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Health Taxes and Domestic Revenue Mobilization in Fragile States: Simulation Evidence for Khat, Tobacco, and Sugar-Sweetened Beverages in Somalia

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Research Article

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Abstract

Background

Somalia faces sustained fiscal constraints, low domestic revenue, and high out-of-pocket (OOP) payments for health, limiting progress toward universal health coverage (UHC). Health taxes—excise taxes on health-harming products—offer a “triple dividend” by reducing consumption of harmful goods, generating predictable domestic revenue, and creating fiscal space for priority health spending.

Methods

We combine (i) analysis of Somalia’s current tax and revenue structure for khat, tobacco, and sugar-sweetened beverages (SSBs) using Ministry of Finance budget execution and policy documents; (ii) findings from a nationwide household opinion survey on health taxes (n = 2,000; 2023/2024); and (iii) a partial-equilibrium revenue simulation model for 2025–2030. We model three effective advalorem excise scenarios (10%, 15%, 20%) applied to khat, tobacco products, and SSBs, incorporating demand responses through price elasticities and a sensitivity analysis on key parameters (elasticity, pass-through, and compliance). We also quantify the potential budget impact of earmarking 50% of incremental excise receipts for an EPHS/health promotion budget line.

Results

Survey results indicate broad support for health taxes (77% overall). Administrative data show that khat already contributes sizable budget revenue (US$17.15 million in FY2024), while tobacco revenue is smaller (US$3.18 million) and SSB-related collections are minimal. Under the 15% excise scenario, simulated incremental revenue rises from US$45.5 million in 2025 to US$51.8 million in 2030, yielding US$291.7 million cumulatively (2025–2030); the 20% scenario yields US$377.3 million cumulatively. Earmarking 50% for health would generate US$22.8 million in 2025 under the 15% scenario (US$1.48 per capita), equivalent to 24.8% of the 2025 federal health budget. Evidence on khat use suggests substantial heterogeneity; daily or near-daily chewing is concentrated among adults, with a conservative best-estimate of 11–12% (or lower) of the adult population affected.

Conclusions

A broadened excise base that explicitly includes khat, alongside tobacco and SSBs, could materially strengthen Somalia’s domestic resource mobilization while advancing NCD prevention. A transparent earmarking mechanism—implemented as a health promotion surcharge or dedicated budget line—could protect priority EPHS financing, provided that legal reforms, strong tax administration, and accountability safeguards are implemented.

Background

Domestic revenue mobilization is a persistent constraint in fragile and conflict-affected settings, where revenue-to-GDP ratios are typically low and public financial management systems are under strain.[1, 2, 6] In Somalia, domestic revenue has increased gradually but remains modest relative to expenditure needs; recurrent shocks, security spending pressures, and dependence on external support limit fiscal space for social sectors.[1, 2, 7] Health sector financing is correspondingly constrained, with household OOP payments and external partner funding accounting for a substantial share of total health expenditure, and government health spending remaining low.[22]

Health taxes—particularly excise taxes on tobacco, alcohol, SSBs, and other health-harming products—are widely recommended in health economics and public finance as efficient instruments to correct negative externalities and raise predictable revenue.[9–11, 14, 15] The theoretical rationale is grounded in Pigouvian taxation: by raising retail prices, excise taxes reduce consumption (depending on price elasticity), and the resulting revenue can expand fiscal space for health and other priorities.[9, 10, 14] In low-income settings, the policy appeal is often framed as a “triple dividend”: (i) reduced exposure to health risks and non-communicable disease (NCD) burden; (ii) increased public revenue; and (iii) potential equity gains if revenues finance pro-poor services or financial protection.[9–11]

While tobacco and SSB taxation are well studied internationally,[12–18] khat (.) remains under-examined in the health tax literature despite its widespread use in the Horn of Africa and the Arabian Peninsula.[20] Khat is a mild stimulant whose regular use has been associated with cardiovascular, gastrointestinal, and mental health harms, as well as productivity and household welfare effects.[20, 21] Somalia exhibits a youthful demographic structure and substantial heterogeneity in khat use patterns by sex, age, and location.[4, 21] National household survey data indicate relatively low current chewing prevalence among females and higher prevalence among males.[4] However, localized studies and conflict-affected cohorts suggest much higher use in certain contexts.[21] In the absence of nationally representative data on daily khat chewing frequency, we adopt a conservative best-estimate that daily or near-daily chewing affects approximately 11–12% (or lower) of the adult population, recognizing substantial uncertainty and using this estimate primarily for contextualizing potential health impacts rather than for calibrating revenue baselines.[4, 20, 21]

Somalia currently collects some revenue from khat through import-related taxes and fees, but excise taxation of health-harming products remains under-developed and fragmented.[3] Tobacco consumption is lower than in many countries but is increasing in some urban groups, and there is no comprehensive excise tax system that systematically raises the effective tax share of retail prices.[4, 12] For SSBs, evidence from other settings indicates that taxes can reduce purchases and encourage product reformulation.[17, 18] Yet Somalia lacks consistent national consumption data for SSBs; this paper therefore draws on a dedicated household survey module on health taxes and beverage consumption to inform plausible baselines and policy design.[5, 15, 16]

This study addresses an important evidence gap for policy-makers in Somalia and similar fragile states: how large could the revenue gains be from an expanded and better-designed excise base that includes khat, tobacco products, and SSBs, and what could be the potential contribution of earmarking a portion of incremental revenue for the Essential Package of Health Services (EPHS)? We contribute in three ways. First, we assemble and summarize the current revenue landscape for these product categories using administrative budget data. Second, we report new evidence on public support for health taxes from a nationwide household opinion survey. Third, we develop a transparent partial-equilibrium simulation model for 2025–2030 to estimate revenue under alternative excise scenarios, with sensitivity analyses relevant for fragile contexts (elasticity, pass-through, and compliance).

