table 1. Country examples of policy elements to achieve stronger protection of children from the harmful impact of food marketing<sup>27</sup>**

Policy elements to consider when implementing a comprehensive policy	Country examples
Protecting all children aged under 18 years	Restrictions for food marketing in Ireland and Turkey apply to children aged under 18 years. In Ireland, commercial communications for defined food products and/or services are not permitted in children’s programmes, and shall not include licensed characters. Children’s programmes are defined as those where more than 50% of the audience is aged <b>under 18 years</b> . In Turkey, the Regulations on Principles and Procedures of Broadcasting Services protect children aged <b>under 18 years</b> , and restrict advertising of defined food and non-alcoholic beverages before, during or after children’s television programmes. If such food is advertised during non-children’s programmes, health promotion messages must be displayed.
Restricting a broad range of foods by applying strict nutrient profile models	The Turkish broadcasting regulations apply restrictions on the marketing of foods to children based on the WHO Regional Office for Europe nutrient profile model (31). Specific food categories – including chocolate and candies, energy bars, sweet biscuits and waffles, potato

<sup>27</sup> Adapted from a forthcoming WHO/UNICEF publication titled *Implementing policies to protect children from the harmful impact of food marketing: a child rights-based approach*.



	chips and sugar-sweetened beverages – are prohibited from being advertised during children’s programming.
Restricting the power of marketing	Chile’s Food Labelling and Advertising Law includes a ban on advertising for defined foods where <b>advertising appeals to children</b> by including characters, toys or other strategies considered to be “directed to children”. The Law Promoting Healthy Eating for Children and Adolescents in Peru includes restrictions for advertising <b>through any medium</b> . Companies are prohibited from using real or fictional characters, gifts or prizes or other incentives to market defined foods and beverages.
Including a broad set of marketing communication channels	In Quebec, Canada, the Quebec Consumer Protection Act bans <b>any commercial advertising</b> (directed at children aged under 13 years), including of foods and non-alcoholic beverages on television, radio, print, Internet, mobile phones and signage, as well as the use of promotional items.
Adopting an effective enforcement mechanism	In Quebec, Canada, the Office for Consumer Protection enforces the Consumer Protection Act in three principal ways: notifying the actors concerned of the rules that apply to their activities; negotiating with said actors to voluntarily change their practices; or filing criminal proceedings against the actors for violating the Act. Fines can be levied on any actor in the advertising process (from the conception phase to its distribution), ranging from 600 to 100 000 Canadian dollars.

A review of contextual factors relevant for the implementation of policies to restrict food marketing (39) identified studies that described elements affecting the overall feasibility of such policies. Facilitators included strong political leadership, supporting evidence, intersectoral collaboration and community support (40-44). Challenges or barriers included complexity of the regulatory processes, conflicting interests, lack of financial and human resources, industry interference, a weak evidence base, and ambiguous categorization of, or lack of criteria for, foods to be restricted or banned (40-50).

The review of contextual factors also showed a wide range of literature reports on industry opposition to government action on developing or implementing policies to restrict food marketing to children (40-43, 49, 51-53). Obtaining buy-in to implement a comprehensive policy that best protects children from the harmful impact of food marketing is likely to be challenging. To identify possible opposition, submissions received during transparent public consultations provide valuable insights (54-57). Acceptability of stakeholders on a comprehensive, mandatory policy approach to marketing restrictions varies greatly (39). The food industry opposes mandatory measures and offers voluntary measures that would only partially protect children from the harmful impact of food marketing (54-57). Table 2 provides possible arguments against food marketing regulation, as well as counterarguments.

**Table 2. Examples of common arguments from opponents and counterarguments<sup>28</sup>**

Common arguments from opponents	Counterargument
Parents and caregivers are responsible for what their children eat. This should not be	The majority of food marketing undermines dietary recommendations and encourages unhealthy diets. Marketing negatively influences food values and preferences, and undermines efforts of parents and other caregivers to encourage healthy eating. The overabundance of such marketing also

<sup>28</sup> Adapted from a forthcoming WHO/UNICEF publication titled *Implementing policies to protect children from the harmful impact of food marketing: a child rights-based approach*.



<p>decided either by the government or by businesses.</p>	<p>distorts the information landscape, impacting children directly and making it more difficult for parents to navigate.</p> <p>Restricting food marketing is an important policy action to improve the food environment to support children in making it easier to make healthier decisions, and to support parents in providing better care for their children (13, 58).</p>
<p>There is no proof that the marketing of food and beverages is linked to children's health outcomes, such as overweight and obesity.</p>	<p>This argument is no longer sustainable. A large body of consistent and independent evidence has determined that marketing influences children's food preferences, purchase requests and dietary intake (7-9), and ultimately impacts their health.</p>
<p>The ministry of health is not the appropriate actor to determine how food marketing to children should be regulated.</p>	<p>Governments have a legal obligation to protect child rights, including those that are threatened by harmful marketing. All relevant governmental sectors should be involved in drafting, adopting and enforcing regulations on food marketing.</p> <p>Whether or not the ministry of health has the legal authority to regulate food marketing varies between jurisdictions and is a matter for each government to determine based on its domestic legislation. In some countries, marketing restrictions were passed under a food law (as in Chile), or under a broadcast regulation (as in Ireland and the United Kingdom of Great Britain and Northern Ireland). The ministry of health will typically take the lead on the process, given the health objective of food marketing restrictions, but needs to be supported by the appropriate governmental bodies and agencies, to ensure that legislation or regulations are issued by the appropriate government body, following required procedures. In the United Kingdom, the Department of Health and the Department for Digital Culture, Media and Sport have worked closely on the development of marketing restrictions.</p>
<p>The food industry is better placed than the government to reduce the harmful impact of food marketing: the adoption of industry-led, self-regulatory pledges is more efficient and less costly than the imposition of mandatory restrictions of business practices.</p>	<p>Research has established that voluntary actions by industry, such as pledges to promote food "responsibly" to children, contain significant gaps that prevent them from reducing the exposure of children to food marketing. These gaps relate to limitations in the age ranges of children protected; exemptions in the marketing techniques, media and programmes used; and weaknesses in the categorization of foods that contribute to an unhealthy diet. Industry-led initiatives are also not effectively enforced, monitored and evaluated; as such, they cannot be substituted for a mandatory, child-rights compliant implementation of the WHO set of recommendations (14).</p>
<p>Sweeping restrictions are excessive: they limit business activity too much and infringe on the ability to market food to adults. A stepwise approach, starting with more narrowly defined approaches, would be better.</p>	<p>The WHO set of recommendations recognizes that a comprehensive approach is most effective in ensuring the broadest possible coverage and a high level of public health protection against food marketing (14). Stepwise approaches may be perceived as representing small and cumulative gains over time, but research has shown that they can have counterproductive effects and can lead to an increase (rather than a decrease) in children's exposure to such marketing. Gaps in restrictions encourage companies to shift their marketing investment to unregulated programmes, media, marketing techniques and settings (24, 59). As a result, a stepwise approach does not sufficiently protect children from exposure to commercial practices that negatively impact their rights, as enshrined in the CRC (19).</p>
<p>Marketing restrictions are unlawful.</p>	<p>Business actors have invoked different legal arguments challenging the validity of food marketing restrictions. These arguments can be rebutted, particularly where a government has considered the likelihood of legal challenges in the development of the regulations. Governments that have ratified the CRC have an obligation to ensure the enjoyment of the highest attainable standard of health for all children in their territories. In upholding this right, they have a broad margin of discretion in determining how to do this most effectively, including through the use of regulations.</p>





CRC: Convention on the Rights of the Child

### Call to action

To mitigate the harmful impact of food marketing on children, governments are called upon to implement comprehensive policy approaches to **restrict marketing of foods that contribute to an unhealthy diet**, to reduce children's exposure to such marketing and to reduce the power of such marketing, offering the best possible protection to all children. Comprehensive policy approaches have the potential to be sufficiently broad to restrict all forms of food marketing to which children are exposed, including cross border marketing.

In view of the increasing concern of digital marketing, and in line with the general comment on children's rights in relation to the digital environment (60), policies to protect children from the harmful impact of food marketing should also include digital marketing restrictions.

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## Appendix 4. Fiscal policies to promote healthy diets: policy brief

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### Policy issue and context

Childhood malnutrition remains one of the most prominent global public health problems. In 2020, 38.9 million children aged under 5 years were estimated to be affected by overweight, 45 million by wasting and 149 million by stunting (1), and in 2016 more than 340 million children and adolescents aged between 5 and 19 years were affected by overweight or obesity (2). A major driver of the increases in obesity that have been seen in almost all countries – which in turn contribute to the increasing global burden of disease associated with obesity (3) – is current food environments, with increasing availability, accessibility, affordability and marketing of foods that are high in saturated fats, trans-fats, sugars or salt and are usually highly processed (4).

Countries across the world have committed to taking action to eliminate malnutrition in all its forms (5-7), including through the creation of food environments that facilitate healthy dietary decisions (5). Affordability of foods (which is a function of price and disposable income) is a key aspect of food environments that influence dietary decisions (8), with changes in price influencing consumer demand for many foods and beverages (9). Hence, use of fiscal policies that influence the relative price of foods and beverages – including both taxes on foods and beverages that are high in fat, sugars or salt, and subsidies on foods that contribute to a healthy diet – has been repeatedly recommended as a policy option to promote healthy diets. For example, the Framework for Action adopted at the Second International Conference on Nutrition in 2014 recommended exploring the use of “economic incentives or disincentives” to promote healthy diets (10), and the World Health Organization (WHO) has recommended the implementation of taxation on sugar-sweetened beverages as a cost-effective intervention to reduce consumption of sugars (11). WHO has also recommended the implementation of fiscal policies to promote healthy diets as part of a policy package to achieve nine global targets for noncommunicable diseases (NCDs) by 2025, now extended to 2030<sup>29</sup> (6, 12). Based on a literature review in 2019, WHO again recommended that countries consider taxing all sugar-sweetened beverages (13); the Commission on Ending Childhood Obesity also recommended the implementation of sugar-sweetened beverage taxes as part of a policy package to tackle childhood obesity (14). Although the issue of sustainability is beyond the scope of this policy brief, there is growing interest in the possibility of using taxes and subsidies to promote diets that are both healthy *and sustainable*, and minimize the negative impacts of diets on the environment (15-19).

Malnutrition has many complex, and often interrelated, causes; thus, fiscal policies to promote healthy diets should be embedded in a comprehensive approach to improve population diet through food system transformation and the creation of healthy food environments. When fiscal policies are part of such an approach, they can be used to shift consumption patterns, encourage product reformulation, and raise domestic revenue (which in turn can be used for health promotion, strengthening health systems or efforts towards universal health coverage).

This policy brief provides policy-makers, programme managers, health professionals and advocates with information on the evidence on the impact of taxes and subsidies to promote healthy diets;

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<sup>29</sup> The Seventy-second World Health Assembly extended the period of the global action plan to 2030 to ensure its alignment with the 2030 Agenda for Sustainable Development.



challenges and opportunities; and policy options related to the design of taxes to promote healthy diets.

### Box 1. Definitions used in this brief

**Fiscal policies to promote healthy diets:** taxes and subsidies (government spending) to promote healthier decisions by consumers

**Taxes:** here *taxes* refers to indirect /consumption taxes, which are taxes imposed on goods or services that cause consumers to pay higher prices and may serve as price disincentives to *consumers*. There are various types of indirect taxes. **Excise taxes**<sup>30</sup> are consumption taxes targeting specific products to increase their price relative to other consumer goods. They can take the form of **ad valorem excise taxes** which are levied as a percentage of the value of a product, or as **specific excise taxes** which are levied as a monetary value according to a certain physical characteristic of the product (e.g. its volume or nutrient content) (20). These types of excise tax can be applied at a uniform or a differential (tiered) rate, and on their own or in combination (i.e. a mixed system).

**Subsidies** here refer to those that result in price incentives to *consumers* (including through rebates, discounts or monetary vouchers or coupons), but do not include cash transfer or in-kind transfer programmes, agricultural subsidies or trade policy instruments.

**Sugar-sweetened beverages** refers to a broad set of non-alcoholic beverages, defined as all types of beverages containing free sugars, including carbonated or non-carbonated soft drinks; fruit or vegetable juices and drinks; liquid and powder concentrates; flavoured water; energy and sports drinks; vitamin waters; ready-to-drink teas; ready-to-drink coffee; flavoured milks and milk-based drinks; and sweetened plant-based milk substitutes.

### Progress in implementing fiscal policies to promote healthy diets

Although countries are increasingly heeding recommendations to implement fiscal policies to promote healthy diets, some have yet to do so. In 2016, the first Global Nutrition Policy Review found that 39 WHO Member States reported having implemented fiscal policies, including for example increasing taxes on foods and beverages that contribute to an unhealthy diet, increasing subsidies on foods and beverages that contribute to a healthy diet (21). Among WHO regions, implementation was highest in the Western Pacific Region (48% of responding countries), followed by the Americas (35%), Europe (28%), South-East Asia (27%) and the Eastern Mediterranean (24%) (21). Only 9% of countries in the WHO African Region reported implementation of fiscal policies to promote healthy diets (21).

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<sup>30</sup> Excise taxes are the primary policy tool used to correct for market-failures, including negative externalities, negative internalities, and information asymmetries. Negative externalities are costs that are not borne by the consumer or producer of the product but by others in society, or society at large. For example, the costs to third parties of second-hand smoke are not reflected in market prices—that is, smokers do not pay a market price that reflects the negative impact on others. Negative internalities arise when individuals do not fully consider or account for the cost on their futures of their current behavior. In other words, internalities arise when consumption of a given product results in long-term net losses which individuals neglect in favor for short-term benefits. Information asymmetries refer here to the fact that some consumers may not be fully aware of the negative consequences of the use of harmful products.



In recent years, there has been a surge in momentum for the implementation of taxes on sugar-sweetened beverage, including those with a stated objective to reduce consumption of beverages such as sugar-sweetened carbonated soft drinks (22-24). Between 2017 and 2019, the proportion of countries implementing taxes on sugar-sweetened beverage rose from 23% to 38% (25). In 2019, the WHO Region of the Americas led globally, with 60% of countries having implemented such taxes (25). As of 2022, 85 of the 194 Member States (44%) taxed sugar-sweetened beverages at the national level, while three Member States had subnational or municipality level taxes (Fig. 1) (25, 26).<sup>31</sup>

Taxes on **foods** high in salt, sugars and fat are less widely implemented, but have also seen increased adoption, from seven Member States in 2017 to 12 (6%) in 2019 (25). As of 2022, 29 Member States implemented national level taxes on food products (Fig. 1).

