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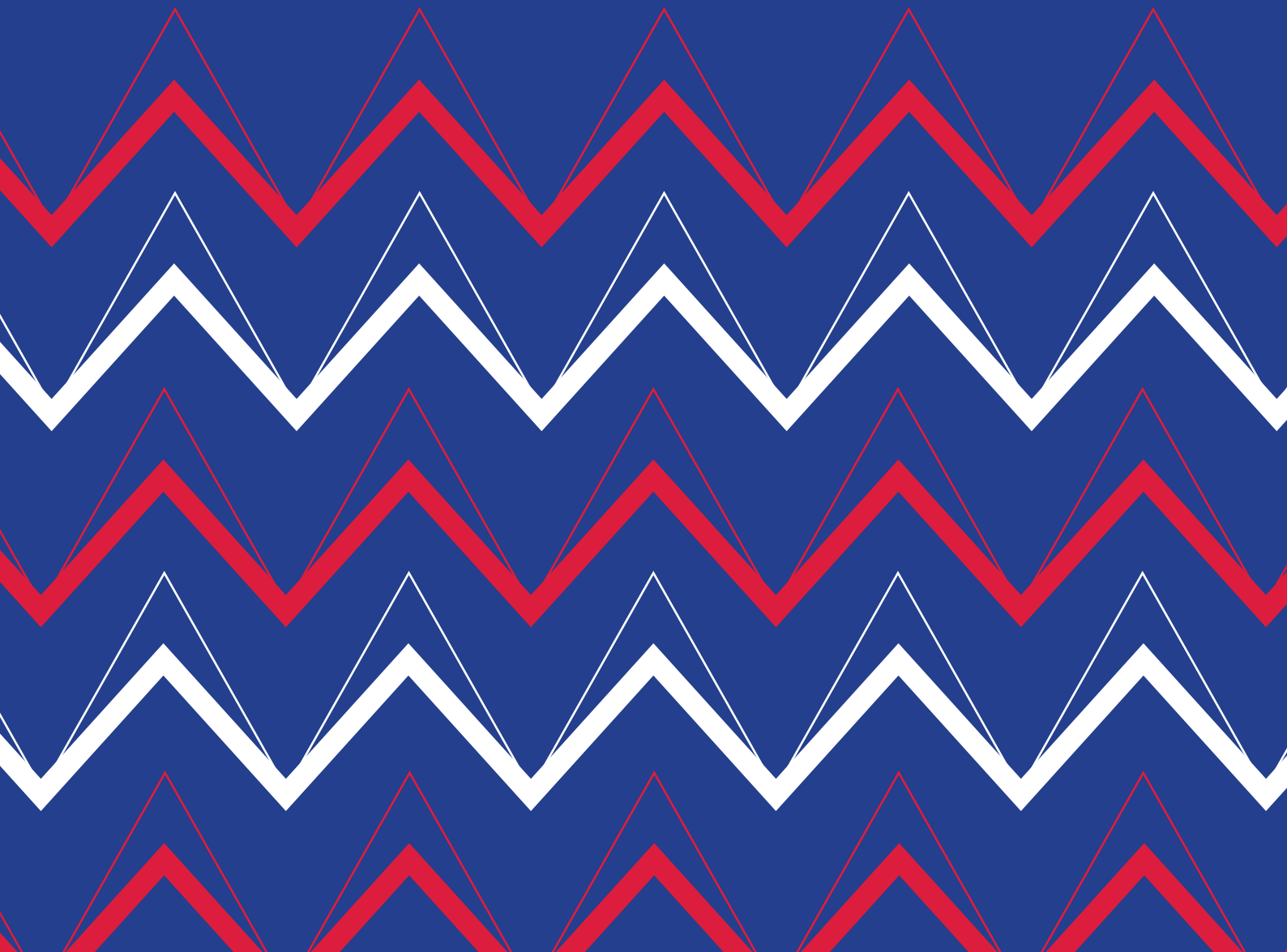
Investment Case for Tobacco Control in NEPAL



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ISBN (WHO) 978-92-4-010049-7 (electronic version)
ISBN (WHO) 978-92-4-010050-3 (print version)

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The case for scaling-up WHO FCTC implementation in Nepal

Investment Case for Tobacco Control in Nepal

More than

39,200

Nepalese die

every year due to tobacco-related illnesses.

Tobacco costs Nepal

NPR 45 billion

every year, equivalent to

1.2% of annual GDP.

Investing now in five proven tobacco control measures will prevent around

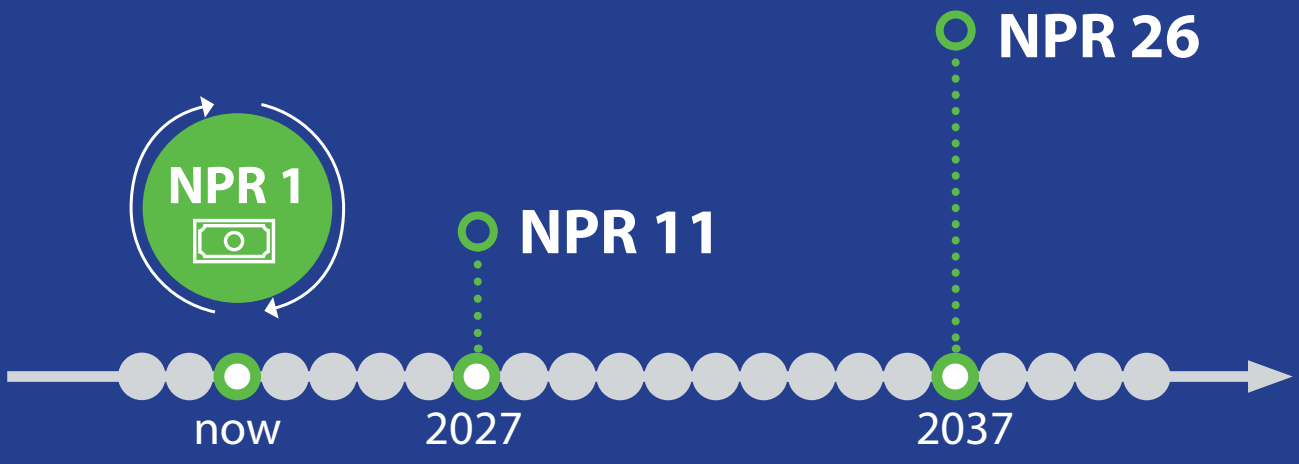
114,000 lives

and avert

NPR 88.1 billion

in health costs and economic losses by 2037.

For every **Nepalese rupee** invested in five priority tobacco-control measures today, Nepal will avert **NPR 11** in healthcare costs and economic losses by 2027 and **NPR 26** by 2037.



Acknowledgements

This report was completed through collaborative efforts of the Ministry of Health and Populations of Nepal, the United Nations Development Programme (UNDP), the Secretariat of the WHO Framework Convention on Tobacco Control (WHO FCTC), and the World Health Organization (WHO).

The investment case report has been made possible through the FCTC 2030 project which is generously funded by the Governments of Australia, Norway and the United Kingdom.

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The economic modelling was performed by Brian Hutchinson and Garrison Spencer. Additional support in drafting was provided by Sue Cheng. Zsuzsanna Schreck completed the graphic design and layout of the report.

Table of contents

This tobacco control investment case highlights the enormous costs of tobacco in Nepal and the set of recommended policy actions that will deliver substantial economic and public health benefits to the country. The implementation of effective tobacco control policies from the WHO Framework Convention on Tobacco Control can play an important role in strengthening sustainable development in Nepal.

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Executive summary

Tobacco is a health and sustainable development issue. Tobacco causes early death and disease, results in high health costs and economic losses, widens socioeconomic inequalities, and impedes progress across the Sustainable Development Goals (SDGs).

This report presents the findings of the case for investing in tobacco control in Nepal, a stated priority of the Government of Nepal. In line with the WHO Framework Convention on Tobacco Control (WHO FCTC) Global Strategy to Accelerate Tobacco Control, it measures the costs and benefits—in health and economic terms—of implementing five priority tobacco control measures. The five measures are: 1) increase tobacco taxation to reduce the affordability of tobacco products (WHO FCTC Article 6); 2) create smoke-free public places and workplaces to protect people from the harms of tobacco smoke (WHO FCTC Article 8); 3) implement plain packaging of tobacco products (WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13); 4) promote and strengthen public awareness of tobacco control issues, including the health risks of tobacco use and tobacco smoke, addiction, and the benefits of cessation (WHO FCTC Article 12); and 5) scale up of brief advice to quit for tobacco users in primary care clinics (WHO FCTC Article 14).

Main findings

In 2019, tobacco use imposed around NPR 45.2 billion in economic losses. The losses are equivalent to 1.2 percent of Nepal's gross domestic product (GDP).

They include a) NPR 12.2 billion in direct health-care expenditures to treat tobacco-related illness, b) tobacco-attributable mortality valued at NPR 20.4 billion, and c) NPR 12.7 billion in reduced workplace productivity from absenteeism and presenteeism. Productivity losses from current tobacco use in Nepal, representing 28 percent of all tobacco-related economic losses, shows how tobacco use impedes development in Nepal beyond health. Multisectoral engagement is required for effective tobacco control, and other sectors benefit substantially from the implementation of tobacco control measures that create healthier communities and a more productive labour force.

Every year, tobacco kills more than 39,200 Nepalese, with 41 percent of these deaths among people under 70 years of age.
Around 11 percent of lives lost from tobacco use are due to exposure to secondhand smoke.

By acting now, the Government of Nepal can substantially reduce the national burden from tobacco use. The investment case findings demonstrate that enacting and enforcing five proven WHO FCTC measures would, over the next 15 years:

Avert NPR 88.1 billion in economic losses.
Of this total, NPR 24.9 billion are avoided workplace productivity losses. The tobacco-control measures stimulate economic growth because fewer people 1) miss days of work due to disability or sickness, and 2) work at a reduced capacity due to tobacco-related health issues.

Save more than 114,400 lives and reduce the incidence of disease.
The recommended WHO FCTC measures would contribute to Nepal's efforts to achieve SDG Target 3.4, which aims to reduce by one-third premature mortality (under age 70) from non-communicable diseases (NCDs) by 2030. Enacting the key WHO FCTC measures would prevent premature deaths from the four main NCDs – cardiovascular disease (CVD), diabetes, cancer, and chronic respiratory disease – in the equivalent of about 12 percent of the needed reduction in premature mortality to achieve SDG Target 3.4.

