

Curbing global sugar consumption

**Effective food policy actions to help
promote healthy diets & tackle obesity**

In this brief, we provide a guide to available policies that can assist countries in reducing the amount of sugar consumed at a population level to meet the World Health Organization's sugar guideline.

We illustrate the available policies, provide examples that have worked and include input from those involved in the development and implementation of these policies.

Overview

- ◆ Globally, the number of people overweight or obese has reached epidemic proportions fuelling the growing rates of non-communicable diseases, including at least ten cancers. Excessive sugar consumption is one factor promoting overweight and obesity.
- ◆ Sugar is widely available and cheap. Over the last decade, global sugar consumption has grown from about 130 to 178 million tonnes.
- ◆ The World Health Organization's (WHO) sugar guideline, issued in March 2015, recommends that adults and children restrict their sugar intake to less than 10% of total energy intake per day, which is the equivalent of around 12.5 teaspoons of sugar for adults, and suggests a further reduction to below 5% of total energy intake per day.
- ◆ Effective, feasible policy actions are available for governments to reduce the availability and affordability of sugar and sugary products, influence the acceptability of alternatives and raise awareness about the sugar contained in products in an effort to move towards meeting the WHO sugar guideline.
- ◆ Examples of actions which have had these effects include school nutrition standards in Queensland, Australia; a vending machine ban in France; a front-of-package symbol that led to product reformulation in the Netherlands; soda taxes in France and Mexico; a programme targeting retail environments in New York City, USA; a programme promoting increased water consumption in schools in Hungary; school fruit and vegetable programmes in Netherlands and Norway; a healthy marketing campaign in Los Angeles County, USA and a comprehensive nutrition and health programme in France.
- ◆ Experience from officials implementing these policies and pilot programmes provides important insights for governments to help them design more effective policies to reduce sugar intake in the context of broader dietary improvements. Insights include the need for measurable indicators of change; engagement, incentives, and/or clear standards for entities involved in the manufacture and delivery of food; actions to inform stakeholders about the broader benefits of reduced sugar consumption; clear and understandable messages for consumers, and synergistic, complementary actions.
- ◆ A comprehensive approach is needed to reduce sugar consumption at a population level. Our NOURISHING framework can be used to identify the ten areas where policy action is needed.
- ◆ Part of this comprehensive approach should be dialogue with stakeholders in the sugar supply chain to identify what 'upstream' actions can be taken to reduce the supply and demand for sugar, taking into consideration the economic impact of such actions.

Why is global sugar consumption a problem?

Excessive consumption of sugar is one factor promoting overweight and obesity. In 2013, about 37% of men and 38% of women worldwide were overweight or obese. Excess weight increases the risk of non-communicable diseases, including some cancers. Research analysed from World Cancer Research Fund International's Continuous Update Project shows there is strong evidence that being overweight or obese increases the risk of ten cancers: bowel (colorectal); gallbladder; kidney; liver; oesophagus; ovary; pancreas; prostate (advanced); post-menopausal breast and womb (endometrial).¹

Research has established that there is an association between dietary sugar consumption and weight gain. Our own research shows substantial and consistent evidence that energy-dense foods, sugary drinks and 'fast foods' contribute to weight gain, overweight and obesity by promoting excess energy intake.² Sugar consumption is indirectly linked to cancer through overweight and obesity. Currently, there is insufficient evidence to show a direct link between sugar and cancer.^a

WHERE IS SUGAR FOUND?

Sugar is found in our diets in a variety of ways:

- Naturally built into the structure of foods such as fruits and vegetables.
- Naturally present in milk and milk products.
- As **'added-sugar'**, which refers to sugars and syrups added to foods and drinks during processing and preparation.
- As **'free sugars'**, which refers both to added sugars, like sucrose or table sugar, and sugars naturally present in honey, syrups, fruit juices and fruit concentrates. Most free sugars consumed are added to foods and drinks. Free sugars do not include sugar that is naturally built into the structure of foods or to sugars naturally present in milk and milk products.