As with taxes on foods high in salt, sugars and fat, **subsidies** on foods that contribute to a healthy diet are less widely implemented. For example, among WHO regions in 2019, South-East Asia led, with 18% of countries reporting subsidies, followed by the Eastern Mediterranean with 10%, the Western Pacific with 7%, and Africa, the Americas and Europe with just 6% (25).

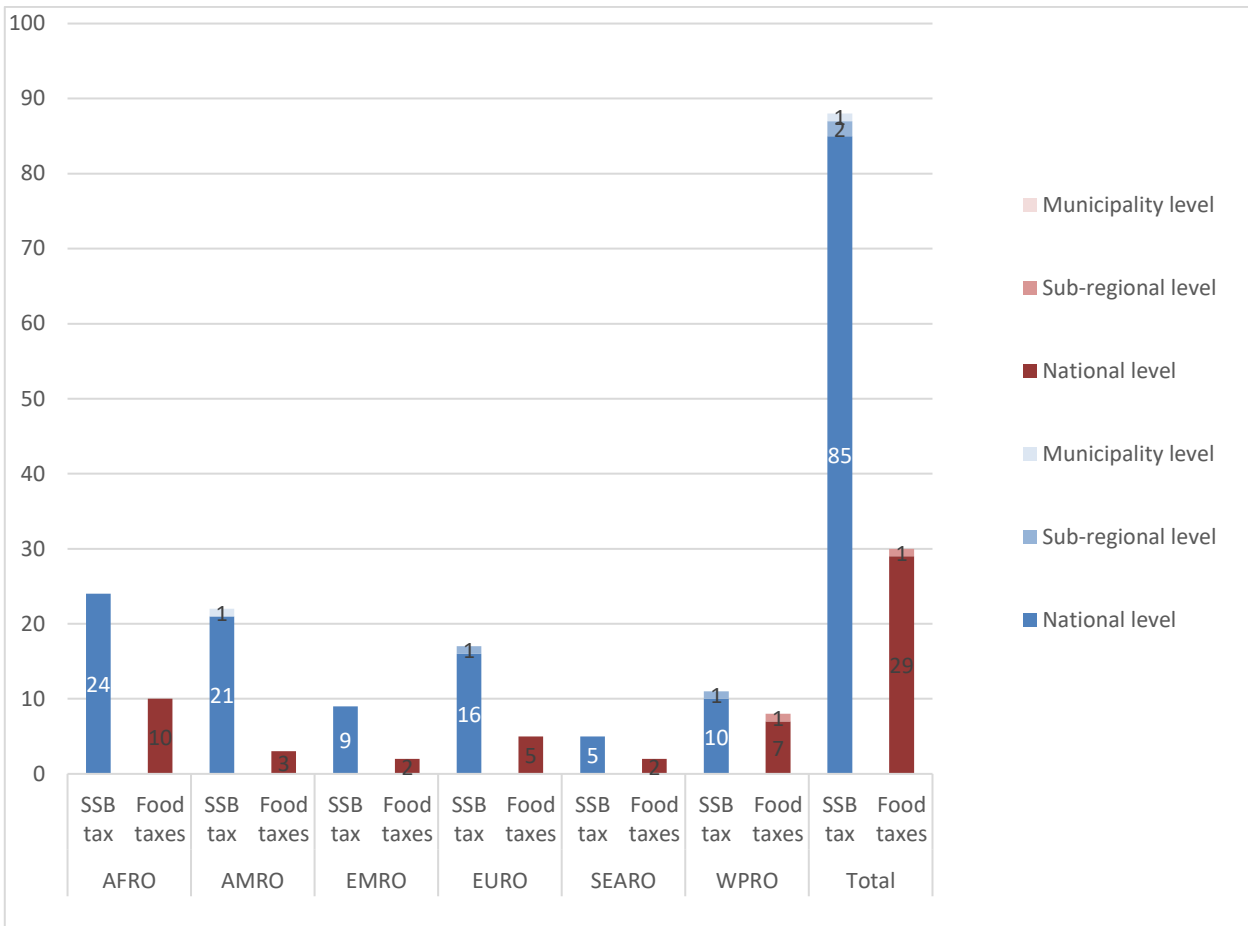
Of 39 countries that reported detailed information on the type of fiscal policy they had implemented in the second Global Nutrition Policy Review, 54% increased taxes on foods and beverages that contribute to unhealthy diets and 23% increased subsidies on foods and beverages that contribute to healthy diets. Only 15% reduced taxes on healthier food and beverage options and just 10% reduced subsidies on less healthy foods and beverages.(21).

**Fig. 1. Member States by region with national, subregional or municipality level taxes on sugar-sweetened beverages and on foods**

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<sup>31</sup> The surveys (Global Nutrition Policy Review and the NCD country capacity survey) do not ask respondents to differentiate between taxes to generate fiscal revenue and taxes to pursue a public health objective. Hence, it is not known how many of the reported taxes on sugar-sweetened beverages are designed to pursue a public health objective.





Some countries have levied taxes on less healthy foods and beverages (e.g. carbonated beverages and chocolate) since as early as the 1920s and 1930s, primarily to generate revenue rather than for health purposes (21). More recently, countries are increasingly seeing such taxes as a strategy for achieving healthier diets, perhaps driven by the inclusion of this approach in the WHO *Global action plan for the prevention and control of noncommunicable diseases 2013–2020*<sup>32</sup> (6).

## Evidence on the impact of fiscal policies to promote healthy diets

### Taxes

Modelling studies suggest that taxes on less healthy foods and beverages would bring about positive dietary changes, and there is growing evidence from “real world” country experience of the benefits of implementing such taxes (9, 23, 27-32).

Much of the evidence available is on the impact of taxes on sugar-sweetened beverages, with countries seeing positive outcomes such as reductions in purchases and consumption of taxed beverages (13, 33-41); increases in purchases and consumption of untaxed beverages, including bottled water (13, 34, 36, 37, 41); product reformulation to reduce sugar levels (13, 40); increased

<sup>32</sup> The Seventy-second World Health Assembly extended the period of the global action plan to 2030 to ensure its alignment with the 2030 Agenda for Sustainable Development.



public awareness of dietary advice to limit the consumption of sugar-sweetened beverages (40); and generation of revenue that can be used for health purposes (40, 41).

### **Box 2. South Africa's health promotion levy**

In 2018, South Africa introduced a specific excise tax on sugar-sweetened beverages, known as the Health Promotion Levy, to tackle rapidly rising intakes of such beverages and a growing burden of diet-related NCDs (42). The tax is based on the sugar content of beverages. Specifically, a fixed ZAR 0.021 (around US\$0.0015) tax rate for every gram of sugar above a 4 g/100 ml threshold (the first 4 grams per 100ml are tax free). In 2021, the Health Promotion Levy represented about 11% of the price per litre. An evaluation based on household purchase data collected between 2014 and 2019 found that the average volume of taxable beverages purchased, as well as the calories and sugar purchased from taxable beverages, fell after the tax was announced (but before it was implemented) and then again in the year after implementation. Over the same period, there was a small increase in purchases of beverages that were not subject to the tax. The reductions were greatest in lower socioeconomic households. Compared with the trend in sales predicted before the tax was announced, the volume of taxable beverages purchased was reduced by 28.9% (31.6% in low socioeconomic households), and the calories and sugar purchased from those beverages were reduced by 52% and 51%. A key lesson learned from the South African experience is that the design of a tax influences producer and consumer responses; the tiered tax based on sugar content of beverages both reduced purchases of taxed SSBs amongst consumers, and induced producers to reduce the sugar content in beverages.

There is limited evidence (much less than in relation to taxes on sugar-sweetened beverage) from research or country experience in relation to taxation of foods that contribute to unhealthy diets (e.g., foods high in saturated fats, *trans*-fatty acids, free sugars or salt). However, the evidence that is available suggests that such taxes can reduce purchases (43-46) and consumption (47) of taxed foods, encourage product reformulation (44), generate revenue that can be used for health purposes (44) and increase awareness of healthy eating (44).

### **Box 3. Hungary's Public Health Product Tax**

In Hungary, the Public Health Product Tax, which came into effect in September 2011, is intended to reduce consumption of unhealthy foods, promote a healthy diet, increase the accessibility of healthy foods choices and raise revenue for health care services. The specific excise tax is applicable to ready-to-eat food and beverages with high salt, sugar or caffeine content, with rates varying depending on the product category. An impact assessment estimated that purchasing of processed foods decreased by 3.4% following the introduction of the tax, while purchasing of unprocessed foods was estimated to have increased by 1.1%, with the lowest-income groups most responsive to the tax (43). Another assessment found that 16% of surveyed consumers of salty snacks changed their consumption of salty snacks, and 14% of surveyed consumers of pre-packaged sweets changed their consumption of pre-packaged sweets (48). In terms of reason for changing consumption, higher prices were cited by 56% of salty snack consumers and 66% of pre-packaged sweets consumers. Consumers who decreased their consumption were two to three times more aware that the product was unhealthy (48).



An important lesson from the experience in Hungary is their use of a nutrient profile model to differentiate tax rates and making sure that there are healthy substitutes.

#### **Box 4: Mexico's tax on nonessential energy-dense foods**

In October 2013, the Mexican Government passed legislation to introduce a specific excise tax of one peso (about US\$ 0.05) per litre on sugar-sweetened beverages, equivalent to a 10% price increase on taxed beverages. The success of the tax in reducing purchases and consumption of sugar-sweetened beverages has been widely reported (37, 49). Less well known is an 8% ad valorem excise tax on nonessential foods with an energy density of more than 275 kcal per 100 g that became effective in January 2014, designed to help slow the country's rising obesity rates and generate tax revenues (50). Evaluations conducted annually for the first 3 years of implementation found decreases in the volume of taxed food purchased – particularly in lower socioeconomic households – compared with expected levels based on pre-tax trends (51-53). No changes in purchases of untaxed foods were observed in the post-tax period. In the first year after introduction of the tax, purchases of taxed foods did not change for households with high socioeconomic status, but they decreased by 5.8% in those with medium socioeconomic status and by 10.2% in those with low socioeconomic status (51).

#### **Box 5: Tonga and Fiji's tax exemptions for healthy foods**

In July 2016, the Government of Tonga abolished a 15% VAT on products including fruits and vegetables, eggs, water and yoghurt (54). Similarly, in 2013, the Government of Fiji removed a 10% excise duty on imported vegetables, and the volume of imported vegetables that are not grown in Fiji increased substantially between 2010 and 2014 (55).

### **Subsidies**

Modelling and intervention studies suggest that subsidies to reduce prices of fruit and vegetables are likely to be effective in increasing consumption of these foods and improving overall diet quality, although the effect on energy intake and weight is unclear (38, 56-58). There is increasing evidence that combining taxes on foods that contribute to unhealthy diets with subsidies of foods that contribute to healthy diets is likely to be the most effective approach (30, 59).

### **Impact on health equity**

A commonly used argument regarding taxes on unhealthy foods and beverages is that these are financially regressive (i.e. people of lower socioeconomic status spend a bigger proportion of their income on these goods compared to the people of higher socioeconomic status).(60). However, because of the likely stronger response of lower socioeconomic groups to price changes, in other words, lower socioeconomic groups decrease consumption of taxed products by a greater extent, (61), the health benefits of taxes on less healthy foods and beverages, as well as the reduction in health care expenditures associated with diet-related diseases, are likely to be progressive—. Evaluations of taxes implemented in Mexico and South Africa, for example, indicate greater reductions in purchasing of taxed foods and beverages among lower socioeconomic groups (42,



51). Similarly, modelling studies have found greater health benefits for lower socioeconomic groups (31, 42, 51, 62, 63). Hence, carefully designed taxes could reduce health inequities, particularly if the tax revenue is used progressively (i.e. where lower socioeconomic groups receive a greater benefit) (64) and if taxes are implemented in combination with subsidies (61). Often, subsidies are targeted to lower socioeconomic groups and thus have the potential to reduce health inequities.

In general, the evidence on the impact of fiscal policies to promote healthy diets collected in low- or middle-income countries is sparse, but some studies suggest that the use of taxes and subsidies is also appropriate in such settings (32, 35, 64, 65).

### **Elements to consider when designing fiscal policies to promote healthy diets**

The health impact of a fiscal policy is influenced by its impact on prices and by how consumers respond to price changes in the targeted foods and beverages. Designing a tax or subsidy involves consideration of several policy design elements, including products subject to the tax or subsidy, the type of tax, as well as the tax base and rate. Importantly, a tax can only be levied if authorized by a law and the mentioned policy design elements are determined by a law. Consideration must be given to the country's existing national legal framework for taxation. In addition, member countries of the World Trade Organization (WTO) must ensure that the proposed policy design elements do not discriminate, for example between imported and locally-produced products, as WTO law also disciplines tariff and non-tariff measures.

### **Products subject to the tax or subsidy**

One key policy design element is the coverage of foods and beverages that are taxed or subsidized. The foods and beverages (or nutrients) included within a tax or subsidy base should be those that are associated with poorer health outcomes (in the case of taxes) or better health outcomes (in the case of subsidies), based on epidemiological evidence and the likelihood that consumption will be affected by a tax or subsidy (66). In the case of taxes, given that consumers may respond to a tax by substituting taxed products with untaxed foods and beverages, the products subject to the tax should be chosen to ensure that substitutes are not less healthy foods and beverages (56). Additionally, as the experience from Hungary shows, it is important to complement these efforts with policy options to ensure that healthy substitutes are available.

Determining the set of taxable products on the basis of nutrient profiles (i.e. the nutritional composition of foods and beverages) may be less likely to have unintended consequences than those based on an individual nutrient, because they are less likely to also apply to healthier foods and beverages (27). Nutrient profile models can be a useful tool for determining the products to be taxed (56), but how the taxable products are defined may influence the feasibility of implementing taxes. For example, taxes on simply defined foods (e.g. sugar-sweetened beverages) may be more straightforward to implement than taxes targeting multiple nutrients, especially in countries with low resources (66). However, the Harmonized Commodity Description and Coding System<sup>33</sup> for classifying commodity groups, which is used in most national tax systems, does not include categories based on healthfulness of products, for example grouping beverages with and without sugars in the same category. Taxes targeting an individual nutrient may also be administratively burdensome to implement, given that they would apply to a wide range of foods (27).

