

## Review

# Monitoring and benchmarking government policies and actions to improve the healthiness of food environments: a proposed Government Healthy Food Environment Policy Index

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## Summary

Government action is essential to increase the healthiness of food environments and reduce obesity, diet-related non-communicable diseases (NCDs), and their related inequalities. This paper proposes a monitoring framework to assess government policies and actions for creating healthy food environments. Recommendations from relevant authoritative organizations and expert advisory groups for reducing obesity and NCDs were examined, and pertinent components were incorporated into a comprehensive framework for monitoring government policies and actions. A Government Healthy Food Environment Policy Index (Food-EPI) was developed, which comprises a 'policy' component with seven domains on specific aspects of food environments, and an 'infrastructure support' component with seven domains to strengthen systems to prevent obesity and NCDs. These were revised through a week-long consultation process with international experts. Examples of good practice statements are proposed within each domain, and these will evolve into benchmarks established by governments at the forefront of creating and implementing food policies for good health. A rating process is proposed to assess a government's level of policy implementation towards good practice. The Food-EPI will be pre-tested and piloted in countries of varying size and income levels. The benchmarking of government policy implementation has the potential to catalyse greater action to reduce obesity and NCDs.

**Keywords:** government policies, INFORMAS, non-communicable diseases, obesity prevention.

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## Background

Worldwide, 65% of all deaths are attributed to non-communicable diseases (NCDs) (1), and dietary risk factors and physical inactivity collectively accounted for about 10% of disability-adjusted life years lost globally in 2010 (2). The Global Action Plan 2013–2020 of the World Health Organization (WHO) (3) to reduce premature NCD-related mortality by 25% by 2025 was adopted at the 66th World Health Assembly in May 2013 (4). Most of the nine voluntary global targets in the action plan are ‘downstream’ markers of NCDs and risk factors (5). The only dietary target is a 30% relative reduction in the mean population intake of salt, with a targeted intake of 5 g of salt per person per day (5,6). Additional food-related indicators included are the limitation of saturated and trans-fatty acids in the food supply, and the reduction of exposure of children to unhealthy food promotion (5).

Food environments are defined as the collective physical, economic, policy and sociocultural surroundings, opportunities and conditions that influence people’s food and beverage choices and nutritional status (adapted from (7–9)). Unhealthy food environments foster unhealthy diets (10,11) through the widespread availability of cheap, highly palatable, heavily promoted, energy-dense and nutrient-poor foods (12). Accordingly, a broader set of ‘upstream’ indicators, focusing on public and private sector policies, and their impacts on food environments, is needed (13,14). The International Network for Food and Obesity/NCD Research, Monitoring and Action Support (INFORMAS) is a global network of public-interest organizations and researchers that aims to monitor, benchmark and support public and private sector actions to create healthy food environments and reduce obesity, NCDs and their inequalities (15). This will fill an important monitoring gap, and complement the WHO voluntary monitoring framework (4).

National governments and the global food industry are the two major stakeholder groups with the greatest capacity to have an impact on food environments and population diets. Governments need to ensure that food environments are as healthy as possible, and encourage citizens to make healthy food choices, thereby enhancing citizens’ health and welfare, protecting the environment and reducing inequalities (16). The WHO and others encourage governments to apply a ‘systems approach’ to interventions (17–19), integrating non-health sectors to ensure supportive and sustainable effects (20,21).

Food systems are largely created by the private sector operating on market principles within the laws and regulations determined mainly by national governments. Governments are in a position to take interventionist actions when the market fails to deliver optimal health benefits for the population (22), particularly with regard to policies to

mitigate the supply-side drivers of the global obesity and NCD epidemics (12,23). Government policy action in this area has been made increasingly difficult by the growing influence of commercial interests on public policy development (24). In particular, the expanding power and wealth of large food corporations (‘Big Food’) (25,26) create a policy environment, which privileges commercial interests over public benefits, and has hampered the implementation of strong policies to reduce obesity and NCDs (27,28). These influences reinforce the need for independent assessments of governments’ policies to create healthy food environments (16).

## Purpose of this paper

This paper introduces the INFORMAS public sector module that focuses on monitoring and benchmarking public sector policies and actions. The overarching research question for the module is, ‘How much progress have (international, national, state and local) governments made towards good practice in improving food environments and implementing obesity/NCDs prevention policies and actions?’ To address this question, this paper proposes a framework for assessing the extent of implementation of government policies and actions for creating healthy food environments to reduce obesity, diet-related NCDs and their related inequalities. The paper also introduces a proposed instrument (the Government Healthy Food Environment Policy Index [Food-EPI]) and a process for using it within the monitoring framework. The intention is that this monitoring approach will evolve into a global system to compare government policies, over time and across countries, to stimulate actions to improve the healthiness of food environments.

In this paper, the ‘public sector’ refers to all levels of government, from international to local. Ultimately, policy authority rests largely with nation states, although it is recognized that some of these powers may be ceded to subnational governments (such as states or municipalities) or supranational entities (e.g. the European Union). This paper focuses on national governments, but takes into account government policies at subnational levels where relevant.

## Development of the proposed framework for monitoring government policies and actions

### Review of policy documents

Major authoritative evidence-based or expert committee reports on reducing obesity and NCDs from international agencies (especially the WHO and the Food and Agricultural Organization [FAO]), national government agencies, global non-government organizations (NGO; e.g. European Heart Network, World Cancer Research Fund),

professional societies (e.g. International Association for the Study of Obesity), and expert advisory groups were reviewed for their recommendations in relation to improving food environments and population diets. These were derived from a search of five databases and the grey literature (see Supporting Information Table S1). The resources identified include peer-reviewed papers ( $n = 18$ ), United Nations System reports ( $n = 13$ ) and websites ( $n = 7$ ), government reports and websites ( $n = 4$ ) and NGO/academic reports and websites ( $n = 9$ ) (Supporting Information Table S1). In addition, WHO representatives were consulted to identify data sources for examining progress made by countries on implementing national nutrition, obesity or NCD action plans. While all the sources concurred on applying a comprehensive policy approach, and had many common elements, the specific framing and recommendations varied in their details. We extracted the recommendations that called for policies to improve food environments, and examined how the WHO approach to strengthening health systems (17) could be applied to infrastructure support for food policy implementation.

