Guide for the Food Industry to Reduce Salt in Products

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Research on estimation of the public health and economic effects of dietary salt reduction efforts through the promotion of food environment creation

Guide for the Food Industry to Reduce Salt in Products Working Group

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About this Guide

Purpose

The purpose of this guide is to provide information to businesses engaged in salt reduction efforts to help them set effective goals, estimate the social impact of these goals, and to present business operators with ideas and procedures to visualize the results.

Intended target

This guide is intended for food-related business operators that are considering product improvement or product development (hereinafter referred to as product improvements) with the aim of reducing salt in their products.

Structure of this guide

This guide consists of a main section and appendices (**Figure 1**). The main section consists of three chapters, the first of which presents the importance of voluntary salt reduction efforts by business operators, in terms of improving the nutrition of society as a whole and the viability of the businesses. Chapter 2 presents key points on setting achievable, step-by-step goals for companies which can be utilized as a reference when setting their own goals. Chapter 3 describes how to establish internal systems and cooperate with external organizations to investigate the organizational structure for salt reduction. As reference material for reducing the salt content in products, appendices provide examples of salt reduction goals set by food-related business operators from five overseas companies (Appendix 1) and three Japanese companies (Appendix 2).

Reference information

Some of the content in this guide is based on the results of a literature review on overseas food-related businesses about their salt reduction goals and a questionnaire survey conducted independently by this working group (hereinafter referred to as independent survey)[1)] as well as a literature review on overseas guidelines on salt reduction support for food-related business operators.[2)]

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1. Balance public health goals with business viability.
2. Design goals by comprehensively considering policy objectives, actual conditions of businesses, technological possibilities, and behavioral characteristics of consumers.
3. Emphasize complementary efforts to increase effectiveness, such as ensuring transparency, developing a monitoring system, and publishing progress reports.

Setting a target product

1. The process starts with products that can be improved, considering factors such as technological feasibility as well as human and economic resources.
2. Products that have a significant impact on the nation's salt intake should be a target.
3. The category, percentage, and sales volume of the target product(s) should be specified.
4. The decision is made as to whether a target product is appealing or not.

Setting sodium content

1. The process starts with the feasible scope.
2. The systems and standards of various countries should be referenced.
3. The calculation and evaluation methods should be understood.

Use of the sales-weighted average sodium content

1. Sales-weighted average sodium content of the company's product(s) should be calculated.
2. The amount and percentage of such reductions are examined to determine the policy for all target products.

Use of the nutrient profiling model

1. The processed food or dish category in which the business' product falls should be identified.
2. The points in the relevant category (the higher the sodium content, the higher the points) should be checked to determine the position of the business' product based on the distribution of sodium points.
3. The extent of sodium reduction should be examined to achieve a healthier product.

Setting the implementation period and goal achievement year

1. These settings should be flexible according to the scale of a target product and the degree of the targeted reduction.
2. A reasonable time period for gradual salt reduction should be set.
3. An interim evaluation year should be set at which time goals are revised as needed.

Chapter 1: Why are product improvements important to reduce salt now?

Although the salt (sodium chloride) intake of the Japanese population is gradually decreasing,[3, 4] it remains high compared with global standards.[5] The average salt intake of Japanese people (aged 20 years and older) as of 2023 is 9.8 g/day,[6] which corresponds to approximately double the amount of the 5 g/day recommended by the World Health Organization (WHO).[7]

Studies on sources of salt intake indicate that seasonings, especially soy sauce and miso, contribute significantly to it. In a study of 190 Japanese men and women aged 20– 69 years, seasonings accounted for the highest percentage of total salt intake: 62% for men and 63% for women, followed by seafood at 7% for both sexes.[8] In another study of 1,145 Japanese people aged 40–59, soy sauce (20% contribution), soups (16%, of which miso soup accounted for 9.7%), fish and processed seafood (15%), and pickles (9.8%) were listed as the main sources of salt intake.[9]

Excessive salt intake leads to high blood pressure, which is a major risk factor for cardiovascular disease, including heart disease and stroke. In this context, the Ministry of Health, Labor and Welfare's "Health Japan 21 (third term)" has set the goal of reducing average salt intake to 7 g/day by 2032.[10]

Raising consumer awareness and nutrition education efforts alone is not sufficient to achieve this goal. Business operators have to determine consumers' food environment through providing their products. Therefore, reducing sodium in their products is an effective way to help them with salt reduction.

This chapter discusses how the nation's overall salt intake could change through business operators making voluntary efforts to reduce salt in their products as well as how these efforts could bring incentives to them.

1. The impact of product improvements on consumers' salt intake and health

Several studies have reported on the impact of voluntary product improvements by the food industry on salt intake and health. For example, Dötsch-Klerk et al. (2022) estimated how national nutrient intakes in five countries (the United Kingdom, France, the United States, Brazil, and China) would change if product improvements were made based on

the nutrient standards set by Unilever.[11] The results showed that improving foods and beverages could reduce average intakes of energy, sodium, saturated fatty acids, and carbohydrates by up to 30%. These standards are based on the WHO recommendations and are designed to limit salt to less than 5 g/day.

Trieu et al. (2021) also modeled the health impact of salt reduction through product improvements and other measures in Australia,[12] showing that full achievement of domestically set goals for sodium reformulation in products could prevent approximately 1,920 cases of cardiovascular disease, chronic kidney disease, and stomach cancer per year, approximately 510 deaths per year, and approximately 7,240 years of lost healthy life expectancy.

These results suggest that salt reduction in processed foods is an important initiative that will have a significant public health impact on society as a whole. In Japan, the Ministry of Health, Labour and Welfare launched the Strategic Initiative for a Healthy and Sustainable Food Environment in March 2022 to address issues, including excessive salt intake.[13] This initiative aims to study and implement effective measures to address issues such as excessive salt intake through collaboration between industry, academia and government.

As mentioned above, it is essential for the industry to make product improvements as it will have a significant impact on society. If each business operator takes responsibility for this objective, it is expected to make a continuous and significant contribution to lowering the nation's overall salt intake, which would result in improving health of the people.

2. Incentives for business operators to engage in salt reduction efforts

(1) Global interest in assessing nutrition improvement, including salt reduction efforts

In recent years, ESG perspectives, meaning environment, social, and governance, have become increasingly important for the evaluation of businesses. Food and beverage manufacturers, especially, are focusing their attention on the health and nutrition field, which is positioned in the "Social" category, and voluntary salt reduction efforts are being evaluated as part of these efforts.

The Access to Nutrition Foundation, a Dutch nongovernmental organization, launched the "Access to Nutrition initiative (ATNi)" and developed the "Global Access to Nutrition Index," which evaluates the efforts of food and beverage manufacturers to prevent the

double burden of overnutrition and undernutrition as well as related diseases, the results of which have been published.[14] Investors around the world are utilizing this global index-based business assessment to evaluate risk and opportunity of their investment when making decisions.

