In focus

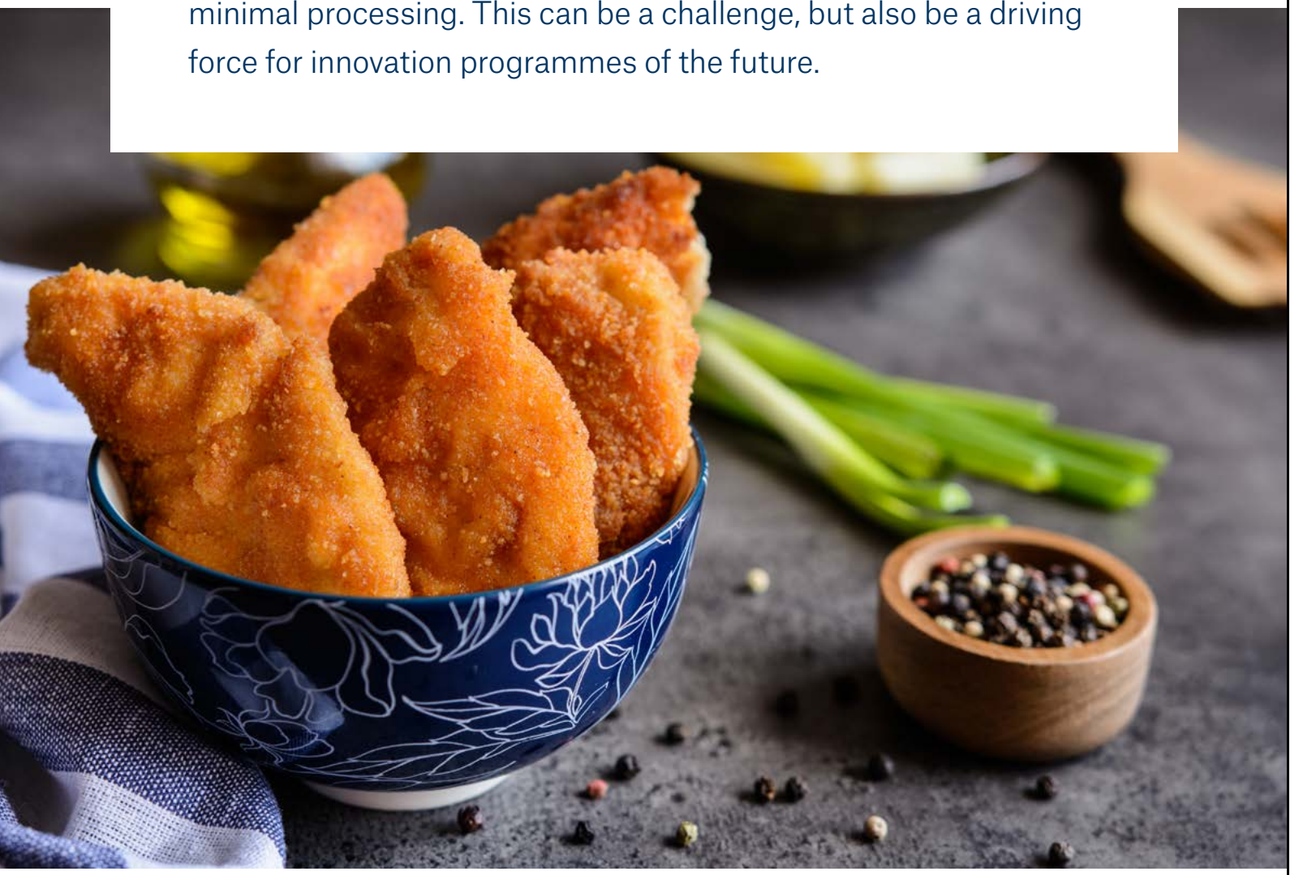
NOVA and ultra-processed foods

What you need to know about the food labelling tool

leatherhead food research

a **science group** company

Use of the NOVA food labelling tool seems set to continue, despite debates around the efficacy of the tool, with ultra-processed foods – which contain an abundance of sugars, fats and salt – increasingly coming into the spotlight. Food and beverage manufacturers need to be aware of how their processed foods may be classified by NOVA, an alternative approach to nutrition profiling that has been highlighted in reports from the Food and Agricultural Organisation (FAO)[1] of the United Nations (UN) and the Pan American Health Organisation[2]. Alternatives to energy-dense ultra-processed foods should be explored, through a combination of careful ingredient selection, reformulation and minimal processing. This can be a challenge, but also be a driving force for innovation programmes of the future.