Provide economic benefits (NPR 88.1 billion) that significantly outweigh the costs of implementing the five WHO FCTC measures (NPR 3.4 billion).
Increasing tobacco taxation to reduce the affordability of tobacco products has the highest return-on-investment (281:1), followed by promoting and strengthening public awareness of tobacco control issues (56:1), implementing plain packaging of tobacco products (31:1), creating smoke-free public places and workplaces to protect people from the harms of tobacco smoke (25:1), and offering cessation support by training health professionals to provide brief advice to quit tobacco use (1:1).

Recommendations

1. Increase taxes and harmonize the tax rates on all tobacco products.
2. Commit to fully implement the WHO FCTC and invest in strengthening the WHO FCTC policy actions modeled in this investment case to reduce tobacco use prevalence and protect the population.
3. Strengthen national multisectoral tobacco control planning and coordination to drive a whole-of-government and whole-of-society approach to tobacco control.

Table ES1. Summary of the main results of the investment case for tobacco control in Nepal*

Every year, tobacco use causes…	Over 15 years, implementing new tobacco control measures or intensifying existing ones would…
More than **39,200** deaths each year	Save more than **114,400** lives
NPR 12.2 billion in healthcare expenditures	Save **NPR 24.0 billion** in healthcare expenditures
NPR 20.4 billion in losses due to tobacco-attributable mortality	Prevent **NPR 39.3 billion** in losses due to tobacco-attributable mortality
NPR 12.7 billion in workplace costs	Prevent **NPR 24.9 billion** in workplace productivity losses
Total economic losses equivalent to **1.2 percent** of GDP.	Generate economic benefits (**NPR 88.1 billion**) that greatly outweigh costs (**NPR 3.4 billion**) of implementation and enforcement – a 26:1 return on investment.

* Figures are subject to rounding.

1. Introduction

Tobacco is one of the world's leading threats to health, and a main risk factor for NCDs including cancers, diabetes, chronic respiratory disease and CVD. In Nepal, approximately one in four adults currently use either smoked or smokeless tobacco products [1], leading to more than 39,200 deaths every year.

Alongside the cost to health, tobacco imposes a substantial economic burden. A 2018 study (based on 2012 data) found that the costs of smoking[1] were equivalent to 1.8 percent of the world's annual gross domestic product (GDP). Almost 40 percent of the costs occurred in developing countries, highlighting the substantial burden these countries suffer [2]. Further, tobacco use can reduce productivity by permanently or temporarily removing individuals from the labour market due to poor health [3]. When individuals die prematurely, the labour output that they would have produced in their remaining years is lost. In addition, individuals with poor health are more likely to miss days of work (absenteeism) or to work at a reduced capacity while at work (presenteeism) [4], [5].

Tobacco use may displace household expenditure that would otherwise go to fulfilling basic needs, including food and education [6]–[8], and it contributes to hunger and impoverishment among families [5], [6]. It imposes health and socio-economic challenges on the poor, women, youth, and other vulnerable populations [11].

Tobacco production causes environmental damage including soil degradation, water pollution, and deforestation [9]–[11]. Given the far-reaching development impacts of tobacco, and the multisectoral nature of the interventions required, effective tobacco control requires the engagement of non-health sectors within the context of a whole-of-government and whole-of-society approach.

Current tobacco use trends in Nepal and around the world are incompatible with sustainable development. Through SDG Target 3.4, the 2030 Agenda for Sustainable Development commits Member States, including Nepal, to achieve a one-third reduction in mortality before age 70 from NCDs by 2030. Accelerating progress on NCDs requires strengthened implementation of the WHO FCTC (SDG Target 3.a). Tobacco control is not just a primary means to improve population health, but also a proven approach to reduce poverty and inequalities, grow the economy, and advance sustainable development more broadly. Tobacco control is an SDG accelerator as it can contribute to many goals simultaneously across the economic, social, and environmental spheres.

1 Defined as either 'direct costs' such as hospital fees or 'indirect costs' representing the productivity loss from morbidity and mortality. The figure here represents these combined costs.

However, more work must be done to reverse the tobacco epidemic including by accelerating implementation of the WHO FCTC.

Nepal signed the WHO FCTC in 2003 and ratified the treaty in 2006 [12]. In response to its WHO FCTC obligations, Nepal passed the Tobacco Product(Control and Regulatory) Act in 2011, prohibiting smoking in public places and banning tobacco advertising and sponsorship [13]. In addition, a 2014 directive mandated graphic warning labels to cover at least 90 percent of tobacco packaging, placing Nepal's restriction among the worlds most stringent [14].

By legislating and funding these important measures, Nepal is helping to curb the tobacco epidemic and has set the stage to strengthen efforts. Intensifying existing policies and implementing new measures can draw the tobacco use prevalence curve further downward and generate additional health and economic gains. For example, opportunities exist in Nepal to raise taxes to reduce the affordability of tobacco products, improve cessation services (including scale up of brief advice to quit tobacco at the primary care level), and mandate plain packaging of tobacco products. Realizing the full potential benefits of such measures depends on concerted and coordinated efforts from multiple sectors of government as well as high-level leadership and an informed public.

In 2018, the Secretariat of the WHO FCTC, UNDP, and WHO undertook a joint mission to Nepal to conduct needs and situational assessments as part of the FCTC 2030 Project. The FCTC 2030 Project is a global initiative funded by the governments of the UK, Norway, and Australia to support countries to strengthen WHO FCTC implementation to achieve the SDGs. As of 2022, Nepal is one of 33 countries worldwide that have participated in the FCTC 2030 project. After initial investment case modeling prepared in early 2019, this report provides updated estimates reflecting new data provided by the Government of Nepal in 2022, principally data from the 2019 STEPS survey.

An investment case analyzes the health and economic costs of tobacco use as well as the potential gains from scaled-up implementation of WHO FCTC measures. It identifies which WHO FCTC demand-reduction measures will produce the largest health and economic returns for Nepal (the return on investment; ROI). In consultation with the Government of Nepal, the investment case models the impact of implementing the following seven key WHO FCTC provisions:

1	**Increase tobacco taxation to reduce the affordability of tobacco products** *(WHO FCTC Article 6);*
2	**Create smoke-free public places and workplaces to protect people from the harms of tobacco smoke** *(WHO FCTC Article 8);*
3	**Require graphic health warnings on tobacco product packaging that describes the harms of tobacco use** *(WHO FCTC Article 11);*
4	**Implement plain packaging of tobacco products** *(WHO FCTC Article 11: Guidelines for implementation, and Article 13);*
5	**Promote and strengthen public awareness of tobacco control issues, including the health risks of tobacco use and tobacco smoke, addiction, and the benefits of cessation** *(WHO FCTC Article 12);*
6	**Enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship** *(WHO FCTC Article 13); and*
7	**Scale up of brief advice to quit for tobacco users in primary care clinics** *(WHO FCTC Article 14).*

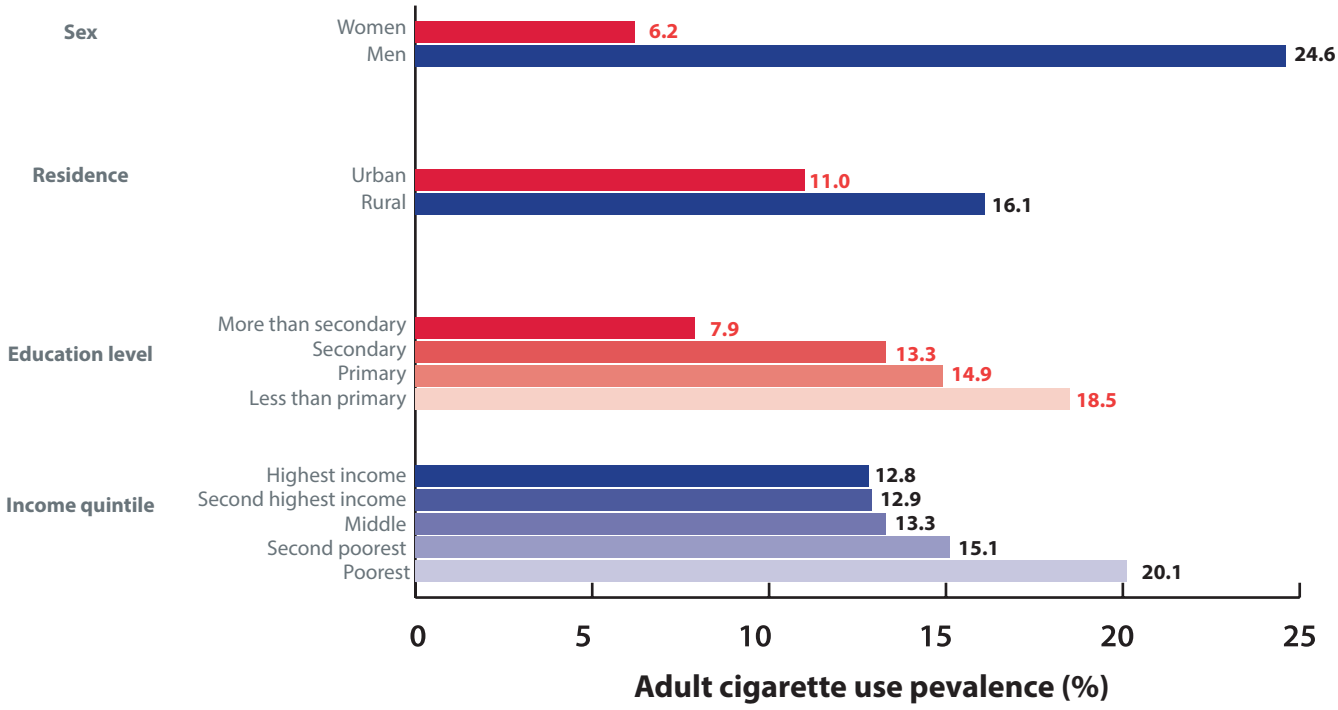
Chapter 3 of this report provides an overview of tobacco control in Nepal, including tobacco use prevalence as well as challenges and opportunities. **Chapter 4** summarizes the methodology of the investment case [for more detail see Section 8: Methodology Annex, and the separate Technical Appendix (available upon request)]. **Chapter 5** reports the main findings of the economic analysis. **Chapter 6** details the results of the complementary analysis examining equity considerations of increasing tobacco taxes, as well as the contribution of the WHO FCTC demand reduction measures to meeting SDG Goal 3.4 to reduce premature mortality due to NCDs by on-third by 2030. The report concludes under **Chapter 7** with recommendations. The annex provides information on the methods underlying the various analyses described in the report.