According to the 2024 ATNi Global Index Report,[14] 19 of the 26 companies with product lines relevant to salt reduction had set the goals for it, and 6 of the 19 had set them as part of an overall goal to achieve their standards for multiple nutrients. However, though 14 companies had announced their goals, only a limited number of companies published their progress toward the goals in externally verifiable ways, such as annual reports.

Considering the circumstances, it is expected that releasing clear goals and status of achievement in annual reports or other documents, accessible to the public, will improve ESG assessment in the health and nutrition sector. This can also create a virtuous cycle of improving investment, sales of salt-reduced products, innovation in product improvements, and consumer confidence (**Figure 2**). This cycle starts with presenting clear and understandable goals.

Figure 2. A virtuous cycle of business incentives through salt reduction efforts
(Image is for illustrative purposes only)

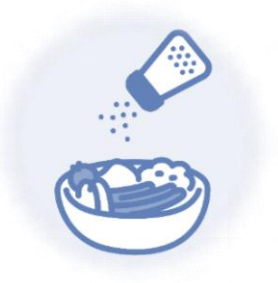
(2) Company-wide efforts to reduce salt in their products

One international food-related business and one trade association that responded to our independent survey indicated that they focus on salt reduction efforts as part of their sustainability and investment risk/opportunity assessment from an ESG perspective (**Table 1**).[1)] For a company to work on salt reduction of their products as a whole, it is important to establish a common understanding among the members about the incentives for the company, with the impact on the national salt intake also in mind.

Table 1. Feedback from business operators regarding Incentives for salt reduction efforts

Responses
• We can contribute to healthy dietary habits of the customers through salt reduction activities, and these efforts will improve our public esteem on sustainability. • As investors place more importance on salt reduction efforts of businesses, we are aiming to gain a positive evaluation by publishing our strategy and ESG reports with our salt reduction efforts. • By focusing on salt reduction, we expect increased investment based on ATNi assessment.

Chapter 2: Key points for setting goals toward reducing salt of products



The SMART framework (specific, measurable, achievable, relevant, and time-bound) is useful when setting goals for reducing salt of products.[15] First, let's understand the goals for salt intake reduction in Japan and around the world (Table 2).

As of 2023, the salt intake of Japanese people (aged ≥20 years old) is 9.8 g/day.[6] The Dietary Reference Intakes for Japanese (2025 edition) set the target salt intake to <7.5 g/day for men and <6.5 g/day for women,[16] whereas the Health Japan 21 (third term) aims for an average dietary salt intake of 7 g/day for adults by 2032.[17] The Japanese Society of Hypertension recommends that hypertensive patients should aim to reduce salt to <6 g/day.[18] While the average salt intake for adults worldwide is 10.8 g/day,[5] the WHO recommends less than 5 g/day.[7]

Using these salt intake targets as a reference, here are some key points to consider when setting salt reduction goals while considering your company's situation.

Table 2. Salt intake targets in Japan and overseas

Institution	Guideline	Salt intake targets
Ministry of Health, Labour and Welfare	Dietary Reference Intakes for Japanese (2025 Edition)[16]	Men:< 7.5 g/day Women:< 6.5 g/day
The Japanese Society of Hypertension	Guidelines for the Management and Treatment of Hypertension 2025[18]	<6g/day (For hypertensive patients)
WHO	Guideline[7]	<5g/day

1. Method of setting salt reduction targets

In setting goals for product improvements to reduce salt, a combination of various methods is used to achieve public health goals and feasibility for businesses. The following is a summary of typical goal-setting methods along the major classification axes.[1, 19)]

Scope of targeted products

Scope of targeted products	Details
Product	Goals are set for each individual product. The standards are clear and easy to manage but will likely restrict the company's ability to improve on products and adjust taste.
Product category	Goals are set for each category such as bread, instant noodles, sausages, etc. The technical and taste characteristics within the category can be reflected.
Entire product portfolio	Goals are set for the entire range of products sold by the company. Allows companies to respond flexibly and promotes overall improvement.

Targeted nutrients

Targeted nutrients	Details
Salt only	Only salt is targeted. A single indicator would be easy to manage and the technical hurdles are relatively low.
Multiple nutrients	In addition to salt, sugars, saturated fatty acids and energy content are also targeted. While effective in creating a healthy food environment, it would increase the complexity of achievement and evaluation.

Types of goals[19)]

Types of goals	Details	Advantages	Disadvantages
Upper limit	Upper limit of maximum sodium content is set for each product or product category.	• Easy to understand. • Easy to develop, implement, and monitor. • Priority can be given to products with the highest sodium content.	• Incentives for further reductions may be less likely to work for products that are already below target.
Simple average	The simple average of the sodium content of the target product line is set to be less than a defined target.	• Easy to implement and monitor.	• Lack of focus on products with high sodium content. • Salt reduction in products with low sales may result in overall progress being overestimated.
Sales-weighted average	The weighted average sodium content reflecting the sales ratio of each product is set to be less than or equal to the target.	• Improvement of best-selling products can be promoted more.	• Collecting sales data is costly. • Products consumed by large numbers of socially vulnerable populations may not be given sufficient consideration.
Relative reduction	The goal is to reduce the	• Easy to understand.	• Difficult to monitor and evaluate on a category-

Types of goals	Details	Advantages	Disadvantages
rate	sodium content by a certain percentage relative to the sodium content in the base year.	• Goals can be set flexibly according to each company's current situation.	by-category basis. • If progress is made in reducing salt in certain categories but not in others, it may be difficult to evaluate the overall results.

Reference criteria

Reference criteria	Details	Example
Nutrient profiling model	Sodium content target is set based on the overall health score of the food.	WHO Regional Office for Europe Model[20]
Sodium-specific criteria	Sodium-specific standards are established for each product group.	WHO's Global Sodium Benchmarks[21]

As mentioned above, salt reduction goal setting should be designed with comprehensive consideration of policy goals, actual business conditions, technological feasibility, and consumer behavioral characteristics. When setting and implementing goals, it is also important to take complementary and effective measures such as ensuring transparency of the content, developing a monitoring system, and publishing the state of progress. The resource section includes examples of salt reduction goals by five overseas and three domestic companies.

Key points of methods of setting salt reduction goals

1. Balance public health goals with business viability.
2. Design goals by comprehensively considering policy objectives, actual conditions of businesses, technological possibilities, and behavioral characteristics of consumers.
3. Emphasize complementary efforts to increase effectiveness, such as ensuring transparency, developing a monitoring system, and publishing progress reports.

