

# SALT REDUCTION

**BENEFITTING OUR HEALTH, ECONOMY, WORKFORCE  
AND ENVIRONMENT**



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## **Acknowledgements**

This report was developed by Mhairi Brown RNutr, Policy and Public Affairs Lead, and Hattie Burt ANutr, Senior Policy Officer.

## **About Action on Salt**

Action on Salt is a group concerned with salt and its effects on health, supported by 22 expert scientific members. Established in 1996, Action on Salt is successfully working to reach a consensus with the food industry and Government over the harmful effects of a high salt diet and bring about a reduction in the amount of salt in processed foods as well as salt added during cooking, and at the table.

## **About World Action on Salt, Sugar and Health**

World Action on Salt, Sugar and Health (WASSH) is a global group with the mission to improve the health of populations throughout the world by achieving a gradual reduction in salt, sugar and excess calorie intake. Established in 2005 to translate the success of the UK's salt reduction programme worldwide, WASSH provide resources and expert advice. WASSH has a network of more than 600 members in 100 countries, all of whom are working towards reducing population salt, sugar and calorie intake.

## **Action on Salt and WASSH**

Wolfson Institute of Population Health  
Queen Mary University of London  
Charterhouse Square  
London EC1M 6BQ

T: +44 (0)20 7882 5941

E: [cash@qmul.ac.uk](mailto:cash@qmul.ac.uk) | [wash@qmul.ac.uk](mailto:wash@qmul.ac.uk)

W: [www.actiononsalt.org.uk](http://www.actiononsalt.org.uk) | [www.worldactiononsalt.com](http://www.worldactiononsalt.com)

Registered charity no: 1098818

# SUMMARY

- Excess salt intake has a large, negative impact on health and is a major risk factor for cardiovascular disease
- Reducing salt intake in the UK to recommended levels, driven by reformulation, would rapidly improve health and ensure a thriving workforce
- The UK has proven success in salt reduction but must now reinvigorate its once world-leading programme
- The government must be more ambitious in its approach to improving population health: 'do nothing' is not a viable option

## THE PROBLEM WITH SALT

Britain is eating too much salt. The Scientific Advisory Committee on Nutrition recommend that we eat no more than 6g of salt per day, but on average we are eating 40% more than this (8.4g/day) (1). Our current salt intake raises blood pressure, which in turn is the major risk factor for cardiovascular disease (CVD, i.e., stroke, heart failure, heart disease), the cause of one in four deaths in the UK (2). Eating too much salt is also linked to kidney disease, osteoporosis and stomach cancer (3). In 2017 alone, excess salt intake was linked to 3 million deaths globally (4).

Many people are eating much more salt than they are aware of. Around 80% of the salt we eat has already been added by the food industry to everyday foods such as bread, breakfast cereals, processed meats and ready meals, in addition to food from restaurants and fast-food outlets, which are sold in larger portions and contain much more salt than meals we would cook for ourselves. Action on Salt's research over the past 25 years has shown that much of this salt is unnecessary: within each category of food, there are numerous products that contain much less salt - in some cases more than 20 times less (5, 6). These products are not at a disadvantage; British retailers and leading brands can make food with less salt while maintaining sales and popularity with consumers.

Public awareness campaigns and mHealth apps will not fix this issue. Choice is not currently in the hands of the British public: our food is coming 'ready salted' whether we want it to be or not. Government intervention is necessary to create an environment that enables everyone - regardless of their nutrition knowledge, income, gender or ethnicity - to access healthier, lower salt foods.

# SOLUTIONS TO THE SALT ISSUE

Reformulation (i.e., changing recipes) is a regular practice for the food industry. Changes in suppliers, changes in recipes, updating product packaging, removing allergens and addressing consumer complaints are all examples that require reformulation.

With guidance from the Government, reformulation can be a powerful and cost-effective tool to prevent ill health and death related to poor diet. By encouraging the food industry to reduce levels of salt, sugar and saturated fat, gradually and across all categories of food, our palates can adapt to slight changes in taste and allow us to continue buying the same products we always have (7).

