CHARITY ENTREPRENEURSHIP

Reducing Diet-related Disease through Taxes on Sugary Drinks

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Ambitious Impact Research Report

November 2025

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Contributions: *The primary authors for this report were Kunal Peety and Tan Zhong Chen (AIM Research Program Fellows), supported by Vicky Cox (Senior Research Manager). Thank you to CEARCH for its research report on Diabetes Mellitus Type 2, on which this report relies heavily.*

Ambitious Impact (AIM) *exists to enable more effective charities to exist worldwide. We strive to achieve this goal through our extensive research process and Incubator Program. We give talented potential entrepreneurs two months of cost-covered, intensive training designed by founders for founders. Our talented researchers and entrepreneurs identify evidence-based, high-impact interventions and help founders find a co-founder to launch the idea and reach scale.*

Note to readers: *Our research is geared toward AIM decision-makers and program participants. We attempt to find the best ideas for our incubation programs through these reports. Given our commitment to focusing on recommended ideas, reports on those not recommended for incubation can often be less polished.*

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Reducing diet-related disease through taxes on sugary drinks / Summary

Description

High consumption of sugar-sweetened beverages (SSBs) is strongly linked to obesity, type 2 diabetes, cardiovascular disease, and poor oral health. Global consumption has increased sharply in recent decades, driven by increased affordability and availability. Evidence shows that SSB taxes increase retail prices and, in many settings, reduce consumption. When well designed and enforced, they can also encourage manufacturers to reformulate products to contain less sugar.

This report evaluates whether a new charity focused on advocating for SSB taxation could achieve meaningful health impact, particularly in countries where such policies remain absent, poorly designed, or weakly enforced.

Expected impact

Cost-effectiveness: Our modeling suggests that advocating for a 20% SSB tax can be cost-effective in some settings, though results vary broadly by country. Across the ten countries assessed, the average cost is estimated at $185 per DALY averted, with six countries meeting our cost-effectiveness bar of $220 per DALY. Estimated cost-effectiveness ranges from $32 per DALY averted in Algeria and $513 in Uruguay, reflecting differences in disease burden, consumption levels, and the effectiveness of tax implementation.

Scale: At scale, the intervention is estimated to avert an average of ~66,000 DALYs per year, with country-level estimates ranging from roughly 10,000 to 150,000 DALYs annually.

Potential for success

Evidence base: There is strong evidence that SSB taxes, when well designed and instituted, reduce consumption of sugary drinks. Multiple meta-analyses find significant associations between higher SSB taxes and lower consumption. There is also strong evidence linking SSB consumption to obesity, diabetes, cardiovascular disease, and tooth decay.

However, direct evidence linking SSB taxes to long-term health outcomes is more limited. Most studies focus on changes in consumption rather than on downstream health effects, which are typically informed through modeling rather than directly observed. Evidence on substitution toward artificially sweetened beverages (ASBs) is mixed, and while substitution likely occurs, its net health impact remains uncertain.

Overall, the evidence supports the conclusion that SSB taxes reduce harmful consumption, but with some uncertainty around the size of resulting health benefits.

Theory of change: A new charity would advocate for the introduction of SSB taxes in countries where they are absent or weak, and support governments with implementation and enforcement. By increasing prices, these taxes would be expected to reduce consumption directly and may also encourage product reformulation. Reduced intake of sugary drinks would in turn very likely lower the risk of obesity, diabetes, cardiovascular disease, and oral disease.

This is a high-risk, high-reward intervention. Based on past advocacy efforts, we estimate a 9% probability of successfully passing a new SSB tax in a given country. However, once implemented, such taxes are likely to persist, with a low annual risk of repeal.

Neglectedness

Existing activity: SSB taxation remains underused globally. Only 44 countries have implemented SSB taxes in line with best practices, while a further 71 countries apply less targeted taxes with limited impact. Meanwhile, sugary drinks become increasingly affordable, particularly in low- and middle-income countries (LMICs), contributing to continued rising consumption.

Geographic fit: Our preliminary geographic assessment prioritizes countries based on SSB-related health burden, neglectedness, and potential tractability in each country. This model suggests the following top ten countries for this work: Senegal, Cuba, Germany, Trinidad and Tobago, Japan, Kuwait, Jordan, Uruguay, Algeria, and Costa Rica. Only six of these countries meet our cost-effectiveness bar (Senegal, Cuba, Germany, Japan, Jordan, and Algeria).

Relevance

Strategic value to AIM: This intervention has limited additional strategic value for AIM, given it overlaps with earlier work on policy-based public health interventions such as alcohol regulation, tobacco taxation, and salt intake reduction.

Fit for the CEIP: This idea is likely to appeal to founders interested in policy advocacy and systems change. It would not require technical medical expertise, but it would require comfort with political engagement, long timelines, and uncertainty. Implementation would involve substantial stakeholder engagement and relationship management. Previous experience in lobbying would be beneficial, though not essential.

Other

Expert views: Academic experts strongly favor prevention over treatment and emphasize population-level policies, particularly SSB taxation, as the most effective tools. They point to evidence from countries such as Mexico and South Africa, where SSB taxes have reduced consumption and prompted industry reformulation. However, experts broadly agree that securing government adoption of SSB taxes is difficult, citing industry influence, political resistance, concerns about regressivity, and context-specific constraints such as limited access to safe drinking water in LMICs or product substitution in high-income countries.

Non-profit experts describe the field as underfunded and neglected. They estimate that advocacy campaigns typically take 1.5–5 years before achieving success and face significant barriers prior to passage, though they also note that once an SSB tax is implemented, repeal is unlikely.

Implementation factors: Access to relevant stakeholders and political tractability are the main implementation challenges. Limited access to decision-makers contributes to the low probability of success typical of policy advocacy efforts. There are also moderate concerns about weak feedback loops and the complexity of scaling policy-focused advocacy.

Reducing diet-related disease through taxes on sugary drinks / Crucial considerations

Poor enforcement of SSB taxes in LMICs

We do not have a clear estimate of how effectively SSB taxes are enforced in LMICs over the medium to long term. In general, we expect enforcement and tax compliance to be weaker in LMICs due to constraints in state capacity (See Section 3.2). The only data point we have of enforcement rates in LMICs comes from a conversation between CEARCH and the Ghana Tax Authority. Although this discussion focused on importers, CEARCH applies the findings to retail markets more broadly. Based on this discussion, Ghana's compliance rate was estimated at 30%.

We also lack evidence on how effective a CE-incubated charity would be at improving tax enforcement. CEARCH estimates that a full-time charity could increase compliance by around 14%, but this figure is based on expert judgement rather than empirical evidence. At present, we do not have additional data to validate or refine this estimate.

In our modeling, we therefore use the Ghana-based 30% compliance estimate as a baseline and apply a 14% increase to reflect the potential contribution of a new charity. We then adjust this figure further using country-level Regulatory Enforcement scores from the World Justice Project's Rule of Law Index to account for differences in expected enforcement capacity relative to Ghana.

20% tax or 10% tax?

A new charity would advocate for a 20% SSB tax, in line with World Health Organization recommendations. In practice, though, many countries have implemented lower tax rates.

Table 1 presents estimated cost-effectiveness under both a 20% tax (the preferred scenario) and a 10% tax. Under the lower tax rate, the number of countries meeting our cost-effectiveness bar falls from six to five.

Table 1: Estimated cost-effectiveness of SSB taxes at 10% and 20%

Tax rate	Average	Senegal	Cuba	Germany	Trinidad and Tobago	Japan	Kuwait	Jordan	Uruguay	Algeria	Costa Rica
10%	$370	$160	$179	$106	$660	$72	$577	$273	$1,025	$64	$587
20%	$185	$80	$90	$53	$330	$36	$289	$136	$513	$32	$294

Note: Cells are color-coded to indicate whether estimated cost-effectiveness falls below or above the $220/DALY threshold

We are uncertain about the proportion of SSB consumers that would switch to ASBs, other sugary products, or harmful non-sugary products (e.g., alcohol). These substitution effects could reduce some of the health gains associated with SSB taxation.

There is evidence that some consumers switch to ASBs as SSB prices rise (see Section 3.3.2). Other evidence suggests that SSB consumption may be partially replaced with alcohol (see Section 3.5.3). In addition, experts noted that in high-income countries, consumers may substitute SSBs with other sugary products, such as sweetened coffee or yogurt. However, we did not find any robust empirical evidence quantifying these patterns and existing estimates of the proportion of consumers who make these switches vary widely.

We attempt to account for these substitution effects in our cost-effectiveness-analysis, but the magnitude of the effect remains highly uncertain. In the absence of stronger evidence, we follow CEARCH's assumption that substitution could reduce the health impact of SSB taxation by 30%. Our results are sensitive to this assumption. Table 2 presents a sensitivity analysis illustrating how different substitution rates affect estimated cost-effectiveness.

Table 2: Sensitivity analysis of substitution effects on cost-effectiveness

	Average	Senegal	Cuba	Germany	Trinidad and Tobago	Japan	Kuwait	Jordan	Uruguay	Algeria	Costa Rica
10%	$144	$62	$70	$41	$256	$28	$224	$106	$399	$25	$228
20%	$162	$70	$79	$46	$289	$32	$252	$119	$449	$28	$257
30% (Current model)	$185	$80	$90	$53	$330	$36	$289	$136	$513	$32	$294
40%	$216	$93	$105	$62	$385	$42	$337	$159	$598	$37	$343
50%	$259	$112	$126	$74	$462	$51	$404	$191	$718	$45	$411
90%[1]	$1,296	$560	$628	$369	$2,308	$253	$2,020	$955	$3,589	$225	$2,055

Note: Cells are color-coded to indicate whether estimated cost-effectiveness falls below or above the $220/DALY threshold

[1] 90% represents the level of substitution at which the intervention is no longer cost-effective in any of our modeled countries.

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1 Background

1.1 Context

Ambitious Impact (AIM) exists to increase the number and quality of effective nonprofits working to improve human and animal wellbeing. AIM connects talented individuals with high-impact ideas. We give potential entrepreneurs intensive training and ongoing support to launch ideas to scale. Our research team focuses on finding impactful opportunities.[2]

As part of our 2025 research agenda, we reviewed wellbeing-focused global health.[3] In that context, we researched *Reducing diet-related disease through taxes on sugary drinks*. This report provides an overview of our findings.

1.2 Introduction to the idea and problem

This report evaluates the potential for a high-impact intervention aimed at reducing consumption of sugar-sweetened beverages (SSBs) via taxation.

Excessive consumption of SSBs is a globally recognized public health problem that causes increased health burdens through obesity, diabetes, cardiovascular disease, and poor oral health (World Bank, 2020a)**.** SSBs include any beverages with added sugar—sodas, fruit juices, energy drinks, or sweetened teas or coffees. According to recent Global Burden of Disease (GBD) estimates provided by the IHME, diets high in SSB consumption were responsible for ~160 thousand deaths, and ~6.4 million DALYs in 2023.

SSB consumption has increased significantly in recent decades and is likely to continue increasing. Lara-Castor et al. (2023) found that global consumption of SSBs (across 185 countries studied) increased by 16% between 1990 and 2018. This increased consumption was largely driven by sub-Saharan Africa, which saw

[2] To read more about our approach to selecting intervention ideas for our program, please see our website.
[3] To read more about this research, please review this document.

an increase in SSB consumption of 41% between 2005 and 2018, whereas Latin America / Caribbean and high-income countries showed decreasing trends between 1990 and 2018.

Meanwhile, Blecher et al. (2017) found that SSBs became more affordable on average annually between 1990 and 2016 in all but three countries/territories studied (Hong Kong, Papua New Guinea, and Zimbabwe), due to a combination of increases in income and decreases in price. SSBs also became affordable more rapidly in LMICs (by an average of 8.76% per year) than in HICs (an average of 1.96% per year). We expect these trends to have continued over the last decade, with recent publications reporting similar findings (e.g., Access Accelerated, 2023).

Advocating for a specific excise tax on SSBs at the national level could be an effective way to reduce the consumption and health harms of SSBs. A specific excise tax is a flat tax amount that is uniformly applied to all taxed goods (e.g., $1 on all goods that qualify as SSBs, regardless of their price), and is used to discourage consumption by reducing affordability. Such a tax is also included in the shelf price of the good, as opposed to variations of sales taxes which are calculated at the register.

Taxation is potentially more effective when combined with other interventions. We consider two such interventions in this report: advocating for front-of-package labels on sugary beverages to discourage consumption and inform consumers about nutritional facts, and running mass-media campaigns about the health concerns of SSB consumption. We believe that such interventions can shift consumer preferences and, when implemented alongside taxation, can be effective at incentivizing manufacturers to reformulate their products to contain less sugar.

2 Theories of change

This section discusses what we believe to be the most robust theory of change (ToC) for a new organization working on advocacy for SSB taxes.

2.1 Enablers and barriers

Table 3 summarizes the enablers of and barriers to successful advocacy for SSB taxation.

Table 3: SSB tax enablers and barriers

Enablers	Barriers
Policy champions within Ministries of Finance and/or Ministries of Health—cases in Peru and South Africa demonstrate that taxation regulations were passed despite industry opposition, due to strong buy-in from policymakers.	Enforcement issues (mostly relevant in LMICs). Precise estimates of tax compliance are unclear (Forberger et al., 2022), but it seems that LMICs face many implementation bottlenecks that make health-related taxes hard to implement (Phonsuk et al., 2025).
Complementary interventions such as introducing front-of-pack labeling, running educational campaigns, or changing default options in schools/hospitals can further decrease consumption of SSBs. Some studies report that "SSB tax is much more likely to reduce consumption if it is part of a broader package of policy measures." (McDonald, 2015, p. 12)[4]	Strong presence of transnational corporations and/or lobbies within the sugar, beverage, and food industries. This was demonstrated by the opposition to taxation in Peru and other Latin American countries (Zuleta et al., 2023; Carriedo et al., 2021).
Tax designs have their pros and cons. Ad valorem taxes seem easier to enforce, but they may not be as effective as specific excise taxes (World Health Organization, 2022).	

[4] Note that although these complementary interventions can further reduce consumption, they have their own costs and so it may not be as cost-effective to advocate for FOPL and SSB taxation even if the overall reduction in SSB consumption is greater.

2.2 Theory of change for this charity

We decided to focus on the ToC depicted in Figure 1. The core focus of the envisioned organization would be to advocate for the introduction of SSB taxes, which appear to be the most effective way to reduce consumption and the associated health burdens of sugar-sweetened beverages. The charity would also most likely play a critical role in enforcement and maintenance. For instance, by providing legal assistance against industry litigation, forming a coalition of civil/academic advocates against SSB consumption, and research assistance in monitoring tax avoidance.

We also consider an alternative ToC in Annex 1, where the organization also advocates for front-of-pack labeling and runs mass media campaigns to make consumers aware of the harms of SSB consumption.