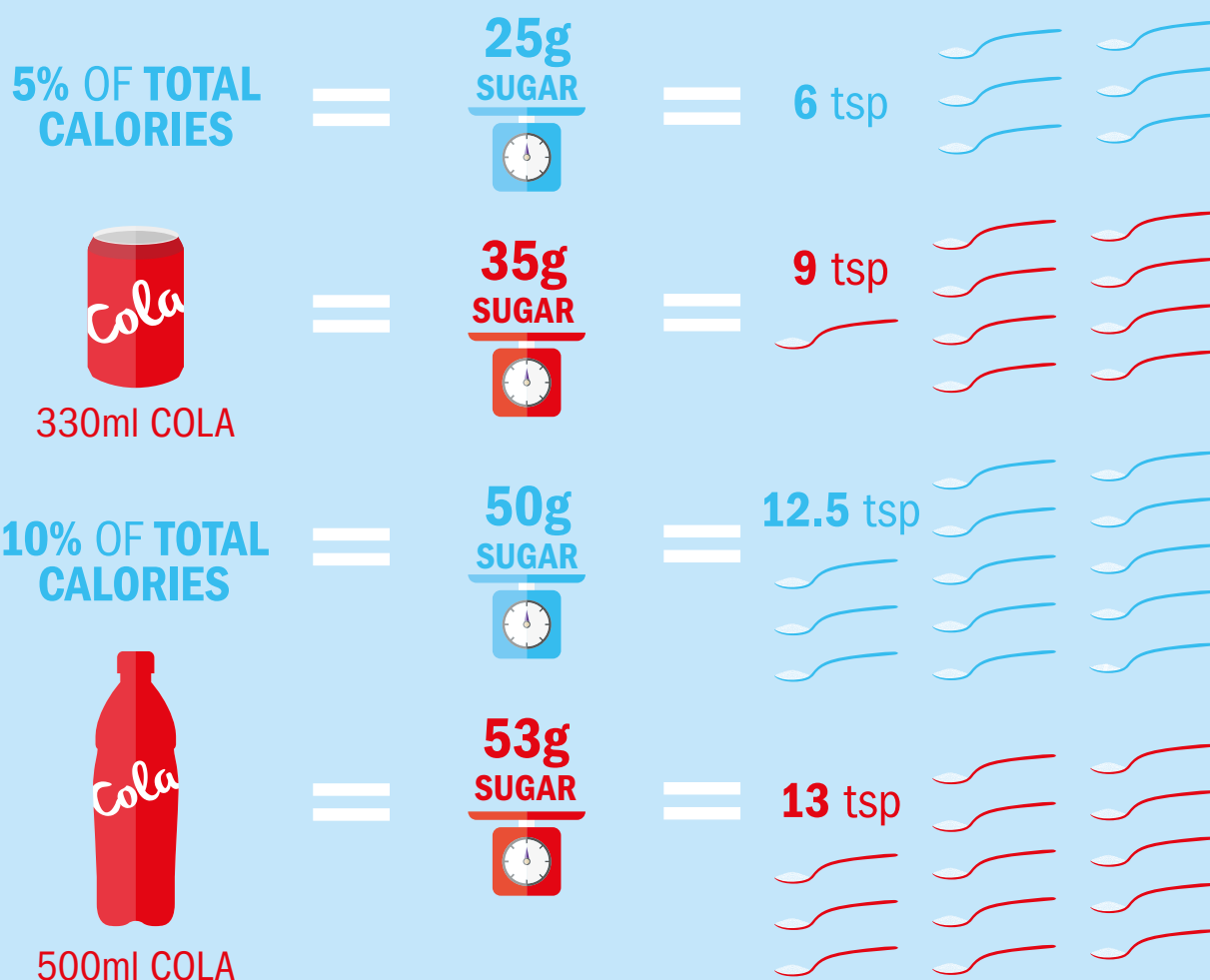
** Throughout this brief 'sugar' refers to 'free sugars'.*



a Current evidence does not indicate a direct link between artificial sweeteners and cancer.

b The WHO guideline provides recommendations on the intake of 'free sugars'. 'Free sugars' are defined by the WHO as "monosaccharides and disaccharides added to foods and beverages by the manufacturer, cook or consumer, and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates".

The World Health Organization guideline recommends keeping sugar consumption to below 10% of total calories per day and suggests keeping it below 5% for further health benefits.



Calculated based on an average daily diet containing 2,000 calories

Owing to the health implications of excess sugar consumption, in March 2015, the World Health Organization (WHO) issued a guideline³ on sugar, which defines too much sugar as more than 10% of total calories (energy intake) per day for both children and adults.^b For an average daily diet containing 2,000 calories, 10% of total calories is equivalent to about 50 grams of sugar or around 12.5 teaspoons. For further (dental) health benefits, the guideline suggests keeping sugar consumption to below 5% of total calories per day, the equivalent of about 25 grams of sugar or around 6 teaspoons.

Global consumption exceeds the WHO's sugar guideline

Worldwide, many populations consume sugars at levels that exceed the WHO's sugar guideline, such as Brazil, Canada, South Africa, the UK and the USA. Sugar consumption is growing, especially in low- and middle- income countries. Between 2000/2001 and 2013/2014 global sugar consumption grew from about 130 to 178 million tonnes, and is expected to reach about 182 million tonnes in 2014/2015. Almost three quarters of global sugar consumption each year takes place in developing countries. This overconsumption of sugar is taking place in the context of a cheap and abundant supply of sugar on the world market.

Why is sugar so available and cheap?