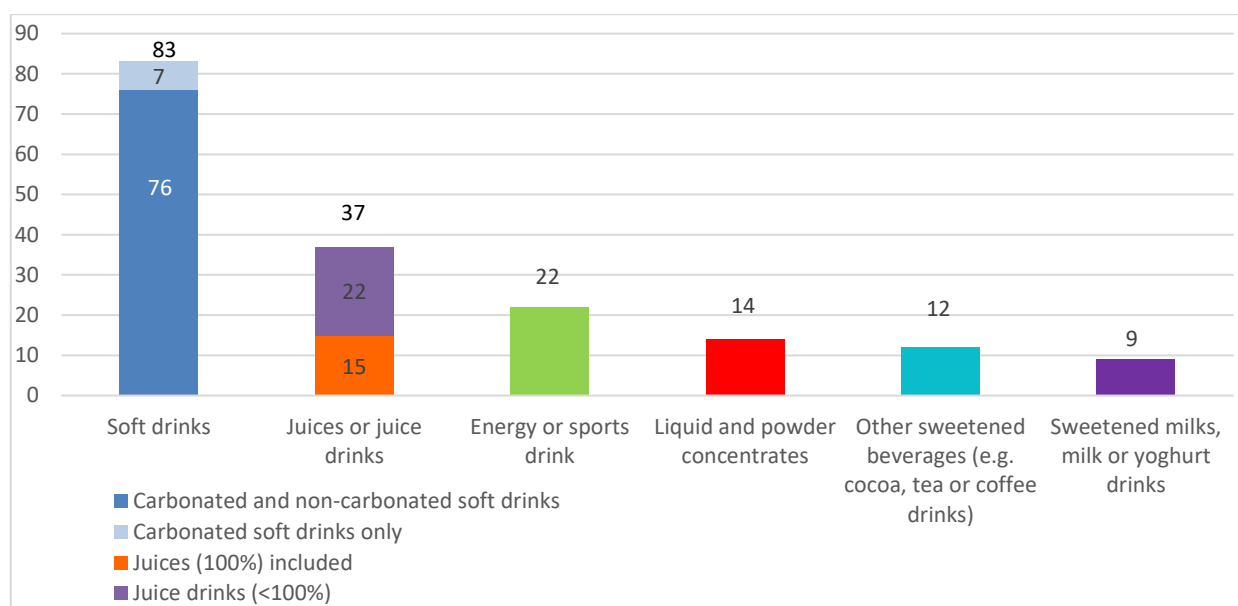
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<sup>33</sup> World Customs Organization. <http://www.wcoomd.org/en/topics/nomenclature/overview/what-is-the-harmonized-system.aspx>



Currently there is large variation in the products subject to SSB taxes of policies already implemented in WHO Member States. Fig. 2 shows the variation in the products subject to sugar-sweetened beverage taxes. As of 2022, 83 Member States tax “soft drinks”, although seven only tax those that are carbonated.<sup>34</sup> Juices and juice drinks can be significant dietary sources of sugars, but less than half (37) of the countries include these within the taxed products; also, countries often exempt fresh fruit and vegetable juices, pure juices (100%) or juice drinks with a specific minimum level of pulp. Energy drinks and sports drinks are increasingly being included in national excise taxes, often at a higher rate than other sugar-sweetened beverages. As such, there is ample space within already implemented policies taxing SSBs to better define the list of taxable products to align more closely with public health objectives.

**Fig. 2. Products taxed in national level sugar-sweetened beverage taxes in 85 WHO Member States**



Foods that have been taxed in countries include those that are typically high in sugars, unhealthy fats and salt, such as confectionery, ice creams, meat preparations, or specific food commodities such as unhealthy meat cuts, instant noodles or bouillon cubes. See box 6 for examples of what foods have been taxed in different countries for health purposes.

#### **Box 6. Examples of what foods have been taxed in countries**

**Mexico:** Nonessential foods with an energy density of more than 275 kcal per 100 g have been subject to an 8% ad valorem excise tax since 2014. Taxed food items include crisps and snacks,

<sup>34</sup> Two countries are not taxing soft drinks. One has a tax at national level covering yoghurt drinks, and the other covering energy drinks.



candies and sweets, chocolate, puddings, peanut and hazelnut butters, ice cream and ice pops, and cereal-based products with substantial added sugar (51).

**Ethiopia:** In February 2020, Ethiopia introduced an ad valorem excise tax on imported and locally produced foods, including fats and oils with high levels of saturated or *trans*-fatty acids, sugar and sugar confectionery, chocolate and food preparations with cocoa and soft drink powders (69).

**Hungary:** The Public Health Product Tax is a specific excise tax applied to a variety of products including snacks with more than 1 g salt per 100 g, condiments with more than 5 g salt per 100 g, flavourings with more than 15 g salt per 100 g, energy drinks, soft drinks (sugar-sweetened and artificially sweetened) and pre-packaged sugar-sweetened products (44).

**Tonga:** Since 2016, Tonga has imposed an excise tax and/or import duty on high fat foods – including very fatty meat products such as turkey tails and mutton flaps – as well as foods and beverages high in sugars and instant noodles (54).

**The Navajo Nation (USA):** A 2% ad valorem excise tax on “minimal-to-no-nutritional value” food and beverage items was introduced in 2015. Taxed foods include sugar-sweetened beverages, sweets and crisps (70).

**Denmark:** In 2011, Denmark introduced a specific excise tax on saturated fat in foods, but the tax was abolished after just over a year for economic reasons after misleading negative media coverage (71). Research has since shown that the tax reduced fat consumption by between 10% and 15% (47). Denmark still taxes chocolates, confectionaries, biscuits and cakes via specific excise taxes.

**Bermuda:** Sugar-containing confectionery – including, since 2019, chocolate bars containing sugar – has been subject to a new ad valorem import duty since 2018. The tax also applies to sugar-sweetened beverages and syrups (72).

### **Type of Tax**

Beyond establishing what products are subject to the tax, another key policy design element of taxes to promote healthy diets is determining the tax type. From a public health perspective, excise taxes are generally preferable to sales taxes and VAT because they are applied to a specific product or products, decreasing their affordability relative to other products; in contrast, VAT or sales taxes typically apply to a broad range of goods and services, and do not affect the relative price of the product. Also, compared with sales taxes (another type of indirect tax), the increased price due to an excise tax is more likely to be visible to consumers in the shelf price, which may increase the likelihood of behavioural change (66). Among the different types of excise taxes, specific excise taxes are likely to be more effective than ad valorem excise taxes, because they increase the price of all taxed foods and beverages by the same (absolute) amount, reducing the incentive for consumers to substitute a cheaper taxed product (56, 66, 73). Specific excise taxes may also be easier to implement than other tax types and are not susceptible to price manipulation by industry; however, as noted above, they should be regularly adjusted in line with inflation and income growth to ensure they remain effective (56). Specific excise taxes based on nutrient content (e.g. sugar-sweetened beverage taxes based on sugar content) are likely to have a larger impact, because they encourage consumers to substitute to healthier untaxed substitutes and encourage industry to reformulate, but simpler taxes (e.g. volume-based sugar-sweetened beverage taxes) may be more feasible in countries with weaker tax administration (56).



## **Tax Structure**

A third tax design element to consider is the tax structure. Tax structures can be either uniform (same type of tax and tax rate applies to all taxable product), or tiered (with the tax rate varying according to product characteristics). Taxes that are tiered rather than uniform may encourage consumers to substitute to foods and beverages containing lower levels of the targeted nutrient, and encourage industry to reformulate foods and beverages (74).

Among the 85 Member States that taxed sugar-sweetened beverages as of 2022, 17 had specific excise taxes based on sugar content or a tiered tax system, where beverages with higher contents of sugars were taxed at higher rates than those with lower contents. Another three countries only taxed beverages with a sugar content above a specific threshold. This may encourage product reformulation by beverage companies wanting their products to be more affordable to consumers, as in the case of the United Kingdom's Soft Drink Industry Levy (see Box. 7).

### **Box 7. The United Kingdom's Soft Drinks Industry Levy**

In the United Kingdom of Great Britain and Northern Ireland (United Kingdom), a two-tiered specific excise tax on soft drinks (the Soft Drinks Industry Levy) was announced in March 2016 and implemented in April 2016. Beverages with 8 g or more of sugar per 100 mL are taxed at £0.24/L (US\$ 0.33/L) whereas beverages with 5–8 g of sugar per 100 mL are taxed at £0.18/L (US\$ 0.25/L). Beverages with less than 5 g sugar per 100 mL are not taxed. One year after the levy was introduced, the amount of sugar purchased from soft drinks was 10% lower (equivalent to 30 g per household per week) than expected from trends before the levy was announced (75). There is evidence that the levy incentivized manufacturers to reformulate their products to reduce sugar levels, with the proportion of sugar-sweetened beverages over the lower levy sugar threshold falling by 34 percentage points between 2015 and 2019 (76).

## **Tax or subsidy rate**

The rate of taxes or subsidies to promote healthy diets is another key policy design element. To have a meaningful public health impact, tax and subsidy rates must be sufficiently high to influence purchasing and consumption of the taxed and subsidized foods and beverages (56). The tax rate of specific excise taxes should be regularly adjusted in line with inflation and income growth, to ensure they remain effective (56).

### **Box 8. Bahrain's tax on energy drinks and soft drinks**

Since December 2017, the Kingdom of Bahrain has levied an ad valorem excise tax on energy drinks and soft drinks (67). The tax is levied at a rate of 100% on energy drinks and 50% on carbonated soft drinks (any aerated beverage except unflavoured aerated water). Evidence indicates that this tax led to a decrease in the annual growth rate of soft drink sales volumes. Similarly, high tax rates have been introduced in many neighbouring countries (e.g. Oman, Qatar, Saudi Arabia and United Arab Emirates) (68)



### **Box 9. Saudi Arabia's tax on carbonated drinks**

In 2017 Saudi Arabia introduced an 50 % ad valorem excise tax on carbonated drinks. Evidence indicates that this tax led to an effective price increase of taxed products and to a decrease of 35 % in carbonated drink volume sales relative to other Arab Gulf states.

#### **Tax compliance**

Essential for taxes on foods and beverages that contribute to unhealthy diets are an effective enforcement mechanism and the ability to impose sanctions for non-compliance (whether through an existing law or the new fiscal policy). Existing enforcement structures (e.g. those for taxes on tobacco and alcohol) may be used to reduce implementation and enforcement costs.

#### **Monitoring and evaluation**

Monitoring and evaluation are key to understanding the effectiveness of fiscal policies to promote healthy diets, and there should be planning and budgeting for monitoring and evaluation from the outset. The responsible monitoring body should be defined and, if feasible, a baseline evaluation should be conducted before implementing the policy, to allow for before and after evaluation. Evaluations should be made public to ensure transparency and to contribute to the international body of knowledge and evidence on fiscal policies to promote healthy diets (13). Also, key are monitoring and evaluation of the health equity impacts of fiscal policies to promote healthy diets, and of any potential unintended consequences. A recent review of global experience summarized key elements to consider for evaluation of a sugar-sweetened beverage tax, including the advantages and challenges of different methodologies in particular the use of natural experiments, the use of relevant outcomes that are likely to be of interest to different actors (such as government, consumers and industry), and the strengths and limitations of data sources to be used (77).

### **Box 10. Possible indicators to monitor a policy's effect**

It is often not possible to directly attribute changes in public health to a specific policy (e.g. a tax or subsidy) owing to the complex mix of causes of malnutrition. In addition, complementary measures are often implemented at the same time, making it even more difficult to assess the impact of a particular fiscal policy on health outcomes; also, there is a substantial time lag with regard to health outcomes. Hence, it is important to monitor both relevant health outcomes and intermediate indicators of the policy's effect (e.g. changes in prices, purchases, consumption, dietary intake, food and beverage composition and revenue) (56).

#### **Use of tax revenue**

Where a country's legal system allows, earmarking revenue from taxes on less healthy foods or beverages for health-related expenditure can increase funding for progress towards public health goals and can help to establish positive perception of such taxes among the public (56, 73, 78, 79). The potential to raise revenue from such taxes could be an important consideration, given the financial problems many countries face as a result of the COVID-19 pandemic (80). In the policy





process, earmarking can face strong resistance from finance authorities as it is said to introduce budget rigidity (limiting the ability to shift resources to align to spending needs and realities) and increase fragmentation. However, it is important to consider that there are varying levels of earmarking, within the spectrum of “soft” to “hard” earmarking, which are associated with different levels of fiscal risk. Soft earmarking, whereby revenues are designated for a particular service but do not determine the amount spent, is usually preferred over hard earmarking, as it comes closer to standard budget processes and provides more flexibility.

#### **Box 11. Examples of use of tax revenue for health purposes**

**Navajo Nation (USA):** The total tax revenue from the ad valorem excise tax on foods of minimal-to-no-nutrition value from 2015 to 2019, estimated at US\$ 7.58 million, was allocated to community wellness projects such as clean water, farmers’ markets, vegetable gardens, healthy classrooms and healthy convenience stores (70).

**Hungary:** Revenue from the Public Health Product Tax is allocated to health care services (44).

**Malaysia:** Revenue from the specific excise tax on sugar-sweetened beverages contributes to providing free and healthy breakfasts for primary school children (81).

**Portugal:** In its first year of implementation, a specific excise tax on sugar-sweetened beverages generated about 80 million Euros, all of which contributed to funding of the Portuguese National Health Service (82).

**Dominica:** Revenue from an ad valorem excise tax on sugar-sweetened beverages contributes to the national Get Healthy campaign (40).

**French Polynesia:** Between 2002 and 2006, revenue from a specific excise tax on sugar-sweetened beverages contributed to a preventive health fund (40). Since 2006, 80% of revenue has been earmarked for the Ministry of Health’s general budget (40).

#### **Challenges and opportunities for fiscal policies to promote healthy diets**

Country experience shows that it is important to carefully plan fiscal policies to promote healthy diets prior to their implementation. Possible windows of opportunity to introduce fiscal policies for healthy diets include a change in political leadership, implementation of tax reform, the development of a new national health or nutrition strategy, and increased political debate or growing social awareness around obesity and diet-related NCDs (50, 83). During the COVID-19 pandemic, the increased risk of severe illness or death for people affected by obesity or diabetes has become clear; the interplay between obesity, NCDs and infectious diseases reinforces the need for policy action to promote healthy diets (84).

The implementation of fiscal policies to promote healthy diets – whether through the introduction of a new tax or subsidy, or an increase in the rate of an existing tax – can encounter opposition. Strategies that can help policy-makers overcome any opposition encountered include the following:

- Galvanizing political leadership and support, and fostering cooperation across government sectors (79).
- Identifying influential “champions” from the start: visible high-level, sustained commitment from governments can counterbalance food industry-led opposition to taxes (85), while



cooperation between health and finance policy-makers can allow development and successful implementation of appropriate policy solutions (44).

