

GUIDING PRINCIPLES AND FRAMEWORK FOR DEVELOPMENT AND IMPLEMENTATION OF THE GHANA NUTRIENT PROFILING MODEL



HD4HL
Healthier Diets 4 Healthy Lives

PARTNERS



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○Declarations & Acknowledgments

This Report was commissioned by the HD4HL Project. The HD4HL Project seeks to motivate a comprehensive policy response to the double-burden of malnutrition in Ghana - by building evidence and mobilizing multi-stakeholder action toward a policy bundle for healthier and more equitable consumer food environments and systems. A coalition of government agencies (led by the Ministry of Health, Food and Drugs Authority, National Development Planning Commission), members of Academia (led by the University of Ghana School of Public Health) and Civil Society (led by the Coalition of Actors for Public Health Advocacy) are collaborating through four work packages that will establish the evidence, tools, policy pathways and evaluation to enable the political commitments and food systems change to be realized.

The Multi-Stakeholder Technical Task Team (M3T) of the HD4HL Project contributed to the development of this guidelines:

Suggested Citation: The Multi-Stakeholder Technical Task Team (M3T) of the HD4HL Project (2022). Technical Report #1 of the HD4HL Project, Accra, Ghana.

The HD4HL Project would also like to thank Mr. Silver Nanema for developing the cover design.

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○Funding Acknowledgment

The HD4HL Project is made possible with financial support from the International Development Research Centre (IDRC-Canada), and The Rockefeller Foundation. (Grant # 109864-001; PI: Laar 02/1/2022-01/31/2025).



Canada



6.0 Background

Nutrient profiling, “the science of categorizing foods according to their nutritional composition for reasons related to preventing disease and promoting health (Drewnowski, 2005), is recognized as a health promoting tool. Currently, various ways of profiling food as “healthy or unhealthy” exist (Arambepola et al 2008; Drewnowski, 2010; Monteiro et al 2010, WHO, 2019). Accordingly referred to as a Nutrient Profiling Model (NPM), Nutrient Profiling System/Scheme (NPS), this science-based tool evaluates the nutritional quality of foods and beverages – categorizing, classifying or ranking them according to their nutritional composition and their impact on health. Existing NPMs have varied applications in health, commerce, and regulatory systems – used to market, to educate, and to regulate. Their principal goal has been to help consumers identify nutritious foods, make decisions on food purchasing and improve diet quality by encouraging a healthy diet (WHO, 2011; WHO, 2019; Drewnowski 2017; Rayner et al 2013).

The ability of public health and regulatory agencies to scientifically define healthier food options is one of the topmost priorities of Ghana’s Ministry of Health. NPMs are known to be useful in this regard (Rayner, 2017; Labonte et al 2018). Over the last three decades, governments (eg public health and regulatory authorities), private sector actors (eg food industry), and other stakeholders have developed more than 100 different NPMs (Labonte et al 2018), that are used to inform a variety of policy, regulatory, and educational applications, including product reformulation, labelling and claims regulations, restrictions on marketing to children, restrictions on point of sale promotions and food procurement (European Heart Network, 2015; Scarborough et al 2016; Jenneson et al 2020; Santos et al 2021; Frank et al 2021). Whilst their availability is helpful, the exponential growth of different nutrient profiling schemes and currently differing interpretations has been shown to confuse both the consumer and the policy maker (Scarborough et al 2014; Cooper, 2016). Many calls from health and consumer groups exist for the development of a NPM consistent with international recommendations for preventing diet-related diseases and with national food-based dietary guidelines that could be applied to all products and with a clearly defined cut-off for defining healthiness, for permitting marketing, or sale (Jewell et al 2015; Scarborough et al 2016; Scarborough et al 2013; Labonte et al 2018; Lobstein et al 2009). In Ghana, the development and application of the Ghana NPM will be facilitated by the Healthier Diets for Health Lives (HD4HL) Project, and informed by a combination of transparent science-informed data, and context-relevance (including taking into consideration the public health nutrition priorities in Ghana and the established need for double-duty policies’ that can combat malnutrition in all its forms (Laar, 2021). The HD4HL Project is coordinated by a coalition of government agencies (led by the Ministry of Health, Food and Drugs Authority, National Development Planning Commission), members of Academia (led by the University of Ghana School of Public Health) and Civil Society (led by the Coalition of Actors for Public Health Advocacy). The project aims to build evidence and mobilize multi-stakeholder actions toward a policy bundle for healthier and more equitable consumer food environments that reduce the double burden of malnutrition in Ghana. The Agency of the Ministry of Health mandated to regulate food and drugs and oversee the implementation of Ghana Public Health Act (Act 851), and the University of Ghana School of Public Health, will co-lead the NPM Sub-Committee of the HD4HL Project’s multi-stakeholder technical task team (M3T). The objectives and responsibilities of the M3T, and its sub-Committees are outlined elsewhere (see HD4HL Project M3T TORS).

2.0 Purpose and structure

This document sets out the guiding principles and framework for developing and applying a NPM to underpin food-based policies in Ghana. Referred to as a double-duty policy bundle, such policies aim to promote healthy diets and prevent malnutrition in all its forms.

This document benefits from existing guiding documents including those developed by the WHO to articulate the principles for Nutrient Profiling and Front of Pack Labelling (FOPL) (WHO, 2010; WHO,

2019; EFAD, 2018). The document is organized into three parts. Part 1 presents the aims and scope of the Ghana NPM and the stakeholders required in its development and implementation. Part 2 presents the Guiding Principles and framework for the development, implementation, monitoring and evaluation of the NPM and its associated policies. Part 3 summarizes the considerations for applying the NPM – to underpin food-based policies.