2. Tobacco control in Nepal: status and context

2.1 Tobacco use prevalence, social norms and awareness-raising

According to the STEPwise approach to NCD risk factor surveillance (STEPS) 2019 survey in Nepal, found that 28.9 percent of adults aged 15–69 years currently use any form of tobacco product in the country [1].[2] Overall, tobacco use prevalence is considerably higher among men, with nearly half of adult men (48.3 percent) currently using a tobacco product, compared to 11.6 percent of women [1]. Nepal has a relatively high prevalence of smokeless tobacco use, with around 18 percent of adults using smokeless tobacco products compared to just 4 percent globally [1], [15]. Most adult smokeless tobacco users (13 percent) consume surti or khaini, a type of chewing tobacco made of sun-dried or fermented crushed tobacco leaves mixed with slaked lime paste [1], [16]. Adult smoked tobacco use prevalence is 16.3 percent, with most (87 percent) users smoking manufactured or hand rolled cigarettes [1].

Fig. 1: Cigarette smoking prevalence by different demographic groups



2 Plain (or standardized) packaging is defined as "measures to restrict or prohibit the use of logos, colours, brand images or promotional information on packaging other than brand names and product names displayed in a standard colour and font style". Further information is available at: Guidelines for implementation of Article 11 of the WHO Framework Convention on Tobacco Control (decision FCTC/COP3(10)) November 2008 available at: https://fctc.who.int/publications/m/item/packaging-and-labelling-of-tobacco-products

Figure 1 shows how cigarette smoking differs by demographic group. Cigarette smoking is more common among men (24.6 percent) compared to women (6.2 percent) [1]. Individuals with lower incomes (the poorest 20 percent of the population) are about 1.5 times as likely to smoke as those in the highest income group (highest income level 20 percent of the population)[1]. Cigarette smoking is also more common in rural areas (16.1 percent) compared to urban or suburban areas (11.0 percent) [1]. Cigarette use prevalence declines with higher levels of education; 18.5 percent of those with less than a primary school education smoke cigarettes compared to 7.9 percent of those who have attended university [1].[3]

2.2 The status of WHO FCTC Tobacco control demand-reduction measures

Strong fiscal and regulatory measures influence societal norms by signalling to the population that tobacco use is harmful, not only for users but for the people around them—including family, colleagues, and workers. While Nepal is fulfilling several obligations under the WHO FCTC, implementing additional measures – or strengthening existing ones – can further align Nepal with the WHO FCTC to reduce the substantial costs imposed by tobacco use. This section summarizes the current state of WHO FCTC demand-reduction measures and the target level advocated for and analyzed within the investment case [17].

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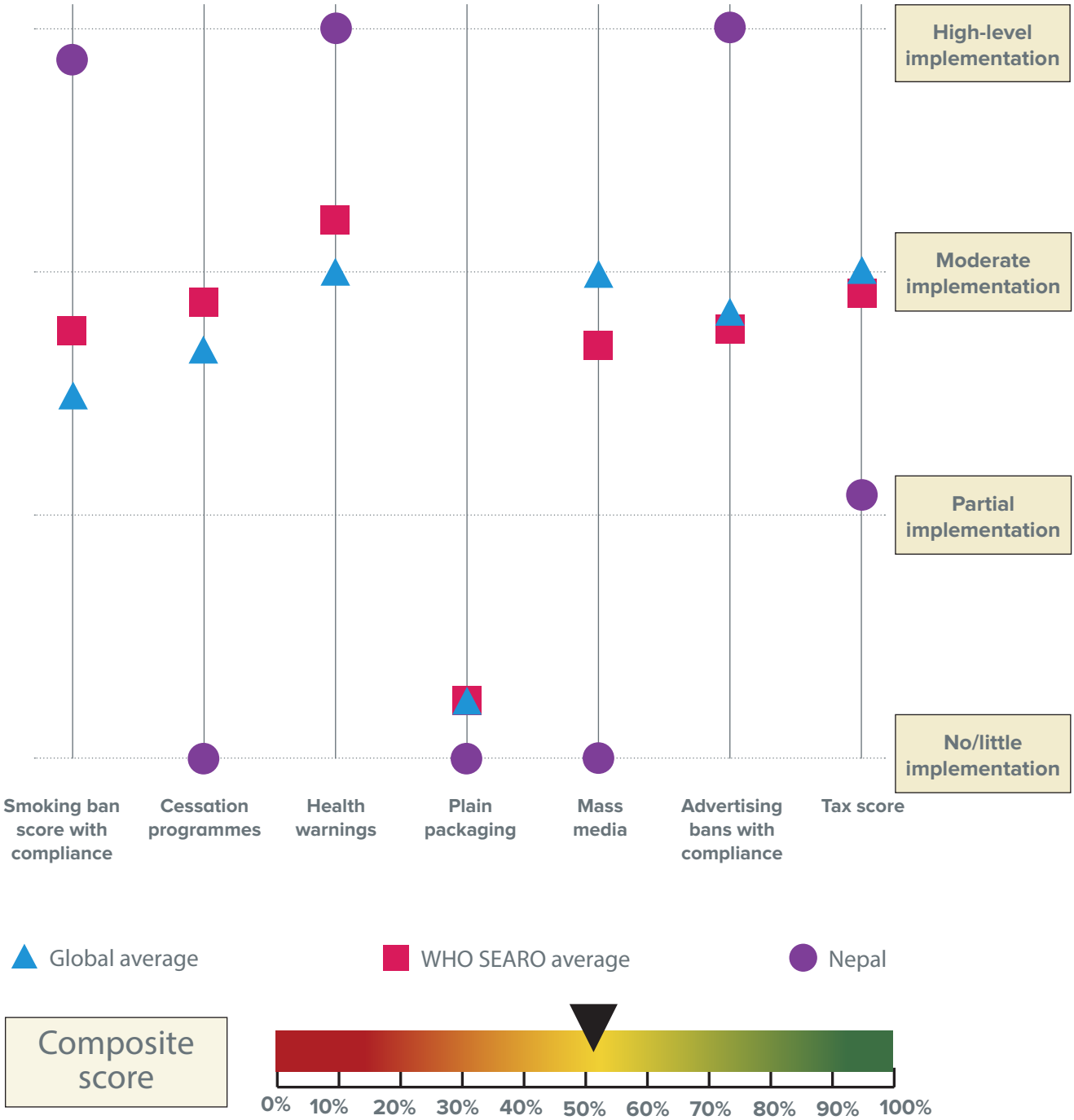
3 Author's calculations using 2019 STEPS data.

Figure 2 summarizes the status of tobacco control demand reduction measures in Nepal from the WHO Report on the Global Tobacco Epidemic, 2021 [18] and, for each, progress toward meeting the WHO FCTC obligations. Overall, Nepal is assessed to be 52 percent of the way toward fulfilling the key WHO FCTC demand reduction measures, slightly below the global average of 53 percent.[4]

Fig. 2: Implementation of WHO demand reduction measures in Nepal



Data underlying Figure 2 are from the 2021 WHO Report on the Global Tobacco Epidemic; see Appendix Section 8.5 for more information.

4 This composite score represents a status quo implementation level of tobacco control demand reduction measures developed by economists intentionally for tobacco control investment cases.

Increase tobacco taxation to reduce the affordability of tobacco products *(WHO FCTC Article 6)*

In Nepal, cigarette taxes – mainly consisting of specific excise tax and value added tax (VAT) – comprise about 27 percent of the retail price of the most sold brand of cigarettes, according to the WHO Report on the Global Tobacco Epidemic, 2021[5][18]. There is substantial scope to reach what is considered in the WHO Report on the Global Tobacco Epidemic as the highest level of achievement, which is for total taxes to represent at least 75 percent of the retail price. Additionally, WHO FCTC Article 6 Guidelines for implementation recommend uniform specific taxes, and that tax rates be monitored, increased and adjusted on a regular basis, taking into account inflation and income growth. The investment case examines the impact of raising cigarette taxes to levels considered in the WHO Report on the Global Tobacco Epidemic as the highest level of achievement. It examines a scenario in which specific excise taxes are implemented that generate price increases that average NPR 39 per year (in real terms) beginning in 2025 until 2037. In this scenario, the tax share would achieve the 75 percent threshold in 2037, meeting WHO FCTC obligations (see Methodology annex for detailed information).

Create smoke-free public places and workplaces to protect people from the harms of tobacco smoke *(WHO FCTC Article 8)*

Nepal's Tobacco Act bans smoking in most public places, though there are limited exceptions that allow managers of airports, prisons and tourist level hotels to create designated smoking areas within the facilities that they oversee [17]. The presence of designated smoking areas in Nepal may signal the acceptability of tobacco use to the population and therefore encourage its continued use. Additionally, enforcement of existing bans is low, receiving a score of 1 out of 10 in the WHO report on the global tobacco epidemic, 2021 [18]. The investment case examines the impact of strengthening enforcement of the ban on smoking in all public places.

Require graphic health warnings on tobacco product packaging that describes the harms of tobacco use *(WHO FCTC Article 11)*

Nepal has five rotating graphic warning labels that are required on cigarette packaging. Nepalese law also dictates that health warnings describe the harmful effects of tobacco use [17]. The law mandates that 90 percent of the principal display area (front and back) of cigarette packaging be covered with the health warnings, meeting WHO FCTC obligations. Nepal is a leader worldwide, with only four other countries mandating 90 percent or more of the principal display area be covered with health warnings (Timor-Leste, Maldives, Niue, and Vanuatu) [18].

5 This is the tax rate used for the economic modelling in the investment case.

Implement plain packaging of tobacco products *(WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)*

Nepal currently does not require plain packaging of tobacco products. The investment case examines the impact of implementing and enforcing plain packaging requirements.

