REPORT ON FISCAL POLICIES TO REDUCE CONSUMPTION OF SUGAR-SWEETENED BEVERAGES AND OTHER REGULATORY MEASURES TO PROMOTE HEALTHY DIETS IN THE REPUBLIC OF MALDIVES

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SUMMARY

The Maldives, a high middle-income country, is undergoing an epidemiological transition with rapidly increasing rates of overweight and obesity adding to the NCD burden. Data indicates that a fourth of adolescent girls aged are overweight, while the Global School-based Student Health Survey (GSHS 2014) reports an overweight and obesity prevalence of 11-18% among teenagers. The Global Health Observatory data (2014) reported that 30% of adults are overweight. Overweight and obesity in the Maldives is attributed to unhealthy diets and lack of physical activity. A key contributor to unhealthy diet is the intake of sugar-sweetened beverages (SSBs). Statistics from the Maldives customs report a very high volume of energy drink imports. The GSHS reported high intakes of SSBs by children. To reduce consumption, the Ministry of Education restricted the sale and marketing of energy drinks in all public schools. Subsequently, the Government implemented an import tariff on soft drinks and energy drinks and requested the technical support of WHO in modelling the effects of the taxation and other guidance with regard to the tariff.

This report provides a situational analysis of unhealthy diets in the Maldives and global evidence on effects of SSB taxation, and assesses the effects of alternative specific excise taxes on consumption and revenue generation. It recommends, for consideration by the Government of Maldives, specific actions which would harmonize new fiscal policies to minimize substitution effects and enhance intended health benefits.

Current tax structure: In March 2017, the Maldives implemented an additional import tariff of 33.64 MVR/litre on energy drinks and 4.60 MVR/litre on soft drinks. Substitution from energy drinks to soft drinks is likely [taxed at a higher rate through the new import tariffs (60% vs 16%)]. Significant substitution to domestically produced carbonates (not subject to import duty) is also likely since domestic production comprised of Coca Cola, Fanta, Sprite and Schweppes is three times the import volume of these brands. Substitution is also likely to other SSBs (such as fruit-flavoured drinks, sweetened teas/coffees and flavoured waters) which are not included as part of the tax base.

Tax recommendations to be considered

- Implement a specific excise tax on domestically produced energy drinks and other soft drinks at rates that are harmonized with the import tariffs to minimize substitution effects from imports to domestically produced sweetened beverages.
- Expand the excise tax base to include other water based flavoured beverages such as fruit drinks and other sweetened beverages and exclude non-sugar sweetened beverages.
- Raise the specific tax rate on both imported and domestically soft drinks and other SSBs to an effective rate of at least 20% (approximately 5.8 MVR/L) to obtain a more meaningful reduction in consumption.
- Adjust both the import tariff and the proposed specific excise taxes for inflation each year.
- Earmark import tariff and excise tax revenue for public well-being programs, with particular emphasis on nutrition and physical activity-related policies.
- Carry out a public awareness and education campaign on sensitizing communities regarding the SSB tax and its objectives to both enhance its acceptance and complement its intended impact to reduce SSB consumption and improve public health.
- If the new import tariffs were ever to be repealed, all specific excise taxes should raise price to at least 20% for both imported and domestically produced SSBs.

Dietary Data: quantifiable data on the contribution of free sugars, and SSBs to the energy intake of the population would be desirable.
1. **Background**

This report has been developed by WHO HQ, WHO Regional office for South-East Asia, Dr. Lisa Powell, University of Illinois at Chicago, Consultant, and the WCO Maldives following a request from the Ministry of Health, Government of Maldives to provide technical guidance to implement fiscal policies to promote healthy diets and other complementary measures to reduce consumption of unhealthy foods. The report will support the Maldives government in its efforts to implement actions of the Multi-sectoral Action Plan for the Prevention and Control of Noncommunicable Diseases in Maldives (2016-2020), and specifically in the policy action the country has undertaken to reduce consumption of energy drinks and carbonated (soft) beverages.

1.1 **Policy context and rationale for taxation of sugar sweetened beverages**

NCD’s are the leading cause of overall, as well as premature mortality in the South-East Asia Region (SEAR), including in the Maldives. The four main NCDs are cardiovascular diseases, chronic respiratory diseases, type 2 diabetes and cancer, the determinants of which are complex and includes behavioural risk factors, specifically tobacco and alcohol usage, sedentary lifestyle and consumption of unhealthy diets leading to obesity.

Obesity affects a significant proportion of people globally. Diets high in fat and sugars are energy-dense and contribute to overweight and obesity. The literature has established a significant link between consumption of free sugars with overweight and obesity and poor oral health. Increased consumption of free sugars, particularly in the form of sugar-sweetened beverages (SSBs), is associated with weight gain in both children and adults and with poor oral health. There is also some evidence that reduction on SSB consumption is associated with weight loss.

A study using econometric models of repeated cross-sectional data on diabetes and nutritional components of food from 175 countries, reported that every 150 kcal/person/day increase in sugar availability (corresponding to 12 ounces of sugar-sweetened beverage, i.e., approximately 354 mL) in the country’s food system was associated with a 1.1% increase in prevalence of diabetes mellitus.

1.2 **WHO Guideline on sugars**

In April 2015, WHO issued the Guideline on Sugars intake for adults and children. The guideline recommends reducing the intake of free sugars to less than 10% of total energy intake, approximately 12 teaspoons of sugars per day. Furthermore, it recommends a further reduction to below 5% of total energy intake, or about 6 daily teaspoons, for additional health benefits.

1.3 **Cost of obesity**

Obesity is one of the biggest drivers of preventable chronic diseases and high healthcare costs. A study from Thailand estimated the health care cost attributable to obesity at 1.5% of national health expenditure, while in South Korea, healthcare costs linked to obesity were estimated to be 3.7% of the national health care expenditures in 2005.