2.1 Aims and scope

2.2.1 Aims

The principal aim of a NPM is to facilitate the classification/ranking/categorization of foods as healthy or less healthy. Once applied in policies such as front of pack labelling (FOPL) it assists consumers in making informed food purchases and healthier eating choices; if applied as marketing regulations, or a food-related health tax, it carries an additional benefit of stimulating favourable compositional changes to food products available in retail outlets.

2.1.2 Scope

The scope of the proposed Ghana's NPM and its associated policies is packaged, manufactured or processed foods that are required to carry a nutrient declaration, presented as ready for sale to the consumer in the retail sector. Guidelines predating this, have recognized that policies that the NPM aim to underpin may not be appropriate for some packaged foods, including those for infants and young children. Existing World Health Assembly resolutions and WHO policies, prohibit promotion (including using a FOPL) of products for infants and young children e.g. infant and follow-up formula. Second, packaged foods that are exempt from displaying a nutrient declaration (e.g. foods with very low nutritional contribution such as herbs, spices, tea, coffee and condiments) are usually out of scope of NPMs.

3.0 Concepts and definitions

- **Nutrient profiling:** “a science of categorizing foods according to their nutritional composition for reasons related to preventing disease and promoting health
- **Nutrient Profiling Model:** a science-based tool that evaluates the nutritional quality of foods and beverages – categorizing, classifying or ranking them according to their nutritional composition and their impact on health. Noted earlier, NPM could be applied to several other policies (some of which are presented below).
- **Front-of-pack labelling:** refers to nutrition labelling systems that:
 - are presented on the front of food packages (in the principal field of vision) and can be applied across the packaged retail food supply;
 - comprise an underpinning nutrient profile model that considers the overall nutrition quality of the product or the nutrients of concern for NCDs (or both);
 - present simple, often graphic information on the nutrient content or nutritional quality of products, to complement the more detailed nutrient declarations usually provided on the back of food packages.
- **Marketing regulations/Marketing restrictions:** Generally, food marketing policies call for comprehensive action by governments to reduce the impact of promotion of unhealthy foods particularly to children. In 2010, the World Health Assembly (WHA) through WHA Resolution 63.14 endorsed a set of recommendations on the marketing of foods and non-alcoholic beverages to children – urging WHO Member States to among others:
 - take necessary measures to implement the recommendations on the marketing of foods and non-alcoholic beverages to children, while taking into account existing legislation and policies;

- to identify the most suitable policy approach given national circumstances and develop new and/or strengthen existing policies that aim to reduce the impact on children of marketing of foods high in saturated fats, trans-fatty acids, free sugars, or salt;
 - In some jurisdictions, food products deemed to contain “high” amounts these are
 - not permitted to use child-directed marketing strategies or appeals in any media/marketing (including use of brand characters on packaging);
 - are not permitted to advertise during children’s programming (TV, cinema, online) or when child audience share >20%;
 - are not permitted to advertise on TV from 6 a.m. – 10 p.m.; and
 - are not permitted to be marketed or sold, or offered for free at kiosks, cafeterias, and feeding programs at schools and nurseries.
- **Food-related fiscal policies (including SSB Tax):** Food-related fiscal policies aim to align with health outcomes by helping to make healthy eating choices easier and cheaper. The instruments of government for this purpose are taxes and subsidies (e.g. taxing unhealthy foods and availing subsidies on healthy foods), or income transfers (cash, vouchers, or in-kind).
 - **Public Food procurement policies:** Public settings, such as schools, childcare centers, nursing homes, hospitals, correctional facilities (eg prisons) and all other canteens of public institutions, can play a key role in ensuring people are provided with healthy food and helping prevent millions of annual deaths caused by unhealthy diets. Healthy public food procurement and service policies set nutrition criteria for food served and sold in public settings. Policies can cover the entire process of purchase, provision, distribution, preparation, service, and sale of food to ensure each step meets healthy criteria. In 2021, the WHO developed an “action framework” that serves as a tool for governments to develop, implement, monitor and evaluate public food procurement and service policies that align with the core principles of healthy diets as outlined in existing WHO recommendations, viz:
 - limit sodium consumption and ensure that salt is iodized;
 - limit the intake of free sugars;
 - shift fat consumption from saturated fats to unsaturated fats; ○ eliminate industrially-produced trans fats;
 - increase consumption of whole grains, vegetables, fruit, nuts and pulses; and ○ ensure the availability of free, safe drinking water.

4.0 Framework for the development, implementation, monitoring & evaluation of the Ghana NPM

The principles, and considerations presented below provide an overall framework for the development, deployment, and evaluation of a NPM and its associated policies. In the case of Ghana, these guiding principles are organized and presented as requirements and desiderata in the process. We present a set of overarching principles, as well as principles related to multi-sectoral inclusivity and collaborative approaches; those related to the model’s content, design, or format, and those relating to implementation.