2. Targeted products

For targeted products, higher feasibility can be expected when various factors such as technical feasibility, human, and economic resources, are taken into consideration, and when they are with potential to undergo product improvement. Therefore, it is effective to target product categories that have a significant impact on the nation's salt intake, e.g., products with high sales among the company's products.[22] Additionally, providing specifics such as the category of the target product, its percentage of the total, and sales volume (sales), will enable clearer targets to be set. It is important that the goals are easy to understand for outside parties.

There are two types of product improvements: those that appeal to consumers for reduced-salt content (appealing type) and those that do not appeal to consumers (nonappealing type).[15] Based on marketing strategy and feasibility, a systematic approach to both types of products is recommended. These policies should be determined prior to the start of product improvements.

Key points on setting target products

1. The process starts with products that can be improved, considering factors such as technological feasibility as well as human and economic resources.
2. Products that have a significant impact on the nation's salt intake should be a target.
3. The category, percentage, and sales volume of the target product(s) should be specified.
4. The decision is made as to whether a target product is appealing or not.

3. Setting the sodium content of a product

Setting the sodium content of a product is an important step in determining the direction of product improvements toward salt reduction. Based on policy and technical feasibility, business operators should set feasible and effective goals.

For salt reduction efforts, it is important to start with something feasible. Striving to achieve even a slight reduction in salt intake will provide an opportunity for improvement and lead to steady progress.

Additionally, referring to the systems and standards of other countries will help setting more realistic and transparent goals. For example, under Japan's Food Labeling Standard (Nutritional Labeling), a food must contain at least 120 mg of sodium per 100 g of food and at least 25% less sodium (20% less for soy sauce and 15% less for miso) to be labeled as "low-salt."[23] Furthermore, in the low-salt food list compiled by the Japanese Society of Hypertension, the salt reduction rate for all products with reduced salt is between 25% and 35%.[24] As an overseas example, Canadian guidance called for a target reduction of approximately 25–30% by 2016 based on the 2009–2010 sales-weighted average sodium content.[25]

While there is a wide variety of evidence-based sodium content settings, it is important to understand the specific calculation and evaluation methods. Therefore, we will introduce details on how to calculate sales-weighted average sodium content and use the nutrient profiling model.

Key points on setting sodium content in products

1. The process starts with the feasible scope.
2. The systems and standards of various countries should be referenced.
3. The calculation and evaluation methods should be understood.

(1) How to calculate sales-weighted average salt content

Sales-weighted average sodium content is to calculate the mean sodium content with the sales volume (sales) of each product taking into consideration. It is recommended to used it in the Canadian Guide.[2, 25] Because it can largely reflect the impact of products with large sales volumes, an evaluation that is in line with the actual consumption situation can be performed.

Calculating sales-weighted average sodium content for each product category of a company will help to determine the overall direction of how much sodium can be reduced. The calculation requires data on the number of target products sold, product weight, and sodium volume (**Figure 3**), and can be used to set goals and evaluate achievement based on actual values. This guide shows some examples on how to calculate it for miso, soy sauce, pickles, and processed seafood products (**Figure 4**).

Figure 3. Procedure for calculating sales-weighted average sodium content

[a] If expressed as salt equivalent, convert to sodium content.
Sodium content (mg) = salt equivalent (g) × 1000 / 2.54

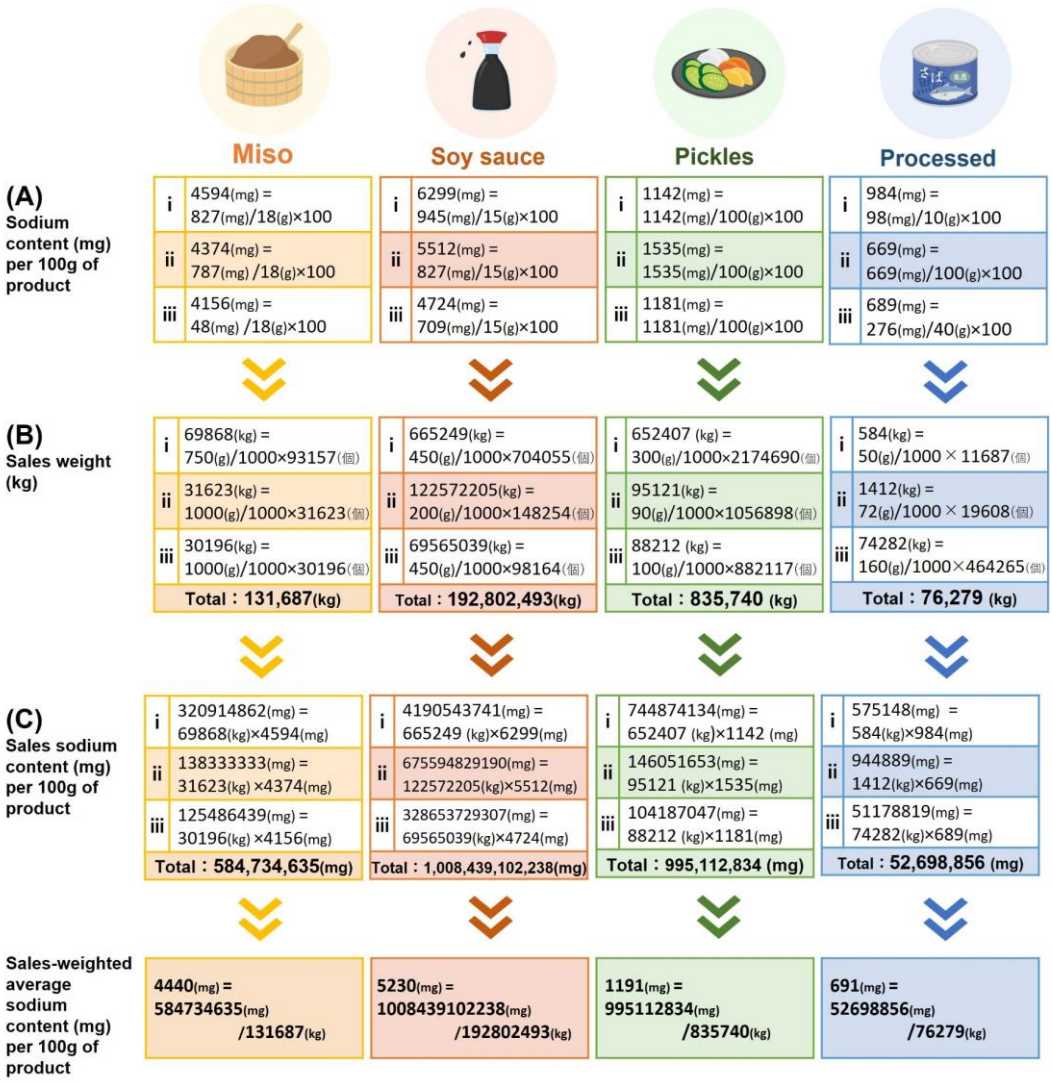


Figure 4. Example of calculating sales-weighted average sodium content

Key points for sales-weighted average sodium content

1. Sales-weighted average sodium content of the company's product(s) should be calculated.
2. The amount and percentage of such reductions are examined to determine the policy for all target products.