In this white paper we will examine NOVA, a system that looks at classifying foods based on the level of processing, in greater detail and investigate how this approach has been used to achieve a variety of objectives worldwide.

Ultra-processing and its impact on health

The concept of 'ultra-processed' food was developed in 2009 by the team at the University of São Paulo responsible for developing the NOVA approach. The term 'ultra-processed' first appeared in a commentary in the journal Public Health Nutrition. Ultra-processed foods are typically energy-dense products, containing high amounts of sugars, unhealthy fats, and salt. They are also typically low in nutritional content such as dietary fibres, proteins, vitamins, and minerals. According to a Foresight Report published by the Global Panel on Agriculture and Food Systems for Nutrition, examples of ultra-processed foods include snack products, ice cream, sugar-sweetened beverages, chocolates, confectionery, French fries, burgers, hot dogs, and chicken or fish nuggets[3].

Growing evidence has confirmed the link between consumption of ultra-processed food and drinks and non-communicable diseases (NCDs)[4], such as obesity or elevated BMI, high glycaemic responses and diabetes. These foods are often not filling to eat, which is linked to additional food consumption as well as high blood pressure and coronary/cardiovascular heart diseases. Yet consumption of ultra-processed foods is on the rise as reported by Monteiro et al[5], with the annual growth in sales of these products amounting to "1% per year in high-income countries and up to 10% per year in middle-income countries". Ultra-processed foods have been identified as being responsible for making up more than half of the total dietary energy that is consumed in some countries – particularly in high-income countries such as the USA, Canada and UK – and between one fifth and one third of the total dietary energy in middle-income countries such as Brazil, Mexico and Chile.

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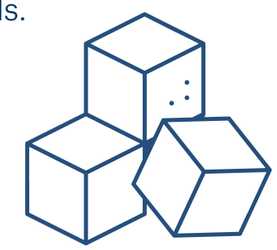

NOVA food labelling

NOVA was developed by the team at the University of São Paolo, Brazil, as a tool for use in nutrition and public health research, and the corresponding development of policy and actions to tackle nutritional issues. More attention is increasingly being focused on the role of ultra-processed foods in the diet and their impact on obesity, diabetes, and broader health issues. NOVA classifies all foods and food products into four distinct groups, which are shown in Table 1.