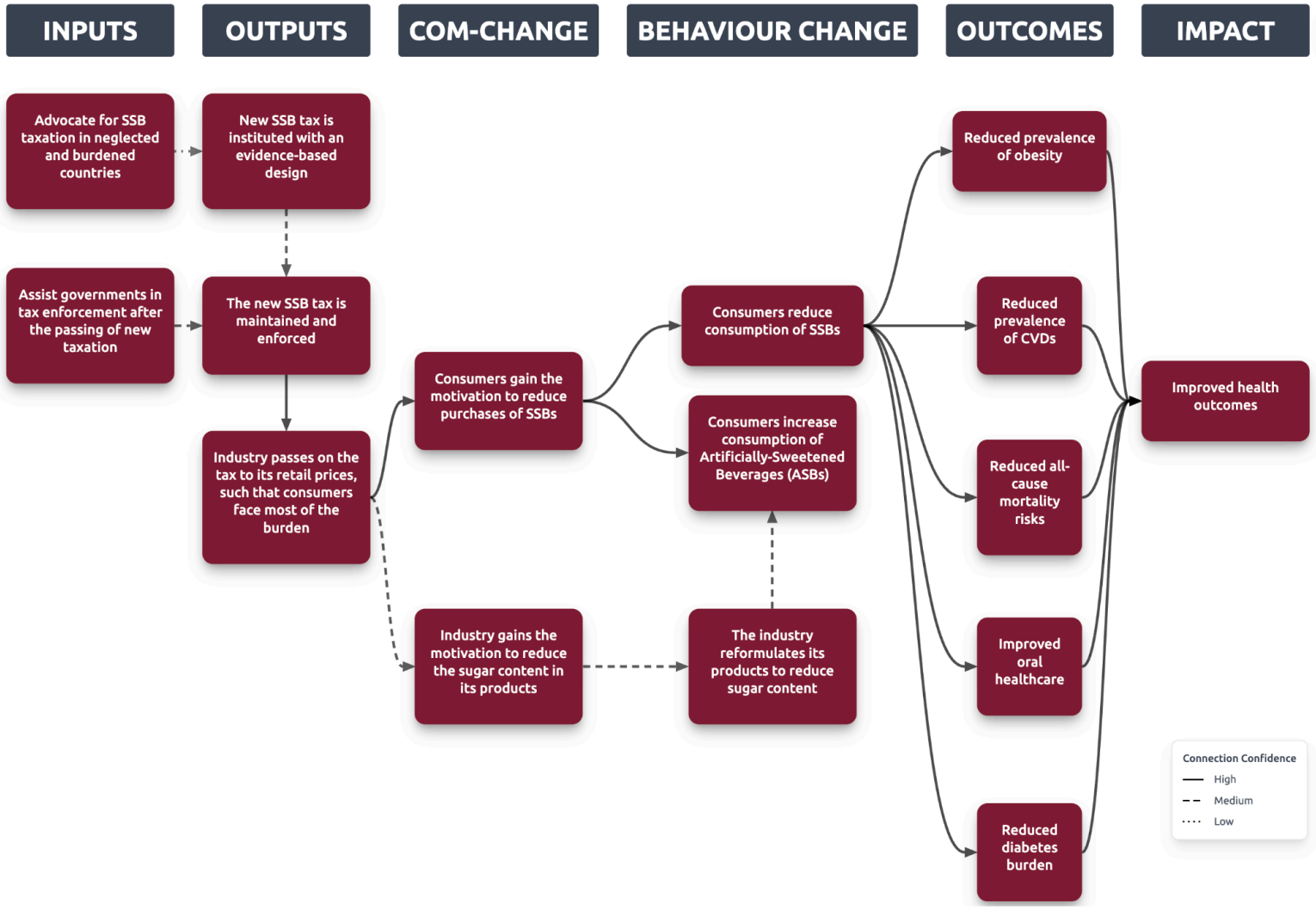


Figure 1: Theory of change of this charity (View in full)

The non-profit would also need to adapt the intervention to the context based on several considerations, such as:

- Advocating for the inclusion of ASBs in the tax, as seen in Philadelphia and Cook County, Illinois (Global Health Advocacy Incubator, 2021). However, this approach has less precedent and is therefore less likely to be successful.
- History of previous policies (e.g., have some policies relating to SSBs in general and/or NCDs been introduced? Has the country made commitments? Has the industry made commitments? Have some advocacy efforts failed?)
- Dietary profile of the country, including popular types of SSBs and potential complementary products (e.g., sweetened condensed milk is a popular type of SSB in Indonesia, used to sweeten drinks like coffee or tea, as well as to complement specific desserts).
- Cultural and contextual dietary practices (e.g., traditional drinks high in sugar, whether SSBs tend to be paired with particular meals).

These would form part of the broader country-based situational analyses the charity needs to do as a first step; refer to What operating this charity would look like for more details on adapting the intervention to different contexts.

2.3 Key assumptions and supporting rationale

	Assumption	Evidence/reasoning
1	Advocacy efforts are successful in engaging policymakers (in the Ministries of Finance and Health, most likely), who successfully institute an SSB tax of at least 20%.	We use a 9% probability of success based on CEARCH's estimate of the chances of success.
2	The charity is able to identify and assist governments with key bottlenecks in enforcement, increasing compliance with the tax.	While we could not find evidence in the literature on NGOs supporting SSB tax enforcement efforts, expert insights point to a potential demand for enforcement assistance among governments (especially in LMICs) and the logistical feasibility of such assistance for nonprofits. CEARCH

		estimates a full-time charity working exclusively on enforcement could bring a 14% increase in compliance.
3a	The SSB taxation is maintained and not rolled back.	We think that the chances of policy roll-back are less than or equal to 1% per year based on analysis by CEARCH.
3b	The passage of the law will be followed by its proper enforcement, resulting in all SSBs sold in the country being taxed per the design.	The exact enforcement gap is unknown—little academic evidence exists on how governments have performed on the taxes they have instituted. Ghana has an enforcement rate of 30% (*CEARCH conversation with the Ghana Tax Authority, which pertains to importers, but CEARCH applies this finding to retail as a whole*).
4	The tax on SSBs is passed down to the consumer, increasing the retail price of SSBs.	Substantial evidence to show that taxation trickles down to the consumer. See Cuadrado et al. (2020) and Gračner et al. (2022).
5	Consumers are motivated to purchase fewer SSBs as prices increase.	Standard economic logic of the law of demand. Consumers are generally motivated to pay lower prices; therefore, an SSB tax will likely reduce their motivation to purchase SSBs. While the behavioral economics literature highlights that consumers are sometimes motivated by factors beyond just prices, we think it is unlikely that consuming SSBs is sufficiently important for a significant number of consumers to fully disregard prices.
6	Industry is motivated to reduce sugar content in its products to avoid taxation.	Standard principle of cost minimization. The confidence in this node is lower, as reformulation costs may be higher than the costs of tax, in which case there would be no motivation to reformulate (without other external forces like FOPL labeling).
7	Consumers are motivated to consume less of what they think is bad for their health.	This motivation may not be a strong one, and may be time-inconsistent.
8	The consumer's knowledge of healthfulness affects the industry's decision to reformulate.	Seems intuitively correct, based on the firm's expectations of lower consumer demand for SSBs (given such knowledge).
9	An increase in prices causes consumers to buy fewer SSBs.	See Section 3.3.1.
10	As prices of SSBs increase, some consumers substitute towards ASBs.	Taxation can lead to increased consumption of untaxed beverages, although the actual substitution rate is uncertain. See Section 3.3.2.

		We could remove this consideration if a new charity also advocated for the inclusion of ASBs in the tax, as we have seen in Philadelphia and Cook County, Illinois (GHAI, 2021).
11	The changes in consumer preferences (or costs of regulation) are high enough for the industry to reformulate	There is evidence of reformulation given taxes and FOPL. Essman et al. (2021) report that a third of the decreases in sugar/energy consumption in Mexico were driven by reformulation. There is more evidence for the association between FOPL and reformulation than taxes alone (Salgado et al., 2025; Roberto et al., 2021).
12	Reformulation may entail switching to non-calorific sweeteners (NCS).	There is little evidence on the exact proportion of the industry that reformulates by substituting sugar with NCS. However, Silva et al. (2021) report it as the "most common industrial approach" to reformulation.
13	Reduction in consumption of SSBs leads to reduced obesity.	See Section 3.4.1.1.
14	Reduction in consumption of SSBs leads to reduced Cardiovascular diseases (CVDs).	See Section 3.4.1.3.
15	Reduction in consumption of SSBs leads to reduced all-cause mortality risks.	Many studies corroborate these results, e.g., Zhang et al. (2021) and Naomi et al. (2023).
16	Reduction in consumption of SSBs leads to improved oral health.	See Section 3.4.1.4.
17	Reduction in consumption of SSBs leads to reduced diabetes burden.	See Section 3.4.1.2.

Advocacy successfully leads to the institution of an SSB tax

We defer to CEARCH on the probability of success. CEARCH estimates a probability of success of 9%. We explore this further in Section 3.1.

A new SSB tax will be successfully enforced

This is a key uncertainty for this intervention. Enforcement capacity may be more limited in some LMICs. The only data point we have on this is based on a conversation that CEARCH had with the Ghana Tax Authority. They found that

Ghana had an enforcement rate of 30% for its SSB tax. By contrast, enforcement rates for more established excise taxes such as alcohol and tobacco are substantially higher, at around 80% in Ghana.

A new charity would likely need to support governments with enforcement after successful advocacy. However, weak enforcement would extend the time between inputs and endline impact, and would increase costs, as the charity would need to remain active in a country for longer.

We explore enforcement gaps and how they may impact the promise of this intervention in Section 3.2.

The new SSB tax is not rolled back

A World Bank study in 2020 highlights how industry opposition can often block new SSB tax proposals (such as in Colombia) or slow the adoption of new taxes (as seen in South Africa) (World Bank, 2020a). The same study found the following key examples of SSB taxes being repealed in Denmark and Cook County, Illinois, as well as Sri Lanka's SSB tax being weakened after passing.

Table 4: World Bank case studies of SSB taxes being prevented or repealed (World Bank, 2020a)

Jurisdiction	SSB tax status	Challenges faced
Colombia	Proposed 20% excise tax not passed by Congress in 2016; existing VAT on SSBs raised in January 2019.	Industry lobbying and legal challenges (including having a public information campaign supporting the tax being banned), and a lack of congressional support and political will.
Denmark	Tax on SSBs in effect since 1930s repealed in 2013, along with excise tax on saturated fat content of high-fat foods enacted in 2011.	Legal action considered by the industry, negative media coverage, perception of negative impact on employment and the economy, and inadequate consultation process and design. Opponents argued that there was evidence of significant leakage (cross-border shopping into Sweden and Germany).
Portugal	Tiered volume-based excise tax successfully introduced February 2017.	Tax passed despite industry lobbying and threats of legal action under constitutional and

		international trade law.
Slovenia	Bill proposing 10% excise tax withdrawn in 2014.	Industry lobbying (on grounds that tax would force production to be relocated outside the country); lack of clear policy rationale, and lack of cross-government and public support.
South Africa	12% sugar-based excise tax successfully introduced in April 2018 after being delayed for a year and lowered from 20%.	Industry lobbying and opposition on grounds that tax would negatively affect employment and economic growth, would be regressive, was not based on sound evidence, and would not be as effective as voluntary initiatives and industry self-regulation.
Sri Lanka	US¢50 per gram sugar excise tax in effect since November 2017 lowered to US¢30 per gram (40%) in December 2018.	Industry lobbying and domestic politics.
United States (Cook County, Illinois)	One-cent-per-ounce tax levied on sweetened soft drinks, including diet drinks, repealed in October 2017 after four months.	Industry lobbying and lack of public support (perceived as being revenue-driven and hurting small businesses).
United States (Arizona, California, Michigan, and Washington)	New city/local-level SSB taxes banned under state preemption laws.	Industry lobbying on the grounds that SSB taxes harm local businesses and jobs and adversely affect consumers (through higher grocery prices, something that did not, in fact, occur) and capture of direct democracy mechanisms to ban cities and countries from introducing SSB taxes through 2030.

A 2023 literature review by EQUINET highlighted some major instances of pressure from multinational soda companies inducing rollbacks of SSB taxes: South Africa's earlier SSB tax was reversed in 2002 under such pressure, while Zambia's previous 25% excise tax on soft drinks was repealed in 2015 after the government allegedly faced threats that Coca-Cola would leave the country. Separately, Pedroza-Tobias et al. (2021) found significant (but unsuccessful) attempts by industry lobbyists to discredit and repeal Mexico's SSB tax after it was passed in 2014. Specifically, they find that "food and beverage industry trade organizations and front groups paid scientists to produce research suggesting that the tax failed to achieve health benefits while harming the economy," and that "these results

were disseminated before non-industry-funded studies could be finalized in peer review." While these specific case studies may not generalize to every context, they point to the need to pre-empt potential industry opposition and to continuously monitor pushback against any passed SSB taxes to ensure inputs translate into endline impact.

However, taking a macro-level view of known instances of SSB tax repeal and triangulating with expert opinion, CEARCH estimates that implemented SSB taxes only face a ~1% chance of repeal per annum. Specifically, they "take the instances of repeal and divide by the number of country-years of potential repeal to yield an annual baseline reversal rate", which is then adjusted downwards based on their interviewed experts' assertion that there is generally a status quo bias when it comes to passed taxes. Note, however, that one expert they interviewed specifically cautioned that maintaining the tax is an active job for the NGO, albeit particularly in the context of the US.

Sense-checking CEARCH's estimate, we believe that it is likely to be accurate to at least a 50% confidence interval. In general, industry opposition appears to have more frequently been successful in slowing down or preventing adoption of an SSB tax in the first place (as in the examples identified by the World Bank above, or in other case studies such as Indonesia (Putri et al., 2023) and Vanuatu (Elliott et al., 2023)). Our additional search did not find any additional instances of SSB tax repeal beyond those already included in CEARCH's analysis. As such, while we believe it remains important for charity co-founders to continuously monitor industry opposition even after an SSB tax is successfully passed, we agree that the chances of policy roll-back are less than or equal to 1% per year.

Industry is motivated to reduce sugar content in its products to avoid taxation

There is evidence that when sugar-specific taxes are levied, the beverage industry reformulates its products to avoid being taxed. While explicit quantitative measures of reformulation (per % of tax, for example) are unclear, several studies observe reformulation as an industry reaction.

- Bandy et al., 2020 note that between 2015 and 2018, six out of the top ten SSB manufacturers in the UK had reformulated more than half of their product portfolio. There was a 50% reduction in the sales of beverages that were subject to the SSB tax, and a 40% increase in the sales of low- and zero-sugar beverages. The authors claim that the effects were driven more by reformulation than by behavior change.
- Essman et al.,2021 report that the 10% SSB tax in South Africa in 2018 caused a 31% reduction in sugar consumption, a 33% reduction in calorie intake through SSBs, and a 37% decrease in volume of SSBs consumed per day per capita. They estimate that approximately one-third of the effect was driven by reformulation efforts.
- In a narrative review that synthesises qualitative evidence from stakeholders within the beverage industry, Forde et al., 2022 report that, among other responses such as price variation and non-marketing activities like lobbying, reformulation is an important component of the industry response to a tax to maintain profits.

Consumers switch to artificially sweetened beverages

We explore this in Section 3.3.

Reduced SSB consumption improves health

We explore this in Section 3.4.

2.4 Other approaches considered

We also considered theories of change that focused more on enforcement than advocacy for new SSB taxes.

CEARCH's current verdict is that enforcement of these taxes in LMICs is low. This means that policy advocacy may be less promising, but assistance with enforcement may be more promising—and even more neglected. Also,

governments—particularly in LMICS—are often actively interested in assistance with the enforcement of existing taxes.