Salt reduction targets – issued as voluntary guidance, implemented via legislation or designed as a levy – are proven to ensure reformulation and reduce salt levels in foods, but only if they are enforced. Complementary policies, such as front of pack nutrition labelling, advertising and promotion restrictions can support salt reduction efforts - food companies can reduce salt levels to levels that allow them to continue advertising and promoting them, or display healthier front of pack labels, but these policies should be implemented as part of a package of measures to have their full effect (8). They are also likely to be more costly for the industry to implement than reformulation, which is cost-effective and does not impact sales.

## REFORMULATION BEST PRACTICE: EARLY UK SUCCESS

***Reformulation works, and the UK has led the way.***

Action on Salt were a major contributor to the evidence base demonstrating salt intake raises blood pressure, and convinced the government to commit to a salt reduction programme in the early 2000s. We collaborated with the Food Standards Agency to develop novel, progressive salt targets to gradually reduce salt levels across more than 80 food categories – everything from bread to ready meals, cakes to biscuits (9). By 2011, because of the FSA's leadership, the government's commitment to preventing ill health associated with excess salt intake, and Action on Salt's monitoring of the targets, salt levels in most products had fallen by 20-40%; consumers were none the wiser (7). This impressive action was accompanied by a fall in population salt intake, average population blood pressure and deaths from cardiovascular disease (10).

The UK's salt reduction programme became the blueprint globally; to date, more than 50 countries have salt targets similar to the UK's (11). However, despite initial success, in recent years the UK salt reduction programme has made little progress. A 2020 report found that many salt targets – due to be met by 2017 – had still not been met (12). A new set of salt targets were set in 2020, to be met by 2024, but there is no guarantee that these will see progress, especially as a key monitoring report that was scheduled for release in 2022 has still not been published.

A key factor has been the governance of the programme. The FSA's transparent monitoring was replaced by the Public Health Responsibility Deal, a widely acknowledged failure which put responsibility for improving products and policing reformulation in the hands of the food industry – fittingly likened to 'putting Dracula in charge of the blood bank' (13-19). Public Health England (PHE) took salt reduction under their wing after the Responsibility Deal was dissolved in 2015, but after the demise of PHE, the salt reduction programme sits now with the Office for Health Improvement and Disparities (OHID). OHID are not independent, and without consistent and comprehensive government leadership, OHID does not have the power or resource to enforce the evidence-based salt reduction programme.

# OPTIONS ANALYSIS

All is not lost with the UK's salt reduction journey, however. A continued lack of action would have serious and unavoidable impact, but measures could be implemented in the short term to reinvigorate progress. Long term investment would deliver the largest benefit. At a time when political capital is closely guarded and cautiously spent, an invigorated salt reduction programme is a necessary investment: the benefits on population health, the economy, the NHS and our environment far outweigh the costs.

## Option 1: No action

- Current salt targets to 2024 remain in place, with continued levels of minimum enforcement
- Food industry compliance remains low
- Salt levels in food remain high and increase

## Opportunities

There are few opportunities associated with this approach, although it could be argued that some irresponsible food industry players would benefit from continuing their current practices. This must be balanced against the health impacts to consumers, wider impacts of preventable health conditions on the economy, and the internal struggle within food companies.

The tension between commercial strategies designed to operate within the status quo of a constant growth, shareholder driven model, and concerns and evidence-based views of nutrition and corporate social responsibility teams is a familiar struggle for most of the UK's recognisable food brands.

## Risks

The risks of this option cannot be ignored, and is at odds with the World Health Organization's approach, which states:

***“To achieve the target [of a 30% relative reduction in salt intake by 2030], strong government leadership and commitment is urgently required to rapidly adopt, implement and monitor government-led and comprehensive mandatory sodium [salt] reduction legislation”*** (20).