5.0 Governance of the NPM

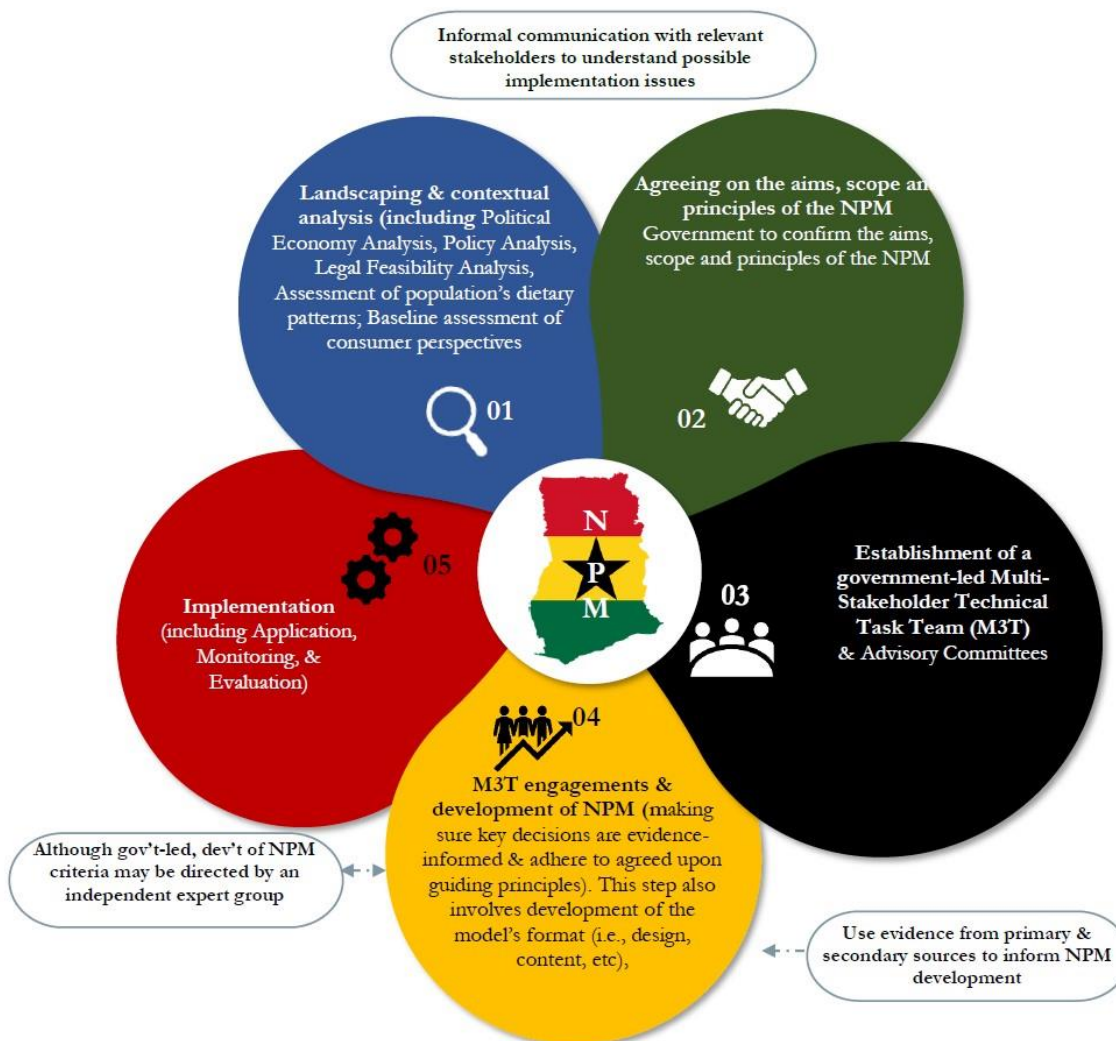
For a NPM to be effective and sustainable, there must be a commitment to governance and oversight throughout its development, implementation, and monitoring and evaluation. It’s recommended that the governance group be government-led, but should include members from key stakeholder groups. In the early stages of implementation, as the NPM is becoming embedded, there needs to be a process to identify and manage any unintended consequences (including errors/abnormalities that can mislead consumers), and to oversee the consumer education campaign and monitoring and evaluation processes.

If not managed, they have the potential to undermine the credibility of the NPM. Governance processes and decisions need to be transparent and accessible.

6.0 Development of a nutrient profiling model

As with previous government-owned NPMs, the development of the Ghana NPM will be iterative, inclusive, and government-led. The government of Ghana will confirm the aims, scope and principles of the model being proposed. Next, and using a collaborative approach the NPM stakeholders will determine the specificities of the model (e.g. the content and format). The development of the Ghana NPM is organized into the following five generally sequential steps (but with room for feedback loops).

Steps in the development and implementation of the Ghana NPM



Adapted from WHO, 2019

These steps are elaborated upon below.

6.1: Landscaping and contextual analysis

Proposed to be initiated at the initial stage of the NPM development, these analyses will clarify, and elucidate the need or rationale for the NPM. Such analysis may include:

- **Political economy analysis** – examination/analysis of the roles of politics, economics, and institutions in policy decisions (examination of the politico-economic dynamics)

- **Legal feasibility analysis** - analysis of the legal framework under which the NPM and its associated policies would be introduced
- **Policy analysis** – analysis of existing national nutrition and related policies, to examine the feasibility of implementation and the appropriateness of the timing for development – ensuring policy coherence.
- **Epidemiological analysis** of diet-related NCDs and the population’s dietary patterns (prevailing intake levels of nutrients to encourage or limit, prevalence of inadequacies in intakes of key positive nutrients, and excess diet-related NCDs, micronutrient malnutrition).
- **Baseline assessment of consumer perspectives** - assessment of consumer understanding and use of the NPM and its associated policies such as POPL.

In Box 1 below, we list the contextual analysis to be conducted by the HD4HL Project. The evidence generated will be curated specifically for use by the HD4HL Project and Ghanaian Policy Makers.