Tips

The Canadian government provides a tool for calculating sales-weighted average sodium content.[26)]

(2) Nutrient profiling model

A nutrient profiling model is a scientific method to comprehensively evaluate the nutritional composition of foods and beverages for the purpose of disease prevention and health promotion.[27] To promote the development, distribution, and use of healthy foods, nutrient profiling models are used in various countries overseas to rank foods according to their nutritional value. In Japan, the first edition of the Japanese Nutrient Profiling Model was developed in 2024, and a processed food version[28] and a culinary dish version[29] applicable to commercially available processed foods and dishes were proposed.

In these models, energy, saturated fatty acids, sugars, and sodium are considered nutrients whose intake should be limited (limited nutrients), while fruits, vegetables, seeds, legumes, mushrooms, algae, protein, and fiber are evaluated as recommended food groups or nutrients (recommended nutrients). Points will be awarded based on the amount of these food groups and nutrients in processed foods and dishes, and the higher the sodium content is, the higher the points will be (Table 3). The food with the lower total points is rated as “healthier.”

Table 3. Points for sodium content in the processed food version [a]

Point	Sodium (mg [b])	Point	Sodium (mg [b])	Point	Sodium (mg [b])
0	≤103	11	>1,133	21	>2,163
1	>103	12	>1,236	22	>2,266
2	>206	13	>1,339	23	>2,369
3	>309	14	>1,442	24	>2,472
4	>412	15	>1,545	25	>2,575
5	>515	16	>1,648	26	>2,678
6	>618	17	>1,751	27	>2,781
7	>721	18	>1,854	28	>2,884
8	>824	19	>1,957	29	>2,987
9	>927	20	>2,060	30	>3,090
10	>1,030				

[a] Modified from Table 3 of Takebayashi et al. (2024).[28]

[b] For processed foods: mg/100g or 100ml, For dishes: mg per meal.

As of now, the Japanese model does not cover the full diversity of typical Japanese processed foods and dishes, and future revisions will be expected. By improving products to reduce the points of company's products, sodium points can also be lowered, so this measure can be applied to reduce salt. The following pages provide an overview of the processed food and dish versions as well as specific examples on setting sodium content.

Key points for using the nutrient profiling model

1. Identify the processed food or dish category in which your product falls.
2. The points in the relevant category (the higher the sodium content, the higher the points) should be checked to determine the position of the business' product based on the distribution of sodium points.
3. Consider degree of salt reduction to achieve a healthier product.

NPM-PFJ (1.0) Nutrient Profiling Model for Processed Foods in Japan[28)]

The NPM-PFJ (1.0) evaluates processed foods by dividing them into independent food groups based on their characteristics, and it is expected to contribute to developing more highly evaluated processed foods, depending on the ingenuity of food manufacturers. This model was developed based on 668 processed foods listed in the Standard Tables of Food Composition in Japan, excluding seasonings and spices, oils and fats, alcoholic beverages, and infant foods. The model can be applied to processed foods that fall into the food categories shown in **Table 4**.

Table 4. Food categories in the Nutrient Profiling Model for Processed Foods in Japan version 1.0 (NPM-PFJ (1.0)) [a]

Category number	NPM-PFJ (1.0) food categories
1	Tea, noodles (fresh and boiled), processed rice products, processed wheat products, processed egg products, dairy products, yogurt, other beverages
2	Processed soybean products (solid), processed seed products
3	Processed meat products, cheese, powdered milk, ice cream, cream, Western confectionery
4	Noodles (dried noodles), processed vegetable products (pickles), seafood (dried, salted and pickled)
5	Processed potatoes, processed vegetables and fruits (canned, frozen, 100% juice), processed mushrooms, processed algae
6	Processed fruits (dried fruits, jams), Japanese sweets, candies

[a] Modified from Table 5 of Takebayashi et al. (2024).[28)]

Example of sodium content setting using the Nutrient Profiling Model for Processed Foods in Japan version 1.0

① The company's target product is pickled Chinese cabbage (sodium content 700 mg/100 g). According to Table 3, this corresponds to 6 points (sodium >618 and ≤721 mg/100g).

② According to **Table 4**, the target product falls into Category 4. According to **Table 5** the median (25th, 75th percentile) of points for Category 4 was 13 (7, 20). The points for the company's products are lower than the 25th percentile value for Category 4.

③ Although the sodium content was on the low side of Category 4, it will be brought closer to the 5-point maximum of 618 mg/100 g to aim for a healthier

Table 5. Distribution of sodium points by food category [a]

	Category					
	1	2	3	4	5	6
Maximum value	30	30	21	30	30	6
75th percentile	4	2	6.75	20	0	0
Median	1	0	2	13	0	0
25th percentile	0	0	0	7	0	0
Minimum value	0	0	0	0	0	0

[a] Modified from Figure 3 of Takebayashi et al. (2024).[28] Note that Figure 3 shows the figures excluding outliers. Therefore, some values for categories with outliers are different from those shown in the table.

Nutrient Profiling Model for Dishes in Japan (NPM-DJ (1.0))[29)]

NPM-DJ (1.0) classifies dishes into staple food, side dish, main dish, mixed dish (consisting of a side dish and main dish), and mixed dish with staple food. The main feature of the dish version is that it allows comprehensive evaluation of a "dish" that combines foods, including seasonings (miso, soy sauce, etc.) and cooking oils, etc., which are not consumed separately. This enables seasonings, cooking oils, etc., which are generally rated low in existing nutrient profiling models, to be incorporated into comprehensive evaluations by combining them with other foods.

Example of sodium content setting utilizing the Nutrient Profiling Model for Dishes in Japan Version 1.0

① The company's targeted product is Tempura Nabe Udon (With all the soup: 1,350 mg sodium/serving). According to **Table 3**, this corresponds to 13 points (>1,339 and ≤1,442 mg/serving).

② According to **Table 6**, the target product falls into the staple food category. According to **Table 7**, the median (25th, 75th percentile) for staple foods was 3.0 (1.0, 9.5). The points of the company's product are higher than the maximum value for staple foods.

③ Its sodium content is higher among the staple foods. However, the product must still taste good. To achieve a healthier product that still tastes good, the first goal is to get closer to the 12-point sodium range (>1,236 and ≤1,339 mg/serving).