Expanding fiscal space for health is also aligned with macroeconomic arguments that investments in essential health services yield large social and economic returns through human capital and productivity gains.[8]

Methods

Study design and setting. We conducted a mixed-methods fiscal and policy analysis combining administrative revenue data, population-based survey evidence, and a simulation model to estimate the revenue potential of health taxes in Somalia over 2025–2030.

Data sources. Table 1 summarizes the data sources used. Administrative data on revenue from khat, tobacco, and SSB-related products were drawn from the Ministry of Finance end-year budget performance report (FY2024) and the budget policy framework paper (FY2026).[1, 3] Product use prevalence was drawn from the Somali Health and Demographic Survey (SHDS) 2020.[4] Public opinion and SSB consumption proxies were obtained from a nationwide household opinion survey conducted by the Federal Ministry of Health and Human Services (MoHHS) in 2023 (n = 2,000), which included modules on support for excise taxes and self-reported consumption patterns.[5] Macroeconomic context was informed by the Central Bank of Somalia annual report.[2]

Household opinion survey. The MoHHS health taxes survey collected information on respondents' socio-demographics (sex, age, education, employment, household income category), knowledge of health harms (tobacco, khat, sugar), and support for excise taxes on tobacco, khat, and sugary drinks. Support was coded as a binary outcome (1 = support/strongly support; 0 = neutral/oppose), consistent with policy interpretation of majority support thresholds. The survey also captured SSB consumption frequency and typical daily intake among consumers to provide a baseline proxy in the absence of nationally representative SSB consumption statistics.[5]

Outcome variables. The primary outcomes were: (i) simulated incremental excise revenue under each policy scenario (USD million, annual and cumulative); (ii) earmarked health revenue under a proposed earmarking share; and (iii) determinants of public support for health taxes based on survey data.

Ethics and consent. The MoHHS survey was implemented as a policy and public opinion study. Participation was voluntary and anonymous. The analysis used de-identified, aggregated results and did not involve clinical interventions.

Revenue simulation model

Overview. We use a transparent partial-equilibrium model to simulate incremental excise revenue from khat, tobacco products, and SSBs for 2025–2030 under three effective ad valorem excise scenarios (10%, 15%, 20%). The model incorporates (i) tax pass-through to consumer prices; (ii) demand response using price elasticity; and (iii) a compliance factor capturing leakage due to smuggling, informality, and enforcement constraints. Similar approaches are widely used in tobacco and SSB tax policy analysis when detailed micro-data on quantities and prices are limited.[9, 13–16]

Tax pass-through. Let P0 be the pre-tax retail price and τ the effective ad valorem excise rate. We assume pass-through φ such that the post-tax retail price is:

(1) $P1 = P0 \times (1 + \varphi\tau)$

Base-case simulations assume full pass-through ($\varphi = 1$), with sensitivity analysis over $\varphi \in \{0.8, 1.0, 1.2\}$. [13–16]

Demand response. Let Q0 be baseline quantity consumed and ε the own-price elasticity of demand ($\varepsilon < 0$). Post-tax quantity is:

(2) $Q1 = Q0 \times (P1 / P0)^{\varepsilon} = Q0 \times (1 + \varphi\tau)^{\varepsilon}$

For tobacco, the literature supports elasticities in the range − 0.2 to − 0.6 in many low- and middle-income contexts, with larger responses among youth.[9, 14] For SSBs, elasticities are typically higher in absolute value (often around − 1), consistent with observed reductions in purchases after tax reforms in Mexico and South Africa.[15–18] Evidence for khat elasticity is limited; we therefore use a conservative range (− 0.4 to − 0.8) informed by studies of stimulant goods and by the observed responsiveness of khat demand to income and price changes in the region, and we treat khat elasticity as a key uncertainty parameter.[20, 21]

Revenue. Incremental annual excise revenue for product i in year t is modeled as:

(3) $R_{i,t} = c \times \tau \times (P0_{i,t} \times Q1_{i,t})$

where c is the compliance factor ($0 < c \leq 1$). We simulate c in the range 0.6–0.9 to reflect realistic enforcement constraints in fragile settings. Aggregate revenue is $R_t = \Sigma_i R_{i,t}$. Baseline consumption values (P0×Q0) are calibrated to administrative revenue and market size proxies to ensure that simulated magnitudes are consistent with observed fiscal aggregates.[1, 3]

Earmarking for health. We model an earmarking mechanism that allocates a fixed share α of incremental excise revenue to a protected EPHS/health promotion budget line:

(4) $H_t = \alpha \times R_t$

We set α = 0.50 (50%) to illustrate an ambitious earmarking option aimed at visibly protecting EPHS financing; results scale linearly for alternative earmark shares. Earmarking is implemented in the model as a budget allocation rule; the paper does not assume full legal hypothecation, recognizing that earmarking designs vary in practice.[10, 11]

Sensitivity analysis. We report one-way sensitivity analysis on key parameters (tobacco, khat, and SSB elasticities; pass-through; compliance). The aim is to assess robustness of revenue estimates and identify the most policy-salient uncertainties in the Somalia context.