NOVA Group	Name	Explanation	Examples
1	Minimally processed	- Unprocessed (or natural) foods are edible parts of plants (seeds, fruits, leaves, stems, roots) or of animals (muscle, offal, eggs, milk), and also fungi, algae and water, after separation from nature. - Minimally processed foods are natural foods altered by processes such as removal of inedible or unwanted parts, drying, crushing, grinding, fractioning, filtering, roasting, boiling, pasteurisation, refrigeration, freezing, placing in containers, vacuum packaging, or non-alcoholic fermentation. None of these processes adds substances such as salt, sugar, oils or fats to the original food.	Fresh, squeezed, chilled, frozen, or dried fruits and leafy and root vegetables; legumes such as beans of all types, lentils, chickpeas; starchy roots and tubers such as potatoes and cassava; meat, poultry, fish and seafood, whole or in the form of steaks, fillets and other cuts, or chilled or frozen; eggs; milk, pasteurised or powdered; fresh or pasteurised fruit or vegetable juices without added sugar, sweeteners or flavours; couscous and plain yoghurt with no added sugar or artificial sweeteners added; tea, coffee, drinking water.
2	Processed culinary ingredients	- Substances obtained directly from group 1 foods or from nature by processes such as pressing, refining, grinding, milling, and spray drying.	Salt mined or from seawater; sugar and molasses obtained from cane or beet; salted butter.
3	Processed Foods	- Relatively simple products made by adding sugar, oil, salt or other group 2 substances to group 1 foods. Most processed foods have two or three ingredients. Processes include various preservation or cooking methods, and, in the case of breads and cheese, non-alcoholic fermentation.	Canned or bottled vegetables, fruits and legumes; salted or sugared nuts and seeds; salted, cured, or smoked meats; canned fish; fruits in syrup; cheeses and unpackaged freshly made breads.
4	Ultra-processed Foods	- Industrial formulations typically with five or more and usually many ingredients. - Such ingredients often include those also used in processed foods, such as sugar, oils, fats, salt, anti-oxidants, stabilisers, and preservatives. - Ingredients only found in ultra-processed products include substances not commonly used in culinary preparations, and additives whose purpose is to imitate sensory qualities of group 1 foods or of culinary preparations of these foods, or to disguise undesirable sensory qualities of the final product. - Group 1 foods are a small proportion of or are even absent from ultra-processed products.	Carbonated drinks; sweet or savoury packaged snacks; ice-cream, chocolate, confectionery; mass-produced packaged breads and buns; margarines and spreads; cookies (biscuits), pastries, cakes, and cake mixes; breakfast 'cereals', milk drinks, 'fruit' yoghurts and 'fruit' drinks; cocoa drinks; meat and chicken extracts; infant formulas, follow-on milks, other baby products; ready to heat products including pre-prepared pies and pasta and pizza dishes; poultry and fish 'nuggets' and 'sticks', sausages, burgers, hot dogs, and other reconstituted meat products, and powdered and packaged 'instant' soups, noodles and desserts.

Table 1: NOVA Classification (taken from Monteiro et al[6])

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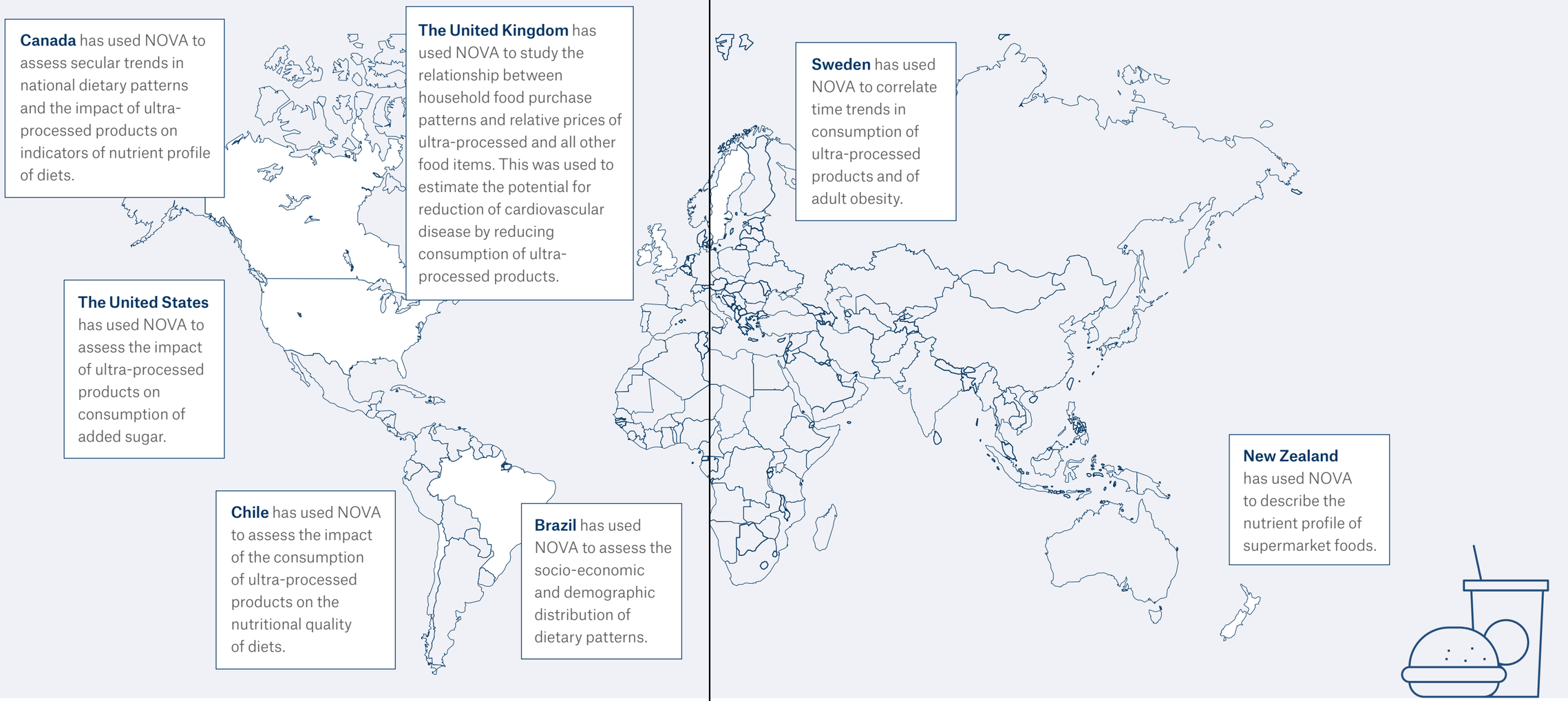
How NOVA is used globally