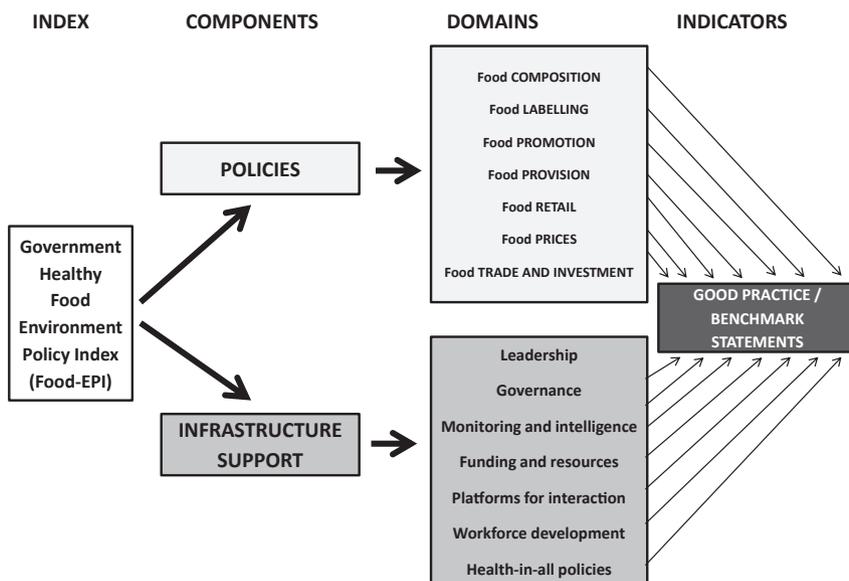
### Overview of proposed framework

The proposed Food-EPI monitoring tool was developed based on the review of policy documents (described above) and conceptualized at a week-long meeting of international experts in November 2012 in Bellagio, Italy (15). Its key components are classified into 'policies' and 'infrastructure support' (Fig. 1). The domains to be monitored under the policy component have been framed to address the key aspects of food environments that can be influenced by governments to create readily accessible, available and affordable healthy food choices. For each policy domain,

an INFORMAS module has been developed for measuring its impact on food environments (see module papers in this supplement (29–35)). Other domains, such as primary production and food waste, may potentially be added at a later stage. The infrastructure support component includes a set of domains that facilitate policy development and implementation. These were based on the existing WHO system-building blocks (36), with an additional 'health-in-all-policies' (or 'policy alignment') (21,37,38) domain added to highlight the importance of considering health in the development of non-health policies (24).

Within each of the 14 domains of the two-component framework (Fig. 1), examples of 'good practice' statements were formulated. These were based on specific recommendations from the review of policy documents. However, in most domains, globally endorsed standards were not available and, in these cases, 'good practice' statements have been developed by the authors. As evidence is gathered internationally on the extent of policy implementation by governments at the forefront of the creation of healthy food environments, it is expected that concrete examples of best practice will emerge to create international benchmarks and best practice exemplars. Importantly, it is expected that these benchmarks will strengthen over time as governments progressively improve policies to create healthy food environments, as has been the case for tobacco control (39,40).

The final aspect of the proposed monitoring framework is to combine all indicators from the domains within both components into one summary index. Decisions on the weighting of different domains and the aggregation of indicator scores will be made at a later stage, subject to robustness testing. A review of 27 indexes and rating schemes used to monitor progress for other public health challenges (41) will be used as a guide for this.



**Figure 1** Components and domains of the Government Healthy Food Environment Policy Index (Food-EPI).

## Components of the proposed framework

### Domains within the 'policy' component

The domains included in the 'policy' component relate to the seven impact modules of the INFORMAS monitoring framework (15), and encompass the food policies identified in the reports from the literature review (see Supporting Information Table S1). For each of the domains, an overview of its impact on diet, the potential role of governments, and an example of current good practice is outlined below, and proposed good practice statements are shown in Table 1. More details on the evidence-base, the monitoring frameworks, and indicators for each of these domains can be found in the module papers in this supplement.

#### *Food composition*

A food supply providing energy-dense, nutrient-poor foods with high levels of salt, sugar, saturated and *trans* fats, delivered through large portion sizes, is a major cause of the NCD burden (12,23). While the composition of processed foods is under the control of food manufacturers, governments can have a role in ensuring targets and strategies are in place to reduce, where practicable, the energy density of foods and the levels of nutrients of concern (predominantly salt, saturated fat, *trans* fat and added sugars) that contribute to NCDs. Statements of good practice in this domain relate to food composition targets for key foods, population intake targets, reduction strategies, monitoring systems and engagement platforms (29). Several countries have food composition targets, implementation plans and regular monitoring systems in place, especially to reduce salt intakes (42–44) and trans-fatty acid intakes (45). South-Africa is the first country to introduce mandatory salt reduction targets for a range of foods, including bread, breakfast cereals, ready-to-eat savoury snacks, flavoured potato crisps and processed meats (46).