In our view, this gives two options for adjusting our ToC:

- Advocating in one country that does not already have a tax, while assisting another that already has a tax with its enforcement
    - This is likely to have the most counterfactual impact if CEARCH's assessment is accurate, but it logistically stretches the team quite thin (i.e., low feasibility).
- Focusing entirely on helping with enforcement
    - However, there is a lack of concrete evidence around the effectiveness of assisting governments with tax enforcement (though its potential effectiveness intuitively makes sense), as well as a lack of concrete figures around the current state of tax enforcement for SSB taxes. A lot of the existing literature concerns tax evasion by wealthy individuals in LMICs, with almost none directly touching on the case of SSB taxes. The charity would therefore likely need to conduct on-the-ground research and run feasibility pilots to get a better sense of the tractability of this approach.

We ended up prioritizing a ToC where the new charity focuses on enforcement assistance after successfully advocating for new tax legislation. We think that this is the most promising option as it avoids splitting focus and we can be more certain of the charity's counterfactual impact.

3 Quality of evidence

3.1 Evidence on feasibility

Overall, our (non-systematic) evidence review leads us to the following conclusions:

1. The issue is sufficiently neglected, with scope for a new charity to make a change in this space.
2. Implementing a 20% SSB tax is possible as it has been done in 44 countries so far, likely with input from NGOs.
3. The chances of success are relatively low, but not much lower than other policy-focused charities AIM has previously recommended, and can be mitigated with best practices found in the existing literature.
    a. There is a strong expectation that the industry may push back against regulatory efforts, as has happened in several countries worldwide on many policy fronts, and particularly on SSB taxes. However, we believe this pushback is surmountable.

The following two sub-sections unpack the evidence that led us to these conclusions.

3.1.1 Chances of success

We defer to CEARCH on the probability of success. CEARCH estimates a probability of success of 9%. CEARCH triangulates the track record of past lobbying attempts for SSB taxes in the US, as well as similar advocacy efforts for sodium control (an "outside view"), with its reasoning through the particulars of the case (an "inside view") based on its expert interviews to get at these odds of success.

We believe that this estimation process is reasonable, as our supplementary evidence review did not find any additional sources that could give a more precise estimate. Specifically, we found successful case studies in Mexico (Donaldson, 2015), Chile (Guerrero-Lopez et al., 2017), Colombia (Carriedo et al., 2021), and

South Africa (Cullinan et al., 2020). We also found expert views in favor of policy advocacy efforts (Roache & Gostin, 2018), another weak signal that policy advocacy is a promising intervention. However, none of the evidence we found provided evidence relevant to quantitatively assessing policy advocacy's chances of success.

A 9% probability of success could be an underestimate as it does not factor in the possibility of increasing acceptance over time. CEARCH does factor in this scenario in their CEA, citing a Vital Strategies policy brief of lessons from South Africa's SSB tax advocacy to highlight that "international evidence of effectiveness of taxes as implemented by other countries is crucial in building the case for a soda tax – which would suggest that advocacy becomes easier over time, and that past success rates are an underestimate" (Cullinan et al., 2020). Further adding on to this, our research points to the possibility of a bandwagon effect of sorts, where the chances of success increase worldwide as new countries pass SSB taxes. Specifically, a comparative policy analysis of the institution of SSB taxes in 16 countries between 2016 and 2019 finds evidence of a diffusion effect, where evidence and political will generated by early adopters of SSB taxes facilitated the adoption of similar taxes in other countries (Mulcahy et al., 2022). With new SSB taxes still being passed, for example as in Ghana in 2023, we believe it is likely that there may be sufficient political momentum facilitating effective advocacy in other countries, which a new charity could capitalize on.

On the other hand, a 9% probability of success could be an overestimate as it is estimated based on prior case studies which are liable to overestimation due to publication bias (successful advocacy campaigns are more likely to be published than unsuccessful advocacy campaigns). Also, evidence from Indonesia traces advocacy efforts between 2016 to 2022, with the issue of SSB taxation still being under review as of 2024 (with Indonesia still having no SSB tax, even by WHO's more expansive definition) (Putri et al., 2023). This is in spite of the Ministry of Finance being largely in favor of SSB taxation, albeit with the cautiousness of prioritizing Indonesia's broader post-COVID-19 economic recovery.

Nevertheless, we still believe the 9% chance of success is fairly reasonable. Despite these relatively low odds of success, our past experience of

recommending other policy advocacy charities with similar odds of success makes us more inclined to still recommend this charity**.** Compared to other policies we have recommended in the past, SSB taxes have a low rate of success, with only alcohol taxes having a lower success rate:

SSB	Salt	Alcohol	Tobacco	Road safety
9%	10%	5.5%	27%	48%

The comparison here is, of course, uncertain, as the methodologies for estimating chances of success differ significantly across each report. Nevertheless, the chances of success are roughly comparable with advocacy for salt intake reduction, and we similarly believe that the outsized potential impact of SSB taxes makes this intervention worth pursuing.

Moreover, we know that implementing an optimal SSB tax is possible as it has been done in 44 countries. Although we are uncertain what percentage of these policies is a result of advocacy by NGOs, we expect that it is a significant proportion.

Also, strong evidence exists for effective best practices in making SSB laws more attractive. Two studies highlight that emphasizing the potential increases in revenues may be a particularly attractive framing for governments of LMICs (Elliot et al., 2022; Hattersley & Mandeville, 2023)[5], albeit with no quantitative estimate of the increase in potential chances of success. Another meta-analysis of 40 qualitative and quantitative studies evaluating the political and/or public acceptability of SSBs tax found that 42% of the public across 26 countries[6] support an SSB tax as a baseline, and that public acceptability of SSB taxes was highest (66%) if the tax revenue is re-invested into health initiatives (Eykelenboom et al., 2019). This is in line with CEARCH's expert interview insight that "taxes,

[5] Elliot et al., 2022 is a meta analysis of 75 papers focusing on health-related fiscal measures (alcohol and tobacco taxation alongside SSB taxation and food-related fiscal regulation) and Hattersley & Mandeville, 2023 analyses 118 SSB taxes (105 national and 13 subnational taxes).
[6] The 32 studies that investigated public acceptability of an SSBs tax "were conducted in the US (n = 19), Australia (n = 7), the UK (n = 5), Mexico (n = 3), China (n = 1), France (n = 1), Israel (n = 1), New Zealand (n = 1), four Pacific countries (n = 1) [Fiji, Samoa, Nauru and French Polynesia] and fourteen European countries (n = 1) [Belgium, Czech Republic, England, Estonia, Finland, Germany, Greece, Iceland, Italy, Ireland, Malta, Poland, Portugal and Slovenia]."

when well-designed, can be sold to the public as a levy that will be fully recycled (e.g., all the funds go into funding healthy school lunches; or early childhood education, as one US state did)." Notably, however, Eykelenboom et al., 2019 found that only 39% of the public across its 40 studies supports an SSB tax as a strategy to reduce obesity, even though 92% believed that obesity is a problem—seemingly indicating that framing SSB taxes as a public health intervention for obesity may not be effective.

The following section outlines some additional enabling factors that may increase a new charity's chances of success.

3.1.2 Enabling factors

Key sources within the literature highlight the following factors as forming an enabling environment for SSB taxation, albeit with less conclusive evidence (primarily observational studies):

- Fiscal need for additional revenue (Elliot et al., 2022; Hagenaars et al., 2017), particularly in LMICs (Hattersley & Mandeville, 2023)
- Localized evidence on the health burden of SSBs (Donaldson, 2015; Sanni et al., 2018; Putri et al., 2023)
- Existing policy/legal/constitutional focus on NCDs (Karim et al., 2020)
- Existing legislative mechanisms for import and excise taxes (Thow et al., 2010)
- A history of collaboration and/or extensive communication channels between the Ministry of Health and the Ministry of Finance (Healthy Caribbean Coalition, 2016)
- Election periods and political change-overs, provided that proposed fiscal measures have already gained a level of recognition on the policy agenda (Elliot et al., 2022)
- Public trust in the government and public health experts (Eykelenboom et al., 2019)
- Direct support by multilateral agencies, NGOs, and philanthropic trusts (Elliot et al., 2022)

3.2 Evidence on key enforcement gaps

Poor tax enforcement is likely to diminish the impact of a new SSB tax. An expert interview with Joel Tan from CEARCH highlighted that SSB taxes may not be a good intervention in LMICs with suboptimal tax collection infrastructure or large informal sectors. For example, based on CEARCH's conversation with the Ghana Tax Authority, Ghana's new SSB tax only has an effective coverage of around 30%[7] due to limited enforcement, compared to a coverage of around 80% for more established excise taxes for alcohol and cigarettes.

There is not much definite evidence around SSB tax enforcement gaps and how effective a charity assisting governments in enforcement would be, but focusing on enforcement is mentioned across multiple policy briefs on SSB tax best practices.

A search of the literature indicates that enforcement can be a significant issue in LMICs, with multiple policy guidelines and studies highlighting that SSB tax enforcement is a crucial component in ensuring the taxes have the desired effect (e.g., Forberger et al., 2022; UNICEF, 2022). However, there appear to have been no studies quantitatively assessing current gaps in SSB tax enforcement. Instead, much of the literature around tax evasion in LMICs is focused on that done by wealthy individuals. Moreover, a 2023 literature review by the Regional Network for Equity in Health in East and Southern Africa (EQUINET) highlights that enforcement issues can be mitigated in the tax design stage, in that ad valorem taxes are less affected by low enforcement capacity. However, it must be noted that ad valorem taxes seem to be less effective at reducing SSB consumption and purchase than specific excise taxes (McDonald, 2015; Teng et al., 2019) and that the World Health Organization specifically recommends a 20% specific excise tax (World Health Organization, 2022).

With these uncertainties in mind, we are inclined to factor in a strong enforcement gap within our cost-effectiveness analysis to model the real effects of the SSB taxation. This is especially relevant since we expect the charity

[7] Note that their conversation specifically pertained to importers, but CEARCH applies this to retail as a whole.

to advocate for specific excise taxes, which are harder to enforce but are more effective at reducing SSB consumption and its subsequent health burdens.

It is also unclear whether an AIM-incubated non-profit would have the bandwidth to provide meaningful enforcement support. Even if enforcement were a full-time focus, it remains uncertain how much compliance would increase as a result. Based on informed inputs, CEARCH modeled a 14% increase in compliance from an intervention focused solely on enforcement assistance.

3.3 Evidence on the effect of SSB taxes on consumption

3.3.1 Taxes leading to a reduction in SSB consumption

Very strong evidence shows that SSB taxes, when designed and instituted well, have a significant impact on decreasing consumption of SSBs.

Multiple meta-analyses show significant positive associations between SSB taxes and reduced SSB consumption. Synthesizing evidence from three meta-analyses (Escobar et al., 2013; Afshin et al., 2017; Teng et al., 2019), CEARCH estimates that "a WHO-recommended 20% tax on sugar-sweetened beverages will reduce consumption of sugar-sweetened beverages by 12%." Another meta-analysis of 62 studies (Andreyeva et al., 2022) provides similar statistically significant results, with a price elasticity of demand of -1.59 and a mean reduction in SSB sales of 15%. Another meta-analysis of 13 studies (Itria et al., 2021) estimates that the own-price elasticity of SSBs ranged from -0.8 to -1.29.

Additionally, multiple observational evaluations of instituted SSB taxes show relatively similar statistically significant decreases in consumption among consumers:

- Essman et al (2021) report that the 10% SSB taxes in South Africa in 2018 caused a 31% reduction in sugar consumption, a 33% reduction in calorie intake through SSBs, and a 37% decrease in volume of SSBs consumed per day per capita.

- Itria et. al (2021), which mainly focuses on MICs and HICs, find that the price elasticities range between -0.8 and -1.29 for SSBs, which means that a 10% tax would result in a 8–12.9% reduction in consumption.
- A reduction in SSB sales by 7% one year post-tax in Portugal[8] (Goiana-da-Silva et al., 2018).
- A reduction in monthly per capita SSB purchases of 3.4%, one year after an increase in Chile's SSB tax rate from 13% to 18% in 2014 (Caro et al., 2018).
- A reduction in SSB consumption of 40% (after accounting for spillover effects of people increasing consumption in neighboring cities and counties) in Philadelphia, one year after implementation of an excise tax of 1.5 cents per ounce on SSBs (Roberto et al., 2019).
- An average reduction in SSB consumption of 7.6% over two years post-tax in Mexico, from a 1 peso per liter excise tax on SSBs. The volume of taxed beverage purchases declined more in low SES households (14.3%) than in high SES households (5.6%) (Colchero et al., 2017).

Risk of bias

We performed a risk of bias assessment for Andreyeva et al. (2022), Itria et al. (2021), Teng et al. (2019), Afshin et al. (2017), and Escobar et al. (2013) as we rely on these studies in our CEA to calculate the price elasticity of demand of SSBs.

We have some concern about the risk of bias in all five studies. Please refer to our RoB spreadsheet for details[9]; we summarize the key findings below.

[8] "This tax is divided into two tiers: drinks with sugar contents below 80 g/L of final product (charged at €8·22 per 100L) are the lower tier and those above 80 g/L of final product (charged at €16·46 per 100L) are the upper tier." (Goiana-da-Silva et al., 2018)

[9] Note that this risk of bias assessment was performed with the help of ChatGPT. Everything was double-checked and verified by the author.

Andreyeva et al. (2022)

- PICO - Low risk of bias
- Pre-registration - High risk of bias, study was not pre-registered
- Literature search strategy - Low risk of bias
- Review carried out by more than one researcher - Low risk of bias
- Inclusion and exclusion criteria - Low risk of bias
- Risk of bias assessment - Low risk of bias
- Researcher bias - Moderate risk of bias. Concerned about the lack of pre-registration protocol, but they do disclose their own funding and conflicts of interest.
- Meta-analysis methods - Low risk of bias
- Were high risk of bias studies excluded? - Moderate risk of bias. High risk studies were not excluded from the meta-analysis, but the risk of bias was considered in the discussion of results. Does not discuss publication bias.

Itria et al. (2021)

- PICO - Low risk of bias
- Pre-registration - Low risk of bias
- Literature search strategy - Low risk of bias
- Review carried out by more than one researcher - Low risk of bias
- Inclusion and exclusion criteria - Low risk of bias
- Risk of bias assessment - Moderate risk of bias. Review is conducted, but is more focused on study quality than risk of bias (does not really cover selection bias or confounding, for example).
- Researcher bias - Low risk of bias
- Meta-analysis methods - N/A (Systematic review)
- Were high risk of bias studies excluded? - N/A (Systematic review)

Teng et al. (2019)

- PICO - Low risk of bias
- Pre-registration - Low risk of bias
- Literature search strategy - Low risk of bias
- Review carried out by more than one researcher - Low risk of bias

- Inclusion and exclusion criteria - Low risk of bias
- Risk of bias assessment - Low risk of bias
- Researcher bias - Low risk of bias
- Meta-analysis methods - Low risk of bias
- Were high risk of bias studies excluded? - Moderate risk of bias. Although study quality was assessed and explored in subgroup analyses, studies at high risk of bias were not excluded from the meta-analysis. They do discuss publication bias and its potential impacts.