Promote and strengthen public awareness of tobacco control issues, including the health risks of tobacco use and tobacco smoke, addiction, and the benefits of cessation *(WHO FCTC Article 12)*

While Nepal operated an anti-tobacco national-level mass media campaign between 2014 and 2016, there have been no campaigns since then [15], [18]–[20]. Launching a best-practice mass media campaign (examined in the investment case) would further promote and strengthen public awareness about tobacco control issues and the harms of tobacco use.

Enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship *(WHO FCTC Article 13)*

Nepal comprehensively bans direct and indirect forms of tobacco advertising, promotion, and sponsorship (TAPS), with high rates of compliance. The ban is inclusive of TV and radio, print media, internet, and billboards and outdoor advertising. Indirect advertising, such as product placement in TV and film, is also banned, and there are complete bans on tobacco industry corporate social responsibility and sponsorship contributions.

Scale up of brief advice to quit for tobacco users in primary care clinics *(WHO FCTC Article 14)*

There is no tobacco use cessation available in Nepal [18]. Twenty-two percent of users of smoked tobacco were advised by a health professional to quit [1]. Of those who attempted to quit smoked tobacco, only 14.2 percent received counselling by health professionals and 1.2 percent used nicotine replacement therapy [1]. The investment case examines the impact of reducing tobacco dependence and cessation by training health professionals to provide brief advice to quit smoking.

Table 1 summarizes the existing state of WHO FCTC demand reduction measures and compares them against a target that would represent a high level of implementation for each measure. Reaching the WHO FCTC targets can further reduce tobacco consumption and its development impacts. The impact of each policy measure – individually and in combination – is described in Annex Table A1.

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Table 1: Summary of the current state of WHO FCTC demand reduction measures in Nepal and modelled WHO FCTC targets

Tobacco Control Policy	Nepal Baseline*	Modeled WHO FCTC Target
Increase tobacco taxation to reduce the affordability of tobacco products *(WHO FCTC Article 6)*	Tax share equivalent to 27% of the retail price of the most sold cigarette brand [18].	Increase taxes on cigarettes to at least 75% of the retail price, and excise taxes to 70%.
Create smoke-free public places and workplaces to protect people from the harms of tobacco smoke *(WHO FCTC Article 8)*	Nepal has a nearly complete ban on smoking in public places, however there are low levels of enforcement. Managers of airports, prisons and tourist level hotels may create designated indoor smoking areas.	Close loopholes that allow smoking in designated areas in airports and prisons and strengthen enforcement.
Require graphic health warnings on tobacco product packaging that describes the harms of tobacco use *(WHO FCTC Article 11)*	Graphic, rotating health warnings are required to cover at least 90% of cigarette packages.	**Nepal is fulfilling the WHO FCTC obligation to ensure that at least 50% of cigarette packaging is covered by graphic warning labels. Therefore, this intervention is not modeled.**
Implement plain packaging of tobacco products *(WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)*	Plain packaging is currently not mandated.	Implement and enforce plain packaging of tobacco products.
Promote and strengthen public awareness of tobacco control issues, including the health risks of tobacco use and tobacco smoke, addiction, and the benefits of cessation *(WHO FCTC Article 12)*	No national-level, anti-smoking media campaigns have recently aired in Nepal.	Implement a nationwide anti-smoking mass media campaign incorporating WHO best practices.
Enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship - TAPS *(WHO FCTC Article 13)*	Nepal has a comprehensive and well-enforced ban on domestic tobacco advertising, promotion, and sponsorship.	**Nepal is fulfilling the WHO FCTC obligation to ban tobacco advertising, promotion, and sponsorship. Therefore, this intervention is not modeled.**
Scale up of brief advice to quit for tobacco users in primary care clinics[6] *(WHO FCTC Article 14)*	There is no smoking cessation support in Nepal.	Expand training of primary health-care providers to identify tobacco users and to provide tobacco cessation advice; implement the provision of tobacco cessation services at the primary care level.

*Information in this column is drawn from Appendices of the WHO Report on the Global Tobacco Epidemic, 2021 [18]

6 The costs include: those to train health providers, the cost to health systems to deliver the brief interventions (inclusive of human resource time, facility overheads, etc.), and some programmatic costs.

2.3 Tobacco use and the COVID-19 pandemic

The global coronavirus disease (COVID-19) pandemic has strained health systems worldwide, and the economic impact of the outbreak has been immense. According to WHO, evidence indicates that smokers are more likely to suffer more severe outcomes of COVID-19, such as admission into intensive care units and death, than never smokers [55]. Furthermore, severe forms of COVID-19 or deaths due to COVID-19 are more frequent in people with comorbidities that are related to tobacco use, including chronic obstructive pulmonary disease, lung cancer and cardiovascular disease [55]. Moreover, tobacco use is also proven to worsen the outcomes of other communicable diseases such as tuberculosis and HIV [56].

2.4 National tobacco control legislation, strategy and coordination

The Tobacco Product (Control and Regulatory) Act, approved by legislature in 2011, is responsible for most tobacco control and regulations in Nepal [57]. However, Nepal needs to scale- up and/or implement several tobacco control interventions to meet WHO FCTC requirements.

Nepal bans smoking in most public places. However, designated indoor smoking areas are permitted, in casinos, tourism standard hotels, and prison/detention facilities [17]. This means airports, prisons and hotels are able to have designated smoking areas in certain public places, even indoors. Loopholes such as these can undermine efforts to denormalize smoking, as well as to protect workers and the public from the serious risks posed by secondhand tobacco smoke. Nearly four out of every 10 people in Nepal indicate that they have been exposed to secondhand smoke in the last 30 days [1].

Further, more could be done to strengthen enforcement, including by raising penalties for infractions. The fines for smoking in public places are miniscule at NPR 100 (US$0.88) [13] and there is no mechanism for levying fines on the establishments covered under the definition of public places [15].

Similarly, while Nepal has enacted a comprehensive ban on advertising, promotion, and sponsorship, in line with WHO FCTC Article 13, information on compliance with this bans is not available, which remains an information gap to facilitate monitoring of the law.

A 2014 directive mandated graphical health warnings to cover 90 percent of the front and back of all tobacco product packaging, placing Nepal's restriction among the highest in the world [17]. Additionally, the law requires that labels be rotated and regulates the language, style, and graphics that appear on cigarette packaging. There are five messages for smoked tobacco products and for smokeless tobacco products.

Finally, plain packaging is not currently mandated in Nepal, although it has been considered a priority action. Plain packaging would work synergistically with warning labels to ensure that attempts to promote tobacco use through its packaging are countered.

The Ministry of Home Affairs oversees law enforcement in Nepal [58], and there is an opportunity to strengthen tobacco control monitoring and involve police forces in tobacco law enforcement. There are seven provinces, 77 districts and 753 local levels in Nepal [59], [61]. To enforce the provisions of the tobacco control law, the government formed national, district and local level Monitoring Committees. The national monitoring committee is coordinated by the Secretary of the MoHP, and the Ministry assigned the National Health Education Information and Communication Centre (NHEICC) to monitor the effective implementation of the act [60]. Interviews during development of the investment case indicated that the 753 local administrative officers appointed as tobacco control inspectors support oversight on implementation of the law at national and sub-national levels, and take legal action if there are violations against the law in their jurisdiction area. This local action on tobacco control is constructive, and puts Nepal ahead of many of its peer countries. Overall, high levels of turnover among key government positions in Nepal has been cited as one of the main challenges to enforcement of the tobacco control laws, among others [62].

Credit: © neiljs via World Bank

Additionally, tobacco industry inference is of concern in Nepal, even though it is performing better in comparison to other countries. Nepal received a score of 42 in the Global Tobacco Industry Interference Index[7] , ranking 11th out of 90 countries (in a system where a lower the score indicates less interference) [63].

2.5 Fiscal measures, i.e. tobacco taxes

Increasing taxes on tobacco products is one of the most effective measures any government can take to reduce tobacco use among the population by decreasing their affordability which in turn increases the government revenue for national development priorities. The 2015 Addis Ababa Action Agenda on Financing for Development, the global financing framework for sustainable development agreed by UN Member States, specifies price and tax measures on tobacco as an important but underutilized revenue stream to finance national development efforts [58].

In Nepal, revenue from tobacco taxes could finance the national tobacco control plan, and other key development priorities such as those outlined in the national development plan or SDG plan.

However, the share of taxes as a percent of the retail price of the most sold brand of cigarettes in Nepal is only 27 percent [18], far short of the WHO obligation of a minimum 75 percent of the retail price, and tobacco products in Nepal remain highly affordable compared to many other consumer products as well as to many other WHO FCTC Parties in Asia. WHO reports that there has been no change in the affordability of cigarettes in Nepal between 2010 and 2020 [18]. In 2020, a pack of 20 of the most sold brand of cigarettes sold in Nepal was only NPR 280 (US$2.51), of which taxes only accounted for NPR 75.6 (US$0.68).

According to government officials, per the Finance Bill 2080 from May 2023 the tax rate as a percent of retail tax has now increased to 32 percent, increasing the cost of the most sold brand of cigarettes to NPR 320, with taxes accounting for NPR 101.4 [64]. However as this increase occurred after the economic modelling was done, this tax rate is not reflected in the modelling of the investment case. The modelling was based on tobacco taxes representing 27 percent of the retail price.

Nepal has a complex cigarette tax structure with a specific excise tax based on the length of the cigarettes. The following tiers are applied: (1) up to 70mm, (2) from 70mm to 75mm, (3) 75mm to 85mm and (4) above 85mm. Furthermore, there is an additional tier for cigarettes without filters. The existence of these tiers facilitates the transition of cigarette manufacturers and consumers to lower-taxed tiers and alternatives respectively, thereby undermining the impact of tax increases [65].

7 The Global Tobacco Industry Interference Index measures efforts by governments to address tobacco industry interference. Available at https://globaltobaccoindex.org/

3. Methodology

The purpose of the investment case is to quantify the current health and economic burden of tobacco use in Nepal (in the context of WHO FCTC measures that are currently in place), and to estimate the impact that implementing new WHO FCTC measures – or intensifying existing ones – would have on reducing this burden.