#### *Food labelling*

Food labelling practices have the potential to affect consumer behaviour (47,48), as well as food producer behaviour, for example by encouraging product reformulation (49). They are also an essential mechanism for fulfilling the consumers' right to know what is in the foods they are purchasing. Front-of-pack and back-of-pack labelling, signage and claims on processed foods are thus an important area for government engagement and potential regulation. The statements of good practice in this domain relate to package labels including basic nutrition information, and more complex systems and standards related to food claims and interpretive front-of-pack nutrition labelling (31). Several countries and jurisdictions, such as the United States (US) and the European Union, have devel-

oped labelling regulations largely following Codex's recommendations. In some jurisdictions, particularly in the US, quick service restaurants are being required to include calorie labelling on their menu boards (50), and in other areas, such as in England as part of the Responsibility Deal, caterers may voluntarily agree to place calorie labelling on menus (51).

#### *Food promotion*

There is a large body of research to support an association between unhealthy food promotion to children and childhood obesity (52–54). To effectively limit unhealthy food promotion to children, strong government intervention, such as statutory regulations (rather than self-regulation by the food industry), is likely to be needed (53–55). The statements of good practice in this domain relate to government regulation of different types of promotion (e.g. broadcast, internet and print) in different settings (30). As an example of good practice, regulations restricting food and beverage advertising on television were implemented in the United Kingdom (UK) in 2006 (56).

#### *Food provision*

Foods which are provided or available in settings where people gather to work, learn and recreate may have an effect on diet and weight status (57,58). Governments need to provide leadership on ensuring that those settings which are publically-funded (including government departments and agencies, schools, early childhood services, hospitals and prisons) provide and sell food which promotes choices aligned with national dietary guidelines. This strategy (of public institutions leading the way) has been important in the past as a lead up to the wider implementation of national policies in other areas (e.g. for smoke free environments, equal employment opportunities). The statements of good practice in this domain include the existence of healthy food policies, support systems for their implementation, and monitoring (33). Many countries are already improving healthy food service policies in school settings (33).

#### *Food retail*

Both community and in-store food environments may influence dietary habits (59,60). Community food environments are subject to local ordinances and zoning regulations which could include requirements or targets on the density of different types of food outlets within a community and/or their proximity to schools. In addition, the in-store availability of types of food (e.g. shelf space allocations, confectionary-free check-out aisles) could be influenced by guidelines and support programmes. While government regulations could technically be applied in-store (e.g. restrictions on unhealthy food in premium

**Table 1** Proposed policy domains and statements of good practice for the Government Healthy Food Environment Policy Index (Food-EPI)

Domains	Proposed good practice in each domain	Proposed good practice statements
Food composition	There are government systems implemented to ensure that, where practicable, processed foods minimize the energy density and the unhealthy nutrients of concern (e.g. salt, saturated and <i>trans</i> fats, and added sugars) and maximize the healthy components (e.g. whole grains, fruit and vegetables).	<ul style="list-style-type: none"> <li>• Clear population intake targets, with appropriate strategies, have been established for the unhealthy nutrients of concern (usually salt, saturated and <i>trans</i> fat, and/or added sugar) to meet the World Health Organization and national recommended daily intake levels.</li> <li>• Food composition targets/standards have been established by the government for the content of unhealthy nutrients of concern (usually salt, saturated and <i>trans</i> fat, and/or added sugar) in certain foods or food groups if they are major contributors to population intakes of these nutrients (e.g. <i>trans</i> fats in processed foods, salt in bread, saturated fat in commercial frying fats).</li> <li>• There is a transparent implementation plan, led by the government, to achieve improvements in energy density of the diet, food composition and population nutrient intakes for the specified nutrients of concern.</li> <li>• Monitoring systems are in place to regularly check progress on improving food composition towards food composition guidelines/standards and population intakes towards specified intake targets or recommended daily intake levels.</li> </ul>
Food labelling	There is a consumer-oriented regulatory system implemented for labelling on food packaging and menu boards in restaurants to enable consumers to easily make informed food choices and to prevent misleading claims.	<ul style="list-style-type: none"> <li>• Ingredient lists and nutrient declarations in line with Codex recommendations are present on the labels of all processed foods.</li> <li>• Robust, evidence-based regulatory systems are in place for approving/reviewing claims on foods, so that consumers are protected against unsubstantiated and misleading nutrition and health claims.</li> <li>• A monitoring system is in place to ensure compliance, including that labels match product content.</li> <li>• A single, consistent, simple, interpretive, evidence-informed front-of-pack supplementary nutrition information system, which readily allows consumers to assess a product's healthiness, is applied to all processed foods.</li> <li>• A consistent, single, simple, clearly visible system of labelling the menu boards of all quick service restaurants (i.e. fast food chains) is applied, which allows consumers to interpret the nutrient quality and energy content of foods and meals on sale.</li> </ul>
Food promotion	There is a comprehensive regulatory approach implemented to reduce the impact (exposure and power) of promotion of unhealthy foods and beverages (high in saturated fats, <i>trans</i> fats, added sugars and/or salt) to children (e.g. <16 years) across all media.	<ul style="list-style-type: none"> <li>• Effective regulations are in place to restrict exposure and power of promotion of unhealthy foods to children through all forms of media, including broadcast (TV, radio) and non-broadcast media (e.g. Internet, point-of-purchase, packaging, sponsorship, outdoor advertising).</li> <li>• Effective regulations are in place to ensure that the settings where children gather (e.g. preschools, schools, sporting grounds, cultural activities) are free from all forms of promotion of unhealthy foods.</li> <li>• Where cross-border broadcasts exist, there are effective systems in place to reduce the impact of marketing of unhealthy foods to children from non-terrestrial media.</li> <li>• There are effective systems in place for the monitoring, evaluation and enforcement of marketing regulations to ensure their effectiveness in reducing the impact on children.</li> </ul>
Food provision	There are healthy food service policies implemented in government-funded settings (e.g. government departments and agencies, publicly funded schools, early childhood services, hospitals, and prisons) to ensure that food provision encourages dietary choices aligned with dietary guidelines, and that government actively encourages and supports private companies to implement similar policies.	<ul style="list-style-type: none"> <li>• There are clear, consistent policies in schools that require food service activities (e.g. canteens, food at events, fundraising, promotions, vending machines) to provide and promote healthy food choices consistent with dietary guidelines.</li> <li>• There are clear, consistent policies in other public sector settings (e.g. government departments, hospitals, pre-school settings) that require food service activities (e.g. cafeterias, food at events, fundraising, promotions, vending machines) to provide and promote healthy food choices consistent with dietary guidelines.</li> <li>• There are good support and training systems in place to help schools and other public sector organizations (and interested private sector organizations) and their caterers meet the healthy food service policies and guidelines.</li> <li>• Regular monitoring/reporting systems are in place to monitor the implementation of the policies (e.g. included in schools reporting requirements, periodic surveys of food services).</li> <li>• The government actively encourages and supports private companies to provide and promote healthy foods and meals in their workplaces.</li> </ul>
Food retail	There are policies and programmes implemented to support the availability of healthy foods and limit the availability of unhealthy foods in communities (outlet density and proximity) and in-store (product density).	<ul style="list-style-type: none"> <li>• Zoning laws and policies are robust enough for (local) governments to ensure that there is a ready availability of outlets selling fresh fruit and vegetables.</li> <li>• Zoning laws and policies are robust enough for local governments to place limits on the density or placement of quick-serve restaurants or other outlets selling mainly unhealthy foods in communities.</li> <li>• There are existing support systems to encourage food stores to promote the in-store availability of healthy foods, and to limit the in-store availability of unhealthy foods.</li> </ul>
Food prices	Food pricing policies (e.g. taxes and subsidies) are aligned with health outcomes by helping to make the healthy eating choices the easier, cheaper choices.	<ul style="list-style-type: none"> <li>• Taxes on healthy foods are minimized, where possible, to encourage healthy choices (e.g. low or no sales tax, excise or import duties on fruit and vegetables).</li> <li>• Taxes on unhealthy foods (e.g. sugar-sweetened beverages) are introduced, where possible, to discourage unhealthy choices.</li> <li>• Any subsidies on foods, including infrastructure funding support (e.g. research and development, supporting markets or transport systems) favour foods that are recommended in dietary guidelines rather than processed foods high in energy density, salt, saturated and <i>trans</i> fats, and/or added sugars.</li> <li>• Mechanisms are in place to ensure that food-related social support programmes (e.g. food stamps or other food assistance programmes) are for healthy foods.</li> </ul>
Food in trade and investment agreements	Trade and investment agreements protect food sovereignty, favour healthy food environments, are linked with domestic health and agricultural policies, and do not promote unhealthy food environments.	<ul style="list-style-type: none"> <li>• The direct impacts of international trade and investment agreements on food environments and population nutrition and health are assessed and considered.</li> <li>• The indirect impacts of international trade and investment agreements on other national policies, which might affect food, nutrition, and health are assessed and considered.</li> <li>• Trade and investment agreements protect national and local food sovereignty.</li> <li>• There are safeguards on the level of investment of foreign ownership of local food production.</li> </ul>

