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TECHNICAL REPORT ON

POLICY OPTIONS FOR TAXING SUGAR-SWEETENED BEVERAGES IN BANGLADESH

April 2021

Noncommunicable Disease Control Program
Directorate General of Health Service

World Health Organization
Bangladesh

NCDC, DGHS

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APRIL 2021

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POLICY OPTIONS FOR TAXING SUGAR-SWEETENED BEVERAGES IN BANGLADESH 2021

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Message

Noncommunicable diseases (NCDs) are accountable for estimated 67% of all deaths in Bangladesh, of which around half are premature. Premature deaths and disabilities from NCDs result in adverse socio-economic consequences for individuals, families, and the state.

These unwanted events can be prevented by addressing behavioural risk factors for NCDs, including unhealthy diet. Foods high in free sugar, salt, and trans fatty acid are contributors to unhealthy diet, of which free sugar causes people becoming overweight or obese. In Bangladesh, an increasing trend of overweight and obesity is observed both among adults and children. The Government of Bangladesh is concerned about this situation as this contributes to high prevalence of NCDs, which would hinder the socio-economic progress of the country towards achieving Sustainable Development Goals (SDGs).

The single largest contributor to high intake of free sugar is sugar-sweetened beverages (SSBs). Increasing affordability of people due to economic growth, combined with extensive marketing of SSBs are contributing to growing consumption of SSB over the years in Bangladesh.

In addition to creating public awareness, it is important to adopt and implement fiscal measures to influence dietary behaviour by promoting healthy diet and discouraging unhealthy diet. Taxing SSB at a high rate is proven to be a cost-effective intervention for promoting health through reducing consumption of SSB, while having the additional benefit of generating revenue.

As enough data was not available to propose an evidence based fiscal policy aiming at curbing SSB consumption, this study was undertaken, with technical assistance from the World Health Organization (WHO).

I am pleased to see that this study report is now being published, which will fill up the gap of paucity of evidence in this sector. I thank WHO for their technical assistance in producing this report, and trust that the policy options proposed in this report will help relevant stakeholders to adopt appropriate fiscal policy measures to curb consumption of SSB and increase the revenue earning from the sector at the same time.

Prof. Dr. Abul Bashar Mohammad Khurshid Alam
Director General
Directorate General of Health Services

Preface

Noncommunicable diseases (NCDs) are silent killers that appear to be a major health problem of this era. It kills almost 800000 people each year and cause premature disabilities of wide spectrum. It not only affects the individual, but also families and state.

All the major NCDs namely Cardiovascular Diseases, Diabetes, Cancer, Chronic respiratory diseases dependant on some common behavioural risk factors. One of these risk factors is unhealthy diet especially excessive sugar, and Sugar Sweetened Beverage (SSB) is one of the most popular form in modern urban area. As free sugar causes overweight or obesity which itself are major risk factors for Diabetes and several NCDs, SSB is considered as harmful for health. In recent days, childhood obesity is becoming a major problem both in urban and rural school going children. As SSB are mainly attractive to the children, it remains a major determinant for development of NCDs in future generation. Moreover, catchy advertisement of SSBs in different media lure the children to consume SSB.

To curb the consumption of SSB, public awareness remains the mainstay. At the same time, fiscal and taxation policy plays a vital role in curbing its consumption by raising the price and let down its consumption. Imposing higher taxes on SSB has proven to be a cost-effective intervention for adopting healthy dietary habit and promote health as well as prevent NCDs. As our noncommunicable related mortality is still 67%, it is worthy to adopt such fiscal policies to restrict the consumption of such unhealthy food.

Though there was little data available regarding this SSB taxation, related fiscal policy and supportive framework, the study conducted by WHO will be beneficial in adopting the supportive policy for reducing SSB consumption. This study shows the existing situation, gaps, opportunities which will provide evidence for adopting appropriate fiscal and regulatory policies to curb SSB consumption, which will help in reducing premature NCD death and achieving SDG by 2030.

Professor Dr. Mohammad Robed Amin
Line Director
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Content

Glossary

AD VALOREM TAX: A tax that is applied to the monetary value of the good involved in a transaction and with a tax rate that is a proportion of the price of the said good.

NON-SUGAR SWEETENER/NON-NUTRITIVE/CALORIC SWEETENER: A food additive (other than a mono- or di-saccharide sugar) is a substance that imparts a sweet taste to a food and includes sweeteners, intense sweeteners, bulk sweeteners. Sugar, honey and other food ingredients that can be used to sweeten are not associated with the term "sweetener.

NUTRIENT PROFILING: The science of classifying or ranking foods according to their nutritional composition for reasons related to preventing disease and promoting health.

OWN-PRICE ELASTICITY OF DEMAND: The percentage of change of demanded quantities of a good, when the price of such good increases by 1%, everything else being constant.

REGRESSIVITY: The extent to which the burden of a tax is proportionally higher for people on lower incomes.

SPECIFIC EXCISE: A fixed amount tax applied to the quantity or another quantifiable characteristics of a good (such as amount of sugar) involved in a transaction.

SOFT DRINKS: For this report, soft drinks are all non-alcoholic drinks, including carbonates, juices, energy drinks, and excluding bottled water. Soft drinks include sugar-sweetened beverages (SSBs) and nonsugar (noncaloric) sweetened beverages.

SUBSTITUTION: An effect caused by a rise in price that induces a consumer (whose income has remained the same) to buy more of a relatively lower-priced good and less of a higher-priced one.

SUGAR-SWEETENED BEVERAGES: These beverages contain free sugars, such as carbonated or noncarbonated soft drinks, fruit/vegetable juices and drinks, liquid and powder concentrates, flavoured water, energy and sports drinks, ready-to-drink tea, ready-to-drink coffee and flavoured milk drinks.

VALUE-ADDED TAX: Tax applied on each stage of production/commercialization on the surplus value, added to the price at each stage of production/commercialization.

Executive summary

There is ample evidence on the growing prevalence of overweight and obesity worldwide. In Bangladesh, overweight among adults increased more than four times – from 4.6% in 1975 to 20% in 2016. STEPS survey done in 2018 estimated that, 20.3% of adults are currently overweight in Bangladesh. In turn, obesity among adults increased from 0.2% in 1975 to 3.6% in 2016; a 17-fold increase. STEPS survey done in 2018 estimated that, 5.5% of adults are currently obese in Bangladesh. Among 5 to 19 year old children, overweight increased from 0.3% in 1975 to 9% in 2016; i.e. a 29-fold increase or an annual average increase of 8.6%. Child obesity increased from 0 in 1975 to 2.6% in 2016.

Increases in overweight and obesity have been associated with a number of health conditions, such as cardiovascular conditions, different types of cancers and diabetes. In Bangladesh, the prevalence of hypertension is partially explained by the recent increase in obesity. Diabetes prevalence has followed a similar trend as overweight/obesity: it has more than doubled (from 1980 to 2014) for both males and females (to a prevalence of close to 8% as per STEPS 2018), leading to more than 26 000 deaths per year.

Overweight and obesity are one of the major drivers of preventable chronic diseases leading to increasing health care costs. Health care costs not only increase because of the many conditions that are caused by overweight and obesity, but also other indirect (usually higher) costs, such as loss of human capital, job absenteeism and presentism (lower productivity while at work). Family costs, such as the cost of suffering and loss of earnings for caregivers, can also be significant, though difficult to measure. A conservative estimation of such costs for Bangladesh would put them at around USD 2.26 billion.

Scientific evidence relating the consumption of sugar-sweetened beverages (SSBs) to negative health outcomes is vast and has been accumulating over the past decade. The direct link between SSB consumption and the overweight and obesity epidemics has been stressed on many occasions. Prominent experts in public health have signalled SSB as “the single largest driver of the obesity epidemic”, and economists have called for extensive taxation of such products.

Consumption of SSBs depends on a number of factors, the main one being price to the consumer. If the price of SSBs decreases relative to other goods, economic theory predicts that its consumption will increase. In Bangladesh, the real price of a soft drink[ii] (excluding water) in 2018 was only half the value it had in 2004. Such a significant decrease in real price for soft drinks (including SSBs) over time has led to SSBs in Bangladesh being among the cheapest in the world. Another factor is affordability (defined as the ratio between wages and prices of soft drinks), which has increased sharply. Affordability increased more than 100% between 2004 and 2018, meaning that the average worker in 2018 had to work half the time he/she had to work in 2004 to buy the same amount of soft drinks.

The drop in real prices of SSBs increased their affordability significantly during 2004–2018, resulting in significantly increased SSB consumption. The total volume of soft drinks (of which

ii Average prices were estimated by dividing total sales (in Bangladeshi Taka (BDT)) by the total sales (in litres), resulting in a weighted average price (BDT/litre), but not by particular soft drink brand or type.

SSBs are a majority proportion) sold in Bangladesh grew at a staggering annual average rate of 6.9% during 2011–2018 and is expected to grow at an average annual rate of 6.3% during 2019–2023. The category with the highest growth rate was carbonates – annual average rate of 7.8% during 2011–2018. In 2018, about 700 million litres of carbonates (the largest category of SSBs according to volume), 210 million litres of juice, and 17.4 million litres of energy drinks were sold to Bangladeshi households. The consumption of SSBs increased from only 2.4 litres per capita per year in 2004, to 6.6 litres per person per year (a 144% total increase, at annual average rate of 6.7%) in 2018. Such an increase is projected to continue, and per capita consumption is expected to reach 7.9 litres per person per year by 2023.

The negative consequences of SSB consumption on health of consumers, financial health of households and macroeconomic costs led to the proposal of fiscal measures – essentially taxes – to reduce SSB consumption. The negative relationship between prices (taxes) and consumption is undeniable. SSB taxation is one of the main population-based measures proposed by the World Health Organization (WHO) to influence consumer behaviour and reduce the dietary risk of noncommunicable diseases (NCDs) with high cost-effectiveness.

Two different excise tax options have been simulated. The first option (preferred), is the introduction of a specific excise tax per sugar content. The second option is the introduction of a specific excise tax per volume similar to the one introduced in Berkeley (USA). The first option seeks to directly penalize sugar consumption (providing incentives to quit consumption, reduce it or to substitute high-sugar SSBs for low-sugar SSBs), while the second option seeks to penalize the consumption of large quantities of SSBs (giving incentives to quit consumption, reduce or to consume SSBs in smaller containers).

Sugar-based specific tax is simulated to be: BDT 0.25 per gram of sugar per 100 ml of SSB. For carbonates this tax would increase average prices by 20%, its consumption would decrease by 114 million–156 million litres, and tax revenue would be BDT 15 billion–16.1 billion. For juices, average price would increase by 30%, its consumption would decrease by 50 million–69 million litres, and tax revenue would be BDT 4.5 billion–5.2 billion. The average price of energy drinks would increase by about 7%, consumption would decrease by 1.0 to 1.3 million litres, and tax revenue would be BDT 442 million–452 million. Overall, over the 2020–2023 period, SSB consumption would decrease by about 845 million litres, and tax revenue would be about BDT 104 billion.

Volume-based specific tax is simulated to be BDT 2.7 per 100 ml. For carbonates, this tax would increase average prices by 20%, its consumption would decrease by 110 million–151 million litres, and tax revenue would be BDT 14.8 billion–15 billion. For juices the average price would increase by 22%, its consumption would decrease by 36 million to 50 million litres, and tax revenue would be BDT 4.3 billion–4.7 billion. The average price of energy drinks would increase by about 6%, consumption would decrease by 16.3 million litres, and tax collection would be BDT 437 million–445 million. Overall, SSB consumption would decrease by 815 million litres over the 2020–2023 period, and tax revenue would exceed BDT 103 billion.

If tax on SSBs is implemented, it is essential to monitor implementation, progress and health impacts of such a policy. The implementation of a specific excise tax reduces the costs of implementation (vis-à-vis an ad-valorem tax), as the tax agency has to gather information on the volume and sugar content of SSBs produced only. While controlling the production volume may be simpler, verifying sugar-content may imply periodically sampling and analysing beverages sold. To monitor the progress of taxation, collection of specific data and a multisectoral coordinated effort are necessary. This would include: systematic collection of data on SSB prices and volume

sold, as well as data on changes in the formulation of products (by, for example, National Board of Revenue, Ministry of Health and Family Welfare, Bangladesh Bureau of Statistics, Ministry of Industry); design and implementation of verification procedures for sugar content of products (by, for example, Bangladesh Standards and Testing Institution (BSTI), Bangladesh Food Safety Authority (BFSA)); and collection of data on domestic production (by, for example, National Board of Revenue, Ministry of Health and Family Welfare, Bureau of Statistics, Bangladesh Bank) that is disaggregated to give information on SSBs separately from waters, natural juices, among others.

For monitoring health impacts, SSBs consumption surveys on children and adults, as well as data on obesity, overweight and diabetes prevalence should be regularly collected, using instruments such as the STEPwise approach to Surveillance (STEPS) survey and Global School-based Student Health Survey (GSHS). Given the long-term effects of the tax policy, it is likely that its health impacts will not be seen immediately. It is important that the set of policies implemented consider the following:

- *Communication of health benefits of taxes to the general public:* Communicating the positive health consequences of an SSB tax and addressing any misleading information is important both to keep a positive public opinion and for the intended impact of reduced SSB consumption.
- *Possibilities to earmark tax revenue*: Earmarking revenue for specific programmes to prevent obesity will help garner public support for the tax. Earmarking specifically for nutrition and physical activity related programmes may complement the intended health impact of the tax. Examples of potential programmes and policies that could be supported by the tax revenue include: (i) subsidizing fruit and vegetable snacks in schools; (ii) promoting the implementation of school gardens as a learning tool and to improve access to fruits and vegetables; (iii) implementing an integrated health communication campaign to promote healthy diets; (iv) providing healthy and nutritive diets in groups that have a high prevalence of undernourishment.
- Supportive dietary information: A regular dietary assessment which would include data that could assess the degree of contribution of free sugars (and SSB) to the diet in a quantifiable manner, would be useful in assessing the impact of taxation.

In the high-level meeting held in United Nations General Assembly in 2011, like other member states, Bangladesh also committed to 'whole of the government, whole of the society efforts' for health promotion to prevent NCDs. Following the development of global action plan on prevention and control of NCD in the 2013 World Health Conference, Government of Bangladesh adopted "Multisectoral Action Plan for Prevention and Control of Non-Communicable Disease, 2018-2025", which sets targets to halt rise in obesity and diabetes in Bangladesh by 2025. In this regard, the recommendations of this report would be useful for adopting fiscal measures to curb consumption of SSBs to reduce prevalence of overweight, obesity and diabetes mellitus in Bangladesh.

This report has been developed by WHO for the Noncommunicable Disease Control (NCDC) unit of the Directorate General of Health Services (DGHS), to provide technical assistance to implement fiscal policies to reduce SSB consumption in Bangladesh.