- Health Impact

Reducing salt intake would have an impact on prevalence of CVD at a population level, which we have focused on here, however there would be considerable impacts on other health conditions associated with salt intake such as kidney disease. CVD deaths had been falling for many years in the UK, thanks to advances in treatment and prevention, but since 2011 the rate of reduction in CVD deaths started to slow and went on to plateau (21). This slowdown is estimated to cost the UK £54 billion by 2029 (22).

CVD accounts for around one in five premature deaths in England (i.e. deaths before the age of 70 years) (23). Worryingly, people living in the most deprived areas of the country are four times more likely to die prematurely from CVD than those in the most affluent areas (24).

- Workforce Impact

The avoidable health impacts associated with excess salt intake have an impact on workforce productivity. A study estimated that more than 240,000 working years are lost due to CVD mortality, and a further 69,000 days lost due to CVD-related incapacity, costing the economy more than £5 billion annually; almost a quarter (23%) of CVD costs to the economy are due to productivity losses (25). This study took place in 2006 however, workforce impact is likely to be much higher in 2023.

- NHS and Economic Impact

Alongside having a devastating impact on individuals and their families, CVD is very costly to treat. During 2019/2020, there were around one million hospital admissions for CVD in England, leading to 5.5 million bed days (26). Consequently, England alone spends an estimated £7.4bn on CVD healthcare costs annually, and the wider economic impact of these diseases is estimated at £15.8bn which includes productivity losses (21).

## Option 2: Actions for short term benefit

- Reinvigorate existing programme, with regular and transparent monitoring reports
- Communicate to food industry that salt reduction expected across all products, similar to other countries
- Recommend the use of low-sodium salt substitutes
- Investigate a levy to incentivise reformulation

### Opportunities

- Economic Benefit

The Soft Drinks Industry Levy is a world-leading and novel levy, the first of its kind to drive reformulation (27). Implemented in 2018, its tiered structure has given a clear incentive for soft drinks manufacturers to reformulate their products and avoid paying additional tax. Between 2015-2020, the SDIL led to a 46% reduction in average total sugar content (sales-weighted) in beverages subject to the tax (28). The SDIL raised £334 million in 2021-2022, with revenue initially funding the National School Breakfast Club Programme which provides meals for children from lower income backgrounds, alongside increasing access to sports equipment (29). An additional levy could be expected to similarly drive reformulation, while raising funds for a variety of activities, such as research and innovation to support British-owned food and drink companies or supporting families to access healthier food.

There may be concerns that levies are regressive. This can be easily countered, as those in lower socioeconomic groups are more likely to eat less healthy food and drinks (due to the availability and accessibility of such products in more deprived areas); reduced consumption of less healthy food and drinks would provide greater health benefits in the long term (30, 31). More importantly, experience from the SDIL has shown that a tiered tax has encouraged many beverage manufacturers to alter their formulations rather than raise prices (28). Well-designed taxes could avoid price rises, and any revenue should be used to benefit those in lower socio-economic groups.

By showing serious intent to implement a levy, Government is likely to accelerate food industry progress in anticipation of incoming legislation, as happened following the announcement of the SDIL in 2016 (32).

- Government Benefit

The release of OHID's delayed 2022 salt reduction monitoring report would help provide accountability, enabling scrutiny of poor performers and celebration of companies who have achieved progress.

Government would have the support of the public by taking a leading role in reformulation. Public polling shows 9 in 10 people support the Government working with the food industry to make food and drinks healthier (33). Furthermore, individuals and organisations have recently suggested further levies to improve the UK diet and protect health, including the National Food Strategy team, the Institute for Public Policy Research, and Kim Leadbetter MP and the Fabian Society, indicating increasing support (34-36).

- Workforce Benefit

In the early 2000s, when the salt reduction programme was transparently monitored, salt intake fell by an average of 1.4g/day (10). Although further reductions of this scale may not be as achievable under a voluntary programme, there is an opportunity for some reduction. Reducing salt intake by just 1g per day in the UK could prevent more than 4,000 premature deaths from heart attacks and stroke, helping to protect the nation's health and keep people in work for longer (37). The nation's average population intake would still be far above the recommended limit, but even small reductions can have a large and beneficial impact.