positions), these have not been enacted to date. Statements of good practice in this domain include the implementation of zoning policies to attract food retailers to low-income neighbourhoods to expand healthy food availability (e.g. supporting farmers' markets and fresh fruit and vegetable outlets), and to limit the availability of unhealthy food (e.g. fast-food outlets) around schools through zoning restrictions (34). In July 2008, the Los Angeles City Council, US approved a one-year moratorium on the opening of new fast food establishments in several neighbourhoods with high fast-food density and high obesity (61,62). In Detroit, US the zoning code prohibits the building of fast-food restaurants within 500 feet of all elementary, junior, and senior high schools (63).

#### *Food prices*

Food prices affect dietary choices (64,65). While the price of food is largely left to market forces, government food fiscal policies also may have a significant impact on food prices. Since the affordability of foods depends not only on their price, but also the ability of people to pay (66), statements of good practice have been developed to address taxes, subsidies and other food pricing policies that influence food affordability (32). Governments may apply taxes (e.g. excise, sales, value-added, tariffs) differentially to healthy and less healthy foods. Conversely, subsidies can reduce the price of foods either directly or indirectly, such as through the funding of infrastructure. For example, fruit and vegetables attract no goods and services tax in Australia, whereas in New Zealand the applicable tax rate is 15%. Several countries have applied taxes on unhealthy foods as part of broader strategies to reduce NCDs (67–70).

#### *Food in trade and investment agreements*

Food is a major part of global trade, and international trade agreements may have considerable impact on domestic food environments. Furthermore, implementation of public health policies and laws may be threatened by trade and investment treaties that privilege investors over governments, and provide opportunities for corporations to challenge democratically-enacted public health policies (71), such as occurred in the case of Australia's tobacco plain packaging laws (72). Statements of good practice in this domain include the impact assessment of international trade agreements on national food policies, food environments, population diets, and the extent of protection of food sovereignty (35,73). The Aid for Trade programme, initiated in 2005, is a positive example of several global institutions (e.g. WHO, FAO and the World Bank) collaborating to ensure that the health and trade sectors enhance health and development by fostering policy coherence across sectors (74).

### Domains within the 'infrastructure support' component

The domains included in the 'infrastructure support' component are based on the WHO 'system building blocks' approach for health systems (36), and are consistently identified in the authoritative documents reviewed (Supporting Information Table S1). Each of the domains within the 'infrastructure support' component are discussed below, with the proposed statements of good practice summarized in Table 2.