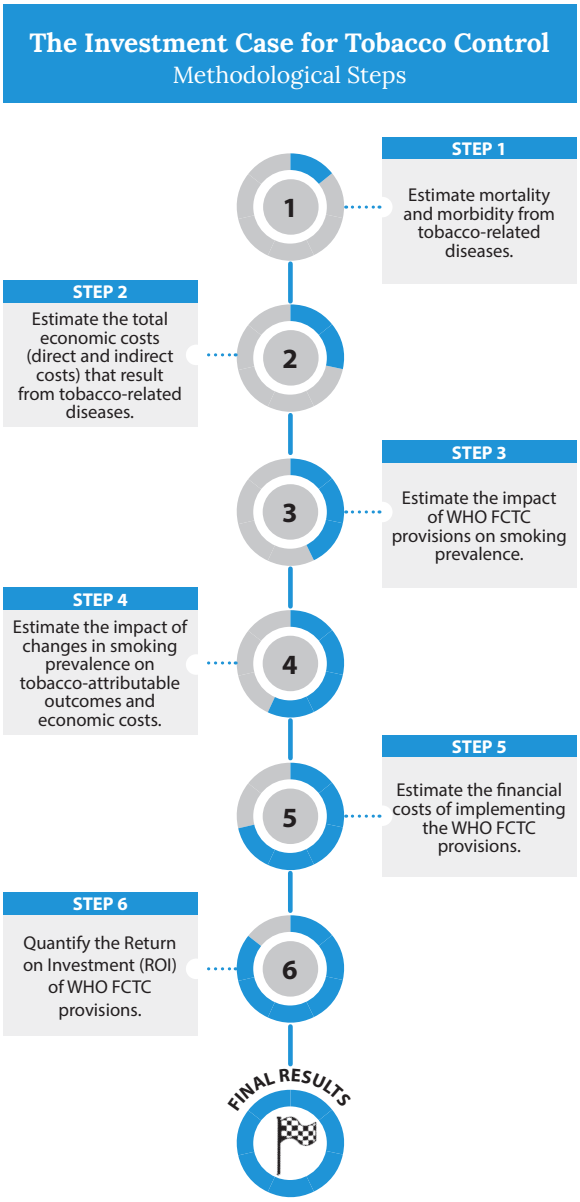
A static model was developed to conduct the investment case and to perform the methodological steps in **Figure 3**. This methodology has been used for previous national WHO FCTC investment cases under the FCTC 2030 project.

The tools and methods used to perform these steps are described in the report Annex. Interested readers are referred to this report's separate, forthcoming Technical Appendix for a more thorough account of the methodology.

The investment case team worked with stakeholders in Nepal to collect national data inputs for the model. Where data was unavailable from government or other in-country sources, the team utilized publicly available national, regional, and global data from sources such as the WHO, World Bank database, Global Burden of Disease (GBD) study, and academic literature.

Within the investment case, costs and monetized benefits are reported in constant 2020 Nepalese rupees (NPR) and discounted at a rate of five percent.

Fig. 3: Building the investment case



4. Results

4.1 The burden of tobacco use: health and economic costs[8]

In 2019, an estimated 39,240 deaths occurred due to tobacco use in Nepal, 41 percent of which occurred among those under the age 70. These deaths equate to 507,211 years of life lost (YLLs). This translates into NPR 20.4 billion in losses due to tobacco-attributable mortality.[9]

The costs of mortality are high, the consequences of tobacco use begin long before death. As individuals begin to acquire tobacco-attributable diseases (e.g., heart disease, strokes, cancers), expensive medical care is required to treat them. Expenditure on medical treatment for illnesses due to smoking costs NPR 1.9 billion to the Government of Nepal in 2019 and out-of-pocket (OOP) healthcare expenditures of Nepalese citizens NPR 7.1 billion. Private and non-profit institutions serving households spent NPR 1.9 billion on treating tobacco-attributable diseases in 2019. In total, healthcare expenditures attributable to smoking amounted to NPR 12.2 billion.

In addition to healthcare costs, as individuals become sick, they are more likely to miss days of work (absenteeism) or to be less productive at work (presenteeism). In 2019, the costs of excess absenteeism due to smoking-related illness was NPR 3.2 billion and the costs of presenteeism were NPR 9.5 billion.

In total, tobacco use cost Nepal's economy NPR 45.2 billion[10] in 2019, equivalent to about 1.2 percent of Nepal's 2019 GDP. **Figure 4** summarizes the current social and economic burden of tobacco use and contextualizes the losses. The burden of tobacco use in Nepal far exceeds the revenue the government currently collects from taxing tobacco products. Tobacco-attributable losses are about two and a half times bigger than the collected government revenue. Social and economic losses per licit cigarette pack sold equate to about 93.6 rupees per pack, outweighing the financial value – represented by the per pack price – that accrue in the value chain to growers, manufacturers, vendors, other supply chain stakeholders, and government (through taxation). **Figure 5** breaks down the share of the economic burden attributable to tobacco-attributable mortality, workplace costs, and health-care costs. **Figure 6** and **Figure 7** illustrate the annual health losses that occur due to tobacco use.

8 In assessing the 'current burden' of tobacco use, the economic costs of mortality include the cost of deaths due to any form of exposure to tobacco (including of smoking, second-hand smoke, and the use of other types of tobacco products). Only smoking-attributable (not tobacco-attributable) costs are calculated for healthcare expenditures, absenteeism, presenteeism, and smoking breaks. While other forms of tobacco may also cause losses in these categories, no data is available to pinpoint those losses.

9 Economic losses from tobacco-related mortality are estimated for individuals aged 30+.

10 Component parts may not add up exactly to NPR 45.2 billion due to rounding.

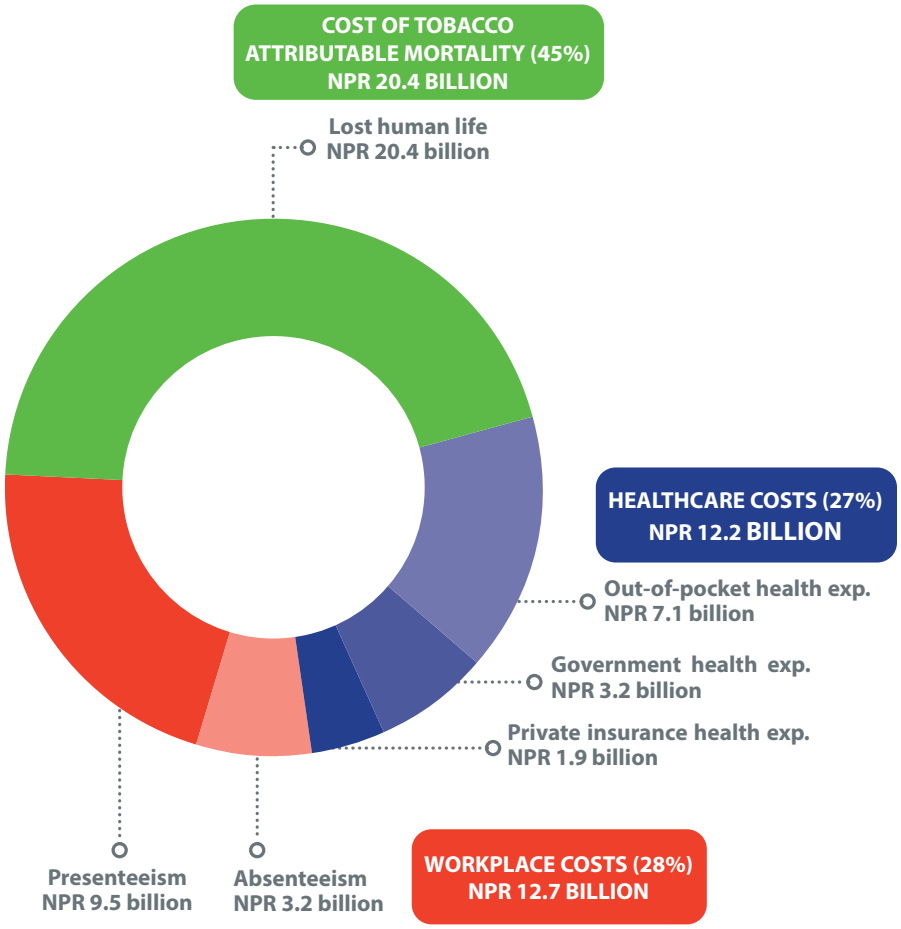
Fig. 4.: Contextualizing the burden of tobacco use*

Social and economic losses per licit cigarette packs sold equate to about **NPR 96.3 per pack.**

Tobacco-attributable losses are about **two and a half times bigger** than the collected tobacco tax revenue.