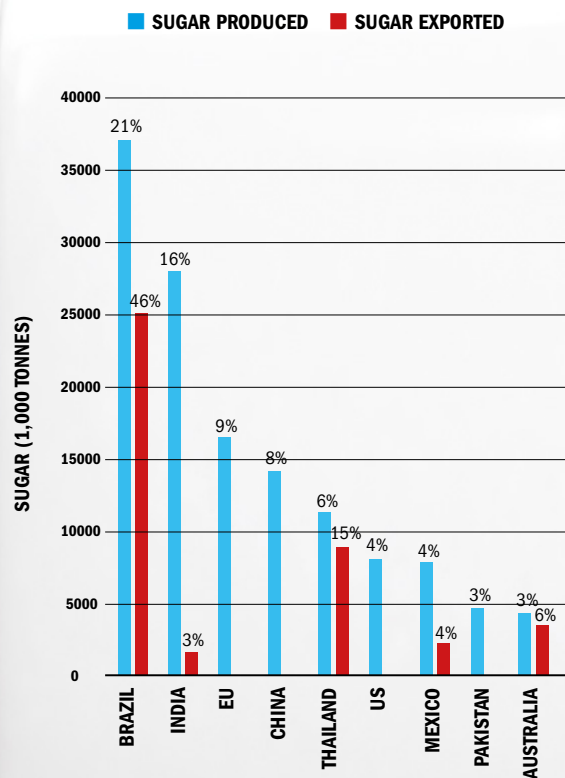
Over 86% of the global sugar supply comes from sugar cane, produced and exported from a small handful of countries with tropical climates. The rest of the sugar supply comes from sugar beet produced in northern temperate regions of the world.

Sugar is produced as either 'raw' or 'refined' sugar, and also has industrial uses, most notably ethanol. In a small number of countries, particularly the United States and Mexico, there is a lower cost alternative to sugar – high fructose corn syrup, which is produced from corn.

Even though sugar prices have risen in recent years, they have had a long-term downward trend and are very volatile. The relatively low cost of producing sugar in the leading exporting countries is one reason why sugar is cheap. Sugar is also frequently traded at less than the costs of production.

Sugar is grown by millions of small-scale farmers. However, its supply is controlled by a huge and complex web of transnational millers, refiners, traders and processors with operations across the world.

MAIN SUGAR PRODUCING COUNTRIES



Percentages above blue bars represent share of global sugar production. Percentages above red bars represent share of global sugar exports.

LEADING GLOBAL SUGAR BUSINESSES

(CORPORATE HEADQUARTERS)

ASR Group – American Sugar Holdings (USA)

Alvean – joint venture between Cargill and Copersucar (Switzerland)

AB Sugar – Associated British Foods (UK)

Louis Dreyfus Commodities (Netherlands)

Mitr Phol Sugar Corp (Thailand)

Raizen (Brazil)

Suedzucker AG (Germany)

Tereos (France)

How can policies influence sugar consumption?

World Cancer Research Fund International's NOURISHING framework on Page 6 shows that a **comprehensive** set of policies is necessary to reduce sugar consumption. Action is needed across **all three** policy domains outlined in NOURISHING: food environment, food system and behaviour change communication, as each plays an important role in influencing what we eat.

Policies to address sugar consumption should be implemented in consideration of the many dietary factors that influence health. Failure to embed sugar policy in the context of improving the total diet introduces the risk that the policies will be inefficient or ineffective, or have unintended adverse effects from a broader health perspective: for example, if reducing the sugar content of processed foods is compensated for by an increase of fat.

All of us consume some sugar in one form or another. Sugar and sugary products are widely available and affordable. We may not find alternatives appetising, or even be aware of how much sugar there is in the products we eat. Policy can therefore be used to help us reduce sugar intake by influencing:

- ◆ *how **available** sugar and sugary products are*
- ◆ *how **affordable** they are*
- ◆ *how **acceptable** sugar and its alternatives are perceived to be*
- ◆ *how **aware** we are of sugar in products*

4 **A'S** THAT INFLUENCE SUGAR CONSUMPTION

A VAILABILITY

A FFORDABILITY

A CCEPTABILITY

A WARENESS

What policies are available?

There is a wide range of policies available to reduce the availability and affordability of sugar and sugary products, increase the acceptability of alternatives and make us more aware of sugar in our foods. Some examples are shown in Table 1.

Table 1 Policies from World Cancer Research Fund International's NOURISHING framework^c that can affect the 4 A's that influence sugar consumption (availability, affordability, acceptability and awareness)