Table 6. Categories in the Nutrient Profiling Model for Dishes in Japan (NPM-DJ (1.0))[a]

Dish category	Characteristics
Staple food	At least 2/3 of the main ingredient weight contains the following food(s): Rice, bread (excluding sweet bread), noodles, and other grains
Side dish	At least 2/3 of the main ingredient weight contains the following food(s): Vegetables, potatoes, legumes other than soybeans, mushrooms, seaweeds, and seeds
Main dish	At least 2/3 of the main ingredient weight contains the following food(s): Meat, fish, eggs, soybeans and soy products
Mixed dishes (dishes consisting of a side dish and main dish)	• No food product that constitutes >2/3 of the weight of the main ingredient • Less than 0.5 servings b of staple food
Mixed dish with staple food	• No food product that constitutes >2/3 of the weight of the main ingredient

[a] Modified from Table 1 in Tousen et al. (2024).[29] It is classified based on the dishes in the food pyramid.

[b] One serving consists of approximately 40 g of carbohydrates derived from the main ingredients.

Table 7. Distribution of sodium points by dish category [a]

	Staple food	Side dish (e.g., vegetables, beans, pickles)	Main dish	Mixed dish	Mixed dish with staple food
Maximum value	27.0	9.0	5.0	14.0	30.0
75th percentile	9.5	4.0	3.0	8.5	9.8
Median	3.0	2.0	2.0	6.0	8.5
25th percentile	1.0	1.0	2.0	5.0	7.0
Minimum value	0.0	0.0	1.0	2.0	4.0

[a] Modified from Figure 3 in Tousen et al. (2024).[29] Note that Figure 3 in the paper shows the figures excluding outliers. Therefore, some of the values for categories with outliers differ from those shown in the table.

(3) WHO sodium content targets by food category

WHO has published sodium content targets (global benchmarks) set by food category for 2021.[21] It was established as an international reference standard based on the collection and analysis of salt reduction goals from 41 countries and one WHO subregion.

In setting the targets, a food classification system was established in reference to work related to the development of the WHO Regional Nutrient Profiling Model. Typical food categories were extracted based on trends in goals of each country, ultimately comprising 18 major categories and 97 subcategories.

As part of its prevention measure for noncommunicable disease control, the WHO aims to reduce relative salt intake worldwide by 30% by 2025,[30] and ultimately to reduce daily intake to < 5g per person.[7] To achieve these goals, there has been an international call to reduce sodium content in food products, and the global benchmark is being used as an indicator of such efforts.

These standards not only help countries to develop policies and strategies but also serve as a reference for businesses when improving and reviewing their products. Furthermore, it is positioned as a common starting point for international collaboration with the private sector.

(4) Calculating relative salt reduction

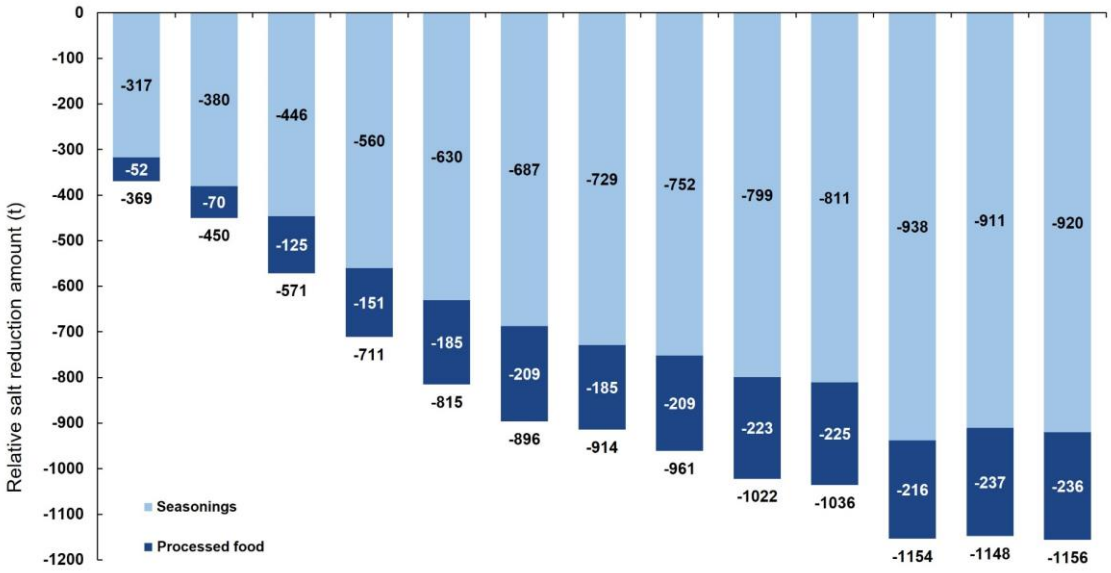
Calculating the relative salt reduction for each product is an effective means to show how much salt reduction can be expected or has been achieved through product improvements. The extent to which each product contributes to salt reduction can be visualized by clearly indicating the relative salt reduction.

After determining the percentage of salt reduction relative to the baseline, estimate how much salt reduction will be achieved through the sale of the improved product. This calculation requires the salt equivalent at baseline, the salt reduction rate, and the number of improved products sold.

Relative salt reduction is calculated using the following equation:

Relative salt reduction = Baseline (control product) salt equivalent (g/product weight) × Salt reduction rate of improved product (%) / 100 × Sales volume (units)

As an actual example, relative salt reduction has been estimated for a group of products on the “low-salt food list” approved by the Japanese Society of Hypertension (**Figure 5**).[31] The list, which was created in 2013, includes 42 companies and 296 products by 2024, with a cumulative relative salt reduction of 10,834 tons from 2013 to 2024.



* In 2019, 207 products from 33 companies were listed; however, 1 product from 1 company was not reported, and the total was 206 products from 33 companies.

Figure 5. Relative salt reduction of products on the low-salt food list (modified from the figure[31] presented by the Japanese Society of Hypertension)

(5) Impact assessment with simulation

Even when a business reduces the sodium content of a product, it is a problem that takes a lot of time and money to determine how much of an impact that salt reduction has on the nation's overall salt intake. To address these issues, Unilever utilized a simulation model to estimate how salt intake would change by reducing salt in products. This analysis method will help other companies to investigate the social impact of product improvements.

For example, Dötsch-Klerk et al. (2015)[32] set a short-term goal of 6 g and a long-term goal of 5 g (WHO recommendation) for daily salt intake per person. Based on this goal, sodium content targets were set for each product category. The standards are based on Unilever's internal standards and on standards used by governments in the United Kingdom and other countries as well as on standards used in international nutrient profiling models.

Furthermore, to ascertain the international applicability of these targets, examples of daily meal menus for six countries (the Netherlands, Spain, Greece, the USA, South Africa, and China) were created and tested by applying them to the dietary habits of each country. Consequently, the estimated amount of sodium needed to achieve the goal was estimated for each food and dish (**Table 8**).