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*a Free sugars include 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*. 
Additionally, obesity is associated with other costs: productivity, transportation, and human capital costs. Job absenteeism (productivity costs due to employees being absent from work for obesity-related health reasons) and ‘presenteeism’ (lower productivity while at work) create significant costs for employers each year. Projections from a systematic review of economic consequences of overweight and obesity in the Asia-Pacific region conclude that direct and indirect spending on obesity may exceed over 4.1% of a country’s GDP.

1.4 Fiscal policy measures
Fiscal policies are a key part of a package of regulatory policies, such as marketing restrictions and labelling, school food policies and labelling of foods that help improve the food environment. While a comprehensive strategy is required to control growing rates of overweight and obesity, and to encourage healthier dietary intake and lifestyles, fiscal policies are effective complementary tools to mitigate the obesity epidemic at a population level.

The Global Action Plan on Prevention of Noncommunicable Diseases, the Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition 2012 and the Report of the WHO Commission on Ending Childhood Obesity (2016) recommend trade measures, taxes and subsidies that discourage the consumption of unhealthy diets and create incentives to improved access to healthier foods and encourage behaviours associated with improved health outcomes.

The WHO Technical Meeting on Fiscal Policies on Diet of May 2015 concluded that appropriately designed fiscal policies, when implemented with other policy actions can reduce the obesogenic environment and promote healthy diets. The evidence is strongest for taxes on SSBs, with taxes projected to lead to significant reductions in SSB consumption by discouraging purchase of SSBs, leading to net reductions in caloric intake.

Fiscal policy measures on SSBs need to take into account, a comprehensive view of outcomes and benefits to the population. In addition to reducing consumption of free sugars and thus, reducing obesity, benefits to the populations are even higher if tax revenues are used for targeted obesity prevention and health promotion and/or targeted subsidies for healthier options are provided. Earmarking will improve the transparency of the taxation process and use of revenues, which will increase the acceptability of the tax by politicians and the general public.

1.5 Fiscal policies on sugar-sweetened beverages and SSB consumption in SEAR
Countries such as France, Mexico and Mauritius have levied taxes on SSBs, while others are planning to do so. The taxes are structured differently across countries, and modelling studies and evaluations done indicate reduced SSB consumption in some. In Mexico, after the introduction of a 1 peso per litre excise tax on SSBs in January 2014, purchases of taxed beverages decreased 5.5 percent in 2014 and 9.7 percent in 2015, yielding an average reduction of 7.6 percent over two years. Households at the lowest socioeconomic level had the largest decreases in purchases of taxed beverages in both years. Among SEAR countries, Thailand has implemented a tax on specific SSBs, and revenue is earmarked for public health.

While SSB intake in some SEAR countries is generally lower than other regions, data from China, India, Vietnam, Thailand and other South Asian countries show rapid increases in SSB consumption. In India, SSBs constitute a significant contribution as the third largest industry in
India after packed tea and biscuits. SSB sales in India have increased by 13% per year since 1998, exceeding 11 liters per capita/year. A similar trend is envisaged in other countries in the Region, and measures to reduce consumption of SSB’s are necessary with a view to reducing intake of free sugars.

1.6 Awareness and advocacy
Challenges in implementing fiscal policies to promote healthy diets are many. Arguments against taxes are usually overstated and relate to the impact on jobs, low-income households and tax avoidance. Recent data from California and Illinois in the USA show that SSB taxes are not likely to lead overall job losses, in spite of a small decrease of jobs in the beverage sector. This is attributed to consumers redirecting their purchases towards untaxed products, and the fact that the tax revenue will generate economic activity, thus stimulating growth in other non-beverage sectors. Evidence so far indicates that low-income populations have the largest health benefit from taxes because their pre-tax SSB consumption is high and post-tax reductions in consumption are relatively large.

Awareness among policymakers and the population of the harmful effects of sugar, increases support for regulatory policies and counteracts efforts to oppose the development and implementation of tax measures. The role of civil society and health professionals is critical, not only to counteract undue pressure from food and beverage companies, but also to monitor fiscal policies and ensure their appropriate implementation.

2. Situation analysis of nutrition and diet in the Maldives

2.1 Demographic and nutrition status
The Republic of Maldives is a nation of 1,190 small coral islands, set in an area of 90,000 sq. km. of the Indian Ocean with 99% of the its area composed of the sea. Inhabited islands number 194. The population of Maldives was estimated to be 319,738 in 2010. A third of the population reside in Male, the capital city. The 2006 Census indicates that adolescents and young persons make up the largest proportion of the population; 37% of the population are in the age group 10-24 years. With improvements in socioeconomic status, Maldives has the highest per capita income in South Asia. The major economic sector, tourism, contributes approximately to 28% of the GDP.

The Maldives is in a status of epidemiological transition, moving towards an increasing burden of NCDs. The transition in the socioeconomic and demographic situation has resulted in a double burden of malnutrition in the Maldives. While undernutrition is on the decline, overweight and obesity are on the rise in many age groups. The percentage of children under 5 years of age who are underweight has declined from 43% in 1996 to 17.3% in 2009. Similarly, stunting declined from 30% in 1996 to 18.9% in 2009; wasting declined from 17% in 1996 to 10.6% in 2009 while 24% of adolescent girls (15-19 years) were overweight, (BMI ≥ 25

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b Maldives Health Profile 2016, Ministry of Health, Maldives.
d Department of National Planning Data, 2010a).
According to GSHS data, among students aged 13-15 years, 17.6% were overweight and 4.5% were obese, while in the older age group, 15.8% were overweight and 4.9% were obese. The STEPs survey (2011) reports that 8.6% of men and 14.5% of women were obese, while the global health observatory data report that 30% of adults are overweight.

2.2 Burden of NCDs
With 81% of deaths attributed to NCDs, they are the leading cause of mortality in the Maldives, and the highest in the Region in 2014. The age standardized mortality rates for NCDs (excluding injuries) was ten times higher as compared to communicable diseases in 2008 (598 per 100 000 population versus 59 per 100 000 population). The leading causes of death for the Maldives in 2012 were cardiovascular diseases, chronic respiratory diseases and diabetes. Dietary habits, high blood pressure, high body mass index and smoking were the top five attributable risk factors for the burden of disease in the country. The increasing NCD rates are related to social determinants of health, especially population ageing, rapid and unplanned urbanization, and effects of globalization including rampant marketing and increasing availability of low cost foods and beverages high in salt, sugars or fat.