#### *Leadership*

This domain featured as a top priority in all sets of recommendations from authoritative bodies. It represents the degree to which influential politicians provide leadership and drive policies in the public's interest. The creation of equitable, safe, healthy and sustainable food environments that protect and promote health, and address lifestyle-related NCDs requires leadership and considerable political will. The good practice statements in this domain include: the level and visibility of political leadership; the comprehensiveness of nutrition and health plans, including the coordination of all relevant sectors to ensure policy alignment; stimulation of civil society participation; and the public provision of adequate information on policies implemented.

#### *Governance*

Good governance is closely aligned with good leadership, although the increasing intrusion of commercial vested interests into policy development justifies governance as a separate domain. Statements of good practice give particular attention to practices which ensure transparency, accountability, citizen participation and inclusion, and the minimization of conflicts of interest in policy development.

#### *Monitoring and intelligence*

National governments have a responsibility to conduct monitoring of dietary intake, weight status, and NCDs (75), as well as the upstream factors in the food supply influencing food environments. Monitoring is a critical but often neglected or underfunded component to inform policy responses and ensure accountability (76). A recent review of 129 policy interventions to promote healthy eating in Europe emphasized the need for accurate monitoring and evaluation of government interventions (77). The statements of good practice in this domain include the regularity of monitoring, and evaluation of the effectiveness of various policies within nutrition and health plans.

#### *Funding and resources*

For most countries, the treatment of diet-related NCDs, especially diabetes and cardiovascular diseases, is a large

**Table 2** Proposed infrastructure support domains and statements of good practice for the Government Healthy Food Environment Policy Index (Food-EPI)

Domain	Proposed good practice in each domain	Proposed good practice statements
Leadership	The political leadership ensures that there is strong support for the vision, planning, communication, implementation and evaluation of policies and actions to create healthy food environments, improve population nutrition, and reduce diet-related inequalities.	<ul style="list-style-type: none"> <li>• There is strong, visible, political support (at the head of state/cabinet level) for improving food environments, population nutrition and diet-related NCDs and their related inequalities.</li> <li>• There is a comprehensive up-to-date plan (including targets, priority policy and programme strategies) linked to national needs and priorities to improve food environments, population nutrition, diet-related NCDs, and their related inequalities.</li> <li>• Priorities are given to reduce inequalities in relation to diet, nutrition, obesity and NCDs in the comprehensive plan (above) and the government generally.</li> </ul>
Governance	Governments have structures in place to ensure transparency and accountability, and encourage broad community participation and inclusion when formulating and implementing policies and actions to create healthy food environments, improve population nutrition, and reduce diet-related inequalities.	<ul style="list-style-type: none"> <li>• There are robust procedures to restrict commercial influences on the development of policies related to food environments where they have conflicts of interest with improving population nutrition.</li> <li>• The government holds other actors accountable for their actions to create healthy food environments using several mechanisms (e.g. legal, political, public communications) and leverage points.</li> <li>• Policies and procedures are implemented for using evidence and ensuring transparency in the development of food policies.</li> <li>• The government ensures access to and regular dissemination of nutrition information and key documents (budget documents, annual performance reviews and health indicators) to the public.</li> <li>• The government fosters civil society participation to develop and implement healthy food environment policies, and the cooperation and coordination of all sectors to align with strategic plans.</li> </ul>
Monitoring and intelligence	The government's monitoring and intelligence systems (surveillance, evaluation, research and reporting) are comprehensive and regular enough to assess the status of food environments, population nutrition and diet-related NCDs and their inequalities, and to measure progress on achieving the goals of nutrition and health plans.	<ul style="list-style-type: none"> <li>• Regular monitoring of food environments (e.g. ideally annual with a maximum of every 5 years for more expensive surveys).</li> <li>• Regular monitoring of adult and childhood nutrition status and food consumption (e.g. ideally annual with a maximum of every 5 years for more expensive surveys).</li> <li>• Regular (e.g. ideally annual with a maximum of every 5 years for more expensive surveys) monitoring of adult and childhood weight and height, waist circumference, overweight and obesity prevalence.</li> <li>• Regular monitoring of the prevalence of NCD risk factors and occurrence rates (e.g. prevalence, incidence, mortality) for the main diet-related NCDs and their related inequalities (e.g. ideally annual with a maximum of every 5 years for more expensive surveys).</li> <li>• Sufficient research and evaluation of major programmes and policies to assess effectiveness and contribution to achieving the goals of the nutrition and health plans.</li> </ul>
Funding and resources	Sufficient funding is invested in 'Population Nutrition Promotion' to create healthy food environments, improved population nutrition, reductions in obesity, diet-related NCDs and their related inequalities.	<ul style="list-style-type: none"> <li>• The level of budget spent on 'Population Nutrition Promotion' is transparent.</li> <li>• The 'Population Nutrition Promotion' budget as a proportion of total health spending and/or in relation to the diet-related NCD burden is sufficient to reduce diet-related NCDs.</li> </ul>
Platforms for interaction	There are coordination platforms and opportunities for synergies across government departments, levels of government and other sectors (e.g. NGOs, private sector, academia) such that policies and actions in food and nutrition are coherent, efficient and effective in improving food environments, population nutrition, diet-related NCDs and their related inequalities.	<ul style="list-style-type: none"> <li>• There are robust coordination mechanisms (across departments and levels of government) to ensure policy coherence, alignment, and integration of food, obesity and diet-related NCD prevention policies across governments.</li> <li>• There are relationships and interactions between government and the commercial food sector, and these adopt systematic and transparent accountability processes to identify and ethically manage conflicts of interests.</li> <li>• There are existing structures and mechanisms for regular, meaningful interactions between government and civil society (academia, professional organizations, public-interest NGOs and citizens) on food policies and other strategies to improve population nutrition.</li> </ul>
Workforce development	Governments have the capacity in population nutrition expertise to ensure that the formulation, implementation and evaluation of food and nutrition policies and programmes meet population needs.	<ul style="list-style-type: none"> <li>• Sufficient inclusion of food and nutrition in curricula for preschool, primary and secondary school children.</li> <li>• The capacity (numbers and skills) of the government's public health nutrition workforce is commensurate with the size of the food and nutrition problems of the population and government resources for health.</li> </ul>
Health-in-all policies	Processes are in place to ensure policy coherence and alignment, and that population health impacts are explicitly considered in the development of government policies.	<ul style="list-style-type: none"> <li>• There are processes in place to ensure that population nutrition and health outcomes are considered and prioritized in the development of all government policies relating to food.</li> <li>• There are processes (e.g. health impact assessments) to assess and consider health impacts during the development of other non-food policies.</li> </ul>