Furthermore, with the survey data from the USA, UK, and the Netherlands, a simulation was performed on "how much the nation's overall salt intake would decrease if multiple businesses reduced the salt content of their products in accordance with this standard." As a result, it was estimated that an average reduction of approximately 25% is possible when aiming for 6g per day, and approximately 30% when aiming for 5 g per day. In particular, the 5 g target was expected to reduce salt by 1.8–2.2g per person per day.

It is expected that Japanese businesses will also utilize this type of analysis method. For example, by combining it with the average salt intake in Japan and official goals such as Health Japan 21 (third term)[17] and the Dietary Reference Intakes for Japanese (2025 edition)[16], it is possible to quantitatively demonstrate how much the salt reduction in a company's products will benefit society.

Table 8. Sodium standards by food or dish[32)]

Product Category	Sodium content target to achieve 2400 mg/day of sodium (6 g salt)	Sodium content target to achieve 2000 mg/day of sodium (5 g salt)
General Criteria	1.6 mg/kcal 100 mg/100 g	1.3mg/kcal 100mg/100g
Bread and cereal	375mg/100g	375mg/100g
Sandwiches/Rolls	1.6mg/kcal	1.4mg/kcal
(Non-)processed meat, meat products, meat substitutes	675mg/100g	675mg/100g
(Non-)processed fish and fish products	340mg/100g	340mg/100g
Cheese (products)	900mg/100g	675mg/100g
Main dish	1.6mg/kcal	1.6mg/kcal
Side dish (e.g., vegetables, beans, pickles)	250mg/100g	250mg/100g
Sauce	540mg/100g	340mg/100g
Emulsion-type dressings (e.g., mayonnaise)	1,080mg/100g	750mg/100g
Water-based dressings (e.g., ketchup)	1,080mg/100g	750mg/100g
Seasonings (herbs, spices, marinades, etc.)	360mg/100g	265mg/100g
Soup and broth	360mg/100g	265mg/100g

Product Category	Sodium content target to achieve 2400 mg/day of sodium (6 g salt)	Sodium content target to achieve 2000 mg/day of sodium (5 g salt)
Snacks (including sweet, salty and ice cream)	1.6mg/kcal or 100mg/100g	300mg/100g
Spreads and cooking products (margarine, butter, oil, and fat products for frying and deep frying)	1.6mg/kcal or 720mg/100g	1.3mg/kcal or 470mg/100g

4. Implementation period and goal achievement year

To promote salt reduction efforts steadily, it is important to clarify “how much to reduce (goal)” and “by when the goal should be achieved (goal period).” Setting an implementation period and goal achievement year is essential for charting a realistic and sustainable path to salt reduction, and it is also effective from the perspective of progress management and internal and external accountability.

In this section, we will describe the basic concepts in designing the implementation period and the goal achievement year. We will also introduce some examples of policies in Japan and overseas, and explain key points for setting realistic time frames according to your company’s actual situation.

The timeline will be determined based on the scale of the target product and the degree of salt reduction. For example, the Health Japan 21 (third term) aims to achieve 7 g/day for the average salt intake of the population over the 9 years from 2024 to 2032.[17] Additionally, the United Nations Sustainable Development Goals (SDGs) set long-term goals for the 15-year period from 2015 to 2030.[33] Overseas guidance on salt reduction provides a period of time during which phased efforts can be made. Examples include 2.5 years in the USA,[22] 4 years in the UK (2020–2024),[34] and 5 years in Canada (2020–2025).[25]

It is important to design a phased approach that is appropriate to your company’s situation, while referring to the timeframe set by these governments and international organizations. Setting an interim evaluation year to check progress and revising goals as necessary will allow salt reduction to proceed in a more realistic and effective manner.

Key points on setting the implementation period and goal achievement year

1. Set goals flexibly according to the scale of the target product and the degree of reduction aimed for.
2. Establish a reasonable period of time for gradual salt reduction.
3. Establish an interim evaluation year and revise goals as necessary.

Column: Tips for reducing salt

When improving products for salt reduction, a certain salt concentration may be required to ensure food safety (e.g., antimicrobial effect) and functionality in manufacturing. Various technical innovations have been used to help salt reduction while meeting these requirements.

One typical approach is the use of “salt substitutes,” which replace some of the sodium chloride (regular salt) with potassium chloride or other similar. This is being introduced in various countries around the world. In Ireland, for example, the government has provided guidelines on the optimal use of potassium-based salt substitutes to promote their use in light of the difficulty of reducing salt in some processed foods.[35] However, potassium chloride has a distinctive bitter taste that needs to be adjusted. The taste is improved with the combined use of carrageenan and adjusting the combination ratio.[36]

Companies are also developing their own unique technologies. For example, Arla Foods Inc. has developed a substitute for emulsifying salt used in the manufacture of processed cheese that reduces salt and preserves quality.[37] In Japan, Ajinomoto Corporation’s “Yasashio®” is an example of a product that utilizes potassium chloride.[38]

Note that products with high potassium content should be used with caution. Potassium elimination is particularly difficult in individuals with impaired renal function, and there is a risk of hyperkalemia. For this reason, it is important to label the amount of potassium contained in the product and warn the consumers concerned.

Additionally, attention is also being paid to the use of flavorings to reduce salt content. Unilever is working to enhance flavor and reduce the amount of salt used by blending vegetables, herbs, and spices.[39] Furthermore, the International Food & Beverage Alliance (IFBA), an international trade association, has shown that in addition to utilizing potassium chloride, flavoring with aromas, herbs, and spices is an effective means to reduce salt.[40]

Thus, it is expected that the introduction of new technologies and the use of traditional ingredients will enable new ways to reduce salt without sacrificing flavor. These efforts are expected to become increasingly important in future product improvements.

Chapter 3: System and collaboration to support product improvement for salt reduction

It is essential for business operators to have an internal organizational system in place to work on product improvements for salt reduction. Even if a system for product improvements is already in place, it is important to periodically review and update the system. Collaboration with outside agencies is also key. Sharing goal setting with outside agencies allows for more realistic and feasible goal setting.

When improving products, balancing salt reduction with maintaining flavor is a big challenge; however, exchanging information with external organizations may help gain knowledge to resolve this issue. Below are examples of internal systems based on our independent research and external organizations with which we expect to collaborate.

1. Internal organizational system

In our independent research, we found cases where the product planning and development departments were responsible for setting internal goals and formulating strategies for salt reduction. Additionally, we identified examples of external organizations, such as business associations, taking on the role of coordinating individual businesses' salt reduction commitments and annual reports.

Figure 6 presents an example of an internal system for salt reduction. The product planning and development department takes the lead in setting salt reduction goals and creating a draft business strategy. Management approves the product improvements, which are then implemented as part of the business.