Photo: Unsplash/Thomas Park

1 Background

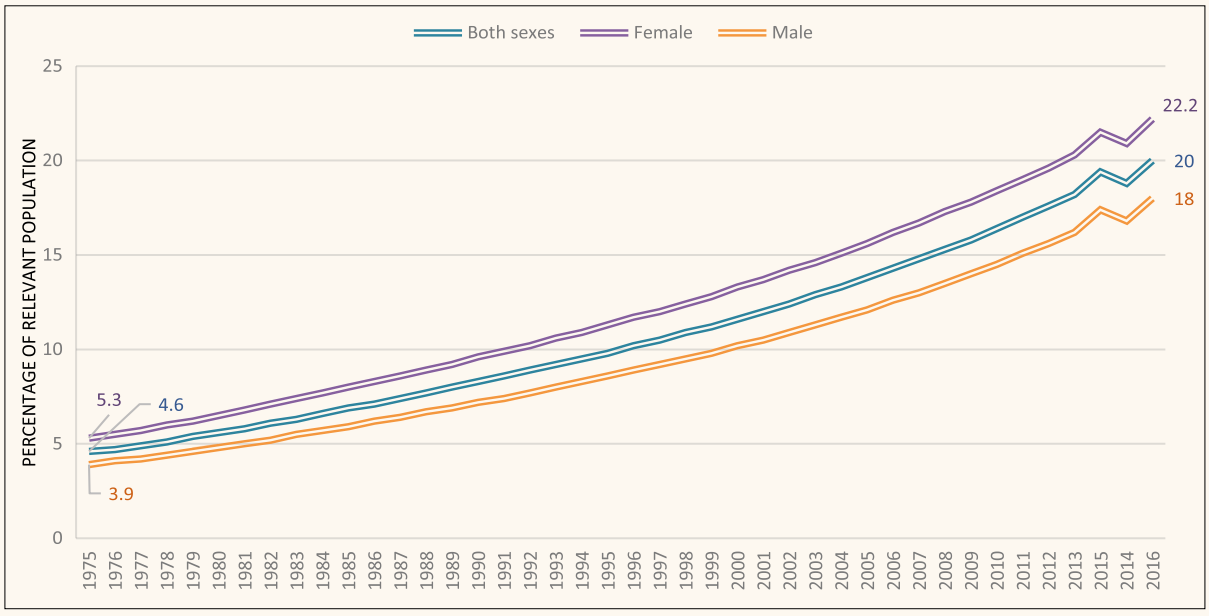
1.1 OVERWEIGHT, OBESITY AND ITS CONSEQUENCES

There is ample evidence on the growing prevalence of overweight and obesity worldwide *(1, 2)*. Obesity nearly tripled between 1975 and 2016, with more than 1.9 billion people 18 years and older being overweight and more than 650 million considered obese *(2)*. Among children the overweight and obesity epidemics are also growing: in 2016, 340 million children and adolescents 5–19 years of age, and around 40 million children below five years of age, were considered overweight or obese *(2)*. In 2016, in the WHO South East-Asia Region the prevalence of overweight adults increased to 21.9% (19.7% for males and 24.3% for females) from only 5.8% in 1975 (4.7% for males and 7% for females) *(3)*. Obesity among adults was 4.7% in 2016, up from only 0.4% in 1975.

In Bangladesh, as in other developing countries, there is a double burden of malnutrition, as overweight and obesity coexist with undernutrition, especially among children *(4)*. Nearly, 32.6% children below five years of age in 2014 were underweight, while overweight children varied between 1.4% (2014) and 2.6% (2013) *(5)*.

As in other developing countries, the increase in prevalence of overweight and obesity in Bangladesh is staggering. In adults the age-standardized prevalence of overweight increased from 4.6% in 1975 to 20% in 2016 (more than four times), as shown in Figure 1.

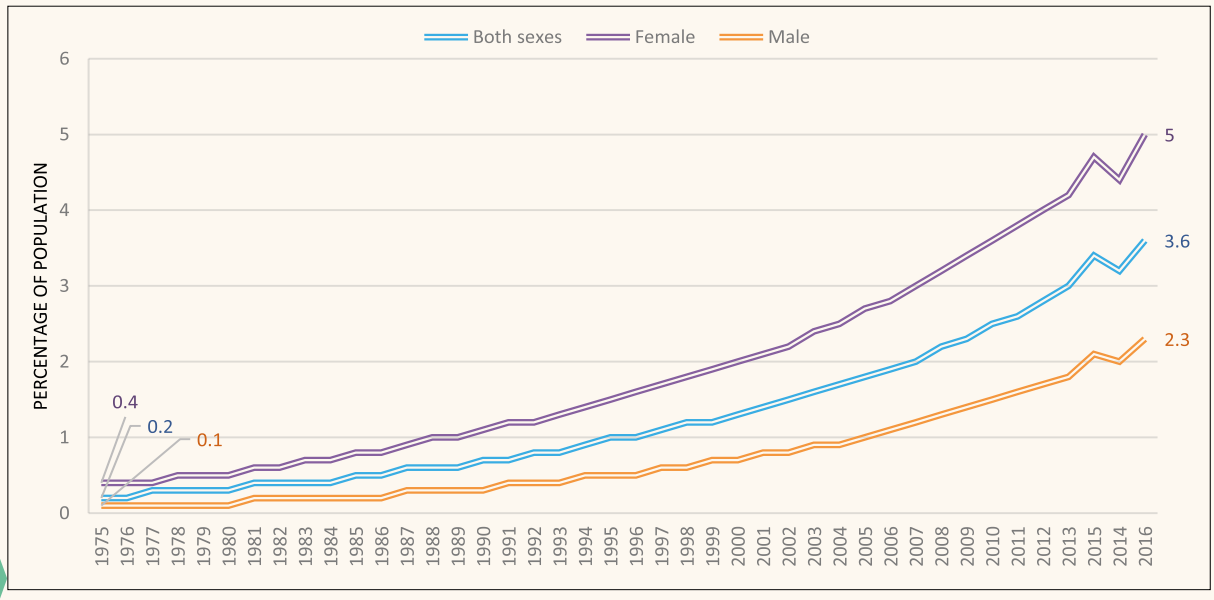
Figure 1: Prevalence of overweight among adults (BMI ≥ 25), age-standardized



Source: Based on Global Health Observatory (GHO) data: Overweight and Obesity [website] (http://www.who.int/gho/ncd/risk_factors/overweight/en/, accessed 15 October 2019)

Similarly, estimates of age-standardized prevalence of obesity among adults increased from 0.2% in 1975 to 3.6% in 2016, 17-fold increase (annual average growth rate of 7.1%) (Figure 2).

Figure 2: Prevalence of obesity among adults (BMI ≥ 30), age-standardized



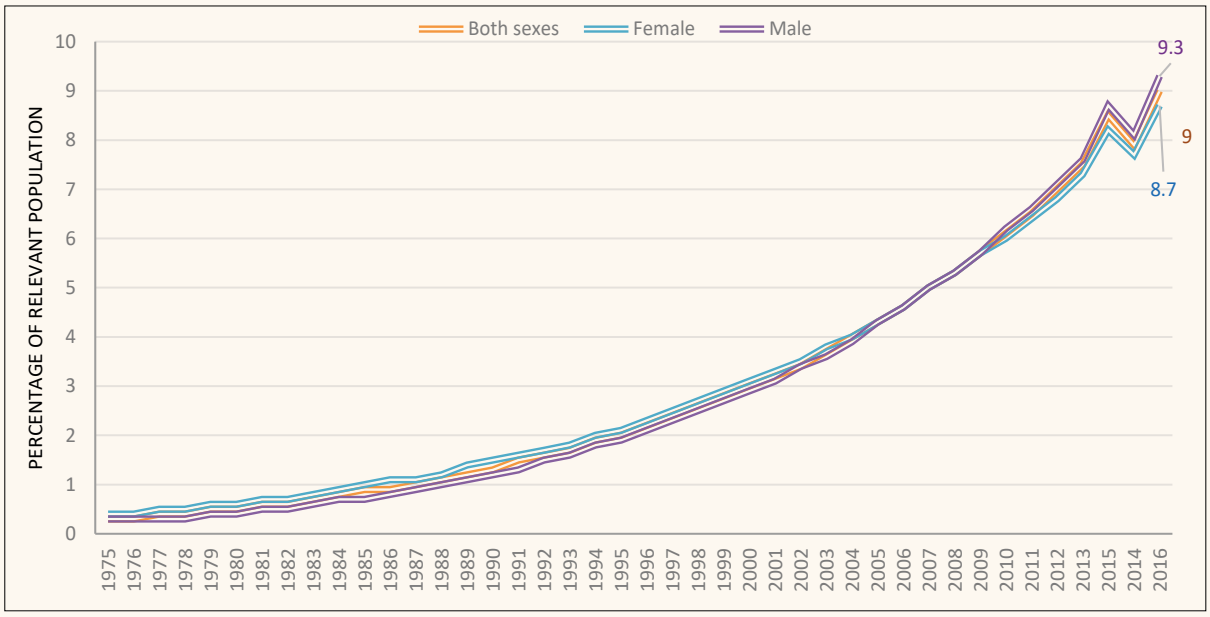
Source: Based on Global Health Observatory (GHO) data: Overweight and Obesity [website] (http://www.who.int/gho/ncd/risk_factors/overweight/en/, accessed 15 October 2019)

STEPS survey done in 2018 estimated that, among the adults, currently 20.3% are overweight and 5.5% are obese in Bangladesh, which is in agreement with above mentioned estimates[iii].

iii World Health Organization, 2019. Non-communicable disease risk factor survey, Bangladesh 2018.

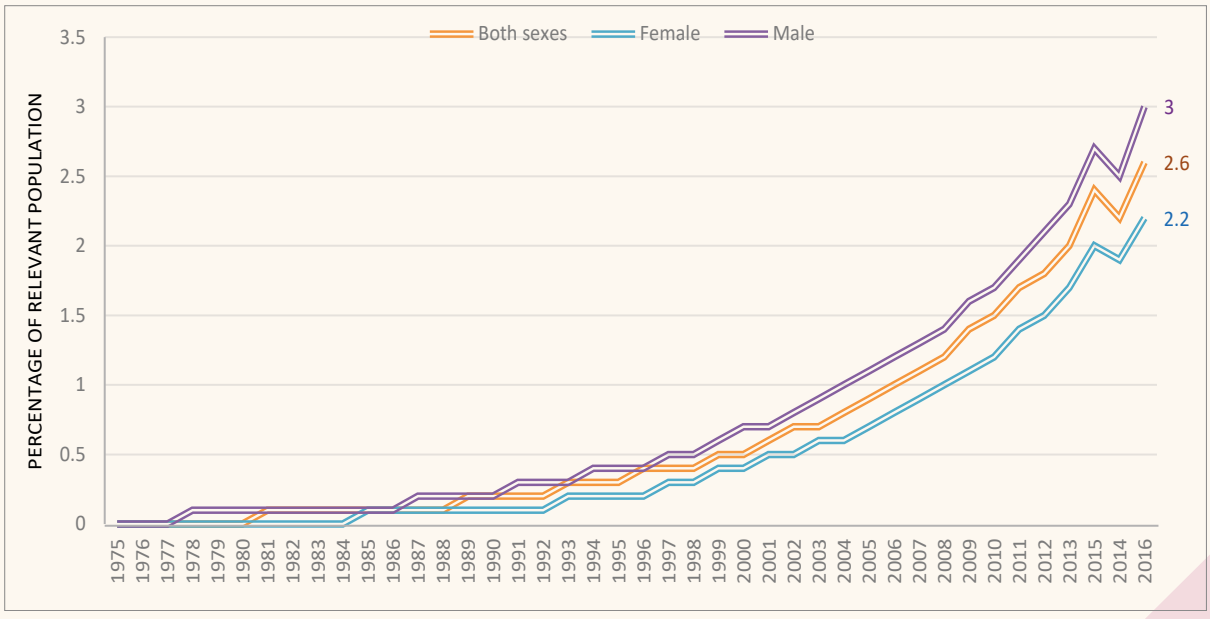
Among children 5–19 years of age, increase in overweight prevalence was greater – from 0.3% in 1975 to 9% in 2016 (Figure 3). This represented a 29-fold increase or an annual average growth in prevalence of 8.6%. Comparing this progression with trends in other countries in the Region, shows that even though overweight increased in all neighbouring countries, these increases were less staggering than in Bangladesh. In India, overweight increased 23-fold in the same period; in Sri Lanka it was an 18-fold increase; in Myanmar and Pakistan it was a 14-fold increase; in China it was a 22-fold increase; in Nepal it was a 25-fold increase.

Figure 3: Prevalence of overweight among children, 5–19 years of age



Source: Based on Global Health Observatory (GHO) data: Overweight and Obesity [website] (http://www.who.int/gho/ncd/risk_factors/overweight/en/, accessed 15 October 2019)

Figure 4: Prevalence of obesity among children, 5–19 years of age

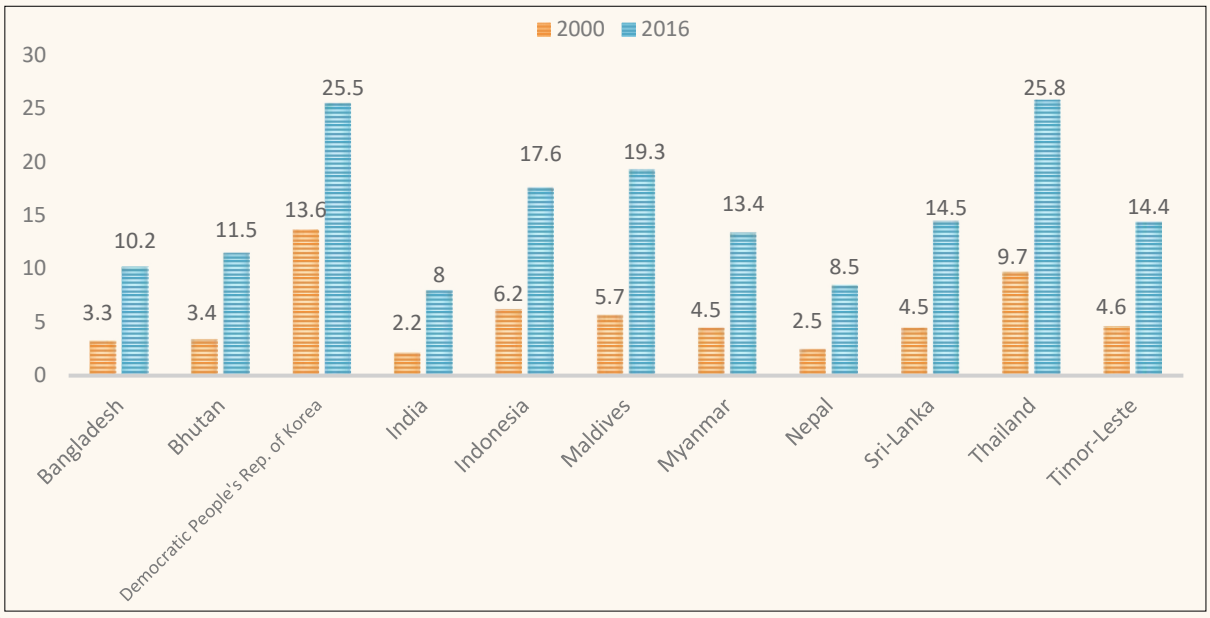


Source: Based on Global Health Observatory (GHO) data: Overweight and Obesity [website] (http://www.who.int/gho/ncd/risk_factors/overweight/en/, accessed 15 October 2019)

In Bangladesh, child obesity prevalence increased from 0 in 1975 to 2.6% in 2016 (Figure 4) and is consistent with findings from a study among 6–15 year olds where 3.5% were obese, 9.5% were overweight and 17.6% were underweight *(4)*. A recent systematic review found that the pooled prevalence rate of overweight among children and adolescents was lowest during 1998–2003, reaching 3.6% of the population; and increased to 7.9% during 2010–2015 *(6)*. The pooled prevalence rate for obesity among children and adolescents was 9.7% during 2004–2009 and 9% during 2010–2015. Due to the nature of the study (a systematic review with a meta-analysis) these pooled prevalence rates were constructed from results of studies with significant heterogeneity (such as different samples, age-groups), however the trends were robust and showed increased proportion of children and adolescents with overweight. Some reasons for these trends were "rapid urbanization, maternal obesity, lack of physical activity, easy access to low-cost unhealthy food and poor awareness about the dangers of being overweight or obese" *(6)*.