- Stating the objective(s) of the fiscal policy: having clear, stated objectives is key to ensuring that the policy is well designed to meet the objective, and for promoting transparency and facilitating monitoring and evaluation of the policy's success. For taxes, it is important to be clear about whether the goal is to raise revenue, improve public health or health equity, or a mix of these. The public health objectives need to be clear and carefully formulated because any uncertainty about objectives leaves the policy vulnerable to opposition (73).
- Clearly defining the products that are subject to the tax or subsidy: Clear definitions help to avoid any confusion about which products are taxed or subsidized. An understanding of substitutes for taxed products, and how savings on subsidized products might be spent, is particularly important. Fiscal policies with a public health objective should be broad and cover potential less healthy substitutes of the taxed products — if many exceptions are made, the measure becomes ineffective.
- Consulting stakeholders: consultation is an important part of the policy development process, but must be transparent and include robust safeguards against conflicts of interest. If industry is consulted on proposals for a tax, the consultation is best carried out in the form of a public hearing that also involves independent experts and civil society.
- Ensuring that communication is transparent and evidence based: clear communication from the outset can increase public awareness of the positive health impacts of taxes or the removal of existing staple food subsidies (particularly for groups with lower socioeconomic status), and can thus support policy implementation and address potential mistrust by the public.
- Earmarking tax revenue for health purposes: using tax revenue for health purposes can increase public support for taxes (56, 73, 78).
- Ensuring that taxes do not discriminate against foreign products: ensuring a lack of discrimination helps to avoid trade disputes. Excise taxes are therefore preferable to import tariffs, because they tax domestic and imported products equally.
- Highlighting evidence on positive economic impacts: industry arguments about projected negative impacts on profits, employment and economic growth, and the regressivity of taxes, can be addressed with evidence from studies showing that net economic impacts are often positive, macroeconomic impacts are minimal and industry can mostly mitigate the effects of fiscal policies (86-89).

In addition to implementing the strategies outlined above, which can help policy-makers overcome any opposition encountered, policy-makers should be prepared with solid scientific evidence to respond to arguments commonly used by the industry to oppose tax measures on unhealthy products. Similarly as in the case of tobacco taxes, country experiences show that the industry's arguments against sugar-sweetened beverage tax policies can be roughly organized into the five categories of SCARE tactics: (S) sowing doubt by discrediting science and diverting attention, (C) court and legal challenge threats, (A) anti-poor rhetoric (regressivity), (R) revenue instability and (E) employment impact.

**Table 1. Examples of common arguments from opponents and counterarguments (adapted from (22, 41, 60))**



Common arguments from opponents	What evidence and country experiences actually indicate
<b>(S) sowing doubt by discrediting science and diverting attention</b>	
Taxes on less healthy foods and beverages do not reduce consumption.	Price elasticities, modelling studies and evaluations of implemented taxes on less healthy foods and beverages indicate that well-designed taxes can reduce consumption. Taxes on other unhealthy commodities (e.g. tobacco) have successfully reduced demand for these commodities. A tiered tax encourages reformulation towards healthier options, thereby affecting consumption patterns.
People should be responsible for their own lifestyles – governments should not impose on what people eat.	The food environment – and food industry actions (e.g. marketing and availability) – also influence what people eat. Governments have responsibilities to protect the right to health, the right to food and ensure healthy environments, as enshrined in the Constitution of some countries; fiscal policies to promote healthy diets are one measure that can be adopted in fulfilling these responsibilities.
The food industry is undertaking other voluntary initiatives to encourage healthy lifestyles (e.g. corporate social responsibility campaigns that promote physical activity and provision of nutrition information on product packaging), regulatory measures are not necessary.	Corporate social responsibility campaigns, including those promoting physical activity, function as public relations strategies for the food industry, which continues to sell more of its products and avoid regulation while demonstrating its “good intentions”. Without public policies to promote healthy diets and address intakes of foods and beverages high in fat, salt and sugars, physical activity programmes alone are unlikely to be successful at addressing overweight and obesity. Industry-proposed nutrition information for inclusion on product packaging is often confusing and insufficiently clear, and populations may lack the capacity to understand, use and interpret such information; nutrition labelling should be regulated to ensure that such information is understandable.
Overweight and obesity are complex issues that will not be solved by taxes on less healthy foods and beverages.	Overweight and obesity are complex issues, and taxes are one policy option in a comprehensive package of policies that are recommended to address them. The revenue collected from taxes could be invested in other initiatives to address overweight and obesity.
<b>C) court and legal challenge threats</b>	
Taxes may be challenged on grounds that they breach domestic or international law.	Many countries have effectively defended legal challenges to taxation policies under both domestic and international investment law. Tax policies can be developed in a manner that safeguards the government’s position in the event of legal challenge. Legal threats should not necessarily impede efforts to advance SSB tax policies.
<b>(A) anti-poor rhetoric (regressivity)</b>	



	Taxes on less healthy foods and beverages are regressive.	In many countries, overweight and obesity and their consequences are regressive, with lower socioeconomic groups disproportionately affected. Taxes on less healthy foods and beverages are therefore likely to be progressive in terms of both their health benefits and associated averted health expenditures with greater benefits for these lower socioeconomic groups. The revenue collected from taxes can also be invested in initiatives that benefit lower socioeconomic groups (e.g. other health-related activities). In the case of sugar-sweetened beverages, such beverages are not a necessary part of any diet, and healthier substitutes are frequently available at little or no extra cost.
<b>(R) revenue instability</b>		
	Taxes will not yield the expected revenue, or increases to existing taxes may reduce revenue yields.	The impact on revenues of taxes to promote healthy diets depends largely on how the tax is designed and administered. Country experiences indicate that these taxes can generate additional revenue, which can then be used to finance health or social initiatives.
<b>(E) employment impact</b>		
	Taxes on less healthy foods and beverages will increase prices and reduce sales, affecting employment.	Because taxes encourage consumers to substitute taxed foods and beverages for healthier foods and beverages, demand for healthier options may increase, providing opportunities for the food industry to offer such options and for jobs to be derived from the increased demand for these products. Consumers may also spend money they would have spent on taxed foods and beverages on other goods and services, increasing employment opportunities in other industries. Also, the revenue collected from taxes could be invested in creating other employment opportunities (e.g. in improving drinking-water infrastructure).

Sources: (22, 41, 60))

### Call to action

To incentivize consumption of healthier options and disincentivize the consumption of less healthy options, governments are called upon to implement fiscal policies that promote healthy diets, such as taxes on less healthy foods and beverages and subsidies on healthier foods and beverages. Policy design elements (e.g. tax or subsidy bases and rates and tax types) should be carefully considered in the development of fiscal policies to ensure that such policies are effective in promoting healthy diets.

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## Appendix 5. Promoting physical activity through schools: policy

### Introduction

**Physical activity is good for hearts, bodies and minds.** Regular physical activity can improve physical fitness; improve heart, vascular and metabolic health, and bone health; and reduce adiposity in children and adolescents (1). Being active can also improve cognitive function, including academic performance and mental health, and can reduce symptoms of depression and anxiety (1). In contrast, **too much sedentary behaviour can be unhealthy**; it increases the risk of obesity and poorer fitness and cardiometabolic health, and can affect sleep duration (2).

Global estimates indicate that over 80% of young people in school are not meeting the global recommendations of 60 minutes of moderate-to-vigorous physical activity per day (see Box 1) (3). In most countries, girls are less active than boys, and levels of inactivity among girls have not improved since 2001 (in fact, the gap between girls and boys is widening) (3). In addition, the most socially disadvantaged groups in most countries, such as girls and those living with chronic health conditions or disability, are often the least active.

### Box 1. How much physical activity is needed for health, and what are the benefits?

The 2020 World Health Organization (WHO) guidelines on physical activity and sedentary behaviour (1), summarized in Fig. 1, provide an evidence-based consensus on the type and amount of physical activity that benefits health across the life-course, including for people living with chronic conditions and disability.

Fig. 1. Summary of the WHO guidelines on physical activity and sedentary behaviour



WHO: World Health Organization.

**Everyone can benefit from increasing physical activity and reducing sedentary behaviour**, including children and adolescents living with disability. These recommendations are relevant to all, regardless of gender, race, ethnicity, income level or ability.

**All physical activity counts** and can be undertaken in different ways and in different settings. For example, walking and cycling can be used as a means of transport; sport and exercise can be part of the school curriculum; and children of all ages can be physically active through play, at home, at school and in public open spaces.



## About this policy brief

This policy brief describes the importance of integrating physical activity into primary and secondary schools so that all children and young people can be physically active on a regular basis, which will contribute to preventing the increasing public health problem of childhood obesity. It outlines six evidence-based domains for promoting physical activity in schools:

1. Quality physical education
2. Active travel to and from school
3. Active before- and after-school programmes
4. Opportunities during recess to encourage physical activity
5. Active classrooms
6. Inclusive approaches to physical activity.

It describes how the school environment can be used to develop, implement and evaluate strategies that promote physical activity and reduce sedentary behaviour among children and young people. Further information is available in WHO's *Promoting physical activity through schools: a toolkit (4)*.

### *Who is this policy brief for?*

This policy brief will support school policy-makers, planners and school principals to develop effective whole-of-school approaches to promoting physical activity. It is intended to support:

- ministries of health
- ministries of education
- ministries of sport and recreation
- policy-makers from other relevant sectors
- school governors, school councils and boards
- school principals or head teachers.

### *The school's role in promoting physical activity*

According to the United Nations Children's Fund (UNICEF), on any given day of the week, about 1 billion children from around the world attend school. Children spend more time in school than anywhere other than home, making schools an excellent setting in which to offer quality physical activity education and possibilities for an active school day to large numbers of children.

However, at least some of a child's daily physical activity should be undertaken outside the school day. Schools can help to achieve this by communicating positive physical activity messages to the wider community, including to pupils' parents and carers (5). Thus, schools can both provide and promote physical activity for all children and adolescents.



Evidence suggests that the health and well-being of children and young people is essential to the attainment of educational outcomes (6, 7). Although the mechanisms are unclear, there is evidence that physical activity is associated with improved cognitive functioning (8), concentration and attention (9, 10), and memory and planning (11), all of which contribute to an improved capacity to learn and to educational success. Participation in organized sport can also provide psychological and social benefits, including social integration and development of social skills (12).

The importance of schools as key focal points for policy action is demonstrated in several high-level documents relating to sport and physical activity (see Table 1).

**Table 1. Summary of policy recommendations supporting the promotion of physical activity through whole-of-school approaches**

<p><b>Global action plan on physical activity 2018–2030 (13)</b></p>	<p><b>Policy action 3.1</b> Strengthen provision of good-quality physical education and more positive experiences and opportunities for active recreation, sports and play for girls and boys, applying the principles of the whole-of-school approach in all pre-primary, primary, secondary and tertiary educational institutions, to establish and reinforce lifelong health and physical literacy, and promote the enjoyment of, and participation in, physical activity, according to capacity and ability.</p>
<p><b>Commission on Ending Childhood Obesity (2016) (14)</b></p>	<p><b>Recommendation 2.2</b> Ensure that adequate facilities are available on school premises and in public spaces for physical activity during recreational time for all children (including those with disabilities), with provision of gender-friendly spaces where appropriate.</p> <p><b>Recommendation 5.7</b> Include quality physical education in the school curriculum and provide adequate and appropriate staffing and facilities to support this.</p>
<p><b>Kazan Action Plan (2017) (15)</b></p>	<p><b>Policy recommendation I.3</b> Foster quality physical education and active schools.</p> <p><b>Policy recommendation II.3</b> Provide quality education and promote lifelong learning for all and skills development through sport.</p>
<p><b>UNESCO</b> <b>Quality physical education (QPE): guidelines for policy-makers (2015) (16)</b> <b>Quality physical education: policy guidelines: methodology (2015) (17)</b> <b>Promoting quality physical education policy (2022) (18)</b></p>	<p>These guidelines and a framework are designed to help policy-makers reshape physical education policies and promote equal access to physical education, in line with the needs and expectations of every child.</p>



<p><b>WHO and UNESCO initiative</b> <b><i>Making every school a health-promoting school: implementation guidance (2021) (19)</i></b> <b><i>Making every school a health-promoting school – global standards and indicators (2021) (5)</i></b></p>	<p>These global standards and indicators provide direction to government staff and policy-makers in all sectors, school leaders and developmental partners in implementing sustainable, whole-of-school approaches to health in education. The standards and indicators are designed to be used by all stakeholders in all sectors involved in identifying, planning, funding, implementing, monitoring and evaluating the health-promoting school approach at schools locally, subnationally, nationally and globally.</p>
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UNESCO: United Nations Educational, Scientific and Cultural Organization; WHO: World Health Organization.

### **Evidence-based interventions to promote physical activity through schools**

A recent review, conducted as part of the Science and Technology in Childhood Obesity Policy (STOP) project, of school-based physical activity programmes indicated that in children aged 6–12 years, interventions that increase physical activity levels can improve body composition (20). These interventions can be cost-effective (21), but they need to ensure participation of all children, and in particular need to reach socially deprived children who may face additional barriers to being active outside school.

No single intervention can, on its own, provide optimal levels of physical activity for all children or within a given school (22). The most effective way to maximize physical activity opportunities in schools is through a whole-of-school approach (23-25), as incorporated in the Health Promoting Schools initiative (5).

Six domains have been shown to be effective in supporting the promotion of physical activity through a whole-of-school approach (Fig. 2). The six domains are discussed below.



**Fig. 2. The six domains that are effective as part of a whole-of-school approach to promoting physical activity**

**Figure 4:** *The six domains as part of a whole-of-school approach to promoting physical activity through schools.*



PA: physical activity; QPE: quality physical education.  
Source: WHO (2021) (4)

### **1. Provide physical activity through quality physical education**

Quality physical education (QPE) should focus on teaching physical competence and confidence (16), sport and movement skills, and knowledge about the health behaviours needed to establish and sustain lifelong physical activity and health. Physical education (PE) provides an opportunity to increase physical activity during the school day, and has the potential to reach most children, ensuring access to and appreciation of health-enhancing physical activities. It can provide children with opportunities to gain competence in a broad, balanced range of physical activities so that they can enjoy being active. Developing confidence and competence in physical activity will increase the likelihood that children will choose to be active in their own time.

#### *Current situation*

Data from the 2013 United Nations Educational, Scientific and Cultural Organization (UNESCO) global survey of school PE (26) showed that 97% of countries have legal requirements for PE at



some point during compulsory schooling years.<sup>35</sup> Despite official commitment to PE, noncompliance with regulations is evident, with about 29% of countries not actually implementing PE in accordance with legal and mandatory obligations. Noncompliance often occurs in countries where curriculum responsibility lies with education districts or individual schools (i.e. in the context of localized implementation of curricula). Thus, PE provision differs across regions and countries according to age or stage of attendance, with variations in the number of lessons per week and weeks taught per year (26).