N O U R I S FOOD ENVIRONMENT		H FOOD SYSTEM	I N G BEHAVIOUR CHANGE
	POLICY AREA	POLICY ACTIONS FOR NUTRITION AND NCDs	
N	Nutrition label standards and regulations on the use of claims and implied claims on foods	Clearly visible 'interpretative' labels can influence people's awareness of sugar in products and have the potential to limit the availability of sugar through product reformulation * E.g. Front-of-package symbols - see page 10 for details.	
O	Offer healthy foods and set standards in public institutions and other specific settings (e.g. workplaces)	Mandatory standards for food available in schools and hospitals, including restrictions on unhealthy foods containing sugar (availability) and measures to improve the acceptability of healthier foods * E.g. Hungary's Aqua Promoting Programme in the Young (HAPPY) - see page 12 for details	
U	Use economic tools to address food affordability and purchase incentives	Health-related food taxes targeting sugar which can influence the affordability of sugary products * E.g. Mexico and France's soda tax – see page 11 for details	
R	Restrict food advertising and other forms of commercial promotion	Mandatory regulation on food advertising to children, including sugary products, to reduce the awareness , acceptability and availability of the sugary products advertised	
I	Improve nutritional quality of the whole food supply	Voluntary reformulation of food products, including reductions of sugar which can influence the availability of sugary products * E.g. see page 10 for details	
S	Set incentives and rules to create a healthy retail and food service environment	Initiatives to increase the availability of healthier foods as alternatives to sugary products, which can influence the acceptability of alternatives * E.g. Shop Healthy NYC - see page 9 for details	
H	Harness the food supply chain and actions across sectors to ensure coherence with health	Initiatives that invest in clean water (which can influence the availability of water as an acceptable alternative to sugary drinks)	
I	Inform people about food and nutrition through public awareness	Public awareness campaigns about sugary products, or campaigns promoting alternatives, which can influence people's awareness of sugar in products and increase the acceptability of alternatives * E.g. Los Angeles County's "Sugar Pack" health marketing campaign - see page 13 for details	
N	Nutrition advice and counselling in health care settings	Advice in dental care settings about consuming sugary products which can influence people's awareness	
G	Give nutrition education and skills	Nutrition literacy and food skills programmes to enable people to prepare healthy meals and snacks with no or minimal sugar which can influence people's awareness	

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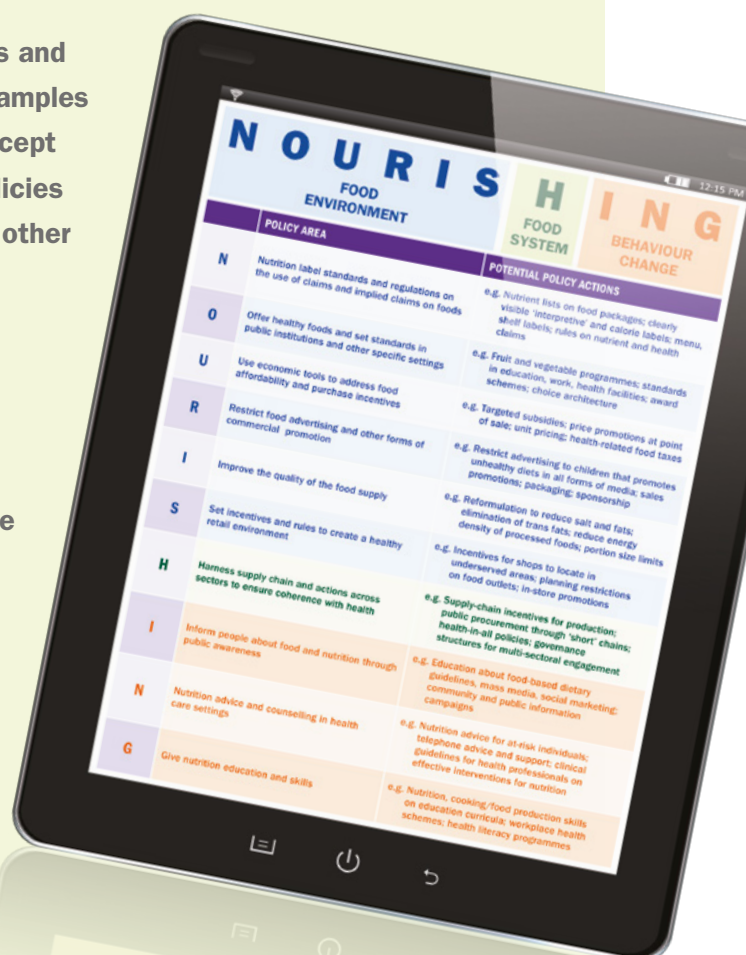
c World Cancer Research Fund International NOURISHING framework www.wcrf.org/NOURISHING

Which policies have worked?

Our NOURISHING policy database shows that countries around the world have implemented actions from across the NOURISHING framework to promote healthier diets. Evidence is available from several of these actions to show there are ways to effectively reduce the availability and affordability of sugary products; increase the acceptability of alternatives and increase the awareness of sugar in products. We identified the evidence through a four-step process (see Method Box).