- NHS Benefit

Reducing population salt intake, even small reductions, can help alleviate some of this burden on the NHS. It is estimated that if the salt reduction targets that were due to be by 2017 were fully achieved by the food industry, this could lower population salt intake by 1g/day (38). The National Institute for Health and Care Excellence estimate that just a 0.9g fall in salt intake could lead to annual healthcare savings of £1.5bn in the UK (39).

Low-sodium salt substitutes, such as potassium-enriched salts, could be used by the food industry to lower levels of salt in food products. This would benefit population health, given our current excess salt intake and suboptimal potassium intake. The Scientific Advisory Committee on Nutrition and the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment modelled the benefits and risks of replacing 15-25% of regular salt in commonly consumed foods (e.g. cereals, fat spreads, meat products and bread) with potassium-based salt replacers, finding that there would be no adverse effects in healthy adults, children or infants, and "The government should consider encouraging food companies to explore the use of potassium-based sodium [salt] replacers to help reduce sodium levels in foods" (40).

- Food Industry Benefit

Food companies committed to the health of their consumers will be empowered to advance their salt reduction work. The current salt targets are easily achievable, and global food companies will likely be facing more challenging targets internationally (11). A reinvigorated salt reduction programme would enable companies to align their efforts across all markets.

## Risks

Companies who have never engaged with voluntary reformulation may continue to shun government engagement; this is unlikely to be resolved without measures such as a levy or legislation. A new levy may have short-term shocks on industry share prices, but this risk is low, with SDIL showing no impact on sales – indeed, sales of drinks have increased by around 20% since 2015 (28). Few companies raised prices; the majority viewed the SDIL as an incentive to reformulate and avoid paying the levy. Even PepsiCo, thought to be a company that would never reformulate their full-sugar Pepsi drink, confirmed they had reformulated earlier in 2023 (41).



## Option 3: Actions for sustained, long term benefit

- Commit to comprehensive and legislated salt, sugar and calorie targets, with financial penalties for non-compliance with the legislation, or implement a levy to incentivise progress
- Invest in support for SMEs, and research and innovation
- Transfer responsibility for nutrition to an independent body

### Opportunities

- Government Benefit

The UK's initial experience of salt reduction is frequently quoted in international research papers and was called upon by the World Health Organization when setting their Global Sodium Benchmarks (42). Disruption to progress has been associated with 9,900 additional cases of CVD which could rise to 26,000 by 2025 (43). By committing to legislation, the UK would reinstate its position as world-leading in salt reduction.

- Food Industry Benefit

Reducing salt content is easier than reducing other elements of the product, as salt does not contribute to the weight of the product, making it a very low-cost approach for the food industry. Indeed, an impact assessment by the Food Standards Agency in 2009 estimated the cost of reformulation is likely to be minimal, as reformulation often occurs within a natural product cycle (44).

The industry has already shown they can commit to improving public health if they have strong and independent leadership with transparent monitoring. Legislation would lead to 'buy in' from all levels of food companies, from the CEO to the influential commercial teams, who frequently drown out the voices of evidence-based nutrition teams calling out for healthier products.

- Health Benefit

Mandatory salt targets could reduce population salt intake by up to 3g/day over ten years, leading to a gain of 19,320 life-years (45).

South Africa became one of the first countries in the world to launch mandatory salt reduction targets in 2016, focusing on key contributors to salt intake such as bread and processed meats (46). Within five years, salt intake had fallen by more than 1g per day, with higher reductions in those from lower socio-economic backgrounds (47).

Significantly reducing population salt intake can improve the quality of life and productivity of individuals, reduce healthcare inequalities, and promote social justice. Although a salt reduction programme stands to benefit everyone, it can be particularly beneficial for those in lower socioeconomic groups.

