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Original Research

Supporting Healthier Futures: Strengthening Ireland's Strategy on Childhood Overweight and Obesity with the WHO Nutrient Profile Model

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Abstract

Background: Global prevalence of childhood overweight and obesity (COO) have reached epidemic proportions, with Ireland experiencing a two-fold increase since the 1990s. This trend is attributed to a multifaceted and persistent obesogenic environment in which dietary patterns of children are significantly shaped by pervasive and aggressive marketing practices. There is an urgent need for heightened regulatory measures in Ireland to confront this, including the adoption of a new nutrient profiling model (NPM) to effectively inform nutrition-related policies and mitigate adverse impacts of harmful marketing practices on children's eating habits and resulting health and well-being.

Evidence: The Ofcom model currently used to regulate the marketing of unhealthy food in Ireland has been criticized for applying relatively lenient criteria to determine which foods can be marketed to children. Evidence suggests that most food advertisements during children's programming in Ireland continue to include unhealthy foods. Comprehensive reform is necessary to rectify the situation.

Policy Options: This policy brief examines four potential policy alternatives: maintaining the status quo or adopting one of three alternative nutrient profiling models (NPM): the 2023 WHO Regional Office for Europe NPM; the Canadian HCST tier system; and the Sustainable Nutrient-Rich Food Index from the Netherlands. Four evaluation criteria were applied to choose the best option: *effectiveness*, *political feasibility*, *ease of implementation*, and *equity*.

Recommendations: Assessment of options found that the 2023 WHO Regional Office for Europe NPM is best due to its advantages for effectiveness, political feasibility, and equity compared to the current Ofcom model. Despite greater potential implementation challenges, the WHO model represents a tool that could enhance Ireland's regulatory approach to mitigating unhealthy food marketing targeting children.

Keywords: Childhood overweight and obesity; Nutrient profiling models; Marketing of unhealthy food

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Introduction

Childhood overweight and obesity (COO) represent a global epidemic (1, 2). Obesity has adverse health consequences for individuals, places significant economic burdens on society and produces ecosystem-wide environmental impacts (3, 4). Excess weight in early childhood can greatly affect a child's physical and mental well-being, overall quality of life, and academic performance, and is strongly associated with non-communicable diseases in adulthood (2, 5, 6). For instance, research indicates that 55% of overweight and obese children remain overweight in adolescence, of which 80% maintain their weight status in adulthood (5). In Ireland, one in four children and adolescents are overweight or obese, a rate that has doubled since the 1990s (7, 8), highlighting the urgent need for intervention.

The causes of rising COO are complex and persistent in modern life, creating an obesogenic environment in which it is difficult for Irish children to achieve healthier lives (9). Low physical activity levels and increased availability of unhealthy foods and drinks, defined as those high in fats, sugars or salt and that are processed, are major contributors (9). Evidence unequivocally demonstrates that aggressive marketing of unhealthy food undermines healthy dietary habits in children (10, 11). The food environment, including marketing exposure, influences children's food values and preferences (12-14). Advocates, including the World Health Organization (WHO), the United Nations Children's Fund (UNICEF) and the Lancet Commission, argue that commercial governance is essential to safeguard children's physical and emotional well-being from the harmful effects of food marketing (15).

A recent policy brief from the Science and Technology in Childhood Obesity Policy (STOP) project indicated that greater emphasis should be placed on what foods are being restricted from marketing, as determined by a nutrient profile model (16). Nutrient profiling has been defined by the WHO as the practice of categorising, evaluating and rating the nutritional quality of foods to prevent disease or promote health (17). NPMs have been increasingly utilised by governmental bodies to guide nutrition-related policies, including the restriction of the marketing of unhealthy food products to children (18). As evidence suggests that robust NPM enhances policy effectiveness, it remains crucial to optimise the NPM to strengthen efforts to protect children (19).

Context: FSA/Ofcom Nutrient Profiling Model in Ireland

The current NPM guiding marketing regulations of unhealthy food in Ireland is the Ofcom model, developed by the UK Food Standards Agency (FSA) in 2004-2005 (20). The Ofcom model has been adopted by the former Broadcasting Authority of Ireland (BAI) and the Advertising Standards Authority of Ireland (ASAI) as per two statutory regulations, the "Children Commercial Communication Code" of 2013 (21), and the "Voluntary Code of Practice for non-broadcast media advertising and marketing of food and non-alcoholic beverages" of 2017 (22), to define and control the advertisement of unhealthy food to children

(23). This includes rules on advertising, sponsorship, teleshopping, and product placement of HFSS foods (24).