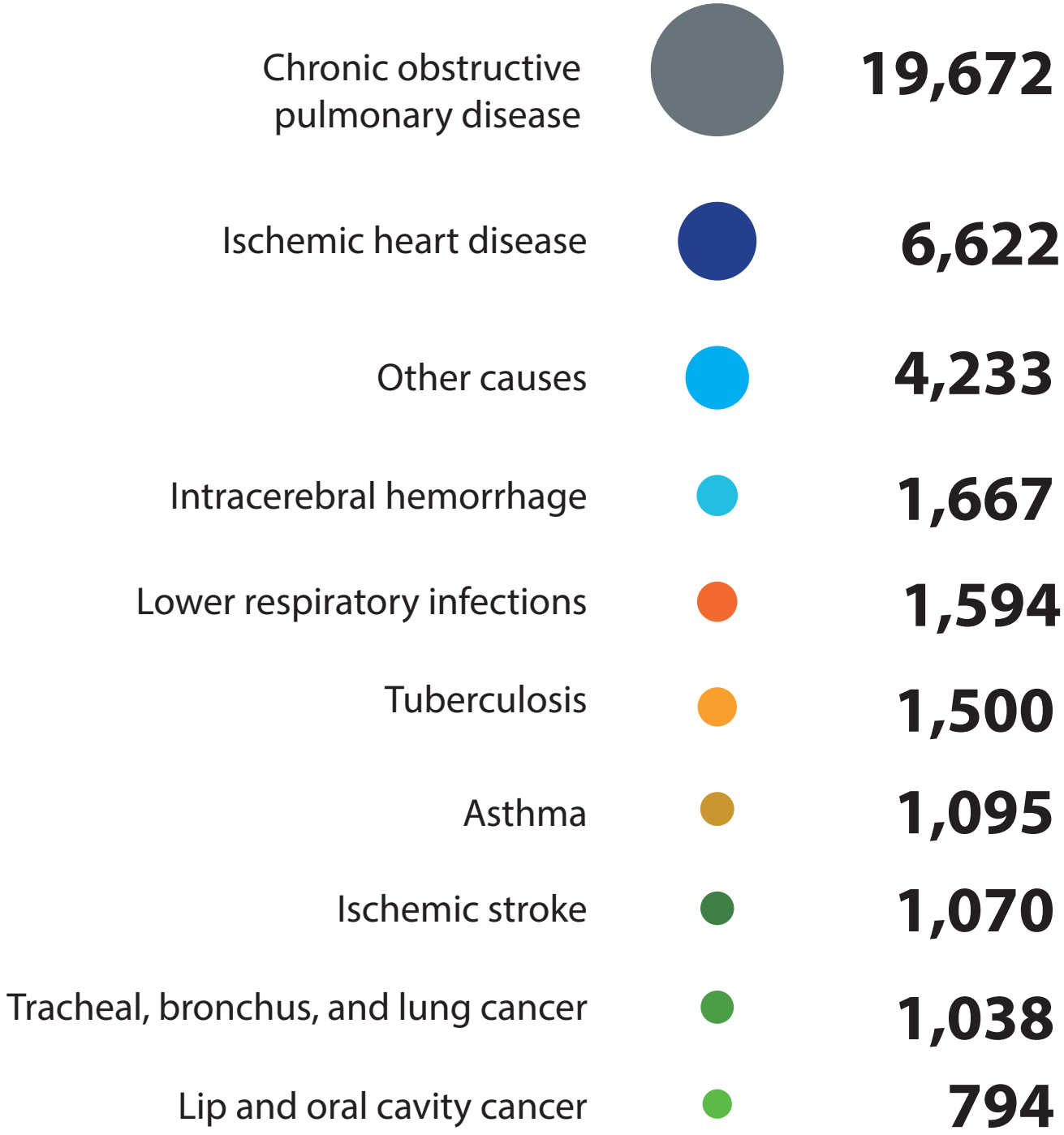
Tobacco costs Nepal **NPR 45 billion every year,** equivalent to **1.2% of annual GDP.**

Fig. 5: Breakdown of the share of the economic cost of lost tobacco-attributable mortality, workplace costs, and health-care costs (rupee billions)



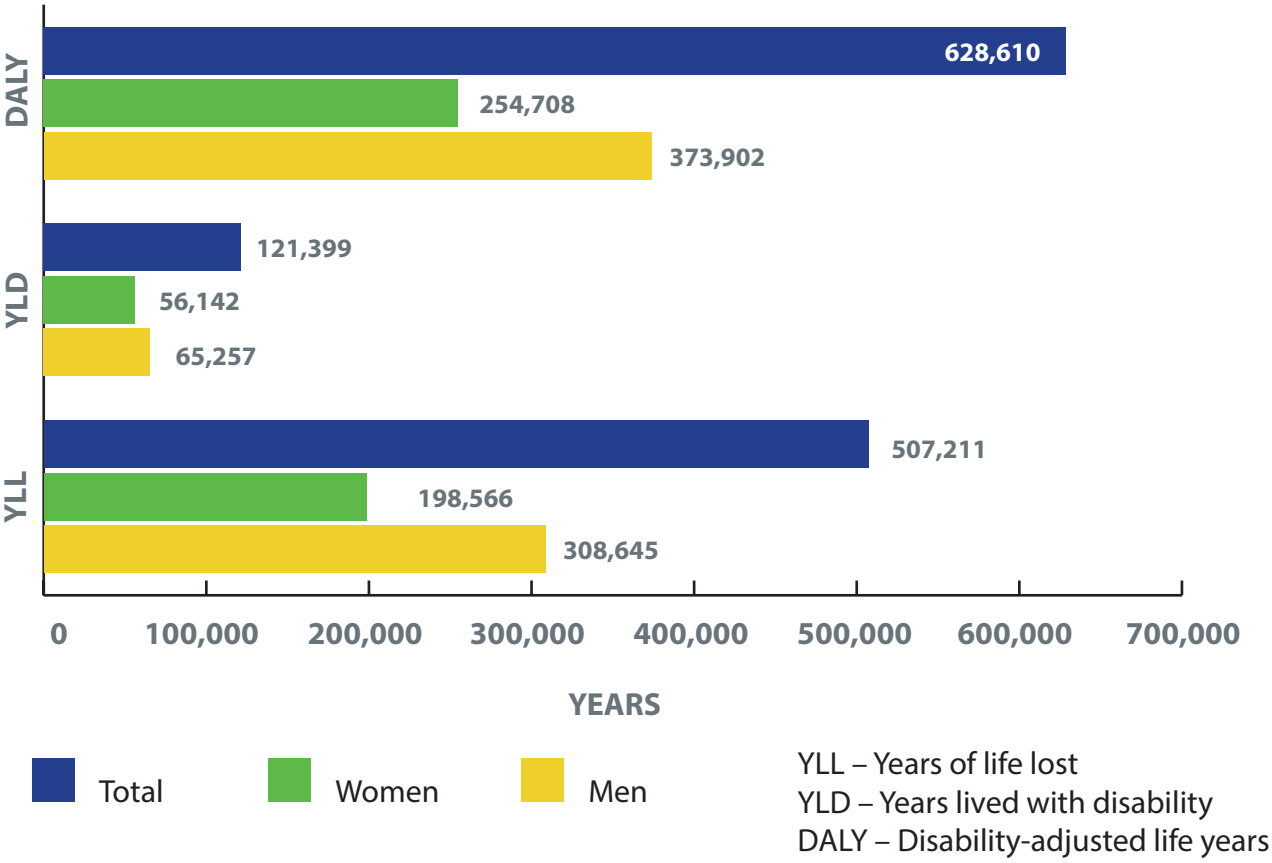
*Figures are subject to rounding.

Fig. 6: Tobacco-attributable deaths by disease in Nepal, 2019[11]



11 Source: Results are from the IHME Global Burden of Disease Results Tool. Other causes include esophageal cancer, diabetes mellitus type 2, Alzheimer's disease and other dementias, other pharynx cancer, larynx cancer, subarachnoid hemorrhage, stomach cancer, cervical cancer, breast cancer, leukemia, pancreatic cancer, colon and rectum cancer, aortic aneurysm, bladder cancer, liver cancer, peptic ulcer disease, atrial fibrillation and flutter, prostate cancer, nasopharynx cancer, kidney cancer, rheumatoid arthritis, peripheral artery disease, gallbladder and biliary diseases, and multiple sclerosis.

Fig. 7: Life years lost to tobacco-related illnesses[12]



4.2 Implementing policy measures that reduce the burden of tobacco use

Effective implementing tobacco control measures can reduce the national burden from tobacco use. Through these actions, Nepal can secure significant health and economic returns, and begin to reduce the NPR 45.2 billion in annual economic losses from tobacco use.

The next two sections present the health and economic benefits that result from five WHO FCTC policy actions to: 1) increase cigarette taxation to reduce the affordability of tobacco products; 2) enforce bans on smoking in public places and workplaces; 3) implement plain packaging of tobacco products; 4) promote and strengthen public awareness of tobacco control issues; 5) support reducing tobacco dependence and cessation by training health professionals to provide brief advice to quit smoking.

12 A Disability-adjusted life year (DALY) is a universal metric that allows comparison between different populations and health conditions across time. DALYs equal the sum of years of life lost (YLLs) and years lived with disability (YLDs). One DALY equals one lost year of healthy life. Years of life lost (YLL) are years lost due to premature mortality. Years lived with disability (YLD) can also be described as years lived in less-than-ideal health. A YLD is calculated by taking the prevalence of the condition multiplied by the disability weight for that condition. Source: IHME. (2018). Frequently asked questions. Retrieved from <http://www.healthdata.org/gbd/faq#What%20is%20a%20DALY?>

4.3 Health benefits – lives saved

The full implementation of the WHO FCTC in Nepal (inclusive of all five of the measures listed above) would lower the prevalence of tobacco use, leading to substantial health gains now and into the future. Specifically, enacting all five measures would reduce the prevalence of cigarette smoking by 31 percent (in relative terms) over 15 years, saving 114,456 lives from 2023-2037, or 7,630 lives annually.

4.4 Economic benefits

Implementing the package of five key WHO FCTC policy actions would result in Nepal avoiding 17.8 percent of the economic losses that it is expected to incur from smoking over the next 15 years. **Figure 8** illustrates the extent to which Nepal can shrink the economic losses it is expected to incur under the status quo.