Afshin et al. (2017)

- PICO - Low risk of bias
- Pre-registration - High risk of bias, study was not pre-registered
- Literature search strategy - Low risk of bias
- Review carried out by more than one researcher - Low risk of bias
- Inclusion and exclusion criteria - Low risk of bias
- Risk of bias assessment - Low risk of bias
- Researcher bias - Moderate risk of bias. Concerns about the lack of pre-registration protocol, but they do disclose their own funding and conflicts of interest.
- Meta-analysis methods - Low risk of bias
- Were high risk of bias studies excluded? - Moderate risk of bias. Although study quality was assessed and explored in subgroup analyses, studies at high risk of bias were not excluded from the meta-analysis. They do discuss publication bias and its potential impacts.

Escobar et al. (2013)

- PICO - Low risk of bias
- Pre-registration - High risk of bias, study was not pre-registered
- Literature search strategy - Moderate risk of bias. The authors searched multiple relevant databases and screened reference lists, but grey literature searching and fully reproducible search strings were not clearly reported.

- Review carried out by more than one researcher - High risk of bias. Does not report that study selection or eligibility assessment was conducted independently by more than one reviewer.
- Inclusion and exclusion criteria - Low risk of bias
- Risk of bias assessment - High risk of bias. No structured assessment of risk of bias. Only focused on publication bias.
- Researcher bias - Moderate risk of bias.
- Meta-analysis methods - Moderate-high risk of bias. Weakest study of all evaluated. Concerned about the lack of pre-registration protocol, the unclear search strategy, and lack of assessment of risk of bias.
- Were high risk of bias studies excluded? - High risk of bias. The review did not assess risk of bias in individual studies and therefore did not exclude high-risk studies from the meta-analysis. They do discuss publication bias and its potential impacts.

3.3.2 SSB taxation leading to increased ASB consumption

It is very likely (80–95%) that some of the reduction in SSB consumption is replaced by increased consumption of artificially-sweetened beverages (ASBs). The exact displacement rate is uncertain, but it is almost certainly greater than zero and would reduce the overall impact of this intervention. High consumption of ASBs is associated with increased risks of obesity, type 2 diabetes, cardiovascular disease, and all-cause mortality, though causality remains debated (Section 3.4.2).

- The Pan American Health Organization reports that two years after implementation of the SSB tax, Mexico saw a 7% increase in the sales of untaxed beverages (PAHO, 2015). Note that this includes beverages other than ASBs, like sparkling mineral water, plain water, juices with no added sugars, and milk with no added sugar.
- In a meta-analysis conducted by Russell et al., 2020 (n=13 studies), six of the included studies do not report findings on non-nutritive sweeteners (NNS) substitution. Out of the seven that do, six show a significant increase in NNS sales/intake, although the degree is highly heterogeneous (+3.5% in

Berkeley to +40% in the UK). One shows a significant decrease in NNS sales (-60.2% in Philadelphia).

- A modeling study from the UK shows statistically significant cross-price elasticity between concentrated and non-concentrated SSBs and diet soft drinks. This cross-price elasticity is also substantial at >0.1, meaning a 20% increase in the price of SSBs leads to a >2% increase in demand for diet soft drinks (Briggs et al., 2013a).
- Teng et al., 2019 found that a 10% SSB tax resulted in a 1.9% non-significant increase in untaxed beverage consumption. They found "no statistical evidence of an increase in total untaxed beverage consumption (1.9% increase, 95% CI: −2.1% to 6.1%, n = 6 studies/4 jurisdictions) nor for water (2.9% increase, CI: −6.2% to 12.7%, n = 6/4), juice (2.0% decline, CI: −10.5% to +7.2%, n = 3), milk (47.4% increase, CI: −35.5% to +237.1%, n = 2), or diet/zero and light beverage (4.5% increase, CI:−12.7% to +25.1%, n = 2)." However, there were "significant increases in untaxed beverage consumption in three of the four jurisdictions (Berkeley, Mexico, and other United States), with only the combined Chile studies showing a non-significant decrease".
- A before-and-after study in South Africa found that there was an increase in consumption of untaxed beverages following SSB taxation[10], but that water accounted for the majority (52%) of the pre-post difference in the volume consumed (Essman et al., 2021)
- A difference-in-difference evaluation of monthly purchase data finds that the SSB tax in Catalonia led to "reduced [consumption of] high sugared taxed and untaxed milkshakes and increased [consumption of] low sugar milkshakes (by 10%). They have also increased the quantity of untaxed low-sugar colas purchased by 1.6%" (Fichera et al., 2021)

On the other hand, a meta-analysis of 62 studies (Andreyeva et al., 2022) finds no evidence of substitution to untaxed beverages. Note that the authors report extreme heterogeneity in their findings (I^2 = 98%). Most studies actually find a modest *increase* in consumption of untaxed beverages, and only a couple of the

[10] "The intake of sugar, calories, and volume of untaxed beverages increased by 5.3 g (36%), 30 kcal (29%), and 339 ml (58%) per capita per day, respectively." (Essman et al., 2021)

studies find an outsized reduction, leading the effect to be statistically insignificant (Andreyeva et al., 2022, p. 38).

Overall, it is unclear what proportion of the substitution is to artificially sweetened beverages. Studies often report substitution to "untaxed beverages," which can include drinking water. For example, in the case of Berkeley, a very high proportion of substitution was made to drinking water (Falbe et al., 2016). Therefore, while we are confident that substitution does occur, we are less confident that the reduction in SSB consumption is directly offset by ASBs.

3.3.3 SSB taxation leading to geographic spillovers

SSB taxation may lead some consumers to seek untaxed SSBs from outside their region, which would reduce the overall impact of the tax.

Andreyeva et al. (2022) identified that cross-border shopping was a major finding in most studies of local-level taxes. As an example of such cross-border shopping, Roberto et al. (2019) assessed the impact of Philadelphia's SSB tax, and found that SSB sales in the zip codes surrounding the city increased by 308.2 million ounces—offsetting the decrease in Philadelphia's SSB sales by 24.4%[11]. While this points to local state, county, or district-level SSB taxes being less effective, we believe that even national-level SSB taxes could suffer from geographical spillovers to some extent. As one possible scenario, it is plausible that certain constituencies/districts are systematically poor at tax enforcement, leading consumers to purchase SSBs from there. In addition, informal markets that illegally sell untaxed SSBs can emerge. For example, the Ghanaian government recently conducted raids into such informal setups, which sold untaxed SSBs and energy drinks.

[11] "Total volume sales of taxed beverages in Philadelphia decreased by 1.3 billion ounces (from 2.475 billion to 1.214 billion) or by 51.0% after tax implementation. Volume sales in the Pennsylvania border zip codes, however, increased by 308.2 million ounces (from 713.1 million to 1.021 billion), offsetting the decrease in Philadelphia's volume sales by 24.4%." (Roberto et al., 2019)

3.4 Evidence on the health impacts of reduced SSB consumption

3.4.1 Effects of SSB consumption on health outcomes

A systematic review by the World Bank from 2020 finds major expert consensus projecting significant positive health effects of SSB taxes across eight countries. Table 5 summarizes their projections of reduced SSB consumption and the corresponding impacts on health.

Table 5: World Bank summary of expert projections of SSB taxes' impact in eight countries (World Bank, 2020a)

Country	Tax scenarios and predicted outcomes
United Kingdom	Briggs et al. (2013a): 20% tax on SSBs predicted to: • Reduce obesity prevalence by 1.3% (180,000 people), with the greatest reduction in young people and no significant difference between income groups. A 10% tax is predicted to have half the impact: a 0.6% reduction in obesity prevalence.
United States	Finkelstein et al. (2010): 20% and 40% taxes on SSBs predicted to: • Reduce SSB consumption by 7 and 12.4 kcal per day per person, respectively. • Result in mean weight losses of 0.32 (0.09) and 0.59 (0.16) kg per year per person, respectively, with the greatest weight reductions in middle-income households • Lead to 60% greater weight reductions when covering all SSBs, compared to carbonates only; a 40% tax would generate US$2.5 billion in tax revenue. Andreyeva, Chaloupka, & Brownell (2011): Nationwide US¢1 per ounce (approximately 10%) tax on SSBs predicted to: • Reduce annual per capita SSB consumption by 24% • Generate US$79 billion tax revenue over 5 years Wang et al. (2012): Nationwide US¢1 per ounce (approximately 10%) tax on SSBs predicted to: • Reduce consumption by 15% among adults aged 25-64 • Prevent 2.4 million diabetes person-years over 10 years, 95,000 CHD events, 8,000 strokes, and 26,000 premature deaths • Generate US$17 billion in health care cost savings over 10 years • Raise US$13 billion in annual tax revenue Long et al. (2015): Nationwide US¢1 per ounce (approximately 10%) tax on SSBs predicted to: • Reduce SSB consumption by 20% • Reduce mean BMI by 0.16 among young people and 0.08 among

	adults in the second year • Avert 101,000 DALYs over 10 years • Gain 871,000 QALYs over 10 years • Generate US$23.6 billion in health care cost savings over 10 years • Raise US$12.5 billion in tax revenue over 10 years Wilde et al. (2019): Nationwide US¢1 per ounce (approximately 10%) tax on SSBs predicted to: • Avert 4,494 lifetime myocardial infarction events and 1,540 lifetime total IHD deaths per million adults • Gain 3.4 million lifetime QALYs • Generate US$45 billion lifetime health care cost savings • Generate cost savings after just one year of implementation
Australia	Veerman et al.(2016): 20% price increase on SSBs predicted to: • Reduce average daily SSB consumption by 12.6% • Reduce obesity prevalence by 2.7% in men and 1.2% in women, with larger BMI reductions in younger age groups • Avert 800 new cases of diabetes each year • Reduce the prevalence of cases of CHD by 4,400, cases of incident stroke by 1,100, and avert 1,606 deaths after 25 years • Gain 112,000 HALYs for men, 56,000 for women • Generate health care cost savings of AUD 609 million over the lifetime of the population • Raise AUD 400 million in tax revenue annually Lal et al. (2017): 20% tax on SSBs predicted to: • Gain 175,300 HALYs, with the highest gains in lower-SES groups • Generate health care cost savings of AUD 1,733 million over the lifetime of the population. The highest out-of-pocket cost savings (as % household expenditure) were seen in the most disadvantaged groups • Raise AUD 642.9 million in tax revenue annually
India	Basu et al. (2014): 20% tax on SSBs predicted to: • Reduce overweight and obesity prevalence by 3% and type 2 diabetes incidence by 1.6%, with the largest relative effect expected among young rural men
Indonesia	Bourke & Veerman (2018): US¢30 per liter tax on SSBs predicted to: • Benefit higher-income quintiles significantly more than lower-income quintiles • Reduce cases of overweight and obesity by 15,000 for women and 12,000 for men in the lowest-income quintile and by 417,000 women and 415,000 for men in the highest-income quintile • Avert 63,000 cases of diabetes in the lowest quintile and 1,487,000 in the highest over 25 years. Similar magnitudes observed for stroke and ischemic heart disease (IHD) • Raise US$920 million in revenue in the first year and US$27.3 billion over 25 years
Ireland	Briggs et al. (2013b): 10% tax on SSBs predicted to: • Reduce adult obesity prevalence by 1.3% (9,900 adults)–similar reductions for men and women and similar for each income group, but greater in young adults than older adults (for example, 2.9% in adults aged 18-24 years vs. 0.6% in adults aged 65 years and older)

Philippines	Saxena et al. (2018): PHP 6 per liter (approximately 13%) tax predicted to: • Avert 5,913 deaths related to diabetes, 10,339 deaths from IHD, and 7,950 deaths from stroke over 20 years • Avert more deaths in higher-income than lower-income quintiles • Generate US$627 million (PHP 31.6 billion) health care cost savings over 20 years • Raise US$813 million (PHP 41 billion) in revenue per year
South Africa	Manyema et al. (2014): 20% tax on SSBs predicted to: • Reduce obesity prevalence by 3.8% in men and 2.4% in women Saxena et al. (2019): 10% tax on SSBs predicted to: • Avert 8,000 type 2 diabetes-related premature deaths over 20 years, with most deaths averted among the third and fourth income quintiles • Generate ZAR 2 billion (US$140 million) subsidized health care cost savings over 20 years • Raise ZAR 6 billion (US$450 million) in tax revenue annually

Briefly sense-checking these projections, we find strong evidence that high levels of SSB consumption is strongly linked with several health risks and strong evidence for a significant relationship between reducing SSB consumption and improved health.

In this section, we consider the prominent risks—obesity, type 2 diabetes, cardiovascular disease, and oral health—which have become major global public health issues.

3.4.1.1 Effects of SSB consumption on obesity

The main mechanism through which sugar-sweetened beverages lead to poor health outcomes is their contribution to weight gain, which has major knock-on effects on health. A systematic review by Malik & Hu (2022) found that SSBs primarily contribute to chronic disease risk through weight gain, citing three other meta-analyses that found significant positive associations:

- Te Morenga et al. (2013)'s meta-analysis of five cohort studies found that children consuming about one daily serving of SSBs at baseline were 1.55 times more likely to be overweight or obese than children consuming none or very little.
- Malik et al. (2013)'s meta-analysis of 32 studies found that each additional serving per day increment in SSB consumption was associated with a

weight gain of 0.12 kg (0.26 lb) in 1 year among adults and an increase in BMI of 0.05 kg/m2 in 1 year among children.

- Vartanian et al. (2006) summarized the results of 88 studies using a variety of research designs, finding that soft drink consumption was associated with body weight with a correlation coefficient of r = 0.05 in cross-sectional studies, r =0.09 in longitudinal studies, and r = 0.24 in experimental studies (all highly statistically significant).

Moreover, Bleich & Vercammen (2018) finds 18 cross-sectional studies and a further 18 longitudinal studies reporting a positive association between SSB consumption and overweight/obesity risk.

Itria et. al (2021)'s meta-analysis of 16 studies, which mainly focuses on MICs and HICs, found that price elasticities range between −0·8 to −1·29 for SSBs. For a 10% and 20% tax, they find that obesity reduces between 2.54 and 5.9% respectively in LMICs/MICs, and between 0.99 to 2.7% respectively in HICs. SSBs thus contribute to the global health burden of obesity, with over 2.1 billion people (nearly 30% of the global population) being overweight or obese as of 2015.

Significant evidence points to this relationship between SSB consumption and obesity being causal, rather than simply correlational. A meta-analysis of seven randomized controlled trials (RCTs) by Kaiser et al. (2013) points to this association being due to additional calories from SSB intake not being compensated for by a reduction in other sources of calories at subsequent meals, as SSB calories are not as satiating. The aforementioned systematic review by Malik & Hu (2022) also provides additional causal pathways for this association, which have less conclusive but still significant evidence:

- Fructose in SSBs is thought to potentially promote weight gain through inducing reductions in resting energy expenditure and through the induction of leptin resistance.
- SSB consumption can lead to sugar addiction, which creates a positive feedback loop that induces even more SSB consumption.

- Consumption of SSBs might also promote weight gain through adverse effects on metabolism, through their ability to induce rapid spikes in blood levels of glucose and insulin.

Being overweight or obese is, in turn, strongly associated with a number of non-communicable diseases (NCDs). Using Global Burden of Disease (GBD) study data from 2017, Dai et al. (2020) found that "the 6 leading GBD level 3 causes of high-BMI-related DALYs were ischemic heart disease, stroke, diabetes mellitus, chronic kidney disease, hypertensive heart disease, and low back pain." In particular, excess weight is the leading risk factor for diabetes mellitus type 2 (DMT2). The GBD 2015 Obesity Collaborators (2017), in turn, estimates that high BMI contributed to 4 million deaths and 120 million disability-adjusted life-years (DALYs) in 2015.