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The Ofcom model evaluates the nutritional quality of food and drinks using a scoring system which considers the positive and negative impacts of nutrients and dietary elements in promoting a healthy diet. It is considered a compensatory approach where the healthy nutrients included in a product can "compensate" for the presence of less healthy nutrients in the final score (25). This approach aims to promote products that not only avoid excessive unhealthy components but also actively incorporate beneficial nutrients, ultimately contributing to a healthier product. Foods and drinks (per 100g/ml) are assigned an overall score that determines whether they can be advertised during broadcasts for children (26).

Despite compliance with statutory regulations, most food advertisements during children's programming in Ireland continue to include unhealthy foods (27), suggesting a possible problem with the underlying NPM. The Ofcom model has been criticised for employing less restrictive rules when identifying which unhealthy food can be marketed to children (24). This is in contrast to other international models, including the 2023 WHO model and the EU Pledge Nutrition Criteria. An additional challenge of the Ofcom model is that it relies on specific portion sizes as the base for calculating a product's healthiness score. If children consume products in larger proportions than the calculated standard, the healthiness score may not accurately depict the nutritional contribution of the product and its impact on an individual's diet. Finally, the Ofcom model was developed 20 years ago, and it is unclear whether it aligns with current recommendations for dietary practices (e.g., incorporation of sustainability considerations).

Policy making for COO in Ireland is complex and shaped by a range of mechanisms, institutions and stakeholders. It is crucial to identify key actors, understand their influences and interests in the policy process and develop better engagement strategies. Our stakeholder analysis identified 11 stakeholders, five of which were considered keys: food corporations, consumers, the Health Service Executive (HSE), NPM experts, and policymakers (see Annex 1 for a summary of the stakeholder analysis).

Rationale

While Ireland is recognized internationally for its leadership in regulating unhealthy food marketing targeting children, the notable limitations of the Ofcom model will undermine the overall regulatory effectiveness (28, 29). Implementing a contemporary, evidence-based updated NPM could significantly enhance the protection of Irish children from unhealthy food marketing and contribute to better public health outcomes. A policy brief exploring alternative NPMs to the Ofcom model tailored to the Irish context remains crucial for guiding legislative action and addressing the current limitations in regulation.

Policy options

Considering the evidence, including a stakeholder analysis, potential NPM alternatives to the Ofcom model have been identified. A summary of policy modifications considered is included in Table 1.

Table 1. Summary of Policy Options.

NPM	P1. Ofcom (Status Quo)	P2. WHO 2023	P3. HCST Tier System	P4. SNRF
Organisation	UK Food Standards Agency	WHO Regional Office for Europe	Health Canada	Netherlands Nutrition Centre
Scope and application	• Adapted from the UK Food Standards Agency (FSA) in 2004-2005 • Created for restriction of the promotion/marketing of foods to children	• Update of 2015 model • All foods and non-alcoholic drinks marketed to or for children aged 36 months or older. • Created for restriction of the promotion/marketing of foods to children	• Evaluate and monitor the adherence of citizens to dietary recommendations. • Evaluate the nutritional quality of various products • Used for restriction of the promotion/marketing of foods to children	• Create a nutrient index that quantifies the relations between the nutrient quality and climate impact of food products • Created to inform citizens about the nutrient quality and climate impact of their dietary behaviours
Nutrients to limit	'A' nutrient (energy, saturated fat, total sugar and sodium)	Total fat, saturated fat, total sugars, added sugars, non-sugar sweeteners, sodium	Total fat, saturated fats, sugar, salt	Saturated fatty acids, sodium, and added sugars
Nutrients to encourage	'C' nutrients (fruit, vegetables and nut	Fresh and frozen fruit and vegetables (only category with no	Vegetables and fruits, whole grain foods and protein foods with no	Essential fatty acids, plant

