SHAKE
the salt habit

second edition

World Health Organization

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Abbreviations and terminology

Abbreviations

CVD cardiovascular disease
FOPL front-of-pack labelling
GIFNA Global database on the Implementation of Food and Nutrition Action
LSSS lower-sodium salt substitutes
NCD noncommunicable disease
NPM nutrient profile model
PAHO Pan American Health Organization
SMART specific, measurable, achievable, relevant and time-bound
WHO World Health Organization

Terminology

In this document:

- **conflict of interest** is defined by WHO as a situation in which a secondary interest has the potential to unduly influence, or may be reasonably perceived to unduly influence, either the independence or objectivity of professional judgement or actions regarding a primary interest;
- **discretionary salt** describes regular table salt added during cooking or when eating;
- **food** describes all food and non-alcoholic beverages;
- **food industry** describes the corporations that manufacture and distribute products commonly referred to as processed or pre-packaged food;
- **lower-sodium food** and **high-sodium food** describe food with relatively low or high sodium content, respectively, without specifying any threshold of sodium content;
- **nutrient profile model (NPM)** is a food classification system that establishes a set of nutrient content thresholds for all food or for specific food categories used to determine which food products are impacted by a policy;
- **out-of-home food** describes food consumed away from home, in cafeterias in public settings, such as schools and workplaces, restaurants and other food outlets, and food purchased and consumed from street vendors or hawkers;
- **salt** (NaCl) and **sodium** (Na) are referred to interchangeably – note that: 5 g salt is equivalent to 2000 mg sodium; and
- **unhealthy food** refers to foods and beverages that do not contribute to healthy diets, being high in unhealthy fats, sugars and salt, and low in recommended food groups such as fruits and vegetables, whole grains, nuts and legumes.

Executive summary

Globally, cardiovascular diseases are the leading cause of death and a cause of significant financial burden on individuals, families, health-care systems and economies. High sodium intake is associated with raised blood pressure, heart disease, stroke and kidney disease, and was estimated to be responsible for 1.7 million deaths in 2023.

All 194 Member States committed to a 30% relative reduction in mean population intake of sodium from 2010 to 2030, but the average global sodium intake remains high – more than double the World Health Organization (WHO) maximum recommended limit of 2000 mg per day. Modelling indicates that implementation of sodium reduction policies and interventions could reduce sodium intake by up to 23% and prevent more than half a million deaths from cardiovascular disease annually by 2030. Reducing sodium intake is a WHO best buy and is one of the most cost-effective ways to improve population health.

The objective of SHAKE[1] is to guide countries to prepare, develop, implement and monitor a comprehensive government-led sodium reduction programme that reduces population sodium intake and thereby saves lives and reduces health-care costs.

Making specific, measurable, achievable, relevant and time-bound (SMART) commitments to bold action is an important initial step in **preparing for a comprehensive sodium reduction programme**. Once commitment is secured, countries should create a multisectoral working group to coordinate action and set clear limits on industry influence; the food industry should not have any role in setting public health policy. Safeguards against industry interference include clearly written policies and procedures to prevent and manage conflicts of interest, mandatory written disclosure of financial or other interests, and strategies to monitor industry influence following WHO's guidance on engagement with the private sector.

Investing in data collection is essential for policy design and to monitor and evaluate the sodium reduction programme. However, given the high sodium intake globally, countries should not wait for national data before initiating action. Information to prioritize and design policies relevant to the country context include data on sources of sodium in the diet, levels of sodium in the food supply, consumer and food environment factors that influence consumer choices, and the current policy environment in support of sodium reduction.

In **developing and implementing a comprehensive sodium reduction programme**, countries should prioritize a mandatory, government-led approach. This helps establish and maintain a healthier food environment, and levels the playing field, creating equal opportunity for food businesses.

[1] SHAKE was originally used as an acronym in the first edition of this guide (Surveillance: measure and monitor salt use; Harness industry: promote reformulation of foods and meals to contain less salt; 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; and, Environment: support settings to promote healthy eating).
While the name has been retained for continuity, it no longer aligns with the current sections because the guide's structure and content have evolved over time in response to emerging evidence and best practice.

WHO has identified a set of cost-effective and evidence-based sodium reduction policies and interventions, many of which are best buys for the prevention and control of NCDs.

- **Food reformulation** policies set maximum limits or targets for the sodium content of pre-packaged foods, providing a healthier food supply by improving the default options available to consumers. Starting with foods that are primary contributors to sodium intake, this policy can be gradually strengthened over time by setting stricter sodium limits and by expanding the foods covered. WHO has published global sodium benchmarks for sodium levels in 70 food subcategories to guide limit or target setting. **(Best buy)**

- **Front-of-pack labelling (FOPL)** provides interpretive information about sodium content (and other nutrients). Interpretive FOPL labels inform consumers, encouraging them to purchase healthier products. Depending on the type of label, they may also encourage industry to reduce sodium in food products. FOPL should be part of comprehensive **food and nutrition labelling** policies, including listing ingredients and declaring sodium content on pre-packaged food and regulating the use of sodium-related claims. Food and nutrition labelling policies also support the implementation of other sodium reduction policies and interventions, especially food procurement and service, food marketing restrictions and taxation of unhealthy food. WHO guidelines on nutrition labelling are being developed. **(Best buy)**

- **Food procurement and service** policies limit the service or sale of high-sodium food in public settings or procured for government food programmes. They can be put in place at every level of government to demonstrate commitment to supporting healthy food environments, and can also be extended to restaurants and food outlets. These policies may also include rules related to sale or service of food, including availability of salt-shakers, pricing strategies, presentation of food choices, marketing practices, and menu labelling or health messages in food service areas. WHO has published an action framework to guide countries and is developing guidelines on school food and nutrition policies. **(Best buy)**

- **Food marketing restriction** policies protect children up to 18 years of age from marketing's harmful impact on diet, including consumption of high-sodium food. Such policies should reduce exposure to unhealthy food marketing, including high-sodium food, in all media, channels and settings, and place limits, such as non-use of cartoon characters to promote unhealthy foods, on such marketing. WHO has developed guidelines on policies to protect children from the harmful impact of food marketing. **(Best buy)**

- **Taxation of unhealthy food**, including high-sodium food, increase the relative prices of unhealthy foods, encouraging healthier choices by consumers. Food taxes also generate needed tax revenue and may incentivize food reformulation. WHO has developed guidelines on fiscal policies to promote healthy diets.

- **Behaviour change communication and mass media campaigns for healthy diets** can build consumer knowledge and change attitudes and behaviours to reduce sodium intake. They can also increase consumer support of sodium reduction policies and interventions. They are unlikely to have a positive impact unless paired with other policies and interventions. **(Best buy)**

- **Lower-sodium salt substitutes (LSSS) to replace regular table salt (in appropriate settings)** are alternatives to regular table salt in which a proportion of the sodium is typically replaced with potassium. These products can contribute to reducing sodium intake in people not at risk of hyperkalaemia (elevated potassium levels in the blood), especially in populations where discretionary salt is a major source of sodium intake, and can therefore help reduce cardiovascular disease (through both lower sodium intake and higher potassium intake). WHO has published a guideline recommending this intervention for settings where health systems have the capacity to detect promptly and manage potential cases of kidney disease.

As a first step to developing and monitoring these policies and interventions, countries should have in place mandatory back-of-pack nutrition labels that include declaration of sodium content. Similarly, government-led nutrition criteria, including sodium content thresholds, are fundamental for identifying high- and lower-sodium food as part of an effective policy or intervention design.

Monitoring, enforcing and evaluating a comprehensive sodium reduction programme is critical for ensuring the effectiveness and success of the programme. Regular compliance checks and appropriate sanctions promote policy adherence. Process evaluation assesses and enables improvement in implementation. Impact evaluation measures if the intended outcomes are achieved. Both process and impact evaluations are important for learning and for building the case for strengthening the programme.

WHO calls on Member States to take immediate action to adopt and implement these cost-effective and evidence-based policies and interventions as part of a comprehensive sodium reduction programme. Successful implementation in countries around the world has resulted in decreases in sodium intake. Our vision is that more countries will put in place the necessary policies and interventions to provide people with a healthier food supply to live longer healthier lives with lower health-care costs, and to progressively realize the human rights to adequate food and the highest attainable standard of health.

Background

Global sodium intake

In 2021, the global average sodium intake was estimated to be 4278 mg per person per day (equivalent to 11 g of salt per person per day) *(1)*, more than double the maximum level of daily intake recommended by WHO (Box 1, Fig. 1).

Across the WHO regions, average sodium intake ranges from 2736 mg per person per day (equivalent to 7 g of salt per person per day) in the WHO African Region to 6281 mg per person per day (equivalent to 16 g of salt per person per day) in the WHO Western Pacific Region.

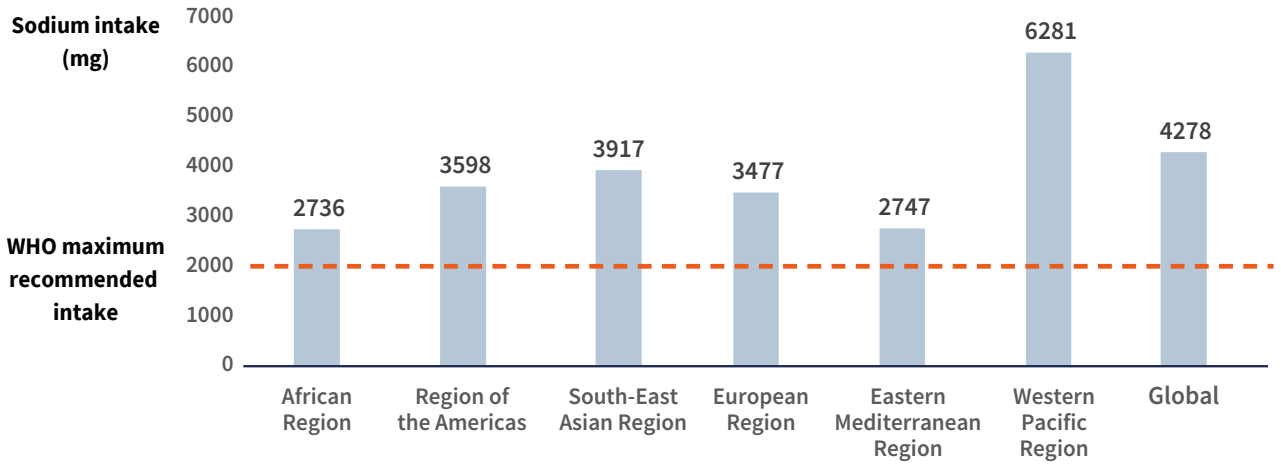
In many high-income countries, and increasingly in low- and middle-income countries, high-sodium diets often result from higher consumption of pre-packaged food and out-of-home food *(2)*. Discretionary salt added to food during cooking or when eating also significantly contributes to sodium intake in many regions *(3)*.

Box 1. WHO sodium intake recommendations

WHO recommends:

- in adults, a maximum intake of less than 2000 mg sodium (less than 5 g salt) per day to reduce blood pressure and risk of cardiovascular disease (CVD), stroke and coronary heart disease; and
- in children, a maximum level of intake of less than 2000 mg sodium (less than 5 g salt) per day, adjusted downward based on the energy requirements of children relative to those of adults, to control blood pressure and prevent a deleterious rise in blood pressure with age *(4)*

Fig. 1. Estimated global and regional sodium intakes in 2021



Impact of high-sodium diets

An estimated 1.7 million deaths were associated with consuming too much sodium in 2023 *(5)*.

The burden attributable to high-sodium diets is significant and impacts individual health and public health systems. High sodium intake is a major contributor to raised blood pressure, which increases the risk of CVD, including heart attack and stroke, and kidney disease *(6-8)*. Globally, CVDs are the leading cause of death and disability-adjusted life years *(9)*, placing a heavy burden on individuals, families, health-care systems and economies through increased medical costs and reduced workforce productivity.

In addition, there is a growing body of evidence showing the impact of high sodium intake on a range of other health outcomes, including gastric cancer *(10, 11)*, obesity *(12-14)*, Ménière's disease *(15)* and osteoporosis *(16)*.

Global commitments to sodium reduction

In 2013, the Sixty-sixth World Health Assembly adopted the *Global action plan for the prevention and control of noncommunicable diseases 2013–2020 (17)*, in which Appendix 3 highlights reduction of salt intake among policy options and cost-effective interventions. The Assembly also adopted the comprehensive global monitoring framework for the prevention and control of noncommunicable diseases (NCDs). The framework includes a target for a 30% relative reduction in mean population intake of salt from 2010 to 2025, which has since been extended to 2030 *(18, 19)*. Numerous countries have incorporated this global target, or a target adapted from it, into their national strategies and implemented mandatory and voluntary policies and interventions to reduce sodium intake *(20)*.

Sodium reduction policies and interventions

The above-mentioned Appendix 3 of the global action plan was updated in 2017 and 2024, identifying cost-effective sodium reduction policies and interventions as "best buys"[1] *(21, 22)*. WHO has published a series of evidence-based guidelines on policy actions affecting the food environment *(23)*, which are also relevant to sodium reduction. The sodium reduction policies and interventions included in the WHO best buys and other WHO guidance are:

- food reformulation
- front-of-pack labelling (FOPL) as part of comprehensive food and nutrition labelling
- food procurement and service
- food marketing restrictions
- taxation of unhealthy food
- behaviour change communication and mass media campaigns for healthy diets
- lower-sodium salt substitutes (LSSS) to replace regular table salt (in appropriate settings).[2]

Implementing a comprehensive, government-led sodium reduction programme with a mandatory approach to food reformulation, food and nutrition labelling, food procurement and service, food marketing restrictions and taxation of unhealthy food – complemented by behaviour change communication and mass media campaigns – is expected to be the most effective approach to lowering sodium intake (Table 1). Most of these policies and interventions could, and often do, incorporate other critical nutrients[3] and should be accompanied by mandatory salt iodization. In addition, LSSS can be used to replace regular table salt for discretionary use in appropriate settings.[2]

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[1] A best buy is an intervention which has an average cost–effectiveness ratio of ≤ 100 international dollars per healthy life-year gained, using WHO-CHOICE methodology.

[2] Countries should assess whether it is appropriate to promote the use of LSSS, in particular whether there is adequate access to health care such that conditions in which increased potassium intake is potentially harmful (e.g. kidney disease) are promptly diagnosed.

[3] Except food reformulation because few countries have initiatives that cover multiple critical nutrients simultaneously.

A comprehensive sodium reduction programme that combines multiple policies and interventions across a wide range of settings (Fig. 2) is likely to be more effective than a single policy or intervention.

If countries implement mandatory food reformulation and other best buys for sodium reduction to achieve a two-score lift on the WHO Sodium Country Score Card (see Annex 1), modelling suggests a reduction in sodium intake of 23% against the 2019 baseline, which could prevent around 7 million CVD deaths by 2030 – equivalent to an average reduction of more than half a million CVD deaths annually *(24)*.

Fig. 2. Example of a comprehensive sodium reduction programme that promotes policies and interventions in multiple settings

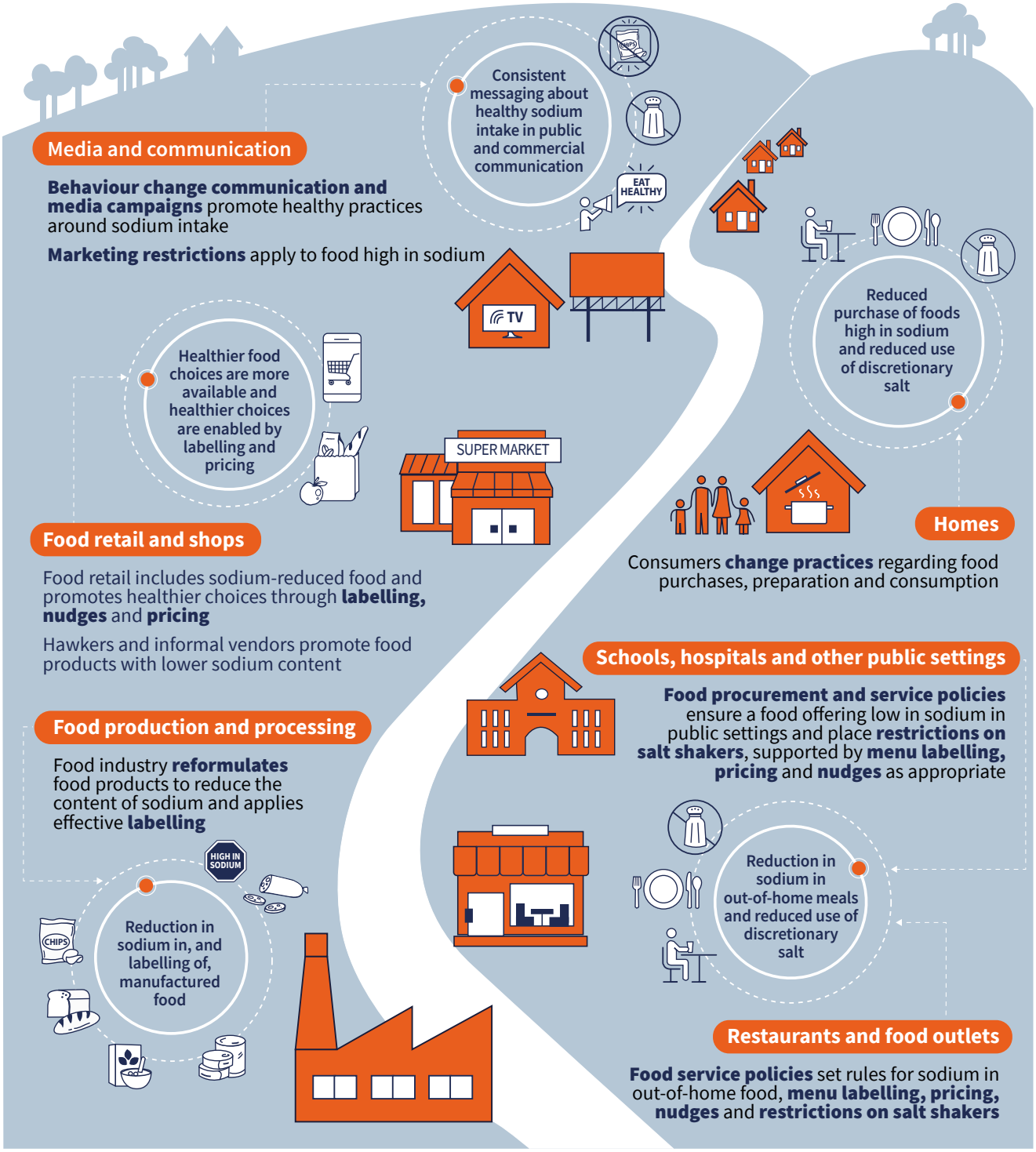


Table 1. Sodium reduction policies and interventions included in WHO best buys or other WHO guidance

Intervention	What is it?	Included in WHO best buys	Included in other WHO guidance	Most comprehensive approach
Food reformulation	Policies that set scope and criteria for maximum limits or targets for the sodium content of pre-packaged food	Yes *(22)*	Yes *(25)*	Mandatory approach: Set maximum permissible limits for sodium (as defined by WHO global benchmarks or regional or national targets) that cover food categories that are major sources of dietary sodium
FOPL as part of comprehensive food and nutrition labelling	Policies that set scope and criteria for providing interpretive information about healthiness of food, including sodium content, on the front of pre-packaged food, as part of comprehensive food and nutrition labelling policies to list ingredients, declare sodium content, regulate the use of sodium-related claims or provide health-related warning messages about sodium content	Yes *(22)*[a]	Yes *(26-29)*	Mandatory approach: Require that interpretive FOPL is mandatory on all pre-packaged food so that consumers can easily identify food products that exceed the nutrient threshold for sodium[b]; require listing of ingredients and mandatory declaration of sodium content on all pre-packaged food; and, prevent misleading health and nutrition claims related to sodium
Food procurement and service	Policies that set scope and criteria for food, including high-sodium food, served or sold in public settings and/or procured by governments for food programmes	Yes *(22)*	Yes *(30,31)*	Mandatory approach: Ban the procurement, use, sale and supply of any food that does not meet nutrition criteria related to sodium[b] across all public settings at national, state and local or province level
Food marketing restrictions	Policies that set scope and criteria for restricting food marketing to protect children from its harmful impact on diet, including consumption of high-sodium food	No[c]	Yes *(32)*	Mandatory approach: Ban the marketing of any food products that exceed the nutrient threshold for sodium[b] to all children aged up to 18 years in all media, channels and settings and prohibit the use of child-appealing persuasive techniques

Table 1. Sodium reduction policies and interventions included in WHO best buys or other WHO guidance

Intervention	What is it?	Included in WHO best buys	Included in other WHO guidance	Most comprehensive approach
Taxation of unhealthy food	Policies that set scope and criteria for taxes on unhealthy food, including high-sodium food	No[d]	Yes *(33)*	Mandatory approach: Require that a health levy or similar is applied to any food that does not meet nutrition criteria related to sodium[b]
Behaviour change communication and mass media campaigns for healthy diets	A set of communication activities designed to change behaviours to reduce consumption of unhealthy food, including salt and high-sodium food	Yes *(22)*	No	Behaviour change communication is integral to all public health responses and should be part of a comprehensive sodium reduction programme, including to build support for other policies and interventions
LSSS to replace regular table salt (in appropriate settings)[e]	Alternatives to regular table salt in which a proportion of the sodium is typically replaced with potassium	No	Yes *(34)*	LSSS may be considered as one of several potential interventions in a comprehensive sodium reduction programme, provided an assessment has been made that its use is appropriate in the setting

FOPL: front-of-pack labelling; LSSS: lower-sodium salt substitutes.

[a] Food and nutrition labelling policies are a best buy *(22)*; FOPL has demonstrated impact on sodium reduction.

[b] See '**Nutrition criteria**' for more information about setting sodium thresholds.

[c] Food marketing restriction policies are a best buy *(22)*, but sodium is not included in the impact pathway.

[d] Sugar-sweetened beverage taxes are a good buy *(22)*.

[e] Countries should assess whether it is appropriate to promote the use of LSSS, in particular whether there is adequate access to health care such that conditions in which increased potassium intake is potentially harmful (e.g. kidney disease) are promptly diagnosed.

SHAKE programme guide

Approach to development

This document is an updated version of *SHAKE the salt habit*[4] *(35)*. The update was prompted by recent WHO evidence-based guidelines, new implementation tools related to sodium reduction policies and interventions, and the update of the best buys for prevention and control of NCDs

[4] SHAKE was originally used as an acronym in the first edition of this guide (Surveillance: measure and monitor salt use; Harness industry: promote reformulation of foods and meals to contain less salt; 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; and, Environment: support settings to promote healthy eating).
While the name has been retained for continuity, it no longer aligns with the current sections because the guide's structure and content have evolved over time in response to emerging evidence and best practice.

(Table 1). Updating SHAKE provided an opportunity to systematically summarize the what, why and how of sodium reduction policies and interventions based on WHO guidelines as well as the key data relevant to comprehensive national programmes. Organizing the policies, interventions and data within a logic model supports the development of coherent policies that address food, food environments and consumer behaviour in a comprehensive manner.

To inform this version, WHO conducted a series of consultations and reviews with the WHO technical leads for the respective guidelines and the WHO regional nutrition advisors experienced in supporting countries on sodium reduction, building on sodium reduction workshops in countries. Partners and global experts in long-standing professional collaborations with WHO were also consulted. None of these reported any conflict of interest as part of the due diligence process.

Intended readership

The SHAKE programme guide is intended primarily for policy-makers and programme managers, although it may also benefit other audiences, including academics and public health professionals.

The logic model

This guide outlines a systematic approach to designing a government-led comprehensive sodium reduction programme. It is based around a logic model that shows how a comprehensive sodium reduction programme may impact dietary, health and economic outcomes (Fig. 3). The logic model provides a useful planning and advocacy tool for countries to define the inputs needed for such a programme, plan related activities and establish clear objectives for the outputs, outcomes and impacts.

The inputs are the foundational elements needed for a comprehensive sodium reduction programme. The activities include a set of sodium reduction interventions that reduce the sodium content of the food supply, and improve consumer behaviour by creating healthier food environments and improving consumer knowledge and attitudes. These interventions reflect those included in the best buys and other WHO guidance (Table 1). The outputs relate to governance, the food supply, food environments and consumer knowledge, attitudes and behaviour. The outcomes relate to food consumption and dietary sodium intake. The impact includes prevention and control of diet-related disease and death, reduced health-care costs and expenditure, and increased economic productivity through improved workforce participation and productivity.

Although the logic model shows how the policies and interventions may lead to different outputs and outcomes, the impact will vary depending on the set of policies and interventions included and their scope, and on the context of the country. Collecting data about the activities, outputs, outcomes and impact is important for monitoring, and can also inform programme design.

This document is divided into three main sections covering the activities shown in the logic model in Fig. 3:

- preparing for a comprehensive sodium reduction programme
- developing and implementing a comprehensive sodium reduction programme
- monitoring, enforcing and evaluating a comprehensive sodium reduction programme.

To skip to a particular section or subsection, use the links in Fig. 3.