Separately, the aforementioned systematic review by Malik & Hu (2022) also finds **additional detrimental effects of high SSB consumption, independent of their leading to obesity**, "through their contribution to a high glycaemic load diet, SSBs can promote insulin resistance, exacerbate inflammatory biomarkers, and have been associated with increased risk of diabetes mellitus type 2 and coronary heart disease. Habitual consumption of diets with a high glycaemic load might also influence cancer risk via hyperinsulinaemia and activation of the insulin-like growth factor axis".

3.4.1.2 Effects of SSB consumption on diabetes

SSB consumption is also associated with a higher risk of diabetes mellitus type 2 (DMT2), independent of the higher risk induced by obesity. Quantifying the overall impact of SSB consumption on DMT2, CEARCH's Deep Report on DMT2 triangulates Global Burden of Disease (GBD) data, expert consultations (including commissioning an independent epidemiologist), and International Diabetes Federation data to estimate that approximately 90 million DALYs are associated with DMT2 as of 2024—4.5% of which are attributable to SSB consumption (Singh et al., 2015, quoted in CEARCH's report). A recent Global Burden of Disease overview by Lara-Castor et al. (2025) corroborates these findings—they report that in 2020, 2.2 million new cases of T2D were attributable to SSB consumption, representing 9.8% of all incident cases.

Inamura et al. (2015)'s meta-analysis of 17 prospective cohort studies found that an increase in SSB consumption of one serving (250 mL) per day was associated with an 18% higher incidence of DMT2. Even after adjusting for adiposity (i.e., the confounding effect of weight gain increasing the risk of DMT2), the meta-analysis still found a 13% higher incidence of DMT2 per serving per day.

A meta-analysis conducted by Meng et al. (2021) synthesized evidence from 17 studies focused on diabetes with roughly ~650,000 participants from 9 countries. They found that each additional SSB serving per day caused a 27% increase in the risk of type 2 diabetes.

A modeling study which projects the impact of an SSB tax on diabetes prevalence in Mexico estimates that a 20% reduction in SSB consumption with 39% calorie compensation could decrease diabetes incidence by 9.5% (Sánchez-Romero et al., 2016).

3.4.1.3 Effects of SSB consumption on cardiovascular disease (CVD)

SSB consumption can lead to significantly higher risks of cardiovascular disease. The overall incidence of CVD mortality attributable to SSB consumption was 1.2 million in 2020, making up 3.1% of all incident cases (Lara-Castor et al., 2025). The GBD database shows that the total DALYs accruing from CVDs attributable to SSB consumption grew 8.4% from 2020 to 2023 (GBD, 2023).

While estimates vary, it seems highly likely that SSB consumption increases the risk of CVD mortality by >5%. Meng et. al (2021) finds that each additional serving of SSB per day causes a 9% increase in the risk of CVDs. Another meta-analysis by Chen et al. (2024) finds that the risks of CVD mortality are increased by 26% due to ASB consumption, which they find is 4-6% lower than the risks caused by SSB consumption. Another meta-analysis, which combines data from 13 cohort studies (~900,000 participants), finds that SSB consumption is associated with an 8% increase in risk from CVD mortality and 8% increase in all-cause mortality (Zhang et al. 2021). Within CVDs, the most common disease associated with SSB consumption seems to be Ischemic Heart Disease (IHD).

3.4.1.4 Effects of SSB consumption on oral health

Additionally, SSB consumption has major negative impacts on oral health. A meta-analysis by Valenzuela et al. (2020) found that higher SSB consumption was significantly positively associated with higher risks of both dental caries and erosion.[12] This is supported by Hajishafiee et al. (2023)'s meta-analysis, which projects that an average reduction of free sugar intake of around 4 g/day would reduce the number of teeth with caries by 0.03 in adults and caries occurrence by 2.8% in children, over a 10-year period.[13]

3.4.2 Effects of ASB consumption on health outcomes

The evidence is much more uncertain and of much lower quality for ASBs, but it seems that high levels of ASB consumption could have several health risks. In this section, we synthesize findings from important literature that studies the health impacts of ASBs on obesity, CVDs, T2D, and all-cause mortality.

Several meta-analyses report increased CVD, diabetes, and all-cause mortality risks due to ASB consumption.

- An umbrella review of 11 meta-analyses conducted by Diaz et al. (2023) found a 19% increased risk for all-cause mortality, a 55% increase in risk for obesity, a 39% increase in risk for diabetes, a 13% increase in risk for hypertension, and a 23% increase in CVD risk.
- Zhang et al. (2021) find that for different doses (servings/day), the health harms look different—hazard ratios (HRs) across different doses (0, 1, 1.5, 2, and 2.5 servings/day) were 1.00, 1.01, 1.04, 1.08, and 1.13 for all-cause mortality and 1.00, 1.01, 1.07, 1.15, and 1.25 for CVD mortality.
- One systematic review of 11 prospective cohort studies notes that intake of ASBs was associated with 26% higher risks for CVDs and 13% for all-cause mortality between the high-intake group and low-intake group (Chen et al. 2024).

[12] Specifically, comparing moderate-to-low consumption, there was significantly increased risk of both caries (odds ratio (OR) of 1.57) and erosion (OR of 1.43). Comparing high-to-moderate consumption, there was further increased risk of caries (OR = 1.53) and erosion (OR = 3.09). Refer to the source for more specific statistical figures.
[13] Note that a single can of Coca Cola contains 39 grams of sugar, so reducing SSB consumption by a can a day is expected to reduce the number of teeth with caries (in adults) by 0.3, on average.

- Queiroz et al. (2025)'s meta-analysis of 12 prospective cohort studies find "One or more daily doses of Artificially sweetened beverages was significantly associated with a higher risk of all-cause mortality (HR 1.14; 95% 1.03 to 1.26; p < 0.01;), cardiovascular mortality (HR 1.29; 95% 1.1 to 1.53; p < 0.01), and stroke (HR 1.15; 95% 1.01 to 1.32; p = 0.04;)"
- A meta-analysis of 34 prospective cohort studies evaluating the relationship between SSBs and ASBs consumption and the risk of diabetes, CVD, and all-cause mortality found that SSBs are more harmful than ASBs, but ASBs still had high risks: "With each additional SSB and ASB serving per day, the risk increased by 27% (RR: 1.27, 95%CI: 1.15-1.41, I^2 = 80.8%) and 13% (95%CI: 1.03-1.25, I^2 = 78.7%) for T2D, 9% (RR: 1.09, 95%CI: 1.07-1.12, I^2 = 42.7%) and 8% (RR: 1.08, 95%CI: 1.04-1.11, I^2 = 45.5%) for CVDs, and 10% (RR: 1.10, 95%CI: 0.97-1.26, I^2 = 86.3%) and 7% (RR: 1.07, 95%CI: 0.91-1.25, I^2 = 76.9%) for all-cause mortality" (Meng et al., 2021)
- Another meta-analysis of 39 prospective cohort studies found similar results: "For each 250-mL/day increase in SSB and ASB intake, the risk increased by 12% (RR = 1.12, 95% CI 1.05–1.19, I^2 = 67.7%) and 21% (RR = 1.21, 95% CI 1.09–1.35, I^2 = 47.2%) for obesity, 19% (RR = 1.19, 95% CI 1.13–1.25, I^2 = 82.4%) and 15% (RR = 1.15, 95% CI 1.05–1.26, I^2 = 92.6%) for T2DM, and 4% (RR = 1.04, 95% CI 1.01–1.07, I^2 = 58.0%) and 6% (RR = 1.06, 95% CI 1.02–1.10, I^2 = 80.8%) for all-cause mortality." (Qin et al., 2020)
- Ruanpeng et al. (2017)'s meta-analysis found "the pooled RR of obesity in patients consuming sugar-sweetened soda was 1.18 (95% CI, 1.10–1.27, n = 11 studies). The pooled RR of obesity in patients consuming artificially sweetened soda was 1.59 (95% CI, 1.22–2.08, n = 3 studies)."
- Another meta-analysis of 17 cohort studies evaluating the relationship between SSB and ASB consumption and the risk of diabetes found that SSBs are more harmful than ASBs when adjusting for adiposity: "Higher consumption of SSBs was associated with a greater incidence of type 2 diabetes, by 18% per one serving/day (95% CI: 9% to 28%, I^2 = 89%) and 13% (6% to 21%, I^2 = 79%) before and after adjustment for adiposity; for artificially sweetened beverages, 25% (18% to 33%, I^2 = 70%) and 8% (2%

to 15%, I^2 = 64%)" (Imamura et al., 2015). Note that the authors highlight publication bias and residual confounding for the ASB effects.

- A prospective cohort study from the UK Biobank database (133,285 participants) reported that each teaspoon increase in consumption of ASBs was associated with a 1.2% increase in CVD risk. Within CVDs, each teaspoon was linked with a 1.8% increase in Coronary Artery Disease (CAD) risk, and a 3.5% increase in Peripheral Artery Disease (PAD). Finally, the association with diabetes seems uncertain (Sun et al., 2024).
- An umbrella review of 19 meta-analyses finds an increased risk in mortality and slightly lower risk in CVD mortality from ASB consumption than SSB consumption: "ASB consumption was associated with a 10% increased risk of mortality (RR: 1.10; 95% CI: 1.07 to 1.12), including an 8% increased risk of cardiovascular disease (CVD) mortality (RR: 1.08; 95% CI: 1.05 to 1.11). SSB intake was linked to a 9% higher overall mortality risk (RR: 1.09; 95% CI: 1.07 to 1.11) and a 10% increased CVD mortality risk (RR: 1.10; 95% CI: 1.07 to 1.13)" (Jamali et al., 2025)
- Kabthymer et. al (2025) find that among Australians aged 40–69, a high intake (≥ 1 time/day) of ASBs compared to a low intake (never or <1 time/month) was associated with 38% increased risk of T2DM (IRR=1.38, 95 % CI: 1.18–1.61).
- Yang et al. (2022) find that there was "a higher risk of total CVD associated with ≥1 serving of SSB intake per day (HR = 1.29 [1.17, 1.42]) [...] Similarly, ASB intake was associated with an increased risk of CVD (1.14 [1.03, 1.26])."
- However, one longitudinal study from Brazil (~12,884 participants) found no significant association between ASB consumption and T2D risks for overweight or obese people, and a 15% increase in risks for healthy individuals (BMI < 25) (Yarmolinksky et al., 2016).
- Ding et al., (2024) also find no association between ASB consumption and mortality and the incidence of type 2 diabetes based on their meta-analysis of 15 studies.

Two important caveats: Firstly, most meta-analyses cited here report high levels of heterogeneity for their findings (usually with I^2 scores > 50%). The health outcomes of ASBs remain a topic of extensive debate within the literature, with

many studies finding polar opposite results and effect sizes having very wide intervals. Moreover, the evidence base is generally quite weak, given that most analyses are based only on cohort studies, not intervention studies (though this is the case for some of our SSB findings, too).

Secondly, it is unclear which artificial sweeteners cause the most harm. ASBs usually use some combination of sweeteners like sucralose, saccharin, acesulfame potassium, aspartame, etc. Two things are unclear: i) which of these cause the most health harms, and ii) which sweetener(s) are most used in the reformulation of ASBs (or "diet" versions of beverages). It is entirely possible (but very unlikely) that the studies used by the aforementioned meta-analyses rely heavily on specific sweeteners that current ASBs do not contain (which happen to be harmful), and thus the findings aren't generalizable to all future ASBs.

Finally, while the health harms are understudied, one common finding seems to be that they increase non-linearly with ASB consumption. Zhang et al. (2021) find that the association between ASB intake and CVD and all-cause mortality is "J-shaped" where risk is ~0% at 1 serving/day, but grew substantially with subsequent servings. Chen et al. (2024) find that while the association between ASB consumption and CVD risks is linear, all-cause mortality risks grow non-linearly. If this were true, then the total offset in health gains could be minimal for consumers who substitute away from SSBs to ASBs and restrict their consumption to less than or equal to 1 serving per day. However, we still think that non-linear effects are at roughly even odds to be true, as the evidence is very sparse.

With this in mind, we think that it is important to note that we still expect an SSB tax to be net-beneficial. Based on current evidence, it is clear that SSBs are more harmful than ASBs. Therefore, substitution from SSBs to ASBs is still net-positive, even if we are concerned about the health impacts of ASBs. Even so, we think that there could be some disbenefit due to increased ASB consumption, which we will attempt to capture in our CEA.

3.5 Evidence on broader impacts and spillover effects

3.5.1 Regressivity

SSB taxation notably has issues with regressivity, but we believe that these externalities are offset by the corresponding positive externality of the lowest-income groups benefiting the most from the tax. The most common counterargument against SSB taxation is its significant regressivity, i.e., disproportionately having negative impacts on the lowest-income groups of society. However, expert consensus seems to be that the significant health benefits of SSB taxes offset these externalities, since the health burden of SSB consumption also disproportionately affects the poor. Specifically, a literature review by the World Bank (2020b) acknowledges that the tax burden falls disproportionately on lower income groups, but that their higher responsiveness to price changes means that they are expected to reduce their consumption the most and that "the greatest health benefits of SSB taxes are expected to be accrued by low-income consumers who experience disproportionately greater health and economic burdens associated with obesity and diet related NCDs."

Admittedly, the reliability of this claim is somewhat lowered by its citing of the World Bank's own 2019 cost-benefit analysis of an SSB tax in Kazakhstan as a central example. Further sense-checking this claim, however, we think it is probably true (55-80% certainty), given that similarly comparatively large decreases in SSB consumption were evident among households at the poorest socioeconomic level (Colchero et al., 2017). Moreover, the World Bank study cites two studies to further point out that tax revenue can be reinvested towards health initiatives for lower-income groups, mitigating regressivity issues (World Bank, 2020b).

CEARCH's expert interviews also offer similar counterarguments against SSB taxes' regressivity, while bringing up additional talking points for potential policy advocates:

One expert noted that concerns about regressivity are the most common argument raised against SSB taxes. Regressivity was significant enough of a concern that two separate experts raised it. Still, there are a lot of responses

available to the advocate: (a) if industry cares so much, why do they market so aggressively to the poorest people (e.g., the evidence in marketing research shows that the worst products are targeted at people of color in the US); (b) diseases like obesity, cancer and diabetes are all regressive diseases which affect the poorest people the most, and it is they who stand to benefit the most from a reduction in consumption, even if this is paternalistic; and (c) you can use the revenue to help poor people disproportionately, so even if the tax is regressive, its use is progressive.

In terms of preventing negative externalities, the Rudd Centre for Food Policy & Obesity has a policy brief detailing how to best ensure equity within an SSB tax, as well as recommendations on how the revenues can be reinvested to best ensure equity.

3.5.2 Reduced freedom of choice

Reduced freedom of choice is another commonly raised negative externality of SSB taxation, but as with our previously recommended tax-focused charities, we believe that the significant health benefits outweigh this negative externality. As explained in our deep-dive report on alcohol regulations (Ladak, 2020), we believe that the SSB industry is rife with market failures caused by issues such as misinformation about the harmful impacts of SSBs or cognitive biases resulting in people making welfare-reducing decisions. AIM has also previously recommended tobacco taxation (Basnak & Cox, 2022) and salt intake reduction (Fairless, 2024), both of which have a similar tradeoff of paternalism/reduced freedom of choice versus outsized health benefits.