NPM	P1. Ofcom (Status Quo)	P2. WHO 2023	P3. HCST Tier System	P4. SNRF
	content, fibre and protein).	nutrient thresholds assigned)	added sodium, free sugars, or added fat	protein, and dietary fibre
Type of model	Compensatory	Food category-specific	Food category-specific	Compensatory
Output	Overall score + cut-off for 'unhealthy' food	Threshold (for total fat, saturated fat, total sugars and sodium based on reference intakes)	Threshold	Overall score + cut-off for unhealthy and unsustainable food
Food categories	2	22 (17 foods and 5 drinks)	4	3
Reference amount	100g/ml	100g/ml	Serving size	100g
Nutrients components	7	8	4	6
Healthier foods	Foods with < 4 points and drinks scoring < 1 points are classified as *healthier*	Based on threshold	Tier 1 and 2 food in line with the CFG	Green traffic light score, including plant-based foods
Less healthy foods	Foods with > 4 points and drinks scoring > 1 points are classified as *less healthy*	Based on threshold	Tier 3 and 4	Red traffic light score, including high-fat and processed animal product

Policy 1: Status quo

The first policy option is to 'do nothing', retaining the current Ofcom NPM, as described in the introduction.

Policy 2: WHO Regional Office for Europe NPM (2023)

The 2023 WHO NPM was developed for use (and adaptation) by member states and WHO regional offices in developing their policies to restrict the marketing of unhealthy foods to children (30). Of note, the WHO Regional Office for Europe has published two nutrient profile models: in 2015 and 2023. The 2023 model was adapted from the 2015 model, implementing additional evidence from a systematic review of over 70 endorsed NPMs in 25 countries, technical meetings with the WHO Collaborating Centre and the Best-ReMaP Joint Action, and evidence from the implementation of the 2015 model in various MS (e.g., Austria, Portugal, Slovenia and Turkey). The 2023 WHO NPM has a total of 22 categories, comprising 17 foods and 5 drinks. The nutrients and components included in the model are energy, total fat, saturated fat, trans fatty acids, total sugars, added sugars, non-sugar sweeteners and sodium/salt.

All food categories, aside from fresh and frozen fruits and vegetables, are assigned category-specific nutrient thresholds. Thresholds are calculated based on WHO's nutritional recommendations, converted into reference intakes, indicated in grams for a diet of 2000 kcal/day. Threshold levels of nutrients, categorised as low, medium, or high, are calculated based on reference intake standard percentages (30). When assigning a threshold (no, low, medium or high) to a food product category, factors taken into account include the presence of other nutrients (e.g., minerals and vitamins) and the energy density of foods (higher thresholds for energy-dense foods, e.g., butter; lower thresholds for products with more water, e.g., yoghurt) (30).

A key feature of this model is that no food category can automatically pass or fail the model, meaning that there are no specific food categories that can/cannot be marketed to children. Rather, emphasis is placed on nutrient composition as per the threshold calculation. To be fit for marketing, a product cannot exceed on a per 100g/mL basis any of the aforementioned thresholds for the food category under which it falls (30).

Policy 3: HCST tier system in Canada

The Health Canada Surveillance Tool (HCST) Tier System is an NPM developed by Health Canada in 2014 to evaluate and monitor the adherence of citizens to dietary recommendations (31, 32). This NPM classifies foods into four main categories: (1) vegetables and fruits; (2) grain products; (3) milk/alternatives; and (4) meat/alternatives. It then evaluates the nutritional quality of various products using thresholds for four elements, including saturated fats, total fats, sodium, and sugar, based on how much they align with Canada's Food Guide (CFG) (33). Products are then classified into four tiers, where consumption of products in Tier 1 and 2 is encouraged, and products in Tier 3 and 4 (including sugar-sweetened beverages, confectionaries and alcohol) are discouraged. Notably, the levels of products' nutrients are considered "per serving", rather than by a standard measure, i.e., 100g/ml.

Although the HCST Tier System was not developed specifically for regulating and categorising food for marketing purposes to children, it has been recommended for use in the Canadian regulation plan of marketing restrictions to children (34, 35).