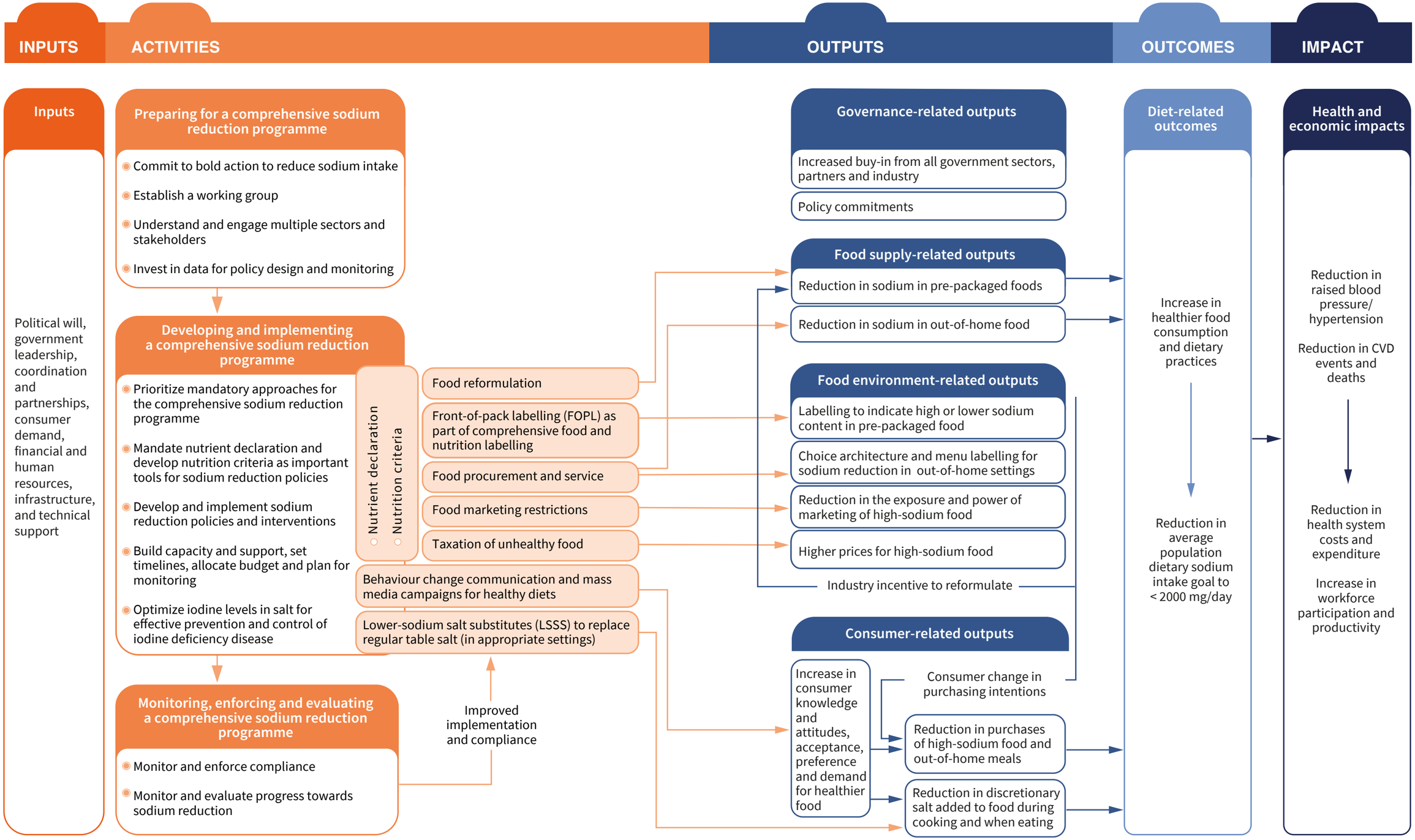
Guiding principles

When designing a comprehensive sodium reduction programme, decisions should be guided by principles and standards related to nutrition, health, the environment and human rights (Box 2) – all areas for which governments bear primary responsibility.

Box 2. Guiding principles for designing a comprehensive sodium reduction programme

- **Evidence informed:** The sodium reduction programme and its policies and interventions should be developed and implemented based on the best available evidence and aligned with evidence-informed guidance on promoting healthy diets.
- **Human rights based:** Ensuring access to healthy diets that are lower in sodium is an important step to progressively realize the human rights to adequate food and the highest attainable standard of health. These rights are enshrined in the International Covenant on Economic, Social and Cultural Rights *(37)*, ratified by 171 countries *(38)*, and the Convention on the Rights of the Child *(39)*, ratified by 196 countries *(38)*, and have been further elaborated in general comments by the respective treaty committees *(40-42)*. Together these establish a legal obligation for governments and other duty bearers to respect, protect and fulfil the rights to adequate food and the highest attainable standard of health and therefore provide a strong justification for action to reduce sodium intake, which is excessive in almost all countries. Access to adequate information about food, nutrition and health is integral to both rights to make informed dietary decisions *(40-42)*. But information alone is not enough. The United Nations Special Rapporteurs on the right to food and to health have described challenges of the current food system, calling for governments to adopt, implement and enforce policies and interventions and the food industry to improve the nutrition profile of food and respect international standards *(43-45)*.
- **Safeguarding of public interest:** Governments are responsible for protecting public health. A government-led comprehensive sodium reduction programme requires commitment and action by various sectors to ensure policy coherence, compliance and the creation of a supportive and synergistic policy environment. Collaboration beyond government authorities, including with civil society organizations and academia, and consultation with the private sector are required. To protect policy development and decision-making from private interests and interference, it is important for governments to establish clear guidelines for engagement and to adopt good governance practices to address potential conflicts of interest when working with multiple sectors and stakeholders.
- **Health in all policies:** Acknowledging the broader determinants of health, multisectoral collaboration is essential for informing policies that enhance health and well-being outcomes. Health in all policies is an approach to public policy-making across sectors that systematically considers the health implications of decisions, seeks synergies and avoids harmful health impacts, to improve population health and health equity *(46)*.
- **Safe, healthy and sustainable diets:** Safe, healthy and sustainable food systems are the cornerstone of protecting the health and well-being of people and the planet. The Food and Agriculture Organization of the United Nations and WHO have developed guiding principles for sustainable healthy diets, taking a holistic approach that considers nutrition recommendations, the environmental costs of food production and consumption, and adaptability to local social, cultural and economic contexts *(47)*.

Fig. 3. A logic model for designing a comprehensive sodium reduction programme[a]



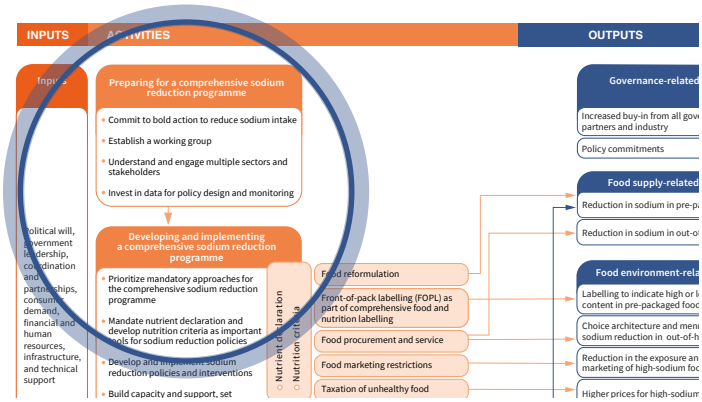
Source: Adapted from WHO *(36)*.

[a] The activities are described in the corresponding subsequent sections. The outputs and outcomes are described within data for policy design and monitoring.

Preparing for a comprehensive sodium reduction programme

This section describes preparation and planning for the creation of a new national sodium reduction programme or the strengthening of an existing programme. It covers:

- committing to bold action to reduce sodium intake;
- establishing a working group;
- understanding and engaging multiple sectors and stakeholders; and
- investing in data for policy design and monitoring.



Commit to bold action to reduce sodium intake

Making bold national commitments to sodium reduction can help to drive progress – they serve as a justification for action – especially if they are made at the highest political level. In the Sodium Country Score Card, national policy commitments to sodium reduction are recognized with a score of 1 (see Annex 1).

Such commitments should be SMART – that is, specific, measurable, achievable, relevant and time-bound *(48)*. SMART commitments can relate to reducing sodium intake, reducing the sodium content of the food supply, implementing interventions that impact sodium and/or ensuring successful implementation of a sodium reduction programme (Box 3). Making – and operationalizing – bold commitments towards sodium reduction is a step towards the realization of the rights to adequate food and the highest attainable standard of health, demonstrating that countries take their obligations to respect, protect and fulfil these rights seriously.

Establish a working group

If not already in place, a working group should be established to coordinate a whole-of-government approach and foster engagement across relevant ministries and agencies in developing and supporting the sodium reduction programme *(17, 48)*.

The health ministry is the government agency most likely to lead the development and implementation of the programme, but the role might vary by country or involve joint responsibility, particularly for monitoring and enforcement. The lead government authority should define the scope of the programme, including its goals and objectives, with support from, and in coordination with, other ministries such as agriculture, education, finance, industry, information and trade.

Setting up a cross-ministerial working group or integrating the working group into an existing coordination body (e.g. multisectoral coordination mechanisms for nutrition or for NCDs) can assist in building consensus on the need for action and provide a platform for continuing engagement and internal discussion.

Written terms of reference should outline roles, responsibilities and decision-making processes. Different structures may be needed for oversight and for technical work. At the technical level, public health experts, food scientists and policy specialists should be engaged to collect and analyse data, draft policies, design monitoring systems and provide technical guidance on interventions.

Box 3. Examples of national commitments to sodium reduction

Commitments to reduce population-level sodium intake

Governments can align their national commitment with the global target to "Reduce sodium intake by 30% in the population by 2030" or adopt an achievable regional or country-specific target with a realistic timeline that takes into account the time it takes to prepare for, develop, implement and monitor sodium reduction policies and interventions. If baseline national sodium intake data are unavailable, a commitment to collect such data could be made.

Commitments to reduce the sodium content of the food supply

Governments can develop national sodium content limits or targets for specific food categories, aligned with the WHO global or regional sodium benchmarks, such as "Over the next year, 50% of all breads (or any other major source of dietary sodium) meet the national benchmark for sodium, and within the next three years, 80% of all breads meet the benchmark".

Commitments to implement a comprehensive sodium reduction programme

Governments can commit to implement a set of effective policies and interventions that form a comprehensive sodium reduction programme. This includes food reformulation, food and nutrition labelling, food procurement and service, food marketing restrictions, and taxation of unhealthy food, alongside behaviour change communication and mass media campaigns promoting healthy diets. For example, a government could commit to "Over the next year, develop, implement and/or monitor a mandatory FOPL system that includes sodium".

Commitments to other actions to ensure a successful sodium reduction programme

Commitments to enhance the success of a sodium reduction programme can be made in relation to, for example, the financial, human or organizational resources required; activities to strengthen monitoring and evaluation; or the integration of sodium reduction and salt iodization programmes. For example, a government could commit to "Within the next two years, increase the number of food inspectors at the district level by 20% and ensure all districts monitor food labels for sodium content yearly".

Understand and engage multiple sectors and stakeholders

Understanding and engaging government ministries and external organizations can enhance insights into national context, strengthen government knowledge, increase advocacy, identify innovative solutions, scale up sodium reduction, expose practices compromising sodium reduction efforts, and ensure transparency in engagement processes. Efforts to develop, strengthen and enforce sodium reduction policies and interventions are more likely to succeed when stakeholders are aligned and work collaboratively towards a common goal. Advocacy campaigns to build support may be needed to bring sectors and stakeholders on-board, and to counter beliefs in opposition to sodium reduction policies and interventions (see Annex 2).

Importantly, there should be clear limits on industry influence. While the food industry has a clear and necessary role in supporting sodium reduction, the food industry should not have a role in setting public health policy.

Identify stakeholders

Relevant stakeholders include all government ministries and any persons or entities that may have a role in supporting or may be significantly impacted by sodium reduction interventions. Table 2 lists potential stakeholders and describes their possible roles.

Table 2. Potential stakeholders and possible roles

Stakeholders	Possible roles
Government stakeholders	
Legislators and parliamentarians	◉ Design, develop and propose legal instruments to reduce sodium intake ◉ Act as champions for these instruments and lobby other legislators and parliamentarians to garner their support
National food authorities and agencies	◉ Adopt food standards that include maximum permissible limits for sodium ◉ Adopt standards for nutrition labelling, including declaration of sodium content and FOPL ◉ Adopt standards for salt iodization ◉ Undertake monitoring activities and strengthen laboratory capacity
Health ministries	◉ Establish national sodium content limits or targets for different food categories ◉ Coordinate, advocate for and facilitate the contribution of other ministries, government agencies and stakeholders ◉ Lead the development of the comprehensive sodium reduction programme ◉ Lead the development of nutrition criteria and setting of sodium thresholds for policies and interventions ◉ Allocate resources for collection of sodium-related data and for development, implementation, monitoring and enforcement of the sodium reduction programme and its interventions
Social protection and welfare ministries	◉ Coordinate, advocate for and facilitate the development and implementation of public food procurement and service policies and food vouchers as part of social protection programmes that promote sodium reduction
Food and agriculture ministries	◉ Adopt national food production policies that reduce the sodium content of the food supply
Education ministries	◉ Develop, implement, monitor and enforce school health policies and school meal programmes that encourage healthy eating habits, including reduced sodium intake

Table 2. Potential stakeholders and possible roles

Stakeholders	Possible roles
Finance ministries	◉ Secure funding to support the implementation of sodium reduction policies and interventions ◉ Enact fiscal policies (including taxation of foods high in sodium and subsidization of healthier food options) to reduce sodium intake
Commerce, trade, investment, industry and food processing ministries	◉ Adopt multilateral and bilateral trade and investment agreements that adhere to global health and trade laws ◉ Ensure compliance with industry and trade standards (e.g. national sodium limits or targets and nutrition labelling requirements), including for imported foods ◉ Support small- and medium-sized food producers in developing and reformulating their products to reduce sodium content
Foreign affairs ministries	◉ Negotiate, analyse and secure adoption of international agreements and frameworks to reduce sodium intake and promote public health
Consumer affairs	◉ Contribute to policy compliance monitoring to protect consumer rights, including by managing consumer complaints
Information and broadcasting, and public affairs ministries	◉ Disseminate relevant public health information about sodium to all stakeholders through appropriate means, including public service announcements and mass media campaigns ◉ Implement marketing restrictions for high-sodium food
Labour and employment ministries	◉ Adopt labour laws that promote healthy lifestyles and reduced sodium intake at workplaces
Nongovernment stakeholders	
United Nations agencies	◉ Recognize sodium reduction is important to achieving Sustainable Development Goal Target 3.4 on NCDs and to other global health agendas ◉ Ensure there is policy coherence across global programmes related to sodium reduction as part of healthy diets ◉ Advocate for and support sodium reduction programmes in countries
Civil society organizations	◉ Advocate for the comprehensive sodium reduction programme, mobilize community support, organize information and education campaigns, deliver services and monitor outcomes ◉ Raise public and political awareness to support government-led sodium reduction policies and interventions and to hold governments and the commercial sector accountable ◉ Advocate for increased investment in research regarding sodium intake and the effects of related policies and interventions

Table 2. Potential stakeholders and possible roles

Stakeholders	Possible roles
Philanthropic foundations	◉ Promote and allocate resources to sodium reduction to advance global health
Academic institutions	◉ Provide expert advice on the national sodium reduction programme, NCDs, cost-effective policies, and monitoring and evaluation ◉ Conduct independent research to support these areas
Media outlets and journalists	◉ Provide news coverage of the sodium reduction programme to raise awareness, stimulate discussion and drive change ◉ Commit to delivering evidence-based, verifiable information, avoiding promotion of less credible sources that lack scientific backing or present a conflict of interest
Commercial actors (including multinational and national food manufacturers, suppliers, private label retailers and food service establishments, such as restaurants, food stalls, street food vendors and hawkers)	◉ Produce healthier food products by reformulating products to reduce sodium content and offer healthier options that are affordable and accessible ◉ Ensure food products adhere to relevant nutrition criteria and labelling standards, including those related to providing information on sodium content ◉ Respect marketing restriction policies

Understand interests

By definition, all stakeholders are likely to have an interest in sodium reduction. This interest underlies their willingness to allocate time and resources to discuss work in this area. It is important to understand the types of interests stakeholders have, including which stakeholders will be supportive of sodium reduction policies and interventions and which may oppose them.

- **The government health sector, civil society organizations and nongovernmental organizations** are likely to have common interests in improving health outcomes. These include enhancing health system benefits and achieving cost-savings by preventing long-term burdens on the health-care system. Action to reduce sodium intake is sometimes sparked by consumers demanding healthier food and healthier food environments, calling on their rights to adequate food and the highest attainable standard of health *(49)*.
- **Government industry, trade and finance sectors** are likely to have common interests in economic benefits. These include increasing government revenue, achieving immediate and long-term cost-savings, and enhancing workforce participation and productivity.
- **Commercial actors** are primarily focused on growing their companies, brands and products, increasing market share and boosting shareholder profits. This focus may conflict with efforts to reduce the sodium content of the food supply and improve public health. Given that approximately 89% of the revenue for the top 20 global food companies comes from food high

in fats, sugars and sodium *(50)*, the food industry will likely resist sodium reduction policies. Commercial actors often engage in practices designed to influence other stakeholders, potentially preventing, weakening, distorting or delaying the development of food policies. They may employ an array of coordinated and sophisticated strategies to protect industry interests by shaping the social and political environment (see Annex 3 for examples) *(51-54)*. Evidence suggests that transnational corporations not only engage in these practices but may also work collectively with a shared goal of defeating legislation that threatens their interests *(55, 56)*. It is important to monitor and document industry influence – including through lobbying – on decisions and activities related to the sodium reduction programme to ensure a transparent and credible policy process.

To ensure transparency and avoid conflicts of interest, require written disclosures of financial or other interests from stakeholders with whom collaboration is envisioned.

Manage the risks of engagement with private sector entities

Private sector entities can offer important insights into aspects of sodium reduction programming, but measures must be taken to ensure they do not unduly influence policies or implementation. WHO has developed decision-making tools to guide countries' engagement with private sector entities for the prevention and control of NCDs and in nutrition programmes *(57, 58)*. The tools offer systematic approaches to assessing, analysing and deciding whether to engage with private sector entities to complement or enhance public sector efforts.

The tools aim to assist Member States in analysing critical elements for decision-making when considering partnerships with the private sector. They promote a principles-based approach, such as accountability, transparency and prevention of conflicts of interest, to ensure that engagements maintain credibility, integrity and sound government processes, thereby protecting public health and mitigating any unintended adverse social, economic and environmental impacts from business practices, products or services.

Such principles and processes can be spelled out in clear written policies and procedures for engaging with the private sector on sodium reduction, food and nutrition, and NCD prevention (Box 4). All interactions with industry should be documented transparently, and an independent technical review process should be established for major decisions.

Box 4. Examples of principles for protecting policy development and implementation from undue industry influence

The food industry should not participate in:

- setting public health goals
- designing policies
- setting nutrition criteria or defining scope
- determining implementation timelines
- developing monitoring and/or enforcement systems.

The food industry can provide input on:

- technical feasibility of implementing the policies and interventions
- innovations in technology
- feasibility of implementation timelines
- practical monitoring approaches
- implementation challenges.

It is crucial to manage potential conflicts of interest by carefully considering how vested commercial interests, particularly those of the food industry or related actors, are handled during the consultation process. In particular, the food industry should not be engaged in setting nutrition criteria for or defining the scope of policies.

Decide how to engage with stakeholders

A government-led and transparent public consultation process during policy development and implementation can garner valuable input from a diverse range of stakeholders, including practical insights into policies and interventions.

Engaging with stakeholders early can help to secure their buy-in and leverage their expertise. Successful stakeholder engagement involves adapting the approach used for each stakeholder by considering their real or perceived conflicts of interest, determining the frequency and purpose of interactions, and clarifying the desired outcomes of the engagement.

From the list of identified stakeholders, key individuals and groups should be pinpointed for inclusion in engagement and consultation processes. Consider their interest, influence and expertise and select the most appropriate options for engagement, including:

- **Sharing:** Communication is one-way, from the government to all stakeholders. This includes decisions such as committing to reduce population-level sodium intake to less than 2000 mg per person per day, along with adopting the policies necessary to achieve this reduction.
- **Consulting:** The government seeks specific, technical input from stakeholders, including those that may be negatively affected by the proposed sodium reduction programme and that would likely interfere in the process (e.g. the food industry). This may involve meetings, roundtables, workshops, forums, written submissions or online surveys. These stakeholders are provided with the opportunity to present their views to decision-makers in a structured, transparent way.
- **Collaborating:** The government seeks support from stakeholders with shared goals to reduce sodium intake to gather information and/or support implementation of the programme and its interventions. This may include collaboration with academic institutions to collect data on sodium intake, sources of sodium in the diet, levels of sodium in the food supply and dietary practices. Collaboration may also extend to coordination across government departments to implement, monitor and enforce policies to reduce sodium intake.

By strategically involving the right stakeholders and choosing the most appropriate engagement method, meaningful dialogue can be fostered to gather valuable insights that will enhance the programme's effectiveness.

Selected technical resources

Technical resources on engaging with stakeholders include:

- Supporting Member States in reaching informed decision-making on engaging with private sector entities for the prevention and control of noncommunicable diseases: a practical tool *(57)*
- Preventing and managing conflicts of interest in country-level nutrition programs: a roadmap for implementing the World Health Organization's draft approach in the Americas *(59)*
- Safeguarding against possible conflicts of interest in nutrition programmes: report by the Director-General *(58)*
- Strengthening nutrition action: a resource guide for countries based on the policy recommendations of the Second International Conference on Nutrition (ICN2) *(48)*

Invest in data for policy design and monitoring

The current situation and country context must be assessed before specific interventions are designed. The cost–effectiveness, impact and sustainability of a comprehensive sodium reduction programme will be greater if the selected interventions are based on the most reliable and valid scientific evidence to ensure the programme is tailored to the country context. This can be achieved by collecting different types of data using the logic model and analysing the data to understand the nature and extent of the problem, establish a baseline and define short- and long-term objectives for the sodium reduction programme. Table 3 lists data types that should be used to inform a comprehensive sodium reduction programme.

Additional detailed information on data for design and monitoring of sodium reduction programmes is available in the annexes: Annex 4 describes the rationale and provides more details on potential approaches, analysis, reporting and technical resources in relation to these different data types; Annex 5 outlines examples of data sources and their relevance to different interventions; and Annex 6 gives examples of how these data can inform key indicators for assessment of specific policies or interventions.

Although data on population-level sodium intake are important, almost all populations consume significantly more sodium than the WHO recommendation of less than 2000 mg per day *(1)*. Countries can use regional estimates rather than wait for a nationally representative sodium intake survey before acting.

When time and resources are limited, countries should not let data gaps prevent or delay action but rather should start with data that are available and plan for expanded future data collection. In many cases, data can be sourced from existing national or regional studies, reviews, grey literature and reliable international sources to build a compelling case for a comprehensive sodium reduction programme.

Countries should prioritize collecting the data that are most relevant to their specific circumstances and policy objectives. For example, if availability or sales of high-sodium ready-to-eat food have increased, then collecting data on their consumption in different population groups and on their availability, labelling, pricing and marketing can help to make the case for new policies.

Data are also important for assessing the design of the programme and evaluating its effectiveness in achieving the desired immediate and long-term outcomes. Therefore, the programme should allocate resources for ongoing data collection to monitor compliance, track trends over time and evaluate impact. When multiple interventions are implemented, programme managers may explore ways to streamline data collection, such as combining efforts to monitor food labels, prices and advertisements in stores. Examples of opportunities for cost-sharing for different data types are described in Annex 4 and across data sources in Annex 5.

A human rights-based approach (see Box 2) should be integral to data collection and reporting. This involves collecting and reporting evidence of the nature and extent of the problem in all segments of the population and actions taken by the government to address it. Data collection should enable disaggregation of the data by gender, income and education level and for vulnerable or marginalized groups whenever possible to highlight inequalities. Any data gaps should be identified and plans should be made to fill those gaps. Data can also be used to inform regular reporting to the Committee on Economic, Social and Cultural Rights and the Committee on the Rights of the Child *(60)*.

Table 3. Data to inform a comprehensive sodium reduction programme[a]

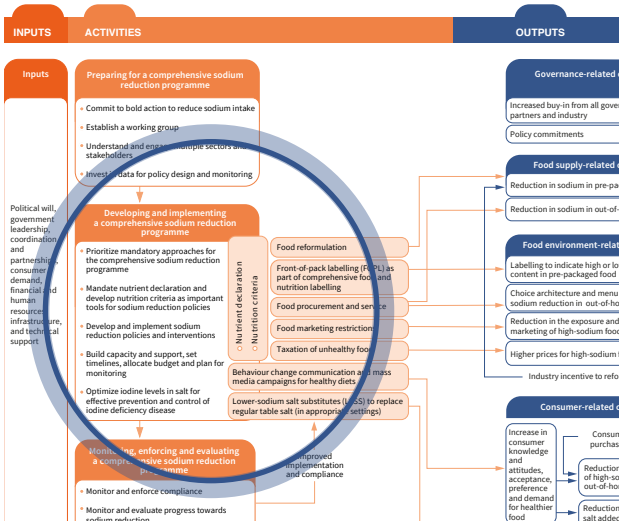
Type of data	Why it matters	Approach
Population-level sodium intake	Sodium intake data can be used to determine magnitude of the problem, raise awareness of the issue, and identify groups with high intakes to inform targeting of interventions.	Where possible, measure sodium intake through 24-hour urine collection in a representative sample to understand intake patterns in different population groups. If this is not feasible, use regional estimates.
Sources of sodium in the diet	Understanding the sources of sodium in the diet, and any variations between different groups in the population, helps prioritize and target interventions, and supports monitoring, enforcing and evaluating sodium reduction programmes.	Use data from 24-hour dietary recalls, preferably multiple recalls, to determine whether sodium comes primarily from pre-packaged food, out-of-home meals or discretionary salt. Look for regional variations and unique local sources.
Levels of sodium in the food supply	Data about the sodium content of the food supply help selection and design of interventions, including identifying priority target food categories and setting realistic nutrition criteria.	Collect data on sodium content of pre-packaged food and out-of-home food. While direct chemical analysis is the gold standard, food label assessment (back-of-pack labelling) and food recipe assessment are good approaches to assess sodium content across food categories, manufacturers and providers.
Consumer or food environment factors that influence consumer choices around sodium intake	Understanding the food environment and consumer knowledge, attitudes and behaviours that influence consumer choices around sodium intake in different settings helps to tailor the sodium reduction programme to the country context. It also helps in prioritizing and designing effective interventions across different settings.	Compile information on food prices, marketing practices, nutrition labelling and choice architecture in food service. Also compile information about consumer knowledge, attitudes and behaviours towards sodium reduction.
Policy environment in support of sodium reduction	Assessing the current level of policies and interventions in place against the set of evidence-based and cost-effective sodium reduction interventions provides an overview of gaps where action may be needed. Identifying policy commitments made towards sodium reduction provides the justification for taking action.	Assess the current policy environment against the provisions that should be in place to effectively reduce sodium intake to identify gaps where action may be needed. Identify policy commitments made towards sodium reduction.