3.5.3 Substitution effects

It is highly probable that consumers will switch to other potentially harmful substances in response to an SSB tax increasing the prices of SSBs. We have already discussed the substitution effect we are most concerned about—substitution to artificially sweetened beverages (ASBs)—at length in Section 3.4.2. Other harmful substitutions include substitution to alcohol or other

sugary products (coffee with added sugar, sweetened yogurt, etc.) or other high-calorie, low-nutrient foods.

- CEARCH quotes Quimbach et al. (2017)'s study on the cross-price-elasticity of SSBs and alcohol to assert that a significant number of consumers will switch to consuming more alcohol. They think that this could reduce cost-effectiveness of SSB taxation by as much as 30%.
- Harding & Lovenheim (2017) report that although a 20% soda tax causes a 10% decrease in SSB consumption among US consumers, the total reduction in calorie consumption is just 4.8%. However, a 20% *sugar* tax decreases total calorie consumption by ~18%, indicating that in the former case, consumers switch to other sugary products that are untaxed.
- HICs usually have a wide range of other sugary products that might compensate for SSB consumption (Starbucks coffee, yoghurt, etc.)

3.5.5 Increased tax revenue

In many cases, SSB tax revenues are specifically earmarked for community health promotion or educational programs, which further improve health and wellbeing (Hagenaars et al., 2017).

4 Expert views

We reached out to four experts across academia and non-profits. Having received no responses, this section outlines the findings from conversations that CEARCH had with three academic and five non-profit experts for its deep-dive report on type 2 diabetes.

The findings from these conversations have influenced our decision-making across the reporting. This section summarizes the key findings from the consultations not mentioned elsewhere.

4.1 Insights from public health academics

The global burden of diabetes

Experts believed that the global burden of diabetes is higher than the 2021 GBD estimates and is on an upward trajectory. Note that in our CEA we use 2023 GBD estimates, which we think are more accurate than the 2021 estimates. The earlier figures were adjusted for COVID-19 in a way that likely led to underestimation of the true disease burden.

- One expert noted that the International Diabetes Federation (IDF) estimates there are around 540 million diabetic patients globally, a figure projected to rise to 800 million by 2045.
- Along with population growth and aging (the pancreas, which produces insulin through the beta cells, is exhausted with age), several experts characterized the problem in terms of the food environment—increasing portion size, increasing availability/affordability of processed food, and the food industry having the ability to manufacture food that is highly pleasurable and encourages overconsumption.
- The GBD relies on fasting glucose measurements, which may underestimate disease burden compared to more sensitive tests such as the oral glucose tolerance test. An expert commented that if fasting blood glucose is used, a

third of the people who would have been detected by oral glucose tolerance would not be detected.
    - Note that although we consider the 2023 GBD estimates more accurate than the 2021 estimates, they still rely on fasting glucose measures and may therefore still be an underestimate.

Effective solutions for reducing disease burden of type 2 diabetes

Experts broadly agreed that prevention is more favorable than treatment, and that population-wide policy interventions such as SSB taxes are likely the most effective approach.

- While views varied on the magnitude of the effect, experts were generally positive about the efficacy of SSB taxes, citing the successful case of Mexico.
- Multiple experts thought that taxation leads to reformulation. One expert noted that in the case of South Africa, manufacturers reduced the sugar content added to their beverages. Another expert claimed that it is "easy" for companies to reformulate since it is the same production chain.
- Experts also expressed interest in related policy approaches, including taxes on unhealthy foods, mandatory reformulation, clearer food labeling, and restrictions on the marketing of unhealthy products, especially those targeting children.

Likelihood of convincing governments to implement SSB taxes

Experts generally agreed that advocating for SSB taxes is challenging, and that industry influence is difficult to overcome. One expert noted, however, that once an SSB tax is implemented, the risk of repeal is relatively low.

Experts also discussed the main arguments raised for and against SSB taxation.

- Arguments in favor:
    - Revenue generation is likely the most persuasive argument for convincing ministries in the government.
- Arguments against:

- Experts confirmed that concerns about regressivity are the most commonly raised objection.
- In some LMICs, SSBs may be among the safest beverages due to limited access to safe drinking water.
- In HICs, consumers may substitute other sugary products (e.g. sweetened coffee drinks or yoghurt), potentially diluting health impacts.

4.2 Insights from non-profit experts

Neglectedness

It seems unlikely that governments would institute SSB taxes of their own accord, and not many funders seem to be interested in this space. Out of the five non-profit experts, three public health advocates (working in Global, EU, and American contexts) were pessimistic about governments instituting SSB taxation without external pressure. The other two (from Nigeria and Mexico) were uncertain.

Except for the Mexican non-profit expert, there was a consensus amongst the other four that funding is scarce within the diabetes/non-communicable disease (NCD) space.

Chances of convincing governments to implement SSB taxes

There is a near-consensus that i) we should be fairly strongly pessimistic about our chances of influencing SSB taxation, but that ii) once passed, the SSB tax is very unlikely to be repealed. Experts from the EU and the US stated industry pushback and a lack of public awareness of the harms of SSBs (as opposed to tobacco, which would be much more feasible to oppose) as barriers to progress. The expert from the Global non-profit also claimed that the food and beverage industry usually has stronger ties with governments compared to the alcohol or tobacco industry.

Across the three experts who provided numerical estimates, campaigns were expected to take between 1.5 and 5 years to succeed.

5 Existing activity, funding, and geographic assessment

This section outlines where similar work is already underway, reviews the funding landscape, and assesses where a new organization could add value, based on disease burden and tractability.

5.1 Existing activity and funding

Actors delivering this intervention

For our stakeholder mapping, we rely on World Obesity's list of civil society organizations working on SSB taxes. We think that the most relevant organizations from this list are the Global Health Advocacy Incubator and Vital Strategies. A new organization should likely avoid working in countries where they are active to avoid duplication.

Table 6: Actors working on SSB taxation

Organization	MANGO/ FoNGO[14]	Scale/coverage	Where they work
Global Health Advocacy Incubator	MANGO	"GHAI works with civil society organizations to promote and protect mandatory policies that reduce the consumption of ultra-processed products. We support advocacy efforts to: • Enact taxes on sugary drinks and unhealthy foods. • Implement mandatory front-of-package warning labels to help consumers identify unhealthy food.	Argentina, Bangladesh, Barbados, Botswana, Brazil, China, Colombia, Costa Rica, El Salvador, Ethiopia, Gambia, Ghana, Guatemala, India, Indonesia, Jamaica, Kazakhstan, Kenya, Nigeria, St. Kitts and Nevis, Pakistan, Philippines, Rwanda, South Africa, Tanzania, Uganda, Vietnam, and Zambia.

[14] Multi-armed NGO (MANGO) and Focused NGO (FoNGO). See Chapter 8 of the World Happiness Report to learn more about this distinction (Plant et al., 2025).

		• Ban marketing and availability of unhealthy food and beverages in schools to ensure healthy food environments. • Restrict marketing of unhealthy food and beverages. • Eliminate industrially produced trans fatty acids from the food supply. • Regulate sodium content in manufactured food. To date, we have supported the passage of 22 national food and nutrition policies in 15 countries."	
Vital Strategies	MANGO	Vital Strategies supports partners to drive public and policymaker support for high-impact policies aimed at creating a healthier food environment. Specifically, it assists in research, advocacy consultation, and implementing mass media campaigns. Its Technical Intervention Package includes taxation on sugary drinks and junk food, clear front-of-package nutrition labeling, and restrictions on marketing unhealthy food.	Barbados, Brazil, Colombia, Jamaica, and South Africa
National Action on Sugar Reduction (NASR)	FoNGO	A coalition advocating for health policies to combat the consumption of Sugar-Sweetened Beverages (SSB) in Nigeria.	Nigeria
"A4H" – Advocating for Health	FoNGO	Using advocacy and scholar activism (often understood as deliberate effort toward change-making through scholarly activities such as research, expository, or explanative writing/communication), this project will create a favorable environment and stakeholder buy-in for food-related fiscal policies (e.g., SSB tax) in	Ghana

		Ghana.	
Various organizations in Indonesia (Putri et al., 2023)	FoNGO	"Five actors leading the discussion were MoF, GAPMMI, Center of Reform on Economics (CORE) Indonesia, Center for Indonesia's Strategic Development Initiatives (CISDI), and MoH."	Indonesia
International Diabetes Federation (IDF)	MANGO	The International Diabetes Federation (IDF) is an umbrella organization of over 240 national diabetes associations in 168 countries and territories. IDF's mission is to promote diabetes care, prevention, and a cure worldwide. IDF is engaged in action to tackle diabetes from the local to the global level – from programmes at the community level to worldwide awareness and advocacy initiatives.	Global (160+ countries)
Obesity Health Alliance (OHA)	MANGO	Formed in 2015, OHA supports policy-making to tackle the social, economic, and cultural factors that contribute to obesity and inequalities in health caused by obesity. It is a coalition of over 30 charities, medical royal colleges, and campaign groups who have joined together to fight obesity.	United Kingdom
Action on Sugar	MANGO	Action on Sugar was launched in 2014 by Consensus Action on Salt and Health—now Action on Salt—to inform and influence sugar reduction policies in the UK, which can also be replicated worldwide, to support the population in consuming no more than the recommended five percent of total energy from free sugars.	United Kingdom
Sustain	MANGO	As a registered charity, Sustain advocates food and agriculture policies and practices that enhance the health and welfare of people	United Kingdom

		and animals, improve the working and living environment, enrich society and culture, and promote equity. It represents around 100 national public interest organizations working at international, national, regional, and local levels.	
Food Active	MANGO	A healthy weight program in the North West of England which does policy work on SSBs alongside other campaigns.	United Kingdom
World Cancer Research Fund	MANGO	As a registered Charity Commission in England and Wales, the World Cancer Research Fund is a leading cancer prevention charity. We fund global research into the links between diet, weight, physical activity, and cancer.	Focuses primarily on the United Kingdom when it comes to policy advocacy. Some limited global advocacy—"Our official relations status with the World Health Organization means we can influence global policy as a respected, trusted authority on cancer prevention."
Food for Health Alliance (formerly known as the Obesity Policy Coalition)	MANGO	The Obesity Policy Coalition was formed in 2006 with the aim of influencing change in policy and regulation to support obesity prevention, particularly in Australian children. The broad objectives of the Obesity Policy Coalition are to identify, analyse, and advocate for evidence-based policy and regulatory initiatives to reduce overweight and obesity, particularly in children, at a local, state, and national level.	Australia
Rudd Centre for Food Policy & Obesity	MANGO	Founded in 2005, the Rudd Centre for Food Policy & Obesity is a non-profit research and public policy organization devoted to promoting solutions to childhood obesity, poor diet, and weight bias through research and policy.	United States Focuses more on research than advocacy

National Coalition on Health Care	MANGO	Created in 1990, the National Coalition on Health Care was formed to help achieve comprehensive health system change. It is a growing coalition representing more than 80 participating organizations. Today, the Coalition works to advance change across the health system through a multi-prolonged program of policy development, consensus building, and advocacy.	United States
Alianza por la salud alimentaria	MANGO	A coalition of civil associations, social organizations, and professionals concerned about the overweight and obesity epidemic in Mexico, which affects the majority of the population, as well as malnutrition, which impacts a high percentage of the poorest families, and the risks that these realities present for the population and for the health and financial viability of the country.	Mexico
Bloomberg	MANGO	Bloomberg Philanthropies focuses on five key areas for creating lasting change. It identifies governments and top research and advocacy organizations that have demonstrated commitment to improving the food environment and augments their efforts through the provision of resources and technical assistance.	Mexico, United States SSB tax advocacy is part of an extremely expansive portfolio; Bloomberg Philanthropies' public health work alone includes at least 12 other cause areas.

Funding

We are unsure whether there is any funding appetite for a new charity advocating for SSB taxation within the AIM network[15]. To date, there have been no grants in this area or in similar fields such as obesity, diabetes, or CVD more broadly.

Outside of the AIM network, the biggest funders working in these health areas include[16]:

- Novo Nordisk Foundation - $1.68B over 10 years → ~$160M annually
- Robert Wood Johnson Foundation - $1B over 18 years → ~$55.5M annually
- World Diabetes Foundation - $0.22B over 21 years → ~$10.5M annually
- Bloomberg - $435 million on their Food Policy Program over 13 years → ~$33.5M annually

These figures likely include research funding, not just funding directed toward NGOs or advocacy organizations. Based on this, we estimate that total philanthropic spending on obesity, diabetes, and CVD is roughly ~$30–$260 million per year.

Despite this, multiple experts have stressed that funding is scarce in this space, so funding could be a bottleneck for a new organization (Tan, 2023).

5.2 Geographic assessment

We conducted a preliminary geographic assessment to understand which countries should be modeled in our cost-effectiveness analysis.[17]

The overall logic for prioritizing countries was to include measures of the SSB-related health burden, neglectedness, and potential tractability in each country.

[15] GiveWell, Founders Pledge, EA Funds, Open Philanthropy, Agency Fund, Mulago, AIM Global Health Funding Circle, Schmidt Futures, and D-Prize.
[16] Note that we used ChatGPT to create this list and to estimate the annual spending of each of these organizations. We decided to exclude the British Heart Foundation from this list as it mostly seemed to fund research.
[17] We are trialing a new way of carrying out geographic assessments, focusing on fewer—more standardized—variables to order countries based on a rough prioritization. We focus more time on cost-effectiveness modeling across more countries.

Table 7 provides what we think are the top 10 candidate countries for this work.[18] This includes cost-effectiveness results. Table 8 describes the criteria used and weights assigned in our model.

Table 7: Top 10 candidate countries for a new SSB taxation charity

Country	Annual DALY burden attributable to a diet high in sugar-sweetened beverages (2023)	Cost-effectiveness ($/DALY)
Senegal	915.65	$80
Cuba	22,205.33	$90
Germany	132,627.97	$53
Trinidad and Tobago	5,858.30	$330
Japan	118,271.24	$36
Kuwait	9,672.67	$289
Jordan	7,480.10	$136
Uruguay	5,864.34	$513
Algeria	34,465.74	$32
Costa Rica	8,692.32	$294

Table 8: Criteria used and weights assigned in our geographic assessment

Criteria	Data source and manipulations	Strengths/weaknesses	Weight
Existing tax	Triangulated across lists by Obesity Evidence Hub, WASSH, and WHO GIFNA's list. We also manually added new cases we found during the evidence review, such as Ghana's 2023 SSB tax, that are yet to be updated in all three databases.	• Excludes countries that already have SSB taxes • It may still be promising to improve enforcement in these countries	Exclusion
Existing work by strong actors	See Section 5.1, which excludes countries that the Global Health Advocacy Incubator and Vital Strategies are working in	• Avoids duplication of work	Exclusion

[18] Reported as of 18 Nov 2025—-note the models are live and may be subject to tweaks or (in rare occasions) large changes that may not be reflected in the text if carried out after publication.