### *Key considerations*

- PE should be valued within the school and should not be replaced by other subjects, courses or activities; also, it should be provided to all children, irrespective of age, gender or ability.
- All schools should provide QPE as a core part of formal curricula, led by appropriately trained teachers (16).
- Students' performance should be evaluated in terms of personal improvement and effort and not by comparison to others.

### **Case study: *Fit for Girls*, Scotland**



Fit for Girls was part of the sportscotland Active Girls programme, which aimed to increase secondary school girls' participation in PE, physical activity and school sport. Fit for Girls provided training for PE teachers, Active Schools coordinators and other physical activity professionals, equipping them with the knowledge, tools and skills to successfully consult, plan and implement positive PE experiences and sustainable physical activity programmes for girls in schools. By the end of the programme, 359 secondary schools had been reached, and 32 local authorities had taken part in training and committed to continue delivering the programme (27).

**[END CASE STUDY]**

## **2. Implement strategies to encourage active travel to and from school**

Active travel means walking, cycling or other active means of travelling as an alternative to motorized transport (e.g. cars, motorbikes and mopeds) for making everyday journeys. It may also include public transport, because this mode of travel often requires physical activity to get to the bus, train or other type of transport. For most students, where active travel to and from school is safe, it provides the best opportunity to increase habitual daily physical activity.

### *Current situation*

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<sup>35</sup> Updated information on legal or mandatory requirements for PE will be available from the UNESCO QPE survey from 2021/2022.



Rates of active travel to and from school vary widely. Data from the Global School-based Student Health Survey indicate that, in some countries, over 60% of students walked or rode their bike to and from school (e.g. Benin and Mongolia), whereas in others, the prevalence of active transport was less than 20% (e.g. Lebanon and Timor-Leste) (28). Rates of active travel in many high-income countries are low and falling, and in some countries (e.g. Brazil, China and Viet Nam) that previously had high rates of school active travel, those rates are declining markedly (29-31).

### *Key considerations*

All schools should introduce measures to make active travel to and from school safer and more sustainable for all students, parents, caregivers and staff. A key step towards this is to implement an active travel plan. This process should follow the same format as that used to develop the school physical activity policy, and should engage students, staff, families and caregivers to:

- audit the school and local environment;
- assess current modes of travel and identify issues or barriers affecting active travel (e.g. safety of routes and facilities to store bikes at school) via consultation or a school travel survey;
- develop or amend the school travel plan and establish a school policy on active travel (this might be a separate policy on walking or cycling to school, a section within the school travel plan or a section within the physical activity policy); and
- disseminate the school travel plan and share information on safe routes to school.

### **Case study: VicHealth Walk to School Program, Australia**



In October each year, the *VicHealth Walk to School Program* encourages primary school children in Victoria, Australia, to walk, ride or scoot to and from school. In 2019, an estimated 186,600 students – the highest in the initiative's 14-year history - walked, rode or scooted to school

Promotional activities to encourage primary schools to participate include:

- engagement activities to encourage schools to run the campaign;
- support for schools to deliver activities (e.g. hosting a breakfast, competitions and one-day promotional events); and
- local initiatives to support ongoing active travel (e.g. installing bike racks at schools).

Teachers use calendars to record each student's active school travel journeys and submit summary data from these to VicHealth via the campaign website.

The initiative resulted in a 26% rise in the number of children walking to school (see campaign aims, objectives and results in the evaluation report for the programme from 2016) (32) that continues to rise.

**[END CASE STUDY]**





### **3. Provide active before- and after-school programmes**

Before- and after-school activities are organized physical activity opportunities that take place outside the curriculum; they are frequently referred to as out-of-school-hours (OSH) activities. OSH activities can be organized and delivered in school by staff, peer leaders or volunteers, by parents or carers, or in the local community by externally funded, non-profit or commercial organizations, depending on the local situation. They should be made available for all pupils either free, or at a cost that is low enough to ensure that all children benefit.

#### *Current situation*

Many countries offer OSH programmes in which the safety and security of students is the primary purpose, whereas others focus on academic development or assessment preparation. Whatever its nature, such programmes can provide an opportunity for students to engage in informal physical activity in a supervised environment.

#### *Key considerations*

To increase participation in physical activity as part of an OSH programme, the activities need to be well organized and cater for all pupils. This involves:

- introducing an after-school sports programme that develops, builds and extends opportunities provided in the school curriculum;
- regularly reviewing and refreshing the content of the OSH programme;
- considering potential transport issues (e.g. early or late buses, or walking buses for pupils who arrive early or stay after school for activities or clubs);
- ensuring that physical activity is scheduled for at least 50% of students' time if the OSH programme is not a sporting programme (e.g. if it focuses on homework or extra tuition); and
- where appropriate, linking with other schools in the area to provide a combined OSH programme with pupils or students able to attend a club at any of the schools involved.

### **4. Provide physical activity opportunities during recess and recreation time**

Recess and recreation time should be offered to all grade levels, from kindergarten through to the final school year in secondary school, because it provides an opportunity for physical activity. Providing physical activity opportunities during recess and recreation time can help to reduce inactivity, sedentary behaviour, boredom and poor behaviour, which can all affect school life. Schools should provide safe, inclusive and accessible places (indoor and outdoor) for children and young people to be physically active during these breaks.

#### *Current situation*

The duration and scheduling of recess varies across countries (33). In some countries (e.g. Australia, Finland, France and the United Kingdom of Great Britain and Northern Ireland), recess periods are a mandated break in the school day. In other countries (e.g. the United States of America [USA]), recess is not consistently implemented, and states and school districts are not required to provide daily recess (34). Globally, total recess times range from 20 to 100 minutes per day, and can include both morning recess and a lunchtime break.

#### *Key considerations*



- Define and communicate standards for a regularly scheduled, unstructured recess break (or breaks) for all students.
- Ensure that the standards include frequency of recess and time allocation, and align with national or subnational policy.

## **5. Embed active classrooms in school curricula**

Classroom physical activity can take place at any time during the school day; for example, by:

- breaking up lesson time with short (3–5-minute) physical activity breaks of varying intensities (movement breaks, energizers or fitness breaks);
- incorporating physical activity into the delivery of academic content (e.g. counting jumps as part of basic mathematics or counting steps walked around the room to estimate distance); and
- restructuring the classroom to increase physical activity or reduce sedentary behaviour (e.g. introducing standing desks or activity equipment) or using outdoor spaces.

These activities are largely at the direction of the classroom teacher. Children and young people frequently sit for extended periods during the school day, so active classrooms can break up sedentary periods and have a positive impact on physical activity levels and educational outcomes (e.g. improved attention to tasks, motivation and enjoyment of learning) (35, 36).

### *Current situation*

The use of active classrooms as part of a whole-of-school approach to physical activity has been extensively incorporated into the education system in Finland (37). Active classroom approaches have also been endorsed by a number of national organizations such as the US Centers for Disease Control and Prevention and the US National Association for Sport and Physical Education.

### *Key considerations*

- The school leadership team needs to support the implementation of active classroom strategies by endorsing a supportive policy.
- The concept and benefits of active classrooms need to be communicated to all staff, students and families.
- Teachers need the right resources, support and education to promote and implement a physically active classroom.

## **Case study: The Daily Mile, United Kingdom**



The Daily Mile started in Scotland in a single primary school in 2012, to promote active lessons and active breaks. Globally, there are now almost 5000 primary schools in more than 40 countries registered as implementing The Daily Mile. Children go outside (at a time of the teacher's choosing) for about 15 minutes of exercise at a pace self-selected by each individual child. This is done during normal classroom time and is in addition to time spent in PE or scheduled breaks. Typically, it involves laps of a playground area. Children often talk as they go and perform a mixture of walking and running. Those who run the whole time will complete about 1 mile in 15 minutes. Children wear their normal school

clothes; most wear their normal school shoes, and jackets are only worn in cold or wet weather. This activity is completed on most school days, regardless of weather conditions. Significant improvements were observed in increased levels of physical activity, reduced sedentary time, increased physical



fitness and improved body composition (38). There are websites for research (39) and promotion (40) of this initiative.

## [END CASE STUDY]

### **6. Ensure inclusive physical activity approaches for children with additional needs**

The General Conference of UNESCO's International Charter of Physical Education, Physical Activity and Sport recognizes that "the practice of physical education, physical activity and sport is a fundamental right for all" (41). Schools are responsible for providing a curriculum for **all** pupils that meets the specific needs of individuals and groups of pupils, from the physically challenged to the physically gifted. Inclusion of children with disability or chronic conditions into mainstream school activities promotes universal completion of primary school, is cost-effective and contributes to the elimination of discrimination.

#### *Current situation*

Globally, there are between 93 and 150 million children with disability aged under 14 years. Many countries have adopted individual education plans as a tool to support the inclusion of children with disability in educational settings (42). The USA, for example, has a national policy that require schools to meet the PE needs of students with disability (43).

#### *Key considerations*

- Consult with the member of staff trained in or responsible for special needs education, to identify any children and young people who may need additional support and specific strategies.

### **Enabling factors for effective implementation of physical activity interventions in schools**

A supportive school policy is the foundation for implementing a whole-of-school approach to promoting physical activity in schools (4). Other factors that enable effective implementation include:

- governance, leadership and resources;
- advocacy and promotion;
- partnerships and community links to provide opportunities for physical activity;
- training on delivering quality PE and promoting physical activity; and
- monitoring and evaluation of the effectiveness of interventions.

A whole-of-school approach can make a significant impact both in the prevention of childhood obesity and in improving children's overall health and well-being, if it partners with parents and the community to ensure that safe and accessible physical activity opportunities are extended to all children. Particular attention should be given to reducing the barriers to being physically active for children with disability or chronic conditions. Integrating physical activity as part of healthy lifestyle interventions, including healthy diets, can be guided by the standards to make every school a health-promoting school (5, 19).

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## Appendix 6. Nudges to promote healthy eating in schools: policy brief

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### Background and rationale

**Supporting good nutrition during childhood** is the basis for many gains in health and well-being across the life course (1). Good nutrition is critical for achieving the highest attainable health for children and adolescents, as outlined by the *Global strategy for women's, children's, and adolescents' health 2016–2030* (2). It is also important for realizing the ambitions of nutrition-relevant and nutrition-enabled Sustainable Development Goals (SDGs) and targets (3). Ultimately, supporting optimal nutrition during childhood responds to children's rights to nutritious food and the best possible health (4).

Given the relevance of diet to obesity and overweight (5), policy action to improve children's diets is central to addressing the substantial and global challenge of **childhood obesity**. Countries continue to struggle with stemming the rate of childhood overweight and obesity (6), and there were over 300 million children and adolescents worldwide with overweight or obesity in 2016 (5). Obesity has adverse social and economic consequences (7); it also has implications for physical and psychological health in childhood, adolescence and adulthood (8). The importance and magnitude of the challenge posed by childhood obesity is established, and there is an evident need for urgent and accelerated public health actions and strategic investments for achieving the global targets on childhood obesity (8, 9).

It is important to acknowledge the short-term and long-term health consequences of children's dietary intake (10), and the importance of intervening early in the life course to establish healthy eating habits, which will contribute towards a healthy diet in adulthood and protection against noncommunicable diseases (NCDs) (11). Children's dietary intake and their food selection is influenced by various factors, including the specific food environment that they are exposed to and within which they select food options (12). It is important to consider children's decision-making, however children can only choose from the selection available, so their choices are constrained by the specific options on offer. Children's choices can be influenced through nudges; that is, small, subtle changes to the physical and social environment that alter the prevailing choice architecture and the context in which decisions are made.

There is growing interest in the **potential of nudges** (13) to promote healthy dietary practices (14), including within school settings. Whenever healthier options are made available, nudges may shift school children's food selection towards foods that contribute to healthy diets; hence, they offer an important opportunity for action, alongside measures such as nutrition standards for school food (15) and policies related to the provision and procurement of food for healthy diets (16). This policy brief summarizes the rationale and evidence around nudges for promoting healthy eating in school settings. It aims to increase awareness of the opportunities for nudges in a school food setting, and proposes action points for decision-makers to implement nudges for healthier eating in schools.

The focus of this brief is on nudges implemented in the school environment to influence children's food selection while at school (e.g. in school canteens/cafeterias, at food kiosks and tuck shops, and from food vendors and vending machines). The brief pertains to foods (both snacks and meals) and beverages<sup>36</sup>. Not all school meal programmes have food options for children to select from; nevertheless, children may still have the possibility of choosing food at other points within schools (Fig. 1), and this brief is relevant to these situations too. There are further opportunities for intervention relating to choices made by children when outside the school premises (e.g. relating to food brought into school from home, and food purchased by parents or children at vendors or shops

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<sup>36</sup> the term "food and beverages" or "food" is used to refer to foods and non-alcoholic beverages



outside the school). Although the principles proposed in this brief may be relevant to the food environment around schools, such opportunities are not discussed here.

### Nudges and choice architecture

As an approach, nudging (13) is receiving increasing attention within a variety of public health domains, including in the field of nutrition where there are opportunities to influence food choice. An integral element of nudging is an understanding of the **choice architecture** and the context within which people make decisions (13); that is, how options are presented to people, and how this influences people's decisions. Any aspect of the choice architecture that adjusts choice behaviour can be classified as a **nudge** (13). Food choice architecture, specifically, relates to various elements of how food options are framed; it can include aspects such as the relative availability and presentation of the different food options, and the subsequent influence of these factors on the selections people make (17). There are many opportunities to deliberately adjust the choice architecture and introduce nudges to promote or demote the selection of certain food options. Thus, nudge-based interventions can aim to improve children's dietary practices in school. The appropriateness of the specific nudges and their effectiveness depends on various elements related to the context in which they are implemented.

Regardless of whether a nudge-based intervention is in place, there is always the **prevailing choice architecture**; that is, the pre-existing framing and context in which options are currently being offered. A good system of choice architecture (13) can help children to select healthier food options (i.e. promoting healthier options and demoting others). On this basis, **nutrition-friendly choice architecture prioritizes healthier options**, with nudges modifying aspects of the choice architecture to facilitate healthier food selection. Nudges look to adjust behaviour in a predictable manner, without removing the options available and without providing substantial economic incentives (13).

In essence, **wherever there is a choice to be made from a selection of foods**, nudges may be used to shift choice towards or away from specific options. There are many ways to nudge behaviour, and in this domain, nudges are about steering children towards foods that contribute to a healthy diet, while also maintaining their freedom of choice from the options available. Nudges are typically low-cost interventions; however, there might be indirect costs from their implementation (e.g. the time resource of food service and school staff involved) that should not be overlooked. Time constraints have been identified as a barrier to implementing nudge-based interventions in schools (18).