[a] Some interventions (e.g. LSSS) require additional data, such as data on the prevalence of kidney disease.

Developing and implementing a comprehensive sodium reduction programme

This section describes an approach to developing and implementing interventions within a comprehensive sodium reduction programme across multiple settings. It covers:

- prioritizing mandatory interventions to be part of a comprehensive sodium reduction programme;
- mandating nutrient declaration and developing nutrition criteria as important tools for sodium reduction policies;
- developing and implementing sodium reduction policies and interventions;
- building capacity and support, setting timelines, allocating budget and planning for monitoring; and
- optimizing iodine levels in salt for effective prevention and control of iodine deficiency disease.



Prioritize mandatory approaches for the comprehensive sodium reduction programme

Implementing a comprehensive, government-led sodium reduction programme using mandatory approaches, as described in Table 1, is expected to be the most effective strategy for lowering sodium intake. However, few countries will be able to implement all sodium reduction policies and interventions in this guide immediately.

Prioritizing where to start should be guided, if possible, by local evidence on the major sources of sodium in the diet. This will define the programme objectives and guide selection of interventions (Fig. 4). The introduction or strengthening of policies and interventions may also be driven by identified gaps and opportunities revealed through assessment of the policy environment in support of sodium reduction (see Annex 4).

The policies and interventions should be tailored to the local context, taking into account all relevant settings. This includes considering not only dietary patterns but also education levels, nutrition and health literacy, communication barriers, local culture, the specific needs of disadvantaged populations and national legislative processes. Prioritization should also take into consideration political feasibility, implementation capacity and public support for different interventions. For LSSS, the safety of implementing the intervention must be assessed.

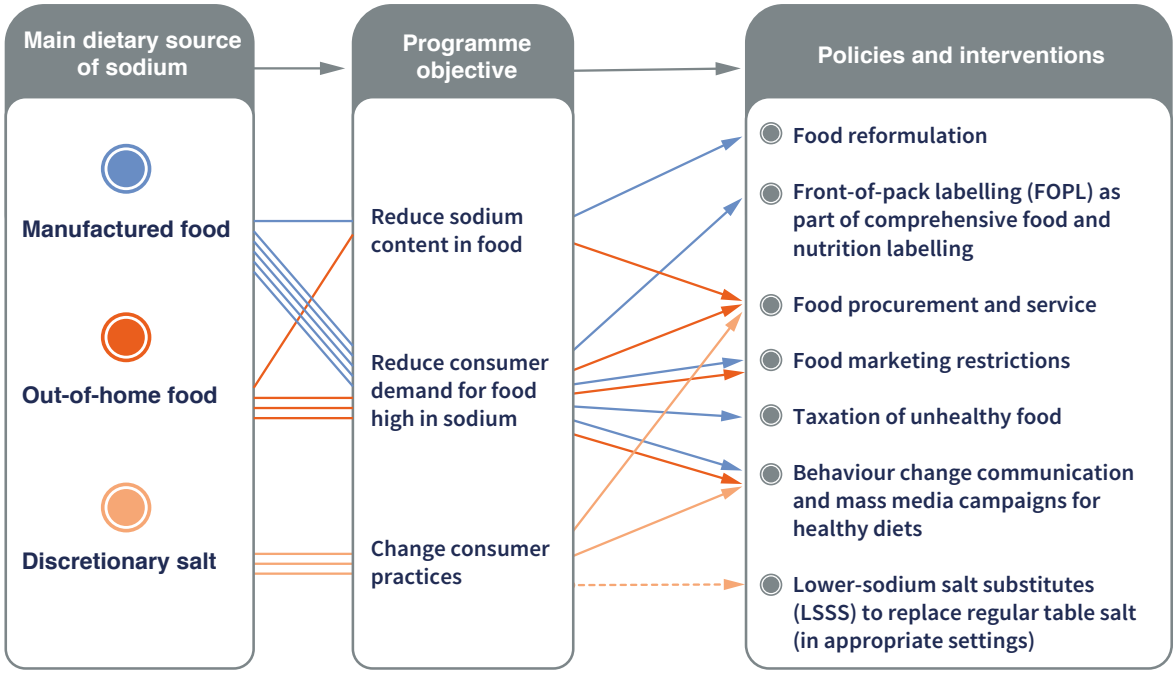
When opportunities at the national level are limited, some policies and interventions can be implemented at a subnational level to drive change and address local needs. The government may choose to demonstrate its commitment to sodium reduction by, for example, initially reducing sodium in food served in government canteens and in other public settings.

A mandatory approach requires compliance with the relevant sodium reduction interventions. Most commonly this is achieved by incorporating sodium reduction interventions into primary legal instruments (e.g. legislation) passed by the parliament or assembly and/or subsidiary legislative instruments (e.g. regulations, administrative orders or mandatory standards) issued by ministers or regulatory agencies, which create legally binding obligations and are enforceable with sanctions applied for non-compliance. Some countries may have other types of government guidance that are considered mandatory, such as ministry directives that must be followed for food served or sold in schools.

Mandatory approaches can contribute to creating a level playing field across the food industry, because all food businesses must comply with them. This promotes fair competition in markets. Under mandatory approaches, companies that want to produce and promote healthier food products will not be disadvantaged relative to those that do not. A comprehensive, appropriately resourced and transparent mechanism to monitor and enforce compliance, along with appropriate sanctions, is essential to deter non-compliance.

Mandatory approaches establish and maintain a healthier food environment. They have a greater potential to effectively reduce sodium intake compared with voluntary or industry self-regulatory approaches, which face several limitations.

Fig. 4. Prioritizing sodium reduction programme objectives, policies and interventions to tackle major sources of dietary sodium[a]



[a] If the main source of sodium in the diet is pre-packaged manufactured food, then the sodium reduction programme objectives should include reducing the sodium content of such food through food reformulation as well as reducing consumer demand through, for example, food and nutrition labelling, food marketing restrictions, taxation of unhealthy food, or behaviour change communication and mass media campaigns. If the main source of sodium in the diet is out-of-home food, then the programme objectives should include reducing the sodium content of such food through food procurement and service as well as decreasing consumer demand through, for example, behaviour change communication, food marketing restrictions, and changes to the service area such as menu labelling, increased price of high-sodium menu options or nudges that encourage healthier consumer choices. If the main source of sodium in the diet is discretionary salt, then behaviour change communication to reduce the use of salt and removal of salt-shakers in food service are important. In appropriate settings, the use of LSSS may further contribute to reduced sodium intake from discretionary salt.

- Industry-led self-regulation lacks the accountability, enforceability and transparency that government regulation provides. Without regulatory frameworks, commercial actors are not legally obliged to reduce sodium to protect public health, leading to insufficient action on sodium reduction.
- Self-regulation can lead to uneven progress across the industry, with some companies taking meaningful steps while others may not, creating a patchwork of sodium reduction efforts that fails to protect public health.
- Relying on the food industry to self-regulate can erode public trust. Consumers may be sceptical of industry claims about sodium reduction, especially if the claims are not independently verified by regulatory bodies.
- Self-regulation can result in multiple, inconsistent standards for sodium reduction when different companies or associations create their own rules, with associated messaging and claims, making it difficult for consumers to make informed choices. Government regulations can create mandatory standards and rules that ensure all products must meet the same health and nutrition criteria.

Government-led mandatory approaches can address systemic issues and create a healthier food environment for all. Over time, countries should work towards implementing and enforcing multiple mandatory sodium reduction policies for a healthier food supply and healthier food environments. See Box 5 for an example of a country that has done so.

Box 5. Example of comprehensive programme with multiple mandatory policies and interventions

Argentina has a score of 4 on the Sodium Country Score Card (see Annex 1) and has mandatory policies for reformulation, FOPL, marketing restrictions, and food served and sold in schools.

In 2013, the congress adopted a law on the promotion of a reduction of sodium consumption in the population *(61)*. The law sets mandatory limits on the sodium content of a range of food categories and introduces other measures including a maximum amount of 500 mg of sodium in salt sachets, health warning messages in food advertising, and lower-sodium alternatives in food establishments. The mandatory limits on the sodium content of food categories have subsequently been revised periodically *(62-65)*.

The congress adopted a law on the promotion of healthy diets in 2021 *(66)* and its regulation decree in 2022 *(67)*. These set the criteria for mandatory front-of-pack warning labels based on sodium, added sugar, total fat, saturated fatty acid, sweeteners and caffeine content, using a two-phased approach with gradually stricter thresholds. In the first phase, warning labels are required for food containing ≥ 5 mg sodium per kcal, or ≥ 600 mg sodium per 100 g in solid food and ≥ 40 mg sodium per 100 mL in non-alcoholic beverages. In the second phase, warning labels are required for food containing ≥ 1 mg sodium per kcal, or ≥ 300 mg sodium per 100 g in solid food, with the threshold remaining the same as phase one for non-alcoholic beverages. The duration of phase one is 9 months and of phase two 18 months, with an additional 6 months provided for small- and medium-sized enterprises to adapt and comply. The law also provides for prohibitions or restrictions related to marketing and prohibits the offer or sale in schools of food bearing warning labels. Initial studies have found that parents understand the labelling and have changed their purchasing behaviour or intentions *(68, 69)*.

Argentina has also implemented various behaviour change communication and media campaigns to reduce consumption of discretionary salt *(70, 71)*.

Mandate nutrient declaration and develop nutrition criteria as important tools for sodium reduction policies

Mandatory declaration of sodium content on all pre-packaged food and government-led nutrition criteria for identifying high- and lower-sodium food are fundamental and important tools for developing effective sodium reduction policies and interventions.

Nutrient declaration

A nutrient declaration provides "a standardized statement or listing of the nutrient content of a food" *(28)*. This information is usually placed on the back or side of pre-packaged food. The nutrient declaration is fundamental for implementing, monitoring and enforcing policies that are based around sodium content thresholds. Countries are advised to adopt regulations in line with the Codex Alimentarius *Guidelines on nutrition labelling* to ensure consistency in listing of nutrients. The Codex Alimentarius requires that nutrient declarations include the sodium content of food *(28)*.

Selected technical resources

Technical resources on nutrient declarations include:

- Codex Alimentarius Guidelines on nutrition labelling *(28)*

Nutrition criteria

Nutrition criteria are a set of standards or rules that determine which food products are to be regulated. For example, they may specify food that cannot be served or sold in schools. Nutrition criteria may include nutrient- or food-based criteria and/or other criteria related to preparation methods or service modalities, depending on the policy's purpose.

Nutrient-based criteria

Nutrient-based criteria are based on nutrient content thresholds for all food or for specific food categories – for example, a maximum permissible amount of sodium per 100 g of food.

A nutrient profile model (NPM) is a set of thresholds for specific nutrients of concern, across one or more food categories – for example, maximum permissible amounts of sodium, saturated fat and total sugars per 100 g of food.

The same thresholds can be used across multiple policies. For example, if a food carries a front-of-pack warning label for high sodium content it could automatically be prohibited from being sold or served in public settings, such as schools or hospitals, and from being marketed to children.

Sometimes, however, it may be necessary to have different thresholds for different policies. For example, a sodium content threshold that is used in a FOPL policy may not be appropriate for use in a food service policy, where multiple thresholds may be needed to differentiate, for example, food that can be served frequently, sometimes or not at all.

Different resources and approaches are available to adapt and set sodium content thresholds for different policy applications (Box 6). These should be validated to ensure consistency between the thresholds and relevant national food-based dietary guidelines, using, for example, a national food composition table (see 'Levels of sodium in the food supply' in Annex 4). This alignment is crucial to maintain consumer acceptance and trust.

The use of nutrient-based criteria requires quantitative information on the nutrient content of food. This can be derived from the nutrient declaration, when available, or estimated from detailed recipes and information about the nutrient content of their ingredients (usually from food composition tables).

Food-based criteria

Food-based criteria are based on defined food categories or items that are typically excessive in sodium or other nutrients or ingredients of concern. Food-based criteria are commonly used to prohibit or limit sales or service of certain food in public settings, or to identify food subject to taxation (see Box 11 for an example). Food typically high in sodium includes soy sauce, fish sauce and similar high-sodium condiments; bouillon cubes; salty savoury snacks; cheese; processed meats; and soups. National food-based dietary guidelines are a good starting point for developing food-based criteria.

Other nutrition-related criteria

Other nutrition-related criteria for the preparation, marketing or service of food give further instruction on how food should be prepared or offered for sale to promote healthy diets. Examples include criteria related to portion sizes (e.g. limits on the size of salt sachets – see Box 5) or to food service (e.g. removal of salt-shakers from tables and self-service areas – see Box 9).

Selected technical resources

Technical resources on the setting of sodium content thresholds include:

- WHO regional NPMs:
  - Pan American Health Organization nutrient profile model *(72)*
  - WHO Regional Office for Europe nutrient profile model, second edition *(76)*
  - Nutrient profile model for the WHO African Region: a tool for implementing WHO recommendations on the marketing of foods and non-alcoholic beverages to children *(74)*
  - Nutrient profile model for the marketing of food and non-alcoholic beverages to children in the WHO Eastern Mediterranean Region *(77)*
  - WHO nutrient profile model for South-East Asia Region *(75)*
  - WHO nutrient profile model for the Western Pacific Region: a tool to protect children from food marketing *(78)*
- WHO global sodium benchmarks for different food categories, second edition *(25)*
- WHO information brief on food profiling *(73)*
- Codex Alimentarius Guidelines for use of nutrition and health claims *(29)*

Box 6. Resources and approaches to setting sodium content thresholds for sodium reduction policies and interventions

Sodium content thresholds can be *uniform* across all food categories or be food *category-based* with thresholds that vary for different food categories.

One well-known example of *uniform* content thresholds is the Pan American Health Organization (PAHO) regional NPM, which was developed to define food excessive in critical nutrients for use in various healthy food environment policies and includes a limit of less than 1 mg sodium/kcal in processed and ultra-processed food *(72)*. PAHO has also suggested that countries consider setting absolute ceiling thresholds of 300 mg sodium per 100 g in processed and ultra-processed products and 40 mg sodium per 100 ml in processed and ultra-processed beverages that provide no energy, to be applied in addition to the threshold of 1 mg sodium per 1 kcal *(79)*.

The Codex Alimentarius also provides uniform thresholds for nutrient content claims related to low sodium. Food containing not more than 120 mg sodium per 100 g can be claimed to be low in sodium, not more than 40 mg sodium per 100 g to be very low in sodium and not more than 5 mg sodium per 100 g to be free from sodium *(29)*.

WHO is currently developing a food classification information brief that will combine *uniform* content thresholds for high sodium and other nutrients of concerns alongside regulatory parameters for ultra-processed food products *(73)*. Application of uniform thresholds reduces risk of misclassification and can promote dietary shifts from unhealthy to healthier food groups.

Food category-based thresholds allow more differentiation in identifying high-sodium food, although challenges may arise in determining the category to which a food product should be allocated. This is the approach taken in the WHO regional NPMs – in the African *(74)*, South-East Asia *(75)*, European *(76),* Eastern Mediterranean *(77)* and Western Pacific *(78)* regions – which were developed to support marketing restrictions *(32)* and have later also been used to formulate criteria for food service in sports settings *(80)*. These NPMs cover 18 food categories frequently marketed to children and/or commonly consumed, aim to align with national food-based dietary guidelines and, in some cases, have been adjusted to align with WHO dietary guidelines *(74-78, 81)*.

Content thresholds for reformulation are typically *food category-based*, where specific sodium content thresholds are often set for a larger set of food categories and subcategories that allow further differentiation for different food products. For example, the WHO global sodium benchmarks include maximum sodium content thresholds for a total of 70 food subcategories, which are derived from the strictest limit or target set in countries to date and reflect achievable sodium content level *(25)*.

The range of these *uniform* or *food category-based* high or low sodium content thresholds are illustrated in Fig. A7.1 in Annex 7. The illustration shows variation in sodium content thresholds across the different approaches, which are used for different purposes. For savoury snacks for example, most of the food category-based WHO regional NPM sodium content thresholds meet the Codex Alimentarius conditions for low or even very low sodium claims, whereas the additional uniform PAHO sodium content threshold for foods is more than double the Codex thresholds, and all but one of the WHO global sodium benchmarks are higher than the additional PAHO sodium content threshold. For ready-made and convenience foods and composite dishes, on the other hand, the additional PAHO sodium content threshold is stricter than the food category-based WHO regional NPM sodium content thresholds, and only a couple of the WHO global sodium benchmarks meet the additional PAHO threshold. Overall, only 4 out of 70 WHO global sodium benchmarks meet the Codex Alimentarius conditions for low sodium claims. As these benchmarks reflect limits that are feasible from a food technology point of view, some food subcategories may still be considered high in sodium and need to be consumed in moderation. This highlights why reformulation policies should be implemented as part of a comprehensive sodium reduction programme that includes further policy interventions, such as FOPL or taxation, to alert consumers to or disincentivize purchase of high-sodium food.

Develop and implement sodium reduction policies and interventions

This section outlines each of the interventions in Table 1, explaining what it entails, why it matters, its impact on consumers and the food environment, and important considerations for implementation. It summarizes key aspects of WHO guidance related to each intervention and refers to more detailed resources for further information.

Food reformulation

What it is

Food reformulation policies set scope and criteria for maximum limits or targets for the sodium content of pre-packaged food.

Why it matters

In many high-income countries, and increasingly in low- and middle-income countries, a substantial portion of dietary sodium comes from food products such as bread, cereal, processed meats, soups, savoury snacks, sauces and other high-sodium condiments, and some dairy products, such as cheese *(2)*. Most of these food products are produced by a relatively small number of companies. There is considerable variation in sodium content among similar products, demonstrating that reducing sodium content is both technically feasible and accepted by consumers. Additionally, the sodium content of the same product often varies between markets – sodium levels are typically higher in low- and middle-income countries without policies or strong food control systems compared with those in high-income countries. Producing products for markets in low- and middle-income countries that have a higher sodium content than those for markets in high-income countries is unethical.

An effective way to reduce population-level sodium intake is to lower the sodium content of the items that significantly contribute to overall sodium intake through high levels of sodium or high levels of consumption *(82)*. Food reformulation policies with mandatory sodium limits ensure a level playing field for the food industry to reduce the sodium content of pre-packaged food. This approach promotes a marketplace that prefers lower-sodium options irrespective of where people shop or how much they understand (or have access to) information on labels. It requires no action by consumers and places the responsibility for reducing sodium content on the food industry.

Food reformulation policies encourage product innovation and development of recipes lower in sodium. The amount of sodium in many pre-packaged food products can be reduced without noticeably altering the taste of the product. For example, the amount of sodium in bread can be reduced by 20–30% *(83, 84)*. Similar reductions have been achieved in processed meats, dairy products, sauces and ready-to-eat meals with no discernible difference for consumers *(85-87)*.

By implementing food reformulation policies to reduce sodium content of food, governments take steps towards meeting their duty to facilitate the realization of the rights to food and health (see Box 2).

WHO guidance and other technical resources

WHO global sodium benchmarks establish maximum limits for sodium levels in 70 food subcategories, based on the lowest maximum limit value for each subcategory from existing national or regional limits or targets *(25)*.

Other technical resources for reducing sodium content in food through reformulation policies include:

- Updated PAHO regional sodium targets: a tool to tackle the burden of diet-related noncommunicable diseases *(88)*
- Detailed technical report of data used in the development of the updated targets: updated PAHO regional sodium reduction targets (2021–2025) *(89)*
- WHO South-East Asia Region sodium benchmarks for packaged foods *(90)*

Approach

The most comprehensive mandatory approach is to set maximum permissible limits for sodium (as defined by WHO global benchmarks or regional or national targets) that cover food categories that are major sources of dietary sodium.

Establish reformulation as a policy priority and define clear objectives

Use data (see 'Invest in data for policy design and monitoring') to generate the rationale for reformulation. The objectives should be to reduce sodium content, reduce the amount of salt added to food and build consumer taste preferences for less salty food.

Determine the scope and criteria of food reformulation

Use data on sources of sodium in the diet and levels of sodium in the food supply (see Annex 4) to prioritize food categories for sodium reduction. Assess how sodium levels in the main food categories contributing to sodium intake compare with the WHO global sodium benchmarks *(25)* and regional targets *(88, 90).*

When feasible, implement the full suite of sodium benchmarks across food categories, adapting them to the local context as appropriate. Consider a phased approach, gradually expanding the number of categories covered and/or progressively setting stricter sodium content thresholds over time. A phased approach can be outlined in the initial policy, with a timeline for gradually stricter thresholds, or be introduced by subsequent policy amendments. This incremental approach will likely be the most acceptable and feasible option compared with an approach that applies strict content thresholds to all categories simultaneously, which would be more challenging for food manufacturers to implement and for governments to monitor, and therefore risks opposition.

Country examples

See Box 7 for examples of countries that have implemented food reformulation policies to reduce sodium content in food. More examples of food reformulation policies can be found in GIFNA *(91)*.

Box 7. Examples of sodium reduction limits or targets and food reformulation policies

In 2021, the Pan American Health Organization launched its updated regional sodium reduction targets as a tool for governments in the **WHO Region of the Americas** to boost progress towards reducing the burden of NCDs *(88)*. The updated targets were developed in response to food supply monitoring data that showed many products across various food categories were already meeting the original (2015) targets. The updated targets were informed by regional data on sodium intake and sources of sodium and were established through an iterative process based on previous policy guidance. The updated targets specify sodium limits as milligrams of sodium per 100 g of food and as milligrams of sodium per kilocalorie for 18 food categories, translating into a 15% reduction in sodium content by 2022 and a 30% reduction by 2025. The feasibility of the targets was assessed by comparing them with national targets from the region and from the United Kingdom of Great Britain and Northern Ireland (United Kingdom), and by evaluating the distribution of sodium levels within each food subcategory. Adjustments were made to ensure the targets were practicable.

In 2020, **Colombia** passed a resolution that specified mandatory maximum permissible limits on sodium content for a range of food products *(92)*, which was amended in 2023 with regards to some food categories, sodium content limits and compliance verification *(93)*. The initial resolution applied a phased approach with a set of limits to be achieved within 24 months (by 2022) and a second more stringent set of limits to be achieved within 48 months (by 2024). In total, there are 58 limits set for priority processed food products such as breads and other bakery products, breakfast cereals, savoury snacks, cheese, ready-made and convenience food, butter, processed meats and fish, and sauces. Colombia's limit of 279 mg of sodium per 100 g of lightly salted peanuts is included in the WHO global sodium benchmarks. Food producers, marketers or importers need to declare that their products comply with the law and that verification has been done according to Colombian technical norms. They may voluntarily obtain a certificate issued by an authorized accreditation body. The mandatory policy has led to significant reductions in sodium content from 2015 to 2024, particularly in baked goods where median sodium content declined from 608 mg to 545 mg per 100 g and in snacks where it declined from 725 mg to 412 mg per 100 g *(94)*.

In 2014, **Kiribati** enacted mandatory limits on the salt content of breads, processed meats and fish, and instant noodles, as part of its food regulations and standards *(95)*. Kiribati's limit of 540 mg of sodium per 100 g of canned corned beef and canned luncheon meat is included in the WHO global sodium benchmarks.

In 2013, the Department of Health in **South Africa** issued regulations stipulating mandatory maximum permissible limits on sodium content in breads, breakfast cereals, fats and butter spreads, savoury snacks, processed meats, and ready-made and convenience food and composite dishes *(96)*. The limits were adjusted in 2016 *(97)*, the year the regulation took effect. Two of the limits are included in the WHO global sodium benchmarks: 800 mg of sodium per 100 g of dry savoury powders with dry instant noodles, and 13 000 mg of sodium per 100 g of bouillon cubes and stock cubes. Studies have reported variable compliance with the limits across different food categories *(98, 99)*, ranging from 2.9% (gravy) to more than 90% in cereal, noodles and stock *(98)*. Challenges identified include limited and decentralized government-led monitoring and enforcement, limited capacity of inspection system, a low level of sanctions, lack of mandatory declaration of sodium content on food labels, and discrepancies between declared and actual sodium content *(98)*.

Front-of-pack labelling (FOPL) as part of comprehensive food and nutrition labelling

What it is

FOPL policies set scope and criteria for providing interpretive information about the healthiness of food, including sodium content, on the front of pre-packaged food, as part of comprehensive food and nutrition labelling policies to list ingredients, declare sodium content, regulate the use of sodium-related claims or provide health-related warning messages about sodium content.[5]

Why it matters

FOPL can contribute to increasing consumer awareness, help consumers make healthier choices and influence purchasing intentions.

Nutrient-specific FOPL displays information on individual nutrients separately. FOPL complements and simplifies the information provided in nutrient declaration panels, making sodium information quick and easy to access, use and understand, which reduces purchase of high-sodium food and increases demand for healthier food, leading to improved diet quality and reduced sodium intake. FOPL can also improve consumer knowledge and attitudes about sodium levels in food, which can reduce purchases of high-sodium food and increase demand for lower-sodium food, leading to reduced sodium intake.