Policy 4: The Sustainable Nutrient-Rich Food Index

The Sustainable Nutrient-Rich Food Index (SNRF) is a Dutch NPM, developed by the Netherlands Nutrition Centre and the Institute for Environmental Studies from the University of Amsterdam (28). The SNRF represents a scoring mechanism for specific food groups, encompassing both their nutritional quality and environmental impacts into a singular metric. Greenhouse gases (GHG) are used as a proxy to rank the environmental impact of food products (36). Next, to measure nutritional quality, ten nutritional characteristics at the food product level are identified (e.g., total fatty acids, sodium, dietary fibre, vegetables, fruits and fish). Essential fatty acids, plant protein, and dietary fibre are encouraged, while saturated fatty

acids, sodium, and added sugars merit restriction. The expression of these nutrients in grams per 100 grams of food product is divided by their daily values, such as the dietary reference intake or acceptable daily intake.

The SNRF per food product was created through correlational tests of the nutritional quality of food groups and their specific GHG emissions. Based on these findings, the SNRF score can be computed per food product according to a specific formula (See Appendix 1). The SNRF classifies food product groups according to a Traffic Light approach (red: SNRF ≤ -1.0; amber: -1.0 to 1.0; or green: ≥ 1.0). Food groups falling within the red category predominantly comprise animal products; the amber category generally includes lean animal products like poultry, eggs, and fish, along with snacks, grains, oils, and starchy foods. The green category predominantly features plant-based products, including legumes, fruits, and vegetables. This aligns with earlier research indicating that emphasis on plant protein over animal protein yields various health benefits, reducing the risks of cardiovascular disease, colon cancer, and chronic diseases, while simultaneously mitigating environmental impact by curtailing GHG emission (37-40).

Comparative analysis

A comparative analysis was conducted across four domains: *effectiveness, political feasibility, ease of implementation* and *equity*. Each domain received a score out of five, as seen in Table 2. A detailed summary of the comparative analysis with supporting judgments is found in Annex 2.

Table 2. Comparative analysis

Policy alternatives	Effectiveness	Political feasibility	Ease of implementation	Equity
(1) Status quo	++	++++	+++++	+
(2) WHO model	++++	++++	+++	++++
(3) HCST tier system	+++	++	++	+++
(4) SNRF	++	+	+++	++

Effectiveness

All NPMs within the four policy options are intended to assist the Irish government in identifying which food and drink categories are healthy and unhealthy, guiding nutrition policies that regulate the marketing of unhealthy food products to children. After a thorough examination of all four models, the WHO 2023 model held the most promise for mitigating unhealthy food marketing practices. Despite its pending implementation, the success of the 2015 model in various member states suggests a high likelihood that the WHO 2023 model

will serve as a valuable tool to enhance Ireland's regulatory practices in the marketing of unhealthy foods targeting children.

In contrast to the WHO model, the HCST and SNRF models were not designed for use in the marketing space, with no evaluation of their effectiveness in restricting the marketing of unhealthy food products to children within the broadcasting and non-broadcasting media contexts. In addition, the underlying model of the SNRF, which categorises snacks within the amber level, may not effectively address undesirable dietary patterns among children. The SNRF model would be more likely to place restrictive marketing on unsustainable products (e.g., meat) rather than conventionally perceived 'unhealthy' foods (e.g., candy). Finally, retaining the Ofcom model as the status quo is unlikely to effectively reduce the marketing of unhealthy foods to children, as evidence suggests that despite compliance with statutory regulations, unhealthy food advertisements during children's programming persist (27).

Political feasibility

For an NPM to be implemented, it must be politically feasible. The most influential stakeholders include food corporations, the HSE, policymakers, and the Irish Nutrition & Dietetic Institute (INDI). After examination of all four models, the status quo appears to be the most politically feasible: it finds favour with broadcasters and advertisers as it imposes fewer restrictions on the classification of healthy and unhealthy foods (28), allowing large unhealthy food corporations to continue advertising their products to children under this model.

Similar to the Ofcom NPM, the WHO 2023 has a high likelihood of being successfully adopted and implemented. Policymakers and HSE, in particular, will be the main supporters of adopting this change, given the Irish government's commitment to the implementation and bettering of policies that help tackle childhood obesity, and work on reducing the marketing of unhealthy foods to children (41). However, food corporations are expected to oppose this change, as it could introduce more restrictive marketing and adversely impact profits.