Box 1. Proposed landscaping and contextual analyses associated with the Ghana NPM/HD4HL Project

[A] Rapid/systematic reviews

1. Implementation of a sugar-sweetened beverage tax in low- and middle-income countries: a rapid review with focus on sharing best practices and recommendations for Ghanaian policymakers (processes, best practices, challenges, etc) – Funded through the GHAI Advocacy for Health (A4H) Project (Commissioned Review)
2. The impact of a sugar-sweetened beverage tax on select health outcomes: A rapid review – Funded through the GHAI A4H Project (Commissioned Review)
3. The macroeconomic impacts of diet-related fiscal policy: A rapid review – Funded through the GHAI A4H Project (Commissioned Review)
4. Implementation of NPM in low- and middle-income countries: recommendations (processes, best practices, challenges, etc) for Ghanaian policymakers (Commissioned Review)
5. Identifying potentially relevant nutrient profiling models for consideration by the Ghana Nutrient Profiling sub-committee
6. Implementation of FOPL in low- and middle-income countries: recommendations for Ghanaian policymakers (processes, best practices, challenges, etc) (Commissioned Review)
7. Implementation of marketing regulations in low- and middle-income countries: recommendations for Ghanaian policymakers (processes, best practices, challenges, etc) (Commissioned Review: t)
8. Implementation of public food procurement policies in low- and middle-income countries: recommendations for Ghanaian policymakers (processes, best practices, challenges, gaps, etc) (Commissioned Review)
9. Implementation of FE policies in Africa: recommendations for Ghanaian policymakers (processes, best practices, challenges, etc) (Commissioned Review)

[B] Policy analysis, political economy analysis, legal feasibility analysis, corporate political analysis

10. Policy analysis – led by HD4HL Project Team
11. Political economy analysis – HD4HL Project Team with guidance from a Consultant
12. Legal feasibility analysis (only SSB Tax) – Funded through the GHAI A4H Project (Commissioned Review)
13. Corporate political activity analysis – HD4HL Project Team with guidance from Consultant
14. State of Ghana’s food composition database (for branded/packaged ready to sell foods) –HD4HL Project Team with support from local Expert

[C] Economic Analysis (only SSB Tax):

15. The potential impact of a sugar-sweetened beverage tax on revenue: a modelling analysis – Consultants (Local Health Economist with support from PRICELESS South Africa)

[D] Primary studies/surveys.

The primary studies including baseline assessment of stakeholders and key opinion leaders' views on, and public support/acceptability for the NPM, unhealthy foods tax, marketing regulations, FOPL, and public food procurement; baseline prices and purchases of sugar-sweetened beverages; compilation of food composition data, and the NPM validation studies are outlined elsewhere (see Appendix 1).

6.2: Agreeing on the aims, scope and principles of the NPM

To define, develop and deploy nutrient profiling models, different pieces of information are needed, such

- as:
- Guidance/rules on scientific knowledge to assign foods to different groups;
 - Food-based dietary guidelines; dietary survey data, including the data of generally consumed serving sizes and food composition databases (preferably with branded products).
 - It also requires political will and commitment, meaningful and sufficient engagement with stakeholders, committees or advisory board with stakeholder representation. Although, government-led, the process, ideally should receive inputs of key stakeholders.
 - NPMs also need a systematic effort to validate (calibrate) their accuracy and usefulness to the consumer.

Execution of all such, would benefit from confirmation and adherence to a set of “guiding principles”. The Ghana NPM development and implementation shall adapt existing principles by the WHO (WHO, 2019). The adapted principles shall be affirmed at the first meeting of the M3T. Of note, the adapted principles take in to account Ghana-specific aims, scope and principles of the NPM. The principles may be updated once findings from the contextual analysis (including the specific food cultures of the Ghanaian population) become available.

6.2.1 Overarching principles for the development and implementation of the Ghana NPM

- **Principle 1:** Context-specific, evidence-driven and aligned with Ghana’s public health and nutrition policies/ food regulations, as well as with relevant WHO guidance and Codex guidelines.
- **Principle 2:** A single national system should be developed to improve its application, monitoring, and impact.
- **Principle 3:** Mandatory nutrient declarations, labelling on food packages required for the NPM should be informed by the requisite political, economic and legal feasibility analyses
- **Principle 4:** Continued improvements or adjustments of the NPM should be informed and supported by monitoring and review processes.
- **Principle 5:** The aims, scope and principles of the NPM (and associated policies), as well as data informing the NPM should be transparent and easily accessible.
- **Principle 6:** The NPM should respond to the multiple forms of malnutrition (including diet-related NCDs, micronutrient deficiencies etc)
- **Principle 7:** The development of the NPM should be food systems-centered – avoiding implementation actions only directed at the consumer level; relevant to multiple levels and sectors – driving healthier diets, nutrition and sustainability

6.2.2 Other guiding principles

Aside from the above seven overarching principles, principles related to collaborative approaches, coordination, NPM format (i.e. design and content), and implementation are worth considering.

- **Principle 8:** Government-led and government-owned – government should lead the multisectoral stakeholder engagement process
- **Principle 9:** The NPM should be interpretive (based on symbols, colors, words or quantifiable elements) and understandable to all population subgroups
- **Principle 10:** Uptake of the NPM should be encouraged across all eligible packaged foods – preferably through regulatory means (voluntary application is not recommended).