The most effective FOPL systems are interpretive labels, which present simple, often graphic, information on the nutrient content or nutritional quality of products and provide at-a-glance guidance on their relative healthfulness or unhealthfulness. As most consumers spend a few seconds at most examining food labels before deciding whether to purchase food products, interpretive labels must be clear and easily understandable *(100)*. Interpretive systems therefore use symbols, figures, colours and/or cautionary text about the nutrient content of the product (e.g. high in sodium). Different systems are explained in more detail in the following subsections.

FOPL that flags high- or lower-sodium food may also encourage industry to reformulate and produce lower-sodium products, leading to reduced sodium content in the food supply *(101, 102).*

Comprehensive food and nutrition labelling, including sometimes FOPL itself, is used as a tool to define target food in policies on food procurement and service, food marketing restrictions and taxation of unhealthy food. The list of ingredients and nutrient declarations support the implementation, monitoring and enforcement of sodium reduction policies, including regulations on FOPL and the use of nutrition and health claims. Mandatory declaration of the sodium content of food also facilitates monitoring of the levels of sodium in the food supply over time.

By implementing food and nutrition labelling policies, governments take steps towards meeting their duty to facilitate the realization of the rights to food, health and information, including non-misleading information (see Box 2). Interpretive FOPL that makes nutrition information readily accessible and easy to understand can help reduce inequity as people with lower health literacy or vulnerable populations at higher risk of diet-related NCD benefit the most *(100)*.

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[5] Food and nutrition labelling may also be used at the point of food sale or service to make information about sodium quick and easy to access, use and understand. Examples include menu labelling in restaurants, fast food outlets, canteens, food trucks and hawker stalls; labelling provided in food delivery applications or on delivered food; and labels on supermarket shelves and vending machines. Menu labelling is discussed in 'Food procurement and service policies'.

Approach

The most comprehensive mandatory approach is to require the use of interpretive FOPL so that consumers can easily identify food products that exceed the nutrient threshold for sodium (as defined by WHO or national NPMs); require listing of ingredients and mandatory declaration of sodium content on all pre-packaged food; and prevent misleading health and nutrition claims related to sodium.

WHO guidance and other technical resources

A forthcoming WHO guideline on nutrition labelling policies will provide recommendations and implementation considerations on the list of ingredients, nutrient declarations, FOPL, and nutrition and health claims *(26)*.

Other technical resources on food and nutrition labelling include:

- Nutrition labelling: policy brief *(102)*
- Resources on front-of-pack labelling:
  - Front-of-package labeling as a policy tool for the prevention of noncommunicable diseases in the Americas *(79)*
  - Manual to develop and implement front-of-pack nutrition labelling: guidance for countries on the selection and testing of evidence-informed front-of-pack nutrition labelling systems in the WHO European Region *(103)*
  - Guiding principles and framework manual for front-of-pack labelling for promoting healthy diets *(104)*
- Codex Alimentarius standards and guidelines:
  - General standard for the labelling of prepackaged foods *(27)*
  - Guidelines on nutrition labelling *(28)*
  - Guidelines for use of nutrition and health claims *(29)*

Establish FOPL as part of comprehensive food and nutrition labelling as a priority and define clear objectives

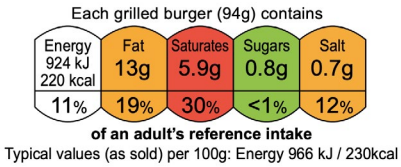
Data (see 'Invest in data for policy design and monitoring') – in particular information on sources of sodium in the diet and consumer or food environment factors that influence consumer choices around sodium intake (see Annex 4) – should be used to generate the rationale for FOPL.

The objectives of labelling within a sodium reduction programme are threefold. Firstly, labelling aims to allow consumers to correctly, quickly and easily identify products that are high or lower in sodium. Secondly, labelling aims to make available information about the sodium content of food to inform the application of other policies that use an NPM in their design. Thirdly, labelling aims to facilitate monitoring of the sodium content of food over time.

Determine the scope and criteria of FOPL

FOPL policies should use a government-led NPM to classify food, including classification based on sodium content, to ensure alignment with national dietary guidelines. Countries need to decide the format, design and content of the FOPL. Table 4 provides examples of FOPL in use in countries. The WHO *Guiding principles and framework manual for front-of-pack labelling for promoting healthy diets* provides a checklist for identifying and adapting existing FOPL systems *(104)*.

Table 4. Examples of FOPL systems

FOPL system	Examples of labels
Negative nutrient-specific FOPL (warning labels): ◉ displays information on individual nutrients separately; ◉ sets thresholds for each nutrient; ◉ allows consumers to quickly and easily identify products that contain excessive amounts of individual nutrients (e.g. that are high in sodium); and ◉ is implemented through mandatory approaches.	 
Nutrient-specific FOPL (traffic light labels): ◉ displays information on individual nutrients separately; ◉ sets thresholds for each nutrient to inform colour coding; and ◉ is implemented through mandatory or voluntary approaches.	
Summary indicators: ◉ combine information on individual nutrient levels to give an overall rating; ◉ use an algorithm with thresholds for the combination of one or more nutrients to assign a score; ◉ may not – depending on the underlying NPM and algorithm – allow consumers to identify products that contain excessive amounts of individual nutrients; and ◉ are implemented through mandatory or voluntary approaches.	 
Endorsement logos: ◉ combine information on individual nutrient levels to give an overall indication of healthfulness; ◉ use an algorithm with thresholds for the combination of one or more nutrients to assess eligibility; ◉ may not – depending on the underlying NPM and algorithm – allow consumers to identify products that contain lower or higher amounts of individual nutrients; ◉ are implemented through voluntary approaches; and ◉ may be interpreted like claims, with potential for misinterpretation.	  

Source: WHO and Pan American Health Organization *(79, 103, 105).*

In the context of a sodium reduction programme, it is important to support consumers in making healthy choices by ensuring that high-sodium food products are clearly labelled. Nutrient-specific systems, including warning labels and traffic light labels, are best suited to informing consumers about specific nutrients, such as sodium. In systems that combine information on individual nutrient levels, such as summary indicators, it is essential that the underlying algorithm includes mechanisms to prevent high-sodium products from being scored favourably. High-sodium products should not carry an endorsement logo.

Adopt and enforce Codex Alimentarius standards and guidelines on food and nutrition labelling and nutrition and health claims

The Codex Alimentarius provides guidance on food and nutrition labelling *(106)*. The Codex *Alimentarius General standard for the labelling of prepackaged foods (27)* indicates that a list of ingredients shall appear on the label of pre-packaged food. The Codex *Alimentarius Guidelines on nutrition labelling* recommend nutrient declarations, including for sodium, be included on all pre-packaged food *(28)*. The guidelines also cover supplementary nutrition information provided on food labels and provide principles for FOPL. The Codex Alimentarius *Guidelines for use of nutrition and health claims* provide nutrient reference values for permitting content claims for a range of nutrients, including claims that a food is free from sodium, very low in sodium or low in sodium *(29)*.

Country examples

See Box 8 for examples of countries that have implemented FOPL or sodium-related health warnings as part of comprehensive food and nutrition labelling policies. Other examples of food and nutrition labelling policies can be found in GIFNA *(105)*.

Box 8. Examples of food and nutrition labelling

Chile's Food Composition and Food Advertising Law of 2013 *(107)* and decree of 2016, which modifies food sanitary regulations *(108)*, mandate that pre-packaged food carry a warning label if it exceeds sodium content thresholds (400 mg sodium per 100 g solid food and 100 mg sodium per 100 mL liquid food). Warning labels are also mandated for food that exceeds thresholds for energy density, total sugars and saturated fatty acids. The warning labels underpin additional, coordinated regulations that prohibit products that carry such labels from being marketed to children up to 14 years of age and from being sold at school kiosks. The marketing restrictions also prohibit child-directed marketing tactics, such as using cartoon characters or other animations on packages and in advertisements. A communication campaign was launched to support the regulations and raise awareness of the warning labels.

Based on data on food and beverage purchases from 2844 Chilean households from 1 July 2013 to 25 June 2019, the sodium content of overall purchases declined by 74 mg per person per day, or almost 14%, with the largest reductions from food products bearing high-in-sodium warning labels *(109, 110)*.

In **Sri Lanka**, the Food (Colour Coding for Sugar, Salt and Fat) Regulations 2019 *(111)* legislates mandatory FOPL for manufactured solid and semi-solid processed food based on sugar, salt and fat content, using a multiple traffic light system. Food must display:

- a red logo if it contains more than 1.25 g salt per 100 g food
- an amber logo if it contains 0.25–1.25 g salt per 100 g food
- a green logo if it contains less than 0.25 g salt per 100 g food.

The legislation came into effect from 1 January 2021. Several factors influenced the development and approval of the legislation, including the increasing burden of NCDs in Sri Lanka, the positive international momentum for evidence-based policies, a dedicated Food Control Administration Unit in the Ministry of Health that coordinates and implements legislation, and the Food Advisory Committee – a multistakeholder committee that advises the Minister of Health on formulation of regulations under the provisions of the Food Act. Ongoing studies of this FOPL system when it was limited solely to sugar between 2016 and 2019 find that consumers are aware of the FOPL and change purchasing *(112).*

In 1991, **Finland** adopted mandatory "heavily salted" health warnings on pre-packaged and certain unpackaged food if it exceeded sodium content thresholds for four food categories (butter, deli food and raw sausages, bread, and breakfast cereals), which were in force until 2005 *(113).* Regulation adopted in 2007 reintroduced the mandatory labelling, using stricter thresholds, for three of the categories (deli food and raw sausages, bread, and breakfast cereals) and introduced thresholds for six additional categories (cheese, meat, fish, crispbread and sourdough bread, soups and broths, and other semi-finished and ready-made food) *(114).* The regulation was further adjusted in 2014, when some thresholds were lowered and others slightly increased, one category was removed (soup and broth) and one was added (snacks) *(115).* As result of the policy, sodium content in the major dietary sources was reduced, as the food industry reformulated their products to ensure sodium content below the thresholds and thereby avoid the warning labels. For example, the average salt content in breads was reduced by approximately 20% and in sausages by approximately 10% *(116).* This, along with other interventions such as information campaigns, has contributed to a decrease in sodium intake of about 15% in men and about 17% in women between 1992 and 2002 *(117)*.

Food procurement and service

What it is

Food procurement and service policies set scope and criteria for food, including high-sodium food, served or sold in public settings and/or procured by governments for food programmes. These policies may also include rules related to sale or service of food, including availability of salt-shakers, pricing strategies, presentation of food choices, marketing practices, and menu labelling or health messages in food service areas.

Why it matters

Every day, a wide range of food, including meals and snacks, is served and sold in public settings – such as government offices, schools, childcare centres, nursing homes, hospitals, health centres, community centres, seniors centres, military bases and prisons – and in shops or stalls surrounding these settings. Additionally, many governments purchase food for government-funded programmes, including school meal programmes and social protection initiatives. These settings and programmes reach a significant portion of the population, including vulnerable groups such as children and elderly people, and the food served or sold in these settings should contribute to improving dietary intake and fostering healthier eating habits. Governments can demonstrate their commitment to supporting healthy eating by only purchasing and serving healthy food in public food programmes.

Healthy public food procurement and service policies reduce the consumption of high-sodium out-of-home food, leading to improved diet quality and reduced sodium intake. Such policies can further drive healthier consumer choices by modifying the choice architecture to nudge consumers towards healthier options, such as removing salt-shakers and high-sodium condiments from tables; providing at-a-glance interpretive nutrition information, such as implementing menu labelling; and adjusting prices, such as lowering the cost of healthier food and increasing the cost of less healthy options.

Food procurement and service policies based on an NPM encourage the development of recipes lower in sodium, food product reformulation and innovation. If mandatory, they create a level playing field for all food services in the setting. They may also reduce the cost of lower-sodium products through bulk purchasing for public food service.

Although these policies are typically applied in public settings where governments are responsible for providing food, they can also be applied in public settings where private food services operate, such as in kiosks in schools or universities and in meetings and events on government property.

Consumption of food away from home, or of prepared food ordered to one's home, is widespread. Similar policies can be introduced for food outlets and restaurants, for example in sports arenas, to ensure that out-of-home food is healthier and to create food environments that facilitate healthier choices.

Healthy public food procurement and service policies often build on and complement policies and rules on food safety in food service. They can also be leveraged to include provisions that support sustainable food systems by, for example, reducing food loss and waste or procuring food from organic and/or local farms.

By implementing food procurement and service policies, governments take steps towards meeting their duty to fulfil – through facilitation or provision – the realization of the rights to food and health (see Box 2). In schools and settings where children gather, countries have a particular responsibility to ensure children's rights to adequate nutritious food as stipulated in the Convention on the Rights of the Child, ratified by virtually all countries in the world. School food and nutrition policies have been found to reduce inequities among students, although the effect may differ across socioeconomic group and may also have unintended consequences *(118).*

WHO guidance and other technical resources

The WHO guideline on school food and nutrition policies provides a good-practice statement, recommendations and implementation considerations on policies that influence or change the school food environment, including standards for food served or sold in schools and the use of nudges to induce healthier choices *(30).*

The WHO *Action framework for developing and implementing public food procurement and service policies for a healthy diet* outlines a stepwise approach to preparing for, developing, implementing, and monitoring, enforcing and evaluating a healthy public food procurement and service policy *(31).*

Other technical resources on public food procurement and service include:

- Healthier food and healthier food environments at sports events: an action guide for sports event organizers *(80)*
- How together we can make the world's most healthy and sustainable public food procurement *(119)*

Approach

The most comprehensive mandatory approach is to ban the procurement, use, sale and supply of any food that does not meet nutrition criteria related to sodium (as defined by WHO or local NPMs, food-based criteria and/or other nutrition criteria) across all public settings at national, state and local/province level.

Establish healthy food procurement and service policies as a policy priority and define clear objectives

Use data (see 'Invest in data for policy design and monitoring') – in particular information on sources of sodium in the diet and consumer or food environment factors that influence consumer choices around sodium intake (see Annex 4) – to generate the rationale for food procurement and service policies. The objectives should be to reduce the amount of unhealthy food, including high-sodium food, that is served or sold in public settings, and to implement complementary action that enables healthier choices around sodium.

Determine the scope and criteria of healthy food procurement and service policies

To determine the scope and criteria of a policy, assess the food procurement and service landscape and consider relevant indicators *(31).* Food procurement and service policies can apply nutrient-based criteria (based on a government-led NPM); food-based criteria to classify food to be limited, prohibited or encouraged; and other criteria related to preparation methods or service modalities – for example, prohibiting salt-shakers or high-sodium condiments on tables *(31).*

The scope of a policy can be defined in terms of:

- **reach**, including whether the policy be implemented at the national, subnational or local/city level;
- **institutions and settings**, including which government institutions and public settings or events will be required to comply with the policy, and whether the policy will extend to the immediate surroundings of the public setting;
- f**ood service venues and programmes**, including to which food service venues and programmes within each government institution or setting the policy will apply;
- **food suppliers, caterers and vendors**, including which types of suppliers, caterers and vendors will be required to comply with the policy and what qualifications or accreditations they will need to hold;
- **types of food**, including which types of food will be included in the policy (e.g. ingredients, pre-packaged food, meals, snacks); and
- **nutrition criteria**, including what types of nutrition criteria will be set, what stage in the procurement process (purchase, provision, distribution, preparation, service or sale) they will be set at, and what percentage of the food offered will need to comply with the criteria and by when.

A phased approach, starting with a limited number of settings and/or within a smaller area or jurisdiction – for example government canteens and public schools – can be an option. This approach allows ideas to be tested, support and publicity to be built, effectiveness to be demonstrated and evidence for further implementation to be generated.

Implement complementary actions to support healthier choices around sodium in food service

Complementary actions that are not directly related to food procurement or service can support and facilitate sodium reduction. Examples include food marketing restrictions in public settings, menu labelling, changes to the choice architecture in food service areas, and subsidies and pricing policies *(31)*. Removal of salt-shakers and high-sodium condiments from tables and service areas is a well-known intervention in sodium reduction programmes. Menu labelling should provide consumers with interpretive information about sodium content, based on a government-led NPM, that enables consumers to select lower-sodium options. Where meals or snacks are sold, pricing policies can support healthier choices. The WHO action guide for sports event organizers illustrates how intervention to improve the food offer can b e combined with nudges, pricing, marketing restrictions and communication activities to create healthier food and healthier food environments at sports events *(80)*.

Develop policies that cover out-of-home food in restaurants and other food outlets

Out-of-home food in restaurants and other food outlets may not be covered by food procurement and service policies unless the venues are situated in schools, universities, hospitals or other public settings. Countries have, however, introduced mandatory and voluntary policies or interventions to reduce sodium consumption in these settings, through removal of salt-shakers or implementing menu labelling or healthy restaurant award schemes. Healthier recipes for meals and snacks common in fast food outlets are available *(80).*

Country examples

See Box 9 for examples of countries that have implemented food procurement and service policies that include action to reduce consumption of high-sodium food. Other examples of healthy public food procurement and service policies can be found in GIFNA *(120).*

Box 9. Examples of food procurement and service policies

In 2020, the **Mongolia** Ministry of Health passed a mandatory order listing food products prohibited for sale in the school environment *(121)* as provisioned in the Law on Food Production and Services for secondary schools. The order applies to food sold on, and within 150 m of, school premises. It prohibits the sale of food containing more than 450 mg of sodium, or 1.1 g of salt, per 100 g of food, and of high-sodium food such as instant noodles.

In 2020, **Ukraine** passed sanitary regulations for secondary schools *(122)* that include mandatory limits on salt in school meals and food for sale. In school meals, the regulations stipulate that salt content should be reduced so that daily salt intake does not exceed 4 g for students in grades 1–4 and 5 g for students in grades 5–11. The regulations also stipulate that all salt should be iodized and only used in cooking. For food for sale, the regulations prohibit salt and salty sauces on sandwiches, limit the amount of salt to be used in bread and bakery preparation, and prohibit dried vegetables, fruits and berries, and nuts and seeds, with added salt. The regulations set sodium limits for salads (120 mg of sodium per 100 g), bread (450 mg of sodium per 100 g), other cereal products and processed potatoes or vegetables (120 mg of sodium per 100 g), and fruit and vegetable juices and plant-based drinks (120 mg of sodium per 100 mL).

In 2021, Ukraine passed a resolution on norms and procedures for organizing catering in educational institutions and children's health and recreation facilities. This included school food standards *(123).* The school food standards include provisions to gradually reduce the amount of salt added to meals for students at breakfast, lunch or dinner down to 0.7 g for children aged 1–4 years, 1 g for children aged 4–11 years, and 1.5 g for students aged 11–18 years. Like in secondary schools, only iodized salt can be used, and it can only be used in cooking. In addition, sodium limits are set for fruit and vegetable juices (120 mg of sodium per 100 mL), bread (450 mg of sodium per 100 g) and other bakery products (300 mg of sodium per 100 g).

In 2019, **Saudi Arabia** published a guide detailing mandatory terms and specifications for healthy food in government food procurement contracts and catering contracts for all settings and programmes *(124)*. The terms set requirements to enable selection of healthier raw food materials and preparation of healthier meals, including requirements related to sodium. These include requirements to use lower-sodium food and use lemon, garlic, onion powder, spices and herbs for flavour to reduce the use of salt during cooking. The guide also sets sodium limits for yogurt and yogurt drinks (1% salt), processed cheese (2 g of salt (equivalent to 800 mg of sodium) per 100 g), processed spreadable cheese (1.8 g of salt (equivalent to 720 mg of sodium) per 100 g), breads (0.5% salt in dry matter) and samoli bread (1% salt in dry matter).

The **Bolivarian Republic of Venezuela** implemented a prohibition on placing salt-shakers on tables and in service areas in food establishments in April 2020. It also required that posters were displayed to warn about the dangers of high sodium intake. Salt-shakers should only be made available when requested by customers. The prohibition was part of a broader public health initiative aimed at addressing high rates of hypertension and CVD. The objective was to encourage controlled use of salt and promote healthier dietary habits among the population *(125).*

Food marketing restrictions

What it is

Food marketing restriction policies set scope and criteria for restricting food marketing to protect children from its harmful impact on diet, including consumption of high-sodium food.

Why it matters

Marketing plays a significant role in shaping food preferences, purchase requests and consumption patterns *(126-128)*. Although commercial marketing is not new, marketing practices have become increasingly sophisticated, diverse and powerful. Food companies purposefully employ marketing strategies that appeal directly to children and use marketing to promote purchase of their products, many of which are inextricably linked to the brand name and logo. Their marketing strategies often seek to lay the foundations for lifelong brand loyalty among children, thereby capturing future consumption *(129).* Today, children are exposed to more marketing – across multiple channels, including digital media platforms – than ever before.

The effect of marketing is produced by a combination of exposure to marketing and the power of marketing. Exposure to marketing includes both the reach and frequency of a marketing message. Reach refers to the percentage of targeted people who are exposed to the message within a given time frame, and frequency refers to the average number of times an individual is exposed to the message. The power of marketing refers to its ability to increase appeal and drive purchase and consumption, which depends on the content of the message and the creative strategies used. Creative strategies include graphics and visual design, such as cartoons and brand equity characters; humour, fun and fantasy; movie and sports celebrities; and competitions, giveaways and entertainment events *(130).*

Food marketing restriction policies reduce exposure to and the power of marketing of high-sodium food, which reduces consumer demand for and purchases of such food, leading to improved diet quality and reduced sodium intake.

By implementing marketing restrictions based on a government-led NPM, the food industry can be incentivized to reformulate its products, develop recipes lower in sodium and innovate food production.

Furthermore, by implementing food marketing restriction policies, governments take steps towards meeting their duty to protect their citizens towards the realization of the rights to food, health and non-misleading information (see Box 2). Restricting food marketing to children supports the realization of children's rights, ratified by virtually all countries in the world. Protecting children from aggressive marketing practices and manipulation, which exploit their vulnerabilities, is particularly important, as is protecting their personal data and ensuring non-interference in their right to privacy *(131, 132).*

WHO guidance and other technical resources

The WHO guideline on policies to protect children from the harmful impact of food marketing provides recommendations and implementation considerations on mandatory policies covering all media and reducing the power of marketing to protect children up to 18 years of age *(32).*

Other technical resources on food marketing restriction policies include:

- Taking action to protect children from the harmful impact of food marketing: a child rights-based approach *(131)*
- Regional action framework on protecting children from the harmful impact of food marketing in the Western Pacific *(133)*

Approach

The most comprehensive mandatory approach is to ban the marketing of any food products that exceed the nutrient threshold for sodium (as defined by WHO or national NPMs) to all children aged up to 18 years in all media, channels and settings and prohibit the use of child-appealing persuasive techniques.

Establish food marketing restrictions as a policy priority and define clear objectives

Use data (see 'Invest in data for policy design and monitoring') – in particular information on sources of sodium in the diet and consumer or food environment factors that influence consumer choices around sodium intake (see Annex 4) – to generate the rationale for implementing marketing restrictions. The objectives of such policies should be to reduce children's exposure to the marketing of unhealthy foods, including those high in sodium, and to reduce the persuasiveness of such marketing activities *(32).*

Determine the scope and criteria of food marketing restriction policies

WHO recommends that food marketing restriction policies cover children of all ages and use a government-led NPM to identify foods subject to marketing restrictions (see 'Nutrition criteria').

Such policies should aim to reduce both the exposure to and the power of marketing of unhealthy food *(32).* Policies should be comprehensive and cover a range of media, channels and settings.

- **Settings where children gather** include schools, childcare, other educational establishments and youth clubs. These settings should be free from all forms of marketing of unhealthy food, and nothing that occurs in them should prejudice a child's well-being.
- **Broadcast media** include television services and streaming platforms, radio, cinema, podcasts and music streaming services. Restrictions on these media may include, for example, restricting unhealthy food advertising on all broadcast media between 06:00 and 00:00 *(134, 135)*.
- **Online media** include digital technologies used for creating, distributing and accessing text, audio, video and images via internet-enabled devices. These include mobile phone applications, social media platforms and video games. Restrictions on these media may include, for example, banning all marketing of unhealthy food across online media platforms *(136, 137).*
- **Outdoor advertising** includes all promotional content displayed outside the home, such as billboards, posters, banners and advertisements on transportation (e.g. on buses). Restrictions on such advertising may include, for example, banning all marketing of unhealthy food through outdoor media.

- **Marketing in retail settings** includes in-store marketing techniques such as point-of-sale and end-of-aisle advertising. Restrictions in retail settings may include, for example, banning placement-based and price-based promotion of unhealthy food.
- **Product packaging** includes on-pack designs. These often use bright colours, childish lettering, cartoon characters, celebrity photos, sportspersons, and references to fun and play. Restrictions on product packaging may include, for example, banning all on-pack marketing directed to children on unhealthy food *(137).*
- **Sports, arts and cultural events sponsorship** includes endorsements and advertising through sporting events, teams and athletes, and cultural events. Restrictions on such sponsorship may include, for example, banning all unhealthy food sponsorship of elite and professional sports, community sports, and arts and cultural events involving children as participants.

Marketing restriction policies should also limit the use of child-appealing persuasive techniques or animation techniques, such as promotional characters, branding, emotional appeals, games, engagement techniques, interactive or downloadable content, celebrity endorsements, music, vivid colours, amusing voices, brand equity characters, celebrities, cartoons, competitions, gifts or prizes *(32, 131).*

Country examples

See Box 10 for examples of countries that have implemented food marketing restriction policies. Other examples of marketing restriction policies and interventions can be found in GIFNA.