Method used for identifying effective policies

1. From our NOURISHING policy database, we identified consumer-facing policies and interventions that have been implemented and have the potential to impact sugar intake.
2. We searched for evidence of the impact/effect/outcome of these policies in the following electronic databases: EBSCOhost, Pubmed, Google Scholar, as well as through searches on government websites and Google. We also performed additional searches using the reference lists of relevant articles.
3. We reviewed the peer-reviewed journal articles and reports that we identified. We found very few examples of policies that focused exclusively on sugar (except for policies targeting sugary drinks), as most policies that tackle sugar in some form do so along with other dietary components.
4. We assessed each policy for its reach, effectiveness, adoption, implementation and maintenance of effects, and classified the policy as ‘working’ if it affected one or more of four indicators: the availability of sugary products, the affordability of sugary products, the increased purchase or intake of alternatives and the awareness of sugar in products.
5. We selected policies and interventions that ‘worked’ according to the selected indicators.
6. We also researched the nature of sugar supply chains, and the policies that govern them, to assess whether there are any clear intervention points to reduce consumption in the sugar supply chain.



Availability, affordability, acceptability & awareness

Here we describe examples of policy actions and their effects across the 4 A's that influence sugar consumption: **availability, affordability, acceptability and awareness.**

AVAILABILITY

Reducing the *availability* of sugary products in schools

AUSTRALIA: Queensland's "Smart Choices – Healthy Food and Drink Supply Strategy"

Launched in 2005 and mandatory in all state schools since 2007, *Smart Choices* are school nutrition standards that separate foods and drinks into three categories 'green, amber and red,' based on their energy, saturated fat, sugar, sodium and fibre content. *Smart Choices* ensures that 'red' foods and drinks (those high in saturated fat, added sugar or salt) are eliminated across the entire school environment (e.g. tuck shops, vending machines, school events, sponsorship and advertising). Surveys of school principals, Parents and Citizens' Associations ('P&Cs' - who usually operate school tuck shops or canteens) and tuck shop convenors six months after implementation indicated that *Smart Choices* nutrition standards had been implemented in almost all tuck shops (between 96% and 99%). 97% of tuck shop convenors reported all 'red' foods had been removed and 91% reported the availability of 'green' foods had increased. 56% of P&Cs reported increased or unchanged tuck shop profits. *Smart Choices* therefore effectively reduced the availability of 'unhealthy foods' on school premises, especially sugary drinks and confectionery. Targeting drink vending machines was particularly effective in reducing the supply of sugary drinks.



"Critical success factors of the Smart Choices strategy include that it applies to all situations where food and drinks are supplied in the school environment, implementation is mandatory in all 1,275 Queensland state primary and secondary schools, and the requirements are well understood."

"A key breakthrough in securing the education sector's leadership in this health initiative was the recognition that improving schools' food supply not only helped fulfill their duty of care to the students, but contributed positively to children's academic performance. This was fostered by the development of strategic partnerships and strong inter-disciplinary relationships, that promoted evidence-informed decision making."



Professor Amanda Lee, School of Public Health and Social Work & School of Exercise and Nutrition Science, Queensland University of Technology



FRANCE: Vending machine ban

France's 2004 Public Health Law includes a vending machine ban in schools, which has been enforced since September 2005. Before the ban, vending machines were present on the school premises of 89.4% of public *lycées* (students aged 14-17) and 39.3% of public *collèges* (students aged 11-13). Comparing data from 1998 and 2006 (before and after the ban was implemented), a significant reduction in calories (between 90-115 calories), fat, sodium and, especially, free sugar intakes (10-12 grams) was observed during morning break after the ban came into force.

Reducing the *availability* of sugary products in retail environments



USA: Shop Healthy NYC

Shop Healthy NYC is a New York City Health Department initiative that aims to increase access to healthy food and engage residents and organisations in supporting sustainable food retail changes in their community. To ensure a long-term impact, the programme aims to influence supply and demand by: 1) reaching out to food retailers to increase their stock and promotion of healthy foods, including intensively working with stores to meet specific criteria; 2) collaborating with distributors and suppliers to facilitate wholesale purchases and widespread promotion of healthy foods; 3) engaging community constituents (customers) to support participating retailers and increase neighbourhood access to healthy foods. An evaluation of *Shop Healthy NYC* – implemented in Bronx neighbourhoods – found that across 170 participating bodegas (convenience stores) and supermarkets, 75% displayed low calorie refrigerated drinks and water at eye level (compared with 45% at baseline); the ratio of unhealthy to healthy ads shifted from 11:1 to 1:1; stores advertising healthy options (e.g. snacks with limits on calories, fat, salt and sugar) increased from 42% to 90%; advertising for sugary drinks decreased from 85% of ads to 52% of ads; advertising for water increased from 3% of ads to 12% of ads; and 64% of customers who saw any *Shop Healthy NYC* materials said the materials made them consider purchasing the healthier option advertised, with 49% ultimately purchasing the healthier advertised product. In general, shop owners participating in the initiative learned how to effectively sell and promote healthier foods through improved displays and signage.

“The combination of working intensively with most store owners in a defined area to improve food choices and garnering support from neighborhood constituents to ‘adopt’ or shop at those stores, is what makes the *Shop Healthy NYC* initiative successful and sustainable.”