- **Principle 11:** Early, meaningful, and sufficient engagement with all food systems actors/ stakeholders
- **Principle 12:** Baseline data should be collected to support monitoring and evaluation of the outcomes and impact of the NPM and its associated policies.
- **Principle 13:** Conflict of interest declarations shall be mandatory for all M3T members

6.3: Establishment of a government-led Multi-Stakeholder Technical Task Team (M3T)

Many different groups of stakeholders have interest or potential interest in the development and implementation of NPM. To adhere to the principle of multi-stakeholder inclusivity (discussed later within this document) and to assure a triple win - for the consumers, for public health, and private sector food systems actors, all relevant stakeholders need to be meaningfully and sufficiently engaged.

Stakeholders include:

- *those with a health focus:* government departments and ministries; international organizations with a focus on health; health and consumer organizations; and the scientific community, including public health and nutrition experts; and
- *those with a wider economic and development interest:* including an interest in food industry growth, sales and trade; such stakeholders include the wider food and agriculture sectors – in particular, food manufacturers and retailers, and the scientific community involved in agriculture and food; and
- *those government departments and ministries responsible for industry development and trade* (including the MOH, FDA, ministry of food and agriculture (MOFA), ministry of finance and economic planning (MOFEP), ministry of trade and industry (MOTI).

In the initial conceptual stages, informal engagement from a wide group of experts is recommended to gain an understanding of the likely issues and possible opposition to the NPM. These experts may include food scientists, food systems/food environment experts, public health and nutrition experts, and consumer behavioural experts, social scientists, health economists, legal experts, etc. To strengthen consumer trust, the NPM development and the negotiations between government and stakeholders should be transparent and accessible (e.g. may be achieved by making meeting reports publicly available, and using a process of public consultation). That said, the government of Ghana (relevant MDAs) have the ultimate responsibility and authority for the development, implementation, and monitoring and evaluation of the NPM and the policies it underpins.

6.4: M3T engagements and development of the NPM

Noted earlier, the development of a NPM should involve all relevant food systems actors. That multi-sectoral team should be led by the relevant government MDAs. In the current instance, it's led by the Ministry of Health, and working closely with other government MDAs (including FDA, GHS, MOFA, MOFEP, MOTI, NDPC) as well as Academia, CSOs, and United Nations Agencies.

6.4.1 Developing or Adapting a NPM

Consideration on whether to adapt an existing NPM, or develop one anew (de novo) is a key decision that the M3T needs to make. Such a decision is context-specific; some countries may create their own NPMs, whereas others may adapt an existing system – depending on their unique challenges and needs. We present below checklists (adapted from WHO, 2019) for guiding either pathway.

6.4.2 Adapting an existing NPM

It may be expedient and appropriate to adapt an existing system, which generally takes less time and costs less than developing a new system from scratch. Should the Ghana NPM development M3T

opt to adapt an existing NPM, below is a checklist – culled from the WHO guiding document, to assist with the process.

6.4.2.1 Checklist for identifying and adapting existing NPMs:

- Consider the evidence on the effectiveness of existing NPMs (published evidence or evidence gathered through undertaking primary consumer studies of systems' awareness and performance with the target market).
- Consider the NPM that facilitates healthy food choices quickly and easily. Consumers' objective understanding of the NPM is the primary performance outcome of relevance.
- Understand the barriers to making healthy food choices, so that the NPM's elements can address these.
- Consider systems that would be feasible by seeking input from all food systems actors (including private actors, the scientific community, and consumer and health organizations).
- Ensure that the underpinning nutrient profiling criteria reflect national dietary guidelines and eating habits of the population.
- Where countries do not have standard serving sizes, adopt nutrient criteria based on per 100 g or 100 mL of a food/beverage.

6.4.3 Developing an NPM anew

The development of a new NPM may be appropriate where there is strong disagreement about the use of existing systems, or where these existing systems do not align with the country-specific aims, scope and principles of the NPM or the country context. Below is a checklist to assist in developing a NPM.

6.4.3.1 Checklist for developing a new NPM

- Review the elements of existing systems that are considered to be more effective or less effective in supporting consumers to make informed food purchases and healthier eating choices (using published evidence or primary consumer studies of the usefulness of the NPMs elements, including format such as design and content). Existing categories of systems that can be compared are:
- Understand the barriers for the target group in making healthy food choices, so that the new system elements can address those barriers.
- Consider NPM that would be feasible by seeking input from the food industry, the scientific community, and consumer and health organizations.
- Follow established steps in NPM Development such as"
 - deliberately clarify or agree on the purpose and target population of the NPM
 - deciding which nutrients and other food components to include
 - selection of a suitable NPM type, criteria & base (e.g. per 100 g, per serving or per 100 kJ)
 - choosing the thresholds to use
 - agree on whether and how the NPM should be validated*

**NB: After a NPM has been proposed, it is important that it be validated and tested for appropriateness. This is an essential step before an NPM can be accepted as appropriate for a certain setting.*

6.4.4 Validity testing

Validity refers to the adequacy with which a measurement reflects what is intended to be measured (Roberts et al 2006; Borsboom et al 2004), and may be empirical or theoretical validation. In both cases, tests of internal and external validity are used (Slack et al 2001). Internal validity is the adequacy of the measurement for the specific population being studied, whereas external validity (also referred to as generalisability) is the adequacy of the measurement when applied to wider populations not under study

(Streiner, 2015). Empirical validation is demonstrable through experimentation and systematic observations. Where empirical confirmation of validity is difficult or impossible, theoretical or conceptual validation is employed. A measure is taken to have theoretical validation if its findings conform with the theoretical principles of the disciplines to which it is aligned. In general, the types of theoretical validity include face, content and construct validity.