Statistical analysis of public support

To examine correlates of public support for health taxes, we estimated a logistic regression model of the form:

(5) $\text{logit}(\Pr(\text{Support}_i = 1)) = \beta 0 + \beta 1 X_i + \varepsilon_i$

where Support_i indicates whether respondent i supports excise taxation on tobacco, khat, and sugary drinks, and X_i includes sex, age group, education, employment status, and income category. Results are reported as adjusted odds ratios (aOR) with 95% confidence intervals.

Table 1
Data sources and analytical uses

Data source	Year(s)	Key content	Use in this paper
Household opinion survey on health taxes (MoHHS, 2023; n = 2,000)	2023/2024	Support for excise taxes; perceptions; socio-demographics	Estimate public support; heterogeneity analysis (logit models)
National household survey-based indicators (e.g., SHDS and other available sources)	2020–2024	Tobacco use prevalence; khat chewing prevalence; SSB consumption indicators	Calibrate baseline prevalence and demographic patterns
Administrative revenue and budget documents (MoF budget policy framework; end-year performance reporting)	2022–2026	Customs collections for khat and tobacco; import tax line items for khat/soft drinks	Describe current revenue; calibrate baseline market size
Macroeconomic and demographic reports (CBS/SNBS national accounts; population projections)	2024–2030	GDP, domestic revenue, population	Contextualize revenue magnitude and compute shares (per capita; % domestic revenue; % GDP)

Notes: EPHS = Essential Package of Health Services; MoF = Ministry of Finance; MoHHS = Ministry of Health and Human Services; SHDS = Somali Health and Demographic Survey; SSBs = sugar-sweetened beverages. Sources are listed in References.

Results

Table 2 summarizes prevalence and consumption indicators for khat, tobacco, and SSBs using available national survey evidence and the 2023 MoHHS health taxes survey. Figure 1 illustrates sex differentials in current khat chewing and tobacco use from SHDS 2020.[4]

Table 2
Product use and consumption indicators in Somalia

Indicator	Estimate	Population group	Notes / source
Daily/near-daily khat chewing prevalence (calibrated; adults 15+)	11–12% (upper bound ≤ 12%)	Total population	Calibration using adult sex-specific prevalence and youthful population structure. Sources: MoHHS (2023); SNBS (2023).
Daily khat chewing prevalence	33%	Adult men (15+)	Calibrated; reflects higher prevalence among adult men. Source: MoHHS (2023).
Daily khat chewing prevalence	8%	Adult women (15+)	Calibrated; lower prevalence among women. Source: MoHHS (2023).
Current khat chewing (any)	9.0% (men); 0.4% (women)	Population aged 10+	Illustrative national survey estimate used in Fig. 2. Source: MoHHS (2023).
Current tobacco use (any)	7.9% (men); 0.8% (women)	Population aged 10+	Illustrative national survey estimate used in Fig. 2. Source: MoHHS (2023).
SSB consumption prevalence	68% drinkers	Adults (survey sample)	Share reporting any packaged sugary drink consumption; survey-based. Source: MoHHS (2023).
SSB mean intake among drinkers	300 ml/day	Adults (survey sample)	Survey-based; used to contextualize magnitude and behavioural effects. Source: MoHHS (2023).
Public support for health taxes	77%	Adults (survey sample)	Support for excise taxes on at least one of tobacco, khat, and SSBs. Source: MoHHS (2023).

Notes: Prevalence estimates are from SHDS 2020 unless otherwise indicated. Daily khat chewing prevalence is presented as a conservative best-estimate for adults (15+) based on triangulation across SHDS sex-specific prevalence and studies reporting high urban male use; it is used for contextualizing potential health impacts rather than calibrating revenue baselines. Sources: SHDS 2020; MoHHS health taxes survey 2023; and selected peer-reviewed khat literature.[4, 5, 20, 21]

Current revenue from khat, tobacco, and SSB-related products

Table 3 summarizes existing revenue instruments and recorded outturns for khat and tobacco, which currently operate as excise-equivalent collections largely at import points.[1, 3] Khat generates substantially higher recorded revenue than tobacco in the federal budget, reflecting both the size of the market and the long-standing practice of applying import-related charges. SSB-related collections

recorded in the budget are negligible, suggesting a large gap between potential and realized revenue from this product category.[1]

Table 3
Current revenue sources and excise-equivalent charges (selected lines)

Product	Current revenue handle (illustrative)	Recent annual revenue (USD)	Year	Approx. share of domestic revenue	Notes / source
Khat	Customs collections; import tax line item	US$17.15 million	FY2024	4.6% (of 2024 domestic revenue)	Customs collections from khat imports; end-year budget performance reporting. Source: MoF (2024).
Tobacco products	Customs collections; import duties and fees	US$3.18 million	FY2024	0.9% (of 2024 domestic revenue)	Customs collections from cigarette/tobacco products; end-year budget performance reporting. Source: MoF (2024).
Soft drinks / SSBs	Import tax line item (“Soft Drinks”)	US$8,667	2025 outturn	0.0%	Budget framework line item indicates minimal current taxation of soft drinks. Source: MoF (2025).
Import tax on khat (budget line item)	Import tax on khat (budget framework)	US$16.4 million (outturn); US$17.8 million (2026 budget)	2025–2026	-	Budget policy framework reporting and 2026 budget projections (illustrative). Source: MoF (2025).