NCD, non-communicable diseases; NGO, non-government organizations.

and growing part of their health budgets (78–80). The level of funding for population prevention of diet-related NCDs, however, is likely to be low and insufficient, but it has not been comprehensively monitored (81). Funding for prevention needs to be increased to a level where it may poten-

tially reverse the flow of people with poor nutrition into the health services (82,83). This domain seeks to capture government spending on obesity and NCD prevention, and the investment in 'Population Nutrition Promotion' as an integrated measure of the level of this prevention invest-

ment. 'Population Nutrition Promotion' is defined as population promotion of healthy eating and healthy food environments for the prevention of obesity and diet-related NCDs, excluding all one-on-one promotion (primary care, antenatal services, maternal and child nursing services etc.), food safety, micronutrient deficiencies, and undernutrition. The 'Population Nutrition Promotion' budget could be shown as a proportion of the total health and/or nutrition budget (providing an adjustment for population size and wealth) or as a proportion of diet-related NCD burden (in terms of dollar costs or disability-adjusted life years lost), if available. At this stage, it will not be possible to state 'how much is enough?', but over time, as some countries start reversing their obesity and NCD burdens, the level of 'sufficient' investment may become more apparent.

#### *Platforms for interactions*

Food and obesity determinants and solutions cover many sectors, and so multiple platforms are likely to be needed to achieve coordination of the multi-level actions to improve food environments. Governments have a key role to play in creating and sustaining such platforms. Cross-government linkages are essential for policy coherence and coordination between government departments and across levels of government (e.g. national, state, and local) (84). This constitutes the first statement of good practice in this domain, and others relate to relationships across sectors (governments, NGOs, private sector, academia, etc.). Multi-sectorial actions can be facilitated by strategic alliances, networks, coalitions and partnerships that can assist in translating promising, population-based strategies into policies with broad and sustained impact (85,86). Alliances and partnerships should adopt systematic and transparent accountability processes to highlight and manage conflicts of interests effectively, and ensure that all activities support healthy food environments, comply with ethical codes of conduct, and assess compatibilities. The outcomes of partner and alliance interactions should be monitored and evaluated (87).

#### *Developing workforce capacity*

Ongoing investment in the development of workforce skills and capacity to improve food environments and diet is the responsibility of many sectors including governments, universities, and professional bodies, training organizations, NGOs and the private sector. For example, training, knowledge and skill development need to be integrated into existing education and training curricula. In addition, increased numbers of professionals working towards improving food environments across sectors are likely to be required. Some areas of government responsibilities are included in the good practice statements including the integration of nutrition into school curricula, and the number and skill levels of the government's public health nutrition workforce.

#### *Health-in-all policies*

The alignment of policy objectives across government is difficult, and health objectives may be undermined by policies of other government sectors such as finance, agriculture, trade and urban development. A potentially powerful way of institutionalizing the protection and promotion of population health in government processes is to have a 'health-in-all policies' approach, which may involve health impact assessments for new policies or some other whole-of-government system. Such policy alignment systems have been successfully used to support environmental protection and minimize regulatory burdens, and are being instituted for health in some governments (21,37,38). The statements of good practice in this domain refer to the prioritization of population nutrition and health outcomes within food policy development processes, and ensuring that health impacts are considered during the development of other (non-food) policies (e.g. taxation, welfare, housing and education policies).

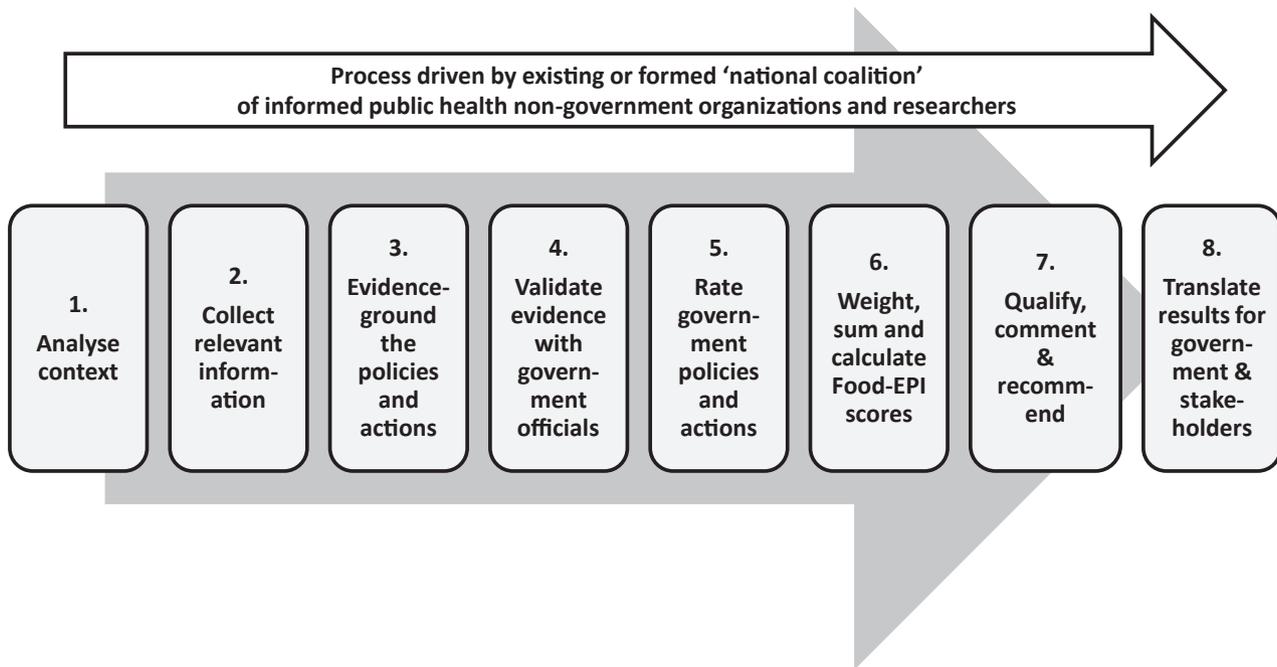
### **Proposed process for applying the Food-EPI**