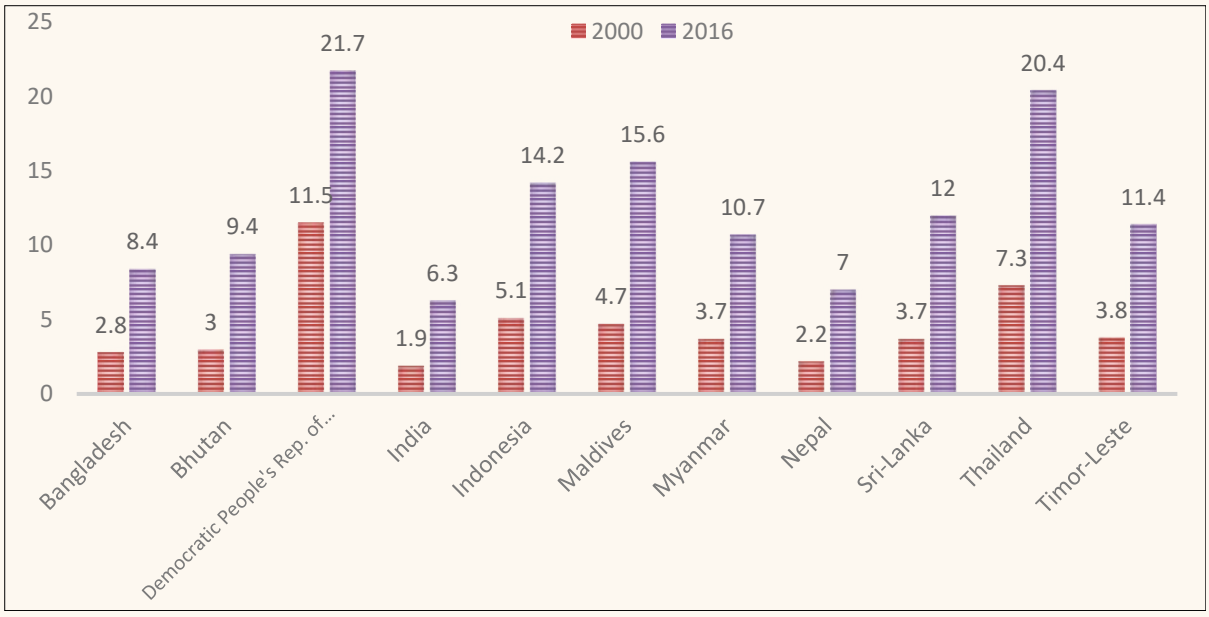
National estimates, for overweight among children 9 years and younger (Figure 5) and for children 10–19 years of age (Figure 6) compared to other countries in the Region, showed that in both cases overweight prevalence increased two to three times in Bangladesh *(3)*, as seen in many countries in the Region

Figure 5: Prevalence of overweight among children (5–9 years), BMI > +1 standard deviations above the median (crude estimate) (%)



Source: Based on Global Health Observatory (GHO) data: Overweight and Obesity [website] (http://www.who.int/gho/ncd/risk_factors/overweight/en/, accessed 15 October 2019)

Figure 6: Prevalence of overweight among adolescents, BMI > +1 standard deviations above the median (crude estimate) (%)



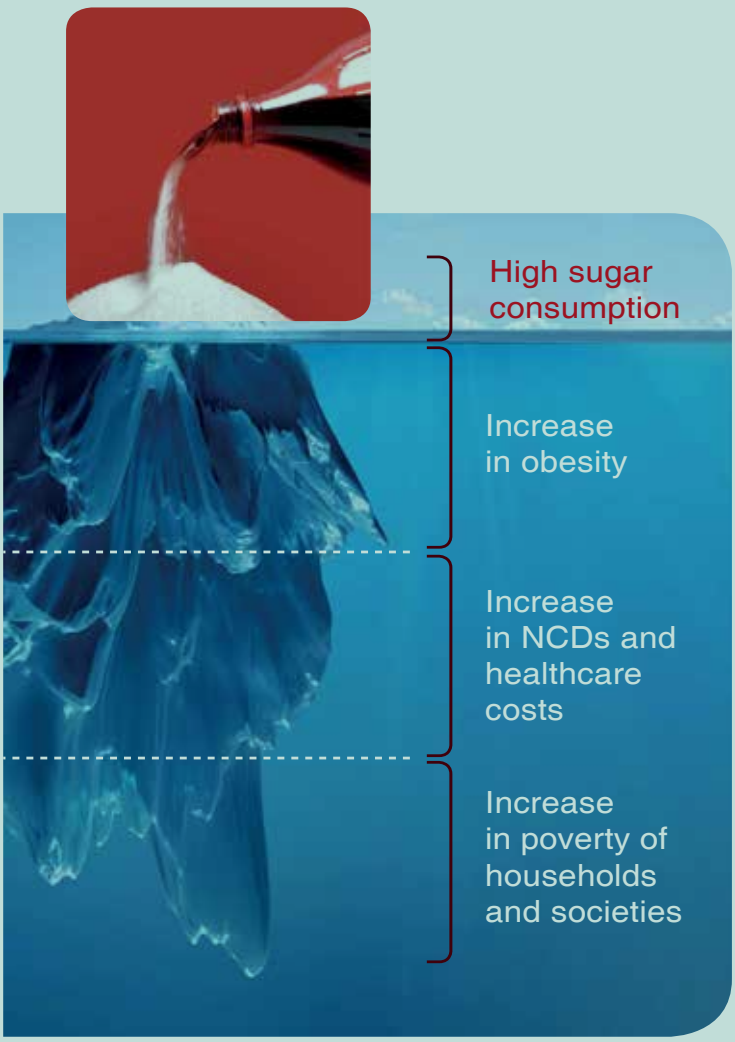
Source: Based on Global Health Observatory (GHO) data: Overweight and Obesity [website] (http://www.who.int/gho/ncd/risk_factors/overweight/en/, accessed 15 October 2019)

Increases in overweight and obesity prevalence have been associated with a number of health conditions, such as cardiovascular diseases, different types of cancers and diabetes. In Bangladesh, the prevalence of hypertension is partially explained by the recent increase in obesity *(7).* Diabetes prevalence followed a similar trend as overweight and obesity: from 1980 to 2014 it more than doubled both for males and females (to a prevalence of close to 8%),[iv] leading to more than 26 000 deaths per year.[v] This pattern was also present in poorer, rural households as reported elsewhere *(8).*

Thus, though the increase in overweight and obesity in the past few decades is a global phenomenon, Bangladesh stands out in the Region with an extremely rapid increase in prevalence, especially among children. Bangladesh still faces the challenge of undernutrition, and the rapid increase in overweight and obesity, especially among children, may hinder its efforts to eradicate undernutrition and other urgent health problems by diverting resources to the treatment of diseases associated with overweight and obesity.

iv Bangladesh. World Health Organization – Noncommunicable Diseases (NCD) Country Profiles, 2018] (https://www.who.int/nmh/countries/bgd_en.pdf, accessed 15 October 2019.

v Bangladesh. World Health Organization – Diabetes country profiles; 2016 (**https://www.who.int/diabetes/country-profiles/bgd_en.pdf**, accessed 15 October 2019).



Infographic: WHO

1.2 COST OF OVERWEIGHT AND OBESITY

Overweight and obesity are leading drivers of preventable chronic diseases and increase health care costs in both developing and developed countries. Not only do health care costs increase because of the many conditions caused directly by being overweight and obese, other indirect costs, such as loss of human capital, job absenteeism and presentism (lower productivity while at work), result in usually higher costs *(9).* Family costs, such as the cost of suffering and loss of earnings for caregivers, can also be significant, though difficult to measure.

A recent study by the Asian Development Bank estimated direct (due to additional medical expenditures) and indirect costs (due to higher morbidity and mortality of overweight and obese patients) for 42 Asian and Pacific countries *(10).* For Bangladesh, direct costs were estimated at the equivalent of USD 25 million and indirect costs were estimated at the equivalent of USD 300 million. Eight medical conditions were considered to estimate direct costs: (i) ischemic heart disease, (ii) stroke, (iii) diabetes, (iv) liver cancer, (v) breast cancer, (vi) oesophagus cancer, (vii) gall bladder and biliary tract cancer, and (viii) hypertensive heart disease. These conditions are related to high body mass index (BMI) but are not the only ones related to overweight and obesity. In fact, using these eight conditions, this study found that disability-adjusted life years (DALYs) associated to BMI were 184 439 per year.[vi]

A different estimate, that considered all conditions associated with high BMI found 1497 783 DALYs in Bangladesh during 2017 *(11).* Valuing these DALYs at only one per capita gross domestic product (GDP) of that year (a conservative approach according to *(12)*,[vii] would give an indirect cost associated with loss of human capital equal to USD 2.26 billion.

vi According to WHO, a DALY "can be thought of as one lost year of "healthy" life. The sum of these DALYs across the population, or the burden of disease, can be thought of as a measurement of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability." (Metrics: Disability-Adjusted Life Year (DALY). Who [website] (https://www.who.int/healthinfo/global_burden_disease/metrics_daly/en/, accessed 15 October 2019).

vii As the GDP per capita is the value of final goods and services produced per person in a year, valuing DALYs at one GDP per capita is equivalent to saying that each year of healthy life lost would have helped to produce an amount of goods and services given by the per capita GDP.

1.3 SUGAR-SWEETENED BEVERAGES: POLICY CONTEXT

Scientific evidence connecting consumption of sugar-sweetened beverages (SSBs)[viii] to negative health outcomes is vast and has been accumulating over the past decade. A 2007 systematic review found that SSB consumption was associated with an increase in caloric intake, beyond the levels contributed by the beverages and increase in body weight *(13).* The study also found negative associations (moderate but significant) between the consumption of SSBs and certain staple foods (such as milk) and indispensable nutrients (such as calcium). There is evidence of a positive relationship between SSB consumption and Type 2 diabetes mellitus. These associations point toward a significant increase in future health system costs associated with overweight and obesity due to SSB consumption *(14).*

The direct link between SSB consumption and the overweight and obesity epidemics has been emphasized on many occasions. Prominent experts in public health have signalled SSBs as "the single largest driver of the obesity

viii SSBs are beverages containing added caloric sweeteners, such as sucrose, high-fructose corn syrup or fruit-juice concentrates. These include, but are not limited to, carbonates, fruit drinks, sports drinks, energy and vitamin water drinks, sweetened iced tea and lemonade (Fiscal policies for diet and prevention of noncommunicable diseases. Technical Meeting Report 5–6 May 2015, Geneva: World Health Organization; 2016 (https://apps.who.int/iris/bitstream/handle/10665/250131/9789241511247-eng.pdf, accessed 15 October 2019).

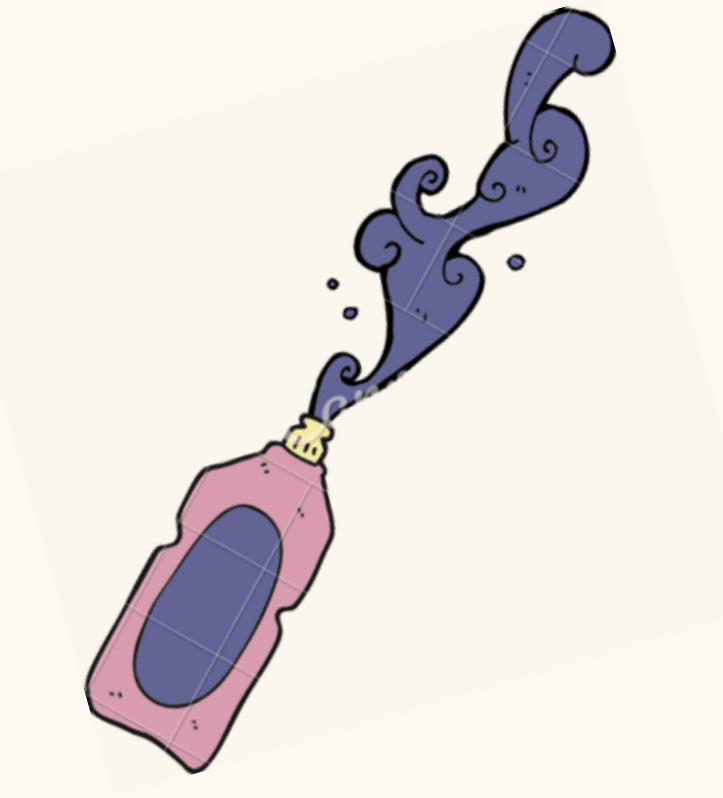

Photo: WHO / Atul Loke

Photo: WHO / Atul Loke


Photo: WHO / Quinn Mattingly


Photo: WHO / Atul Loke

RETHINK YOUR DRINK



- Regular Soda
- Sport, energy, and electrolyte drinks.
- Fruit juices
- Milk and dairy-based drinks- with added sugar.

epidemic", calling for extensive taxation of such products *(15)*. Recent evidence shows that SSB consumption is positively associated with or has an effect on obesity indices in children *(16)*. Also, well-known orthodox economists have alerted the high social costs of poor diets and commended SSB taxes as a first and necessary step to curb the obesity epidemic *(17,18).* Recently, a high-profile Task Force on Health Taxes concluded that "raising taxes on sugary beverages is prudent because taxes can incentivize healthier diets and address the growing burden of disease from obesity and diabetes" *(19).*

WHO's 2015 guideline on sugar intake for adults and children[ix] recommends reducing the intake of free sugars to less than 10% of the total energy intake, approximately 12 teaspoons of sugar per day based on poor health outcomes of excess sugar intake (such as overweight, obesity and poor dental health). Furthermore, it recommends a further reduction to below 5% of total energy intake, or about six daily teaspoons, for additional health benefits. A study on global, regional and national consumption of SSBs, fruit juices and milk *(20),* estimated that the intake of SSBs in Bangladesh is higher than milk intake for women of reproductive age (20–49 years) and for males in active ages (20–69 years) at the national level. Another study conducted among university students in Bangladesh found that 95.4% reported SSB intake and 53.6% reported SSB intake more than two days in a week; males were more likely to take such drinks than females *(21).*

SSB taxation is one of the many population-based options proposed by the WHO to influence consumer behaviour and reduce the dietary risk of NCDs, with a cost-effectiveness ratio of >USD 100 (international) per DALY averted in low and middle income countries *(22).* It is important to note that taxation achieves the best results when implemented along with other nontax measures, aiming specially at restricting availability of these products to children and informing the population of the risks involved in consuming them. These measures include:

ix Sugars intake for adults and children: Guideline. Geneva: World Health Organization; 2015 (https://www.who.int/nutrition/publications/guidelines/sugars_intake/en/, accessed 15 October 2019).

- restrictions on marketing and sales of unhealthy foods and non-alcoholic beverages to children;
- school and other settings-based interventions to reduce intake of salt, sugar and fat;
- front-of-package food labelling, specifically interpretative on pre-packaged foods and promoting product reformulation; and
- mass media campaigns to raise awareness and advocate for healthy dietary behaviours.

As with tobacco and alcohol, taxation has been proposed as an effective tool to decrease SSB consumption *(1,7)*. However, unlike tobacco and alcohol, which do not have healthy substitutes, fiscal tools to decrease SSB consumption can include subsidies to healthy alternatives (such as fruits or vegetables in schools, potable water) and promoting improved eating behaviours.

1.4 TAXING SUGAR-SWEETENED BEVERAGES: GLOBAL EXPERIENCES

The negative consequences on health of consumers, financial health of households and macroeconomics consequences of SSB consumption have led to the proposing of fiscal measures – essentially taxes – to reduce SSB consumption. A recent expert, high-profile Task Force on Fiscal Policy for Health, concluded that raising SSB prices by 20% (due tax increases) worldwide could save 800 000 lives per year and avoid 23.7 million years of life being lost per year *(19)*.