Sources: Ministry of Finance end-year budget performance report (FY2024) and budget policy framework paper (FY2026).[1, 3]

Public support for health taxes

Across survey respondents, approximately 77% supported introducing or increasing excise taxes on tobacco, khat, and sugary drinks.[5] Table 7 presents multivariable correlates of support. Support was broadly consistent across demographic groups, with higher support among respondents reporting better knowledge of health harms and among higher-income households, consistent with international evidence that acceptability improves when health benefits and earmarking are clear.[10, 11, 15]

Simulated revenue under alternative excise scenarios

Table 4 reports simulated incremental excise revenue for 2025–2030 under three effective ad valorem scenarios (10%, 15%, 20%) applied to khat, tobacco products, and SSBs. Under the 15% scenario, incremental revenue increases from US$45.5 million in 2025 to US$51.8 million in 2030, yielding US$291.7 million cumulatively across 2025–2030. Under the 20% scenario, cumulative revenue reaches US$377.3 million. Figure 2 plots annual revenue trajectories.

Table 4
Simulated incremental excise revenue (USD million) under alternative scenarios, 2025–2030

Year	Excise 10%	Excise 15%	Excise 20%
2025	31.3	45.5	58.9
2026	32.2	46.7	60.4
2027	33.0	47.9	62.0
2028	33.9	49.2	63.6
2029	34.7	50.5	65.3
2030	35.6	51.8	67.0
Cumulative 2025–2030	200.7	291.7	377.3

Notes: Scenarios are effective ad valorem excise rates applied to khat, tobacco, and SSBs. Values are incremental revenue relative to baseline (current fragmented collections). Sources: authors' simulation calibrated to MoF administrative data and elasticities from the literature.[1, 3, 9, 14–18]

Source: authors' simulation model.[1, 3, 9, 14–18]

Earmarked health revenue and budget significance

Table 5 quantifies earmarked health revenue assuming that 50% of incremental excise receipts are allocated to a protected EPHS/health promotion budget line. Under the 15% scenario, earmarked revenue would be US$22.8 million in 2025 (≈ US$1.48 per capita), equivalent to ~ 24.8% of the federal MoH budget in the same year. Figure 3 illustrates earmarked revenue in 2025 across scenarios.

Table 5
Earmarked health revenue under a 50% allocation rule

Scenario	Earmarked health revenue (US$ m)	Per-capita earmarked amount (US$)	Share of 2025 federal MoH budget
10%	15.7	1.00	17.0%
15%	22.8	1.48	24.8%
20%	29.5	1.90	32.0%
Scenario	**Earmarked health revenue (US$ m)**	**Per-capita earmarked amount (US$)**	**Share of 2025 federal MoH budget**
10%	15.7	1.00	17.0%
15%	22.8	1.48	24.8%
20%	29.5	1.90	32.0%

Notes: Earmarked health revenue is calculated as 50% of simulated incremental excise revenue. Per-capita estimates use mid-2020s population projections; the share of the 2025 federal health budget uses MoH budget utilization totals. Sources: authors' simulation; MoH budget utilization (FY2025).[1, 3, 5]

Under the 15% scenario, cumulative earmarked health revenue over 2025–2030 would be approximately US$145.8 million (50% of cumulative incremental excise revenue), rising to US$188.7 million under the 20% scenario.

Source: authors' simulation; MoH budget utilization (FY2025).

Sensitivity analysis

Table 6 shows one-way sensitivity analysis for 2030 revenue under the 15% scenario. Revenue is moderately sensitive to compliance and pass-through assumptions, reflecting the importance of enforcement and market structure. Revenue is less sensitive to plausible ranges of elasticity in the short run because higher tax rates increase the tax base even as consumption declines, a pattern documented in tobacco and SSB tax literature.[9, 14–18]

Table 6
One-way sensitivity analysis (2030 revenue, 15% scenario; USD million)

Parameter	Range tested	Base-case value	Revenue (low)	Revenue (base)	Revenue (high)
Tobacco elasticity (ε_tob)	-0.2	-0.4	-0.6	-0.6	-0.6
Khat elasticity (ε_khat)	-0.4	-0.6	-0.8	-0.8	-0.8
SSB elasticity (ε_ssb)	-0.8	-1.0	-1.2	-1.2	-1.2
Pass-through (φ)	0.8	1.0	1.2	1.2	1.2

Notes: "Low/base/high" refer to the revenue outcomes under the low, base-case, and high values of each parameter while holding others constant. Elasticity ranges are drawn from international evidence for tobacco and SSBs; khat elasticity remains uncertain and is treated as a key parameter. [9, 14–18, 20, 21]