Cathy Nonas, Senior Advisor, Center for Health Equity, NYC Department of Health and Mental Hygiene



Reducing the *availability* of sugar in the food supply: product reformulation

Evidence indicates that products with front-of-package symbols have encouraged food manufacturers to reformulate their products with less salt and trans fat. There is some limited evidence that labelling has also encouraged manufacturers to reduce sugar levels. Few studies have examined the impact on sugar levels, with the Netherlands Choices logo^d being one exception. The voluntary logo appears on healthier options in a product group, defined according to their levels of sodium, sugar, fat, calories and dietary fibre. Research shows that most products carrying the logo have been reformulated to meet the logo's criteria, including soups, sandwiches and processed meat. Saturated fat, added sugars and calories have been significantly reduced in dairy products to meet the logo criteria and added sugar has been reduced in sauces. New products specifically formulated to meet the criteria were developed following the launch of the logo – typically, snacks; processed fruits and vegetables; fruit juices and drinks; and soups.

“Companies are willing to improve their products, but they need guidance and a reward. By offering them a positive front of pack logo when they fulfill the criteria of the Choices programme, they can show the quality of the product to the consumer.”

“By defining the criteria every four years with an independent scientific committee, we make sure that they are recognised as an objective guideline for product development by participants of the Choices programme as well as by other companies and health promoting organisations.”

Dr Léon Jansen, Secretary, Scientific Committee, Dutch Choices Foundation

^d There is no evidence that Choices is better than any other logo at encouraging the reformulation of products to include less sugar.

AFFORDABILITY

Reducing *affordability* of sugary drinks: soda taxes

FRANCE: The French soda tax

The tax, comprising approximately of 11 euro cents for a 1.5 litre of soda, has been in effect since 1 January 2012. As an excise tax, it is expected that producers or sellers (who must pay the tax to the government) will pass (shift) the tax on to the consumer by raising the price of the product; thereby, recovering the cost of tax. Research shows that the tax significantly increased the price of beverages liable for the tax (all non-alcoholic beverages with added sugar or sweetener, e.g. soda, fruit drinks and flavoured waters). Six months after implementation, the tax was 'fully shifted' to soda prices but only partially to the prices of fruit drinks and flavoured waters (about 60% and 85% respectively).

MEXICO: Mexico's sugary drinks tax

The tax has been in effect since January 2014 and increases the price of sugary drinks by about 10% – 1 peso (\$0.07) per litre. Sugary drinks are defined under the law as all drinks with added sugar, excluding milks or yoghurts. Preliminary results of the Mexican soda tax show that in the first quarter of 2014, there was, approximately, a 10% decrease in sales of taxed beverages.

ACCEPTABILITY

Increasing the *acceptability* of fruits and vegetables relative to sugary snacks: School Fruit and Vegetable Programmes

NETHERLANDS: The Dutch SchoolGruiten Programme

The programme was implemented in 2003 with a 3-year pilot and provided one serving of fruit or vegetables twice a week at no cost to school children. Children from schools with the intervention programme brought in fruit and vegetables and fewer unhealthy snacks from home, significantly more often than children in schools without the intervention. Starting in 2006, the SchoolGruiten Programme was rolled out nationally with the costs of the fruit and vegetables passed onto schools, parents or third parties. The SchoolGruiten Programme ran until 2013 and the teaching materials were adapted and transitioned into the EU School Fruit Programme.



NORWAY: Norway's School Fruit Programmes

The subscription school fruit programme was initiated in 1996 and made nationwide in 2003, for students in grades 1-10. In 2007, a free school fruit programme was also implemented nationwide in all secondary elementary schools (grades 8-10) and combined schools (grades 1-10). In both programmes, a piece of fruit or vegetable was provided every school day to students. Research shows that students enrolled in schools implementing the programme increased their overall fruit and vegetable intake and reduced the frequency of their unhealthy snack consumption (sugary drinks, candy and potato chips). In the free fruit programme, the reduced frequency in consumption of unhealthy snacks was especially evident among students with parents with lower educational attainment. Norway's Free School Fruit Programme was replaced with a subscription programme in 2014.

“*The national education act was revised in 2008 and made it clear that the municipalities (as school owner) were responsible for providing free fruit and vegetables every school day to all students attending the included schools.*”

“Furthermore, the amount of earmarked funds available for this programme to each municipality was public information, and parents could complain to the County Governor if their municipality cut programme funds. Whenever a County Governor had to instruct a city to reinstate the programme, it received a lot of media attention.”

Professor Knut-Inge Klepp, Director-General, Division of Epidemiology, Norwegian Institute of Public Health, Norway

Increasing the acceptability of water relative to sugary drinks

HUNGARY: Hungarian Aqua Promoting Programme in the Young (HAPPY)

Implemented initially as a two-month intervention programme in 2007, HAPPY aimed to increase the popularity of drinking water among primary school students aged 7 to 10. The programme promoted water consumption by educating students about adequate fluid consumption and making free water available (in water coolers) on school premises. At the end of the intervention, there was a significant increase in the children's knowledge about fluid intake, a significant decrease in sugary drinks



consumption, and an increase in water consumption (with almost two-thirds of students reducing the amount of sugary drinks they consumed). In addition, fewer students brought sugary drinks to school and more students brought water to school following the intervention. Based on the success of the pilot, in 2010 the National Institute for Food and Nutrition Science extended HAPPY nationwide for voluntary adoption by schools. In 2014, around 144 schools had implemented the programme.