The negative relationship between prices (taxes) and consumption is undeniable. A recent systematic review and meta-analysis on the effect of prices on the consumption of SSBs revealed an overall own-price elasticity (i.e. the percentage of demand reduction when faced with a 1% price

THIRSTY? CHOOSE HEALTHY DRINKS

Photo: Unsplash/Charles Deluvio

Photo: Unsplash/Eiliv-Sonas Aceron

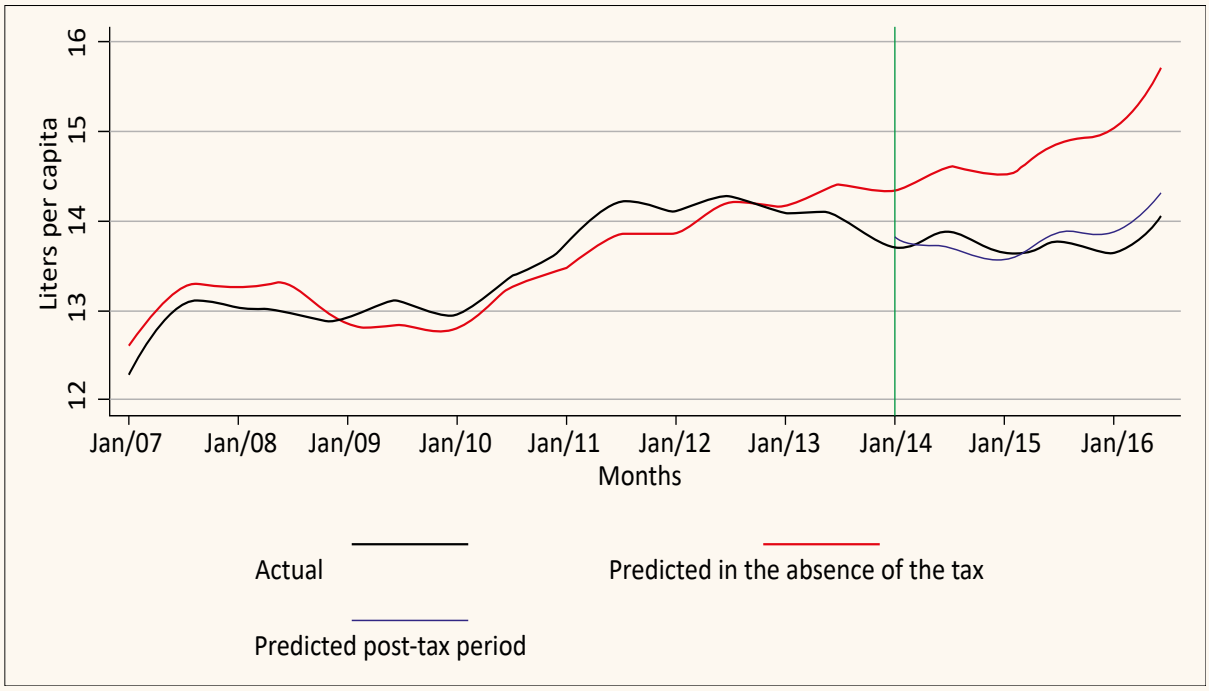
Photo: Unsplash/Corinne Kutz

increase) of –1.3 for SSBs *(23,24).* This indicates a relatively high effectiveness of taxes in curbing consumption (everything else being constant) as consumption would decrease by 13% for a 10% increase in prices. Countries with no or low levels of taxation are those where gains in obesity reduction are most important (keeping everything else constant) *(25)*.

In Mexico there is an extremely high burden of disease associated with unusually high consumption of SSBs. There is also a strong offensive against the initiative by the SSB industry. The own-price elasticity for SSBs was estimated at –0.6 in 1989 and –1.1 in 2006, statistically significant in both cases *(26).* Hence, a 10% increase in SSB prices would produce a decrease in consumption of 6–11% (keeping everything else constant).

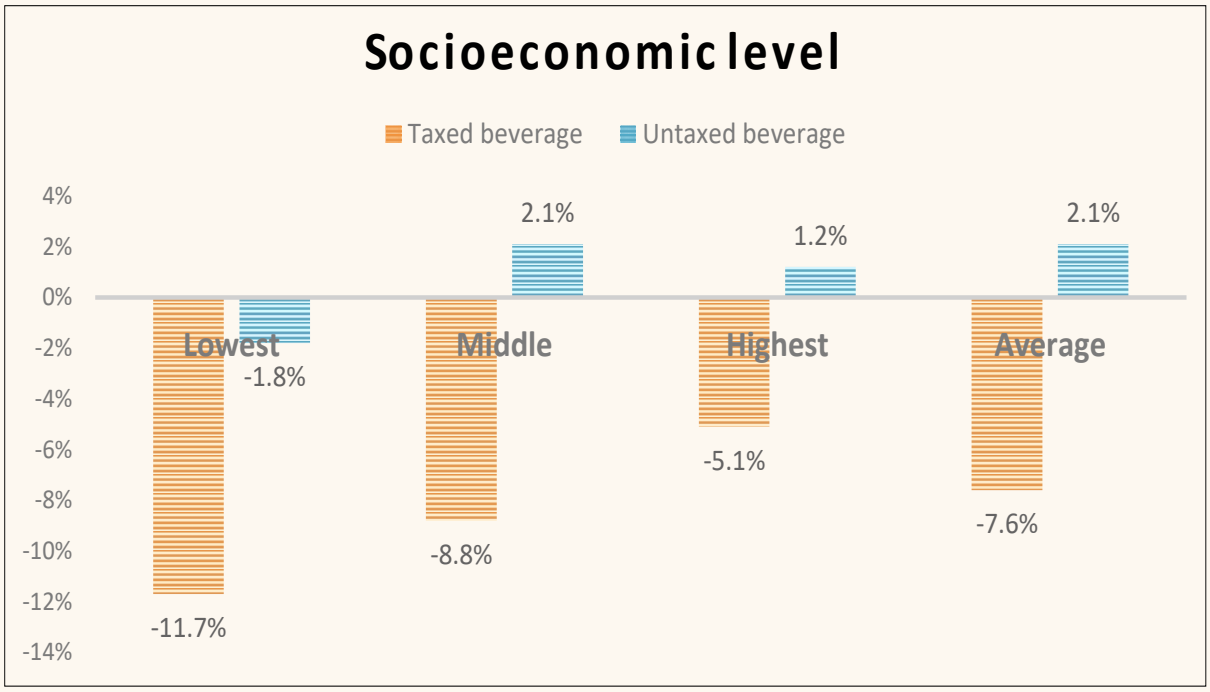
The immediate impact of Mexico's enactment of an SSBs tax in late 2013 was a decrease in SSB purchases by an average of 6%, and a year later a 12% decrease was reported *(27).* The underlying pre-tax trend of growing SSB consumption was modified by an actual decrease in SSB consumption (Figure 7). All socioeconomic groups reduced purchase of SSBs, though reductions were higher among poorer households (Figure 8). Purchase of untaxed beverages increased by 4%, mainly driven by an increase in purchase of plain bottled water.

Figure 7: Sales of sugar-sweetened beverages. Filtered series. Mexico 2007–June 2016



Source: Changes in sales of sugar-sweetened beverages in Mexico before (2007–2013) and after the tax (2014–2016). [website] (https://www.insp.mx/epppo/blog/4278-changes-sales-beverages.html, accessed 15 October 2019).

Figure 8: Changes in household purchases of taxed and untaxed beverages by socioeconomic level, Mexico 2014–15



Source: Chaloupka FJ, Powell LM. Health taxes to save lives – background materials: case studies. New York: Bloomberg Philanthropies; 2019 (https://tobacconomics.org/wp-content/uploads/2019/04/Health-Taxes-to-Save-Lives-Case-Studies.pdf, accessed 15 October 2019).

An economic-epidemiological study with data from India estimated demand elasticities for SSBs and certain substitutes (milk, coffee, tea and fresh fruit juices) *(29).* The study simulated the change in calorie consumption, with overweight and type 2 diabetes mellitus as outcomes based on a specific epidemiological model for India (i.e. impact of BMI on chronic diseases). The elasticity estimates obtained using two-stage models were around –0.94 (i.e. a 10% increase in SSB prices would produce a 9.4% decrease in consumption). Thus, a moderate increase in SSB tax could result in substantial reduction in prevalence of overweight, obesity and diabetes mellitus.

Photo: Unsplash/Amanda Shepherd

1.5 EFFECT OF TAXES ON PRICES, CONSUMPTION AND FISCAL REVENUE

The effect of taxes on prices, consumption of taxed goods and fiscal revenues depends on a number of considerations.

Own-price elasticity: If it is greater than one (in absolute values) it means that increase in price would have a corresponding decrease in quantities that are more than proportional, keeping everything else constant. In terms of public health, the more elastic the demand, the more effective the increase in taxes. On the other hand, in terms of public revenues, an elastic demand means that increase in taxes can reduce fiscal revenues (once taxes are already in place).

Tax base: A product is more price elastic (i.e. demand for it will decrease more if its price increases) if the product is defined broadly. Definition includes many similar substitute products, such as orange juice, that are generally less elastic than fruit juice since a consumer can buy another type of fruit juice if the price of orange juice rises. Given the large amount of beverage substitutes for SSBs, SSBs are expected to be relatively price elastic.

Proportion of household expenditure: A specific product can also be more price elastic if expenditure on that product takes a relatively large share of person/household budget (which is generally not the case for SSBs, though for certain population groups budget share allocated to SSBs can be relatively high).

Tax pass-through rate: An increase in tax usually implies an increase in consumer prices. However, consumer prices are set by supplying firms and such prices depend on costs, taxes and the competitive landscape of markets. Thus, the proportion by which taxes are passed to consumers (i.e. the 'pass-through rate') is unknown when deciding the tax rate. It is unlikely, however, that firms decide not to pass taxes to consumers (at least in the long term) based on evidence for other countries. In Mexico, taxes not only are fully passed-through to consumers, but there is an over-shifting of taxes (where prices increase more than the tax) for carbonated SSBs *(30,31).* In France, SSB tax was fully passed to consumers *(32).* In Berkeley (USA), pass-through to consumers for SSBs varied in degree and timing by store type and beverage type: pass-through was complete in large chain supermarkets, small chain supermarkets and chain gas stations; pass-through was partial in pharmacies; and pass-through was nil in independent corner stores and independent gas stations *(33).*

1.6 TYPES OF TAXES

The second key consideration is the type of tax to be imposed. Typically, there are three types of excise tax systems that could be imposed on SSBs.

An ad-valorem tax is a percentage of the purchasing value of the beverage. An example is India's SSB tax where 40% of the value is used as a tax base.[x] Though this type of tax decreases SSBs consumption, it incentivizes consumers to down-trade to relatively cheaper brands. Thus, though it may increase the price of SSBs relative to other goods (making its consumption less desirable) it decreases the price of cheaper brands relative to more expensive ones, favouring

x In India, SSBs are placed under the highest tax bracket in the Goods and Services Tax (GST) at 28%, plus a 12% "compensation cess", or sin tax (a tax applied to harmful products such as tobacco).

the down-trading.[xi] If the goal of the tax is to decrease absolute consumption of SSB, an ad-valorem tax only partially achieves that.

A specific tax is constant by a relevant chosen unit (such as volume content of the SSB; sugar content by 100 ml). In Mexico, SSB tax is MXN 10 per litre. Maldives in 2017 imposed an additional import tariff of 33.64 MVR/litre on energy drinks and 4.60 MVR/litre on other soft drinks. Similarly, specific taxes on a specific volume of SSB have been implemented in a number of US cities, Belgium, Finland, France, Hungary, Ireland, Norway and the Philippines. Specific tax was recently applied on the sugar or caloric content of the SSB in Sri Lanka and Thailand, among other countries. Studies have found (as economic theory predicts) that the largest effect in terms of reduced intake of calories and sugar are obtained by applying tax on sugar content in all SSBs *(34).* Specific taxes, either by volume or sugar content, reduce the incentive to down-trading, as prices of cheaper SSBs relative to more expensive ones, increase *(35–37).*[xii] In addition, it incentivizes reformulation by manufacturers, as they try to decrease or avoid tax burden on their products.

A tiered tax is a tax rate or amount that is different for different tiers, usually defined according to sugar content. Chile taxes SSBs at the rate of 18% of the pre value-added tax (VAT) price if sugar content is above 6.25 g per 100 ml; below that threshold the tax rate is 10%. In United Kingdom, SSBs with sugar content above 5 g per 100 ml are taxed at 18 p per litre, while those

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xi Assumption: with a 20% ad-valorem tax, a litre of SSB brand A that costed BDT 100 increases to BDT 120, while a litre of SSB brand B that costed BDT 200 increases to BDT 240. While the price of A relative to B remains constant (the ratio between both prices), consumers will try to substitute SSB brand B that increased by BDT 40, for SSB brand A that increased by only BDT 20.

xii Assumption: with a BDT 20 per litre specific tax a litre of SSB brand A that costed BDT 100 increases to BDT 120, while a litre of SSB brand B that costed BDT 200 increases to BDT 220. Both products increase by the same amount, but the price of A relative to B (the ratio between both prices) increases from 0.5 before the imposition of the tax to 0.55. Consumers will try to substitute both products, as nominal prices for both would increase, but will tend to choose B over A as it becomes relatively less expensive than A.

Photo: WHO/ Jubair Bin Iqbal

with more than 8 g per 100 ml are taxed at 24 p per litre. In Sri Lanka, in 2018 a tax of 40 cents per gram of sugar for carbonated and energy drinks with more than 4 g per 100 ml, was introduced; and a tax of 40 cents per gram of sugar for beverages based on fruit and vegetable juices, with more than 8 g of sugars per 100 ml. In Thailand, a tax of THB 0.1 per gram of sugar per litre is implemented for drinks with 6–8 g of sugar per 100 ml; the tax increases to THB 0.3 if the drink has 8–10 g sugar per 100 ml; to THB 0.5 if the drink has 10–14 g sugar per 100 ml; and to THB 1 if the drink has more than 14 g sugar per 100 ml. These taxes are set to increase over time, especially for drinks with higher concentration of sugar. While the tiered tax system may incentivize reformulation, such an incentive is weaker than a pure specific tax system, as manufacturers would try to reformulate only to position their products in the lowest tier.

Though specific taxes are more effective in curbing consumption, they can lose effectiveness in context of high inflation, especially if they are set in fixed monetary terms (such as USD 1 per litre). Inflation over time decreases the real impact of excise on consumption, unless it is changed periodically to account for inflation. On the other hand, specific taxes can be cheaper to administer, since they reduce the risks of undervaluation of the tax base, such as by under-invoicing (i.e. declaring a consumer price below the actual price at which the good is sold).

Photo: Unsplash/Francesco Gallarotti

2 Situation analysis on household expenditures and consumption of sugar-sweetened beverages in Bangladesh

The 2016 Household Income and Expenditure Survey (HIES) provided useful information on consumption of SSBs among Bangladeshi households. Table A-1 in Annex A presents detailed information on patterns of expenditure by expenditure quintiles. Total expenditure in households in the lowest quintile was 80% lower than those in the top quintile, showing an important inequality in material well-being.

The budget share devoted to food and beverages (including SSBs) was about 90% of all monthly expenditures and relatively constant across quintiles. SSB expenditures (defined as expenditures in soft drinks, Ovaltine/Horlicks, and liquid juice (Ros) of sugarcane/date/palm), showed that though budget shares across quintiles were similar (about 1.6% of total budget is spent on SSB), only 3.3% of households in the lowest quintile spent on SSBs, while 38.3% of households in the highest quintile spent on SSBs. This means that the vast majority of poorer households do not spend at all on SSBs, though those that choose to buy SSBs end up devoting a similar share of their budget than richer households. On average, almost 20% of Bangladeshi households spend on SSBs.

This overview is reinforced if a deeper analysis is conducted. Table A-2 (see Annex 4) shows the marginal effects from a dichotomous variable model (i.e. probit), where the dependent variable is equal to 1 if households spend on SSBs (and 0 otherwise). In other words, probability of spending on SSBs changes when the probability of any independent variable changes by 1%, keeping everything else constant.

The probability of spending on SSBs is positively related to the marital status (living with spouse), having at least a child (17 years or younger), and with household total expenditure. The higher the household total expenditure, the larger the probability of spending on SSBs. This is also shown by the signs and magnitudes of independent dichotomous variables for quintiles: the higher the quintile, the larger the coefficient, which means that belonging to a higher quintile strongly increases the probability of SSB consumption (by 10%, when compared to belonging to the lowest quintile, as shown here).

2.1 REAL PRICES AND AFFORDABILITY

While SSB consumption depends on several factors, the main one is the price to the consumer. If the price decreases relative to other goods, economic theory predicts that its consumption will increase. Moreover, if a good is 'normal',[xiii] an increase in consumer income will increase such a good's demand. Thus, SSB consumption in Bangladesh (and anywhere) will be linked to SSB real price and SSB affordability. SSB real price can be defined as the ratio between SSB nominal (i.e. monetary) prices and general inflation. If the real price of SSBs decreases it means that even when its nominal price may increase, the increase would be lower than the average increase of other goods (general inflation) because of which SSBs would become relatively cheaper over time.

If affordability (defined as the ratio between wages and prices of SSBs) increases it means that an average worker has to work less time to buy the same amount of SSBs. In such a situation, SSBs would become more affordable and its consumption will increase.

However, if affordability decreases it means that an average worker has to work more time to buy the same amount of SSBs. In such a situation, SSBs would become less affordable and its consumption will decrease.