Table 7
Determinants of support for health taxes (logistic regression; adjusted odds ratios)

Variable (ref. category)	Adjusted OR	95% CI	p-value
Age (per 10-yr ↓)	1.21	1.05–1.40	0.006
Female (vs male)	1.14	0.98–1.33	0.084
Middle income (vs low)	1.36	1.12–1.64	0.002
High income (vs low)	1.47	1.17–1.85	< 0.001
≥ Secondary education	1.42	1.19–1.70	< 0.001
Urban (vs rural)	1.08	0.92–1.27	0.330
"Knows NCD risks" †	1.53	1.30–1.80	< 0.001

Source: MoHHS household opinion survey on health taxes (2023).[5]

Discussion

Principal findings. This study provides the first consolidated evidence base for health taxes in Somalia combining administrative revenue data, nationwide survey evidence on public support, and a transparent simulation model. We find that (i) Somalia already collects meaningful revenue from khat through import-related charges, indicating a feasible collection point and a potentially scalable tax base; (ii) public support for health taxes is high (77%); and (iii) an expanded excise base that includes khat,

tobacco, and SSBs could generate substantial incremental revenue over 2025–2030, with earmarking offering a meaningful contribution to EPHS financing.[1, 3, 5]

Comparison with international experience. The direction and magnitude of simulated revenue gains are consistent with evidence from other low- and middle-income countries where excise reforms have increased revenue even as consumption declined, particularly when tax administration is strengthened.[9, 12–14] For SSBs, the empirical literature documents significant reductions in purchases after tax implementation in Mexico and South Africa, alongside sustained revenue generation and in some cases producer reformulation.[17, 18] Somalia's context differs due to the centrality of khat and the fragility of enforcement systems, but the underlying economic mechanisms (price responsiveness and revenue generation from inelastic demand) remain relevant.[9, 14, 20]

Policy design considerations. Three design choices are critical. First, the tax base should explicitly include khat and define taxable forms clearly to reduce loopholes (fresh leaves, processed products, and substitutes). Second, the rate structure should aim to raise the effective tax share while limiting opportunities for under-declaration. For tobacco, international guidance favors moving toward a strong specific excise (or mixed system with a minimum tax) rather than relying solely on ad valorem duties, to reduce price dispersion and strengthen health impact.[12–14] For SSBs, sugar-based or volumetric taxes can better target health harms than ad valorem taxes, though administrative capacity must be considered.[15, 16] Third, robust enforcement—customs valuation, licensing of importers/wholesalers, track-and-trace for tobacco, and anti-smuggling coordination with border agencies—is essential to maintain compliance (parameter c) and protect revenues.[12, 13]

Evidence from multi-country studies in the International Tobacco Control (ITC) Project reinforces that sustained increases in tobacco taxes and prices reduce consumption and increase cessation, supporting the relevance of excise reforms even in resource-constrained settings.[19]

Earmarking and governance. Earmarking a portion of incremental excise receipts can improve public acceptability and strengthen budget credibility for priority health spending, but it must be designed carefully to avoid fragmentation and to preserve macro-fiscal flexibility.[10, 11] In fragile settings, a pragmatic approach is a protected health budget line (or health promotion fund) with transparent allocation rules, quarterly reporting, and independent audit, rather than a rigid hypothecation that bypasses the treasury system.[6, 10] The earmarking scenario presented here (50%) is intended as an implementable option that could be phased in and linked to measurable EPHS outputs.

Equity and distributional considerations. Health taxes can be regressive in narrow financial terms because poorer households spend a larger share of income on taxed products. However, international evidence suggests that the health gains from reduced consumption are often progressive, and the net distributional impact can be pro-poor if revenues are used to finance services that disproportionately benefit lower-income groups.[9–11, 16] For Somalia, a priority would be to earmark and visibly invest in primary health care, essential medicines, and financial protection mechanisms, while monitoring for unintended effects (e.g., substitution to informal or illicit products).

Implementation feasibility in Somalia. Somalia's experience collecting khat-related revenue indicates an operational entry point for scaling excise collection, likely through strengthened customs administration at key ports and border points. However, implementation will require legal amendments to the excise framework, clear product definitions, and institutional capacity building in revenue administration and enforcement.[1, 3] Coordination with Federal Member States and local authorities is also important to reduce displacement of trade routes and to avoid conflicting sub-national levies. Given the political economy of khat, early stakeholder engagement and transparent communication about health objectives and revenue use are essential.

Limitations

First, Somalia lacks comprehensive, routinely collected data on quantities and prices of khat, tobacco, and SSBs. We therefore calibrate the simulation to administrative revenue and apply elasticity values from the international literature, with sensitivity analysis to reflect uncertainty.[9, 14–18, 20, 21] Second, the MoHHS household opinion survey provides valuable policy evidence but may not fully capture hard-to-reach populations; results should therefore be interpreted as indicative of national sentiment rather than definitive population estimates.[5] Third, the model abstracts from cross-product substitution, industry pricing strategies beyond simple pass-through, and long-run behavioral dynamics. Fourth, enforcement constraints and illicit trade could materially affect revenue outcomes; the compliance parameter c is treated as a key uncertainty but is difficult to estimate precisely in Somalia.[12, 13] Future research should prioritize improved market surveillance, price data collection, and quasi-experimental evaluation if reforms are implemented.