- Environment Benefit

The production and transportation of salt requires significant amounts of energy. Salt is mined in its solid form i.e., rock salt (from beds ranging from a few centimetres to several hundred feet deep) or it occurs as brine, due both to dissolution of the naturally occurring rock salt and solution mining. Domestic salt production was as high as 5.8 million tonnes in 2004.

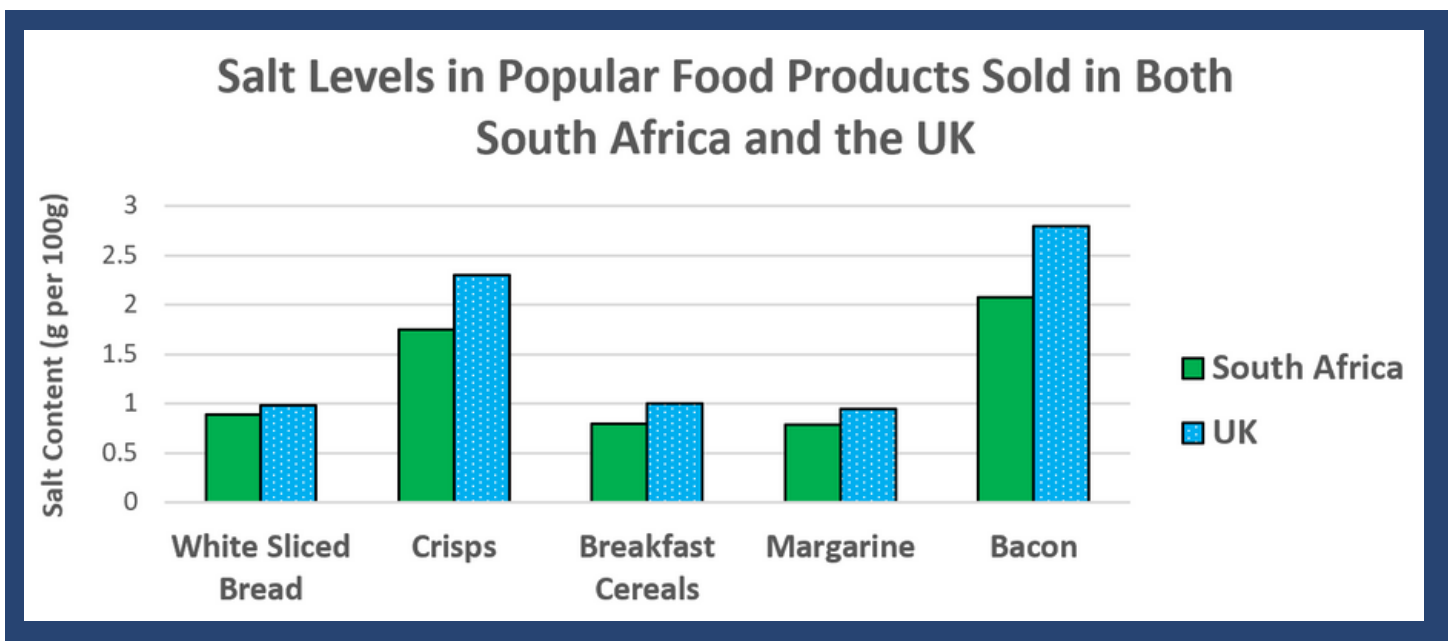
Once mined, around 30% of the rock salt is used for roads in the winter and as a fertiliser for sugar beet - incidentally, sugar beet harvest in the UK leads to the permanent loss of 400,000-600,000 tonnes of prime, non-renewable topsoil from Britain's most fertile fields each year (48). The remaining 70% of mined salt is used by the heavy inorganic chemicals industry and to produce white salt for foods (49).

Reducing salt intake, and lowering the need for salt production, could help to reduce energy consumption, greenhouse gas emissions, and prevent water pollution and harm to aquatic life.

### Risks

Push back from the food industry is expected, in line with industry pushback towards other key health policies such as advertising and promotion restrictions for less healthy food and drinks. Kellogg's lawsuit against DHSC was burdensome and costly for the government, but it provides a useful precedent thanks to the resounding defeat of Kellogg's (50). This is likely to have deterred other companies from challenging the evidence.