The HCST model, due to its strict categorization of products and identification of unhealthy foods, gains support from stakeholders including the HSE, Irish Heart Foundation, Irish Nutrition & Dietetic Institute, and nutrition experts. However, as it restricts "a priori" multiple food categories, it also poses challenges for acceptance from food industries, manufacturers, retailers, and the Media Commission, as it could lead to financial losses within these sectors.

Implementing the SNRF as a new NPM encounters the least support from stakeholders, targeting both sweets and beverage producers and dairy and meat producers. The substantial economic impact and cultural significance of the meat and dairy industries in Ireland creates

obstacles to the seamless implementation of the SNRF, reflecting deeply ingrained societal beliefs and economic considerations.

Ease of implementation

Maintaining the status quo would be the simplest option, as it does not necessitate additional implementation considerations. Furthermore, the successful integration of the Ofcom model into practice, as documented in the statutory report (28), can be attributed to two key factors: (1) the model's specific design for use in the broadcasting context and (2) its uncomplicated scoring system for categorising healthy and unhealthy foods.

The 2023 WHO model and the SNRF model were considered to be moderately easy to implement. Considering that the 2023 WHO model has undergone successful pilot testing in 13 member states and has been purposefully developed for application in the broadcasting context, its implementation in Ireland is anticipated to be straightforward. Although the SNRF model was not originally designed for broadcasting use, it employs an uncomplicated scoring system similar to the Ofcom model, supporting its implementation. In contrast, the implementation of the HCST model in the Irish context is deemed more intricate compared to the other proposed models, posing a greater challenge to its successful implementation.

Equity

The marketing exposure among children from various socioeconomic and ethnic backgrounds varies. There are disparities, in particular, for those of lower socioeconomic status and minority ethnic groups, as they encounter a higher volume of marketing messages and are more susceptible to their influence (42). Evaluation of equity is considered essential to ensure that the policy suggested will not increase social and health inequalities among the population. The evaluation showed that the WHO NPM has better potential to ensure the advertisement of healthy food, while not widening social and economic inequalities (43, 44).

The Ofcom model, representing the status quo, exacerbates health inequalities, failing to restrict unhealthy food marketing during children's programming, perpetuating an already existing issue. In contrast, the WHO model effectively restricts marketing of unhealthy food, using a balanced system, and allowing diverse foods meeting nutritional criteria to potentially reach children. By not outrightly prohibiting or allowing the marketing of entire food groups, it provides a fairer platform for healthier options within each category. Additionally, it encourages diverse diets without negatively impacting low-income or larger families, thereby not further widening health inequalities.

The HCST tier system aims to promote a healthier diet by restricting numerous unhealthy products through various media platforms for the entire population. However, it faces challenges due to the affordability and accessibility of unhealthy foods, which could disproportionately impact families with lower incomes or larger households, potentially

increasing disparities. SNRF highlights the cost barrier associated with plant-based foods compared to processed animal-based options, potentially limiting equitable access. Nonetheless, it recognizes the commendable inclusivity of plant-based approaches, especially outside Western dietary contexts, which could promote equity among non-Western individuals (45, 46).

Policy recommendation

After thorough consideration, policy alternative two, the 2023 WHO Regional Office for Europe NPM, is recommended for implementation. Despite presenting greater barriers to implementation compared to the status quo (Ofcom model), the WHO model is expected to encounter fewer political feasibility obstacles, be highly equitable and be deemed the most effective NPM in enhancing Ireland's regulatory practices targeting unhealthy food marketing. The adoption of an NPM that adequately restricts the advertising of certain unhealthy foods marks the initial step towards establishing an equitable food environment conducive to the consumption of healthy foods for children. It is noteworthy, however, that the greatest public health impact will be attained by integrating the modified NPM within a broader marketing regulation framework. Examples include making mandatory the Voluntary Code of Practice for non-broadcast media advertising and marketing of food and non-alcoholic beverages or extending the viewing time to include family viewing (i.e., between 6 pm and 9 pm).

To ensure the successful implementation of the 2023 WHO NPM, a comprehensive strategy involving legislative updates, stakeholder engagement, and resource allocation is essential. Additionally, establishing robust monitoring and evaluation mechanisms will be crucial for assessing policy effectiveness and making necessary adjustments to optimize its impact on reducing unhealthy food marketing to children.