2.3 Unhealthy diets in the Maldivian population
Data on dietary risk factors are available from the Global School-based Student Health Survey (GSHS 2014) STEPs (2011), and other quantitative and qualitative surveys. According to the STEPs 2011, in a typical week, study respondents consumed fruits and vegetables on 3.3 days and 3.8 days, respectively. The mean number of servings of both fruits and vegetables per day was 1.0. A third of the respondents reported that they ate less than one serving or no serving of fruits and/or vegetables per day. Only 7.4% of men and 5.4% of women ate the recommended five or more servings of fruits and/or vegetables per day.

According to the GSHS, a high consumption of carbonated beverages was reported, with a third of students reporting consumption of such products one or more times per day. This information is further supported by focus group discussions carried out as part of a situational analysis on nutrition and food security (unpublished): only 22.7% of students usually ate a fruit two or more times per day and 10.1% ate a vegetable three or more times per day and 15% of the students indicated that they ate from a restaurant three or more times a day. Salt consumption too has been estimated to be high with the age standardized estimated sodium intake (g/d) reported as 3.31 g of sodium in 2010.

Causes of unhealthy dietary practices in the Maldives were assessed in a dietary survey:

- lifestyle changes that reduce time for home-cooked meals and increasing trend of using ready to cook meals or fast foods
- lack of shops/restaurants providing healthy dietary options
- high cost of fresh fruits and vegetables compared to ultra-processed foods

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\(^e\) Global School Health Survey data 2014
\(^f\) WHO STEPS survey on risk factors for noncommunicable diseases Maldives, 2011
\(^g\) Global Health Observatory data 2014
\(^h\) World Health Statistics
\(^i\) Global Burden of Disease
• misconception/misinformation regarding healthy eating
• influence of advertising and media promoting foods high in salt, sugar and fat
• absent or very minimal school based programmes on hygiene, food safety, nutrition and physical activity for adolescents

According to STEPs, low levels of physical activity were reported by 45.9% of respondents (39.1% of men and 52.4% of women) and also by children.  

2.4 Availability and consumption of sugar-sweetened beverages in the Maldives
The categorisation of beverages in this document is as stated in the nutrient profile model for the South- East Asia Region. However, the term ‘soft drinks’ is used since this description is used by Maldives in the tax notification documents. The non-alcoholic beverage industry in the Maldives is made up of 100 % fruit juices, water based flavoured beverages including carbonated sports drinks and energy drinks¹, flavoured milks etc., however, it is dominated by carbonated drinks and energy drinks as assessed from import data by Maldives Customs. Consumption of sugary beverages is considered a significant problem among Maldivian youth and young adults. The recent Maldives Food Based Dietary Guidelines devoted a separate section to promote reduction in consumption of sugary beverages, mainly energy drinks. According to customs authority data, 4.7 million L of energy drinks alone were imported to Maldives in 2015. In 2016, the Ministry of Education, Maldives issued guidance instructing all public schools in the Maldives to ban energy drinks and to disallow advertisements for energy drinks inside or outside school premises as well as on adjacent buildings. ² Energy drink sellers also were disallowed from sponsoring school events or sports activities.

Dietary data to assess in a quantifiable manner, the degree of contribution of free sugars (including SSBs) to the diet of Maldivians would be useful. This would provide further evidence of the need to address SSB intake and provide information on other contributors to intake of free sugars as well as information on other nutrients of interest (fat, and salt).

2.5 Mandate for enactment of fiscal policies in the Maldives
A specific objective in the Multi-sectoral NCD Action Plan of Maldives is the reduction of modifiable risk factors for noncommunicable diseases and underlying social determinants through creation of health-promoting environments.¹ The Action Plan ensures a holistic approach embracing policy, legal and structural components necessary to address complex social determinants of NCDs and their risk factors. The strategic priority action area 2 on health

¹ Energy drinks are non-alcoholic beverages intended for consumption without modification, with a total amount of caffeine in excess of 150 mg / l, and containing at least one or more stimulant or tonic substances (for example, taurine, inositol, Guarana alkaloids, ginkgo extract). Energy drinks may additionally contain other food ingredients in accordance with the laws and regulations of the food chain specified requirements. (Republic of Latvia https://likumi.lv/doc.php?id=280078). The 150mg/l is consistent for caffeine is consistent with the EU regulation on food information to consumers, which requires specific labelling for high caffeine drinks and foods where caffeine has been added for a physiological effect. (REGULATION (EU) No 1169/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2011. http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32011R1169&from=en)
¹ Multisectoral action plan for NCDs, Ministry of Health, Maldives.
promotion and risk reduction aims to promote the development of population-wide interventions to reduce exposure to key risk factors.

Effective implementation of these actions will lead to reduction in tobacco use; increased intake of fruits and vegetables; reduced consumption of saturated fat, salt and sugar; reduction in harmful use of alcohol; increase in physical activity; and reduction in second hand exposure to tobacco smoke.

SSB taxation addresses a specific objective in the NCD action plan: To reduce modifiable risk factors for NCDs and underlying social determinants through creation of health-promoting environments, with the target being a 25% relative reduction in overall mortality from cardiovascular diseases, cancers, diabetes, or chronic respiratory diseases. This is an opportune moment for the Maldives to implement actions aimed at reducing unhealthy diets, considering that the Government of Maldives just gazetted the notification of an import tax on energy drinks and carbonated beverages.

3. Fiscal policies: taxation of sweetened beverages

3.1 Tax design

3.1.1 Tax Type

A tax that is applied to a defined set of products may be used as a policy instrument to increase the relative prices of such products and, thereby, influence individual-level consumption. Taxes on consumption are considered indirect taxes which are passed on to the consumer and include excise taxes, value added taxes (VAT), general sales taxes (GST), and import tariffs.