As to establishing the accuracy of a NPM, there are various types of validation (calibration) approaches depending on how the NPM is to be used. These include content validity, face validity, and construct (convergent, discriminant criterion, predictive) validity. A recent systematic review (Abdul-haq, 2021), reported validation approaches being used in NPM development to include criterion validity, predictive validity, convergent validity and discriminant validity. A summary of examples is as below:

- Comparison of ranking of foods from different nutrient profiling models
- Comparison of the rankings by nutrient profile models with the ranking from nutrition experts.
- The use of dietary survey data to compare nutrient profile rankings and the healthiness of diets and dietary goals
- The use of statistical linear modelling to design theoretical diets with healthy food option to test the construct validity of the models
- The use of prospective associations with health outcomes to test for predictive validity of the nutrient profile models

6.4.5 Select the NPM format

Irrespective of whether the NPM is adapted from an existing one, or developed de novo, negotiations with stakeholders on the format (i.e. design and content) of the NPM should be done, taking into consideration the aims and scope, the overarching principles, and additional country principles as needed. Principles related to the NPM format have to be developed to guide the process of designing the NPM, or its associated policies e.g. a FOPL system and to ensure that there is a common understanding among stakeholders on the expectations for the model. On design, considerations should be given as to whether it should be interpretive or non-interpretive, and how easily understandable it would be to the lay population. It's recommended that NPMs be interpretive, based on symbols, colors, words or quantifiable elements, and their designs should be understandable to all population subgroups. On content, it is recommended that it encompasses nutritional and food components – aiming to inform choice, and enable interpretation of healthiness of food against risks of diet-related diseases (in the context of Ghana, both overweight, obesity, diet-related NCDs, but also undernutrition).

6.5 Application of the NPM

Once proposed, developed and validated, the NPM can be applied in various policies or interventions. As indicated earlier, such may relate to health, regulation, commerce (see table 1). However, for the NPM and its associated policies to be able to realize their goals, food systems actors (especially consumers) must be aware of, and recognize, the content and depictions of the model and policies. For instance, consumers must first recognize and understand the NPM symbol (or symbols); understand what the symbol means, be able to use it correctly and be motivated to use it. Such awareness is facilitated by systems that are widely adopted across the retail space and by formats that promote visibility. For example, in the case of FOPL, those that are large in size, are placed in a consistent position on the front of packages.

6.5.1 Application of the NPM to underpin food policies in Ghana

Although, the applications of NPMs are almost limitless (see table 1), currently, the Ghanaian government plans to apply it in four food-based policies – front of pack labelling, marketing regulations, food-related health taxes, and public food procurement. In all four policies, the principal goal is to help Ghanaian food

systems actors (including policy makers and consumers) identify nutritious foods, make the right decisions on food purchasing and consumption.

Table 1 Potential applications of NPMs

Examples of opportunities for using nutrient profiling in the food supply chain	
Agricultural policies	<ul style="list-style-type: none"> ○ Assessing the health impact of policies as part of a health, social and environmental impact assessment (farming, fishing and aquaculture policies, and policies to incentivize production of more plant-based foods). ○ Assessing potential nutrition impact of sustainable production methods. ○ Subsidies to certain foods are part of the food policies that aim to facilitate the consumption of fresh and low processed foods, as opposed to other ultra-processed ones that can have adverse effects on health when they are consumed in excess or displace others with a healthier value. NP models can make it easier for policy makers to select food candidates for subsidies or taxes - evaluation and re-examination of farm subsidies
International trade policy	<ul style="list-style-type: none"> ○ As part of health impact assessment in negotiations for multilateral, regional or bilateral trade agreements. ○ Use to negotiate different terms of trade where health criteria other than food safety are rarely invoked. ○ Designing trade measures that can have a positive nutritional impact on the food supply.
Primary producers	<ul style="list-style-type: none"> ○ Assessing the nutritional impact of changing agricultural production methods
Food manufacturers and processors	<ul style="list-style-type: none"> ○ Reformulation: setting mandatory or voluntary targets for reformulating products; informing companies' decisions on new product development and reviewing existing products; assessing a company's overall product portfolio, and to set targets for change. ○ Portion size: assessing the impact of changing portion sizes and identifying priorities for action. ○ Replacing trans fats: assessing products where trans fats have been removed, and monitoring the situation. ○ Complementary foods: assessing foods for infants and young children. ○ New product development: setting targets for product portfolio and to guiding new product
	<ul style="list-style-type: none"> development or corporate mergers and acquisitions. ○ New technologies for foods low in fat, sugar or salt: guiding R&D to ensure new products are all-round healthy. ○ Government support for food technology research: setting criteria for public funding for food technology research. ○ Self-regulation: evaluating industry efforts to improve the health profile of foods and drinks.
Food wholesalers and retailers	<ul style="list-style-type: none"> ○ Retailers: evaluating retailers' product portfolio, to define targets and to measure progress. ○ Incentives for retailers to offer healthier choices in areas with poor access: enabling local shops to expand their portfolio of healthy products suitably displayed and to qualify for incentive schemes.
Caterers in local government facilities (schools, early years care, colleges, social care, leisure facilities)	<ul style="list-style-type: none"> ○ Food in public institutions: monitoring/controlling the nutritional content of foods sold or served in public institutions; assessing contractor companies; setting standards for food to be served or sold in public institutions; assessing the impact of modifying portion size, and guiding this process; and identifying foods high in fat, sugar or salt for which commercial information should be limited. ○ Pricing: identifying products that should be offered at a high price (less healthy products) and those which should have a lower price (more healthy products) to encourage consumption. ○ Public procurement: in procurement contracts, assessing companies tendering for contracts and setting standards for food in public institutions; incorporating into toolkits for catering companies to improve their understanding of healthy foods and to guide their practice. ○ Inspection/regulation: for assessing good nutritional practice as part of regulatory inspections. ○ Childcare: identifying products which are suitable to be provided, made available and/or brought into childcare facilities.