Box 10. Examples of food marketing restriction policies

In 2007, the **United Kingdom** became the first country in the WHO European Region to enact mandatory policies to restrict marketing of food high in fats, sugars or salt during or adjacent to television and radio programmes directed to or appealing to children aged under 16 years *(138, 139)*. Food is classified as high in fats, sugars or salt based on an NPM that has an algorithm that includes both "negative" nutrients – including sodium – and "positive" nutrients. In 2011, the broadcasting code set out that children aged under 18 years should be protected and prohibited product placement of such food in television programmes *(140).* In 2022, the government enacted further mandatory restrictions that ban the advertisement of such food on television and in on-demand programme services between 05:30 and 21:00, and prohibit the paid placement of advertisements of such food on the internet at all times *(141).*

Following the law on the promotion of healthy diets of 2021 *(66)* and its regulation on mandatory front-of-pack warning labels, including for sodium, of 2022 *(67)*, **Argentina** set out specific rules that prohibit advertising and promotion of and sponsorship by food that bears at least one warning label *(142)*. Advertisement of such food is prohibited if it is aimed at or appealing to children and adolescents. In other cases, it is subject to rules, including that it clearly displays all warning labels; does not include cartoons, animations or other children's characters; and does not involve giveaways or donations.

Taxation of unhealthy food

What it is

Taxation of unhealthy food policies set scope and criteria for taxes on unhealthy food, including high-sodium food.

Why it matters

Food prices, which – along with disposable income – determine food affordability, play a role in shaping consumer food purchases and consumption. Increasing the relative price of unhealthy food, including high-sodium food, through taxation may therefore reduce consumer purchases and consumption of these harmful products, leading to improved diet quality and reduced sodium intake.

Food taxation policies that are based on a government-led NPM can incentivize the food industry to reformulate its products.

Food taxes have the additional benefit of generating tax revenue, which can fund the sodium reduction programme, other health programmes or subsidies on healthier food.

By implementing taxation of unhealthy food, governments take steps towards meeting their duty to facilitate the realization of the rights to food and health, including economic access to adequate food if tax revenues are used to subsidize healthier food (see Box 2). Some studies find that low-income groups purchase less unhealthy food as result of taxes, improving equity *(143)*.

WHO guidance and other technical resources

The WHO guideline on fiscal policies to promote healthy diets provides recommendations and implementation considerations on policies to tax sugar-sweetened beverages and foods that do not contribute to healthy diets, including high-sodium food, and on policies to subsidize foods that contribute to healthy diets *(33).*

Other technical resources on fiscal policies include:

- Fiscal policies to promote healthy diets: policy brief *(144)*

Approach

The most comprehensive mandatory approach is to require that a health levy or similar is applied to any food that does not meet nutrition criteria related to sodium (as defined by WHO or national NPMs or food-based criteria).

Establish food taxes as a policy priority and define clear objectives

Use data (see 'Invest in data for policy design and monitoring') – in particular information on sources of sodium in the diet and consumer or food environment factors that influence consumer choices around sodium intake (see Annex 4) – to generate the rationale for food taxes on pre-packaged food. The objective of such taxes should be linked to improving health by increasing the price of unhealthy food, including high-sodium food, to decrease the purchases and consumption of such food and/or stimulate reformulation to increase availability of healthier food.

Policy objectives can also be formulated in relation to revenue generation, although there can be a tension with health-related objectives as the more successful the tax is at reducing consumption the less revenues will be generated over time.

Countries may also consider combined objectives of improving health and raising revenues.

Determine the scope and criteria of food taxes

Specify the tax design in terms of the taxable products, type of tax and tax structure.

Data on sources of sodium in the diet and levels of sodium in the food supply (see Annex 4) can be used to prioritize food categories to be taxed. However, taxation of a narrow set of food categories based on sodium contribution could result in unhealthy substitutions, such as substitutions to foods high in sugars and unhealthy fats. A broad scope covering the entire food supply or all pre-packaged food ensures a wide-reaching policy effect, avoids loopholes that could be exploited by the food industry, and protects against unhealthy substitutions by consumers. Using an NPM (see 'Nutrition criteria') to determine which products are taxable within the food categories covered is less likely to have unintended consequences. The feasibility of how the taxable products are defined should be evaluated with consideration to the country's capacity for tax administration. Some countries that do not have mandatory declaration of sodium content on all pre-packaged food have implemented taxes that target food products typically high in sodium and that are highly consumed in the country, such as bouillon cubes.

WHO considers specific excise taxes to be preferred among various types of consumption taxes when considering health objectives *(33, 145).* Excise taxes raise the price of the targeted food relative to the price of other goods and services, unlike taxes that apply to a wide variety of goods and services, such as value added taxes and general consumption taxes. Specific taxes, which are levied as a monetary value (e.g. by volume, weight or sodium content), are preferred over ad valorem taxes, which are levied as a percentage of the value of the product. Specific taxes can effectively target cheap products and reduce incentives to switch to less expensive brands, are relatively easier to administer, and are likely to yield more predictable tax revenues because they are immune to industry price manipulation. Specific taxes need to be adjusted for inflation over time to avoid erosion of their effect.

The tax structure can be either uniform – applying the same rate across all products within a category – or tiered – where the tax rate varies according to product characteristics. Tiered taxes based on sodium content result in higher prices for higher sodium content. Because they use sodium content thresholds to define the tiers, tiered taxes may encourage reformulation. A tiered tax should be based on a government-led NPM and requires mandatory declaration of sodium content on all pre-packaged food.

Earmark tax revenues generated for health purposes to increase acceptability of the taxes

Stakeholders' acceptance of fiscal and pricing policies can often be low; however, earmarking tax revenues for health-related purposes is associated with greater public acceptance. Tax revenues can, for example, be used to support implementation of the sodium reduction programme, to finance health care or school food programmes, or to subsidize healthier food products such as fruits and vegetables. The overall impact on health is maximized when taxes on less healthy foods are combined with subsidies for healthy alternatives.

Country examples

See Box 11 for examples of countries that have implemented taxation of unhealthy food. Other examples of food taxation policies can be found in GIFNA *(146).*

Box 11. Examples of taxation of unhealthy food

In **Colombia**, a tax is applied to ultra-processed food that exceeds thresholds for added sugar, sodium and saturated fatty acids. The tax is tied to mandatory front-of-package warning labels, whereby products that carry one or more warning labels are taxed. Products are taxed if they contain greater than or equal to 1 mg of sodium per kilocalorie or greater than or equal to 300 mg of sodium per 100 g of food. The tax rates increased in a phased manner from 10% in 2023, to 15% in 2024 and 20% in 2025 *(147)*.

Initial data on revenue generation from the government shows that in 2024, the first full year the tax was in effect, about 2.4 million pesos was collected from taxing ultra-processed food – almost five times the amount collected from taxes on sugar-sweetened beverages under the same law that year *(148)*.

In 2011, **Hungary** implemented the Public Health Product Tax *(149)*, which aims to reduce consumption of certain manufactured food products that are high in sugars or sodium, promote healthy eating and create an additional mechanism for financing public health services. The tax is applied to certain manufactured, non-staple food products that exceed thresholds for sodium. Salty snacks containing more than 1 g of salt per 100 g of food and seasoning or food flavouring containing more than 5 g or 15 g of salt per 100 g of food, depending on the product category, were taxed at 200 forints per kilogram of food.

An initial impact assessment in 2012 showed that approximately 40% of unhealthy food manufacturers changed their product formulations to either reduce unhealthy ingredients (28% of manufacturers) or eliminate them (12%) *(150)*. Supply, sales and consumption of taxed food products also declined. A second impact assessment, in 2014, found that 16% of consumers had reduced their consumption of salty snacks and 11% had reduced their consumption of powdered soup and salty condiments since the introduction of the law *(151)*. A long-term impact study comparing purchases in 2010, 2012, 2015 and 2018 however, found that these effects could not be sustained. The proportion of adults consuming products subject to the tax was higher in 2018 than in 2012, but the tax had fulfilled its purpose of generating revenue for public health programmes *(152)*. The tax rate had, however, remained at 200 forints per kilogram of food from 2011 through 2018. An amendment in 2018 increased the tax rate to 300 forints per kilogram of food *(153)*. Another amendment, in 2022, extended the NPM to include additional nutrients (saturated fatty acids and dietary fibre) and additional food categories (e.g. mueslis, breakfast cereals) and further increased the rate to 390 forints per kilogram of food *(154)*.

In 2021, **Senegal** amended its General Tax Code to include a tax on locally produced or imported bouillon cubes for use in cooking or for seasoning *(155)*. The amendment proposed an ad valorem tax rate of 15%. The tax was established to generate tax revenue and is also expected to play a significant role in addressing the effects of consumption of such high-sodium food products. A 2023 study of 111 households in the capital and a rural area found that bouillon cubes contributed to one third of discretionary salt consumption, which was excessive in two thirds of individuals and especially in rural areas *(156)*.

Behaviour change communication and mass media campaigns for healthy diets

What it is

Behaviour change communication and mass media campaigns for healthy diets involve a set of communication activities designed to change dietary behaviours, including to reduce consumption of salt and high-sodium food.

Why it matters

Behaviour change is integral to all public health responses and should be part of a comprehensive sodium reduction programme, including to build support for other policies and interventions.

Comprehensive approaches that combine behaviour change with supporting policies and structural changes – such as reformulating food, improving food labelling and creating healthier food environments – are more effective in achieving sustainable reductions in sodium intake and promoting healthier dietary patterns. For example, mass media campaigns can be used to educate the public on how to use FOPL.

Communication activities focus on building knowledge and changing attitudes and behaviours in the population. However, standalone implementation of behaviour change activities is not a recommended approach for reducing sodium intake because individuals' choices are heavily influenced by the broader food environment, including the availability, pricing and marketing of high-sodium products.

By implementing behaviour change communication and mass media campaigns for healthy diets, governments take steps towards meeting their duty to facilitate the realization of the rights to food, health and information (see Box 2).

Selected technical resources

Technical resources on social marketing for salt reduction and public health include:

- WHO strategic communications framework for effective communications *(157)*
- Applying a social marketing framework to salt reduction *(158)*
- Introduction to social marketing for public health (self-paced) *(159)*

Other technical resources to inform development and implementation of communication and mass media campaigns, including social marketing, are available *(158-161).*

Approach

Use data (see 'Invest in data for policy design and monitoring') – in particular information on sources of sodium in the diet and consumer or food environment factors that influence consumer choices around sodium intake (see Annex 4) – to generate the rationale for and inform the design of behaviour change communication and mass media campaigns for healthy diets.

Many individuals are unaware of the risks associated with high sodium intake, including raised blood pressure, CVD, heart attack, stroke and kidney disease. They may also be unsure of their sodium intake, the primary sources of sodium in their diet, how to adjust taste preferences for less salty food, or strategies to reduce their sodium intake. Communication campaigns should provide

practical and feasible advice to help people to change their behaviour. For example, campaigns could highlight the benefits of using FOPL when shopping and teach how to cook with less salt, including by replacing discretionary salt with herbs, spices or lemon to enhance flavour.

Health-care professionals can also play an important role in providing sodium reduction messages to their patients and the community. By leveraging trusted relationships, health-care professionals can reinforce campaign messages and provide tailored, practical advice that meets the specific needs of their patients and communities, such as how to prepare meals with less salt at home or how to recognize high-sodium food products when shopping.

WHO has established six principles for effective communication *(162).*

- **Accessible**: Communicators should identify all available channels and assess their effectiveness in reaching priority audiences. By using the right combination of channels, communicators can ensure that the audience is equipped with the information necessary to make informed decisions.
- **Actionable**: Understanding the target audience's existing knowledge, attitudes and behaviours enhances the effectiveness of communication materials and messages. Tailoring messages to address barriers and encourage decision-makers to follow recommended actions significantly increases the likelihood of positive outcomes.
- **Credible**: The more credible the message being communicated and the organization communicating it, the more likely it is that the information will be acted on.
- **Relevant**: Communications must ensure that audiences perceive the health information, advice or guidance as applicable to themselves, their families or those they care about.
- **Timely**: For all health issues, advice and guidance must be delivered promptly to ensure that audiences have the necessary information when they need it to make informed health decisions.
- **Understandable**: Communicators must ensure that the information is presented in a clear and easily understood manner, so decision-makers can grasp health risks and take appropriate action.

Country examples

See Box 12 for examples of countries that have implemented behaviour change campaigns.

Box 12. Examples of behaviour change campaigns

In 2011, a multifaceted, community-based salt reduction programme using the Communication for Behavioural Impact framework was implemented in Lithgow, **Australia**. The intervention included administrative mobilization and public advocacy to engage stakeholders, community mobilization (targeting local clubs and organizations), advertising (using local radio and print media), interpersonal communication (information booths) and provision of free tools (namely FoodSwitch, an application which provides consumers with rapid information to compare the sodium content of products within the same food category, and a sample of LSSS to replace discretionary salt). The programme was associated with a 10% reduction in salt consumption *(163).*

From June 2013 to June 2014, the Communication for Behavioral Impact – Eat Less Salt initiative was implemented in Viet Tri, **Viet Nam**, as part of a comprehensive communication intervention. The initiative included mass media communication using various channels to reach a broad audience, school interventions engaging students and families, and community programmes with a focus on high-risk groups. After one year, the initiative improved participants' knowledge about and behaviours towards sodium intake *(164).*

Lower-sodium salt substitutes (LSSS) to replace regular table salt (in appropriate settings)

What it is

LSSS are alternatives to regular table salt in which a proportion of the sodium is typically replaced with potassium.

Why it matters

Replacing discretionary salt, that is regular table salt added by the consumer during cooking or when eating, with LSSS can contribute to reducing sodium intake, especially in populations where discretionary salt is a major source of sodium in the diet. Considering the challenges with behaviour change campaigns, LSSS may represent a complementary tool to the sodium reduction toolbox. LSSS still contain sodium and should therefore be used sparingly as part of efforts to reduce overall sodium intake.

Replacing regular table salt with LSSS containing potassium may improve blood pressure regulation and support cardiovascular health *(165)* and provide health benefits beyond sodium reduction. However, increased potassium intake may also pose risks for certain population groups, particularly individuals with kidney disease or those taking potassium-sparing diuretics or potassium supplements. Elevated potassium levels in the blood (hyperkalaemia) can be harmful. LSSS should only be used in settings with adequate access to health care, where conditions in which increased potassium intakes are potentially harmful (e.g. kidney disease) would not go undiagnosed for a long time. WHO recommends increasing potassium intake from food sources to reduce blood pressure and the risk of CVD *(166)*. The WHO potassium intake recommendation does not relate to potassium obtained from supplements in tablet form or LSSS. Foods rich in potassium include legumes, nuts, fruits and vegetables. They offer health benefits beyond increasing potassium intake and should be a part of a healthy diet *(165, 167).*

By undertaking risk assessments for the appropriateness of the use of LSSS to replace regular table salt in the country, governments take steps towards meeting their duty to facilitate the realization of the rights to food and health. Should this assessment find it appropriate to promote LSSS, controlling price and ensuring availability of such products to all population groups may be necessary to prevent inequity *(168).*

WHO guidance

The WHO guideline on the use of LSSS provides a conditional recommendation, along with considerations for assessing whether the setting is appropriate and for its implementation *(34)*.[6]

[6] The recommendation is intended for adults in the general population and excludes individuals with kidney impairments or with other circumstances or conditions that might compromise potassium excretion. It does not apply to children or pregnant women. The recommendation is conditional and can be interpreted as "Implement the recommendation to use LSSS if safety considerations can be accounted for, and monitor carefully because of potential risks of hyperkalaemia or other indicators of impaired potassium excretion that would be contraindications to LSSS use".

Approach

Assess appropriateness of LSSS use

The use of LSSS is increasingly being recognized by national health authorities and public health organizations as a feasible strategy to lower sodium intake, blood pressure and CVD risk *(169, 170)*. Consideration of promoting the use of LSSS that contain potassium in a country requires substantial discussion among policy-makers and stakeholders to assess its appropriateness. The assessment should consider the proportion of the population at risk of kidney disease and hyperkalaemia, access to health care, sources of sodium in the diet, capacity for monitoring sodium and potassium intakes, capacity for monitoring health effects, the potassium content of LSSS, the inclusion of potassium on nutrient declarations, use of warning labels and health claims, consumer awareness and understanding of potential risks and benefits, and cost implications, including the significantly higher price of LSSS compared with regular table salt.

Ensure the health system has capacity to identify kidney disease in the population

LSSS containing potassium should only be used in settings where there is adequate access to health care and where kidney disease is unlikely to go undiagnosed.

Consider LSSS as one potential intervention in a comprehensive sodium reduction programme

Reducing sodium intake by using salt sparingly and choosing lower-sodium food, and increasing potassium intake by greater consumption of legumes, nuts, fruits and vegetables, should remain core dietary recommendations for all populations, as recommended by WHO.

The use of LSSS as a replacement for regular table salt can form part of a comprehensive sodium reduction programme provided that safety considerations are appropriately addressed.

Increase population awareness of LSSS

If the use of LSSS is deemed appropriate in the risk assessment, countries should raise awareness of the replacement of table salt with LSSS through communication campaigns and counselling in health care. It is important to draw attention to the risk potassium intake may pose for certain population groups, particularly in individuals with kidney disease or those taking potassium-sparing diuretics or potassium supplements.

Set standards for LSSS, including for iodization

Food authorities should establish standards for LSSS, including the types and level of sodium substitutes allowed. These standards should also cover labelling requirements, instructions for use and health warning messages. As LSSS are being made available to replace regular table salt, efforts should be made to ensure all LSSS are adequately iodized to support the prevention and control of iodine deficiency.

Develop strategies to increase availability, access and affordability of LSSS

If the use of LSSS is deemed appropriate in the country context, countries may need to take steps to increase its availability, access and affordability. Stimulating domestic production or facilitating importation can make LSSS more available. Countries should also determine how LSSS will be used; for example, through food procurement, service or prescription programmes. Controlling pricing may be necessary because LSSS are more expensive than regular table salt, which makes them less affordable to lower-income population groups.

Monitor use of LSSS in the food supply

In principle, LSSS could be used to replace discretionary salt and salt used as an ingredient in pre-packaged food (including condiments, such as soy sauce and fish sauce). However, the WHO recommendation only applies to the use of LSSS that contain potassium as a replacement for discretionary salt due to the lack of evidence related to non-discretionary use. Using LSSS to replace regular table salt in processed food as part of reformulation efforts requires additional government-led consideration and analysis of the risks and benefits in different population groups.

As LSSS are increasingly becoming available and are therefore potentially increasingly being used in food processing and preparation, countries should monitor the sodium and potassium content of foods and population-level sodium and potassium intakes. Countries may mandate the listing of LSSS as an ingredient and the declaration of potassium content on food labels, which can facilitate such monitoring activities.

Country examples

See Box 13 for an example of a country that has used LSSS.

Box 13. Example of use of LSSS

In 2022, the Health Promotion Board of **Singapore** announced a target to reduce sodium intake by 15% over the following five years. This initiative aims to increase the market share of LSSS so that they replace at least half of the salt market, with a particular focus on encouraging the food services to adopt the use of LSSS. A four-week trial conducted with two major caterers in 2021 demonstrated that replacing regular table salt with LSSS in meals resulted in more than 80% of consumers reporting no difference in taste. Approximately 75% of sodium intake in Singapore comes from added salt, sauces and seasonings, with the remainder coming primarily from manufactured food. The replacement of regular table salt with LSSS is being accompanied by strengthening of existing efforts in reformulation of sauces and seasonings (the Healthier Ingredient Development Scheme), labelling programmes (the Healthier Choice Symbol and Nutri-Grade), marketing restrictions and public education *(171)*.

Build capacity and support, set timelines, allocate budget and plan for monitoring

This section outlines the need to develop capacity, build support through advocacy, set timelines for implementation, allocate budgetary resources and plan for monitoring and enforcement.

Capacity development and training for sodium reduction

Effective sodium reduction programmes require capacities at all levels, strengthened systems, and sustained support. Developing institutional and operational capacity goes beyond training – it involves revising staff terms of reference to ensure adequate time and resources for programme activities, fostering networks for experience-sharing (e.g. among food procurement officers), developing implementation tools and guidelines, setting up and equipping laboratories, and ensuring coordination among actors by clarifying roles and responsibilities.

Training can be delivered in person or through accessible formats such as videos. Some countries have partnered with universities or nongovernmental organizations to support training delivery. Where resources permit, technical assistance – either on-site or remotely – by programme managers, nutritionists or working group members can offer tailored, one-on-one support to strengthen implementation in individual settings. Inspectors should be trained to assess food labels, marketing practices, food service settings and procurement contracts.

Advocacy campaigns to build support

Generating awareness about the benefits of sodium reduction policies and interventions should be an ongoing activity, targeted at both internal stakeholders (government agencies) and external audiences (nongovernment stakeholders and the public). The objective of generating such awareness is to increase transparency around what the government intends to achieve, increase support for policies and provide information that addresses common arguments from opponents of policies (see Annex 2 for examples of arguments and counter-arguments). Because sodium reduction policies and interventions may not be appealing to policy-makers or food industry lobby groups, or in high demand among consumers, it is important to link the sodium reduction programme to other popular and widely supported political objectives, such as promoting healthy diets and ensuring longer, healthier lives. Use data (see 'Invest in data for policy design and monitoring') to inform evidence-based advocacy campaigns and public education.

Timelines for implementation

The date of effect and timelines for interim criteria should be determined for each policy. This may involve a transition period and/or a phased approach that allows time for industry to adapt, exhaustion of existing stock, recipe modification and training for food preparation workers.

Nutrition criteria can be introduced in a policy using a phased approach, allowing for the gradual inclusion of more food categories and/or incrementally stricter nutrient thresholds. For example, food reformulation policies often set out two-, four- and five-year limits or targets for reducing the sodium content of food. Although some countries include a complete timeline in their initial policy, others choose to revise the criteria in subsequent amendments to the policy.

Measures such as the removal of salt-shakers and high-sodium condiments from service areas can be implemented immediately.

Budget allocation

The development of sodium reduction policies and interventions should include a detailed and realistic costing of development and implementation, including costing of monitoring, enforcement and evaluation systems for new or amended policies. In this way, the necessary resources are identified from the outset, increasing the chances of implementing policies and interventions as they were originally intended.

When taxation of unhealthy food is introduced at the same time as other sodium reduction policies and interventions, the tax can generate funds to cover their costs.

Planning for compliance monitoring and enforcement

It is important to ensure an adequate mandate for monitoring, enforcing and evaluating the comprehensive sodium reduction programme. A policy is more likely to be effective if continuous monitoring and enforcement mechanisms are established (including a complaints procedure available to those with a legitimate complaint) and sanctions are designed to be sufficiently meaningful to deter non-compliance.

Ensure that clear authority to enforce policies is allocated from the start of the policy process *(131).* Agencies should be identified that will be responsible for monitoring compliance, receiving and investigating complaints, prosecuting non-compliance and enforcing compliance. These agencies should have the legislative mandate, resources and capacity to carry out their designated functions; adequate legislative powers to investigate, inspect or collect evidence of non-compliance, or to refer matters to an agency with such powers; and adequate jurisdiction to prosecute or issue penalties for non-compliance.

A complaints mechanism could be established through which consumers can report breaches. Any such mechanism should include clear details of how to submit complaints, such as via an online reporting portal, and to whom they are submitted. Mechanisms to ensure transparency (including to provide feedback to complainants) should be identified and/or created to prevent corruption in enforcement.

Optimize iodine levels in salt for effective prevention and control of iodine deficiency disease

WHO promotes the implementation of sodium reduction interventions as one of the most cost-effective strategies to decrease the burden of NCDs, alongside universal salt iodization to prevent and control iodine deficiency disorders.

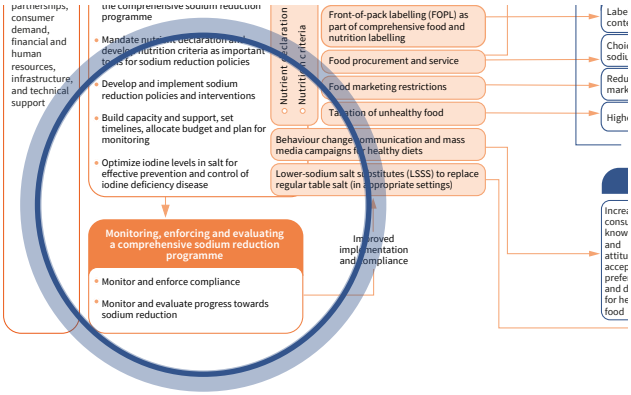
WHO recommends that all food-grade salt used in households and food manufacturing be adequately fortified with iodine as a safe and effective strategy for the prevention and control of iodine deficiency disease *(172)*. The level of iodine to be added needs to be adjusted based on population-level sodium intake, allowing for an increase in the amount of iodine added in response to any documented decrease in sodium intake *(173).*

Both regular table salt and LSSS need to be adequately iodized.

Monitoring, enforcing and evaluating a comprehensive sodium reduction programme

This section outlines approaches to monitoring compliance for enforcement purposes and to assessing progress towards achieving the objectives and goals of a sodium reduction programme. It covers:

- monitoring and enforcing compliance; and
- monitoring and evaluating progress towards sodium reduction.



Governments are responsible for establishing robust monitoring, enforcement and evaluation systems. These systems can be either government-led or carried out by a government-appointed independent body, ensuring that they remain free from conflicts of interest. They may be supported or complemented by independent, nongovernment initiatives that increase accountability. Self-monitoring or self-evaluation by industry is generally not effective and may introduce bias.

Monitor and enforce compliance

What it is

Monitoring and enforcing compliance involves regular assessment of compliance with the criteria and rules outlined in policies and interventions, and using appropriate sanctions to enforce compliance.

Why it matters

Monitoring is necessary to identify non-compliance with established criteria and rules (i.e. infringements and violations). Failure to comply with policies established through laws or regulations must lead to application of appropriate sanctions.