Excise taxes are discriminatory taxes which are applied to specific products. Excise taxes are often used as “Pigouvian” taxes which are implemented with the intent of inducing a behaviour change to correct for an externality of overconsumption. Typical examples include excise taxes on tobacco and alcohol products, gasoline and motor vehicles, and products packaged in plastic bottles. Excise taxes are also used to tax luxury items as a discriminatory means to raise revenue. Excise taxes apply equally to domestically produced and imported products and therefore do not impact trade agreements.

Excise taxes may be applied as a specific tax or an ad valorem tax. A specific tax is applied as a specific amount per unit of the product whereas an ad valorem tax is applied as a percentage of the price (value) of the product. Specific excise taxes are preferred when the objective is to reduce consumption of specific products for a number of reasons. Importantly, since specific excise taxes are applied on a per unit basis rather than as a function of price, quantity discounts are still taxed. In particular, free refills of soda would not be subject to an ad valorem tax. Specific taxes also reduce incentives to switch to less expensive brands. However, it is important to keep in mind that excise taxes need to be periodically increased, otherwise they will be eroded by inflation. At present, the Maldives does not currently apply excise taxes to any beverage products.
Value added taxes (VAT) and Goods and Services taxes (GST) taxes generally apply broadly to all products and, therefore, are not considered as policy tools that would change relative prices of specific products and related consumption behaviour. Whereas a VAT tax is incorporated into the shelf price which is important for impacting behaviour decisions, a GST is usually applied only at the point of purchase and thus, is the least favourable tax instrument for impacting behaviours. The VAT in the Maldives is currently 6%.

Import tariffs are used to raise revenue and can influence consumption and the balance of trade. High tariffs on products that do not have domestically produced substitutes may be effective in reducing overall consumption of such products. Tariffs on imported products that are also produced domestically will raise the relative price of the imported products and induce substitution to the domestically produced products. Given that the Maldives import a substantial proportion of consumer goods, import tariffs may serve as an effective excise tax for some types of products. Higher tariffs imposed on tobacco products increase the overall prices of cigarettes without the potential for substitution since there is no local tobacco production.

**The Maldives’ import tariff on specific beverages**

With the public health aim of reducing consumption, in March 2017, the Maldives implemented an additional import tariff of 33.64 MVR/litre on energy drinks (including both SSB and nSSB varieties) and 4.60 MVR/litre on soft drinks (including SSB and nSSB carbonated sodas and sports drinks). Almost 100% of energy drinks available in the Maldives are imported and, therefore, substitution to domestically produced energy drinks is not expected. However, the new import tariff may encourage new domestic production of energy drinks. For soft drinks, there is domestic production of Coca Cola, Sprite, Fanta and Schweppes brands and approximately three quarters of the total volume available for these brands come from domestic production which would not be subject to the import tariff. Thus, we expect significant substitution to domestically produced soft drinks. Additionally, we expect substitution to beverages that are not included as part of this tax base such as fruit drinks, sweetened teas/coffees and flavoured waters.

**3.1.2 Tax Base**

Another key consideration for policy makers is to define the tax base – that is, defining which products will be taxed. The appropriate tax base depends on the objective of the tax. The public health objective to reduce sugar intake suggests a tax on all SSBs including: all water based flavoured drinks (regular energy drinks, regular soda, regular isotonic drinks, sweetened fruit drinks), coffee, coffee substitutes, tea and herbal infusions (sweetened teas/coffees) and some milk and dairy based products (sweetened/flavoured milk). However, even though flavoured sweetened milk is a significant contributor to children’s SSB intake, it has been exempted from targeted beverage excise taxes to date. If any form of free sugars are considered a risk factor then the tax base would also include 100% fruit juice.
A broader tax base helps to minimize substitution across the targeted products. Under the public health objective, to decrease simple sugar intake, non-sugar sweetened beverages (nSSBs) would not be included in the tax base. Recent sweetened beverage taxes have not been consistent in their application to SSB versus nSSBs beverages. For example, the targeted product excise taxes in Mexico, Hungary, and Berkeley, CA, USA, apply to SSBs, whereas the tax in Philadelphia, USA, applies to both SSBs and nSSBs. The impending beverage excise taxes for Oakland and Albany, CA, and Boulder, CO, USA, will apply to SSBs, whereas the Cook County, IL, USA, tax will apply to both SSBs and nSSBs.

As of March 2017, the increased tariff rates in the Maldives were applied to soft drinks and energy drinks. The tax base for the soft drinks includes SSB and nSSB carbonated sodas and sports drinks and tax base also covers both SSB and nSSB energy drinks. Soft drinks not included as part of this base at present are cordials and other fruit drinks; nor are sweetened teas/coffees and flavoured waters included. Additionally, 100% juices and flavoured milks are not being taxed. As noted above, from a public health standpoint, it is recommended to have a tax base that includes all forms of SSBs (but not necessarily nSSBs) that are either imported or domestically produced.

### 3.1.3 Tax Rate

The size of the tax has implications for the expected impact on individuals’ consumption. The price elasticity of demand is a common metric that measures the percentage change in quantity demanded that arises from a one percent change in price. The price elasticity of demand for SSBs is estimated to be in the range of -0.8 to -1.2. Thus, based on an estimated price...
elasticity value of -1.0, an excise tax that raises prices by 20% is expected, on average, to reduce consumption of the taxed product by 20%.

The effective net change in prices for the taxed products depends on the type of tax that is implemented. Assuming full pass through of taxes to prices, an ad valorem excise tax of a given percentage will by definition increase prices by the given rate. The percentage change in prices resulting from a specific excise tax, however, depends on the baseline prices of the taxed products.