“**Clear measurable indicators are needed to demonstrate programme achievements for decision makers. Thus, monitoring and robust evaluation are key elements for sustainability and future funding.**”

“Appropriate steps like having a responsible contact person, building strong collaborations, regular communication with the target groups, and effective documentation and dissemination needs to be planned and undertaken. If you would like to realise impact, first identify the problem then develop the proper language to effectively educate and reach your target group, especially when you are working with children.”

Dr Eva Martos MD PhD, General Director, National Institute for Food and Nutrition Science, Budapest, Hungary

AWARENESS

Raising awareness of sugar in products

USA: Los Angeles County’s “Sugar Pack” campaign

This campaign aimed to increase awareness of the number of “sugar packs” (a packet containing three grams of sugar, commonly found in restaurants) in sugary drinks, as well as the adverse health effects of obesity. The campaign ran between October 2011 and December 2012 and used paid media messages placed on billboards, buses, and railways, a short video on transit TV, a website that included a sugar calculator, and social media. The campaign visuals and messages were pre-tested on the intended targeted audiences, and the campaign materials and resources were produced in both English and Spanish. Results from an evaluation demonstrated that the campaign increased the public’s knowledge of the number of sugar packs in drinks and the health effects of obesity. The campaign also resulted in favourable recognition of health messages, and over 60% of respondents reported they were likely or very likely to reduce their daily intake of sugary drinks.^e

“**Sugar in a soda presented as sugar packets rather than other measures such as grams resonated with the public. Consumers were provided with a measure that was clear, striking, and very familiar to them – really driving the point home.**”

Noel Barragan, Program Manager, Strategic Planning for Community and Health Resources, Division of Chronic Disease and Injury Prevention, Los Angeles County Department of Public Health

^e Barragan NC et al. (2014). The “sugar pack” health marketing campaign in Los Angeles County, 2011-2012. *Health Promotion Practice* 15(2): 208-216.

Taking a comprehensive approach

FRANCE: The National Nutrition and Health Programme (PNNS)

This programme promotes health across an entire population and uses a number of policies with components that aim to reduce sugar intake in the context of improving the total diet. The programme includes nine objectives, one of which is to reduce the consumption of added sugar by 25%. It involves collaboration across multiple sectors, including the government, food industry, research, education communities, consumers and healthcare organisations. The PNNS was implemented in 2001 and is an ongoing programme. Mass media campaigns organized in the first phase of the PNNS (2001-2005) aimed to encourage fruit and vegetable consumption, physical activity and the consumption of foods rich in wholegrains, while reducing the consumption of foods with added sugars. The Food Quality Observatory (Oqali) was created in 2008 as part of the second phase of the PNNS. Oqali assesses the nutritional composition of food items sold in France, follows nutritional and labelling changes in the food supply (including food reformulation), and assesses PNNS voluntary commitment charters for nutritional improvement signed by the food industry. The charters of voluntary commitment (launched in the second phase of PNNS) have resulted in product reformulation, including a significant reduction in sugar in some food categories. For example, between 2001 and 2008 among breakfast cereals, there was a 10% reduction in sugar content (a quarter of cereals sold had reduced sugar content by 1.5 – 9.0 grams per 100 grams). Based on the first 15 signed charters of commitment, an estimated 11,700 to 13,000 tonnes of sugar were removed from the French food market over the period of two years (2008-2010). In 2010, mandatory guidelines on the nutritional composition of meals served in schools (including sugar) were implemented.

“**The success of a public health programme like the PNNS relies on a combination of synergistic and complementary actions, measures, regulations and laws. It combines different strategies oriented towards education, communication, information, training of professionals, nutritional environment, as well as towards food composition, availability, accessibility and affordability. The PNNS framework also accounts for notions such as pleasure, conviviality and gastronomy.**”

“Efforts to improve knowledge about nutrition are essential but are clearly not enough. The choices for consumption cannot solely be the individual’s responsibility, because for the consumer, the available choices depend largely on the environment.”

Professor Serge Hercberg, Chairman of the French Nutrition and Health Programme (PNNS)



What can other sectors do?

Our research shows that with so many players and a complex, dynamic system, there is no obvious way to intervene in the sugar supply chain to reduce the consumption of free sugars. Many different sectors of government (e.g. agriculture, trade, industry) and society (e.g. farmers, agribusiness, food manufacturers) are involved. Despite this complexity, the fact that sugar is both cheap and widely available means there is a strong case for exploring opportunities to harness these other sectors to take action to influence the **availability** and **affordability** of sugary products, the **acceptability** of alternatives and people's **awareness** of sugar in products.