### Why nudging is relevant to healthier food selection in schools

Decisions about what to eat can be habitual and automatic, rapid and instinctive, and guided by non-cognitive processing (19); the relevance of this is becoming increasingly apparent (14). Decisions about food selection are subject to the influence of social and environmental cues and are often made in a way that does not require effort, awareness, intent or control (19, 20). Behavioural insights and efforts to understand behaviour and decision-making (21) have contributed to the development of nudge-based interventions in various settings, including schools (22-25).

**Historically**, school-based approaches to promote healthy dietary practices have emphasized nutrition education (which is incumbent on rational and thoughtful food selection) and the regulation of school food and beverages (which restricts what is offered in school settings). Nudges, on the other hand, can operate within a person's automatic decision-making processes, reducing the cognitive load or physical effort involved in choosing the target option.

### Why schools?



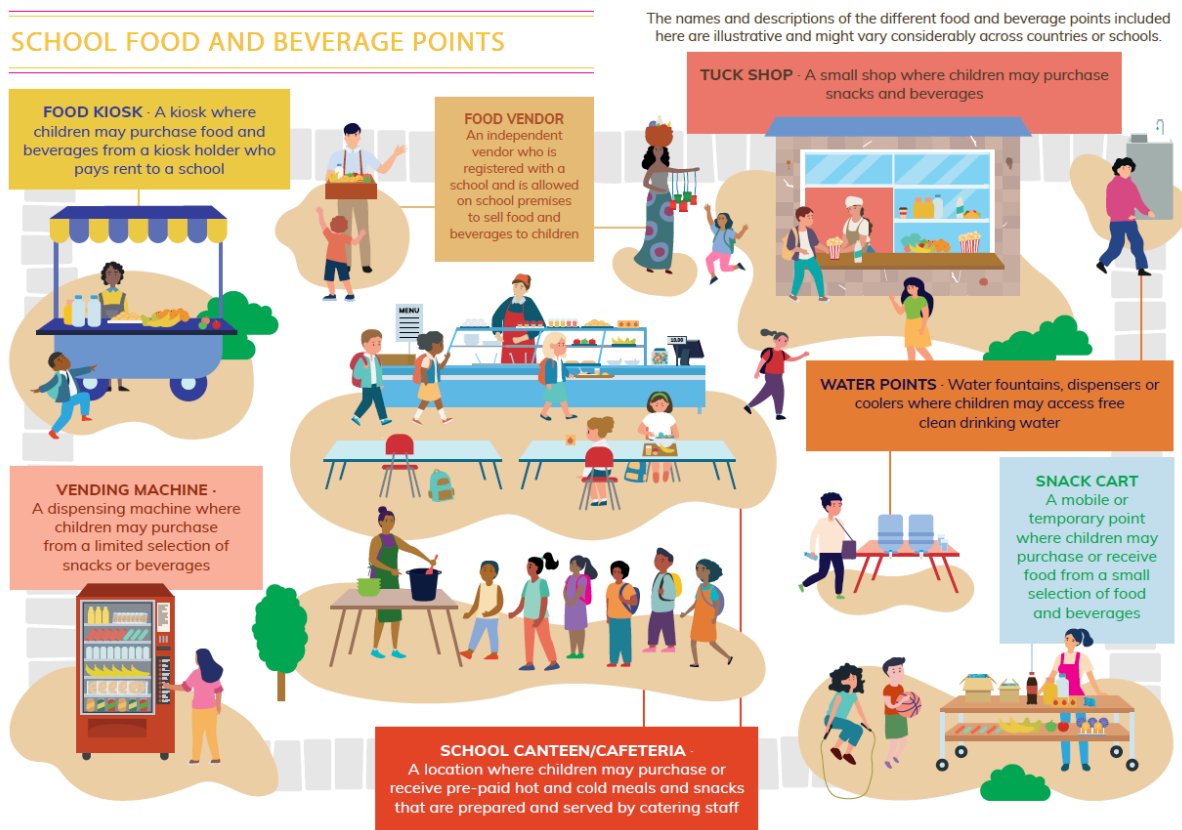
Improving the nutritional status of children and adolescents is an effective investment for future generations. Schools offer opportunities and provide an ideal setting to implement nudges for promoting healthy dietary practices to improve health and nutritional status of children because:

- intervening in schools can impact a **high number of children** of different ages and often from **different socioeconomic backgrounds**;
- children typically spend a **substantial proportion of their day** in school; thus, food consumption in schools matters to children’s overall diets;
- schools are settings where children might have the opportunity to **choose food and beverages from a selection of options that are available**; and
- schools often provide a **controlled food environment** that is more discrete and manageable than that available beyond the school perimeter.

### Food choice in schools

Nudges aimed at promoting selection of healthier food options may be implemented at any point on school premises where children have the opportunity to select between various food (and beverage) options. For example, the school food environment may include a school canteen/cafeteria, food kiosks (where a kiosk holder pays rent to a school and provides food to children), food vendors (where an independent vendor registers with a school and is allowed on school premises to provide food to children) and vending machines. Fig. 1 illustrates these and other examples on school premises, where children may encounter and select food (snacks and meals) and beverages from the available options.

**Fig. 1** Elements of the school food setting: points where children may select from available food options



### Nudging to promote healthy eating as part of an integrated approach



The implementation of appropriate and context specific nudges can modify the school food environment, to facilitate the selection of food and beverages that contribute to a **healthy diet**. Nutrition-friendly choice architecture in schools can support the core principles of increasing the intake of whole grains, vegetables, fruit, nuts and pulses; limiting free sugars and sodium intake; and shifting fat intake from saturated fats to unsaturated fats (16). Likewise, supportive food environments can aim to discourage unhealthy foods, such as those that are energy-dense and micronutrient-poor (26).

In this context, nudges create an “enabling environment”, eliminating barriers to making healthier food choices and creating new “enablers” to such choices. Implementing nudges is also about **making the healthier choice the easy choice** – a rationale outlined within recommendations developed by the Commission on Ending Childhood Obesity to create healthy food environments and improve children’s nutrition (8). Implementing nudges for healthy eating in schools resonates with several of the recommendations (8); also, it aligns with the aspirations of the Nutrition Friendly Schools Initiative and the Health Promoting School approach (27). Promoting healthy diets for children is paramount in protecting against malnutrition in all its forms (11).

As part of an **integrated approach that also sets school food and nutrition standards**, nudges can contribute to a school food environment that enables healthy dietary practices. Indeed, a review of evidence on nutrition action in schools suggests that school nutrition policies embracing multiple components and approaches (which may include nudge-based approaches) are associated with positive dietary outcomes in children (27). Hence, nudge-based approaches can be used to support other important measures, such as school food and nutrition standards (15) and the provision of foods that contribute to a healthy diet (16).

### Nudges to promote healthier food choices

**Various nudge-based interventions** have been implemented in school settings (22-24), and a review of contextual factors related to school food and nutrition policies found that nudge-based interventions were generally feasible and accepted among children and stakeholders (18).

Nudges previously implemented in interventions have included changes to various elements of the choice architecture. For example, studies have examined adjustments to the placement of food options, their convenience, order, presentation, attractiveness and labelling, and the quantities available, as well as changes to the normativeness of options (22-24). Different nudges are considered to influence decision-making in different ways, for example, by reducing the effort and cognitive load required to make a choice, enhancing salience and making an option more prominent, and emphasizing tastiness, and leveraging social norms (14).

**Nudging does not involve eliminating any food options** that are available in schools; however, nudges can be implemented to support and complement other measures such as the implementation of school nutrition standards and policies related to the provision and procurement of food. Similarly, making substantial changes to economic incentives is not considered nudging (13). When adopting nudge techniques, the emphasis is on changing the presentation or framing of the pre-existing food options, to promote the selection of the healthier options.

Several typologies and frameworks (28-32) have been developed to help define nudges, and this is a growing area of research. For example, a review on nudging towards healthier food choices (33) classified nudges within an adapted taxonomy of different types of choice architecture interventions (34), including changes to the physical environment, changes to the default option, provision of information, use of salience and social norms. A meta-analysis of nudge-based interventions classified nudges according to whether they were cognitively oriented (e.g. descriptive nutritional labelling), affectively oriented (e.g. hedonic enhancements) or behaviourally oriented (e.g. convenience enhancements) (35).



Fig. 2 provides a selection of nudges within a school setting; (adapted from previous work (14) and categorized according to an adapted taxonomy of behaviour change interventions (33,34)) these aim to increase the selection of the healthier target food (e.g. snack, main meal or side portion) or beverage. Where the target food is the unhealthy option and the target behaviour is a reduction in the selection of that food, nudges can be designed to discourage the selection of target foods.

### **Changes to the physical environment**

**Placement** – this change can be used to display healthier food options in a prominent position; for example, first in line, at the top of the menu, in front of other options in the kiosk or near the checkout. Placement changes can also be used to obscure unhealthy food options from a child’s eyeline when the unhealthy target option is to be discouraged. Placing food options further away or less prominently can be effective in reducing their selection (36, 37), and a meta-analysis of nudge-based interventions targeting fruit and vegetables indicated that placement nudges had the largest effect size (38).

**Presentation** – this change relates to the presentation or format of the food options. Examples include serving healthier food options to children in “grab-and-go” containers (17), providing pre-sliced fruit ready to consume (39), presenting healthier food options in attractive stands or on attractive plating, presenting whole wheat bread rolls in fun shapes (e.g. heart shaped) (40) and providing water from chilled water dispensers (41).

**Availability** – this change can entail increasing the relative share or the number of the healthier food options in a given choice context (e.g. in a vending machine or kiosk). Changes to availability have been shown to influence selection and could contribute to meaningful behaviour change (42). Proposed mechanisms underlying the effects observed with such changes include increased salience and social norms indicated by the greater availability (14).

**Contrast** – this change highlights or emphasizes the healthier food options relative to other alternatives; for example, by emphasizing these on a school meal menu (e.g. by placing a box around the healthier food options) or by providing an attractive display of the healthier food options. The contrast highlights the target food options with respect to their surroundings and can influence salience bias (perceptual salience), drawing focus to more prominent options, particularly where there are multiple options to choose from.

### **Changes to the provision of information**

**Descriptives** – these changes include assigning appealing descriptive names for target healthier food options; for example, magnificent mango, cool refreshing water, crunchy corn, delicious cauliflower curry and incredible fish burrito. Care is needed to ensure that the language used is age appropriate – descriptions that might be suitable for primary or elementary school children may not be relevant for older children.

**Semiotics** – these changes include adding symbols or icons (e.g. emoticons or healthy heart logos) to healthier food options (43, 44). This can influence salience and promote selection, especially in contexts where there are many alternatives to choose from. There is emerging evidence of the advantage of subtle messaging compared to an explicit message; for example, healthier food options were more likely to be chosen when these were given a heart logo as opposed to the message “a healthy choice” (45).

**Prompts** – this change entails prompting children when they are in the food setting; for example, saying “Would you like an apple with your lunch?”. Verbal prompts by canteen/cafeteria staff can significantly increase the likelihood that children choose and consume a serving of fruit with their school lunch (46). Prompts can also be written statements; for example, placing the label “Today’s



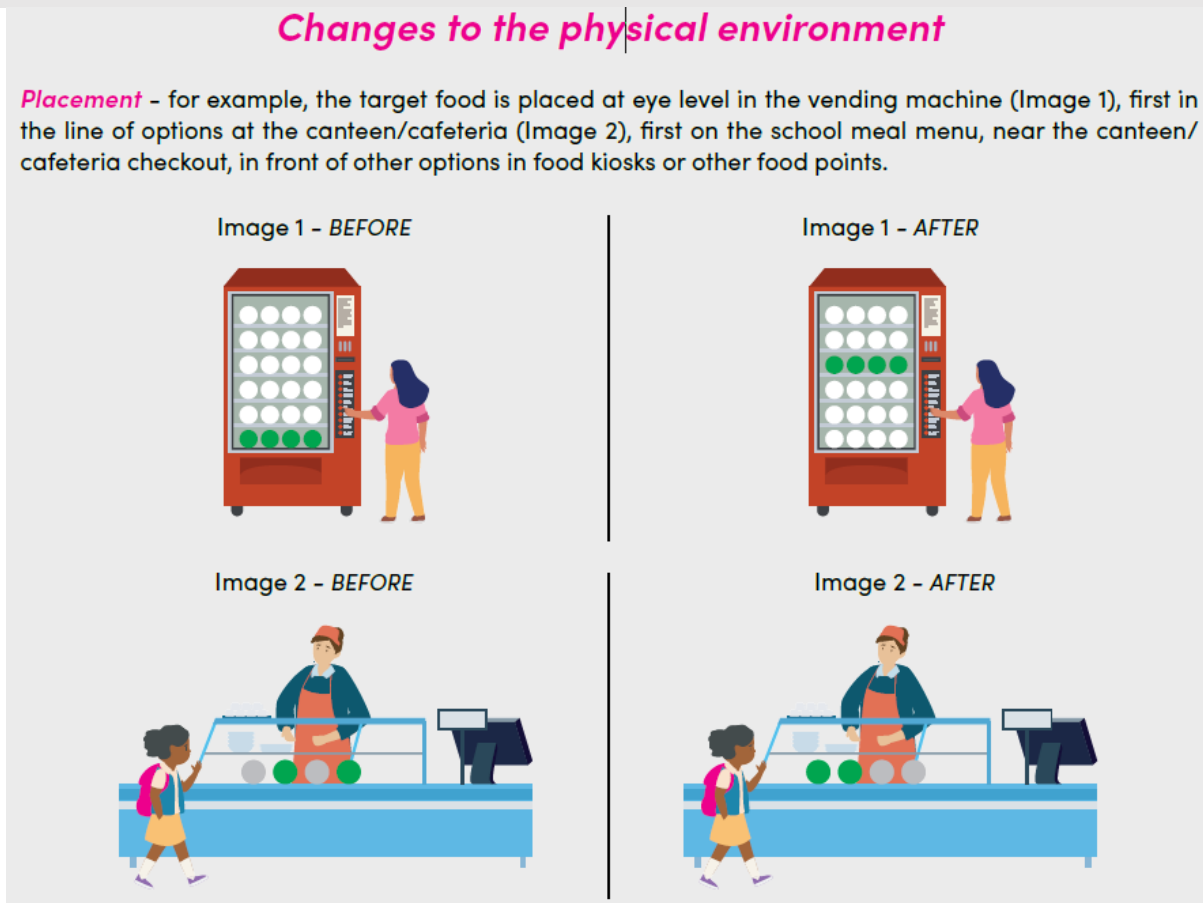
SPECIAL – Make a fresh choice” next to a target food (17) or using the statement “Let fruit and vegetables put a spring in your step” (47).