Fragile countries	AIM's internal list of countries that are too dangerous to work in	• Excludes countries that are too dangerous to work in	Exclusion
Small countries	AIM's internal list of countries that are too small to work in	• Maximizes impact	Exclusion
DALY burden	GBD 2023, log of DALYs attributable to a "Diet high in sugar-sweetened beverages." Capped at 2.	• Maximizes impact	40%
SSB consumption	Global Dietary Database (GDD) data on weekly intake of SSBs among adults as of 2018, in terms of servings of 8 oz/week. Capped at 2.	• Maximizes impact • May be negatively correlated with tractability, as higher consumption may suggest a larger industry and therefore a stronger counter lobby	37.5%
Regulatory enforcement	World Justice Project (2025)	• Prioritizes countries that have sufficient resources to implement new regulation	7.5%
Elite consultation	V-DEM (2025), processed by Our World in Data	• Prioritizes countries that have more consultation when deciding on policies	7.5%
Existing FOPL	A 2024 Global Overview of FOPL policies by governments of packaged foods	• Maximizes impact	7.5%

Further thoughts on geographic prioritization

One of the key limitations of this geographic assessment is the lack of a direct proxy for the strength of the lobby in a given nation. As we have seen in Norway, Denmark, and in several US states, the sugar and beverage industries can be effective at blocking policy progress. We would have liked to include this as a criterion in our model but we were unable to find a good proxy for this.

One of the key uncertainties we have with this geographic assessment is whether we should exclude high-income countries. We have currently decided to include HICs. However, CEARCH advised that high-income countries should likely be excluded because:

1. It will be more expensive to work in HICs.

2. It is more likely that these countries are better at screening and treatment than LMICs, lowering the burden per individual suffering from cardiovascular diseases.
3. It is more likely that HICs that are amenable to introducing SSB taxes will have already done so, given the rate of introduction of these policies in HICs relative to other countries.
4. Richer countries tend to be ideologically more libertarian and so may be less in favor of a taxation policy.
5. Richer countries do not need the excise tax revenue.

Our responses to these critiques (and rationale to include HICs) are as follows:

1. Although it is more expensive to work in HICs, it is not necessarily less cost-effective. According to this GBD visualizer, it is clear that ~28% of the DALYs accrued from diets high in SSB consumption are in high-income countries. Furthermore, we think it is likely that these countries require less assistance in enforcement due to higher state capacity, reducing the costs of the charity at scale. It remains unclear if HICs are equally or more cost-effective, but there is not enough evidence to exclude them solely based on costs.
2. It seems true that high-income countries seem to have less CVD burden than the rest of the world (~12.5% of total global burden, while housing ~17% of the world's population). However, the burden does not seem to be insignificant, and tax regulation in some key countries could be cost-effective.
3. There are plenty of examples of countries/states instituting SSB taxes purely motivated by health outcomes, without a fiscal necessity. SSB taxes in several cities in California and the 20% excise tax in Canada provide a few examples.

6 Cost-effectiveness analysis

Link to our model - 2025 - W - #1 SSB taxation CEA

6.1 Results

Our model estimates that an SSB tax of 20% can avert a DALY for an average of $185 across our top 10 geographic priorities. This intervention meets our cost-effectiveness bar for this round of $220/DALY averted in 6 out of the 10 countries modeled. Within our 10 selected countries, the cost-effectiveness of advocating for SSB taxation seems to be highest in Algeria ($32 per DALY averted), and lowest in Uruguay ($513 per DALY averted).

Table 9: Cost-effectiveness analysis results ($/DALY)

Average	Senegal	Cuba	Germany	Trinidad and Tobago	Japan	Kuwait	Jordan	Uruguay	Algeria	Costa Rica
$185	$80	$90	$53	$330	$36	$289	$136	$513	$32	$294

Our current cost-effectiveness analysis does not account for the optional steps in our theory of change, namely, advocating for front-of-pack labeling, and/or running mass media campaigns. This model should therefore be treated as a baseline cost-effectiveness model for taxation and enforcement assistance only, which are our two mandatory components.

Other models

CEARCH has also modeled the cost-effectiveness of advocating for an SSB tax in LMICs and found that this could be **highly cost-effective, averting a DALY for $2.91** (or 34,353 DALYs per $100,000).

Table 10: Differences between our model and CEARCH's model

Input	Our model	CEARCH's model
Health impacts modeled	Ischemic heart disease and diabetes	Diabetes and depression
Total costs	$460,246	$338,056
Total benefits	66,123 DALYs	11,183,441,798 DALYs
Probability of success	9%	9%
Tax rate	20%	20%
Expected reduction in consumption	8–13%, depending on the country modeled	12%
Duration of impact	30 years	136 years
Country modeled	Senegal, Cuba, Germany, Trinidad and Tobago, Japan, Kuwait, Jordan, Uruguay, Algeria, and Costa Rica	Average LMIC
$/DALY	185	2.91

We note that CEARCH's model is trying to do a slightly different thing than our model, as it is estimating the marginal expected value of giving to SSB tax advocacy, whereas our model estimates the impact of a new charity working in this space. We also note that CEARCH's model makes a number of assumptions and adjustments that we do not fully understand, but we think it is still useful to highlight a model that finds this intervention could be much more cost-effective than we have modeled.

The World Health Organization also recommends the following interventions as part of its "Best Buys" for tackling NCDs due to their cost-effectiveness:

- Taxation on sugar-sweetened beverages as part of fiscal policies for healthy diets in LICs and LMICs, which has an estimated cost-effectiveness of >$100 per HLY gained.
- Front-of-pack labeling as part of comprehensive nutrition labeling policies for facilitating consumers' understanding and choice of food for healthy diets in LICs and LMICs, which has an estimated cost-effectiveness of ≤$100 per HLY gained.
- Behavior change communication and mass media campaign for healthy diets (e.g., to reduce the intake of energy, free sugars, sodium and unhealthy fats, and to increase the consumption of legumes, wholegrains, fruits and vegetables) in LICs and LMICs, which has an estimated cost-effectiveness of ≤$100 per HLY gained.

6.2 Modeling choices

Costs

Most of our costing choices run on standard AIM assumptions. We model our initial and at-scale fixed costs using standardized assumptions—$145,000 in the initial year, and $280,000 at scale. We also make the standard assumption across all policy interventions that the non-profit would employ 5 locals to aid the advocacy process, uniformly adding 5 times the salary for a medium-skilled occupation in each country (using ILO data) and $10,000 in overhead costs for each hire.

Effects

We model a 20% specific excise tax rate, which we estimate will increase prices by 16.4% based on a tax pass-through rate of 82% from Andreyeva et al., 2022. To estimate the reduction in demand as a result of this price increase, we use a weighted average (weighted by n) price elasticity of -1.36 from Andreyeva et al., 2022, Itria et al., 2021, Teng et al., 2019, Afshin et al., 2017, and Escobar et al.,

2013. Based on internal and external validity adjustments and taking all of this together, we estimate that the 20% tax will decrease consumption of SSBs by ~19%.

We also adjust the reach of this intervention based on the expected enforcement rate of SSB taxes. The baseline expected enforcement rate is 30% based on the enforcement rate in Ghana (*Source: CEARCH's conversation with the Ghana Tax Authority)*. We adjust this 30% baseline based on the difference in the Regulatory Enforcement Score given to the modeled country by the World Justice Project. Then we defer to CEARCH and model that a charity focused on enforcement full-time could improve compliance by 14%. This estimate is CEARCH's best guess based on their research and conversations with experts.

We model the effects of 2 primary benefits and 1 important disbenefit of SSB taxation. We consider the DALYs averted from the reduction in ischemic heart disease and type 2 diabetes. We then consider the disbenefits of consumers substituting their SSB consumption with other harmful products.

Using the current SSB consumption per country and the expected reduction in consumption due to taxation, we can calculate the expected SSB consumption per country after intervention. Using this, we can calculate the difference in the mean relative risk for ischemic heart disease and type 2 diabetes at current SSB consumption levels and expected future SSB consumption levels based on IHME's burden of proof risk curve (IHME 2021a (Ischemic heart disease); IHME 2021b (type 2 diabetes)). Then, using the GBD 2023 data on DALY burden for ischemic heart disease and type 2 diabetes, we can calculate the DALYs averted due to the intervention.

We also model the disbenefits of substitution. We defer to CEARCH and assume that substitution could offset benefits by 30% (Tan, 2023, p. 38).

Scaling

Based on analysis by CEARCH, we assume that it takes ~3 years for this intervention to reach scale. We model a 9% probability of reaching at-scale delivery.

Sensitivity analysis and considerations

Table 11: Factors that could affect cost-effectiveness

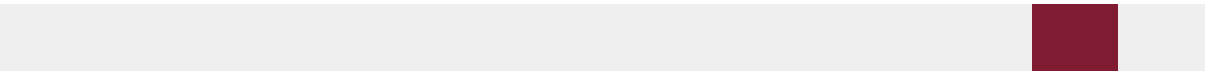
Factors that could increase cost-effectiveness	Factors that could reduce cost-effectiveness
• **Probability of instituting the SSB taxation.** We think the current CEARCH estimate of 9% could be an underestimate of the likelihood of instituting an SSB tax. • **Enforcement rate of SSB taxes.** We think that using the low enforcement rate in Ghana as a baseline could be too conservative, especially in HICs. • **Substitution offsets the benefits by <30%.** • **The pass-through rate of the tax to consumers could be 100%.** We currently model a pass-through rate of 82% based on Andreyeva et al., 2022, but it is possible to make it a requirement that all of the tax is passed on to the consumer as in Catalonia: "The Bill established the requirement of a 100% pass-through of the tax to the final consumer" (Castello & Casasnovas, 2020). • **Modeling more health effects.** In our evidence review, we also focused on CVDs more broadly (we have currently just modeled ischemic heart disease), obesity, and oral health. CEARCH's CEA also includes impacts on depression. • **Modeling income effects.** CEARCH's CEA also includes impacts on income due to increased productivity.	• **If the effects of the taxation last for less than 30 years.** • **If the tax rate that is implemented is <20%.** We have modeled a 20% tax rate as this is the optimal taxation rate according to the World Health Organization. However, many countries have implemented a tax rate that is lower than this (around 10%). A new charity does not have total control over which taxation rate is implemented by governments. • **Substitution offsets the benefits by >30%.** • **Geographic spillovers.** We have not modeled the potential that people may try to get untaxed SSBs from outside their region, which would reduce the impact of the SSB tax. • **Disbenefits from increased costs for those who do not reduce SSB consumption.**

7 Implementation

This section discusses implementation factors that we think are of relevance for both 1) deciding whether we should recommend the ideas, and 2) the entrepreneurs considering taking the idea to scale.

7.1 What operating this charity would look like

Figure 2 notes how we would characterize this proposed idea along an explore-exploit continuum.[19] We think that this intervention is on the exploit end of the spectrum, as SSB taxation has been implemented in many countries before, and the World Health Organization provides a manual on SSB tax policy.



Explore **Exploit**

Figure 2: Explore-exploit

The manual on SSB tax policy provided by the WHO outlines the following key steps that a policy advocacy organization might follow:

1. Building a case for taxing SSBs—conducting situational analyses
    a. Understanding the health and economic burdens of the country
    b. Assessing complementary interventions
    c. Examining the political environment of the country
2. Assessing the technical, administrative, and political feasibility of a tax for the country
3. Building a coalition among key stakeholders, including civil society and academia
4. Determining how to best frame the issue to garner public support
    a. Framing should also anticipate and counter opposition from the food and beverage industry

[19] Our recommendations can be characterized along a spectrum between exploration and exploitation—ideas closer to exploration require more research and design, and involve riskier bets and wider confidence intervals; ideas closer to the exploit side of things usually have narrower confidence intervals and rely more on replication/expansion of well-developed and concrete interventions.

5. Designing an appropriate tax instrument for the country's situation
6. Assisting with monitoring and enforcement after the passing of the tax
7. Countering industry lobbying to roll back the new tax

In terms of determining how to best frame the issue, qualitative research by Lwin et al. (2023) indicates that the new charity would need to be flexible in highlighting different benefits of the tax to different audiences. Specifically, based on studies of health taxes across eight LMICs, they find that no one best practice dominates when it comes to choosing between an emphasis on the health benefits of the tax, or the fiscal and economic benefits: "Researchers, advocates and policymakers may generate greater support for health taxes by developing multiple frames that resonate with different types of values rather than searching for a single strong frame that is universally applicable across contexts." Nevertheless, meta-analyses indicate that emphasizing how the revenues of the tax can be reinvested towards health initiatives tends to carry a particularly high chance of success, at least in framing the matter to the general public (Elliot et al., 2022; Hattersley et al., 2023).

Other potential strategies include those outlined in the Global Health Advocacy Incubator (GHAI)'s "path to policy change" framework—as utilized in the successful SSB tax advocacy in Ghana (Laar et al., 2023).

The World Cancer Research Fund study highlights the following key questions to be considered when designing an SSB tax, to take into account country contexts and local jurisdictions:

- What types of products should be taxed?
- What type of tax should be used?
- How high should the tax be?
- Who should the tax be levied on?
- Should it be a general or an earmarked tax?

A new charity working on this issue should fully flesh out its answers to each of these questions in order to determine the precise SSB tax it should advocate for.

7.2 Key operational factors

This section summarizes our assessment of potential concerns related to implementing this idea through a new charity.

Table 12: Implementation concerns

Factor	Level of concern
Talent	Moderate
Access to information	Low
Access to relevant stakeholders	High
Feedback loops / monitoring and evaluation	Moderate
Execution difficulty / tractability	High
Complexity of scaling	Moderate
Risk of harm	Low

Talent

We think that a team of strong generalists could have success with this ToC. Given the policy focus, founders would need to be excited about policy advocacy, which generally includes longer timelines, less obvious feedback loops, and a significant amount of networking and relationship management. Progress in this space often depends on being able to identify, access, and persuade the right decision-makers.

Our main concern relates to local context and connections. Therefore, a local founder or a strong local first hire would likely be essential to gain access to relevant networks and support effective engagement with policymakers.

The following backgrounds, skills, or profiles would likely be useful for the co-founders or early hires at this organization:

- Background in lobbying
- Language proficiency in the official language of the country they choose to advocate in, or at least one team member who does

- Established networks among the government/civil society in their chosen country
- Experience in communications/framing policy advocacy messaging

Access

"Access" refers largely to the ease with which a newcomer can gain traction with stakeholders or get information that is necessary to design or evaluate the intervention.

Information

We do not expect access to information to be a barrier.

Relevant stakeholders

We think that it is likely that access to decision-makers will be a barrier, which is part of the reason why policy advocacy has a low chance of success. This expectation is already "priced in" to our thinking on cost-effectiveness and the theory of change.

Feedback loops / monitoring and evaluation

Monitoring progress for this intervention will likely focus on the following indicators:

- In the short term, policy proposals submitted or meetings conducted
- In the long term, the creation of a new SSB tax
- Changes in sugar intake in the population post-reform (pre-/post-studies)
- Reformulation of beverages post-reform

We find it very likely that an organization can reliably monitor these changes.

However, given the nature of this work, it is worth noting that evaluating the specific contribution of policy advocacy to eventual policy changes is particularly challenging. It is rarely possible to determine with high confidence what would have happened in the absence of advocacy efforts. That said, strong and rigorous evaluations should be able to narrow down and plausibly estimate a non-profit's

contribution to policy change. Founders and funders working in this space should be comfortable operating under this degree of uncertainty.