Caterers in health care facilities (for patients, staff and visitors)	<ul style="list-style-type: none"> Setting standards: setting standards for hospital food for patients, staff and visitors; setting standards for food sold in kiosks, vending machines and cafeterias for visitors and staff; providing nutrition information (menu labelling); guiding patient nutrition services. Contracts: assessing companies, tendering for catering contracts. Concessions: assessing companies for eligibility to run a concession outlet within hospitals
Schools	<ul style="list-style-type: none"> Vending machines, breakfasts, packed lunches, special events: identifying appropriate foods to be sold or served in state and independent schools; defining that foods high in fat, sugar or salt should not to be available in schools. Inspections: assessing food provided in schools as part of inspection process. Guidance for governors and staff: integrating nutrient profiling into guidance to help define and describe foods, and assess companies. Healthy takeaway service in schools: investigating this and other innovative options for school meals; assessing foods. Healthy schools rating: assessing foods provided in schools as part of a broader healthy schools assessment.
Other public sector catering: civil service, uniformed services	<ul style="list-style-type: none"> Food in other public sector catering: monitoring the nutritional content of foods sold or served in public institutions; assessing contractor companies; setting standards for food to be served or sold in public institutions; assessing the impact of modifying portion size, and to guide this process; identifying foods high in fat, sugar or salt for which commercial information/marketing should be limited.
Caterers in private sector workplace	<ul style="list-style-type: none"> Provision of healthy choices: assessing nutritional quality of food offered and to encourage a progressive move to wider provision of healthy choices. Menu labelling: providing nutrition information to employees
Commercial catering: high street, hotel, motorway, airport	<ul style="list-style-type: none"> Reformulation: setting targets for reformulation of fast food. Menu labelling: supporting for caterers with the provision of menu labelling.
Examples of opportunities for using nutrient profiling in food marketing and promotion	
Portion	<ul style="list-style-type: none"> Portion size: assessing the impact of changing portion sizes and identifying priorities for action.
Position	<ul style="list-style-type: none"> Product positioning: identifying healthier foods to be positioned to encourage consumption.
Packaging and labelling	<ul style="list-style-type: none"> Nutrition information: setting criteria for mandatory traffic light labelling scheme based on nutrient profile in both retail (labels, shelf tickets) and catering (menu labelling).
	<ul style="list-style-type: none"> Improved food literacy: Allows consumer to identify healthier food options by the use of logos, symbols or labelling schemes (front of pack systems) Claims: setting criteria for nutrition and health claims and to disqualify foods from carrying claims if they are unhealthy.
Price	<ul style="list-style-type: none"> Pricing strategies: retailers, caterers, public institutions identifying foods which should be priced relatively high and those to price lower to encourage consumption.
Promotion	<ul style="list-style-type: none"> Promoting healthier foods: manufacturers, retailers and caterers using nutrient profiling to define the balance of price promotions between healthy and unhealthy products (define a target percentage and monitor implementation).
Media control	<ul style="list-style-type: none"> Marketing to children: extending, based on existing use for controls on broadcast advertising to children, to all controls on marketing (including non-broadcast, online and new media marketing). Foods for infants and young children: defining rules for marketing foods for infants and young children.
Sponsorships	<ul style="list-style-type: none"> Schools: identifying foods (or assessing companies) for which commercial communications, including sponsorship, should not be allowed in schools. Sponsorship: identifying which companies from which it is appropriate for community organizations, clubs, churches, workplaces, sports events, etc. to accept sponsorship. Public sector: assessing whether companies are appropriate to provide sponsorship to the public sector.
Examples of opportunities for using nutrient profiling in other sectors of the food system	