### **Changes to the default**

**Defaults** – this change can include making the healthier food option the default that will be served without the child making an active choice; hence, it will tend to be the option taken because it requires the least cognitive effort. The portion size provided can also constitute a default, and evidence indicates that changes to portion size may be more effective with older children than younger children (48).

The nudges provided in Fig. 2 are just some of the many examples possible. Those presented have been categorized according to type; however, some nudges may have features that relate to more than one type or category. Also, an intervention may entail multiple nudges; for example, placement for one target food and presentation for another target food, such as vegetables offered at the beginning of the lunch line, and fruit in attractive containers (49). Indeed, there is some evidence that interventions adopting multiple nudges have merit (48). Nudges can also be combined for the same target food (e.g. placed at eye level and with a written prompt). Other aspects can also be incorporated, such as enabling children to pre-order their school lunch, which may lead to healthier food options being selected (50). Pre-ordering can also be combined with nudges on the school menu; for example, the target food options can be placed at the top of the school meal menu that children (or their parents or carers) are choosing from.

**Fig. 2** A selection of different nudges within a school food setting (examples adapted from (14) and categorized according to a taxonomy of behaviour change interventions, adapted from (33, 34)).





**Availability** - for example, more of the target food is available at the vending machine (Image 3), food vendor (Image 4) or at any other food point.

Image 3 - BEFORE



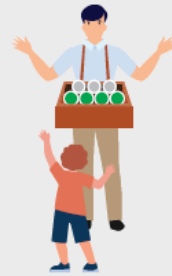
Image 3 - AFTER



Image 4 - BEFORE



Image 4 - AFTER





## Changes to the physical environment *cont*

**Contrast** - for example, the target food is highlighted on the school meal menu (Image 5), or by the way in which it is displayed at the sanck-bar, the food kiosk or at any other food point.

Image 5 - BEFORE

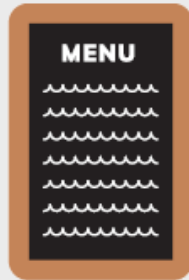
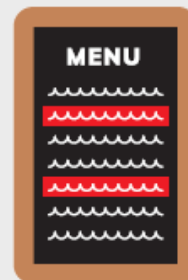


Image 5 - AFTER



**Presentation** - for example, the target food is presented pre-sliced (Image 6), in attractive stands (Image 7), or in grab-and-go containers.

Image 6 - BEFORE



Image 6 - AFTER

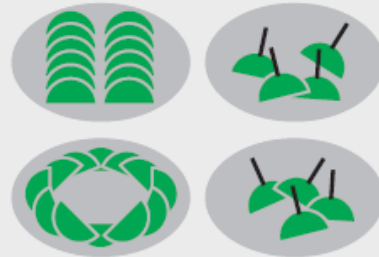


Image 7 - BEFORE



Image 7 - AFTER



## Changes to the provision of information

**Descriptives** - for example, the target food has an appealing name on the school menu (Image 8) or on a food label.

Image 8 - BEFORE

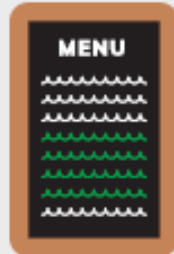


Image 8 - AFTER



**Semiotics** - for example, a smiley face on labels or containers for the target food (Image 9), in the canteen/cafeteria, kiosk, vending machine or other food point.

Image 9 - BEFORE



Image 9 - AFTER



**Prompts** - for example, the canteen/cafeteria staff, kiosk holder or food vendor promotes the target food (Image 10), or there is a label prompting the choice of that food.

Image 10 - BEFORE



Image 10 - AFTER



## Changes to the defaults

**Defaults** - for example, the target food or beverage is provided as the default choice (meals are served with water as default option, Image 11).

Image 11 - BEFORE



Image 11 - AFTER





## Evidence on effectiveness

In developing evidence-based strategies to address children's nutrition, it is important to consider the effectiveness of nudges in changing food selections. There is evidence that nudges can result in small but significant changes in food selection, but nudges vary in their effectiveness and context is important. One review reported effect sizes to be moderate to small, with behaviourally oriented nudges (e.g. changing the convenience of options) having greater effects than cognitively oriented nudges (e.g. labelling) (35). That review focused exclusively on interventions in field settings (i.e. canteens/cafeterias, restaurants and grocery stores); it found a small average effect size, although this translated to a substantial (7.2%) change in energy intake (35). When considered on a population basis, this reveals the potential change that nudge-based interventions may have. Even though nudge-based interventions have moderate to small effect sizes, they should be considered for implementation given their low cost. Indeed, on a cost-adjusted basis, the impact of nudges in general has been found to be often greater than that of traditional tools, suggesting that nudging is a valuable approach that should be adopted more often alongside traditional policies (51).

Several studies have examined the impact of various nudges on food choices of children specifically (22, 48, 52) and the available evidence indicates that, overall, the implementation of nudges shows promise. One systematic review of nudge-based dietary interventions (in children) entailing presentation, availability, sizing, prompting/priming and multiple nudges found positive changes in 33 of the 40 studies (83%) (52). Another systematic review of interventions using behavioural insights (including nudges such as changes to the physical environment, salience, and defaults) to improve children's diets found that nearly three quarters (74%) of interventions were effective in changing children's diet-related outcomes (48). Much of the evidence in these reviews (48, 52) came from school settings.

**Systematic reviews** have also examined nudge-based interventions in school settings exclusively (22-24). One review focused on interventions to promote vegetable intake in schools; it included studies related to, for example, serving style and how vegetables were presented, and changes to the physical environment (24). It included nine studies from the United States of America (USA), two from Canada and one from Denmark, and reported inconclusive findings, highlighting heterogeneity in the limited number of studies (24). Another larger systematic review examined nudge-based interventions (entailing placement/convenience, marketing/promotion, variety/portion and multiple nudges) across primary and secondary schools (23). Based on the 29 studies reviewed (26 from the USA, and one each from Australia, France and the United Kingdom of Great Britain and Northern Ireland), the authors concluded that nudge-based interventions were positively associated with food selection, and the influence on consumption has yet to be clarified (23). Another systematic review investigated nudges (including changing the order, availability, labelling, attractiveness, convenience and normativeness of selecting healthier food options) to promote healthy food choices in school cafeterias (22). It included 24 studies from the USA and one from the United Kingdom; the results indicated increased selection of the target foods (healthier options) in 17 studies, with 11 studies showing a significant change in consumption (22). Although the review acknowledged limitations in the studies and recommended cautious interpretation of results, it pointed to the low cost of nudges coupled with the potential of significant public health benefit (22).

Overall, evidence on nudges to promote healthier food selection in a school setting appears mixed, but given the relatively low cost of nudges and the existence of the prevailing choice architecture, nudge-based interventions to support children's selection of healthier food options should be implemented. Nutrition-friendly choice architecture can contribute to the selection of healthier options and complement other efforts such as school food and nutrition policies (15) and food procurement for healthy diets (16).

## How to design nudges





When planning nudge-based interventions in schools, it is important to recognize that nudges are context specific – their relevance and potential impact depend on the particular setting in which they are implemented. Contextual factors that might influence the implementation and effectiveness of nudging in a given context include the acceptability of nudges among relevant stakeholders, the feasibility of nudges and the generalisability of evidence on the effectiveness of nudges. These contextual factors should be analysed from the perspective of a variety of stakeholders, including food service staff, students, parents and school staff at different levels. Other aspects to consider include food and cultural preferences, food availability, and specific nutrients or foods of concern (e.g. excessive or insufficient intake of particular nutrients or foods). Some of these factors might become barriers to implementation in certain contexts; therefore, it is important to assess and address these as part of the design of a nudge-based intervention before it is tested or scaled up.

### **Actions to drive nudges for promoting healthy eating in schools**

This section outlines the core elements to consider when implementing nudge-based interventions aimed at shifting food choice towards healthy eating options in schools. Prior to action on the ground in schools, the decision-maker(s) and choice architect need to be identified. **One or more decision-makers will drive the change, and the choice architect will design the nudges.** Decisions about nudge-based interventions to influence food choice in school settings can be undertaken by decision-makers at national, local or school level. **Action can be taken for one school or collectively** across multiple schools (e.g. in schools managed by the same district authority or served by the same catering company).

Before discussing what nudges need to be put in place, it is important to identify the **relevant decision-maker** who is critical to driving commitment and action at school level (see the checklist on page xx). The decision-maker raises awareness, advocates for the implementation of interventions, and coordinates overarching policy and implementation. This individual will have responsibility and oversight for school food, and will be the person who can generate a demand or opportunity for the required change.

To drive the school-based changes, it is important to identify **the choice architect**; that is, the person who is best placed to design and ensure the implementation of the changes that are typical of nudges (e.g. changing the position of food options, adding labels and changing food presentation). This can be the same person as the key decision-maker or a different person. To a large extent, this will depend on the point where the food choice is being considered (e.g. school canteen/cafeteria, food kiosk, tuck shop, food vendor or vending machine) and the school procurement arrangement (e.g. government catering provision or private food kiosk holder). Regardless, one person must play the role of the choice architect and must take responsibility, invest time in following the steps outlined in Fig. 3 and drive the implementation of nudges.

Nudges for healthy eating in schools are typically straightforward and low cost. However, understanding the choice architecture in which they operate, selecting appropriate nudges and implementing those nudges requires time and effort. Decision-makers and choice architects also need to engage and empower stakeholders on the ground. Similarly, for action at district level, alliance with stakeholders across schools is important to ensure effective implementation and monitoring.

### ***Key steps when developing and implementing nudges for healthy eating in schools***

This section provides an overview of relevant considerations in the development and implementation of nudges in schools. The process itself entails a number of steps, outlined below.

- Step 1. Investigate the prevailing choice architecture
- Step 2. Specify the food options and the beverages to be targeted with the nudge-based intervention
- Step 3. Establish a shortlist of nudges and select the final nudges to be implemented



Step 4. Implement the nudges

Step 5. Monitor to check fidelity, impact and sustainability

### Checklist

#### Who might be interested in nudges to promote healthy eating in schools?

The following stakeholders are particularly well placed to initiate or play a role in the implementation of nudges in schools as described in this policy brief:

- Government officials with responsibility for school food in a district, city or region
- Nutritionists with responsibility for school food in a district, city or region
- The chair of the school management committee with responsibility for school food
- The director, principal or head teacher at a school
- Senior managers in a school with responsibility for catering provision
- Managers of catering companies for schools
- Managers of the school's catering team
- Vendors with a contract in a school or with authorization to sell food on school premises
- Parents or other organized groups
- Representatives of students, such as the students' council or association

Key advocates and decision-makers can be found among the categories above. Advocates and decision-makers can play a role in demanding or instigating action to modify the choice architecture of a variety of food points in schools. The changes to the food choice architecture are made by the choice architect.

#### Could you be the choice architect?

The choice architect is the individual who designs and oversees the implementation of the changes to the food choice architecture. As the choice architect, you may implement directly the changes that you have designed to promote a specific food option, or you may engage others on the ground to implement the changes that you have designed. You may design the nudges yourself (by following the steps outlined), nominate another person who is better placed to do so, or seek external expert support to implement the recommended steps.

Fig. 3 provides an overview of relevant considerations in the development and implementation of nudges in schools. The process itself entails a number of actions, outlined below.

#### Step 1. Investigate the prevailing choice architecture

The design of appropriate nudges requires detailed characterization of the existing food choice architecture. This can be done, for example, by observing the setting during food service to understand how children use the setting and make selections, photographing and mapping the food setting, interviewing key informants (e.g. food service staff and food vendors) and undertaking focus group discussions with children to gain a better understanding of their food choice in school.

#### Step 2. Specify the food options and the beverages to be targeted with the nudge-based intervention

In essence, Steps 2 and 3 relate to the two core components that should be considered together: the target food options and the nudges. Step 2 relates to the food and beverages that are available at the food choice point and how target foods to be promoted or demoted are designated. Ideally, this step should be informed by assessing the nutritional composition of school food options and gathering data on the food options that children select in schools, where available.

A **target food** (e.g. snack, main meal or side portion) or beverage is the option to be promoted or discouraged. In designating target foods, **criteria** can be established on the basis of nutrition criteria



for healthy diets (16). Relevant resources can be reviewed and examples of existing resources are nutrition criteria included in other policy measures; national or regional nutrient-based or food-based dietary guidelines; regional nutrient profile models<sup>37</sup>; and international nutrition guidance, such as the World Health Organization (WHO) publications *Healthy diet factsheet (11)*, *5 keys to a healthy diet (53)*, *Drinking-water fact sheet (54)*, other WHO resources on nutrient requirements and dietary guidelines (55), and the core principles for a healthy diet. In this way, foods or beverages can be designated as target foods and become the focus of subsequent nudges. These criteria can be context specific and may be based on nutrients, foods or preparation techniques (16). The **designation of target foods and beverages** should be according to the local context and the local school population (e.g. promotion of whole milk may be discouraged in some regions or contexts and promoted in others). Similarly, nudges within schools should complement other efforts such as school food and nutrition standards (15) and policies related to food procurement for healthy diets (16).

At this point, the target behaviour with respect to the target foods should be clearly specified (e.g. increased selection of fruit and vegetables or reduced selection of sugar-sweetened beverages). The behaviour should be based on the desired change or relevant **nutrition criteria**.

### **Step 3. Establish a shortlist of nudges and select the final nudges to be implemented**

This step involves determining the possible nudges to promote target foods (healthier food options) or discourage target foods (unhealthy food options); for example, based on previously used nudges such as those in Section 4, Fig. 2 and the case studies. It is important to consider whether any of these nudges would be appropriate or could be modified for the target foods. The nudges should be based on a good understanding of the choice architecture, achieved through the activities in Step 1 above. In this way, it is possible to establish a shortlist of nudges that are suited to the designated target foods and the prevailing choice architecture. The final nudges to be implemented are selected from the shortlist, refined and eventually tested before being adopted. This step requires close consultation with relevant stakeholders such as school staff, food service staff, food vendors, food kiosk holders and parents. This can eliminate impractical, unfeasible or unacceptable nudges, and support successful implementation of the intervention and the subsequent roll-out. Similarly, early engagement with relevant staff on the ground fosters ownership and empowerment. The costs relating to each nudge on the shortlist should also be specified, to inform the selection of the final nudges. In this phase, acceptability and feasibility of the nudges can be assessed.

### **Step 4. Implement the nudges**

Nudges are typically low or no cost to implement. For example, many placement nudges are straightforward changes to the position or order of foods, and have no resource implications. Likewise, changes to the descriptive names of food options or the highlighting of options on a menu will have very low or no cost. However, some nudges may have resource implications and any resources required will need to be acquired at this stage. It is also important to consider indirect costs such as the time and effort required for the development and implementation of an intervention.