There are several international examples of legislation designed to reduce salt intake, such as mandatory targets in South Africa that have led to lower salt products than similar equivalents available in the UK:



Gradual, unobtrusive improvements to product recipes, which is the core aim of reformulation, do not lead to loss of sales as the public can continue to buy their usual food and drinks, but will benefit from the nutritionally improved products: **we can have both a thriving British food industry, and a healthy and resilient population.**

## Recommended Option

Even some action will help to address the considerable health and economic impacts of excessive salt intake currently experienced by the UK population.

**Option 3 – long term investment in salt reduction via legislation, research and innovation support, and the transfer of responsibility for nutrition policy to an independent body - is our recommended option and is in line with best-practice recommendations.**

This would bring the UK back on a par with other countries who have taken decisive action to protect health, by preventing thousands of unnecessary CVD deaths and saving the NHS and economy billions of pounds.

# REFERENCES

1. Public Health England. National Diet and Nutrition Survey. Assessment of salt intake from urinary sodium in adults (aged 19 to 64 years) in England, 2018 to 2019. London, UK; 2020
2. PHE. Health matters: combating high blood pressure. London: Public Health England; 2017.
3. He FJ, Tan M, Ma Y, MacGregor GA. Salt Reduction to Prevent Hypertension and Cardiovascular Disease: JACC State-of-the-Art Review. *J Am Coll Cardiol.* 2020;18:632.
4. Afshin A et al. Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2019;393:1958
5. Action on Salt. Salt Surveys. <https://www.actiononsalt.org.uk/salt-surveys/>
6. Action on Salt. Chilled Sliced Meats. <https://www.actiononsalt.org.uk/salt-surveys/2022/chilled-sliced-meats/>
7. He FJ, Brinsden HC, MacGregor GA. Salt reduction in the United Kingdom: a successful experiment in public health. *J Hum Hypertens* 2014;28:345.
8. Hyseni L, Elliot-Green A, Lloyd-Williams F, Kypridemos C, O'Flaherty M, McGill R, Orton L, Bromley H, Cappuccio FP, Capewell S. Systematic review of dietary salt reduction policies: Evidence for an effectiveness hierarchy? *PLoS One.* 2017;12:e0177535.
9. Wyness LA, Buttriss JL, Stanner SA. Reducing the population's sodium intake: the UK Food Standards Agency's salt reduction programme. *Public Health Nutr.* 2012;15:254.
10. He FJ, Pombo-Rodrigues S, Macgregor GA. Salt reduction in England from 2003 to 2011: its relationship to blood pressure, stroke and ischaemic heart disease mortality. *BMJ Open* 2014;4:e004549.
11. Santos JA, Tekle D, Rosewarne E, Flexner N, Cobb L, Al-Jawaldeh A, Junsuk Kim W, Breda J, Whiting S, Campbell N, Neal B, Webster J, Trieu K. A Systematic Review of Salt Reduction Initiatives Around the World: A Midterm Evaluation of Progress Towards the 2025 Global Non-Communicable Diseases Salt Reduction Target. *Adv. Nutr* 2021;12:1768.
12. PHE. Salt targets 2017: Second progress report. London: Public Health England; 2020.
13. Knai C, Petticrew M, Durand M, Eastmure E, James L, Mehrotra A, et al. Has a public-private partnership resulted in action on healthier diets in England? An analysis of the Public Health Responsibility Deal food pledges. *Food Policy.* 2015;54:1-10.
14. Knai C, Scott C, D'Souza P, James L, Mehrotra A, Petticrew M, et al. The Public Health Responsibility Deal: making the workplace healthier? *J Public Health (Oxf).* 2017;39(2):373-86.
15. Knai C, Petticrew M, Durand MA, Eastmure E, Mays N. Are the Public Health Responsibility Deal alcohol pledges likely to improve public health? An evidence synthesis. *Addiction.* 2015;110(8):1232-46.
16. Durand MA, Petticrew M, Goulding L, Eastmure E, Knai C, Mays N. An evaluation of the Public Health Responsibility Deal: Informants' experiences and views of the development, implementation and achievements of a pledge-based, public-private partnership to improve population health in England. *Health Policy.* 2015;119(11):1506-14.
17. Knai C, Petticrew M, Douglas N, Durand MA, Eastmure E, Nolte E, et al. The Public Health Responsibility Deal: Using a Systems-Level Analysis to Understand the Lack of Impact on Alcohol, Food, Physical Activity, and Workplace Health Sub-Systems. *Int J Environ Res Public Health.* 2018;15(12).