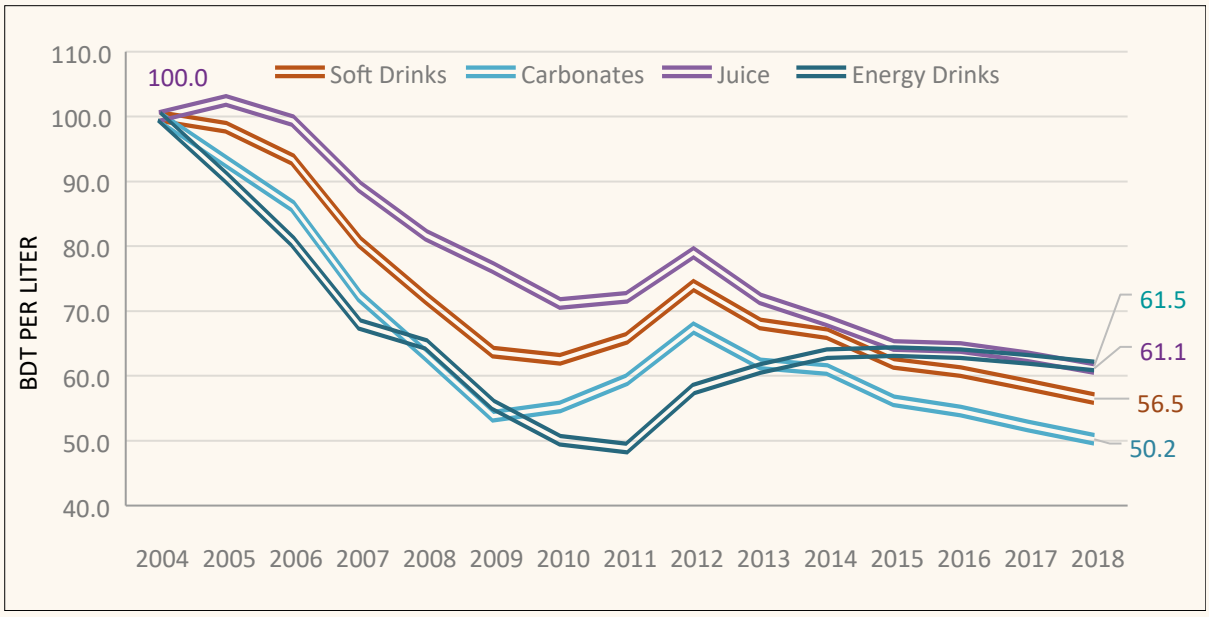
Figure 9 shows the evolution of real prices of soft drinks and real prices of different types of SSBs, between 2004 and 2018. In all cases, real price of SSBs showed a clear downward trend. In fact, the real price of a soft drink[xiv] in 2018 was only half the value it had in 2004, mostly due to decrease in the price of carbonates. For juices and energy drinks, such a decrease was not as high as with carbonates but was very significant (real prices in 2018 were 60% of such prices in 2004).

xiii A good is "normal" if its demand increases when consumer income increases, keeping everything else constant or, in other words, its income-elasticity is positive.

xiv Average prices were estimated by dividing total sales (in BDT) by the total sales (in litres), resulting in a weighted average price (BDT/litre), but not by particular soft drink brand or type.

Photo: WHO/Jubair Bin Iqbal

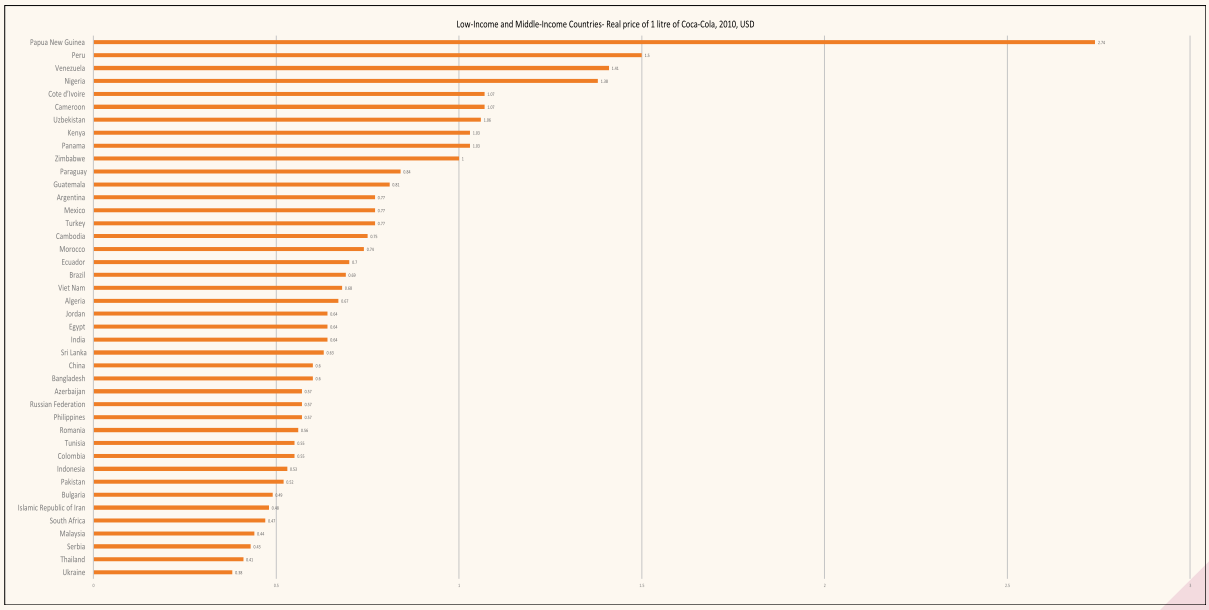
Figure 9: Real price of sugar-sweetened beverages in Bangladesh per litre (off-trade channel) (Base 2004 =100)



Source: Based on Euromonitor International and Bangladesh Bureau of Statistics.

The significant decrease in real prices for SSBs over time implies that SSBs in Bangladesh are amongst the cheapest in the world. Figure 10 shows real prices of 1 litre of Coca-Cola in comparable US dollars (corrected by purchasing parity power), during 2016. As can be seen, price of Coca-Cola in Bangladesh is below that in Cambodia, China, India, Sri Lanka, Vietnam, though it is higher than in Indonesia, Malaysia, Pakistan or Thailand (one of the cheapest in the world).

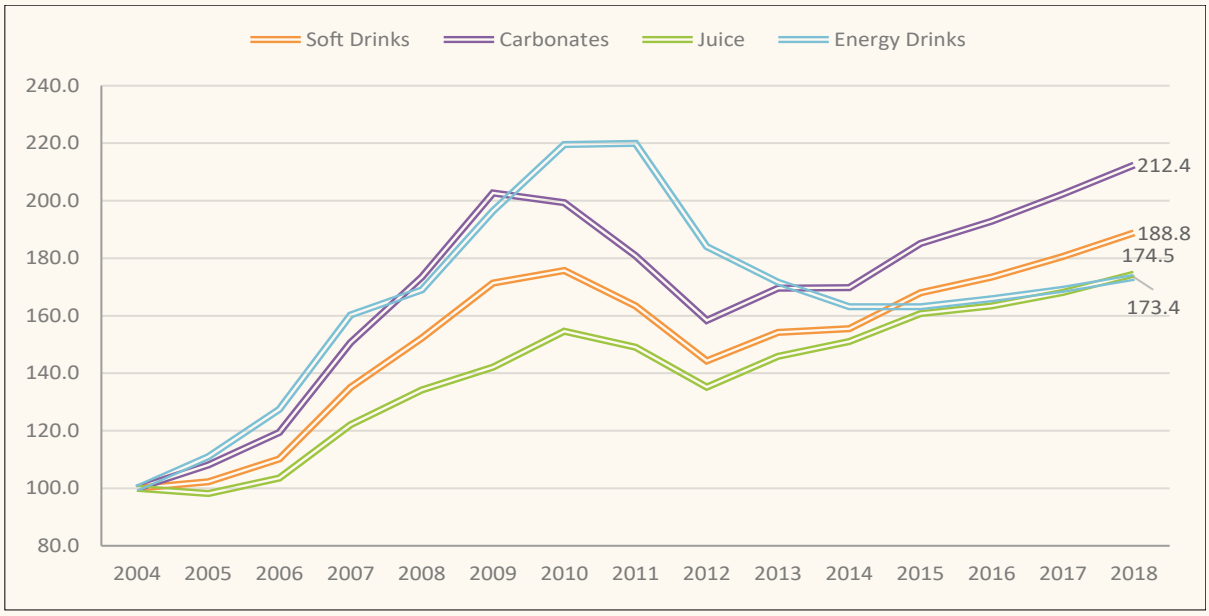
Figure 10: Real price of 1 litre of Coca-Cola in Bangladesh, in 2010 USD



Source: Blecher E, Liber AC, Drope JM, Nguyen B, Stoklosa M. Global trends in the affordability of sugar-sweetened beverages, 1990-2016. Prev Chronic Dis 2017;14:160406.
Note: The reference year is 2016.

Figure 11 shows that in relation to nominal wages (taken from the wage rate index produced by the Bangladesh Bureau of Statistics) affordability of SSBs increased dramatically from 2004 to May 2018. For general category of soft drinks, affordability increased more than 100%. This means that the average worker in 2018 had to work half the time he/she had to work in 2004 to buy the same amount of soft drinks. For carbonates, the pattern was similar to that for soft drinks, while for juices and energy drinks the increase in affordability was significant but lower than that for soft drinks and carbonates.

Figure 11: Affordability (ratio of wage to price) of sugar-sweetened beverages in Bangladesh, Base 2004 =100)

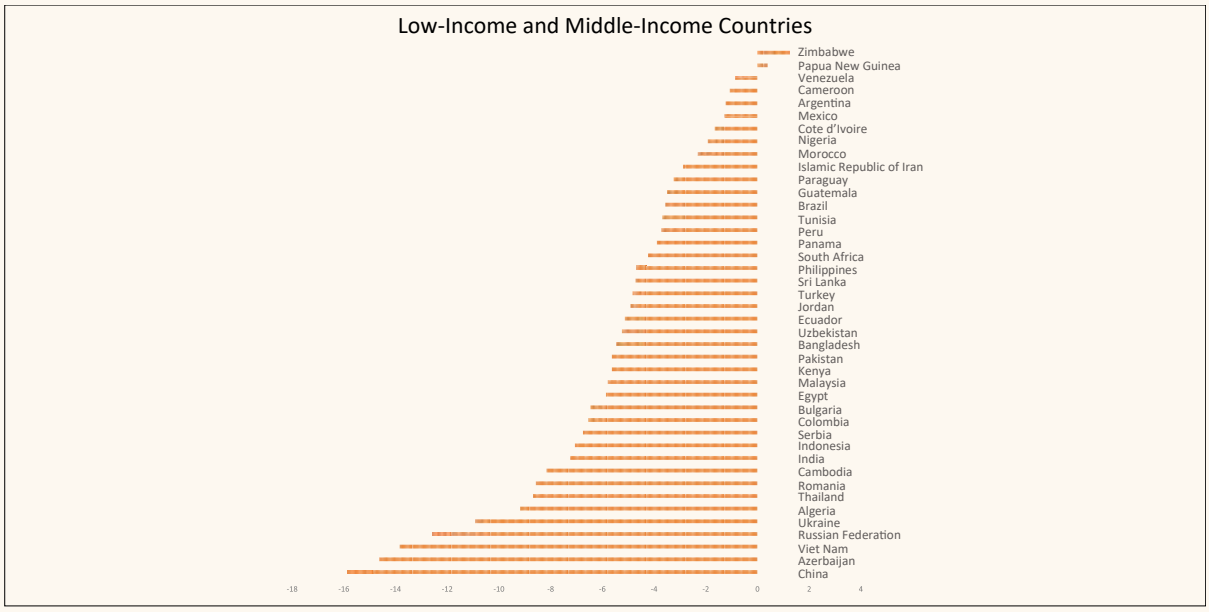


Source: Based on Euromonitor International and Bangladesh Bureau of Statistics.

For real price there was a significant change in affordability which was one of the highest in the world. Figure 12 shows that the change in affordability of Coca-Cola between 1990 and 2016 in Bangladesh was one of the more significant in the world. Affordability was measured as the ratio between SSB price and wages (the reciprocal of the affordability measure shown in Figure 11).

Photo: shutterstock

Figure 12: Average change in affordability of Coca-Cola in Bangladesh in comparison to other countries of the world



Source: Blecher E, Liber AC, Drope JM, Nguyen B, Stoklosa M. Global trends in the affordability of sugar-sweetened beverages, 1990-2016. Prev Chronic Dis 2017;14:160406.
Note: The change in affordability is for the 1990-2016 period.

2.2 CONSUMPTION AND SALES OF SUGAR-SWEETENED BEVERAGES IN BANGLADESH

Given that real prices of SSBs decreased and affordability increased significantly during 2004–2018, SSB consumption increased significantly (Table 1). The total volume of soft drinks sold (which includes diet drinks) in Bangladesh (both on-trade and off-trade)[xv] grew at a staggering annual average rate of 6.9% during 2011–2018 and is expected to grow at an average annual rate of 6.3% during 2019–2023. Among soft drinks, the category with the highest growth was carbonates, at an annual average rate of 7.8% during 2011–2018. It is worth considering that during 2011–2017, the Bangladeshi economy (GDP in BDT at constant prices) grew at an average annual rate of 5.4%. This means that physical sales of soft drinks increased at a faster rate than the country's economy.

Table 1: Consumption, sales and average price of sugar-sweetened beverages by type (2011–2018); forecast for 2019-2023

Million litres	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Annual average growth 2011-2018	Annual average growth 2019-2023
Carbonates	413.3	432.1	482.2	520.7	564.4	607.5	652.5	700.0	749.6	800.6	853.1	903.7	951.1	7.8%	6.1%
Juice	155.2	151.2	162.4	167.3	180.8	188.7	198.3	209.8	222.6	236.8	252.6	270.0	289.2	4.4%	6.8%
Energy Drinks	11.8	11.8	12.3	13.2	14.2	15.4	16.4	17.4	18.4	19.3	20.3	21.4	22.4	5.7%	5.1%
Total volume	**580.4**	**595.1**	**656.9**	**701.2**	**759.4**	**811.5**	**867.2**	**927.2**	**990.5**	**1056.7**	**1126.1**	**1195.1**	**1262.7**	**6.9%**	**6.3%**

Million BDT	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Annual average growth 2011-2018	Annual average growth 2019-2023
Carbonates	41,900	52,914	58,118	65,923	69,739	76,820	84,020	91,442	99,602	108,286	117,362	126,527	135,590	11.8%	8.0%
Juice	11,026	12,503	13,093	13,647	14,730	16,104	17,505	18,926	20,540	22,339	24,312	26,470	28,866	8.0%	8.9%
Energy Drinks	647	819	970	1,143	1,314	1,485	1,656	1,819	1,994	2,183	2,380	2,586	2,802	15.9%	8.9%
Total sales	**53,573**	**66,236**	**72,181**	**80,713**	**85,783**	**94,409**	**103,180**	**112,187**	**122,136**	**132,808**	**144,055**	**155,583**	**167,258**	**11.1%**	**8.2%**

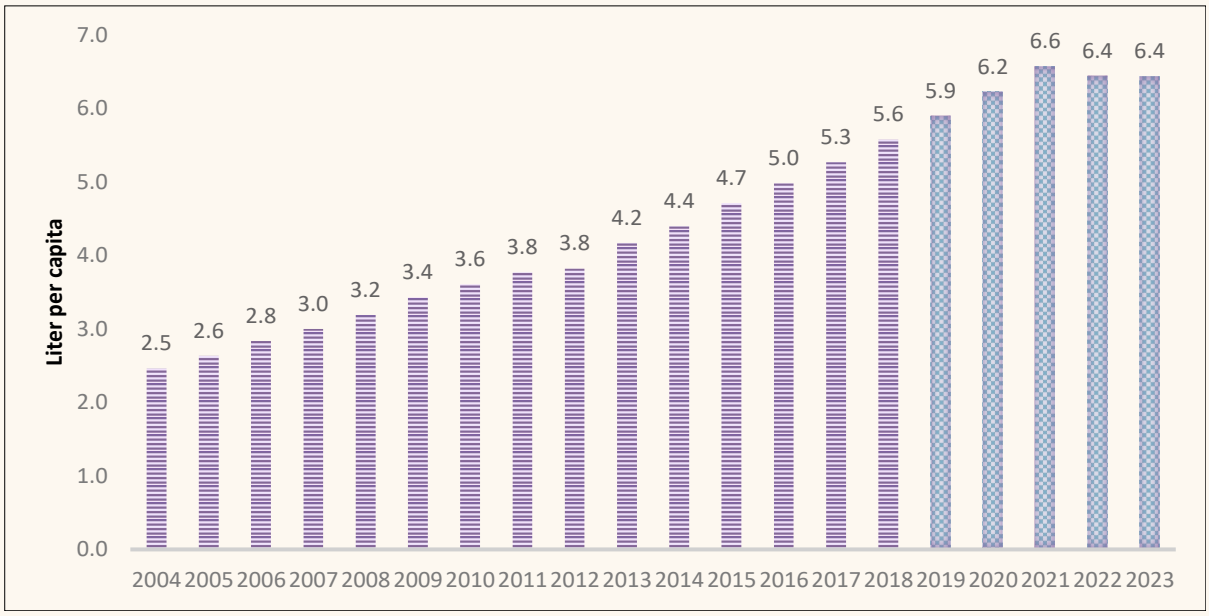
BDT/Litre off-trade channel	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Annual average growth 2011-2018	Annual average growth 2019-2023
Carbonates	64.6	78.3	77.1	80.8	78.9	80.7	81.9	82.8	84.1	85.4	86.8	88.1	89.7	4.0%	1.6%
Juice	61.0	71.3	69.7	70.7	70.7	74.1	76.7	78.5	80.4	82.3	84.0	85.7	87.3	3.7%	2.1%
Energy Drinks	54.8	69.4	78.6	86.8	92.4	96.7	101.0	104.7	108.7	112.9	117.0	121.0	125.1	9.7%	3.6%
Weighted average price per litre	**63.1**	**75.7**	**74.7**	**77.8**	**76.7**	**79.1**	**80.9**	**82.2**	**83.7**	**85.3**	**86.8**	**88.3**	**89.9**	**3.9%**	**1.8%**

Source: Based on Euromonitor International

According to Euromonitor International, in 2018 about 700 million litres of carbonates (the largest category of SSBs according to volume), 210 million litres of juice, and 17.4 million litres of energy drinks were sold to Bangladeshi households. Carbonate sales were worth more than BDT 91 billion, while juices and energy drink sales were worth BDT 19 billion and 1.8 billion, respectively.