Table 1 shows mean estimated prices per litre of soft drinks (proxied by carbonated soda which makes up approximately 64% of soft drink imports) and energy drinks based on food store data from February 2017. The Table shows in example 1 that if a specific excise tax was imposed equivalent to a 20% tax rate this would equate to an increase in price of soft drinks and energy drinks of 5.8 MVR per litre and 11.1 MVR per litre, respectively. As shown in example 2, a tax in the range of the penny per ounce that is often considered in the USA would equate to approximately 5.2 MVR per litre for the Maldives and would translate into an approximate increase in price of 18% and for soft drinks and 9% for energy drinks. Finally, as shown in example 3, the new import tariff of 4.6 MVR per litre for soft drinks and 33.64 MVR per litre for energy drinks is estimated to equate to a 16% increase in the price of soft drinks and a 60% increase in the price of energy drinks. The estimated impact on energy drink prices differs across the top two brands imported into the Maldives: it is estimated to increase the price, on average, of XL energy drinks by 70%, the price of Red Bull by 43%, and the price of other brands by 62%.

### 3.2 Evidence on the impact of SSB taxes on consumption and obesity outcomes

The existing literature suggests that the price elasticity of demand (% change in quantity demanded as a result of a 1% change in price for SSBs) is estimated to be in the range of -0.8 to -1.2. Thus, based on a mid-range estimated price elasticity value of -1.0, an excise tax that raises prices by 20% is expected, on average, to reduce consumption of the taxed product by 20%.

Evidence from the Mexico tax experience shows that following the implementation of a one peso/litre tax on SSBs (equivalent to approximately a 10% tax), average volume of taxed beverage purchases was 6% lower during the first year post tax and 12% lower by the end of the year; changes were greatest among low-income households, averaging 9.1% lower and reaching 17.4% lower by the end of the year. Follow up analyses that examined the sustained impact of the tax in Mexico found an average net reduction of 7.6% in beverages purchased over the two-year study period. Evidence on Berkeley’s $0.01/oz SSB tax, effective March 2015, found SSB consumption frequency among individuals living in low-income neighbourhoods four months post-tax fell 21% compared to a 4% increase in comparison cities and water consumption increased 63% compared to 19%.

At present the impact of the recent introduction of SSB taxes on obesity outcomes has not been evaluated. Previous literature on associations between soda and SSB prices and body weight outcomes is mixed, with a few studies indicating significant associations between higher prices and lower body weight. Several simulations models, however, suggest that reductions in consumption associated with an SSB tax result in lower obesity rates.
3.3 Potential impact on demand and tax revenue generation from alternative sugar-sweetened beverage taxes in the Maldives

We have estimated the potential impact on demand and tax revenue raised from three alternative sugar-sweetened beverage specific excise tax scenarios. The three examples are as follows:

- **Example 1** assesses a specific excise tax for soft drinks and energy drinks equivalent to an excise tax of 20% (such a specific tax would be at the rate of 5.8 MV/L on soft drinks and 11.1 MVR/L on energy drinks).
- **Example 2** assesses a specific excise tax of 5.2 MVL/L which is equivalent the popularly proposed penny per ounce excise tax rates in the USA and based on current prices equates to roughly an 18% tax on soft drinks and a 9% tax on energy drinks.
- **Example 3** assesses the new import tariffs of 4.6 MVR/L for soft drinks and 33.64 MVR/L for energy drinks which equates to roughly a 16% tax on soft drinks and a 60% tax on energy drinks.

We provide estimated changes in demand of imported soft drinks and energy drinks and revenue generation based on three different price elasticity of demand assumptions: -0.8, -1.0 and -1.2. We also provide estimates for changes in demand and revenue generation for all three specific excise tax examples applied to the domestically produced soft drinks that are not covered by the new import tariff.

3.3.1 Imports

Based on import data made available from the Maldives customs office on soft drinks and energy drinks, we assessed the impact on demand and potential revenue from these tax examples as applied to imported soft drinks (which include both regular and diet versions of sodas, sports drinks, cordials and other juice drinks, sweetened teas and other soft drinks) and energy drinks. Additionally, based on the available data, these taxes are assumed to apply to both sugar-sweetened and non-sugar-sweetened beverages. As an example of the distribution of SSB versus nSSB soft drinks, approximately 90% of Coca Cola imports are SSB varieties versus nSSBs. Further, in our analyses, it is assumed that the taxes are fully passed on to retail prices.

Table 2 shows in Example 1 that a specific excise tax of 5.8 MV/L on soft drinks and 11.1 MVR/L on energy drinks (corresponding to a tax rate of 20%) is estimated to reduce demand in the range of 16% to 24% depending on the elasticity of demand. Based on the mid-range price elasticity of demand of -1.0, such a tax is estimated to raise a total of 55.4 million MVR (13.4 million MVR from soft drinks and 42.0 million MVR from energy drinks).

Example 2 shows that if a specific excise tax of 5.2 MVR/L (corresponding to a penny per ounce tax in the U.S.) were placed on both soft drinks and energy drinks then demand is expected to fall by about 14% to 21% for soft drinks and 8% to 11% for energy drinks. Under this scenario, based on the mid-range price elasticity of demand, expected revenue is of 34.5 million MVR (12.2 million MVR from soft drinks and 22.2 million MVR from energy drinks). Both the change in demand and the expected revenue under Example 2 are smaller than under Example 1 since
the specific excise tax of 5.2 MVR/L is estimated to raise prices by less than 20% as it would in Example 1.

Finally, Example 3 shows that based on the recently imposed import tariffs of 4.6 MVR/L for soft drinks and 33.64 MVR/L for energy drinks which equates to roughly an 16% tax on soft drinks and a 60% tax on energy drinks, demand is estimated to fall by 13% to 19% for soft drinks and by 48% to 73% for energy drinks. Based on a price elasticity of demand of -1.0, excise tax rates set at the new import tariff levels are expected to raise 73.9 million MVR (11.1 million MVR from soft drinks and 62.8 million MVR from energy drinks). Note that the expected revenue from the import tariffs themselves will be smaller since the import tariffs do not apply to the full range of soft drinks included in our modelling (that is, they exclude cordials and other fruit drinks, sweetened teas and other soft drink beverages).