18. Ralston R. The informal governance of public-private partnerships in UK obesity policy: Collaborating on calorie reduction or reducing effectiveness? *Soc Sci Med.* 2021;289:114451.
19. The Independent. Lansley has caved in to fast-food industry, says former advisor. <https://www.independent.co.uk/news/uk/politics/lansley-has-caved-in-to-fastfood-industry-says-for>
20. WHO. WHO Global Report on Sodium Intake Reduction. Geneva: World Health Organization; 2023.
21. UK Health security Agency. Health matters: Preventing cardiovascular disease. <https://ukhsa.blog.gov.uk/2019/02/14/health-matters-preventing-cardiovascular-disease/>
22. Collins B, Bandosz P, Guzman-Castillo M, Pearson-Stuttard J, Stoye G, et al. What will the cardiovascular disease slowdown cost? Modelling the impact of CVD trends on dementia, disability, and economic costs in England and Wales from 2020–2029. *PLOS ONE* 2022;17:e0268766.
23. British Heart Foundation, 2016. CVD Statistics Compendium 2017
24. PHE. Health matters: preventing cardiovascular disease. London: Public Health England; 2019.
25. Luengo-Fernández R, Leal J, Gray A, Petersen S, Rayner M. Cost of cardiovascular diseases in the United Kingdom. *Heart.* 2006;92:1384-9
26. The King's Fund. Cardiovascular disease in England: supporting leaders to take actions. [https://www.kingsfund.org.uk/sites/default/files/2022-11/CVD\\_Report\\_Web.pdf](https://www.kingsfund.org.uk/sites/default/files/2022-11/CVD_Report_Web.pdf)
27. Pell D et al. Changes in soft drinks purchased by British households associated with the UK soft drinks industry levy: controlled interrupted time series analysis. *BMJ* 2021;372:n254
28. OHID. Sugar reduction – industry progress 2015 to 2020. London: Office for Health Improvement and Disparities; 2022
29. HMRC. Soft Drinks Industry Levy statistics commentary 2022. London: HM Revenue & Customs; 2022.
30. Eyles H, Ni Mhurchu C, Nghiem N, Blakely T. Food pricing strategies, population diets, and non-communicable disease: a systematic review of simulation studies. *PLoS Med.* 2012;9(12):e1001353
31. Backholer K, Sarink D, Beauchamp A, Keating C, Loh V, Ball K, et al. The impact of a tax on sugar-sweetened beverages according to socio-economic position: a systematic review of the evidence. *Public Health Nutr.* 2016;19(17):3070–84
32. Scarborough P, Adhikari V, Harrington RA, Elhussein A, Briggs A, Rayner M, Adams J, Cummins S, Penney T, White M. Impact of the announcement and implementation of the UK Soft Drinks Industry Levy on sugar content, price, product size and number of available soft drinks in the UK, 2015-19: A controlled interrupted time series analysis. *PLoS Med* 2020;17:e1003025.
33. Public Health England, 2018. Overwhelming public support for sugar and calorie reduction. <https://www.gov.uk/government/news/overwhelming-public-support-for-sugar-and-calorie-reduction>
34. National Food Strategy Independent Review, 2021. Recommendations in Full <https://www.nationalfoodstrategy.org/wp-content/uploads/2021/07/National-Food-Strategy-Recommendations-in-Full.pdf>
35. IPPR, 2023. Healthy People Prosperous Lives [https://www.ippr.org/files/2023-04/1682577258\\_healthy-people-prosperous-lives-april-2023.pdf](https://www.ippr.org/files/2023-04/1682577258_healthy-people-prosperous-lives-april-2023.pdf)
36. Fabian Society, 2023. Healthy Britain: A new approach to health and wellbeing policy <https://fabians.org.uk/wp-content/uploads/2023/03/Kim-Leadbeater-Report-FINAL-17032023.pdf>
37. Cabinet Office and Department of Health & Social Care. Advancing our health: prevention in the 2020s. <https://www.gov.uk/government/consultations/advancing-our-health-prevention-in-the-2020s/advancing-our-health-prevention-in-the-2020s-consultation-document>