Our research suggests that the following questions could provide a starting point for dialogue and research:

- ◆ **Is supporting farmers and labourers involved in sugar production one way of reducing consumption?** Though the rewards are few, growing sugar supports the livelihoods of millions of farmers and agricultural workers. It is also an important source of national revenue for many countries, both large and small. Reducing production could potentially have adverse economic impacts. The economic threats posed by reduced production have led to opposition to policies to reduce sugar consumption. Is the time right to encourage farmers to transition out of sugar production and into healthier alternatives which demand higher market prices? Since farmers receive such a small proportion of the price paid for sugar, could more Fairtrade and organic sugar benefit both people's health (through higher sugar prices) and farmers' livelihoods?
- ◆ **Could the provision of clean water, fruits and vegetables encourage a large-scale substitution away from sugary foods and drinks?** Evidence presented here shows that school-based policies can effectively encourage children to switch from sugary drinks to water and from sugary snacks to fruits and vegetables. Could the same process be scaled up from specific settings to the whole food supply? There is anecdotal evidence that people in low- and middle-income countries consume sugary drinks because they are concerned about the safety of the water supply. Many people across the world lack access to fruit and vegetables. Is harnessing the power of suppliers of water, fruit and vegetables to increase availability and affordability, one answer to excess sugar intake?
- ◆ **What is the role of reformulation?** Evidence presented here shows that reformulation to reduce the amount of sugars added to processed foods is possible. Moreover, our research into the sugar supply chain shows that a lot of the global sugar supply is sold to food manufacturers for use in processed foods, rather than to households for use in the home. Yet, actions to reformulate products around the world still focus on salt and trans fats. What are the challenges faced by food manufacturers to reduce added sugars in their products? Can government policies and investments help address some of these challenges and motivate change? Will the reduction of sugar content actually lead to healthier diets, or will there be unintended consequences?

- ◆ **Is facilitating the adoption of non-caloric sweeteners by soft drink manufacturers part of the solution?** Many large sugar refiners also produce non-caloric sweeteners, or have joint ventures with companies who manufacture non-caloric sweeteners. Equivalent prices of non-caloric sweeteners are lower than sugar. Yet despite these price incentives to increase the use of non-caloric sweeteners, the market is still just 10% of the global market for all sweeteners (80% is sugar). One reason may be that non-caloric sweeteners cannot be used as a direct substitute for sugar in foods since they do not have ‘bulking’ properties. Non-caloric sweeteners are also heavily regulated. And from a health perspective, there is reported to be “insufficient clinical and epidemiologic data available to make definitive conclusions regarding the benefits of NNS [non-nutritive sweeteners] in displacing caloric sweeteners as related to energy balance.”^f Nevertheless, soft drink manufacturers can directly substitute non-caloric sweeteners in their sugary drinks. What is preventing soft drink manufacturers from switching all of their product portfolios to non-caloric sweeteners? What further evidence is needed to identify if the use of non-caloric sweeteners can assist in obesity prevention? Or is looking to non-caloric sweeteners at best an ill-advised short-term solution since it still promotes a preference for sweetness and a reliance on highly-processed foods in the diet?
- ◆ **Is there a role for policy on sugar production, trade and distribution?** The policy environment around sugar is very complex, with incentives for production, trade and distribution being affected by a range of subsidies, quotas and trade agreements, which vary from place to place and affect different parts of the sugar supply chain in different ways. Yet within this complexity, specific policies clearly have specific effects on sugar prices and on the behaviour of sugar businesses. Are there any supply-side sugar policies that could make a difference to sugar consumption globally?

^f Shankar P, Ahuja S, Sriram K (2013). Non-nutritive sweeteners: Review and update. *Nutrition*, 29(11-12):1293-1299.

RECOMMENDATIONS

To help curb sugar consumption, promote healthier diets and reduce non-communicable diseases, governments should:

- ◆ **Learn from the policy actions highlighted here and the experience of the experts who have developed and implemented them. Governments should prioritise not only taking more action, but more *effective* action to curb sugar consumption.**
- ◆ **Initiate dialogue with stakeholders in the sugar supply chain. This could identify what ‘upstream’ actions can be taken to reduce the supply and demand for sugar.**
- ◆ **Avoid looking at sugar in isolation. Policies to reduce sugar intake should be implemented in the context of broader dietary improvements.**
- ◆ **Take a comprehensive approach to reducing sugar consumption. Action is needed across all three policy domains outlined in our NOURISHING framework: food environment, food system and behaviour change communication.**

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For further information

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About World Cancer Research Fund International

World Cancer Research Fund International leads and unifies a network of cancer prevention charities with a global reach.

We are the world's leading authority on cancer prevention research related to diet, weight and physical activity.

We work collaboratively with organisations around the world to encourage governments to implement policies to prevent cancer and other non-communicable diseases.

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