Tractability

We think that failure to introduce the policy is more likely than success. Consistent with this, we believe that advocating for government action—particularly when it affects the food and beverage industry—is inherently difficult. We expect strong opposition to any proposed SSB tax, with lobbying efforts likely to focus on arguments such as:

- There is no evidence to demonstrate that SSB taxes will reduce obesity, diabetes, or diet-related NCDs
- SSB taxes unfairly target the beverage and sugar industries, even though many other foods are high in sugar
- Individuals should be responsible for their health, including deciding what to eat and drink, not governments
- SSB taxes are regressive and disproportionately affect and harm poor people
- SSB taxes will harm the economy and cause job losses
- SSB taxes give money to ineffective and corrupt government agencies

All of these arguments can be easily rebutted (see GHAI 2021), and we think that it is possible to beat this counter-lobby. However, we expect it to make advocacy significantly more difficult and to slow progress. But, change is clearly possible; SSB taxes have already been successfully implemented in 44 countries (see the OEH and WASSH databases).

Based on this, we give this intervention a 9% probability of success. This assessment of difficulty is priced into our estimations in this investigation.

Complexity of scaling

Although policy change is challenging, we think that it could become easier with each new country. A Vital Strategies policy brief of lessons from South Africa's

SSB tax advocacy highlights that "international evidence of effectiveness of taxes as implemented by other countries is crucial in building the case for a soda tax – which would suggest that advocacy becomes easier over time, and that past success rates are an underestimate" (Cullinan et al., 2020). Moreover, a comparative policy analysis of the institution of SSB taxes in 16 countries between 2016 and 2019 (Mulcahy et al., 2022) finds evidence for a diffusion effect, where evidence and political will generated by early adopters of SSB taxes facilitated the adoption of similar taxes in other countries.

On the other hand, because successful policy advocacy is highly relationship-based, a new charity may essentially need to start from scratch in each country, building and cultivating new relationships.

We also think it is worth highlighting that enforcement is especially important for SSB taxes, as we expect compliance to be low without oversight by the charity, so this may limit how quickly a new organization can scale.

Risk of harm

The overall risk of harm from this intervention is low.

We discuss potential negative externalities in Section 3.5. The most significant concern is substitution, as this may have its own health implications depending on what consumers substitute toward (see Section 3.5.3). However, we expect the overall effect of substitution to be net positive.

7.3 Remaining uncertainties

- What tax rate will ultimately be implemented by target governments. While a new charity would advocate for a 20% tax in line with WHO recommendations, many countries have implemented lower tax rates in practice.

- The level of enforcement a new SSB tax would achieve, and therefore how much effort a new charity would need to devote to supporting enforcement following successful advocacy.
- The extent to which consumers would substitute away from SSBs toward ASBs or other beverages, and how harmful these substitutions may be, given the high uncertainty and heterogeneity in the existing evidence.
    - It is also unclear which artificial sweeteners cause the most harm.
- The share of products that would reformulate to avoid the new tax, and how this would influence consumption.

8 Conclusion

The decision board met in December 2025 and included Morgan Fairless (AIM), Vicky Cox (AIM), Juan Benzo (AIM), and Martijn Klop (AIM). Samantha Kagel (AIM) provided notes for the meeting.

The board recommended moving forward with this intervention. The decision was based on its strong cost-effectiveness, relatively low implementation costs, and the view that it represents a reasonable and tractable policy action for governments.

A key area of discussion was whether SSB taxation should be combined with AIM's existing salt reduction policy work into a single recommendation or treated as a standalone intervention. While a narrow focus is generally preferred, both interventions engage similar government actors, legislators, and industry stakeholders, raising the possibility that separate organizations could be duplicative.

The main concerns raised related to the challenges inherent in policy advocacy. These included uncertainty around cost-effectiveness due to variation in lobbying costs across countries, as well as the difficulty of determining when efforts are unlikely to succeed and should be discontinued.

Annex 1 - Alternative ToC

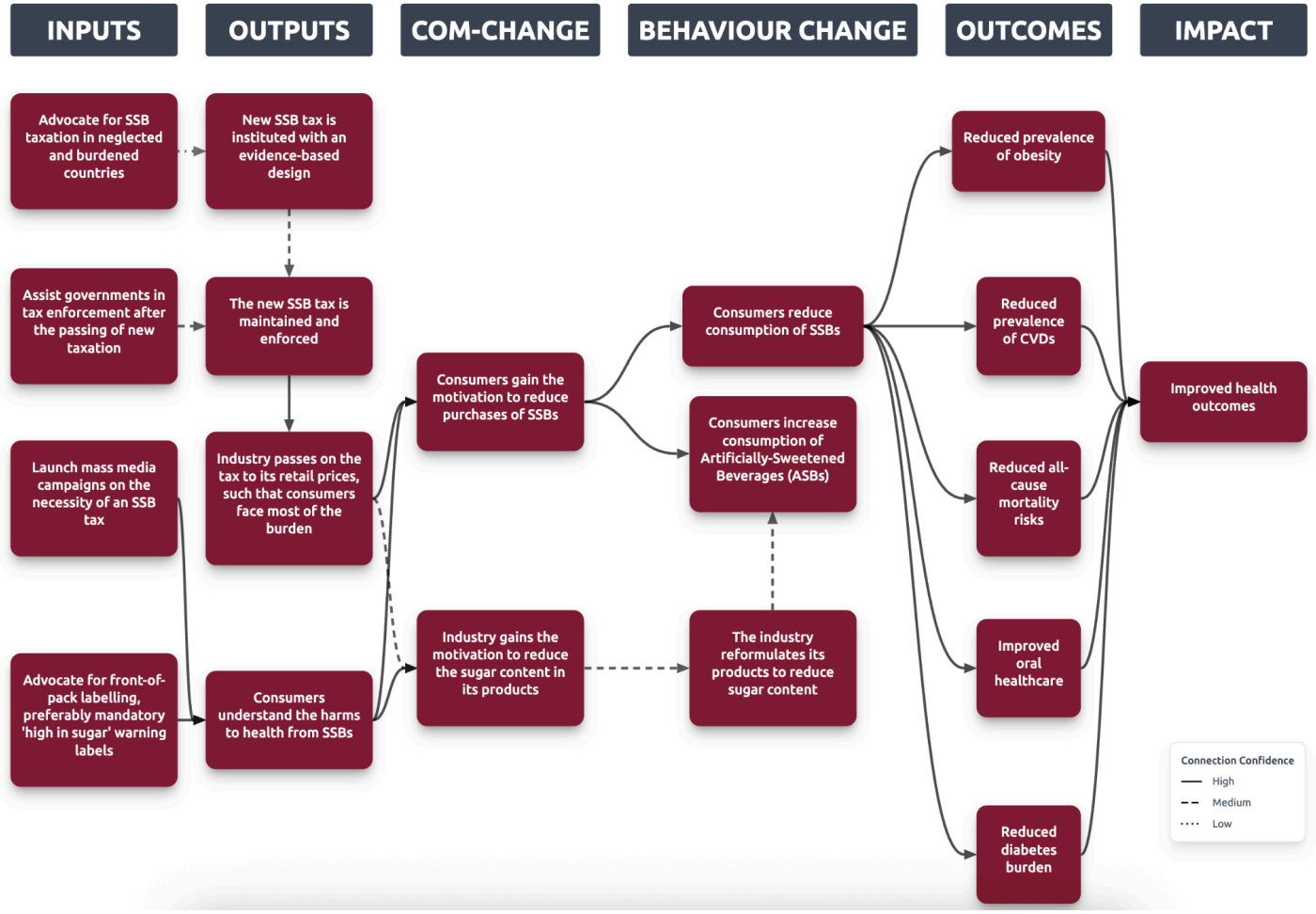


Figure X: Alternative ToC for this charity (View in full)

Additional assumptions and key factors

Assumption	Evidence/Explanation
The charity is able to run engaging mass media campaigns, leading to increased understanding of the health effects of SSBs, which will facilitate the passing and sustainability of the tax.	Many studies, such as Murukutla et al., 2020, and Farley et al., 2017 have shown the effectiveness of mass media campaigns aimed at increasing knowledge and decreasing SSB consumption. These mass media campaigns also contribute to support for taxation. Note that the intervention does not necessarily have to include a mass media campaign, particularly if there are low levels of public opposition to the tax and/or high levels of awareness of SSB harms among the public.
Advocacy successfully leads to the introduction of front-of-pack labeling	We think that failure is more likely than success here, and we are unsure whether advocating for this on top of SSB taxation makes advocacy easier or harder.
Front-of-pack labeling (FOPL) leads to an increased understanding of the health effects of SSBs.	Plenty of studies show the increased understanding of the health facts of SSBs based on FOPLs - e.g., see Roberto et al., 2021, Contreras-Manzano et al., 2024, and Saavedra-Garcia et al., 2022.
The consumer's knowledge of healthfulness affects the industry's decision to reformulate	Seems intuitively correct, based on the firm's expectations of lower consumer demand for SSBs.

A new charity can run engaging mass media campaigns that increase understanding of the health harms of SSBs and reduce consumption

We are confident that a new charity can run engaging mass media campaigns, given the success of AIM-incubated charities such as Family Empowerment Media and NOVAH.

Mass media campaigns on the health harms of SSBs were found to have contributed to the successful passing of an SSB tax in South Africa by changing public perceptions of and attitudes towards sugary drinks (Murukutla et al., 2020).

This aspect of the ToC may also have significant impacts on health outcomes in itself. Mass media campaigns have also been found to contribute to lower SSB consumption levels in the US (Farley et al., 2017) and South Africa (Murukutla et al., 2020), independent of whether they lead to increased support for SSB taxes.

A new charity may not have to run mass media campaigns, particularly if there are low levels of public opposition to the tax and/or high levels of awareness of SSB harms among the public.

Since the mass media campaigns are an optional component of our ToC, we will not be conducting a more in-depth evidence review beyond the articles cited here.

Advocacy successfully leads to the introduction of front-of-pack labeling

We think that the chances of advocacy leading to the institution of successful and optimal front-of-pack labels (FOPL) for SSBs are unlikely (<10% chance). We don't have a precise estimate for the probability of success, but we know that non-profits/civil society advocates have played a critical role in advocacy and design in countries with FOPL currently. Note that we don't have a good sense of failed advocacy campaigns.

Several policy documents, news reports, and academic literature show that civil society advocates were critical in the process of passing FOPL legislation. The

counterfactual importance of such advocacy is unclear, so these should be interpreted as correlational, not causal claims. The IDEC in Brazil was instrumental in pointing out the importance of clear labeling to the Anvisa (the Health Regulation Body in Brazil) (Amorim et al., 2021). They were also involved in countering the industry interference with legislation, which was strong, since the Bolsonaro government relied heavily on the food and beverage industry. Brazil then implemented the Black and White 'High-in' warning labels, which are often cited as the most effective labels to discourage consumption.

Crosbie et al. (2023) document how the 'El Poder del Consumidor', among other non-profit advocates, was crucial in engaging the Mexican National Institute of Public Health to design and implement FOPL policy. 'Civil advocates' were cited in many policy papers and discussions along with government agencies.

In Peru, Diez-Canseco et al. (2023) note that three drafts were prepared for FOPL legislation, all of which included inputs from civil advocates. Academic influence was observed as the Ministry of Health (MoH) moved from nutrition scores to the evidence-backed Black and White octagon labels, which were instituted in 2019.

The Global Health Advocacy Incubator reports that the International Institute for Legislative Affairs (IILA) in Kenya, along with several partners, formed a coalition that successfully blocked a Nutrition Profile Model (NPM), which set the limits too high, and effectively introduced a more stringent NPM based on WHO guidelines.

A more comprehensive guide of non-profits and their successes in introducing FOPL policy can be found here.

Since front-of-pack labeling is an optional component of our ToC, we will not be conducting a more in-depth evidence review beyond the articles cited here.

Front-of-pack labeling leads to reduced purchase/consumption

We think it is highly likely (55-80%) that FOPL, especially when designed optimally, leads to increased knowledge of health facts, reductions in intention to purchase SSBs, and actual reductions in SSB purchases. We also believe it is effective at incentivizing industry reformulation, although the magnitude of its effect is unclear. This section is divided into two parts: first, it shows several

estimates of FOPL efficacy, and second, it demonstrates that the 'High-in', black and white warning labels work best in terms of discouraging consumption.

FOPL is highly likely to be effective at increasing consumer knowledge, reducing intentions to consume, reducing purchases, and incentivizing industry reformulation. Croker et al. (2020) analyse 14 studies from high-income countries, including 6 experimental studies which compared consumers that were exposed to FOPL vs. a control group of non-exposed consumers. They find an effect size of -0.4g/100g of consumption within treatment consumers.

Contreras-Manzano et al. (2024) studied the effects of warning labels in Mexico by surveying ~9,500 consumers pre- and post-tax, and found a 44.8% and 38.7% reported reduction in purchases amongst adults and youth, respectively, due to warning labels[20].

Roberto et al. (2021) provide a narrative review of literature studying the effects of FOPL on consumer behaviour between 1980 and 2020. They find significant reductions in consumption in several parts of the US and in Chile, although in Chile they found it difficult to disentangle the effects of FOPL from other SSB-targeted policies such as taxation. In New Zealand, they observed that after the introduction of the health star rating system in 2014, 83% of products at '1 star' had been reformulated by 2016. The amount of reformulation was greater in labeled products than in nonlabeled products. In the Netherlands, the Choices programme added labels to healthy food options, which incentivized reformulation in sodium- and sugar-related products.

Salgado et al. (2025) conducted a pre-post study to isolate the effects of 2020 warning labels in Mexico on industry reformulation by following the top 1,000 consumer products and their labels. By 2022, they observed a 63.1% reduction in products with sodium labels, 26.3% reduction in products with saturated fat labels, and 29% reduction in products with non-calorific sweetener labels[21].

A comprehensive evidence review of the efficacy of FOPL was conducted by Global Health Advocacy Incubator and can be found here.

[20] These must be heavily discounted for social desirability bias.
[21] Mexico's 2020 system of warning labels included a warning for artificial sweeteners which said "Contains Sweeteners – Avoid in Children".

It is likely (55-80%) that the 'high-in' warning labels are the most effective form of FOPL, and thus the optimal design that should be advocated for. Croker et al. (2020) found that the most significant difference in consumption was for groups that were exposed to 'high-in' warning labels (other labeling options included nutri-scores, guidance limits, star ratings, etc). In an online RCT conducted by Acton & Hammond (2018) in Canada, the highest reductions in consumption were found within treatment groups with 'high-in' labels (although the p-value was marginally insignificant at 0.11). Another online RCT from Mexico, Jáuregui et al. (2020), studied the differences in consumer purchase behaviour for three labels: warning labels (WL), Guideline Daily Amounts (GDA), and Multiple Traffic Lights (MTL). They found that WL reduced purchases the most (followed by MTL), and the difference between reductions caused by WL compared to other labels was significant. The WHO's manual on FOPL policies recommends interpretive, non-numerical, color-based labeling, of which warning labels are a subset. These kinds of labels can also include traffic light labels (WHO, 2019). Vital Strategies also recommends interpretive warning labels as the most effective way to reduce sodium, sugar, and trans-fat consumption among consumers and incentivize reformulation (Section 8, Vital Strategies, 2025).

Since front-of-pack labeling is an optional component of our ToC, we will not be conducting a more in-depth evidence review beyond the articles cited here.

The consumer's knowledge of healthfulness affects the industry's decision to reformulate

There is evidence that mass media campaigns and FOPLs (which only affect knowledge) also motivate reformulation, e.g., Roberto et al., 2021, and Salgado et al., 2025.

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