38. Briggs ADM, Wolstenholme J, Scarborough P. Estimating the cost-effectiveness of salt reformulation and increasing access to leisure centres in England, with PRIMETIME CE model validation using the AdViSHE tool. *BMC Health Serv Res.* 2019;19:489
39. National Institute for Health and Care Excellence, 2010. Cardiovascular disease prevention. <https://www.nice.org.uk/guidance/ph25/chapter/3-Considerations>
40. SACN COT. Potassium-based Sodium Replacers: Assessment of the Health Benefits and Risks of Using Potassium-based Sodium Replacers in Foods in the UK: A Joint Statement from the Scientific Advisory Committee on Nutrition and the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment. London: Scientific Advisory Committee on Nutrition and Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment; 2017.
41. PepsiCo UK and Ireland. PepsiCo UK & Ireland reformulates Pepsi, reducing sugar by 57%. <https://www.pepsico.co.uk/news/stories/reformulates-pepsi-reducing-sugar-by-57>
42. WHO. WHO global sodium benchmarks for different food categories. Geneva: World Health Organization; 2021
43. Lavery AA, Kypridemos C, Seferidi P, et al. Quantifying the impact of the Public Health Responsibility Deal on salt intake, cardiovascular disease and gastric cancer burdens: interrupted time series and microsimulation study. *J Epidemiol Community Health* 2019;73:881.
44. Food Standards Agency, 2009. Impact assessment of the revised salt reduction targets. [https://www.legislation.gov.uk/ukia/2009/86/pdfs/ukia\\_20090086\\_en.pdf](https://www.legislation.gov.uk/ukia/2009/86/pdfs/ukia_20090086_en.pdf)
45. Collins M, Mason H, O'Flaherty M, Guzman-Castillo M, Critchley J, Capewell S. An economic evaluation of salt reduction policies to reduce coronary heart disease in England: a policy modeling study. *Value Health* 2014;17:517.
46. Charlton K, Webster J, Kowal P. To legislate or not to legislate? A comparison of the UK and South African approaches to the development and implementation of salt reduction programs. *Nutrients.* 2014;6:3672.
47. Strauss-Kruger, M., Wentzel-Viljoen, E., Ware, L.J. et al. Early evidence for the effectiveness of South Africa's legislation on salt restriction in foods: the African-PREDICT study. *J Hum Hypertens* 2023;37:42
48. Feedback, 'Too Much of a Bad Thing: The Use and Misuse of UK Soil and Land to Grow Sugar' (London, 2019), <https://feedbackglobal.org/campaigns/sugar-beet-and-soil-depletion/>
49. Office of the Deputy Prime Minister, 2006. Salt. [https://www2.bgs.ac.uk/mineralsuk/download/planning\\_factsheets/mpf\\_salt.pdf](https://www2.bgs.ac.uk/mineralsuk/download/planning_factsheets/mpf_salt.pdf)
50. JustFood, 2022. Kellogg loses breakfast cereal legal challenge against UK's HFSS rules. <https://www.just-food.com/news/kellogg-loses-breakfast-cereal-court-battle-against-uks-hfss-rules/>