Enforcement mechanisms should include systems for detecting infringements through screening and ongoing monitoring. These systems should also be open to receiving notifications of infringements through complaints mechanisms. A systematic process should be established covering the identification of infringements through to the application of sanctions, including clear procedures for appraising complaints and communicating the findings of monitoring. This process includes notifying relevant actors of recourse mechanisms to protect them against retaliation for reporting a complaint, and archiving cases and queries in a central database.

Approach

Identify or establish effective monitoring mechanisms

Depending on the policy or setting, government-led compliance monitoring systems can include a variety of roles such as food or health inspectors, media inspectors, school inspectors, customs officers and excise department officials. Some countries have established complaint mechanisms that allow consumers to report policy breaches. In addition, civil society organizations may play an important role as watchdogs, providing independent reports on instances of non-compliance. Academics may also contribute by conducting research that shows implementation gaps, further supporting the oversight of policies and interventions.

Appropriate protocols and tools are needed to monitor compliance with the different policies and interventions of the sodium reduction programme. Set up a central database for documenting the monitoring activities and registering their results, including violations and sanctions applied. Budget for and finance the costs associated with inspections, analyses and capacity-building.

Leverage existing monitoring systems

Existing monitoring systems should be leveraged to ensure cost efficient monitoring of new policies. New policies covering food procurement and service, for example, may be monitored through established food safety inspections. Compliance with new FOPL policies can be assessed through existing food label inspections. This integrated approach not only streamlines and reduces the costs of the monitoring process but also enhances the effectiveness of compliance efforts across various initiatives.

Ensure compliance monitoring is regular and representative

Create a monitoring plan of inspections that over time covers all geographical areas, settings and food products, considering available capacities and resources. When determining the geographical area or jurisdiction in which compliance will be monitored and enforced, consider cross-border activities and the domestic presence of corporations.

The following types of information should be integrated into existing compliance monitoring tools used by assessors: date, location, setting or media channel where monitoring is being conducted, food product or category monitored, type of violation observed/documented, brand name, company name, proof (sample or image) of violation and action taken, as appropriate. Annex 6 provides key indicators for assessment of specific policies or interventions.

Ensure that non-compliance results in appropriate sanctions and strategies to enhance compliance

Sanctions may differ based on the degree of the violation. They may include warnings, public notices, fines, product recalls, licence suspension or, in extreme cases, imprisonment.

Sanctions must be meaningful in the business context. Consideration should be given to different aspects, such as different penalty scales to apply to individuals and corporations; graded fines based on the reach and frequency of non-compliant food marketing; increased penalties for repeated non-compliance; personal, civil or criminal liability of directors or company officers for corporate breaches; and withdrawal of products from the market or of business licences. Tailoring sanctions to the degree of the violation ensures that enforcement is both fair and effective.

Sanctions deter non-compliance and, if adequately levied, can generate substantial revenue for reinvestment in regulatory enforcement efforts or public health programmes.

In many low- and middle-income countries, street vendors and hawker stores offer food high in sodium. Enforcement approaches in the informal food sector will require different strategies, including a focus on educating vendors about the health impacts of sodium and sodium reduction. Additionally, financial sanctions should be aligned with the vendor's ability to pay, ensuring that enforcement measures are both fair and effective. This dual focus on education and equitable enforcement will help foster compliance and promote healthier food options in these settings.

Publicly report monitoring results and sanctions applied

Reporting about monitoring and sanctions is important for transparency. It should include details about the number of monitoring activities conducted (and their frequency), complaints received, violations observed and sanctions imposed; the types of sanctions issued and their value; and the corrections made and the time taken to implement them. Such transparency can incentivize industries, caterers or vendors operating in public settings to comply with policies. Findings can also inform periodic country reports submitted to relevant human rights treaty committees.

Country examples

See Box 14 for an example of a country that has implemented monitoring activities.

Box 14. Example of monitoring activities

In **Chile**, the Ministry of Health coordinates implementation of warning labels and marketing regulations, including compliance and enforcement, which are implemented in all regions by regional health authorities. Compliance monitoring consists of evaluation of warning labels, marketing and prices. If violations are found, they are further investigated. Depending on the investigation findings, the resolution will vary from a reprimand to a fine or prohibition from selling a given product. A reprimand involves warning the company, demanding that it comply with the regulation within 30–60 days and verifying compliance with a new inspection. A re-offence may be sanctioned with double the original fine. Additionally, and depending on the risk to the population's health, the sanction could require the company to suspend distribution of or destroy the product *(174)*.

Monitor and evaluate progress towards sodium reduction

What it is

Monitoring progress towards sodium reduction across a sodium reduction programme can focus on how policies and interventions are implemented (process evaluation) or the results they achieve (impact evaluation).

Why it matters

Process evaluation provides insights into whether a policy or intervention is being implemented as planned and meeting its objectives and expected outputs (see the logic model in Fig. 3). It provides insights about the potential barriers in implementing the policy or intervention and is useful for identifying and documenting possible loopholes, unintended consequences and gaps in policy scope or nutrition criteria. The root causes of identified problems should be identified and analysed to enable development of effective strategies to resolve them.

Impact evaluation helps in understanding if a policy or intervention is effective in achieving the desired outcomes and impact, for example, reducing sodium intake and reducing consumption of food high in sodium.

The results from monitoring and evaluation can be used to advocate for the revision and strengthening of a policy or intervention, to strengthen support systems, or to build the case for the need to introduce new policies or interventions.

Both process and impact evaluations are important for learning and should be documented and made publicly available. They help the country implementing the policy or intervention to assess effectiveness and take corrective action, and provide insights for other countries that consider implementing similar policies or intervention. Such evaluations can also inform periodic country reporting to relevant human rights treaty body committees.

Approach

Governments may carry out ongoing process monitoring to verify that the policy or intervention is being implemented as planned. Information and feedback should be sought from stakeholders involved in the implementation.

Evaluations are typically carried out by independent entities. Academics may carry out research and evaluations that assess policy and intervention effectiveness.

Collect baseline data (see 'Invest in data for policy design and monitoring') and repeat data collection to enable monitoring every two to five years. Annex 6 provides key indicators for assessment of specific policies or interventions. Annex 4 provides details on potential approaches, analysis, reporting and technical resources in relation to collection of different data types and describes specific opportunities for cost-sharing for each of these. Annex 5 provides an overview of data sources to inform and monitor sodium reduction policies and interventions. A database for monitoring should be established to allow comparison over time.

All reports should be made publicly available.

A call for action

An estimated 1.7 million deaths were associated with excessive sodium intake in 2023, which is a well-established cause of raised blood pressure and increased CVD risk *(5)*. The global average sodium intake was estimated to be 4278 mg per person per day (equivalent to 11 g of salt per person per day) in 2021 *(1)*, significantly exceeding physiological requirements and more than double the WHO recommendation of less than 2000 mg of sodium (or less than 5 g of salt) per day in adults.

Reducing sodium intake is one of the most cost-effective strategies to improve health and reduce the burden of NCDs. It has the potential to prevent numerous cardiovascular events and premature deaths at minimal programme costs. WHO recommends several effective policies and interventions, including:

- lowering the sodium content of food products;
- implementing interpretive FOPL to help consumers select food products with lower sodium content;
- implementing food procurement and service policies to reduce the sodium content of food served or sold;
- implementing food marketing restrictions to protect children from its harmful impact on diet;
- imposing taxes on high-sodium food;
- conducting mass media campaigns to alter consumer behaviour around sodium; and
- using LSSS – in appropriate settings – to replace regular table salt.

Despite the commitment of all 194 Member States to reduce population-level sodium intake by 30% by 2030 – demonstrating strong consensus on sodium reduction as a life-saving strategy – progress is not on track, as noted in the *WHO global report on sodium intake reduction (20).* However, by implementing a comprehensive sodium reduction programme with more, and more mandatory, policies and interventions, countries can still achieve a significant reduction in population-level sodium intake by 2030.

SHAKE is focused on comprehensive sodium reduction programmes. Although sodium reduction is important, it is only one aspect of achieving healthier diets. Tackling sodium intake should not overshadow addressing other important components of a healthy diet, such as ensuring adequate iodine intake, eliminating industrial *trans*-fatty acids and reducing intake of sugars and saturated fatty acids. Many sodium reduction policies and interventions can enhance overall diet quality by incorporating measures such as iodizing all salt, using government-led NPMs that set thresholds for other nutrients beyond sodium, and encouraging consumption of healthier food such as whole grains, fruits, vegetables, legumes, pulses and nuts.

Many policies and interventions outlined in this document aim to achieve broader dietary goals. For example, FOPL is focused not just on sodium but on providing clear nutritional information that helps consumers make healthier decisions overall. Lessons learned from sodium reduction efforts can also inform and accelerate initiatives in other areas, such as by using existing mechanisms for sodium reformulation to reduce the sugar content of pre-packaged food. This comprehensive and coherent approach is reflected in the 2023 update of the WHO best buys to prevent and control NCDs *(22)*, which moves beyond siloed strategies focused on single nutrients towards interventions that tackle unhealthy diets in a more holistic manner.

Governments are urged to take immediate action to design and implement comprehensive sodium reduction programmes as part of comprehensive policies for healthy diets to progressively realize the rights to adequate food and the highest attainable standard of health of the people.

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Annex 1. Sodium Country Score Card

Comparison across countries and regions enables opportunities and incentives for governments to strengthen sodium reduction policies.

The World Health Organization (WHO) developed in 2021 the Sodium Country Score Card to assess and monitor country implementation of sodium reduction policies and interventions *(1).* The score card is hosted on the Global database on the Implementation of Food and Nutrition Action (GIFNA) and tracks the adoption of policies and interventions towards reducing sodium intake in countries. GIFNA represents three decades of monitoring food and nutrition policies in countries. It draws information from WHO's day-to-day work and nutrition-related policy surveys, from partners' databases, including those of other United Nations agencies and civil society organizations, and from users that submit information through the platform. The information is regularly updated, and is used to inform several score cards[1].

The Sodium Country Score Card allocates a score from 1 (lowest) to 4 (highest) *(1,5)*, as follows:

- A score of **1** indicates a national policy commitment towards sodium reduction.
- A score of **2** indicates voluntary measures[2] to reduce the sodium content of the food supply or encourage consumers to make healthier food choices.
- A score of **3** indicates mandatory measures[2] to reduce the sodium content of the food supply or encourage consumers to make healthier food choices, and mandatory declaration of sodium on pre-packaged food.
- A score of **4** indicates at least two mandatory measures[2] to reduce sodium, mandatory declaration of sodium on pre-packaged food, and implementation of all four sodium-related WHO best buys[3].

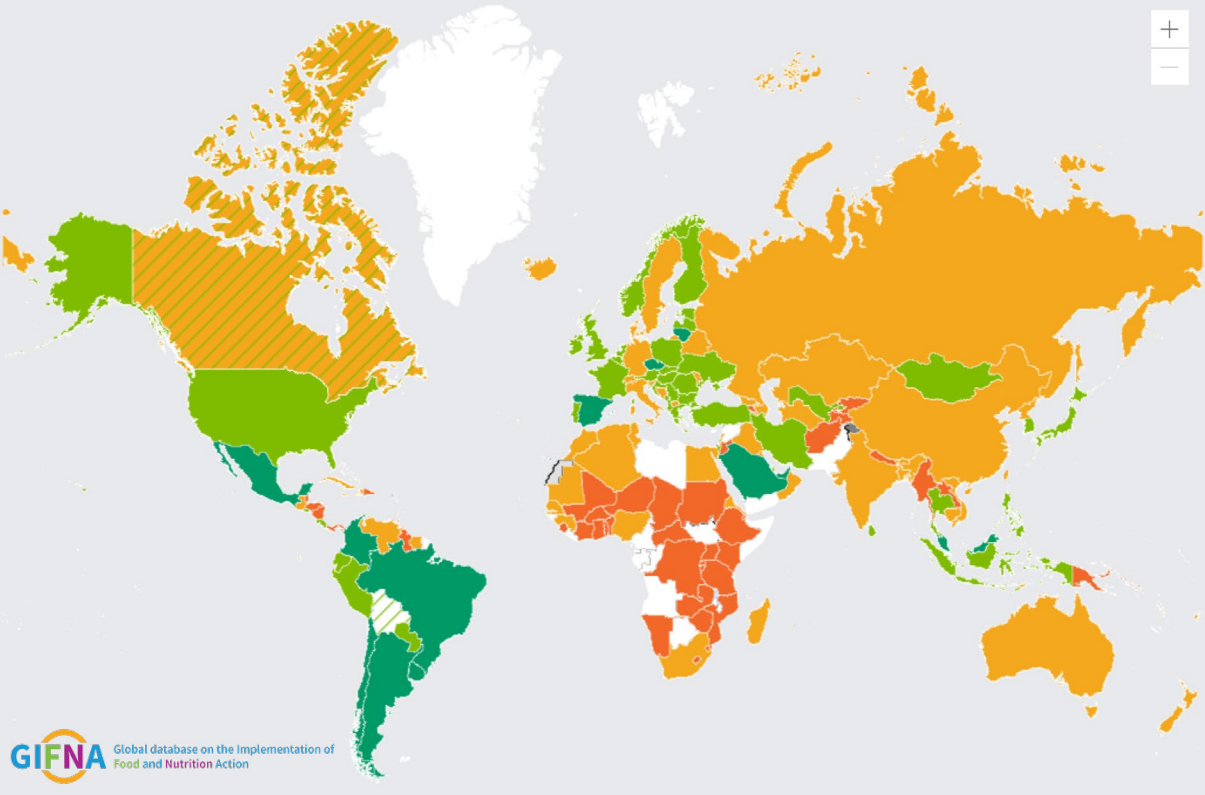
The score card should not replace in-country monitoring but can serve as an information hub for countries to compare progress.

[1] In addition to the Sodium Country Score Card, WHO has established score cards for *trans*-fatty acids *(2)* and sugars *(3)*. Data summaries for some of the food system interventions are also available in GIFNA *(4)*.

[2] These measures include food reformulation policies, front-of-pack and other interpretive nutrition labelling policies, public food procurement and service policies, food marketing restriction policies, taxation of unhealthy food, and behaviour change communication and media campaigns. They are considered relevant if upper thresholds for sodium have been set in an underlying nutrient profile model (NPM) (e.g. a threshold for the maximum permissible amount of sodium in food served in schools), or if consumer behaviour is specifically targeted in relation to sodium (e.g. prohibition on salt-shakers in food service areas).

[3] The four WHO sodium-related best buys are food reformulation, food procurement and service, FOPL and behaviour change communication (see Table 1).

Fig. A1.1. Sodium Country Score Card (as of December 2025)



The *WHO global report on sodium intake reduction (5)* presents the country scores and the policies and measures behind the scores, with further analysis of the scope of the policies and measures. It found considerable potential to develop new and strengthen existing policies and measures for sodium reduction. For example, the number of food categories with reformulation limits or targets, or the number of public settings with criteria for the service and sale of high-sodium food, could be expanded. The report also includes estimates for country sodium intake from the WHO Noncommunicable Diseases Data Portal *(6)* and modelled impact of progressing in the country scores through implementing policies and measures.

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[4] All references were accessed on 9 October 2025.

Annex 2. Examples of arguments from opponents of sodium reduction policies and interventions, and counter-arguments

Table A2.1. Common arguments from opponents of sodium reduction policies and interventions, and counter-arguments

Argument from opponents of sodium reduction policies and interventions	Counter-argument
Government-led policy and intervention: Policies cannot modify sodium intake.	The short-term experience of the United Kingdom of Great Britain and Northern Ireland (which achieved a reduction in population-level salt intake of 15%, or 1.4 g salt per person per day, in seven years) and the longer-term experience of Finland and Japan (which achieved a reduction in population-level salt intake of about 3 g salt per person per day over two decades) show that public health policy can lead to substantial reductions in population-level sodium intake. Such reductions are accompanied by significant reductions in blood pressure and rates of stroke, and have ensuing cost-savings.
Industry-led policy and intervention: Industry is better placed than government to implement policies and interventions.	Industry-led self-regulation often lacks the accountability and transparency that government oversight provides. Without regulatory frameworks, companies may prioritize profit over public health, leading to insufficient action on sodium reduction. Self-regulation can lead to uneven progress across the industry, as some companies may take meaningful steps while others may not, creating a patchwork of sodium reduction efforts that fails to protect public health. Relying on the food industry to self-regulate can erode public trust. Consumers may be sceptical of industry claims about sodium reduction, especially if the claims are not independently verified by regulatory bodies. Self-regulation can result in multiple, inconsistent standards for sodium reduction when different companies or industry associations create their own rules, making it difficult for consumers to make informed choices. Government regulations can create mandatory standards that ensure all products must meet the same health and nutrition criteria. The government has a responsibility to protect public health and promote well-being, which is not always aligned with the profit motives of the food industry. Government intervention can address systemic issues and create a healthier food environment for all.
Taste preferences: Many people enjoy the taste of salty food, and reducing sodium may lead to unpalatable manufactured food and out-of-home food.	Taste preferences can be adjusted over time. A gradual reduction in sodium can help consumers develop a taste for less salty foods without sacrificing flavour, especially with the use of herbs and spices. In the United Kingdom, when sodium was gradually reduced in the products of major brands, there was no reduction in sales and no complaints about taste. Once sodium intake is reduced, people prefer food with less sodium.

Table A2.1. Common arguments from opponents of sodium reduction policies and interventions, and counter-arguments

Argument from opponents of sodium reduction policies and interventions	Counter-argument
Cultural and culinary practices: Sodium is an essential part of many culinary traditions and cultural dishes. Sodium reduction may undermine these practices.	Culinary traditions can evolve to incorporate healthier practices without losing their essence. Many cultures are already adapting to healthier cooking methods while maintaining their culinary heritage.
Health individuality: Individual responses to sodium vary. Some people are less sensitive to sodium's effects on blood pressure, so blanket recommendations may not be appropriate.	Although individual sensitivity to sodium varies, large-scale studies show that many people benefit from reduced sodium intake. Public health recommendations aim to protect the majority of the population while allowing for personal dietary adjustments.
Hypertension: Only people with raised blood pressure (hypertension) need to reduce their sodium intake.	Reducing sodium intake is beneficial not just for those diagnosed with hypertension, but also for preventing the development of raised blood pressure in at-risk individuals and with age. Many people may not yet exhibit symptoms but are on a path towards hypertension. High sodium consumption is linked to various health problems beyond hypertension, including CVD, stroke and kidney issues. Reducing sodium intake can lead to improved health outcomes for everyone, not just those with high blood pressure.
Cost: Implementing sodium reduction policies may lead to increased costs for food manufacturers and consumers, impacting the economy.	The long-term economic benefits of reduced health-care costs from diet-related diseases can outweigh short-term expenses. Healthier populations can lead to increased productivity and lower health-care expenditure.

CVD: cardiovascular disease.

Source: adapted from WHO Regional Office for Europe *(1)*.

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[1] All references were accessed on 9 October 2025.

Annex 3. Examples of strategies used by commercial actors to undermine food policies

Develop corporate alternatives to government-led interventions

Commercial actors may develop alternative labelling schemes and voluntary self-regulation schemes and codes. Partial, stepwise and voluntary actions, such as industry-led pledges and self-regulatory measures, have been less effective in areas such as front-of-pack labelling (FOPL) *(1-5)*, reformulation *(6-10)*, reducing children's exposure to food marketing *(11, 12)* and other nutrition-related policies *(13).* Evidence also shows that food industry compliance with voluntary FOPL is often low, particularly when labels reflect poorly on the products *(14)*. The food industry is unlikely to comply with voluntary FOPL that highlights negative properties of products, such as high sodium content. Evidence from countries with voluntary FOPL policies, including Australia, New Zealand and the United Kingdom of Great Britain and Northern Ireland, shows that companies often avoid applying labels to products with excessive amounts of critical nutrients or choose to not use the FOPL system at all *(1-5).*

Country example: In **Europe**, food industry actors have worked to discredit the evidence supporting Nutri-Score, while at the same time sponsoring studies of non-interpretive FOPL systems considered less effective for protecting consumer health. These industry tactics plus intense lobbying have delayed the adoption of a common FOPL scheme across the European Union *(15).*

Country example: In **Australia**, the Australian Association of National Advertisers established its self-regulatory system for advertising and marketing communications in 1997 when it released its Code of Ethics. Since then, the association has developed and updated several codes, including the Food and Beverages Advertising Code and the Children's Advertising Code. The objectives of these codes tend to emphasize the prevention of misleading advertising, with less focus on the comprehensive restriction of marketing of unhealthy food *(16, 17).*

Influence the political process

Commercial actors may engage in lobbying, make political donations or gifts to politicians, recruit former politicians and participate in policy development to influence, block, weaken, and delay policy and regulatory outcomes.

Country example: In **Thailand**, a 2018 publication based on stakeholder interviews proposed that the food industry had approached Ministry of Public Health staff and politicians to potentially influence the planned introduction of a traffic light FOPL system. The planned traffic light FOPL system was not successful *(18)*.

Country example: In **Mexico**, during the approval process for a front-of-pack warning label system before its adoption in 2020, the food industry and allies attempted to weaken provisions *(19, 20)*. Potential interference has also been noted in the implementation of fiscal policies.

Undermine legitimate science

Commercial actors may fund counter-studies, sponsor conferences, recruit corporate scientists, skew data, distort evidence, allege manipulation, exaggerate uncertainty, plant doubt, downplay the severity of the issue and emphasize the complexity of the issue.

Global example: Research funded by the sugar-sweetened beverage industry is more likely than independently funded studies to report no association between sugar-sweetened beverages and obesity or diabetes *(21)*.

Country example: In **Uruguay**, in 2016, the food industry engaged researchers and professional organizations affiliated with the food industry to oppose new FOPL regulations. The arguments presented were consistent with those used by the food industry in the media and during public consultation. The food industry also criticized and sought to undermine the Pan American Health Organization's (PAHO) nutrient profile model *(22).* Uruguay implemented FOPL in 2020 *(22, 23).*

Frame and reframe discussion and debate

Commercial actors may promote narratives that emphasize personal or individual responsibility, moderation, consumer freedoms, free markets, opposition to the so-called nanny state and concerns about government intrusion, and frame businesses as part of the solution.

Country example: In **Chile**, in 2014, the government published a proposed set of food labels and marketing regulations for public consultation. Comments were primarily received from national and international food companies and academic institutions. The World Trade Union, the food industry and some politicians opposed the law, arguing that it violated freedom of expression, was paternalistic and oversimplified the complexities of food advertising *(24)*. Chile's nutrition labelling was officially adopted in 2016. The regulations include mandatory warning labels on food products high in sugar, saturated fatty acids and sodium, and restrictions on marketing unhealthy foods to children *(25).*

Camouflage actions

Commercial actors may leverage front groups and pseudo civil society organizations to serve as industry mouthpieces, creating the appearance of independence and avoiding bad publicity.
Country example: In **Mexico**, manufacturers of sugar-sweetened beverages funded public health organizations that subsequently downplayed the effectiveness of sugar taxes *(26)*.

Deploy corporate social responsibility, partnerships and positive images

Commercial actors may donate to community groups and sports, entertainment and nongovernmental organizations, as well as develop public–private partnerships with governments and credible organizations, to foster corporate goodwill and divert attention away from harmful products or practices.

Country example: In **France**, a study found 108 examples of food industry involvement in community activities. Evidence suggested that some of these efforts may be used to market products, shape public opinion and deflect criticism *(27).*

Avoid and evade regulation and policies

Commercial actors may impede the implementation of policies through legal challenges in national and international courts, exploit legal loopholes, engage in tax avoidance and corporate restructuring, and violate laws, treaties and codes.

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Annex 4. Data collection for comprehensive sodium reduction programmes

Population-level sodium intake

What it is

Collecting data on population-level sodium intake allows the average daily sodium intake (in milligrams) of the adult population to be determined.

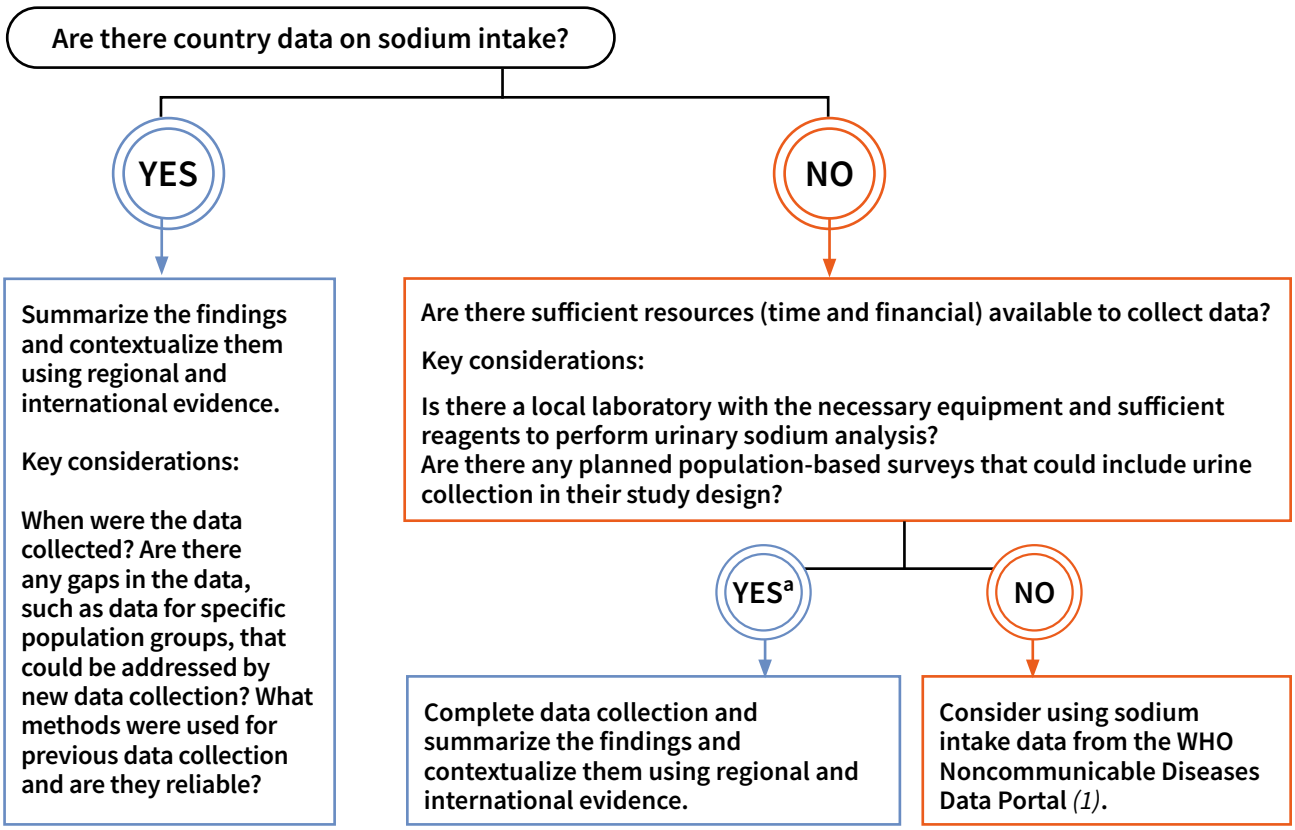
Why it matters

A baseline measurement of population-level sodium intake determines the magnitude of the issue. Repeated measurements over time allow comparisons to assess progress and inform policy decisions. This information can be used to elevate sodium reduction on the policy agenda and to compare country progress with that of other countries. A well-designed sodium intake survey that is representative across different segments of the population (e.g. children, women, rural populations, ethnic minorities) can also identify population groups with the highest intakes, thereby guiding tailoring of policies and interventions.