Conclusion

The escalating epidemic of COO in Ireland underscores an urgent need for effective policy interventions. The existing regulatory framework, which relies on the Ofcom NPM, has proven insufficient in reducing the aggressive marketing of unhealthy foods to children, despite compliance with statutory regulations. The 2023 WHO Regional Office for Europe NPM emerges as the most robust and promising alternative for Ireland. This model offers a nuanced and evidence-based approach to nutrient profiling, incorporating updated dietary thresholds and scientific evidence from global best practices. Adopting the WHO 2023 NPM will not only strengthen Ireland's regulatory practices but also serve as a critical step toward mitigating the adverse health impacts of childhood obesity.

In conclusion, transitioning to the WHO 2023 NPM represents a strategic move towards a healthier future for Irish children. It aligns with the global push for enhanced food marketing

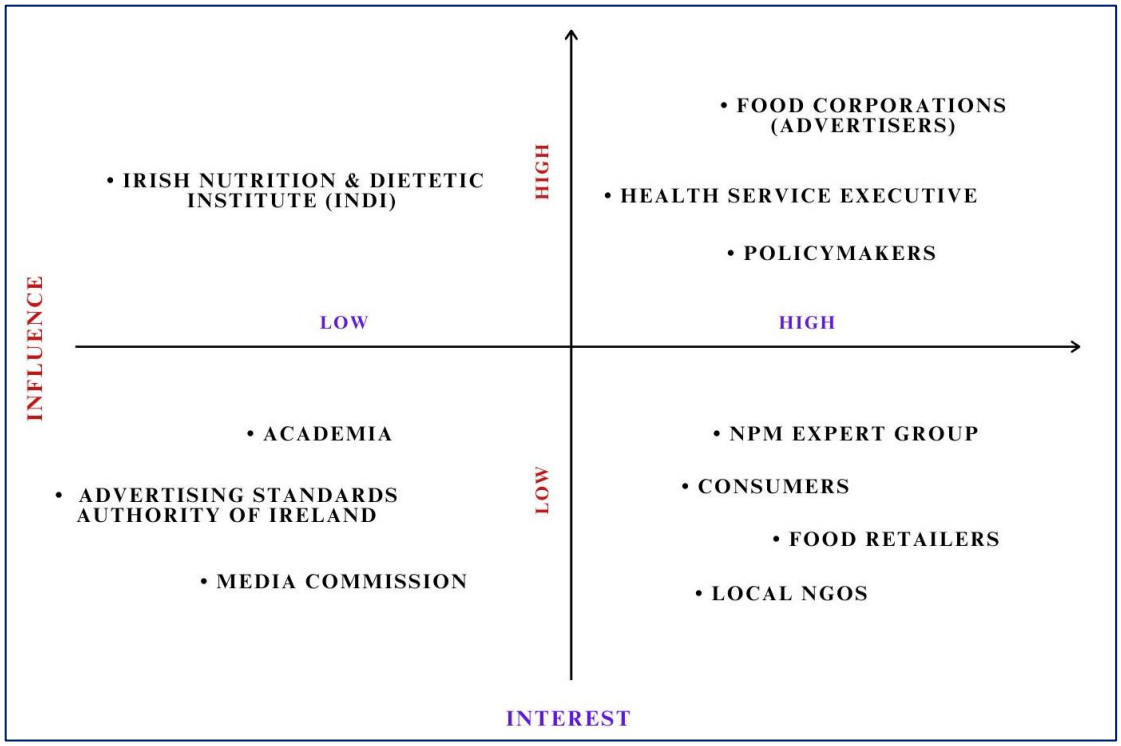
regulations and provides a sound basis for improving public health outcomes. To achieve the greatest impact, this policy shift should be supported by broader regulatory measures, including updates to existing codes of practice and expanded viewing time restrictions. Embracing these changes will pave the way for a more equitable and health-conscious food environment for children in Ireland.