Conclusions

Somalia's constrained fiscal space and high reliance on OOP and external financing make domestic revenue mobilization for health a strategic imperative. Our simulations indicate that implementing a broadened excise base that includes khat, tobacco products, and SSBs could generate tens of millions of dollars annually over 2025–2030, even under conservative assumptions. A transparent earmarking rule—such as allocating 50% of incremental excise revenue to a protected EPHS/health promotion budget line—could meaningfully increase the resources available for priority services and improve budget credibility. Achieving these gains will require legal reforms, strengthened tax and customs administration, and governance safeguards that ensure accountability and efficiency.

Abbreviations

EPHS
Essential Package of Health Services
IMF
International Monetary Fund
MoF

Ministry of Finance
MoHHS
Ministry of Health and Human Services
NCD
non-communicable disease
OOP
out-of-pocket
SSB
sugar-sweetened beverage
UHC
universal health coverage.

Declarations

Ethics approval and consent to participate

Not applicable. The analysis used aggregated administrative data and an anonymized public opinion survey implemented for policy purposes; no clinical data were collected.

Consent for publication

Not applicable.

Availability of data and materials

Administrative fiscal data are available from the Somali Ministry of Finance budget documents cited in the References. Survey micro-data are not publicly available due to institutional data governance policies; aggregated results used in this paper are available from the corresponding author upon reasonable request and with MoHHS authorization.

Competing interests

The authors declare no competing interests.

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Authors’ contributions

KMM conceptualized the study, assembled administrative and survey evidence, developed the simulation model, analyzed data, and drafted the manuscript. GAA provided methodological review, policy and contextual inputs, and critical revision of the manuscript. Both authors read and approved the final manuscript.

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Figures

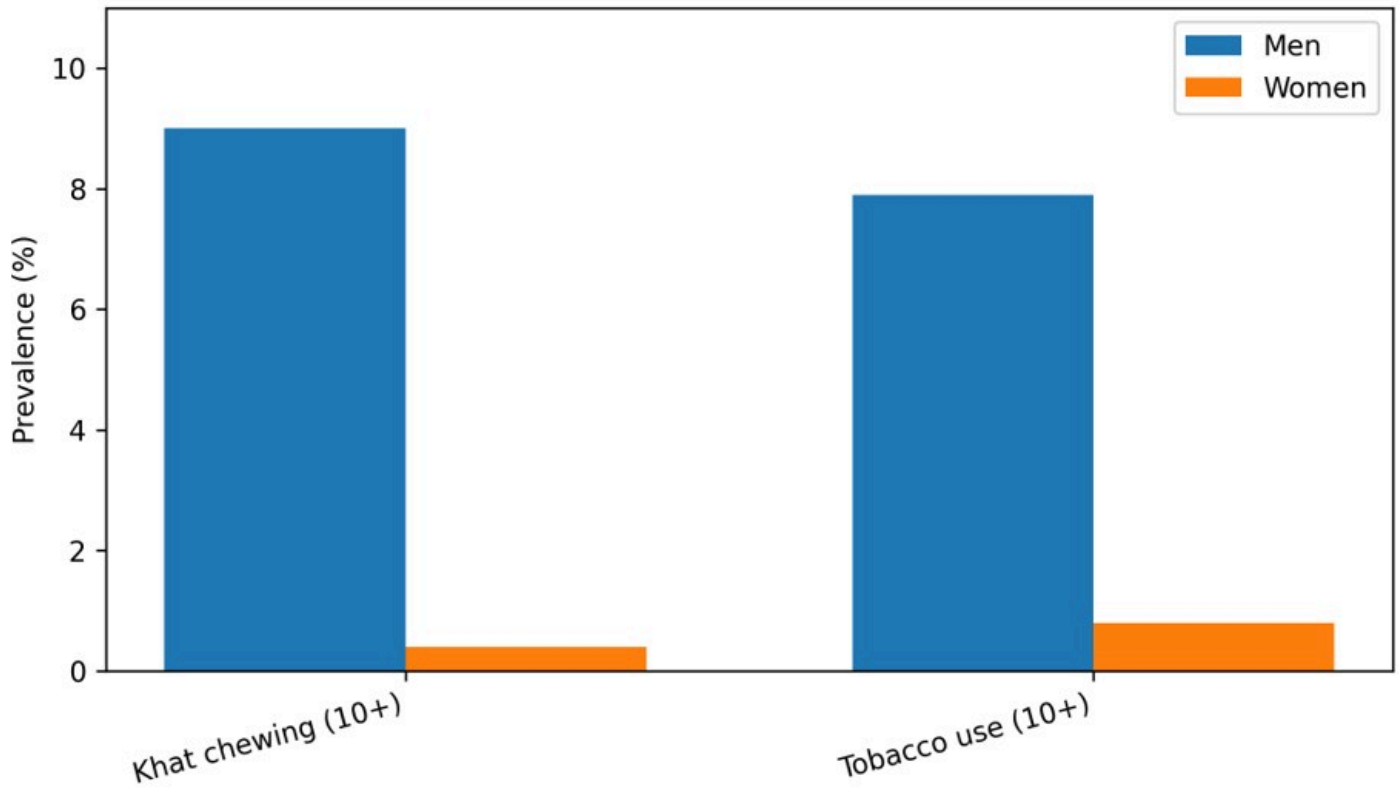


Figure 1

Current khat chewing and tobacco use by sex (population aged 10+)