The increase in physical sales was also far higher than the population increase (population grew at an annual average rate of 1.1% during 2011–2018). As a result, per capita consumption displayed a strong increase over time (Figure 13). In 2004, consumption of soft drinks was only 2.4 litres per capita per year and by 2018 it had increased to 5.6 litres per person per year (a 126% total increase at annual average rate of 6.1%). Such an increase is projected to continue and per capita consumption is expected to reach 6.4 litres per person per year by 2023.

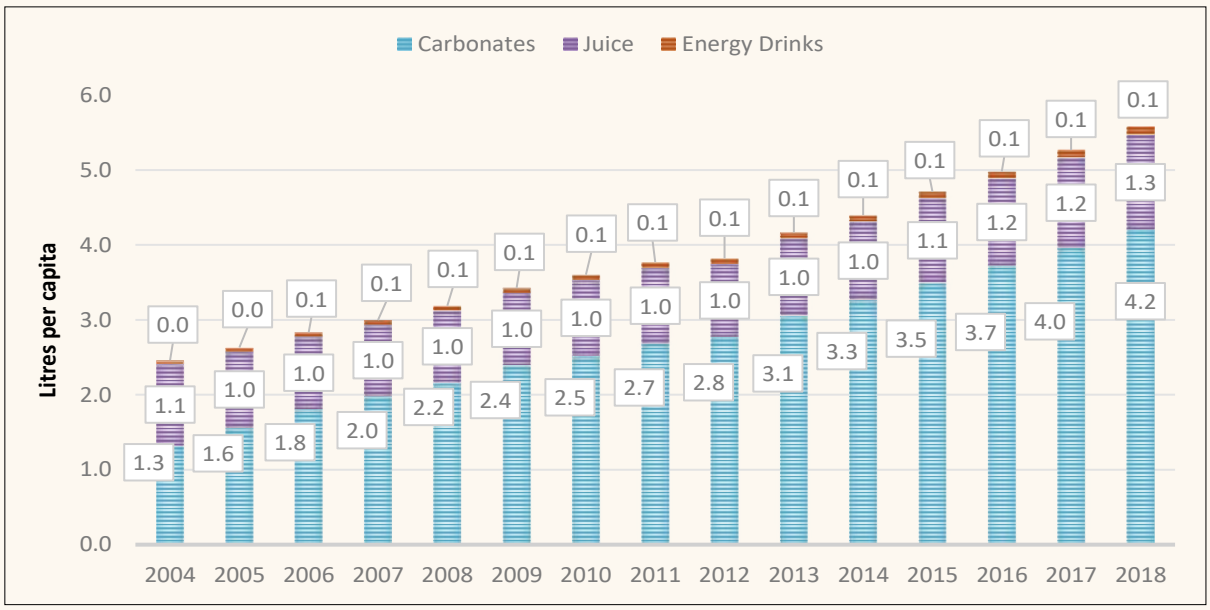
Figure 13: Total per capita consumption (2004–2018) of soft drinks and projected total per capita consumption (2019–2023)



Source: Based on Euromonitor International.

Increase in per capita consumption has been explained mostly by an increase in the per capita consumption of carbonates. Figure 14 shows that per capita consumption of juices and energy drinks remained constant during 2004–2018. During the same period, per capita consumption of carbonates increased 3.2 times, from only 1.3 litres per person per year in 2004 to 4.2 in 2018.

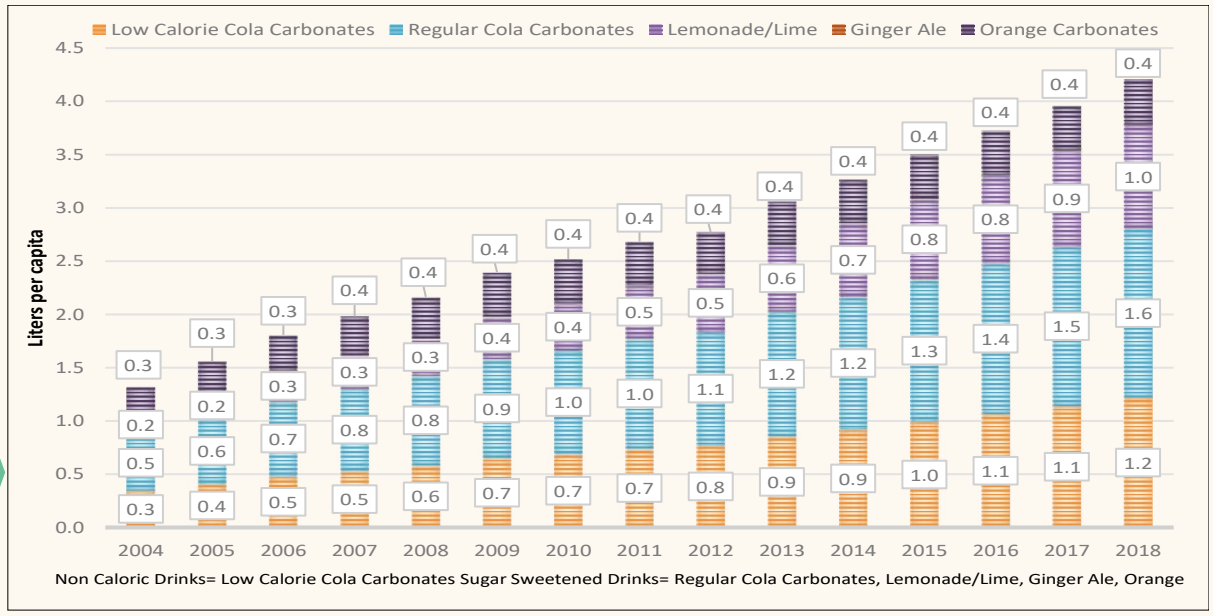
Figure 14: Total per capita consumption per type of drink



Source: Based on Euromonitor International.

Figure 15 shows that per capita consumption of carbonates (mostly cola carbonates) was 67% of the total, of which sugar-sweetened cola carbonates accounted for 57%. Artificially sweetened (low-calorie) carbonates increased over time possibly showing an increased desire of the population toward alternatives that are perceived as healthier.

Figure 15: Total per capita consumption of carbonates



Source: Based on Euromonitor International.

2.3 TAX POLICY SIMULATIONS FOR BANGLADESH

2.3.1 Current tax structure on SSBs

As discussed previously, to decrease SSB affordability as a way of reducing consumption, taxes have to result in an increase in real prices of SSBs. To do so, they have to differentially affect SSB prices. Excise tax can achieve this, while general tax, such as VAT, does not affect real prices, as it affects prices of all goods in the same proportion.

SSBs that are domestically produced are taxed by two general taxes:

i. Value-added tax is levied on most goods (all food and beverages are taxed with VAT) at a single rate of 15%. As in most countries, the tax base for VAT is the net value added at each stage of the production/commercialization of the product.

ii. Supplementary duty (SD) is levied on most goods and has a different tax rate according to the good. SD for domestically produced SSBs is 25% of the retail price, SD for energy drinks is 35%.

iii. SD on imported SSB is 150%.

2.3.2 Scope of SSB taxation in Bangladesh

Excise taxes are discriminatory taxes, applied to a specific set of products. Usually excise taxes are applied to luxury products, with a purely fiscal purpose, i.e. to generate revenue. Excise taxes are also applied to products with negative externalities (goods which have social costs of consumption that exceed private costs of consumption). The main purpose of excise taxes here is to induce behaviour changes (such as excises on tobacco or alcohol). Excise taxes can be applied as a specific tax or ad-valorem tax, as discussed previously.

Photo: WHO

Since there were no studies for SSBs demand own-price elasticity for Bangladesh, three different values were assumed: (i) SSB own-price elasticity = –0.8 (i.e. a 10% increase in SSB relative price leads to a 8% decrease in SSB consumption); (ii) SSB own-price elasticity = –1 (i.e. a 10% increase in SSB relative price leads to a 10% decrease in SSB consumption); (iii) SSB own-price elasticity = –1.1 (i.e. a 10% increase in SSB relative price leads to a 11% decrease in SSB consumption). The evidence available for low-/middle-income countries is consistent with the above assumptions *(39).*

2.3.3 The tax base

The tax base for the SSB tax in Bangladesh would include the following categories, as per the nutrient profile model:

- All water-based flavoured drinks[xvi] carbonated and noncarbonated.
- Sport, energy and electrolyte drinks.
- Ready-to-drink form: coffee, coffee substitutes, tea, herbal infusions in or calculated as ready-to-drink form.
- Juices: 100% fruit and vegetable juices prepared from direct extraction or reconstituted from the concentrate.
- Milk and dairy based drinks[xvii] with added sugar.[xviii]
- Cereal, grain and tree nut-based beverages.[xix]

Products with non-sugar sweeteners would be exempt from the SSB tax.

2.3.4 Excise tax on SSBs

Two separate excise tax options are simulated (an alternative option is presented in Annex B). The first and preferred tax option is the introduction of a specific excise tax per sugar content. The second option is the introduction of a specific tax per volume, similar to the one introduced in Berkeley (USA). The first option seeks to penalize sugar consumption (providing incentives to quit consumption, reduce it or to substitute high-sugar SSBs for low-sugar SSBs), while the second option seeks to penalize the consumption of larger quantities of SSBs (giving incentives to quit consumption, reduce or to consume SSBs in smaller containers). In both cases, the ad-valorem component would be eliminated and only the specific excise would remain.

Sugar content based specific tax

The results of the simulations for a sugar-based specific tax of BDT 0.25 per gram of sugar per 100 ml are presented in Table 2. The average sugar content of SSBs is assumed to be 11 g/100 ml for carbonates; 13 g/100 ml for juices; 11 g/100 ml for energy drinks; and 11 g/100 ml for an SSB.[xx]

Table 2 shows that for carbonates this tax would increase average prices by 20%, consumption would decrease by 114 million–156 million litres, and the tax revenue would be BDT 15 billion–16.1 billion, depending on the demand elasticity value. For juices, the average price would increase by 30%, consumption would decrease by 50 million–69 million litres, and the tax revenue would be BDT 4.6 billion–5.2 billion. The average price of energy drinks would increase by about 7%, consumption would decrease by 1.0 to 1.3 million litres, and tax collection would be about BDT 445 million. Overall, SSB consumption would decrease by about 845 million litres during 2020–2023, and tax revenue would be about BDT 104 billion.

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xvi Examples of food items: sport, energy, electrolyte drinks, carbonated and noncarbonated water-based flavoured drinks, jal jeera, concentrates (liquid or solid) in or calculated as ready-to-drink form.

xvii Examples of food items: milk, butter milk, flavoured dairy-based milk, fermented dairy-based milk (chocolate milk, strawberry milk, cocoa, eggnog, drinking yoghurt, whey-based drinks). Milk means milk from animals such as cow, buffalo, goat.

xviii Intrinsic sugars include lactose and galactose incorporated in the milk naturally and are considered healthy. Products in which the sugars are intrinsic (lactose and galactose) would be excluded from the tax base, but flavoured milks with added extrinsic sugars would be taxed.

xix Examples of food items: cereal, grain and tree nut-based beverages produced from the extracts of cereals, beans, pulses and tree nuts (rice-, almond-, soybean-, oat-based).

xx Average prices were estimated by dividing total sales (in BDT) by the total sales (in litres), resulting in a weighted average price (BDT/litre), but not by particular soft drink brand or type.

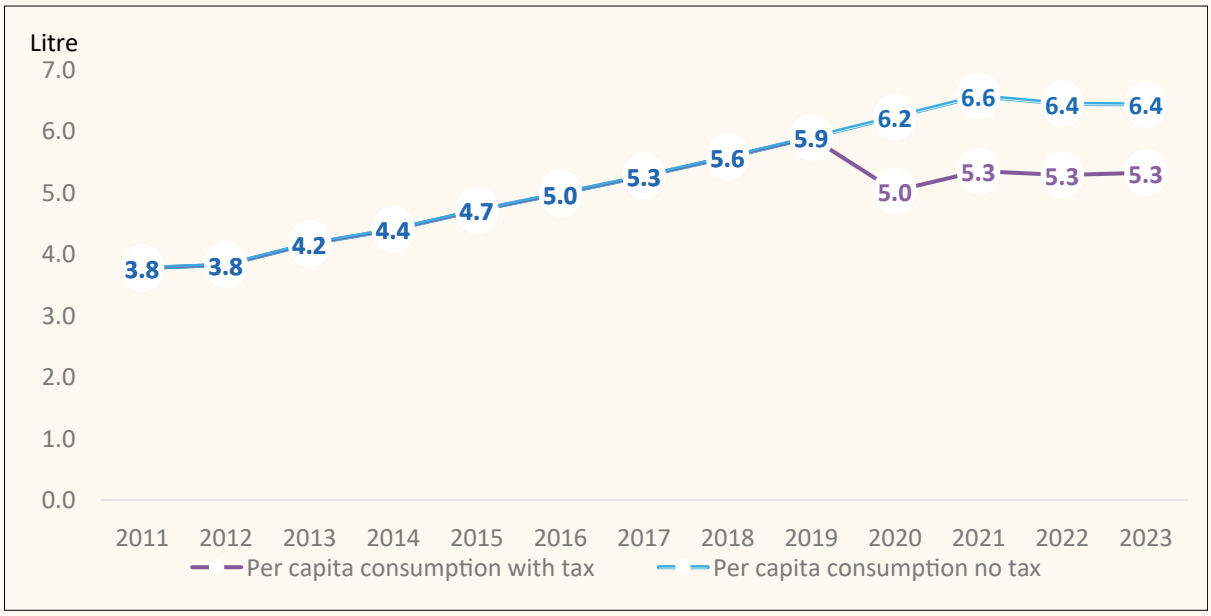
Table 2: Sugar-based specific excise tax of BDT 0.25 per gram per 100 ml

Specific tax of BDT 0.25 per gram of sugar per 100 ml									
Price elasticity of demand	**Current consumption (million litres)**	**Current average price per litre pre-VAT and supplementary duty**	**Current average price per litre post taxes**	**% Increase in price pre-VAT**	**New average price per litre post taxes**	**% Change in consumption**	**Change in consumption (million litres)**	**Post tax consumption (million litres)**	**Tax revenues from tax at implementation (in million BDT)**
Carbonates (11 g of sugar)									
-0.8	700.0	59.2	82.8	20%	99.7	-16%	113.8	586.2	16,121
-1.0	700.0	59.2	82.8	20%	99.7	-20%	142.2	557.8	15,339
-1.1	700.0	59.2	82.8	20%	99.7	-22%	156.5	543.6	14,948
Juices (13 g of sugar)									
-0.8	209.8	56.0	78.5	30%	101.8	-24%	50.0	159.8	5,194
-1.0	209.8	56.0	78.5	30%	101.8	-30%	62.5	147.3	4,788
-1.1	209.8	56.0	78.5	30%	101.8	-33%	68.7	141.1	4,585
Energy drinks (11 g of sugar)									
-0.8	17.4	69.8	104.7	7%	111.9	-6%	1.0	16.4	452
-1.0	17.4	69.8	104.7	7%	111.9	-7%	1.2	16.2	445
-1.1	17.4	69.8	104.7	7%	111.9	-8%	1.3	16.1	442
Average SSB (11 g of sugar)									
-0.8	927.2	58.7	82.2	21%	99.1	-17%	153.1	774.1	21,767
-1.0	927.2	58.7	82.2	21%	99.1	-21%	191.4	735.8	20,572
-1.1	927.2	58.7	82.2	21%	99.1	-23%	210.5	716.7	19,975

Source: As estimated by the authors in this study.