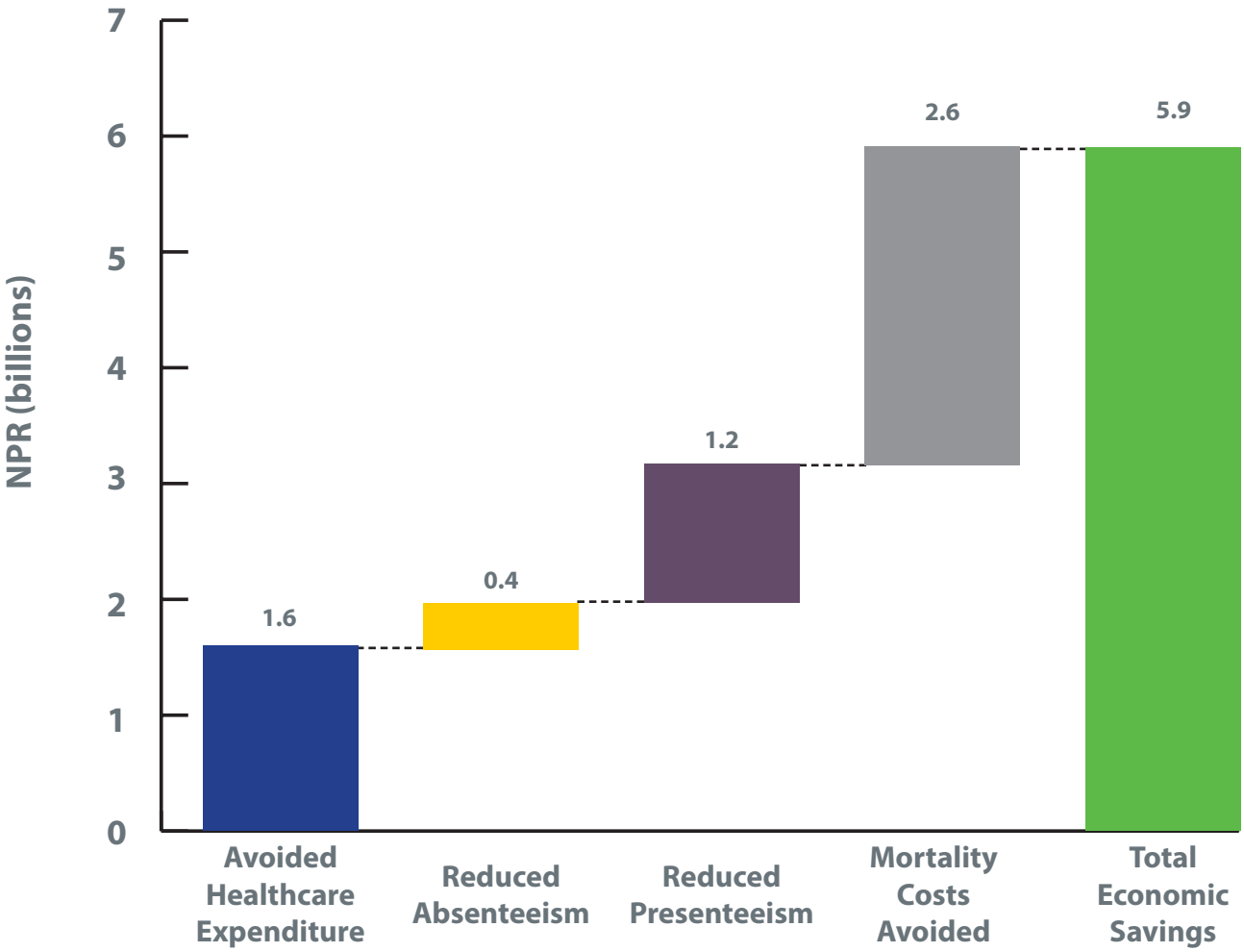
Fig. 8: Tobacco-related economic losses over 15 years (2023-2037): What happens if Nepal does nothing, versus if the government implements tobacco measures to reduce demand for smoking?

In total, over 15 years Nepal would save about NPR 88.1 billion that would otherwise be lost if it does not implement the package of five key WHO FCTC policy actions. These costs are equivalent to about NPR 5.9 billion in annual avoided economic losses.

With better health, fewer individuals need to be treated for complications from disease, resulting in direct cost savings to the government. Better health also leads to increased productivity. Fewer working-age individuals leave the workforce prematurely due to death. Laborers miss fewer days of work (absenteeism) and are less hindered by health complications while at work (presenteeism).

Figure 9 breaks down the sources from which annual savings accrue because of implementing the tobacco control policy package. The largest annual avoided costs result from averted tobacco-attributable mortality (NPR 2.6 billion). The next highest source is avoided healthcare expenditures (NPR 1.6 billion), followed by reduced presenteeism (NPR 1.2 billion), and reduced absenteeism (NPR 0.4 billion).

Fig. 9: Sources of annual economic savings as a result of implementing the tobacco policy package.*

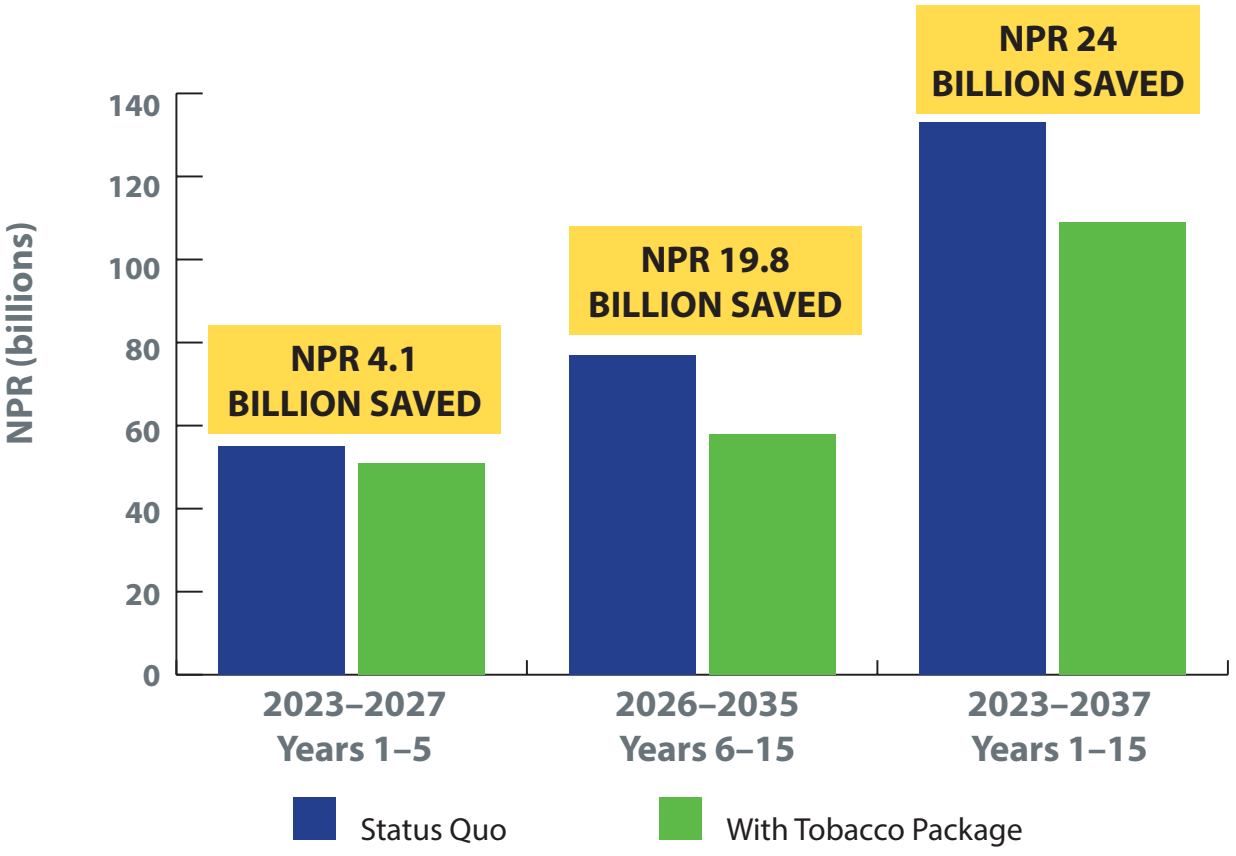


*Figures are subject to rounding.

Implementing the package of WHO FCTC policy actions will reduce medical expenditure for citizens and the Government. Presently, total public and private annual health care expenditures in Nepal are about NPR 197.1 billion [21], of which an estimated 6.2 percent is directly related to treating disease and illness due to tobacco use (≈ NPR 12.2 billion) [2].

Year-on-year, the package of interventions lowers smoking prevalence, which leads to less illness, and consequently less healthcare expenditure. Over the time horizon of the analysis, the package of interventions averts NPR 24.0 billion in healthcare expenditures, or about NPR 1.6 billion annually (see **Figure 10**). Of this, 27 percent of those savings accruing to Government and 58 percent to individual citizens who would have paid out-of-pocket for healthcare. The remainder of savings go to private insurance and other sources of health expenditure. Thus, from the reduced healthcare costs alone, the Government stands to save about NPR 6.4 billion over 15 years. Simultaneously, the Government would successfully reduce the health expenditure burden that tobacco imposes on Nepal's citizens, supporting efforts to reduce poverty and economic hardship on families. Rather than spend on treating avoidable disease and routinely spending on tobacco products, these families would be able to invest more in nutrition, education, and other productive inputs to secure a better future.

Fig. 10: Private and Public Healthcare costs (and savings) over the 15-year time horizon*



*Figures are subject to rounding.

4.5 The Return on Investment

An investment is considered worthwhile from an economic perspective if the gains from making it outweigh the costs. A return on investment (ROI) analysis measures the efficiency of the tobacco investments by dividing the economic benefits that are gained from implementing the WHO FCTC measures by the costs of the investments.

For the Nepal investment case, the ROI for each intervention was evaluated in the short-term (period of 5 years), to align with planning and political cycles, and in the medium-term (period of 15 years). The ROI shows the best return on investment for each intervention, and for the full package of measures. Net benefits are a measure of which interventions are expected to have the largest impact.

Table 2 displays costs, benefits and ROIs by intervention, as well as for all interventions combined. With the exception of training health professionals to provide brief advice to quit smoking (an individual-level intervention with higher initial personnel costs), interventions deliver a positive ROI within the first 5 years (for example smoke-free places and cigarette taxes generating ROIs of 7 and 107 respectively), meaning that even short-term benefits of implementing interventions outweigh the costs. The ROIs for each intervention continue to grow over time, reflecting the compounding gains from planning and development stages to full implementation.

Table 2: Return on investment, by tobacco control policy/intervention (NPR billions)

	First 5 years (2023–2027)			All 15 years (2023–2037)		
	Total Costs (NPR billions)	Net Benefits (NPR billions)	ROI	Total Costs (NPR billions)	Net Benefits (NPR billions)	ROI
Tobacco control intervention package* *(all policies/interventions implemented simultaneously)*	1.4	15.3	11	3.4	88.1	**26**
Increase cigarette taxation *(WHO FCTC Article 6)*	0.1	8.7	107	0.2	47.8	281
Create smoke-free public places and workplaces *(WHO FCTC Article 8)*	0.2	1.6	7	0.5	11.5	25
Implement plain packaging of tobacco products *(WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)*	0.1	0.9	9	0.2	6.4	31
Promote and strengthen public awareness of tobacco control issues, including the health risks of tobacco use and tobacco smoke, addiction, and the benefits of cessation *(WHO FCTC Article 12)*	0.3	5.1	19	0.6	34.9	56
Scale up of brief advice to quit for tobacco users in primary care clinics *(WHO FCTC Article 14)*	0.4	0.1	0.2	1.2	1.2	1

* The combined impact of all interventions is not the sum of individual interventions. To assess the combined impact of interventions, following Levy and colleagues' (2018), "effect sizes [are applied] as constant relative reductions; that is, for policy i and j with effect sizes PRi and PRj, (1-PR ii) x (1-PR j) [is] applied to the current smoking prevalence [22]. The costs of the tobacco package include the costs of the examined policies, as well as programmatic costs to implement and oversee a comprehensive tobacco-control programme.