Finally, it is worth noting that under an assumed price elasticity of -1.2, excise tax rates at the level of the new import tariffs (Example 3) would raise approximately the same amount of revenue as estimated from a 20% equivalent tax on both soft drinks and energy drinks (Example 1) - 54 versus 53 million MVR.
Table 2: Estimated Change in Demand and Tax Revenue from Imported Soft Drinks and Energy Drinks based on Examples of Alternative Specific Excise Taxes, by Price Elasticity of Demand

<table>
<thead>
<tr>
<th>Example 1: Specific excise tax equivalent to a 20% tax rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price Elasticity of Demand</strong></td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
<tr>
<td><strong>Soft Drinks</strong></td>
</tr>
<tr>
<td>-0.8</td>
</tr>
<tr>
<td>-1</td>
</tr>
<tr>
<td>-1.2</td>
</tr>
<tr>
<td><strong>Energy Drinks</strong></td>
</tr>
<tr>
<td>-0.8</td>
</tr>
<tr>
<td>-1</td>
</tr>
<tr>
<td>-1.2</td>
</tr>
<tr>
<td><strong>Total Revenue from Soft Drinks and Energy Drinks (MVR):</strong></td>
</tr>
<tr>
<td>Ed=-0.8: 58,173,807; Ed=-1.0: 55,403,626; Ed=-1.2: 52,633,445</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example 2: Specific excise tax (5.2 MVR/L) equivalent to the USA penny per ounce</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price Elasticity of Demand</strong></td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
<tr>
<td><strong>Soft Drinks</strong></td>
</tr>
<tr>
<td>-0.8</td>
</tr>
<tr>
<td>-1</td>
</tr>
<tr>
<td>-1.2</td>
</tr>
<tr>
<td><strong>Energy Drinks</strong></td>
</tr>
<tr>
<td>-0.8</td>
</tr>
<tr>
<td>-1</td>
</tr>
<tr>
<td>-1.2</td>
</tr>
<tr>
<td><strong>Total Revenue from Soft Drinks and Energy Drinks (MVR):</strong></td>
</tr>
<tr>
<td>Ed=-0.8: 35,452,468; Ed=-1.0: 34,464,710; Ed=-1.2: 33,476,952</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example 3: Specific excise tax rate equivalent to new Maldives import tariff rates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price Elasticity of Demand</strong></td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
<tr>
<td><strong>Soft Drinks</strong></td>
</tr>
<tr>
<td>-0.8</td>
</tr>
<tr>
<td>-1</td>
</tr>
<tr>
<td>-1.2</td>
</tr>
<tr>
<td><strong>Energy Drinks</strong></td>
</tr>
<tr>
<td>-0.8</td>
</tr>
<tr>
<td>-1</td>
</tr>
<tr>
<td>-1.2</td>
</tr>
<tr>
<td><strong>Total Revenue from Soft Drinks and Energy Drinks (MVR):</strong></td>
</tr>
<tr>
<td>Ed=-0.8: 93,515,731; Ed=-1.0: 73,933,266; Ed=-1.2: 54,350,801</td>
</tr>
</tbody>
</table>

Notes: MVR=Maldivian Rufiyaa. L=liter
3.3.2 Domestic Production

Here we report on analyses that assess potential impacts on demand and tax revenue if these excise tax examples were to be extended to domestic production. Data on the volume of domestic soft drink production show that approximately 4.8 million L of soft drinks are produced annually in the Maldives. This is almost double the 2.9 million L amount of all types of soft drinks that are imported. Domestic soft drink production is comprised of sodas (including regular and diet versions of the following brands: Coca Cola, Fanta, Sprite, and Schweppes). Among these brands the ratio of domestic production to imports is 3:1. Among the domestically produced soft drinks, SSB varieties account for about 87% of total domestic production. Calculations in Table 3 below include both the SSB and nSSB varieties.

Table 3 shows that if we were to subject local soft drink production to any of the three examples of specific excise taxes, estimated additional tax revenue in the range of 18.0 million MVR to 23.7 million MVR would be raised. Based on the mid-range price elasticity of demand of -1.0, a specific excise tax equivalent to a 20% tax (example 1 of 5.8 MVR/L on soft drinks), is estimated to raise 22.6 million MVR.

As shown in Table 2, this same tax (example 1) applied to soft drink and energy drink imports is estimated to raise approximately 55.4 million MVR and so this would represent a 40% increase in tax revenue. If a specific excise tax equivalent to the new import tariff on soft drinks of 4.6 MVR/L were applied to domestic production, an additional 18.7 million MVR in tax revenue would be raised (based on an assumed price elasticity of demand of -1.0). This would represent an approximate 25% increase in revenue up from the estimated 73.9 million MVR that would be raised from an excise tax equivalent to the new import tariffs on soft drinks and energy drinks.
### Table 3: Estimated Change in Demand and Tax Revenue from Domestically Produced Soft Drinks based on Examples of Alternative Specific Excise Taxes, by Price Elasticity of Demand

<table>
<thead>
<tr>
<th>Example 1: Specific excise tax equivalent to a 20% tax rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price Elasticity of Demand</td>
</tr>
<tr>
<td>------------------------------</td>
</tr>
<tr>
<td>Soft Drinks</td>
</tr>
<tr>
<td>0.8</td>
</tr>
<tr>
<td>-1</td>
</tr>
<tr>
<td>-1.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example 2: Specific excise tax (5.2 MVR/L) equivalent to the USA penny per ounce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price Elasticity of Demand</td>
</tr>
<tr>
<td>------------------------------</td>
</tr>
<tr>
<td>Soft Drinks</td>
</tr>
<tr>
<td>0.8</td>
</tr>
<tr>
<td>-1</td>
</tr>
<tr>
<td>-1.2</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Example 3: Specific excise tax rate equivalent to new Maldives import tariff rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price Elasticity of Demand</td>
</tr>
<tr>
<td>------------------------------</td>
</tr>
<tr>
<td>Soft Drinks</td>
</tr>
<tr>
<td>0.8</td>
</tr>
<tr>
<td>-1</td>
</tr>
<tr>
<td>-1.2</td>
</tr>
</tbody>
</table>

Notes: MVR=Maldivian Rufiyaa. L=liter

### 3.3.1 Earmarking of Tax Revenue for Maldives

Earmarking tax revenue for specific government programs to prevent obesity is an important aspect of fiscal policies to ensure public health benefits and will help garner public support for the tax. Earmarking specifically for nutrition and physical activity-related programs will complement the intended health impact of the tax. Examples of potential programs and policies that could be supported by the tax revenue (import tariff revenue and potential excise tax revenue) include:

- Subsidizing fruit and vegetable snacks in schools;
- Promoting the implementation of school gardens as a learning tool and to improve access to fruits and vegetables;
- Funding for safe water in specific areas where it is needed;
- Implementing an integrated health communication campaign to promote the importance of breakfast;
• Providing sponsorship for youth sports, including government-supported interschool competitions and sports events; and
• Providing funding for increased activity spaces.