Where to start

Depending on the country, data on population-level sodium intake may already be available or they may need to be collected (Fig. A4.1).

Fig. A4.1. Flow chart to guide collection of data on population-level sodium intake



WHO: World Health Organization.

[a] Assessments of sodium intake and/or consumption patterns can be integrated into the WHO STEPwise approach to noncommunicable disease (NCD) risk factor surveillance *(2)*.

Data collection approach

The World Health Organization (WHO) STEPS method for determining average sodium intake is to measure urinary sodium excretion. Dietary surveys can be used to estimate population-level sodium intake, but they generally underestimate consumption. Table A4.1 can be used to support selection of the most appropriate data collection approach *(3)*.

Table A4.1. Approaches to collecting data on population-level sodium intake

Data collection approach	Accuracy	Participant burden	Planning time	Resources required	Cost	Opportunities for cost-sharing
24-hour urinary sodium	Gold standard	High	High	High Requires equipment and laboratories	High	Can be used to collect data on iodine and potassium intake Opportunities for partial cost-sharing with other population-based surveys (e.g. dietary intake, STEPS) Can be used for monitoring and evaluating all interventions in the sodium reduction programme
Spot urinary sodium	Good Repeated measurements may approximate the mean population-level sodium intake	Low	High	High Requires equipment and laboratories	Medium	
Dietary survey	Although not sufficient for determining population-level sodium intake, dietary surveys are important for identifying sources of sodium in the diet (see Table A4.2 for a summary of dietary survey approaches)					

24-hour urinary sodium

Measuring 24-hour urinary sodium excretion is considered the gold standard for assessing an individual's usual sodium intake because it provides the most accurate assessment *(4-6)*. It is a highly reliable method, as typically more than 90% of sodium consumed by healthy individuals is excreted in their urine.

A 24-hour collection period is necessary to capture fluctuations in sodium excretion across the day. However, a 24-hour collection period does not account for possible day-to-day or seasonal variations, and it also has a high participant burden and cost *(7)*. Opportunities for cost-sharing that could mitigate the costs include using the collection to also estimate intake of potassium or other minerals.

Spot urinary sodium

Using spot urine samples (a single collection of urine) can simplify specimen collection for both participants and survey teams. They are used in some population health surveys to overcome the challenges of 24-hour collection *(8)*. Although there is ongoing research, analyses indicate that equations used with spot urine samples can provide reasonable estimates of population-level sodium intake when compared with parallel 24-hour collection *(8, 9)*. There are opportunities for cost-sharing by using spot urine samples to assess iodine intake, which is frequently measured as part of salt iodization monitoring programmes.

When monitoring changes in sodium intake over time, spot urine measurements should not be directly compared with 24-hour urine measurements. Consistent data collection and analysis methods should be used over time.

Dietary surveys

Although dietary surveys are sometimes used to estimate or model sodium intake in the absence of data based on urine samples (biomarkers), dietary surveys are not considered the gold standard for estimating sodium intake because of:

- inaccurate reporting by individuals of the types and quantities of food, including condiments, they have consumed (sodium intake is highly correlated with energy intake);
- their exclusion of discretionary salt;
- variability in the sodium content within a category of pre-packaged food if individuals do not report the specific brand;
- in many countries, a lack of declaration of the sodium content of pre-packaged food;
- their reliance on incomplete and infrequently updated food composition tables or databases; and
- variation between countries in the sodium content of food which may not be captured by regional food composition tables or databases.

Measuring discretionary salt intake presents a particular challenge, as individuals often struggle to quantify the amount of salt added during cooking or when eating, a difficulty which is compounded when eating away from home (see Box A4.1). Because of their limitations, dietary surveys are frequently supplemented with urinary samples to provide a more accurate estimate of population-level sodium intake.

Analysis and reporting

A report on population-level sodium intake should include information on the:

- participant selection method used (including details of geographical representation);
- data collection tool used;
- data analysis methods (including equations) used;
- number of participants;
- number of participants with valid results;
- average population-level sodium intake in milligrams per person per day (disaggregated by sex, age, education level and income level and for vulnerable or marginalized groups); and
- distribution of population-level sodium intake in milligrams per person per day (including the standard deviation, percentiles, and minimum and maximum, disaggregated by sex, age, education level and income level and for vulnerable or marginalized groups).

Selected technical resources

Technical resources to measure population-level sodium intake include:

- STEPwise approach to NCD risk factor surveillance (STEPS) *(2)*
- How to obtain measures of population-level sodium intake in 24-hour urine samples: protocol *(7)*
- Measurement of population salt intake *(5)*
- How to obtain measures of population-level sodium intake in 24-hour urine samples *(4)*
- Protocol for population level sodium determination in 24-hour urine samples *(6)*
- Noncommunicable Diseases Data Portal *(1)*

Sources of sodium in the diet

What it is

Collecting data on sources of sodium in the diet allows the major sources of sodium in the diet to be determined.

Why it matters

The major sources of sodium in the diet can vary both within and across countries. Identifying whether sodium comes primarily from pre-packaged food, food prepared outside the home or discretionary salt (Box A4.1), as well as understanding which food categories contribute most to sodium intake, will help in prioritizing sodium reduction interventions. This information can also be used for monitoring, enforcing and evaluating sodium reduction programmes, and to guide modifications to interventions as nutrition patterns change.

Box A4.1. Capturing sodium intake from discretionary salt and high-sodium condiments

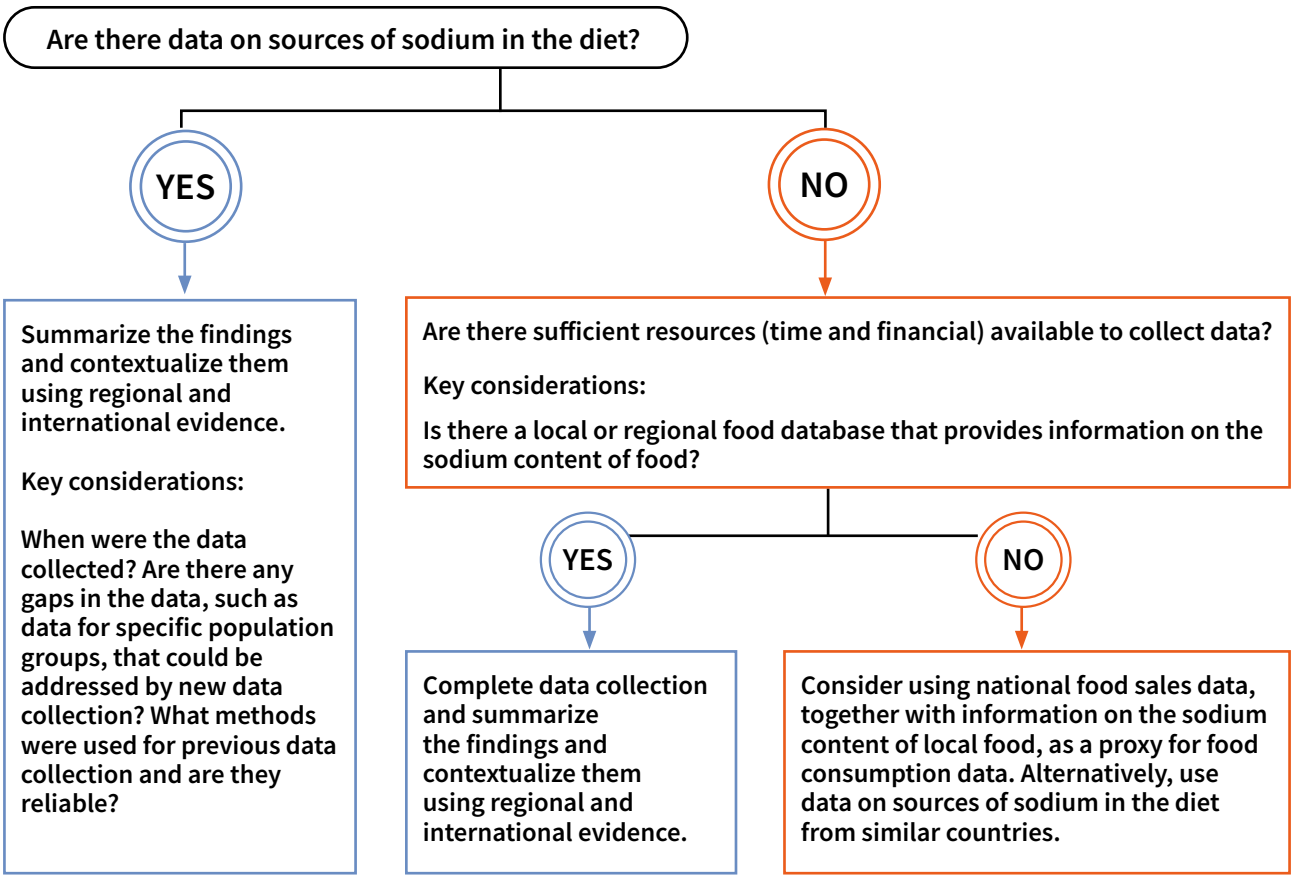
To accurately capture sodium intake from discretionary salt and high-sodium condiments, it is important to include questions about their use in dietary surveys. Information on sodium intake from discretionary salt and high-sodium condiments is essential for implementing behaviour change communication or strategies, such as removing salt-shakers and high-sodium condiments from food service settings as part of food procurement and service policies.

Collecting data on the type of salt used is important to determine whether the salt is iodized, and if so, at what level, and whether it is a lower-sodium salt substitute, and if so, its sodium and potassium contents.

Where to start

Depending on the country, data on sources of sodium in the diet may already be available or they may need to be collected (Fig. A4.2).

Fig. A4.2. Flow chart to guide collection of data on sources of sodium in the diet



Data collection approach

Dietary assessment methods such as 24-hour dietary recalls, food frequency questionnaires, food records and food purchase surveys can be used to determine the sources of sodium in the diet. Table A4.2 can be used to support selection of the most appropriate data collection approach *(3, 10-12)*.

24-hour dietary recalls

A 24-hour dietary recall retrospectively collects information about all food, or specific categories of food, consumed in a 24-hour period. It captures food consumed both at home and away from home, such as that consumed in restaurants, from street vendors and in workplaces. Due to variations in dietary intake from day to day, multiple 24-hour dietary recalls provide a more accurate indication of sources of sodium in the diet.

Food frequency questionnaires

A food frequency questionnaire retrospectively collects information on usual dietary intake by assessing how often and in what quantities food or food groups from a predefined list are consumed during a specified period.

Food records

A food record is a detailed log in which participants record all food consumed over a specific period, typically ranging from one day to several days. It provides a snapshot of dietary intake, capturing both the types and amounts of food consumed.

Table A4.2. Approaches to collecting data on sources of sodium in the diet

Data collection approach	Accuracy	Participant burden	Resources required	Cost	Opportunities for cost-sharing
Multiple 24-hour dietary recalls	Gold standard	High	High Validated tool Tools (e.g. photographs) to capture portion sizes Food composition table or database	Medium	Can be used to collect data on all other food and nutrients Can be used for monitoring and evaluating all interventions in the sodium reduction programme
24-hour dietary recalls	Good	High		Medium	
Food frequency questionnaires	Medium	Medium		Medium	
Food records	Medium	Medium	High Validated tool Scales and measurement tools Food composition table or database	Medium	
Food purchase and sales data	Although not sufficient for determining sources of sodium in the diet, food purchase and sales data can be used as a proxy for food consumption data or to understand market trends and sales volumes of products				
Food balance sheets	Although not sufficient for determining sources of sodium in the diet, food balance sheets can be useful for understanding major trends in consumption of some relevant food categories				

Food purchase and sales data

Food purchase and sales data are an indirect, alternative method to estimate food intake when individual food consumption data are unavailable *(10, 11)*. Purchase data are often regularly collected in representative household budget surveys. Food purchase and sales data may also be available from the food industry, retail point-of-sale data or commercial third-party data providers *(12)*.

Use of these data is cost-effective, but adjustments are needed to estimate consumption, for example, to correct for larger quantities of high-sodium condiments or stocks that may not be immediately consumed and salt that is purchased for non-food uses.

Food purchase and sales data can provide insights into food consumption patterns and consumer preferences. For example, purchase and sales trends of food products with varying sodium content can inform action to restrict marketing of or impose taxes on high-sodium food. Food purchase and sales data are also helpful for monitoring food prices, which are an important factor in determining consumer choices.

Food balance sheets

Food balance sheets provide information on the total food supply in a country. Per capita food supply is calculated based on the amount of food available for human consumption, excluding food that is exported, food that is used for livestock feed, seeds, food used in manufacturing, and food lost during storage and transportation. Food balance sheets, along with the related supply utilization accounts, detail the availability of predefined food categories, some of which are relevant to sodium reduction efforts, such as soy sauce. However, although they offer insights into energy and protein availability, food balance sheets do not specifically analyse the availability of sodium or other nutrients *(13, 14).*

Analysis and reporting

Data on the types and quantities of food, including high-sodium condiments and discretionary salt, that are consumed, purchased or available can be combined with information on sodium content from a food composition table or database to estimate dietary sodium intake.

A report on sources of sodium in the diet should include information on the:

- participant selection method used (including details of geographical representation);
- data collection tool used;
- number of participants;
- number of participants with valid results;
- food database used (local, regional or international); and
- top sodium sources, food categories and products, including pre-packaged food, out-of-home food, and discretionary salt and high-sodium condiments (disaggregated by sex, age, education level and income level and for vulnerable or marginalized groups).

Selected technical resources

Technical resources to measure sources of sodium in the diet include:

- Using dietary intake modelling to achieve population salt reduction: a guide to developing a country-specific salt reduction model *(10)*
- A review of methods to determine the main sources of salt in the diet *(11)*
- Using third-party food sales and composition databases to monitor nutrition policies *(12)*

Levels of sodium in the food supply

What it is

Collecting data on the levels of sodium in the food supply allows the sodium content of pre-packaged food and food from street vendors and restaurants to be determined.

Why it matters

Information about the sodium content of the food supply can inform the selection of sodium reduction policies and interventions. The information helps to identify priority food categories (Box A4.2) for reformulation and set realistic nutrition criteria for front-of-pack labelling (FOPL), food procurement and service, food marketing restriction and food taxation policies.

Repeated measurements over time allow comparisons to evaluate progress and guide future policy decisions.

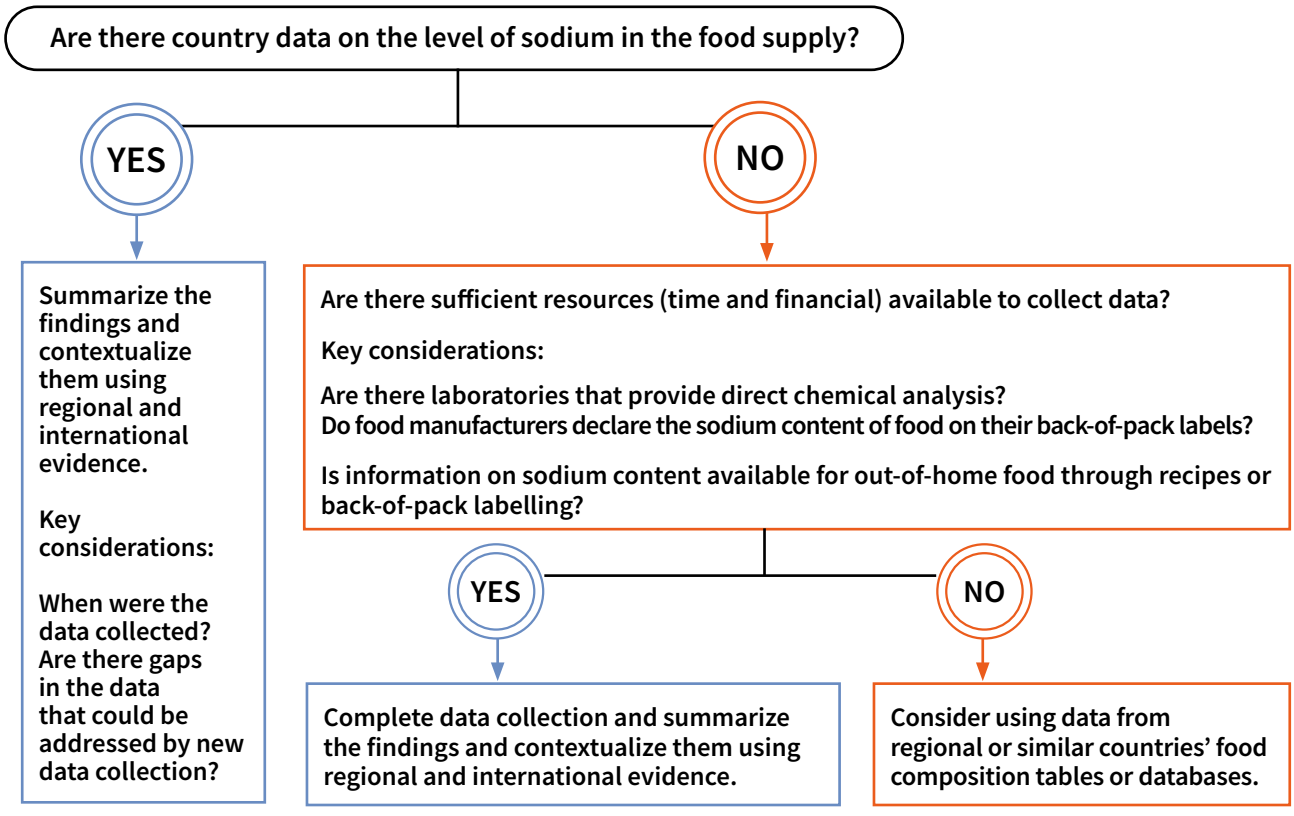
Box A4.2. Prioritizing food categories for data collection

For all data collection approaches, refer to information on sources of sodium in the diet (see 'Sources of sodium in the diet') to help prioritize the food categories for data collection. Alternatively, consider collecting data on the 18 food categories and 70 subcategories provided in the WHO global sodium benchmarks (or in regional targets, when available), or selecting priority categories from these *(15)*. Establish a standardized method for collecting and recording information to enable monitoring and evaluation of sodium reduction programmes.

Where to start

Depending on the country, data on levels of sodium in the food supply may already be available or they may need to be collected (Fig. A4.3).

Fig. A4.3. Flow chart to guide collection of data on levels of sodium in the food supply



Data collection approach

Methods for determining the level of sodium in the food supply include direct chemical analysis, food label assessment, food recipe assessment, and food composition tables and databases *(10).*

Table A4.3 can be used to support selection of the most appropriate data collection approach.

Table A4.3. Approaches to collecting data on levels of sodium in the food supply

Data collection approach	Accuracy	Resources required	Cost	Opportunities for cost-sharing
Direct chemical analysis	Gold standard	High Laboratories and trained food scientists	Medium	Can be used to collect data on all other food and nutrients Can be used for monitoring reformulation policies
Food label assessment (back-of-pack labelling) for pre-packaged food	Good More feasible than direct chemical analysis, but reliant on the information from packaging, and accuracy of sodium information on back-of-pack labels	Medium Access to food stores and/ or online supermarket data Labelling (nutrient declarations)	Low	Can be used to collect data on all other food and nutrients Can be used for monitoring reformulation policies, nutrition labelling policies, certain aspects of marketing restriction policies, and – if prices are also monitored – taxation policies
Food recipe assessment for out-of-home food	Medium Reliant on obtaining detailed recipes from food outlets, the accuracy of sodium information on back-of-pack labels of ingredients, and the precise execution of recipes	Medium Access to recipes for out-of-home food Labelling (nutrient declarations)	Low	Can be used to collect data on all other food and nutrients Can be used for monitoring public food procurement and service policies
Food composition tables and databases	Good Reliant on inclusion of sodium or salt content in foods Accuracy is dependent on source of information	Low Up-to-date tables reflective of products in the country	Low	Can be used to collect data on all other food and nutrients Can be used for monitoring reformulation policies

Direct chemical analysis

Direct chemical analysis of food is considered the gold standard for determining the sodium content of pre-packaged food, especially when food labels are missing or do not provide sodium information or when discrepancies are suspected. It is the major data source for food composition tables and databases. However, direct chemical analysis can be time-consuming and costly and requires a laboratory, equipment and trained personnel.

Food label assessment (back-of-pack labelling)

The nutrient declaration, typically provided on the back-of-pack label, is the most direct method to assess the sodium content of a product, provided it is accurate. Information on nutrient content can be collected by photographing labels or scanning barcodes using specific smartphone applications, or from government administrative records created during food product registration and authorization. If nutrient declarations are not available, the list of ingredients – detailing all substances used in the production or preparation of a food, listed by their weight – may give some indication of sodium content, especially if the ingredients are quantified by weight. Ingredients that indicate a food contains sodium include salt, salty sauces like soy sauce, and various food additives such as monosodium glutamate (MSG), disodium guanylate (GMP), disodium inosinate (IMP), sodium bicarbonate and sodium nitrate.

Food recipe assessment

Out-of-home food served in public settings, such as in restaurants and by street vendors, often lacks detailed nutrient information and is typically not included in food composition tables or databases. To determine the sodium content of such food, it is usually necessary to collect and analyse the recipes, calculate the average serving size, assess the quantity of each ingredient in each serving and estimate the sodium contribution of each ingredient. A potential exception is for restaurant chains, which may provide nutrient content information for their menu options online in some countries.

Food composition tables and databases

Various tables and databases provide information on the nutrients in a wide range of food available in a country or region *(12)* which may include sodium or salt content in foods. Government food standards agencies often maintain their own food composition tables or databases, which include information on commonly consumed food and pre-packaged products reported by food companies. For example, Food Standards Australia New Zealand maintains the Australian Food Composition Database *(16)*.

If national resources are not available, information from the region or similar countries can be used. The Food and Agriculture Organization of the United Nations hosts the International Network of Food Data Systems (INFOODS), which provides a directory of national and international food composition tables and databases *(17)*. Another useful resource is the Resolve to Save Lives Global Nutrition Database for Packaged Foods, which provides centralized access to nutrient data for pre-packaged food sold around the world *(18).*

For street food, the WHO Regional Office for Europe is conducting the ongoing multi-country study FEEDcities. The study is exploring and describing urban food environments in cities across Central Asia, the Caucasus and South-Eastern Europe *(19).*

As lower-sodium salt substitutes (LSSS) are increasingly introduced in the food supply, it will be crucial to determine these levels.

Analysis and reporting

A report on levels of sodium in the food supply should include information on the:

- products and categories sampled;
- data collection methods or data sources used;
- date of data collection or data source use;
- average level of sodium across pre-packaged food categories and brands (as milligrams of sodium per 100 g or 100 mL of food);
- distribution of sodium levels across pre-packaged food categories and brands (including the standard deviation, percentiles, and minimum and maximum);
- comparison of sodium levels with existing country or regional sodium targets and/or WHO benchmarks; and
- average level of sodium across restaurant and/or street vendor food categories.

Selected technical resources

Technical resources to measure levels of sodium in the food supply include:

- Using dietary intake modelling to achieve population salt reduction: a guide to developing a country-specific salt reduction model *(10)*
- Using third-party food sales and composition databases to monitor nutrition policies *(12)*

Consumer or food environment factors that influence consumer choices around sodium intake

What it is

Collecting data on consumer or food environment factors allows a variety of consumer or food environment factors that influence consumer choices around sodium intake to be determined. Both consumer- and food environment-related factors are included as outputs in the logic model.

Why it matters

Food environments play an important role in shaping dietary behaviours. Factors such as prices, marketing, nutrition labelling and choice architecture[1] influence consumer choices and practices. The food industry uses a range of tactics to increase sales, and understanding these and the extent of their use is important for designing effective sodium reduction interventions. For example, understanding food marketing is important for making the case for and designing effective marketing restriction policies and can inform the development of counter-marketing communication campaigns as needed.