Using Euromonitor estimates of total volume consumption and weighted average price per litre (see Table 1) it is possible to estimate the cumulative impact of a sugar-based specific excise, such as the one simulated here. Figure 16 shows the path that total per capita volume consumption would have if the sugar-based specific excise is adopted and a price elasticity of –1 is assumed, with complete pass-through to price. The stabilization of per capita consumption is expected (as shown in Figure 13) and taxation would achieve such a stabilization at a much lower level than expected.

Figure 16: Expected per capita consumption of sugar-sweetened beverages, with and without specific excise per sugar content



Source: As estimated by the authors in this study.

Volume-based specific tax

The results of the simulations for a volume-based specific tax of BDT 2.7 per 100 ml (this amount is equivalent to a specific tax of BDT 27 per litre, which is a 20% increase on the average 2017 off-trade price for SSBs) are presented in Table 3. The table shows the expected increase in SSB prices (if the pass-through rate is 1) for each value of own-price demand elasticity, the change in consumption and the implied increase in tax revenues.[xxi]

For carbonates, this tax would increase average prices by 20%, consumption

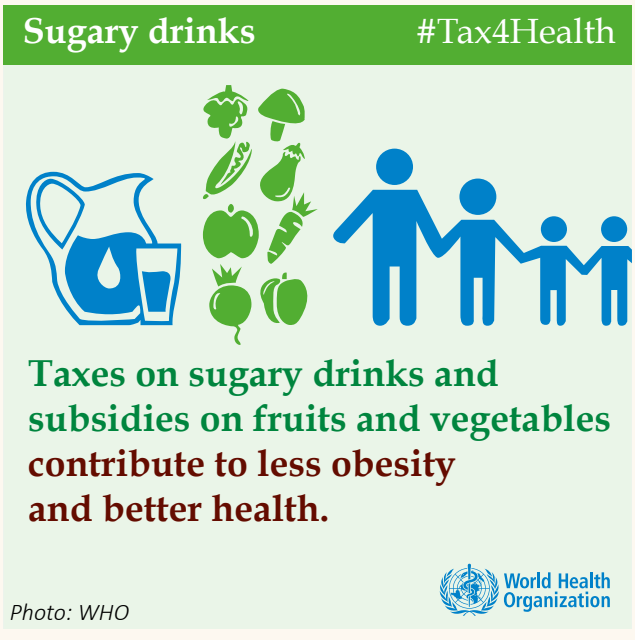


Photo: WHO

xxi All scenarios/options in all simulations presented assume that the supply of SSBs has an own-price elasticity equal to infinity (i.e. the supply curve is flat). Though this assumption is unrealistic (at least in the short-run) it provides a conservative scenario for tax revenues (it is likely that tax revenues will be higher than those presented in the different tables); though it gives an optimistic scenario for changes in prices and consumption (it is likely that those changes will be smaller than those presented in the different tables). If the pass-through rate is higher than one (a probable scenario given the international experience in these types of taxes) actual changes in prices and consumption are expected to be similar to those simulated.

would decrease by 110 million–151 million litres, and the tax revenue at implementation would be BDT 14.8 billion–16 billion, depending on the demand elasticity value. For juices the average price would increase by 22%, consumption would decrease by 36 million–50 million litres, and tax revenue would be BDT 4.3 billion–4.7 billion. The average price of energy drinks would increase by about 6%, consumption would decrease by about 1.1 million litres, and tax collection would be BDT 437 million–445 million.

Overall, SSB consumption would decrease by 148 million–203 million litres, and tax revenue at implementation would be BDT 19.6 billion–21.1 billion.

Table 3: Volume-based specific excise tax of BDT 2.7 per 100 ml

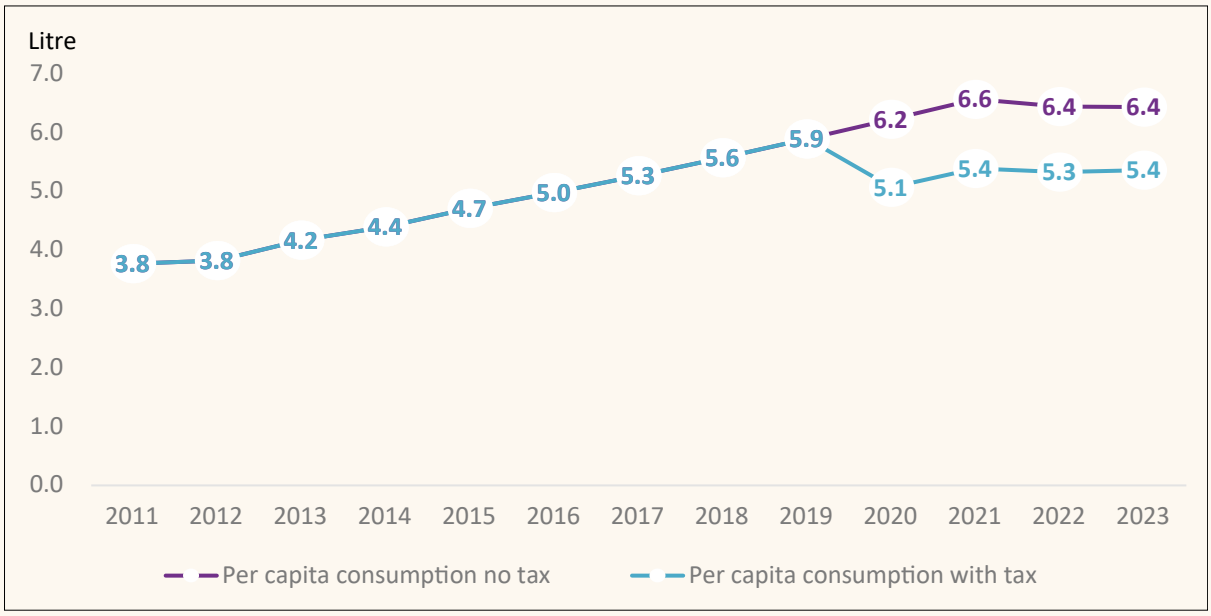
Specific tax of BDT 2.7 per 100 ml									
Price elasticity of demand	Current consumption (million litres)	Current average price per litre pre-VAT and supplementary duty	Current average price per litre post taxes	% Increase in price pre-VAT	New average price per litre post taxes	% Change in consumption	Change in consumption (million litres)	Post tax consumption (million litres)	Tax revenues from tax at implementation (in million BDT)
Carbonates									
-0.8	700.0	59.2	82.8	20%	99.1	-16%	109.9	590.1	15,933
-1.0	700.0	59.2	82.8	20%	99.1	-20%	137.4	562.6	15,191
-1.1	700.0	59.2	82.8	20%	99.1	-22%	151.1	548.9	14,820
Juices									
-0.8	209.8	56.0	78.5	22%	95.5	-17%	36.4	173.4	4,681
-1.0	209.8	56.0	78.5	22%	95.5	-22%	45.6	164.2	4,435
-1.1	209.8	56.0	78.5	22%	95.5	-24%	50.1	159.7	4,312
Energy drinks									
-0.8	17.4	69.8	104.7	6%	111.3	-5%	0.9	16.5	445
-1.0	17.4	69.8	104.7	6%	111.3	-6%	1.1	16.3	439
-1.1	17.4	69.8	104.7	6%	111.3	-7%	1.2	16.2	437
Average SSB									
-0.8	927.2	58.7	82.2	20%	98.5	-16%	147.9	779.3	21,059
-1.0	927.2	58.7	82.2	20%	98.5	-20%	184.9	742.3	20,065
-1.1	927.2	58.7	82.2	20%	98.5	-22%	203.4	723.8	19,568

Source: As estimated by the authors in this study.

Using estimates of total volume consumption and weighted average price per litre (see Table 1) it is possible to estimate the cumulative impact of a volume-based specific excise such as the one simulated here. Figure 17 shows the trend of total per capita volume consumption if volume-based specific excise is adopted and a price elasticity of –1 is assumed, with complete pass-through to prices. With the introduction of the tax, the per capita consumption stabilizes at a lower level than the one forecasted for 2019.

This would imply that over the 2020–2023 period, the cumulative decrease in consumption would be 815 million litres and cumulative revenue raised from this tax would be BDT 103 billion.

Figure 17: Expected per capita consumption of sugar-sweetened beverages, with and without volume-based specific excise



Source: As estimated by the authors in this study.

Photo: Pexels/ Breakingpic

2.4 ARGUMENTS AGAINST TAXATION

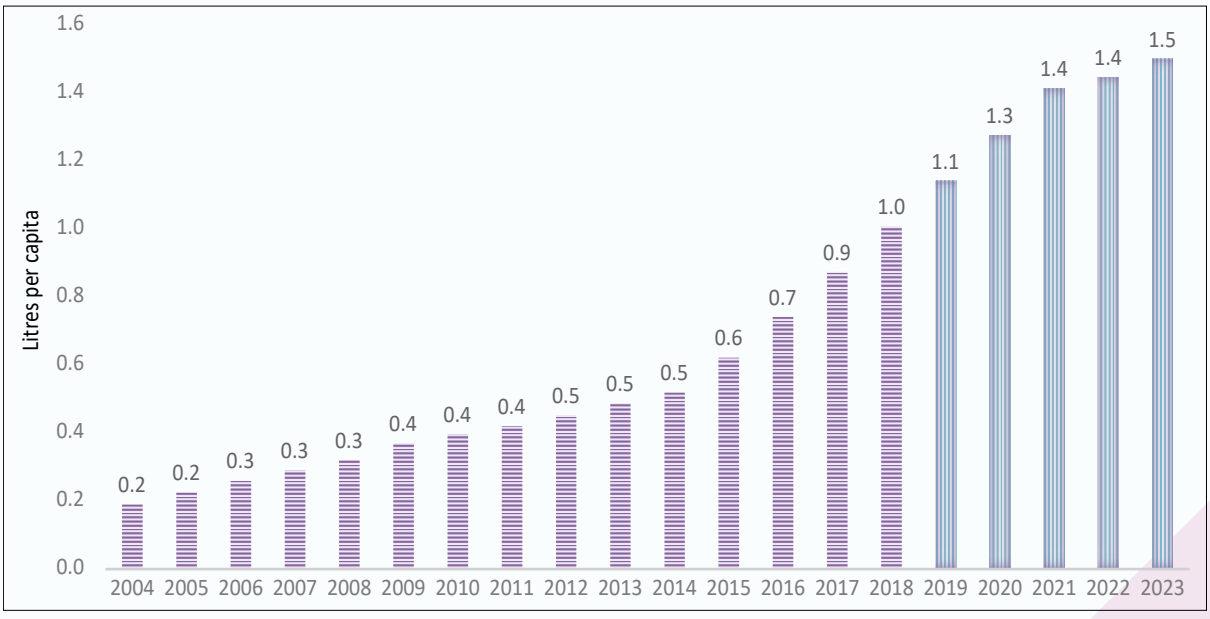
The arguments against SSB taxation have been made mostly by industry representatives globally. It is worth noting that these arguments have been given universally in all countries where SSB taxation has been proposed, be it developed or developing countries. Though presumably rooted in economic theory, the arguments cannot be either theoretically or empirically true. There are usually two main arguments against taxing specific goods in general and SSBs, in particular.

1. Taxing specific goods may be regressive, as relatively poorer households may spend a higher budget share on these goods. In Bangladesh, in terms of budget share allocated to SSBs, poorer households do not differ from richer ones. However, the proportion of households spending on these products is radically different. While only 3.3% of poorer households spend on SSBs, that proportion increases by quintile: it is 8.6% for households in quintile 2; and 15%, 23.8% and 38.3% for those in quintiles 2, 3, 4 and 5, respectively (see Table 4). Therefore, it is highly unlikely that an increase in price of SSBs produced by a tax would be regressive.

The counter arguments that favour taxation include the following:

- SSBs are nonessential goods, with widely available healthy substitutes (such as potable water) and with own-price demand elasticities that are probably above 1 (in absolute terms), as demonstrated in numerous studies for developing countries *(39–41)*. Therefore, given an increase in SSB taxes, people are willing to decrease consumption more than proportionally, also decreasing the budget share allocated to these products. Moreover, it is highly possible (in line with economic theory) that price elasticities are higher for poorer households, as has been shown for other developing countries *(40,42)*. Figure 18 shows that per capita consumption of bottled water is increasing in Bangladesh, and is expected to increase more during 2019–2023. A tax on SSBs will likely accelerate such an increase.

Figure 18: Total per capita consumption (2004–2018) of bottled water and projected total per capita consumption (2019–2023)



Source: Based on Euromonitor International.

- Consumption of SSBs has negative health consequences that may have a greater

Low-income and young consumers have the highest health benefits from taxes on sugary drinks.

World Health Organization

#Tax4Health

#beatNCDs

Photo: WHO

effect on poorer households. In Bangladesh, poorer households incur significant out-of-pocket expenditures that may put them in situations of financial distress (as shown in Table 4). In fact, health care expenditures were proportionally higher for households belonging to the lowest quintile in relation to the rest of the population. Thus, higher SSB taxation would imply less negative health consequences and, as a result, a lower probability of incurring out-of-pocket expenditures on health. In other countries – Australia *(43,44)*, India *(29)* and the Philippines *(45)* – taxing SSBs actually benefitted poorer households as it saved health care costs.

2. Taxation will lead to job losses. It is argued that by taxing these industries jobs will be destroyed, causing economic difficulties to those who lose their employment. **However, there is evidence that this is not the case:**

- Money not spent on taxed beverages will be spent on nontaxed beverages and other products. While there could be a lower demand for taxed beverages and related job losses in this sector, as consumers reallocate their spending to nontaxed beverages and other goods and services, new jobs will be created in these sectors, as demonstrated in other countries *(46,47)*. Also given that SSB manufacturers are highly capital-intensive (i.e. their ratio capital/labour is higher than the average), it is possible that spending in non-SSB goods could imply a net creation of jobs.
- Taxing SSBs provides an incentive to manufacturers to reformulate products, by lowering their sugar content. Though this process may take time, once it is achieved, it would imply that no jobs are lost, as new products with increased consumption will compensate for a decrease in SSBs with higher sugar content.

Overall, there is no serious argument against SSB taxation, as these taxes imply savings in current and future resources for households and the society, with likely creation of new jobs.

2.5 MONITORING AND EVALUATION

If SSB tax is implemented, it is essential to monitor implementation, progress and health impacts of such a policy. As mentioned previously, the implementation of a specific excise tax reduces the costs of implementation (vis-à-vis an ad-valorem tax), as the tax agency has to gather information on the volume and sugar-content of SSBs produced. While controlling volume production may be straight-forward, verifying sugar-content may imply sampling and analysing beverages that are sold, periodically.