Source: Somali Health and Demographic Survey 2020.[4]

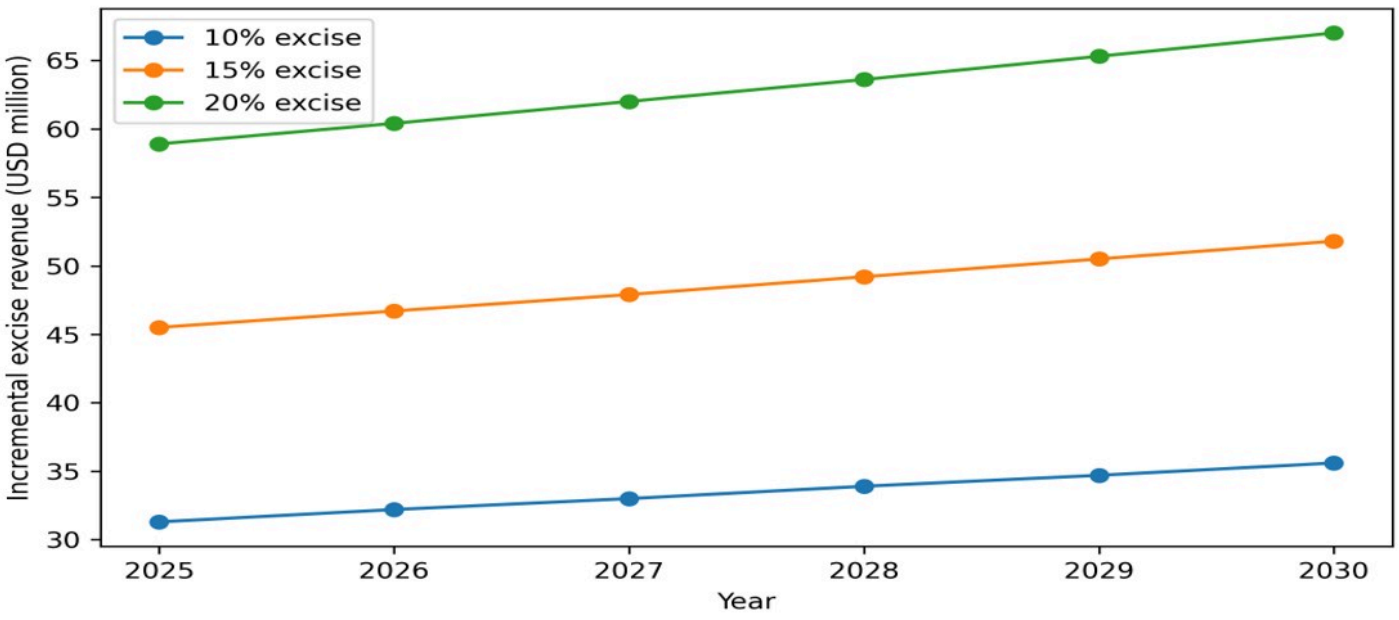


Figure 2

Simulated incremental excise revenue under alternative scenarios, 2025–2030

Source: authors' simulation model.[1,3,9,14–18]