ANNEX I: Stakeholder analysis

Table 1. Stakeholder Mapping

STAKEHOLDER NAME	INFLUENCE	INTEREST	POSITION	ENGAGEMENT PRIORITY
Food corporations	High	High	Against	High
Consumers	Low	High	Positive	High
Health Service Executive (HSE)	High	High	Positive	High
NPM Expert Group (nutrition experts)	Low	High	Positive	High
Policymakers	High	High	Positive	Medium
Local NGOs *(e.g.* Irish Heart Foundation*)*	Low	High	Positive	Medium
Food retailers	Low	High	Against	Medium
Irish Nutrition & Dietetic Institute (INDI)	High	Low	Positive	Medium
Academia	Low	Low	Positive	Low
Media Commission (Coimisiún na Meán)	Low	Low	Positive	Low
Advertising Standards Authority of Ireland	Low	Low	Positive	Low

Figure 1. Stakeholder Analysis Matrix.



Annex II: Rationale for policy options

Policies	Effectiveness	Political feasibility	Ease of implementation	Equity
(1) Status quo	**Score: 2/5** • Evidence suggests that the current policy under the Ofcom model does not sufficiently limit the marketing of unhealthy food to children • Despite compliance with statutory regulations, most food advertisements during children's programming are unhealthy foods high in salt and sugar • As such, retaining the Ofcom model as status-quo is unlikely to effectively reduce the marketing of unhealthy foods to children	**Score: 4/5** • Imposes few restrictions on the classification of healthy and unhealthy foods • *Influential stakeholders:* the current model allows influential stakeholders from unhealthy food corporations to continue advertising their products to children • *Less influential stakeholders*: civic societies and public health bodies such as the Joint Oireachtas Committee for Children and Youth Affairs are opposed to the current model	**Score: 5/5** • Retaining status-quo would not require further implementation considerations • Implementation evidence suggests that there was ease of implementation of Ofcom NPM into practice previously, with the success attributed to two factors: (a) the model was developed specifically for use in the broadcasting context and (b) simple scoring model of healthy and unhealthy foods	**Score: 1/5** • Over 50% of advertisements during children's programming in Ireland promote unhealthy foods (27, 47), exacerbating health inequalities among children from socially disadvantaged backgrounds
(2) WHO model	**Score: 4/5** • 2023 WHO model based on the established 2015 model • 2023 NPM has been tested in 13 countries, to show that 2015 and 2023 models are compatible • Although the 2023 model is yet to be tested, we anticipate that the 2023 model will be	**Score: 4/5** • *Influential stakeholders:* the Health Service Executive (HSE) and policymakers will be the main supporters of adopting this change, as it is supported by a strong evidence base. Food corporations could be against this change, as it could introduce more restrictive marketing. However, food corporation advertisers could find loopholes to promote unhealthy	**Score: 3/5** • Pilot testing in 13 member states indicates ease of implementation • For instance, a report from Germany demonstrated that the 2023 WHO model is feasible to implement on the German market. There were only minor challenges (nutrient and ingredient information on the German food packaging is not sufficient to	**Score: 4/5** • It aims for a balanced system, allowing potential marketing of diverse foods meeting nutritional criteria • It provides a fairer platform for various food types to be marketed to children • It ensures healthier choices within each category have visibility, fostering an equitable system