In cases where an internal system for product improvements is not yet in place, or when aiming to strengthen the system, it is effective to receive support for building an organizational structure while sharing the goal of salt reduction with other businesses through participation in a trade association. **Figure 7** presents an example of an organizational system that utilizes such business associations. The trade associations compile annual reports and other documents that report on the progress of each business in implementing salt reduction, and disclose their goals and results to the public. As an international example, IFBA has also stated its commitment to salt reduction as a trade association and publishes the results of each business.[40)]

While each business has its own organizational system, it is important to work on salt

reduction in products in a way that is consistent with one's own company's existing system. Furthermore, to make the system more effective, it is necessary to continuously review and improve the system.

Figure 6. An example of an internal organizational system for promoting salt reduction

Figure 7. An example of an organizational structure for salt reduction using business associations

2. Collaboration with external organizations

To promote efficient and effective salt reduction efforts, it is essential to collaborate with external organizations such as government agencies and specialized associations. Collaboration with the government is especially important in understanding the government's policy on salt reduction and the state of salt intake in the community. In addition, by collaborating with organizations that are actively engaged in salt reduction, it is possible to obtain advice on the latest findings and specific methods, which will help promote business.

This guide introduces (1) a government-led initiative that promotes collaboration between government and businesses, and (2) the activities of two external organizations that can collaborate in the development and certification of low-salt products.

(1) Strategic initiative for a Healthy and Sustainable Food environment

The "Strategic Initiative for a Healthy and Sustainable Food Environment' was launched in March 2022,[13] based on the Japanese government's commitment at the Tokyo Nutrition Summit 2021 and the report of the 'Study Group for the Promotion of a Naturally Healthy and Sustainable Food Environment," published in June of the same year.[15] This initiative aims to create a food environment where everyone can become healthy naturally through collaboration between industry, academia and government as well as individual businesses and organizations. With the aim of having 42 businesses participating by 2024,[41] it has become an important platform for improving the food environment in Japan.

The initiative has positioned "excessive salt intake" as a priority nutritional issue, and is engaging in efforts reduce salt intake through collaboration between industry, academia, and government. Specifically, the following activities are underway.

1) Development of an action plan for the initiative based on the commitments of the Tokyo Nutrition Summit 2021

Industry, academia and government collaboration to develop specific action plans are pushing forward efforts to improve the food environment.

2) Nutrient profiling model development

A science-based nutrient profiling model is being developed to comprehensively evaluate the nutritional value of our products and help provide information to consumers.

3) Verification of effectiveness of salt reduction measures

Multicenter verification is conducted to validate the effectiveness of salt reduction measures, including effective consumer appeal methods and sales methods.

4) Providing a platform to share information and exchange opinions

To promote salt reduction efforts, opportunities are provided for the exchange of information between industry, academia, government, and other stakeholders, including financial institutions, to share the latest knowledge and case studies.

The initiative invites experts on SDGs and ESG issues and supports opportunities for participating businesses to examine the social impact of food production and sales. Further opportunities will be provided for participating businesses to collaborate with relevant ministries with the aim of expressing SMART action goals in line with relevant policies. These efforts were introduced in the WHO report on noncommunicable disease control as good practices that should be presented in detail to the world.[42)]

Tokyo Nutrition Summit 2021 Commitments of the Government of Japan (excerpt)[43)]

> In particular, the following efforts will further promote Japan's nutrition policy as an important part of Universal Health Coverage (UHC), which is the foundation of a sustainable society over the life course and leaves no one behind.
>
> - A major nutrition policy package will be developed that includes promotion of a healthy and sustainable food environment through collaboration among industry, academia and government by addressing issues such as excessive salt intake, emaciation among young women, and nutrition disparities associated with economic disparities.
> - The progress and results of these efforts will be announced annually starting in 2023.

(2) Efforts and activities of the committee on salt reduction and nutrition of the Japanese Society of hypertension

The Japanese Society of Hypertension conducts a wide variety of activities to promote salt reduction among the public. The Salt Reduction and Nutrition Committee, established in 2005, was reorganized and renamed in 2020 and works under four policies.[44)]

1) Political and social approaches

Lobbying government, municipalities, and industry to reduce salt intake.

2) Population approach

Working at the collective level with hypertensive patients, citizens and the public.

3) Individual approach

Working with hypertensive patients, their families and health care providers.

4) Publication activities

Supporting the above three activities through websites and booklets.

In 2019, the Japanese Society of Hypertension issued the “Tokyo Declaration Promoting Salt Reduction - JSH Tokyo Declaration on Salt Reduction,” and has been undertaking activities based on the “6 Strategies for 6 g.” As part of this effort to encourage the development of low-sodium foods, products that meet the standards set by the society are listed on the low-salt food list. The number of products listed has increased each year, and in 2024, 107 products from 26 companies were listed, contributing to an annual reduction of 1,156 tons of salt. In addition, as of 2015, the “Reduced-Salt Food Award” has been given to products on the low-salt food list that have made a particular contribution to salt reduction.

Collaboration with local governments is also actively underway. One specific example is the efforts to reduce salt in the town of Mashike, Hokkaido. [45)] With the society’s development support, Mashike soy sauce was developed in 2018. It is flavored to suit the food culture of the coastal region and contains 1 g of salt per tablespoon less than the average soy sauce product. Efforts, such as proposing recipes using Mashike soy sauce contributes to salt reduction. The Japanese Society of Hypertension has been recruiting towns for its “Hypertension-free Municipality” model since 2019 to support hypertension measures in local governments, including salt reduction.[46)] The town of Mashike has also been certified as a model town.

(3) Efforts and activities of the National Cerebral and Cardiovascular Center

The National Cerebral and Cardiovascular Center has launched the “KARUSHIOH” project based on the concept of “using salt lightly to bring out the best taste,” with the aim of preventing cardiovascular disease and extending healthy life expectancy.[47] Public awareness efforts are underway to promote low-salt diets through various initiatives, such as proposing low-salt recipes that are easy to follow for discharged patients and the general public, holding cooking classes, and planning the S-1g (S-1 Grand Prix) competition, a low-salt recipe contest.

Collaboration with businesses to expand the range of low-salt food options is actively underway. Under the “KARUSHIOH Certification System,” which began in 2014, standards are set in the categories of lunchboxes and set meals, individual items and side dishes, seasonings, processed foods, and salted products such as seafood. After strict screening by the National Cerebral and Cardiovascular Center, certified products can display the “KARUSHIOH Certification Mark” on their products. This certification mark has led to increased consumer trust as a proof of good taste certified by a medical institution, expansion of a new customer base, market appeal, and promotion of the KARUSHIOH Project as a unit. By 2024, applications submitted for more than 120 items from 45 companies had been approved, with sales exceeding 2 billion yen, indicating excellent outcomes.[48] The KARUSHIOH office continuously follows up on products after certification to maintain the brand value.