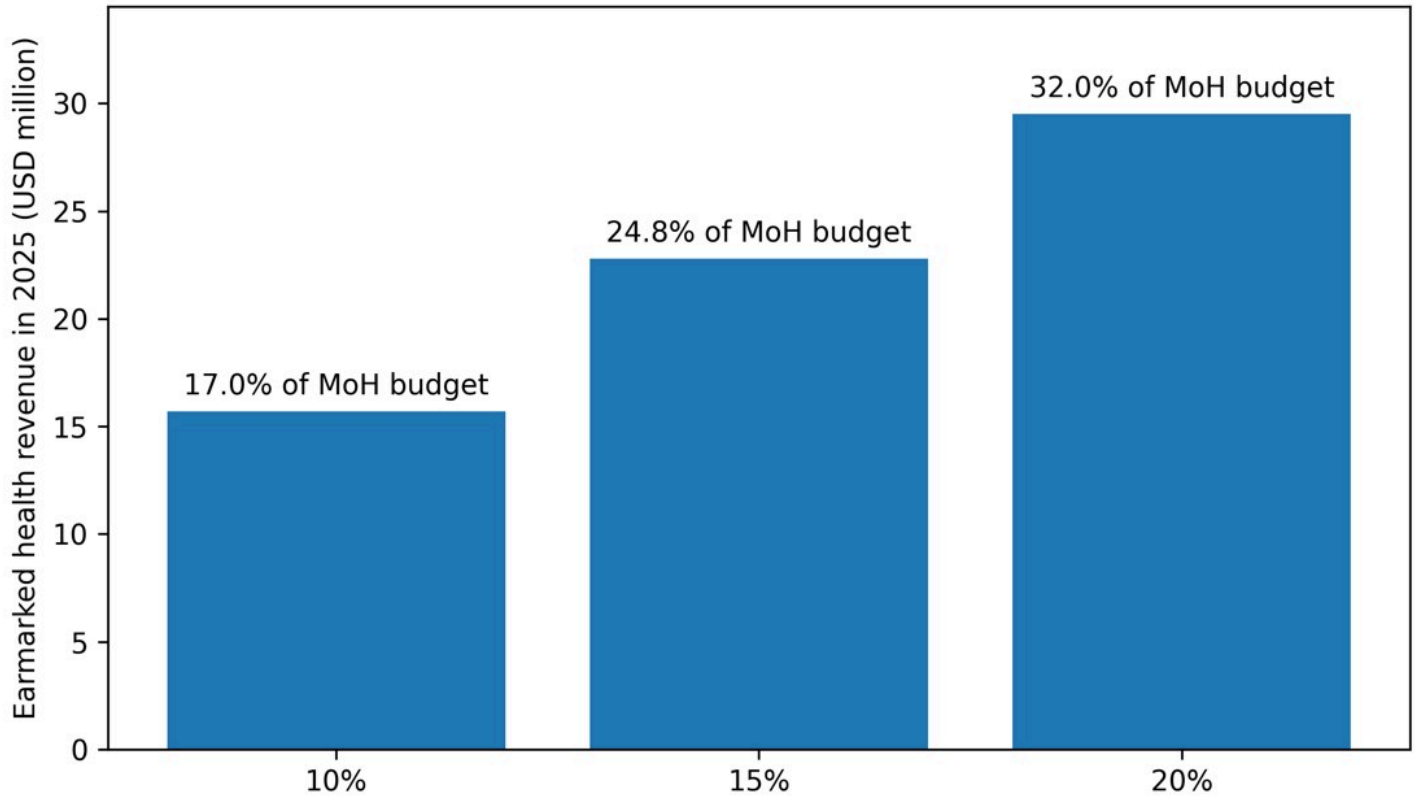


Figure 3

Earmarked health revenue in 2025 and implied share of federal health budget

Source: authors' simulation; MoH budget utilization (FY2025).

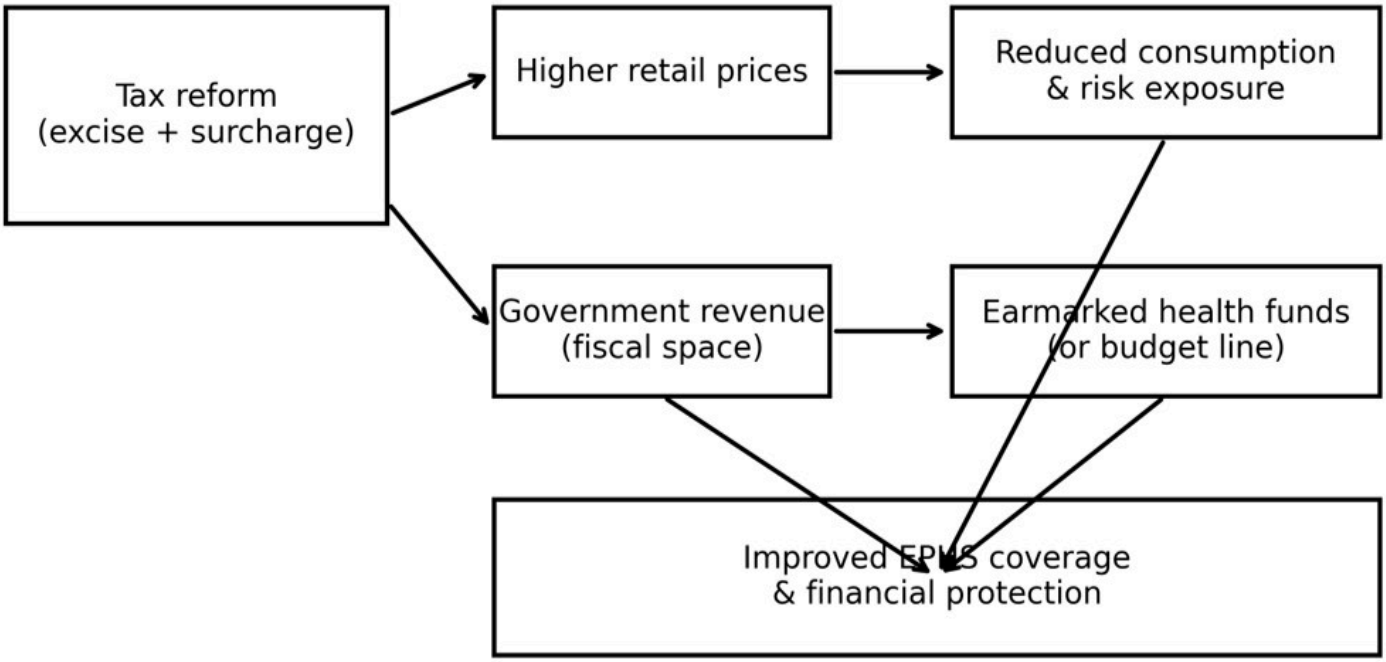


Figure 4

Conceptual framework: health taxes, the “triple dividend”, and fiscal space for EPHS

Sources: authors’ synthesis based on health tax and fiscal space literature.[7,9–11,14,15]