3.4 Important issues for consideration related to fiscal SSB tax policy

3.4.1 Tax Pass-through
Excise taxes are generally levied upon the manufacturer or distributor of the taxed products, whereas sales taxes are levied directly by retailers on the consumer. Thus, the impact of an excise tax depends on the extent to which the tax is passed through in the form of higher retail prices of the taxed products. In competitive markets, taxes are expected to be fully passed on and, in which case a 20% excise tax on SSBs would be expected to raise the retail prices of SSBs by 20%. However, taxes may also be over-shifted (where prices increase more than the tax) or under-shifted (where prices increases to a less than the tax) depending on the market conditions and the price elasticity of demand. Understanding the extent of tax pass-through for a given tax is important for understanding the observed effects of the tax since demand will not fall as expected unless the tax is passed on through higher retail prices.

Studies on beverage excise taxes have found varying pass-through rates, depending on the beverage type, brand, and size of the tax. An analysis of beverage taxes in Denmark suggested overshifting of excise taxes and that the pass-through rate was smaller when the size of the tax was larger. An evaluation of the effects of the French soda tax imposed in 2012 using data on drive-through purchases by consumers from retail outlets found that, six months after the tax took effect, it had been fully passed through to soda prices. Evidence from Mexico also showed full pass-through to SSB prices at one-year post-tax implementation; though some differences were found based on product type and package size. Two early studies on the Berkeley tax showed less than 50% pass-through of SSB taxes to SSB prices at 3 months post-tax implementation and for certain brands at 5 months post-tax implementation.

3.4.2 Regressivity
Consumption taxes are regressive and so are not an equitable policy tool for raising general tax revenue. However, targeted consumption taxes such as SSB and tobacco taxes are intended to change behaviour to yield a health benefit. Of key importance is that behaviour change and related health benefits are likely to be progressive given that low-income households tend to be more responsive to changes in prices/taxes. Evidence reveals greater SSB price sensitivity for low-income populations; a larger impact of the tax in Mexico among low-income individuals; and, a large impact of the Berkeley tax on SSB consumption among residents in low-income neighbourhoods.

3.4.3 Job Losses
Both the beverage industry and local business raise concerns about potential job losses that may result from the introduction of a beverage tax. However, it is important to keep in mind that money not spent on the taxed beverages will be spent on other non-taxed beverages and other products. That is, while there may be lower demand for the taxed beverages and related job loss, as consumers reallocate their spending to non-taxed beverages and other goods and services new jobs will be created in the economy. Further, many beverage companies produce a variety of
beverages including those that will and will not be subject to a given tax and hence substitution across beverages will serve to offset part of the potential impact on overall demand for beverages and related industry jobs. Finally, new jobs will be created as a result of the economic activity that is generated from the spending from the tax revenue. A recent study of the impact of SSB taxes on employment for California and Illinois in the USA showed no net reduction in jobs associated with an SSB tax. 33

3.5 Monitoring impact of an SSB taxes in the Maldives
In order to monitor the impact of the new import tariff in the Maldives, it is important to systematically collect data on soft drink and energy drink prices and volume of soft drink and energy drink imports and domestic production. Import data have been collected monthly and should continue to be collected as such. Data on domestic production should continue to be monitored annually given that we expected substantial substitution to the locally produced soft drinks and new production of energy drinks which to date have made up less than 1% of total volume. To assess pass-through it is important to distinguish between prices of imported soda and prices domestically produced soda. Ideally, price data would be collected at six and twelve months post-tariff implementation at a minimum from the same stores used for the baseline price data collection.

3.6 Recommendations

3.6.1 Fiscal policy measures in the Maldives
The new import tariffs of a 4.6 MVR/L on soft drinks and 33.64 MVR/L on energy drinks are to be commended as a significant move forward in the use of fiscal policy as an instrument to reduce the consumption of sugary drinks and improve public health. However, it is important to take into consideration the following issues with respect to the design of the recommended tax structure:

- There is likely to be substitution from energy drinks to soft drinks which are taxed at a lower rate through the new import tariffs (16% versus 60%).
- There is likely to be substitution to domestically produced soft drinks that are not subject to the import duty. This may be significant since domestic production comprised of Coca Cola, Fanta, Sprite and Schweppes is three times the import volume of these brands.
- There will also be substitution to other SSB products that are not be taxed under the new import tariffs such as fruit drinks, sweetened teas and coffees, and flavoured waters. Additionally, flavoured milk is not taxed and may be a substitute product, particularly for children.

Thus, in consideration of the recently introduced tariffs, we suggest the introduction and harmonization of new fiscal policies in order to minimize substitution effects and enhance the intended health benefits.
3.6.2 Supportive dietary information

A dietary analysis to assess in a quantifiable manner, the degree of contribution of free sugars (and SSB) to the diet of Maldivians would be useful. This would provide further evidence of the need to address SSB intake and other contributors to intake of free sugars as well as other nutrients of interest (fat, and salt) which would provide guidance on other foods to be addressed.