Government food and nutrition policy	<ul style="list-style-type: none"> ○ National action plans: setting targets for dietary change and incorporate these targets into action plans; defining and describing food within Food-based dietary guidelines and defining priorities for communication campaigns. ○ Monitoring: monitoring the food environment, in the setting of indicators to monitor progress and, specifically, assessing the situation for different population groups. ○ Health impact assessment: incorporating nutrient profiling into methods to assess impact of programmes or policies on consumption of healthy or unhealthy foods (for example economic, trade, transport, agriculture, industry and urban/rural development policies). ○ Limiting commercial interests: identifying companies to be excluded from policy formulation process. ○ Multi-sectorial mechanism for national food and nutrition policy: as a tool for planning, monitoring and evaluating national policy.
Social support and welfare	<ul style="list-style-type: none"> ○ Food poverty: assessing the impact of actions to tackle food poverty and interventions to improve access to affordable healthy food; ensuring that social protection measures (vouchers, etc.) improve access to healthy foods. ○ Welfare: defining foods which qualify for subsidised or free distribution; assessing foods provided at home through welfare support schemes. ○ Defining healthy sustainable food: defining healthy sustainable food so that access and affordability can be evaluated and monitored.
Fiscal policies, VAT, taxes, subsidies (including the Common Agricultural Policy)	<ul style="list-style-type: none"> ○ subsidies: identifying foods to be taxed/levied or those which qualify for subsidies. ○ Trade and fiscal policies: assessing the health impact of trade and fiscal policies.
Investors	<ul style="list-style-type: none"> ○ Assessing companies: assessing companies' overall portfolio and to measure their progress on nutrition, particularly whether their portfolio of products is getting healthier. ○ Investment: assessing the likely impact of nutrition investment and assess the suitability of private sector investors/ investment.
Research	<ul style="list-style-type: none"> ○ Innovation: assessing products coming through research pipeline to ensure products are all-round healthy; assessing research priorities and ensure that agriculture, fisheries and technology research is working towards dietary goals; informing science and technology funding of R&D to ensure that it promotes development of healthier products. ○ Research and education funding: identifying companies from which research or educational funding should not be accepted. ○ Monitoring the food environment: assess and monitor the nutritional quality of the food environment alongside retailers' electronic point of sale data. ○ Environmental and food security goals: assessing the impact of policies to meet environmental and food security goals on nutritional quality of diets.
Urban planning	<ul style="list-style-type: none"> ○ Schools: assessing outlets in the school vicinity and to inform planning decisions about the location of any new outlets, licences for mobile food vendors or siting of advertising billboards, etc. near schools. ○ Encouraging retailers in underserved areas: informing planning decisions and identifying which retailers should be encouraged (qualify for tax breaks, eligibility for grants, etc.) ○ Planning: guiding planning decisions on the location and distribution of shops, markets, fast-food outlets and other commercial catering establishments.
Education and mass media campaigns	<ul style="list-style-type: none"> ○ Public education: as a tool for nutrition education to help understanding of nutrition messages and applying these to food and shopping decisions. ○ Nutrition education for health, education and childcare professionals: as a tool for nutrition education. ○ Schools: defining and describing foods and communicating clear messages about foods to children. ○ Child caregivers: informing guidance to caregivers for young children. ○ Use nutrient profiling as a tool as part of food skills education: integrating into practical courses and use to assess recipes. ○ Industry contribution to government campaigns: ranking companies according to the health of the products they sell and calculating the size of the contribution these companies should make to financing government campaigns.

Civil society	<ul style="list-style-type: none"> ○ Accountability: monitoring policies and practices to be able to hold government, industry and public services to account. ○ Influencing industry: assessing companies' product portfolios and to evaluate and rate their commitment to change in order to raise consumer and investor awareness and, in turn, encourage change.
Technology	<ul style="list-style-type: none"> ○ New technology: developing tools (for example mobile phone applications) to help people make healthy choices.

Source McColl et al. 2017

7.0 Monitoring and Evaluation

The initiation of the monitoring and evaluation work is done prior to the development of the NPM. In the current case, once a NPM and its associated policies have been introduced, monitoring and evaluation of the system is needed to ensure compliance and enforcement. In government-implemented or regulated systems, government has responsibility for the monitoring of implementation and compliance. This could be coordinated through either a government agency or an independent group that does not have conflicts of interests. During such implementation phase, evaluation of the use and performance of the NPM in achieving its aims is critical. Other unintended consequences of the NPM, such as food price changes, may also be assessed. In this regard, the five key elements to be monitored are:

- the extent and fidelity of implementation of the model;
- the effect of the model on changes to consumer understanding;
- the effect of the model on changes to product purchases;
- the effect of the model on changes to population dietary intakes; and
- the effect of the model on changes to nutrient compositions of food products (reformulation).

Other elements to include in the overall evaluation of the NPM are its general acceptability and its support from consumers, the public health community and food industries. Monitoring media coverage and public comment is a useful addition to the data gathering outlined above. Media commentary may be indicative of areas of the NPM that need to be modified. It is important that the system is given a chance to work before modifications are made. A period of 3–5 years is seen as a realistic time frame for considering evaluation of system effectiveness and the need for any modifications (WHO, 2019). **In Appendix 1**, we provide a more detailed framework for monitoring and evaluation of a NPM (this includes monitoring activities from design stage through to the validation and implementation stages of the model).

8.0 Limitations of nutrient profiling

Although NPM (as per table 1) appears to have limitless application, nutrition profiling is not a cure-all; it cannot solve all problems in relation to diet and health, not to talk of the many problems of our food systems. It has been argued, many a time that, the nutrient composition of an individual food does not determine the profile of the overall diet or food pattern (WHO, 2010; European Commission, 2015). Most NPMs take into consideration just nutrients and the energy content of foods; they rarely include substances that are not nutrients, but may be considered alongside nutrients (e.g. phytochemicals) and do not encompass other substances such as pathogens, contaminants and food additives which may affect the health of some, particularly vulnerable, people (European

Commission, 2015). Some NPMs also do not embrace other concerns people have about food (e.g. ethical, religious and environmental concerns) (WHO, 2010; European Commission, 2015;

Drewnowski et al 2021;) One of the main criticisms concerning nutrient profiling schemes is that there are healthy and less healthy foods, but there are also healthy and less healthy diets. Technically, to define the role of a food in a diet, we assign a score as to how likely is a food to be part of a healthy

diet. This is the reason some authors think it may be more appropriate to try to derive a validation method from available data about healthy diets and not only from the opinion of experts on single foods (FINUT, 2017)

9.0 References

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Appendices

Appendix 1 Monitoring and evaluation of the application of the NPM (not included; available on Project website)

Appendix 2: Terms of Reference for the Nutrient Profiling Model Sub-Committee of the Project Multi-Stakeholder Technical Task Team (M3T) (not included; available on Project website)