#### **Approach**

The proposed process for assessing the level of government policy implementation to create healthy food environments is based on methods used to rate government action on obesity prevention in Australia (88), whereby informed, non-government public health experts annually rate their state government's recent progress on obesity prevention against a series of good practice statements, providing concrete examples of action or inaction to back up their score. The scores are collated and launched at the annual obesity conference, and premiers and health ministers in each state are sent their scores and rankings along with examples of good progress by their government and areas where they could improve to match or exceed other states. The media coverage and responses from bureaucrats and politicians indicated that the award stimulated discussion within their jurisdictions (88). The Food-EPI, however, will assess current levels of policy implementation rather than recent progress over time, as the latter may disadvantage governments that already made good progress in the past. For the Food-EPI, it is planned that a group of non-government, informed public health experts who would be independent of the food industry would form a 'national coalition' to manage the process or, alternatively, an existing public health NGO or association may take the lead.

#### **Proposed steps (Fig. 2)**

1. Analyse context: Relevant contextual information (such as demographic and socioeconomic data, available infrastructure, resources and capacity, political system,



**Figure 2** Process for assessing the policies and actions of governments to create healthy food environments and determining the Government Healthy Food Environment Policy Index (Food-EPI).

structure and stability, absence of corruption and freedom of press, potential constraints for monitoring, and availability and accessibility of governmental documents and budget information) will allow the Food-EPI to be interpreted in light of these important factors. This information will be collected via a standardized form.

**2. Collect relevant information:** Searches for documents and budget information need to be conducted on governmental websites, libraries and via government officials (where snowball sampling techniques may be needed to engage the relevant individuals). For some countries, both national and subnational policy documents will have to be collected in order to avoid underestimation of policy implementation. There are several global WHO data sources which may be relevant (see Box 1). In addition, FAO has a number of agricultural and food-related databases, which may be of relevance as supporting evidence for this module (89).

**3. Evidence-ground the policies and actions:** In this step, information from Step 2 is used to ground the policies and actions (domains and good practice statements) in the available evidence, for example, to determine the existence and degree of implementation of a certain policy (including enactment dates). Most assessments will be on the current level of implementation (i.e. status over the previous year), but some components will need to take a longer view (e.g. nutrition surveys conducted within the last 5 years). Whenever evidence is uncertain, non-existent or when it is difficult to separate evidence related to nutrition from physical

activity, it will need to be noted as such. The output from this step is a report of notated evidence related to each of the indicators in Tables 1 and 2.

**4. Validate the evidence with government officials:** Information gathered in Steps 2 and 3 is fed back to government officials to verify the completeness and accuracy of evidence collected. In addition, feedback may be provided on reasonableness of domains and good practice statements. Steps 2 and 3 may give insight on which officials are most suitable to perform this step.

**5. Rate government policies and actions:** A workshop is convened of 'raters' (independent, non-government public health experts) who undergo a short training course on how to assess and score the level of government policy implementation for each of the good practice statements. Government officials may participate as observers to the workshop. The evidence on extent of policy implementation is presented for each domain and, after some discussion, each rater independently scores the degree of implementation towards the good practice statements or benchmarks on a scale of 0–5. Inter-rater reliability will be assessed using available methods (90) in order to potentially refine the tools or procedures as needed.

**6. Weight, aggregate and calculate the Food-EPI score:** In the first instance, domains will receive their own mean scores with the good practice statements each being weighted as 1 and then the domain scores will be summed (each being weighted as 1) to give an overall score (or percentage) for that government's level of policy implementation towards