Internationally, NOVA has been used to study time trends in sales of ultra-processed products in 79 low-middle, upper-middle, and high-income countries, as well as in 14 Asian countries. The map below shows how NOVA has been used to make claims about the impacts of ultra-processed foods worldwide[7].



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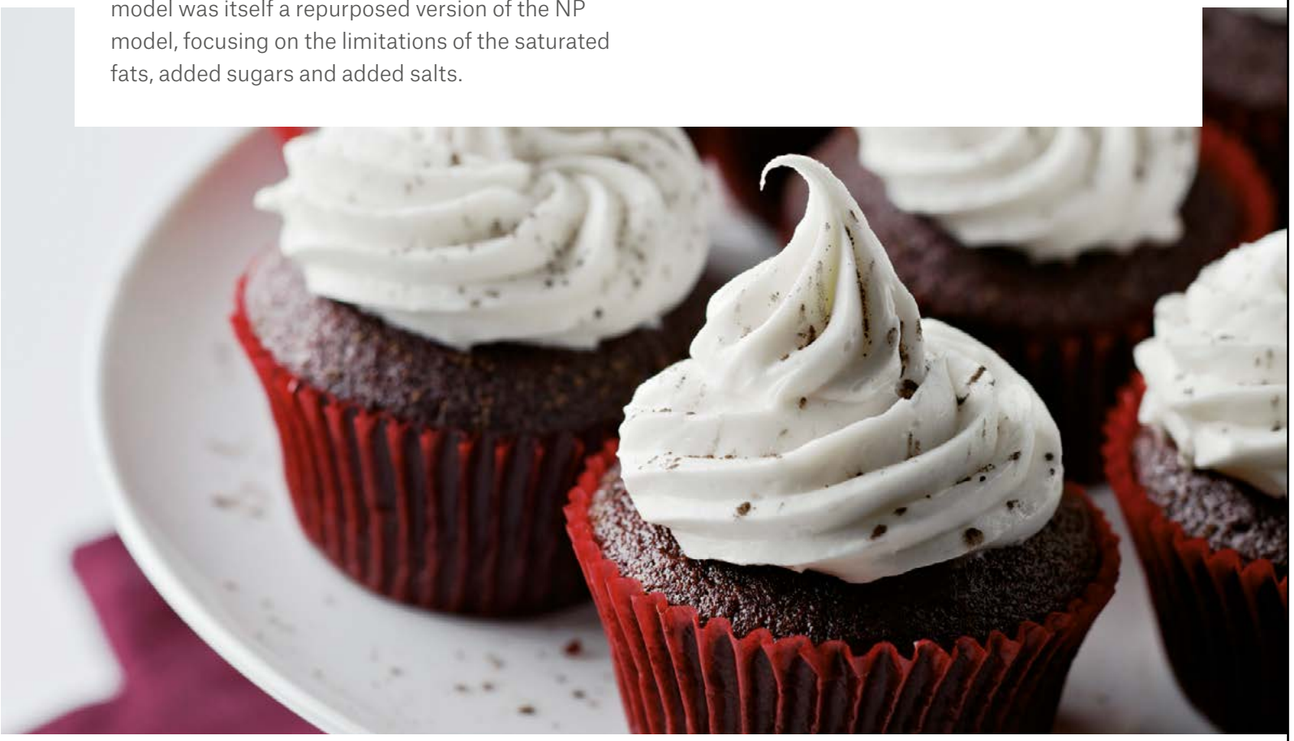
Controversies remain