Recommendations to enhance health benefits and minimize substitution:

- Implement a specific excise tax on domestically produced energy drinks and other soft drink at rates that are harmonized with the import tariffs to minimize substitution effects from imports to domestically produced sweetened beverages.
- Ensure that the excise tax base includes water based flavoured beverages such as fruit drinks and sweetened tea/coffee. Also considered expanding the base to include flavoured water and sweetened flavoured milk.
- Reduce the tax base to include only SSBs; that is, exclude nSSBs.
- Raise the effective specific excise tax rate on both imported and domestically produced SSBs to at least 20% (approximately 5.8 MVR/L) to obtain a more meaningful reduction in consumption.
- Adjust both the import tariff and the proposed specific excise taxes for inflation each year.
- Earmark import tariff and excise tax revenue for public well-being programs, with particular emphasis on nutrition and physical activity-related policies.
- Carry out a public awareness and education campaign on sensitizing communities regarding the SSB tax and its objectives to both enhance its acceptance and complement its intended impact to reduce sugary drink consumption and improve public health.
- If the new import tariffs were ever to be repealed, all specific excise taxes should raise prices to at least 20% for both imported and domestically produced SSBs.
4. Other regulatory policies and other interventions to promote healthy diets and current status of interventions in the Maldives

4.1 Implementing the WHO recommendations on marketing of foods and non-alcoholic beverages to children

Marketing plays a significant role in shaping attitudes towards and encouraging consumption of unhealthy foods and non-alcoholic beverages, particularly among children, who are most susceptible to marketing messages. Marketing increases children’s awareness and preference for brands, purchase request and purchases, and consumption of foods that are often high in fats, sugar and salt. A correlation has been observed between the levels of unhealthy food advertising and the prevalence of overweight. 34, 35

To reduce the impact on children of marketing of foods high in saturated fats, trans-fat acids, free sugars or salt, the World Health Assembly in May 2010 endorsed a Set of Recommendations on the Marketing of Foods and Non-alcoholic Beverages to Children to guide Member States in designing new and/or strengthening existing policies on food marketing communications to children. Since then, numerous global mandates have consistently called for countries to implement the Set of Recommendations with support from WHO; however, progress has been slow.

Current status in the Maldives:

- A regulation on prohibiting sale of energy drinks within schools and other public institutions has been implemented.
- Marketing of energy drinks within school premises has been prohibited, but is not regulated for other media, channels and settings.
- A comprehensive policy on regulating marketing of foods and non-alcoholic beverages high in saturated fats, trans-fats, sugar and salt to children has been drafted and is awaiting due process.
- The regional nutrient profile model will be used to define/categorise foods as permitted and not permitted for marketing.

Further recommendations:

- Assess current marketing practices and exposure to foods other than SSBs.
- Develop a monitoring framework to monitor and evaluate marketing of foods and non-alcoholic beverages through key communicational channels (broadcast media, print media, online and social media, outdoors and cinema promotion).
- Progress the adoption of the comprehensive policy on restricting marketing through an amendment of the Food Act of Maldives.
4.2 School-based interventions

Current status
- Detailed assessment of nutrition status of children at Year 1 entry into schools and referral is in progress.
- The regulation that prohibits marketing of energy drinks on school premises and that students bringing energy drinks to schools has been implemented.
- Marketing of energy drinks is disallowed in schools.
- Schools implement a 'fruit day' where all students have to bring a fruit (snack) to school.
- A school canteen policy has been developed and is being submitted for approval.

Further recommendations
- Develop a comprehensive school food and nutrition policies, regulating availability, access and marketing of all unhealthy foods and beverages and promoting healthy options.
- Review and regulate marketing and sale of other sugary beverages such as water-based flavoured drinks because they contain just as much, or often more, sugar as carbonated sugary drinks and energy drinks.
- Incorporate messages targeted to children and parents about harms of SSBs, including juices, and benefits of water as the best means of hydration in nutrition education sessions through curriculum revisions.
- Monitor and evaluate the current regulations which make schools free from marketing of SSBs.
- Promote the implementation of school gardens as a learning tool and to improve access to fruits and vegetables.
- Implement an integrated health communication campaign to promote the importance of breakfast.

4.3 Nutrition labelling

Current status
In the current food regulations of the Maldives, a nutrient declaration is not mandatory, which makes it difficult for consumers to make informed choices.

Recommendations:
- Include the declaration of the “Nutrient Reference Values – Non-communicable Disease (NRVs-NCD)”, that are based on levels of nutrients associated with the reduction in the risk of diet-related noncommunicable: available carbohydrate, fat, saturated fat, sodium and total sugars. As a first step, it should at least declare the amount of total energy (calories) and the concentration in the food products of total carbohydrates, total fats and total proteins.
4.4 Product reformulation

Food reformulation should be part of a comprehensive approach to promoting healthy diets, and include front-of-pack labelling and consumer awareness. Reformulation should be based on the importance of a particular food containing the nutrients of interest in the diet of the local population, the nutrients contained within the food and the ability of the food to be modified. Reformulation of less commonly eaten products are unlikely to have an impact on health of population. Regulations are important in making clear the policy objectives of product reformulation and food labelling, and in setting standards and targets. Food reformulation on its own is insufficient to create healthy diets and needs to be accompanied by measures to improve the affordability and accessibility of healthy foods, particularly fruit, vegetables and other fresh products.

4.5 Awareness raising and advocacy

It is essential to increase awareness of the population on the harmful effects of sugar, increase support for regulatory policies and counteract efforts to oppose the development and implementation of tax measures.  

Recommendations:

- Engage a broad coalition of stakeholders (health-oriented organizations, civil society organizations or consumer groups) in implementation of the tax on SSBs.
- Design and implement a public awareness or communication campaign to inform the public about the positive health consequences of policies to reduce the consumption of SSBs, emphasizing the importance to drink water as the main source of hydration, and address any potential negative effects of the tax and keep a positive public opinion;
- Conduct a high-level advocacy forum in support of the excise tax for domestically produced SSBs; and earmarking of funds from the tax on SSBs for promoting healthy lifestyles and healthy diets.

Policy brief: Producing and promoting more food products consistent with a healthy diet.
http://www.who.int/nmh/ncd-coordination-mechanism/Policybrief32.pdf
5. References


22. Colchero MA, Popkin BM, Rivera JA, Ng SW. Beverage purchases from stores in Mexico under the excise tax on sugar sweetened beverages: observational study. BMJ. 2016;352. doi: https://doi.org/10.1136/bmj.h6704