**Box 1 World Health Organization (WHO) data sources relevant to INFORMAS**

1. Nutrition, Obesity and Physical Activity (NOPA) database: The World Health Organization (WHO) Regional Office for Europe developed the NOPA database in 2008 to compile information for 53 Member States to help policymakers identify gaps and needs in data collection and policy development, and monitor progress in addressing obesity (91). The country information contains national and subnational surveillance data, policy documents, actions to implement policies and examples of promising practices. The NOPA database examines progress made by countries based on their Second European Action Plan for Food and Nutrition Policy, which provides an integrated approach to nutrition, food safety and food security from 2007 to 2012.
2. e-Library of Evidence for Nutrition Action (eLena): The WHO's Department of Nutrition for Health and Development supports several databases including eLena, which is an online library of evidence-informed guidelines and recommendations for many nutrition interventions. The purpose of eLena is to help countries successfully implement and scale up nutrition interventions by informing and guiding policy development and programme design (92).
3. Global database on the Implementation of Nutrition Action (GINA): GINA was launched in November 2012 and contains information from various sources, including a questionnaire to Member States, analysed in the context of the Global Nutrition Policy review, and direct submissions collected through a wiki platform. GINA will address issues such as child growth and breastfeeding, and will be based on countries' implementation experiences. GINA actions will link with eLENA, and can be used to build the capacity of countries to address specific issues without having to start from scratch by examining what other countries have achieved (93).
4. Nutrition Landscape Information System (NLIS): The WHO's NLIS is geared to countries focused on addressing undernutrition (94). NLIS is a web-based tool to assess nutrition indicators and progress towards implementing national nutrition plans. The indicators include: the existence and adoption of national nutrition plans and policies and their budget allocations; the existence of national dietary guidelines; the implementation of regular nutrition monitoring; and the existence of a budget line for nutrition in the health budget.
5. Global InfoBase: The WHO's Department of Chronic Diseases and Health Promotion supports the Global InfoBase, a repository of information about chronic diseases and their risk factors for all WHO Member States. The Global InfoBase provides global overweight and obesity prevalence rates for adults, and maps comparisons across countries; an age-standardized mortality map for non-communicable diseases, cardiovascular diseases and cancers; and an estimated proportional mortality based on the WHO region (95).

creating healthy food environments. In time, a more sophisticated weighting system will be developed to assign higher or lower importance to particular good practice statements and domains. The rationale for applying weightings other than 1 would need to be based as much as possible on the evidence of the relative contributions of policies and actions to healthy food environments or nutrition/health outcomes, but inevitably this will involve some degree of expert informant input. Weighting approaches will be tested during the pilot phase for the Food-EPI where the raters will assign weightings to the statements and domains before the scoring rounds.

7. Qualify, comment and recommend: Raters will provide comments, which will serve as qualifiers and recommendations to feed back to government. These are intended to give positive, considered support for further policy implementation.

8. Translate results for government and stakeholders: The Food-EPI scores (for indicators, domains and overall score), comments and recommendations will be translated for feedback to governments, the public and other stakeholders by the 'national coalition' to stimulate further policy

implementation. In time, valuable trend data and comparisons with other countries will become available which will provide reference points for single Food-EPI scores.

### Design considerations

For a small country with a dominant national government role for food policies, each of the steps mentioned earlier is relatively simple, compared with a large country where responsibility for food policies is covered by different federal, state and local authorities. For subnational levels of government, it is proposed that these are sampled using either a complete sample (e.g. for high-income countries like Australia, with good data and a low number of subnational jurisdictions), or a stratified representative sample (e.g. for high-income countries like the United States with good data, but a large number of states), or a sentinel site sample (e.g. for low- and middle-income countries like India with less data and many states). The priority for the Food-EPI is to assess national governments, so it should be adapted and used in ways that are most appropriate and feasible for a particular country.

## Future developments and implementation considerations

Testing is needed in order to operationalize the proposed Food-EPI. The index and its components need to be conceptually clear, policy relevant, reliable and robust. The proposed domains, good practice statements and the mechanisms for allocating ratings will be further subjected to conceptual clarity and policy relevance testing (with national coalitions and government officials), as well as validity and reliability assessments. Sensitivity analyses will be conducted to assess robustness of the proposed index, which means evaluating the impact of different design choices (e.g. weighting and aggregation procedures) on results obtained.

For some of the modules within INFORMAS, an assessment of equity in access to healthy food environments (e.g. food prices, provision, retail and promotion) will be possible and will be developed over time. While there are some equity statements of good practice within the Food-EPI, these may be able to be expanded in the future.

Primarily, the Food-EPI aims to assess progress over time of national governments on the extent of implementation of policies to create healthy food environments. Comparing different countries and benchmarking government policies is important as well, but is a secondary objective. Pilot testing the Food-EPI index in high-, medium- and low-income countries will provide insight into the extent that good practice statements can be made comparable across countries. In addition, over time, these theoretically defined good practice statements will evolve into real-life, best practice benchmarks, which will be regularly updated. Thus, the Food-EPI is envisaged as an intrinsically evolving instrument as the benchmarks get higher and higher. A score on one year will not imply the same level of policy implementation as the same score on another year because the goalposts will keep moving. Annual versions of the good practice statements or benchmarks will be provided to the raters to keep pace with the changing benchmarks, and to improve comparability across countries. Systems for ensuring quality control and comparability of Food-EPI scores across countries are under consideration. In addition, it needs to be noted that the detail of available evidence will vary widely across countries, and several phases of the process and collaboration with government officials might be more difficult or slower in some countries than others.

## Conclusions

Civil society, including the scientific community, has an important role to play in the accountability processes for action or inaction of governments on improving food environments and reducing obesity and NCDs. The proposed

Food-EPI will enable national and international benchmarking and comparisons of public sector policies. This will assist in holding governments to account for their role in obesity and NCD prevention efforts, and lift the urgency and the public voice in support of increased government action to improve food environments. In the long term, it will also provide a rich, global database for research into the determinants of obesity and NCDs, and for evaluating the impact of existing and newly introduced policies.

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## Conflicts of interest

Bruce Neal is the Chair of the Australian Division of World Action on Salt and Health (2007–ongoing), was a Member of the Pepsico Global Scientific Advisory Board (2010–2012), was the Independent Adjudicator for the Australian Responsible Marketing to Children's Initiative (2009–2010) and holds funding from the Australian Food and Grocery Council as part of a National Health and Medical Research Council of Australia Partnership project (2010–2014). The other authors declare that they have no competing interests.

## Supporting information

Additional Supporting Information may be found in the online version of this article, <http://dx.doi.org/10.1111/obr.12073>

**Table S1.** Summary of the review of policy documents for their recommendations in relation to improving food environments and population diets.

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