NOVA has its proponents, but some remain skeptical. Among the criticisms levelled at NOVA are that "the proposed definition of ultra-processed foods [is] an imprecise, vague and heterogeneous technological group". The NOVA classification has also been criticized for being "qualitative only and too imprecise"[8]. However, even these authors concede that from a holistic perspective, the ultra-processed food concept has serious advantages, such as broad and common deleterious health attributes i.e., the loss of "matrix" effect, empty calories, poorly satiating, hyperglycemic and containing artificial compounds foreign to the human body. Another strong criticism was from Drewnowski et al[9] who addresses similarities between the NOVA scheme and pre-existing nutrient profiling (NP) models, and that the NOVA model was itself a repurposed version of the NP model, focusing on the limitations of the saturated fats, added sugars and added salts.

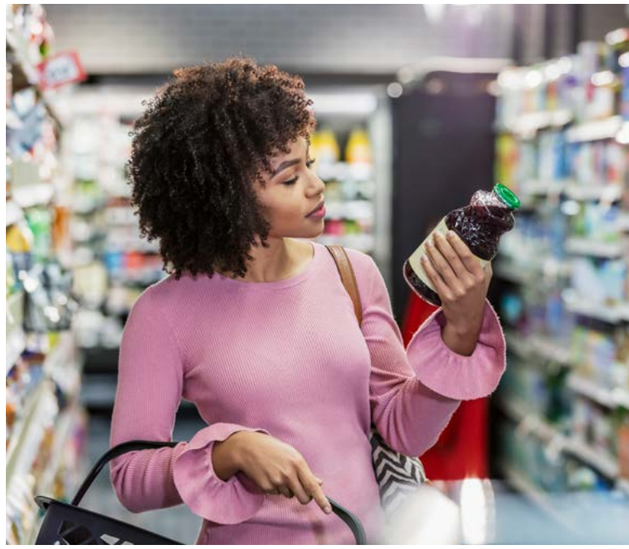
What food manufacturers need to know

It's essential for food and beverage manufacturers to understand how their products are classified and therefore affected by the NOVA tool. Consumers are now proactively seeking to eat healthier foods that are good for their health and wellbeing, therefore expect to be informed about their purchasing choices. It is a well-known fact that food and beverage manufacturers are influenced by consumer trends and will need to focus their R&D and product development efforts into producing healthier mainstream products. Using the NOVA tool can be helpful for both manufacturers and consumers when making investment and purchasing decisions; as well as being a recognised classification tool for nutrition and public health research and policy making.



Leatherhead can help

- With front of pack nutrition labelling and monitoring regulatory developments and qualifying the potential impact to your business
- To create a scientifically sound case to support your regulatory advocacy process
- Implement and apply front of pack nutrition labelling to your products globally. We can identify the risks and opportunities to help you find the most efficient way to implement your labelling changes
- Develop and review global nutrition policies through horizon scanning; an activity to help you understand what potential changes are expected in the short, medium, or longer term that impact your business
- Conducting literature reviews so you can stay up-to-date with key papers and on-going studies to help inform your product development. This can include speaking with academics involved in the work and nutritional horizon scanning



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