In addition to the food environment, social and cultural factors, as well as population age, education levels and average income, are primary determinants of dietary behaviours, but are non-modifiable or difficult to modify in the short term *(20)*. Knowledge, attitudes and behaviours, on the other hand, are amenable to change *(21, 22)*. Information about knowledge, attitudes and behaviours can inform behaviour change interventions aimed at increasing consumer awareness about the importance of reducing salt consumption. It can also inform the prioritization and design of interventions acting on the food system. For example, it can be useful to know if consumers are concerned about food prices, if they understand nutrition labels or if they are aware that similar food products can have highly different sodium contents.

Compiling a rich set of information about consumer and food environment factors that influence consumer choices around sodium intake in different settings helps to tailor the sodium reduction programme to the country context. It also helps in prioritizing and designing effective interventions across different settings (see Fig. 2 and Fig. 3).

Where to start

Depending on the country, data on consumer and food environment factors that influence consumer choices around sodium intake may already be available or they may need to be collected (Fig. A4.4).

Data collection approach

To document the factors that influence consumer choices around sodium across all relevant settings, information on food environment factors can be collected through surveys in the respective settings. For example, food prices, nutrition labelling and retail marketing (such as product placement in supermarkets) can be assessed using surveys in retail settings or on online grocery platforms. The availability of salt-shakers, menu labelling and marketing at point of service in food service can be assessed as part of surveys in cafeterias, restaurants and other food outlets. Exposure to and power of marketing are typically assessed over a wide range of channels and settings. Consumer knowledge and attitudes towards sodium are usually assessed through questionnaire surveys.

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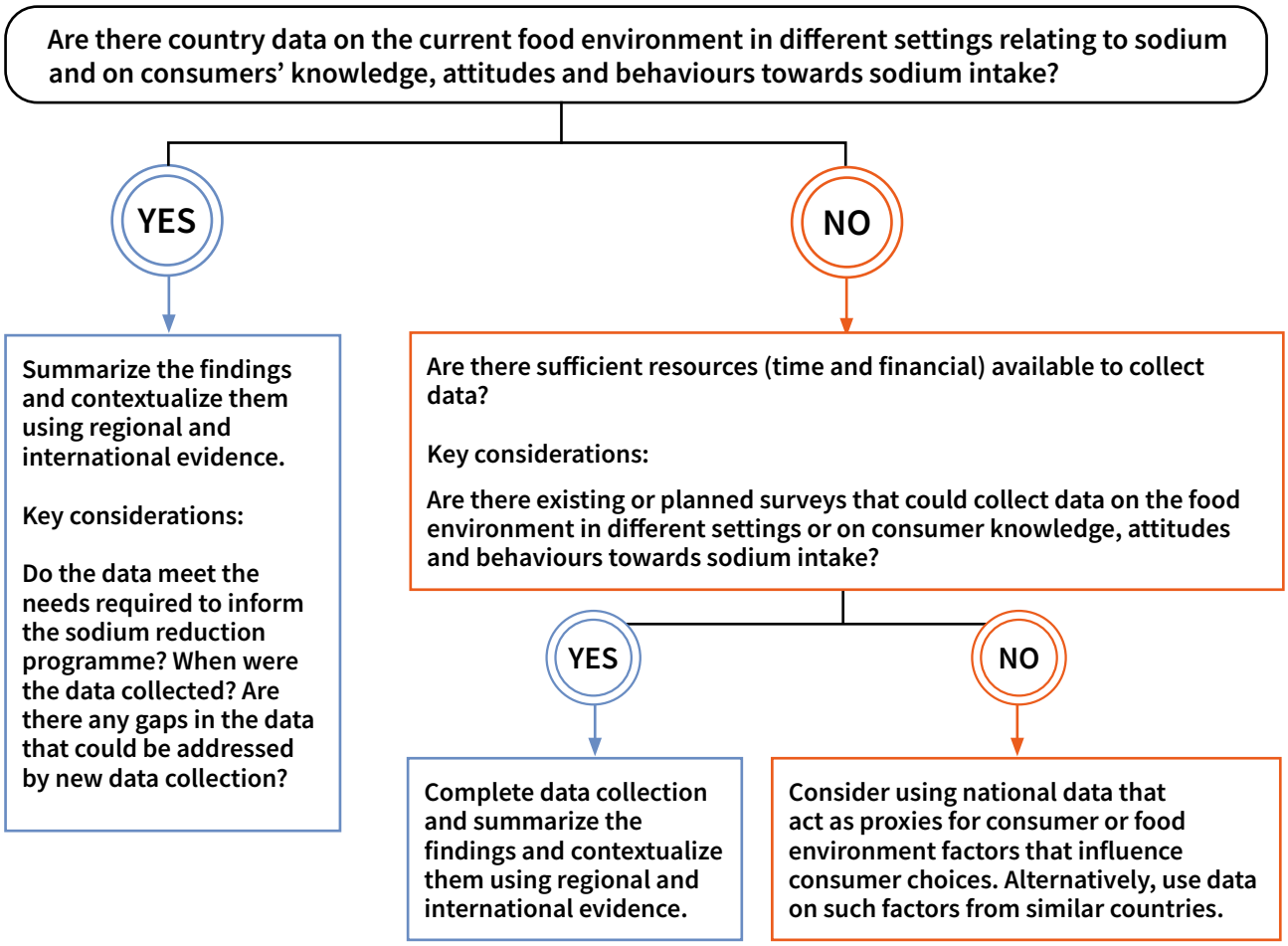
[1] That is, how food options are presented in food service and sale settings, which impacts decision-making.

Fig. A4.4. Flow chart to guide collection of data on consumer and food environment factors that influence consumer choices around sodium intake



Using standardized questionnaires *(2, 23, 24)* allows for international comparisons. However, questions should be added or tailored to suit the food environment context and dietary practices in the country.

Food and nutrition labelling

Collection of data related to food and nutrition labelling may be completed online using company nutrition information or in food stores and supermarkets using surveys. The objective is to collect data on manufacturers' use of different types of nutrition labelling, including nutrient declarations for sodium content, nutrition and health claims regarding sodium (e.g. low in sodium), FOPL or other labelling, such as warning messages related to high sodium intake. Whether food and nutrition labelling adheres to national or international standards should be assessed.

Food pricing

Collecting food pricing data involves gathering information on the costs of food products, including lower-sodium alternatives, across different settings. The objective is to inform and monitor fiscal policies by identifying trends in prices over time and across different locations. These data are best collected during the collection of food sales data. Alternatively, they can be collected from menu boards, shelf labels and company websites.

Choice architecture in food service and sale

Choice architecture refers to how food is presented in food service and sale settings such as in restaurants or supermarkets. It encompasses both physical characteristics and the provision of information. This includes factors such as the availability, placement and presentation of food, as well as the design of menu boards and the use of verbal prompts *(25, 26)*. Mapping the existing choice architecture involves examining how the physical environment enables or hinders healthier choices. The data collected can include descriptive observations, photos, illustrations and maps of food service and sale areas that provide information about the availability, placement and presentation of salt-shakers, high-sodium food and lower-sodium alternatives.

Exposure to and power of food marketing

Information on exposure to marketing is collected as a quantitative metric based on the reach and frequency of marketing across media and settings. The power of marketing is assessed qualitatively, with information focusing on the persuasive appeal of marketing communications, including their creative design, content and delivery. The objective is to identify and document the nature, extent and potential harmful impacts of food marketing. Standardized protocols are available to support local monitoring of the extent and nature of marketing *(27)*.

Consumer knowledge, attitudes and behaviours

There are population surveys to determine knowledge, attitudes and behaviours towards salt use, such as in the WHO STEPS survey *(2)* or the Pan American Health Organization rapid mobile phone survey to assess policies on NCDs *(28)*. Consumer data related to the priority interventions in the countries may also be collected, for example consumers' understanding and use of food and nutrition labels or the importance they give to food prices. Engaging behavioural and cultural insights experts can be helpful in designing effective survey tools to collect relevant information.

Analysis and reporting

A report on consumer or food environment factors should include, as relevant, information on:

- the data collection method used;
- for food environment surveys, the:
  - settings and channels sampled;
  - food categories sampled;
  - use and type of front-of-pack and other interpretive labelling, and nutrition and health claims (disaggregated by food categories, brands and products);
  - use of marketing on packaging (disaggregated by food categories, brands and products);
  - choice architecture, including the availability and placement of salt-shakers, menu labelling and prices in food service settings;
  - price of food categories and brands (including the price per unit or package, standard deviation, percentiles and minimum and maximum); and
  - exposure and power of marketing;
- for consumer surveys, the:
  - participants and/or settings sampled (including details of geographical representation);
  - number of participants;
  - number of participants with results; and
  - responses (disaggregated by sex, age, education level and income level and for vulnerable or marginalized groups).

Selected technical resources

Technical resources to measure consumer or food environment factors that influence consumer choices around sodium intake include:

- School food environment
  - Global school health policies and practices survey *(23)*
  - Nudges to promote healthy eating in schools: policy brief *(26)*
- Marketing power and exposure
  - Monitoring of marketing of unhealthy products to children and adolescents – protocols and templates *(27)*
- Consumer knowledge, attitude and behaviour
  - STEPwise approach to NCD risk factor surveillance (STEPS) *(2)*
  - Rapid Mobile Phone Survey on Noncommunicable diseases and COVID-19: Uruguay, 2022 *(28)*
  - Sample standalone questionnaire: assessing population knowledge, attitudes and practices (KAP) *(24)*

Policy environment and capacities in support of sodium reduction

What it is

Collecting data on the policy environment allows policy commitments and legislative and other policies and interventions currently in place which support sodium reduction to be identified.

Why it matters

Identifying policy commitments made towards sodium reduction provides the justification for taking action. Assessing the current level of policies and interventions in place against the set of evidence-based and cost-effective sodium reduction policies and interventions provides an overview of gaps where action may be needed.

Data collection approach

Assessment of the policy environment considers commitments that have been made regarding sodium reduction in national policy documents, strategies and action plans related to, for example, public health, NCDs, health promotion, food safety, nutrition and consumer protection. This may include commitments made towards reducing sodium intake or the sodium content of food, preventing hypertension or NCDs, promoting healthy diets or creating healthier food environments.

It also includes a thorough review of existing legal and policy frameworks, activities and governance structures that may impact sodium reduction. Such a review should consider national or subnational agencies with authority over food manufacturing and marketing, trade and import of food, and food procurement and service, and identify legal and policy frameworks relevant to sodium reduction across different settings, venues or activities *(29)* (Table A4.4). Some of these may include provisions directly related to sodium reduction such food and marketing laws, while others may indirectly affect the scope of such laws such as competition and privacy laws. Other interventions that should be included in the review include voluntary approaches and campaign activities for sodium reduction.

The scope, coverage and complementarity of these policy and non-policy interventions should be assessed, including whether they are mandatory or voluntary, and their effectiveness should be determined.

Assess how systematically the policies are implemented, monitored, enforced and evaluated and the existing capacities for this. Capacities include mechanisms such as food inspection systems and laboratory facilities, support systems such as training opportunities for caterers, and technical expertise across the entities involved.

Online data sources include the WHO Global database on the Implementation of Food and Nutrition Action (GIFNA) *(31)*. GIFNA features the Sodium Country Score Card and detailed data on sodium scores for countries (Annex 1). It also provides links to global databases maintained by other agencies and organizations. Many countries have online parliamentary or legal libraries containing regulations, laws or national gazettes. Other sources of information include decision-makers, technical leaders and legal experts, who may have been mapped during stakeholder identification (see ‘Identify stakeholders’).

Table A4.4. Examples of legal and policy frameworks and governance structures relevant to sodium reduction

Legal and policy frameworks	Governance structures
◉ Food laws or regulations ◉ Food composition and or nutrient laws, regulations or standards ◉ Food and nutrition labelling laws (including menu labelling) ◉ Laws and policies governing the sale and marketing of food ◉ Laws and policies governing the sale, service or marketing of food in settings where children gather, such as schools, day care centres and leisure centres ◉ Media and communication laws ◉ Advertising and marketing laws ◉ Broadcasting laws, including laws governing broadcasting over the internet ◉ Fiscal laws ◉ Trade laws and policies (i.e. international commitments or obligations reflected in, or impacting, domestic law such as procurement policies) ◉ Food fortification laws or regulations ◉ Public health laws ◉ Consumer protection laws ◉ Children's laws and sector-specific laws and policies where specific children's rights are recognized ◉ Food security laws and policies that recognize the right to food ◉ Overarching legislation where fundamental human rights (including children's rights) and government duties are recognized (e.g. national constitutions) ◉ Competition laws ◉ Intellectual property laws ◉ Data protection laws ◉ Privacy laws ◉ Policies or regulatory frameworks for management of conflicts of interest, lobbying, or ethics codes for public sector employees	◉ Implementing ministries or regulating authorities (e.g. food and drug administration, communications authority) ◉ Organizations and agencies mandated to implement, enforce and monitor each policy or law ◉ Standard-setting authorities or bodies ◉ Customs authority ◉ Coordination mechanisms (e.g. technical working groups) ◉ Focal points, committees or commissions responsible for human rights (including children's rights), including reporting (e.g. reporting to the Committee on the Rights of the Child) ◉ Government institutions in charge of providing remedies (e.g. courts, administrative tribunals, regulators such as consumer protection authorities) ◉ Corporate governance and market regulators ◉ Multilateral and regional trade or customs bodies and forums ◉ Public–private partnerships and private sector initiatives, including voluntary schemes and self-regulation

Source: adapted from WHO and United Nations Children's Fund *(30)*.

The delegation of authority of government bodies should also be determined, including an assessment of whether they have the responsibility to:

- oversee and monitor the implementation of the relevant regulation and laws;
- adopt and implement additional policies, standards, decrees, orders and guidelines to implement and enforce the relevant regulation;
- inspect and investigate facilities (e.g. to monitor schools or workplaces with public food procurement and service policies) and products (e.g. to monitor reformulation limits or targets) for compliance with the relevant regulation;
- initiate lawsuits and seek appropriate penalties for violations of the relevant regulation; and
- initiate an amendment of the relevant regulation if new scientific and independent evidence and international nutrition guidance changes the recommended policies for sodium reduction.

Selected technical resources

Technical resources to measure policy environments in support of sodium reduction include:

- Legal environment assessment for the prevention of non-communicable diseases: an operational guide *(29)*
- The Global database on the Implementation of Food and Nutrition Action (GIFNA) *(31)*

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Annex 5. Examples of data sources to inform and monitor sodium reduction policies and interventions

Table A5.1. Data sources to inform and monitor sodium reduction interventions

Policies and interventions / Survey setting	Food reformulation	FOPL as part of comprehensive food and nutrition labelling	Food procurement and service	Food marketing restrictions	Taxation of unhealthy food	Behaviour change communication and mass media campaigns for healthy diets	LSSS to replace regular table salt (in appropriate settings)
Population-based surveys	◉ Measurement of population sodium intake ◉ Sources of sodium in the diet ◉ Purchase data ◉ Dietary practices and social norms						
	◉ Food consumption survey	◉ Consumer understanding of FOPL	◉ Out-of-home food consumption practices	◉ Exposure to marketing	◉ Attitude towards food taxes	◉ Consumer knowledge, attitude and behaviour	◉ Knowledge of LSSS
Retail survey	◉ Levels of sodium in pre-packaged food	◉ Use of FOPL and other interpretive labelling		◉ Reach and power of marketing	◉ Prices		
	◉ Sales data						
Food service surveys	◉ Use of reformulated food in food service and vending machines	◉ Use of menu labelling in food service and vending machines	◉ Levels of sodium in meals ◉ Menus and recipes ◉ Choice architecture	◉ Reach and power of marketing			
Media channels and other settings							
Document review, key stakeholder interviews	◉ Policy environment						

FOPL: front-of-pack labelling; LSSS: lower-sodium salt substitutes.

Annex 6. Examples of indicators for monitoring progress towards sodium reduction

Table A6.1. Examples of indicators for monitoring progress towards the outputs of sodium reduction

Policies and interventions	Indicators	Potential data sources
Food reformulation	◉ Number or percentage of food products above sodium content threshold (in milligrams of sodium per 100 g of food) by food category and manufacturer ◉ Average and range of sodium content by food category and manufacturer ◉ Trends in the sodium content of food categories covered by the policy ◉ Trends in number or percentage of food products that are reformulated ◉ Trends in sales and purchases of reformulated food products by food category ◉ Number or percentage of manufacturers fully complying with the policy	◉ Levels of sodium in the food supply ◉ Food purchase and sales data
FOPL as part of comprehensive food and nutrition labelling	◉ Number or percentage of food products with sodium-related FOPL by food category and manufacturer ◉ Trends in sales and purchases of food products with sodium-related FOPL by food category ◉ Number or percentage of manufacturers fully complying with FOPL criteria ◉ Number or percentage of out-of-home food with sodium-related labelling by food category and by food provider or manufacturer ◉ Trends in sales and purchases of food products with sodium-related out-of-home food and nutrition labelling by food category ◉ Number or percentage of manufacturers or food providers fully complying with criteria for out-of-home food and nutrition labelling ◉ Consumer understanding including awareness and trust in food and nutrition labelling regarding sodium	◉ Food and nutrition labelling ◉ Food purchase and sales data ◉ Consumer knowledge, attitudes and behaviours
Food procurement and service	◉ Number or percentage of food options (e.g. meals, snacks, menus) served or sold above sodium levels by food category and by venue and setting ◉ Average and range of sodium levels by restaurant and/or street food categories ◉ Trends in sales and purchases of food options with improved recipes regarding sodium ◉ Number or percentage of venues and settings fully complying with the policy ◉ Number or percentage of contracts with suppliers, vendors and caterers that include standards	◉ Food purchase and sales data ◉ Food recipe assessment ◉ Choice architecture in food service and sale ◉ Consumer knowledge, attitudes and behaviours

Policies and interventions	Indicators	Potential data sources
Food marketing restrictions	◉ Food marketing exposure - Percentage of all marketing that is for food - Percentage of all food marketing that is for food high in sodium - Rate (per hour or location) of food marketing and of food high in sodium by food category, manufacturer, channel or setting, geographical or socioeconomic area, and age group targeted - Rate (per hour or location) of marketing of a food type ◉ Food marketing power - Percentage of all food marketing using persuasive marketing techniques - Percentage of all marketing of a food type using persuasive marketing techniques - Rate (per hour or location) of food marketing using persuasive marketing techniques - Rate (per hour or location) of marketing of a food type using persuasive marketing techniques ◉ Number or percentage of manufacturers or food providers fully complying with the marketing restriction policy	◉ Exposure to and power of food marketing
Taxation of unhealthy food	◉ Number or percentage of food products high in sodium being taxed by food category or manufacturer ◉ Prices of taxed food ◉ Price change of taxed food ◉ Price change of non-taxed food to investigate substitution (e.g. to see if salty sauces are replaced with fatty or sugary sauces) ◉ Trends in sales and purchases of taxed food products high in sodium by food category ◉ Consumption of fruits and vegetables	◉ Food pricing ◉ Food purchase and sales data
Behaviour change communication and mass media campaigns for healthy diets	◉ Number and reach of mass media campaigns ◉ Change in consumer knowledge, attitudes and beliefs ◉ Increase in the acceptance, preference and demand for healthier food	◉ Consumer knowledge, attitudes and behaviours
LSSS to replace regular table salt (in appropriate settings)	◉ Number of LSSS available, including type and level of sodium used ◉ Purchases, sales and prices of LSSS ◉ Change in potassium, alongside sodium, intake ◉ Consumer awareness and education on the risks and benefits of LSSS ◉ Kidney disease prevalence in the population ◉ Change in the proportion of at-risk populations (i.e. people in the population with kidney disease or other conditions for whom an elevated level of potassium intake should be avoided)	◉ Food purchase and sales data ◉ Population-level sodium intake

Table A6.2. Examples of indicators for monitoring progress towards the outcomes of sodium reduction

Outcomes	Indicators	Potential data sources
Diet-related outcomes	◉ Increase in healthier food consumption and dietary practices (including the access, demand, supply and consumption of salt and lower-sodium food, recipes and meals) ◉ Reduction in average population-level sodium intake (to < 2000 mg per person per day)	◉ Population-level sodium intake ◉ Sources of sodium in the diet

FOPL: front-of-pack labelling; LSSS: lower-sodium salt substitutes.

Table A6.3. Examples of indicators for monitoring progress towards the impact of sodium reduction

Impact	Indicators	Potential data sources
Health impact	◉ Reduction in raised blood pressure/hypertension ◉ Reduction in CVD events and death	◉ National and subnational population surveys
Economic impact	◉ Reduction in health system costs and expenditure ◉ Increase in workforce participation and productivity ◉ Revenue from taxes on food high in sodium	◉ Economic data and reports

CVD: cardiovascular disease.

Annex 7. Visualization of sodium content thresholds

Figure A7.1 depicts range of sodium content thresholds as found in the World Health Organization (WHO) global sodium benchmarks *(1)*; the WHO regional nutrient profile models as they are food category-based in the African *(2)*, South-East Asia *(3)*, European *(4)*, Eastern Mediterranean *(5)* and Western Pacific *(6)* regions, or uniform as in the Region of the Americas *(7)* and represented in the graph by the ceiling thresholds suggested by PAHO to be applied in addition to the 1 mg sodium per 1 kcal threshold *(8)*; and, the Codex Alimentarius conditions for low sodium claims *(9)*.

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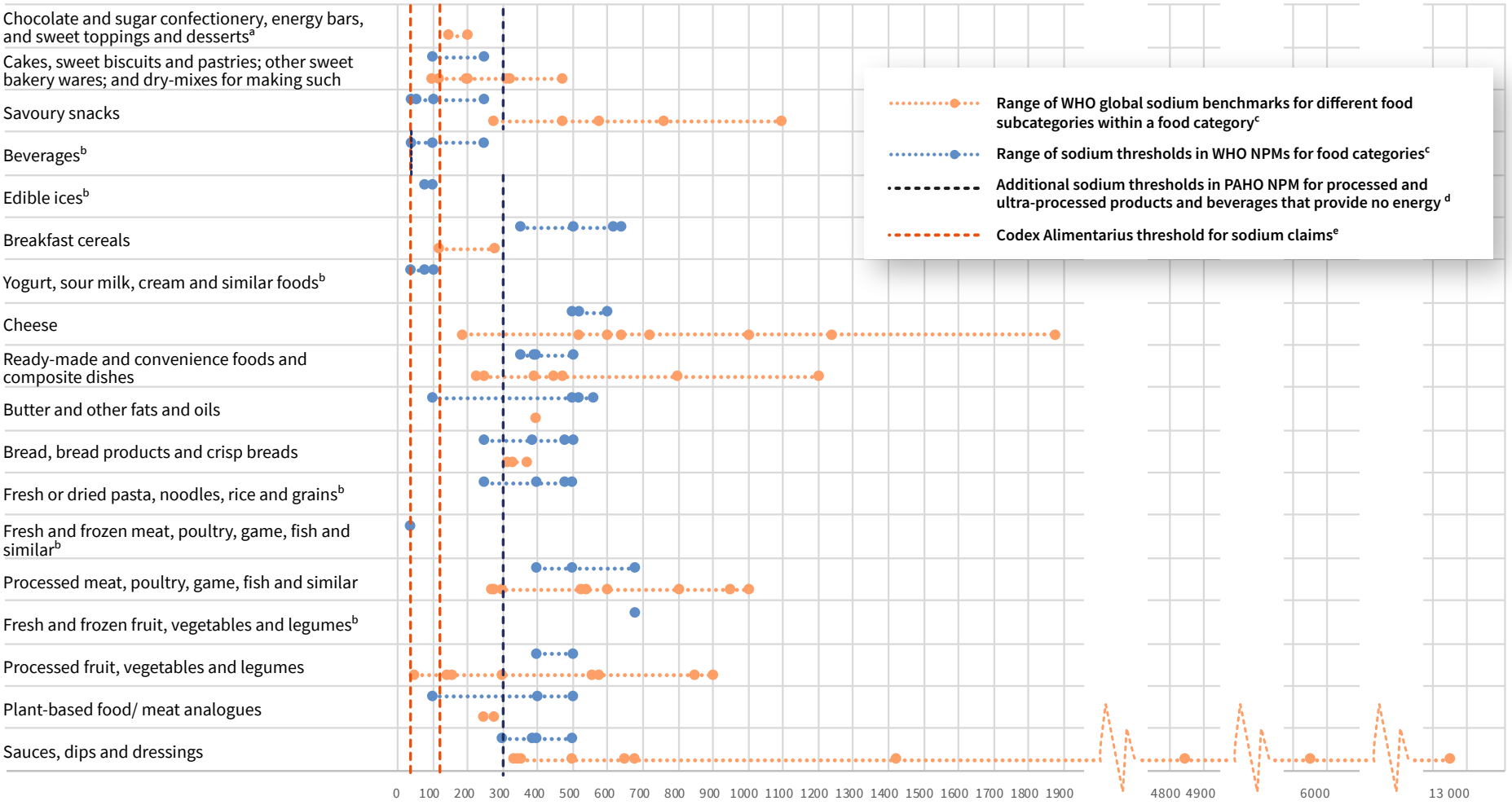
[1] All references were accessed on 9 October 2025.

Fig. A7.1. Visualization of range of sodium content thresholds



NPM: nutrient profile model; PAHO: Pan American Health Organization.

[a] Marketing of this category is not permitted by the WHO regional NPMs, so they do not include a sodium content threshold.

[b] No WHO global sodium benchmark has been set for this category.

[c] The ranges of thresholds are depicted. When two thresholds for a food category from the same source are the same, they are shown by one point.

[d] The graphs represent the additional thresholds of 300 mg sodium per 100 g in processed and ultra-processed products and 40 mg sodium per 100 ml in processed and ultra-processed beverages that provide no energy, to be applied in addition to the 1 mg sodium per 1 kcal threshold.

[e] Codex Alimentarius thresholds for claim of very low in sodium (not more than 40 mg of sodium per 100 g) and low in sodium (not more than 120 mg of sodium per 100 g).

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