To monitor the progress of taxation, collection of specific data and a multisectoral coordinated effort is necessary. This would include: systematic collection of data on SSB prices and volume sold, as well as data on changes in the formulation of products (by, for example, National Board of Revenue, Ministry of Health and Family Welfare, Bureau of Statistics); design and implementation of verification procedures for sugar content of products (by, for example, Bangladesh Standards and Testing Institution (BSTI), Bangladesh Food Safety Authority (BFSA)); and collection of data on domestic production (by, for example, National Board of Revenue, Ministry of Health and Family Welfare, Bureau of Statistics) that is disaggregated to give information on SSBs separately from waters, natural juices, among others.

For the monitoring of health impacts, surveys on SSB consumption, obesity, overweight and diabetes prevalence among children and adults should be regularly collected. Given the long-term effect of the tax policy, it is likely that health impacts will not be seen immediately.

Photo: Unsplash/Miguel Andrade

Photo: WHO/ Jubair Bin Iqbal

Photo: Pexels/Alex Green from

Photo: Unsplash/Xiaoyu Li

Photo: WHO/ Jubair Bin Iqbal

2.6 OTHER CONSIDERATIONS

- **Communication of health benefits of taxes to the general public**: Communicating the positive health consequences of an SSB tax and addressing any misleading or inaccurate information regarding taxation is important both to keep a positive public opinion and for the intended impact of reduced SSB consumption.
- **Possibilities to earmark tax revenue**: Earmarking revenue for specific programmes to prevent obesity will help garner public support for the tax. Earmarking specifically for nutrition and physical activity-related programmes may complement the intended health impact of the tax. Examples of potential programmes and policies that could be supported by the tax revenue include: (i) subsidizing fruit and vegetable snacks in schools; (ii) promoting the implementation of school gardens as a learning tool and to improve access to fruits and vegetables; (iii) implementing an integrated health communication campaign to promote healthy diets; and (iv) conducting programmes for providing healthy and nutritive diets in groups with a high prevalence of undernourishment.
- **Supportive dietary information**: A regular dietary assessment which would include data that could assess, in a quantifiable manner, the degree of contribution of free sugars (and SSB) to the diet would be useful in assessing the impact of the taxation.
- **Industry interference**: Initiatives on changing people's diets will face opposition from economic stakeholders that may see their interests undermined by such initiatives. Public officials should manage industry interference by

setting clear ground rules with interactions, such as public meetings and consultations, where industry representatives expose their concerns openly. Public and civil society should be invited to participate and present their counterarguments openly.

- **Evidence generation**: The need to follow the evolution of diseases related to overweight and obesity can be complemented with a number of indicators (such as dental caries, body weight index in children). This can be included in a pre-tax baseline to assess the contribution of taxation in the improvement of these indicators, and provide information on the need to implement complementary measures.

2.7 CONCLUSION AND KEY MESSAGES

The evolution of overweight and obesity in Bangladesh is rising at a higher rate than in similar countries. Health consequences of such growth will impose a burden on a health system that still is addressing urgent problems, related to infant and maternal health, among other things.

Taxes on products that cause potential harms to health are a public health tool to avoid present and future health costs. In this regard, taxes on SSBs are being increasingly used globally to fight overweight and obesity and their consequences.

In economic terms, taxes aimed at reducing sugar intake are the most effective ones. In this regard, taxing sugar content should be used with the aim of not only inducing consumers to reduce consumption of SSBs with higher sugar content, but crucially, to incentivize producers to reformulate their products resulting in reduced sugar content.

In the high-level meeting held in United Nations General Assembly in 2011, like other member states, Bangladesh also committed to 'whole of the government, whole of the society efforts' for health promotion to prevent NCDs. Following the development of global action plan on prevention and control of NCDs in the 2013 World Health Conference, the Government of Bangladesh has adopted "Multisectoral Action Plan for Prevention and Control of Non-Communicable Disease, 2018-2025", which sets targets to halt rise in obesity and diabetes in Bangladesh by 2025. To reach the intended targets on time, DGHS has identified several interventions/ measures which was included in the Multisectoral Action Plan including the implementation of SSB taxation. In this regard, the recommendations of this report would be useful for adopting fiscal measures to curb consumption of SSBs to reduce prevalence of overweight, obesity and diabetes mellitus in Bangladesh.

Photo: WHO/ Patrick Brown


less
more
Tax on
sugary drinks
Taxes on sugary drinks
lead to savings
on healthcare.
World Health
Organization
#Tax4Health
#beatNCDs

Photo: WHO

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Annexure

Annex A: 2016 Bangladesh Household Income and Expenditure Survey (HIES)

Annex B: Alternative option for sugar-sweetened beverage taxation: raising ad-valorem tax

Annex A: 2016 Bangladesh Household Income and Expenditure Survey (HIES)

Table A-1: Budget shares for selected categories by expenditure quintile

Variable	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Budget share food	90.5%	90.5%	90.4%	89.9%	89.0%	90.0%
	0.07	0.06	0.06	0.07	0.08	0.07
Percentage of households with positive expenditures in food	99.5%	100.0%	100.0%	100.0%	100.0%	99.9%
	0.07	0.00	0.01	0.00	0.00	0.03
Budget share vegetables	13.4%	11.7%	10.7%	9.7%	8.1%	10.7%
	0.05	0.04	0.04	0.04	0.04	0.05
Percentage of households with positive expenditures in vegetables	98.9%	100.0%	100.0%	100.0%	100.0%	99.8%
	0.10	0.02	0.02	0.00	0.00	0.05
Budget share fruits	4.1%	4.3%	4.6%	5.3%	6.0%	5.0%
	0.04	0.04	0.04	0.04	0.05	0.04
Percentage of households with positive expenditures in fruits	41.0%	56.6%	67.7%	77.7%	86.6%	65.9%
	0.49	0.50	0.47	0.42	0.34	0.47
Budget share of SSBs (among those having positive expenditures)	1.6%	1.6%	1.6%	1.5%	1.6%	1.6%
	0.02	0.02	0.02	0.02	0.02	0.02
Expenditure on SSBs (in BDT)	684	996	1359	1717	3045	2121
	673	1,114	1,373	1,950	3,676	2,828

Variable	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Percentage of households with positive expenditures in SSBs	3.3%	8.6%	15.0%	23.8%	38.3%	17.8%
	0.18	0.28	0.36	0.43	0.49	0.38
Budget share for tea and coffee (among those having positive expenditures)	2.1%	1.7%	1.6%	1.5%	1.3%	1.5%
	0.02	0.02	0.02	0.01	0.01	0.02
Percentage of households with positive expenditures in tea and coffee	8.6%	14.0%	20.4%	29.8%	45.3%	23.6%
	0.28	0.35	0.40	0.46	0.50	0.42
Budget share for milk (among those having positive expenditures)	5.3%	4.9%	4.8%	4.4%	4.4%	4.6%
	0.05	0.04	0.04	0.04	0.04	0.04
Percentage of households with positive expenditures in milk	23.8%	36.2%	47.0%	60.2%	74.9%	48.4%
	0.43	0.48	0.50	0.49	0.43	0.50
Budget share for health care (among those having positive expenditures)	1.1%	0.8%	0.8%	0.7%	0.8%	0.8%
	0.03	0.01	0.01	0.01	0.01	0.02
Percentage of households with positive expenditures in health care	86.6%	89.6%	92.2%	93.2%	95.0%	91.3%
	0.34	0.31	0.27	0.25	0.22	0.28
Budget share for education (among those having positive expenditures)	1.3%	1.1%	1.2%	1.2%	1.3%	1.2%
	0.02	0.02	0.02	0.01	0.02	0.02
Percentage of households with positive expenditures in education	35.1%	52.6%	58.8%	65.1%	74.2%	57.2%
	0.48	0.50	0.49	0.48	0.44	0.49
Household total expenditures (in BDT)	37 930	63 110	83 708	110 221	184 451	95 883
	11 439.8	5 707.8	6448.3	9550.9	96 016.9	66 550.6

Source: HIES 2016.

Note: Standard deviations below mean values. SSBs are carbonated beverages, juices and energy drinks, including noncaloric beverages.

Table A-2: Marginal effects from a probit model on having positive expenditure on sugar-sweetened beverages

Variables (dependent variable: positive expenditures on SSB)	Marginal effect	Standard error	z	P>|z|
Sex of household head (reference group, female)	0.015	0.011	1.4	0.2
Age of household head	-0.001	0.000	-4.8	0.0
Marital status (reference group, single/widowed)	0.010	0.011	1.0	0.3
Quintile of expenditure (reference group 1)				
2	0.020	0.010	2.0	0.0
3	0.045	0.012	3.7	0.0
4	0.071	0.017	4.3	0.0
5	0.096	0.025	3.8	0.0
District (reference group, Sylhet)				
Barisal	-0.029	0.010	-2.9	0.0
Chittagong	0.068	0.010	7.1	0.0
Dhaka	0.053	0.009	5.7	0.0
Khulna	0.068	0.009	7.5	0.0
Mymensingh	0.044	0.012	3.8	0.0
Rajshahi	0.010	0.011	1.0	0.3
Rangpur	-0.056	0.011	-5.3	0.0
With at least one child 17 years or younger (reference group, no children)	0.029	0.009	3.1	0.0
Log of the number of household members	-0.123	0.010	-12.2	0.0
Working status of household head (reference group, not working)	-0.005	0.009	-0.6	0.6
Log of household total expenditure	0.194	0.016	12.3	0.0

Source: From modelling performed by the author based on primary data sources.

Annex B: Alternative option for sugar-sweetened beverage taxation: raising ad-valorem tax

An alternative option for SSB taxation is the modification to the now used ad-valorem excise (the Supplementary Duty, SD). The proposed tax rate is high enough to increase SSB prices (each of them) by 20%. The SD for carbonates and juices would increase to 53%, while the SD for energy drinks would increase to 65%.

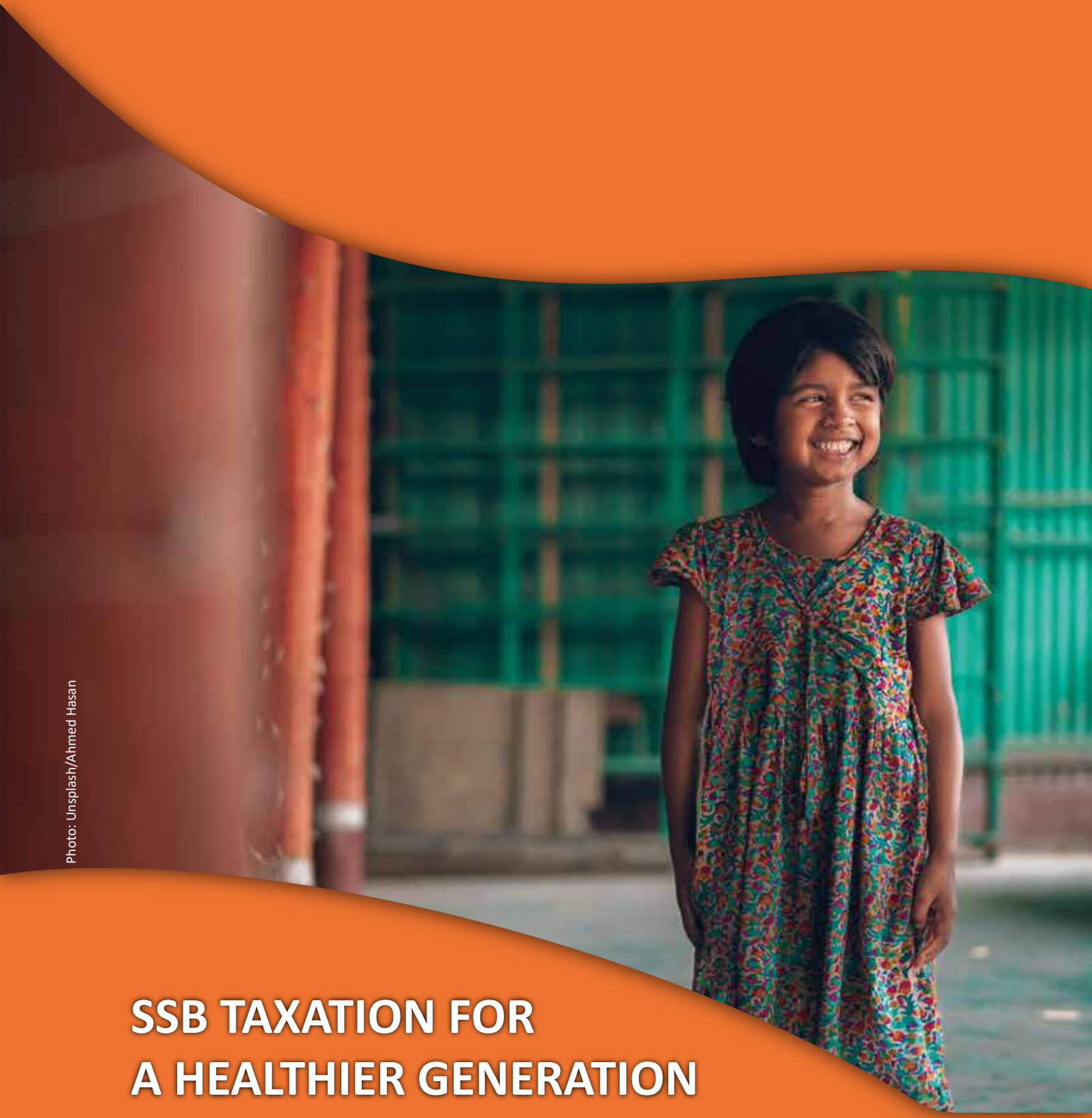
Table B-1 shows the results for different own-price elasticities. For carbonates, a 20% increase in price, means a decrease in SSB consumption of 112 million–154 million litres, and a tax revenue of BDT 17.1 billion–18.4 billion, depending on the demand elasticity value. For juices, the decrease in consumption would be 34 million–46 million litres, with a tax revenue of BDT 4.8 billion–5.2 billion. Consumption of energy drinks would decrease to 2.8–3.8 million litres, with tax collection of BDT 501 million–602 million. Overall, SSB consumption would decrease to 148 million–204 million litres, with tax revenue increase of BDT 22.5 billion–24.4 billion.

Table B-1: Ad-valorem excise tax on sugar-sweetened beverages

Increase by 20% in prices pre- VAT due to an ad- valorem tax

Price elasticity of demand	Current consumption (million litres)	Current average price per litre pre-VAT and supplementary duty	Current average price per litre post taxes	% Increase in price pre-VAT	New average price per litre post taxes	% Change in consumption	Change in consumption (million litres)	Post tax consumption (million litres)	Tax revenues from tax at implementation (in million BDT)
Carbonates									
-0.8	700.0	59.2	82.8	20%	99.4	-16%	112.0	588.0	18,440
-1.0	700.0	59.2	82.8	20%	99.4	-20%	140.0	560.0	17,562
-1.1	700.0	59.2	82.8	20%	99.4	-22%	154.0	546.0	17,123
Juices									
-0.8	209.8	56.0	78.5	20%	94.2	-16%	33.6	176.2	5,235
-1.0	209.8	56.0	78.5	20%	94.2	-20%	42.0	167.8	4,986
-1.1	209.8	56.0	78.5	20%	94.2	-22%	46.2	163.6	4,861
Energy drinks									
-0.8	17.4	69.8	104.7	20%	125.6	-16%	2.8	14.6	662
-1.0	17.4	69.8	104.7	20%	125.6	-20%	3.5	13.9	514
-1.1	17.4	69.8	104.7	20%	125.6	-22%	3.8	13.6	501
Average SSB									
-0.8	927.2	58.7	82.2	20%	98.6	-16%	148.4	778.9	24,337
-1.0	927.2	58.7	82.2	20%	98.6	-20%	185.4	741.8	23,062
-1.1	927.2	58.7	82.2	20%	98.6	-22%	204.0	723.2	22,486

Source: From modelling performed by the author based on primary data sources.



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SSB TAXATION FOR A HEALTHIER GENERATION

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