Policies	Effectiveness	Political feasibility	Ease of implementation	Equity
	equally, if not more effective than the 2015 model • WHO 2023 NPM has the potential to serve as a tool to improve Ireland's unhealthy food marketing regulatory practices aimed at children. It is a comprehensive NPM that can enhance policy effectiveness and improve the quality of life of children in Ireland, help teach better food choices and reduce morbidity	food choices, as long as they meet nutrient thresholds • *Less influential stakeholders*: Endorsed by experts and organisations	determine whether the threshold is met, e.g. trans-fatty acid content) but even those are possible to address with suitable practical adjustments • Given the wide applicability of the model, it is expected that the implementation process in Ireland will be smooth and that the model will be able to achieve its intended aims in the domain of public health	• It supports diverse diets without negatively impacting low-income or larger families economically • It favours healthier diets without exacerbating health inequalities among different socioeconomic groups
(3) HCST tier system in Canada	**Score: 3/5** • Evidence suggests that the HCST positively influences population diet through the promotion of CFGs adherence • The "low-in"/HCST system is stricter than other NPMs (WHO and PAHO) in assessing and restricting specific products targeted at children • Effectiveness would likely reach both children general population • Lack of an overall score for a product, and the lack of the "compensation" process may	**Score: 2/5** • *Influential stakeholders*: Public health bodies, such as the Department of Health and the Irish Nutrition & Dietetic Institute, would endorse this model for its stringent approach to classifying unhealthy foods. Conversely, corporations in the unhealthy food sector are unlikely to support it, as they fear potential impacts on their revenue due to these classifications • *Less influential stakeholders:* supported by the Irish Heart Foundation, nutrition experts/advocates	**Score: 2/5** • Implementation is more complex than the other models proposed • The model was not developed for marketing restriction to children • Key differences between the Ofcom model and the HCST may impede implementation. The HCST is based on a "food category specific" model, while Ofcom is based on a "compensatory" model. As such, they have different food categories, reference amounts, and categorisation of products • the specifications and guidelines of the "nutrient content claim thresholds" may not be entirely	**Score: 3/5** • It aims to restrict a wide range of unhealthy products across broadcast and non-broadcast media, promoting equitable access to healthier options for the entire population • However, evidence suggests that unhealthy food is economically more viable. Strict restrictions on advertising for certain food categories and the push for purchasing healthier options might disproportionately affect families with lower incomes or larger households. This could exacerbate inequalities, widening the gap

Policies	Effectiveness	Political feasibility	Ease of implementation	Equity
	lead to the misclassification of products, and reduce the overall effectiveness of the model		accepted and may need changes that would make the HCST model's implementation more difficult	among different economic groups within the population
(4) Sustainable Nutrient Rich Food Index	**Score: 2/5** • The SNRF is a conceptual model, currently lacking evidence of effectiveness in restricting the marketing of unhealthy food to children • Evidence on the current advertising practices targeting children suggests that it might be of limited success in restricting unhealthy food consumption among children • The NPM provides a combined score of both nutrient quality and environmental impact of food products, assigning the lowest ranking to animal-based foods and the highest to plant-based foods, positioning snacks such as candy and crisps at an intermediate level • The types of foods advertised in Ireland after 2PM, which public health organisations consider "unhealthy" (e.g., candy and crisps) diverge	**Score: 1/5** • *Influential stakeholders:* implementing the SNRF as a new NPM has the least amount of support from two major stakeholders, as it targets not only sweets and beverages producers, but also dairy and meat producers. Firstly, the agricultural food industry stands as the largest indigenous sector in Ireland, playing a pivotal role in the nation's economy. Within this sector, the production of animal products stands out as the most significant contributor, generating €6.1 billion in value from live animals and animal products (48). Secondly, given the sizable economic impact of the meat and dairy industry, the stability of these particular industries is also a key interest for the Irish government and its policy-makers. • *Less influential stakeholders*: consumers would not be likely to support the model. The perception	**Score: 3/5** • The implementation of the SNRF is moderately easy relative to other NPM proposed • The SNRF employs a straightforward scoring model, like the Ofcom model (which has demonstrated ease of implementation). This simplicity facilitates a clear determination of whether individual food products meet the criteria for advertising, enhancing the feasibility and ease of implementing the SNRF in diverse regulatory contexts. • However, akin to the HCST tier system, the SNRF was not specifically designed for imposing marketing restrictions on children. This characteristic adds a layer of complexity for the Irish government when considering its application in this context	**Score: 2/5** • Plant-based foods and meat replacements often come with higher costs compared to their processed animal-based counterparts. This financial barrier potentially limits equitable access to healthier alternatives • The SNRF's emphasis on plant-based diets displays commendable inclusivity, particularly for non-Western individuals. Evidence supports the higher prevalence of plant-based diets outside Western contexts, indicating greater regional adoption

Policies	Effectiveness	Political feasibility	Ease of implementation	Equity
	markedly from the nutritional hierarchy proposed by the SNRF • There may be a potential inadequacy of the SNRF model in effectively addressing the most frequently advertised and notably unhealthy food categories, thereby undermining its potential impact on curbing undesirable dietary patterns among children	that meat and dairy consumption are both normal and essential for a balanced human diet are strongly ingrained in societal beliefs, which is often called "carnism" (49). As such, it poses a substantial obstacle to the implementation of the model (50).		

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