Appendix 1: Overseas examples of setting salt reduction goals

Examples of setting salt reduction goals by major overseas food-related businesses are presented (**Appendix Table 1**). Each company's efforts are diverse in terms of the scope of products targeted, the types of nutrients targeted, the criteria referenced, and the timeframe for implementation. They also range from goals that target only salt to goals that include multiple nutrients such as saturated fatty acids and added sugars. Regarding standards, in some instances government recommendations are used, whereas in other instances businesses use their own standards.

Arnott's Group[49)]

In the Australian and New Zealand markets by 2025, the company aims to (1) have at least one-third of its products achieve ≥3.5 of Health Star Rating, a nutrient profiling model recommended by governments,[50)] and (2) have at least half of its products with positive nutritional attributes such as reduced salt, saturated fat added sugar as well as being enriched with whole grains, fiber, and protein. As of April 2024, 35% for (1) and 50.2% for (2) have been achieved.

Aldi[51)]

The company aims to have at least 95% of its own-brand products comply with the maximum limits for food categories set in the "Salt Reduction Targets for 2024"[34)] established by the British government for the period from 2020 to 2024. The target nutrient is sodium only. As of 2023, 84% of all its products already meet the standard.

Nestlé[52)]

During the target period from 2021 to 2025, Nestlé aims to achieve the salt reduction goals set within the company for at least 90% of sales volume in the following eight product categories: plant-based meal products, pizza, frozen prepared foods, recipe mixes, room temperature preserved foods, instant noodles, soups, bouillon and dried seasonings, ketchup, mayonnaise, and dressings.[52)]

These salt reduction goals are based on the WHO's Global Sodium Benchmarks[21)] and are set independently by Nestlé.

Bel[53)]

During the target period from 2017 to 2025, for the product range aimed at children and their families, Bel aims for at least 80% of the products to comply with the company's nutrient profiling model, "Bel Nutri+".[54)] Target nutrients include salt, total energy, protein, saturated fatty acids, calcium, and added sugars.

McCain Foods[55)]

McCain Foods aims to reduce sodium content by 15% on a sales-weighted average between 2018 and 2025 for McCain-branded potato and appetizer products. No specific salt reduction standards have been set. As of 2024, a 6.5% reduction has already been achieved for appetizer products, whereas that for potato products have increased 0.7%, indicating differences in progress between product categories.

Appendix Table 1. Overseas examples of setting salt reduction targets

Company name	Targeted product	Targeted nutrients	Target	Reference standard	Implementation period
Arnott's Group[49]	Own brand products	Salt, saturated fats, added sugars, whole grains, fiber, protein	At least 1/3 of the products have a HSR of ≥3.5; at least 1/2 of the product has positive nutritional characteristics	HSR (NPM; Australia and New Zealand Food Standards Agency)[50]	2021–2025
Aldi[51]	Own brand products	Salt	Over 95% of products comply with standards	Salt reduction targets for 2024 (UK government)[34]	2020–2024
Nestlé[52]	8 product categories	Salt	At least 90% of total sales volume in each category complies with standards	Company salt reduction goal[52]	2021–2025
Bel[53]	Product lines targeted at children and families	Salt, total energy, protein, saturated fatty acids, calcium, added sugars	More than 80% of products comply with standards	Bel Nutri+ (NPM)[54]	2017–2025

Company name	Targeted product	Targeted nutrients	Target	Reference standard	Implementation period
McCain Foods[55)]	Potato and appetizer products	Salt	15% reduction in sodium content on a sales-weighted average	None	2018–2025

HSR: Health Star Rating System, NPM: Nutrient profiling model

Appendix 2: Japanese examples of setting salt reduction goals

Efforts to reduce salt consumption are getting more popular in Japan, and there are several businesses that have clearly stated their target products for salt reduction, specific standards for salt content, and implementation periods and goal achievement years (**Appendix Table 2**).

Ajinomoto Co. Inc.

Ajinomoto Co., Ltd. aims to provide 400 million people annually with low-salt products and products that help with protein intake to extend the healthy life expectancy of 1 billion people by 2030.[56] To propose “delicious low-salt foods” with umami and dashi flavors, the “Smart Salt®” project has been launched and is underway overseas.

Kikkoman Corporation

In response to a growing demand for low-salt products in the Japanese soy sauce market, Kikkoman Corporation aims to increase the sales composition ratio of low-salt products in its household soy sauce products to 25% by 2024 and 35% by 2030.[57] By promoting the sales of low-salt products, Kikkoman aims to help solve the problem of excessive salt intake among the Japanese population.[58]

Lawson, Inc.

Lawson, Inc. has developed health-related products based on three pillars (sugar control, salt control, and protein intake.[59] The goal was to reduce the salt equivalent per serving of all products to 3 g or less by 2021–2022, and to reduce salt by up to 30% (20% on average) by 2019–2021, mainly in the standard staple menu items.[60, 61] Starting in 2023, Lawson is working toward achieving their goal, including salt control in our 10 health themes.[62]

In addition to these businesses, there are many others that are actively working to reduce salt. For example, the reduced-salt dressing developed and marketed by FamilyMart Co., Ltd. won the Gold Award at the 5th JSH Reduced-salt Food Awards, organized by the Japanese Society of Hypertension’s Salt Reduction Committee, as a product with outstanding results in promoting salt reduction.[63]

Appendix Table 2. Salt Reduction Goals of Japanese Businesses

Company name	Target	Implementation period (Fiscal year)	Outline of initiatives
Ajinomoto Co., Inc.	1) Among the products with enhanced nutritional value, products that help with “delicious salt reduction” and “protein intake” are offered to 400 million people annually.[56)] 2) The percentage of products with enhanced nutritional value, including salt, will be 60%.[56)]	1) 2021–2030 2) 2021–2030	Ajinomoto pledged to help extend the healthy lifespan of one billion people. The “Smart Salt®” project, which proposes delicious salt reduction, was extended to include foreign countries.[56)]
Kikkoman Corporation	The following table presents the sales composition of low-salt products among Kikkoman’s soy sauce products (household use) in Japan.[57)] 1) 25% 2) 35%	1) 2022–2024 2) 2022–2030	In the Japanese soy sauce market, demand for low-salt products is increasing. Kikkoman announced its own goals to accelerate this trend, and contribute to solving the problem of excessive salt intake.[58)]
Lawson, Inc	1) The salt equivalent per serving of all products is kept below 3 g.[59)] 2) Salt will be reduced by up to 30% (average 20%),	1) 2021–2022 2) 2019–2021 3) 2023–2025	Health-related products were developed around three pillars (sugar and salt control, and

Company name	Target	Implementation period (Fiscal year)	Outline of initiatives
	focusing on staple food in set menus.[60, 61)] 3) Sales of products that fall under the 10 health themes, including salt control, are to be 500 billion yen.[62)]		protein intake).[59)] Starting in 2023, efforts have been underway to achieve goals, including salt control in the 10 health themes.

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