### **Step 5. Monitor to check fidelity, impact and sustainability**

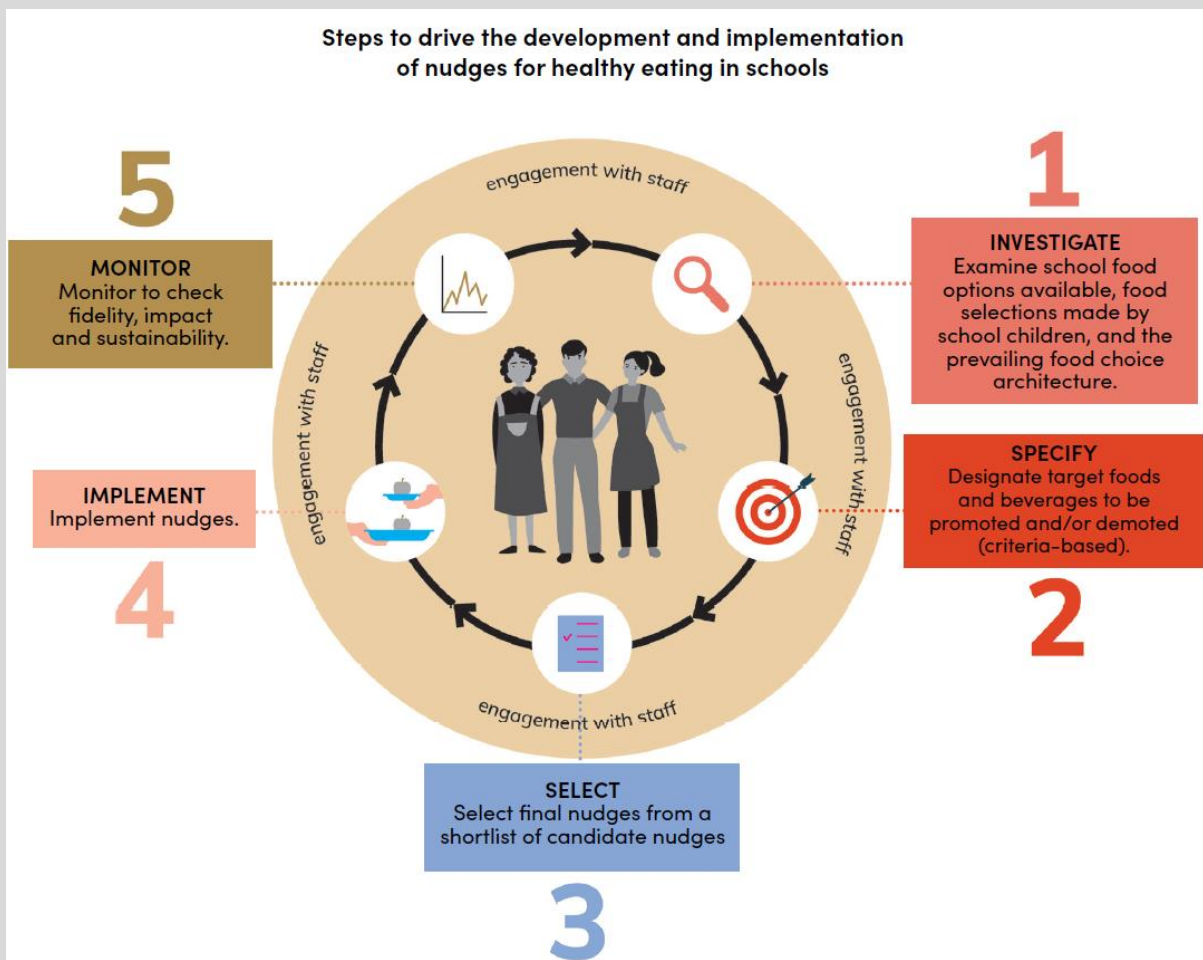
Once nudges have been implemented, it is critical to **check fidelity** (i.e. the extent to which the intervention was actually implemented as intended in the original plan (56)), and to monitor impact and sustainability over time (i.e. whether nudges themselves and the changes effected are sustained

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<sup>37</sup> Nutrient profile model for the WHO African Region (<https://apps.who.int/iris/handle/10665/329956>); Pan American Health Organization nutrient profile model (<https://iris.paho.org/handle/10665.2/18621>); Nutrient profile model for the marketing of food and non-alcoholic beverages to children in the WHO Eastern Mediterranean Region (<https://apps.who.int/iris/handle/10665/255260>); WHO Regional Office for Europe nutrient profile model (<https://apps.who.int/iris/handle/10665/152779>); WHO nutrient profile model for South-East Asia Region (<https://apps.who.int/iris/handle/10665/253459>); WHO nutrient profile model for the Western Pacific Region (<https://iris.wpro.who.int/handle/10665.1/13525>).

in the long term). **Monitoring impact** and sustainability is important to provide a level of feedback control (i.e. to adapt as necessary) and to check for possible unintended consequences (i.e. outcomes that are not planned and expected but may accompany interventions). Unintended consequences may be positive or negative. For example, food waste is one area that may be affected if children’s food selections are adjusted, but children then do not consume as much of the designated food. There is some evidence of the food waste implications of such interventions (57). Monitoring impact and sustainability is also crucial in providing data on the impact of the nudges. The data should inform any subsequent decisions; for example, on adjusting the strategies for optimization or on rolling out strategies to other schools.

- Fig. 3** Key actions when developing and implementing nudges for healthy eating in schools
- Engage with staff on the ground (e.g. food service staff, school staff, food vendors and kiosk holders)
  - Examine school food options available, food selections made by school children and the prevailing food choice architecture
  - Designate target foods and beverages to be promoted or demoted (based on set criteria)
  - Select final nudges from a shortlist of candidate nudges
  - Implement nudges
  - Monitor to check fidelity, impact and sustainability



### **Engagement and empowerment**

Common challenges with nudge-based interventions can be the development of appropriate and feasible nudges, and their sustained or long-term implementation as intended. The primary



responsibility for actions may lie with school management; however, it is important to recognize the need to engage and empower key stakeholders, such as food service staff, school staff or contracted vendors (one or more of whom will implement the changes and may have also been the choice architect) to ensure successful implementation of nudges.

A review of contextual factors for developing and implementing school food and nutrition policies (18) highlighted the importance of supportive school system factors (including the time and space for implementation). Meaningful engagement is critical to the development and implementation of nudge-based interventions. Early engagement provides a solid foundation for dialogue and the design of nudges that are fit for purpose. Engagement is crucial to inform the development and selection of the final nudges. Individuals on the ground are key to informing which nudges are best placed and most suitable for implementation in a specific setting.

There are also opportunities to train stakeholders on the ground to become familiar with nudges in school settings to promote healthy diets and to implement changes. Such training can improve participants' beliefs and self-efficacy about encouraging changes to promote healthier food options; it can also result in significant improvements in the reported use of various nudges (e.g. better placement of healthier options) by managers in their school settings (58).

Implementing nudges does **not** entail eliminating pre-existing food options; rather, it entails making small changes. Such changes may be more acceptable to stakeholders (e.g. food service staff, school staff, vendors and kiosk holders) than, for example, changes to food provision – hence, the nature of nudges can be useful for engaging stakeholders in healthy eating strategies.

Similarly, nudges are typically low cost to implement; this is relevant when considering affordability for schools and catering providers, and the potential of nudges for implementation and scale up (e.g. at district level).

### **Case studies – selection of nudge-based studies in school settings**

These four case studies provide examples of nudges implemented in school settings. To date, interventions have predominantly been tested in high-income countries, and this is reflected in the case studies. Nudges are specific to their setting and should be considered, contextualized and tested rather than simply being transposed to another context.

#### **Case study 1 – presentation of fruit, elementary school, Kentucky, USA (39)**

This study examined the selection and consumption of apples and oranges at lunchtime in the cafeteria of an elementary school (kindergarten to fourth grade; children aged 5–10 years). The nudge that was tested was the presentation of apples and oranges, served as half a piece of fruit sliced into three wedges (on day 1, with 491 children) and whole pieces of fruit (on day 2, with 488 children). The sliced apples (prevented from browning with an ascorbic acid solution) and oranges were presented in individual bowls for children to place on their food trays on day 1; on day 2, the whole pieces of fruit were available for children to place on their trays. The selection and consumption of sliced oranges were significantly higher than for whole oranges (16.2% of children selected sliced oranges whereas 5.5% selected whole oranges). However, a similar effect was not seen with apples, and the authors suggested that the effect of slicing on fruit depends on the fruit. The findings also revealed that, in general, younger children were more likely than older children to choose apples and oranges when sliced and were also more likely to consume oranges when sliced.

#### **Case study 2 – multiple nudges for plant-based foods, secondary school, Yorkshire, United Kingdom (17)**

This study examined the impact of multiple nudges on the selection by adolescents (980 children aged 11–18 years) of plant-based foods in a secondary school canteen. The target foods were the



vegetarian daily specials, sandwiches containing salad, whole fruit and also fruit salad in pots. This was a multi-component intervention with changes in placement, availability, presentation, prompts and semiotics. The nudges included placing fruit on a stand near the till, presenting vegetarian daily specials in grab-and-go pots, using emoticon stickers (smiley faces) with sandwiches containing salad, and written prompts for the target foods. These prompts were “Today’s SPECIAL – Make a fresh choice” for vegetarian specials, “GOOD for YOU” for fruit, and “Sandwiches with a little bit extra – Get more in your sandwich” for sandwiches with salad. In addition, availability was increased for all target foods. The selection of target food items increased significantly during the intervention, and adolescents were 2.5 times as likely to select target foods compared with baseline. In addition to the independent effect of the intervention on the selection of target foods, there was an effect on the selection overall of fruit, vegetables and salads, with students three times as likely to select a fruit, vegetable or salad item during the intervention compared with baseline.

### **Case study 3 – multiple nudges for healthier foods and beverages, 10 primary schools, New South Wales, Australia (59)**

This trial involved 10 primary schools (kindergarten to sixth grade; 2714 children aged 5–12 years) with online school food ordering systems, which children (or parents on their behalf) used to select school lunch items. The intervention aimed to promote the selection of healthier foods and beverages from the school menu (i.e. those items lower in energy, saturated fat, sugar and salt). The intervention comprised multiple elements including placement (target foods were listed in the main website display, and listed first within a category), prompts for users to add target foods, round traffic light labels indicating “best choice”, “select carefully” and “select occasionally”, and appealing descriptions to target foods. The results indicated that the intervention group had significantly lower energy, saturated fat, and sodium content (no significant differences were found for sugar) in their lunch compared to the control (without the intervention). The authors pointed to the appeal of such interventions as part of larger government strategies to improve children’s nutrition.

### **Case study 4 – photographs of carrots and green beans, elementary school, Minnesota, USA (60)**

This study was conducted at the cafeteria of an elementary school (kindergarten to fifth grade; 800 children aged 5–11 years). The nudge-based intervention involved providing photographs of carrots and green beans (the target foods) in school lunch tray compartments. This was on the basis that the photographs would indicate to children that other children choose vegetables in these compartments and so they should too. The results showed that there was a significant increase in the percentage of children selecting green beans (6.3% control to 14.8% intervention) and carrots (11.6% control to 36.8% intervention). For those children who selected green beans, the average amount of green beans consumed did not change; for those selecting carrots, the average amount consumed decreased. However, overall, the consumption of green beans and carrots increased and for all students *exposed* to the intervention there was a significant increase in the consumption of green beans (1.2 g to 2.8 g per student) and carrots (3.6 g to 10.0 g per student).

## **Challenges and limitations**

It is clear that the implementation of nudge-based interventions to improve the food environment and promote healthy dietary practices in schools could facilitate the selection and consumption of foods and beverages contributing to a healthy diet, and therefore is worth consideration. However, a challenge is how to account for the mixed evidence and the limited research on long-term effects. Indeed, calls for further research on nudge-based interventions and sustained behaviour change are in response to much of the research entailing limited follow-up periods (48) or mixed or tentative evidence (22, 23). However, despite limited evidence, and considering that nudge-based interventions are typically low cost, and have the potential to confer benefit, then their implementation should be considered while awaiting the evidence, in particular on the long-term effects.



Another challenge is a lack of evidence and documented experiences in low- and middle-income countries. Nudges have been used in school-based interventions in a number of countries, predominantly the USA and in Europe to date. There is much scope for nudges in schools in low- and middle-income countries, particularly if these have school food and nutrition policies in place, and offer healthier options. However, the need for further work to examine the effect of nudges in diverse populations is recognized (14). To this end, proposed nudges should be developed, as appropriate, to the specific context; that is, one size does not fit all and actions will vary between individual schools. It is therefore important to **contextualize and test**; local food contexts and dietary intakes of schoolchildren should be central to the development of nudge-based interventions.

It is important to consider the ethical dimensions to implementing nudges (61) as well as public approval of nudges to promote healthy eating (62, 63), and other potential barriers such as time and space (18). It is also important to distinguish food choice from food consumption – however, food choice does influence consumption, and current evidence of nudge-based interventions for healthy eating indicates that monitoring food choice (instead of the more challenging consumption) may suffice when testing interventions (35).

Finally, the need for further evidence on the potential implications of nudge-based interventions on health equity has been highlighted, with a review of behavioural insight interventions reporting that most interventions did not explore even one equity element, and those that did typically tested for sex and age (48). Other work has also recognized the need to characterize better study populations and to report results for different population groups (35). Indeed, health equity should be a central consideration in public health interventions in order to ascertain that inequities are reduced and interventions do not worsen inequities (7).

## Conclusions

While existing evidence of the effectiveness of nudges to promote healthier food choices in a school setting appears to be somewhat mixed, evidence shows that the implementation of nudge-based interventions can contribute to improving the school food environment and facilitating the selection and consumption of food and beverages that contribute to a healthy diet in children. It is pertinent to consider that with or without intervention, there is a prevailing choice architecture already in place. On this basis and given the relatively low cost of implementation, nudges within school food settings to support healthy eating should be instigated to complement other efforts such as school food and nutrition policies (15) and food procurement for healthy diets (16). In this way, nudges can contribute to the positive dietary outcomes in children, associated with school nutrition policies embracing multiple components and approaches (27), and can contribute to healthy lives and well-being for all at all ages and achieving the nutrition-relevant and nutrition-enabled Sustainable Development Goals.

Nudges for healthy eating in schools offer a unique opportunity to change school children's food choice. As part of the efforts to support children's nutrition, there is now the opportunity to use nudges for promoting healthy dietary practices in schools and build nutrition-friendly choice architecture in schools across the globe.

## Acknowledgements

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Science and Technology in  
childhood Obesity Policy

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