Over the 15-year period, raising taxes is expected to have the highest return on investment (281:1). Raising public awareness has the next highest ROI (56:1), followed by plain packaging (31:1), creating smoke-free public places and workplaces (25:1), and tobacco cessation support (1:1).

The higher ROIs for fiscal and regulatory measures, relative to the lower ROI for the clinical intervention, demonstrates the impact of fiscal and regulatory measures for health and development. However, providing assistance to those who would like to quit a deadly product, but cannot do so on their own, is an important service, especially given that implementing other demand-reduction policy measures will motivate more individuals to quit.

5. Examining additional impacts: equity and the SDGs

The investment case examines how increasing taxes would impact equity, and the contributions that stronger WHO FCTC implementation would make towards Nepal's fulfillment of Target 3.4 of the Sustainable Development Goals.

5.1 Equity analysis: benefits for lower-income populations of increasing cigarette taxes

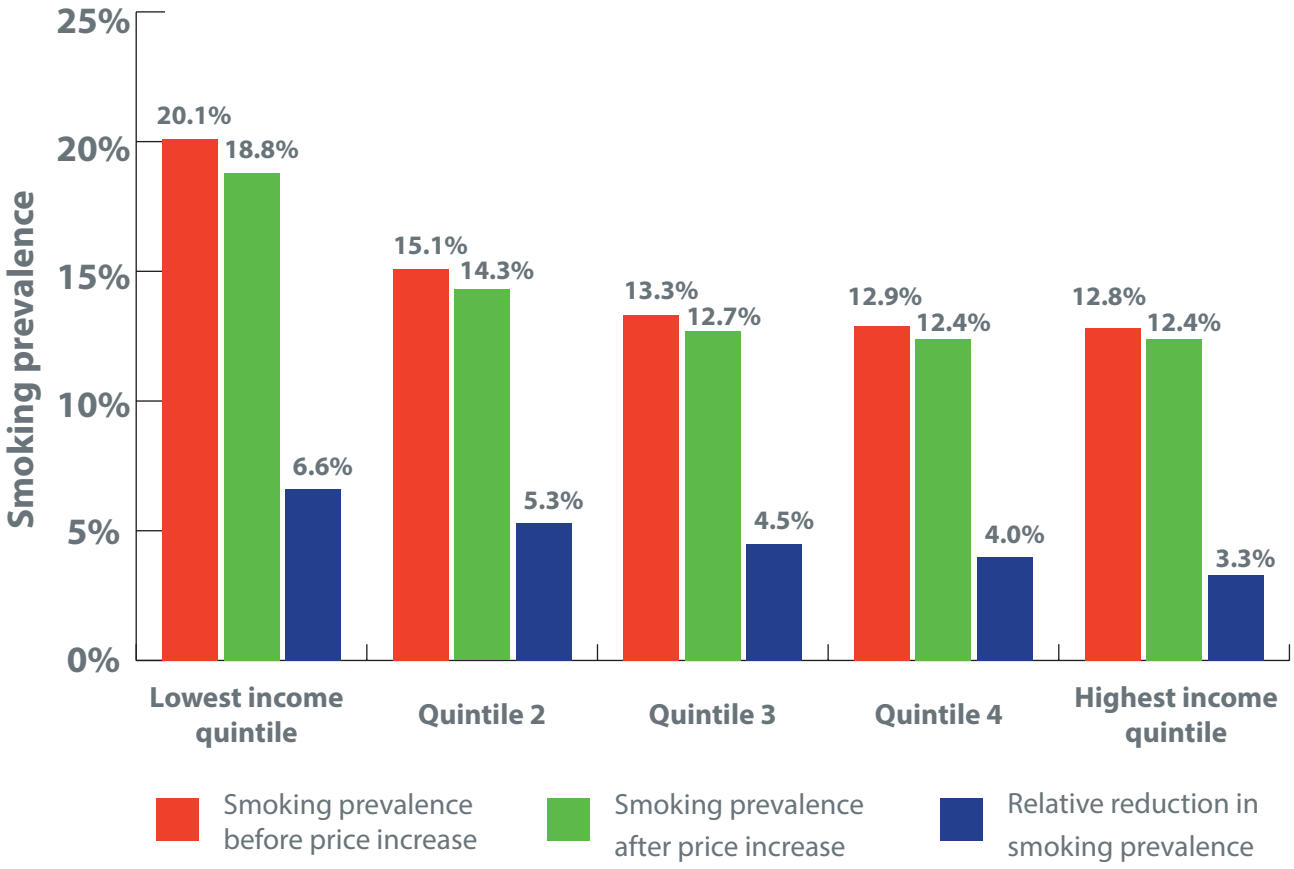
A common misconception is that taxes on tobacco products may disproportionately harm poor tobacco users, since the tax burden represents a higher proportion of their income than that of wealthier tobacco users. However, evidence shows that the poor actually stand to benefit most from raised cigarette taxes [24]. Relative to richer smokers, lower-income smokers are more likely to quit smoking when taxes are increased [25], meaning they benefit from subsequent decreases in tobacco-related health problems, and resulting medical costs which can be financially catastrophic. In Lebanon [26], for example, a 50 percent increase in cigarette prices was projected to prevent 23,000 households from falling into poverty over 50 years, and that same level of increase was found to avert catastrophic health expenditures for 1.83 million individuals in India, 440,000 in Bangladesh, and 350,000 in Viet Nam [27].

To examine the extent to which a cigarette tax increase could be considered pro-poor in Nepal, the investment case undertakes an equity analysis. The analysis divides Nepal's population into five equal groups, by income, where quintile 1 is composed of the poorest 20 percent of people, and quintile 5 is composed of the wealthiest 20 percent. Within each income group, the analysis examines the impact of a hypothetical tax increase that raises the price of the average pack of cigarettes by about 24 percent (NPR 66, or about US$0.51)[13]. This represents only the first year of tax increases that are modeled in the investment case. People at different income levels tend to respond differently to price changes. Average tobacco-income prevalence elasticities of demand from a set of low- and middle-income countries are employed to assess how different economic groups react to changes in price.

13 The tax rate for the analysis was based on a feasible rate that would gradually reach a level where total taxes represent at least 75 percent of the retail price.

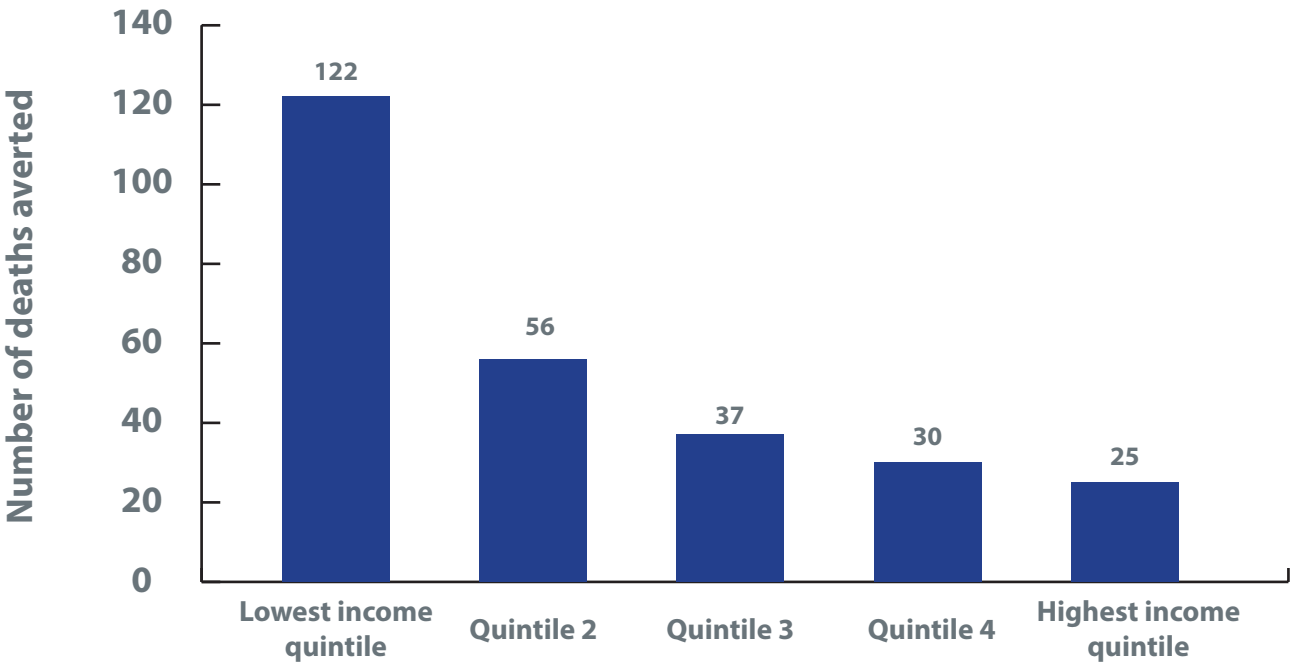
In Nepal, the poorest income quintile has the highest cigarette smoking prevalence (20.1 percent), meaning they experience the largest share of health and economic impacts resulting from tobacco use [1]. The results from the analysis show that all income quintiles reduce smoking in response to the tax measures, but because people with lower incomes are more responsive to changes in price, the cigarette tax increase causes the largest drop in prevalence among the poorest income quintiles. **Figure 11** shows the smoking prevalence in each income quintile before and after the tax increase, as well as the relative change in smoking prevalence.

Fig. 11: Relative reduction in smoking prevalence before and after the cigarette tax increase, by income quintile



Lower rates of smoking translate to health gains. Prior to the cigarette tax increase, of the over 34,000 smoking-attributable deaths observed in 2019, nearly half (47 percent) occurred among the poorest 40 percent of the population (quintiles 1 and 2). Because the cigarette tax increase causes smoking prevalence to fall the most in the two poorest quintiles, health benefits disproportionately accrue to lower-income Nepalese. The equity analysis finds that almost two-thirds (66 percent) of the 270 deaths that would be averted during the first year of tax increases modeled in the investment case would be among the poorest 40 percent of the population, as shown in **Figure 12**.

Fig. 12: Deaths averted due to tax increase, by income quintile

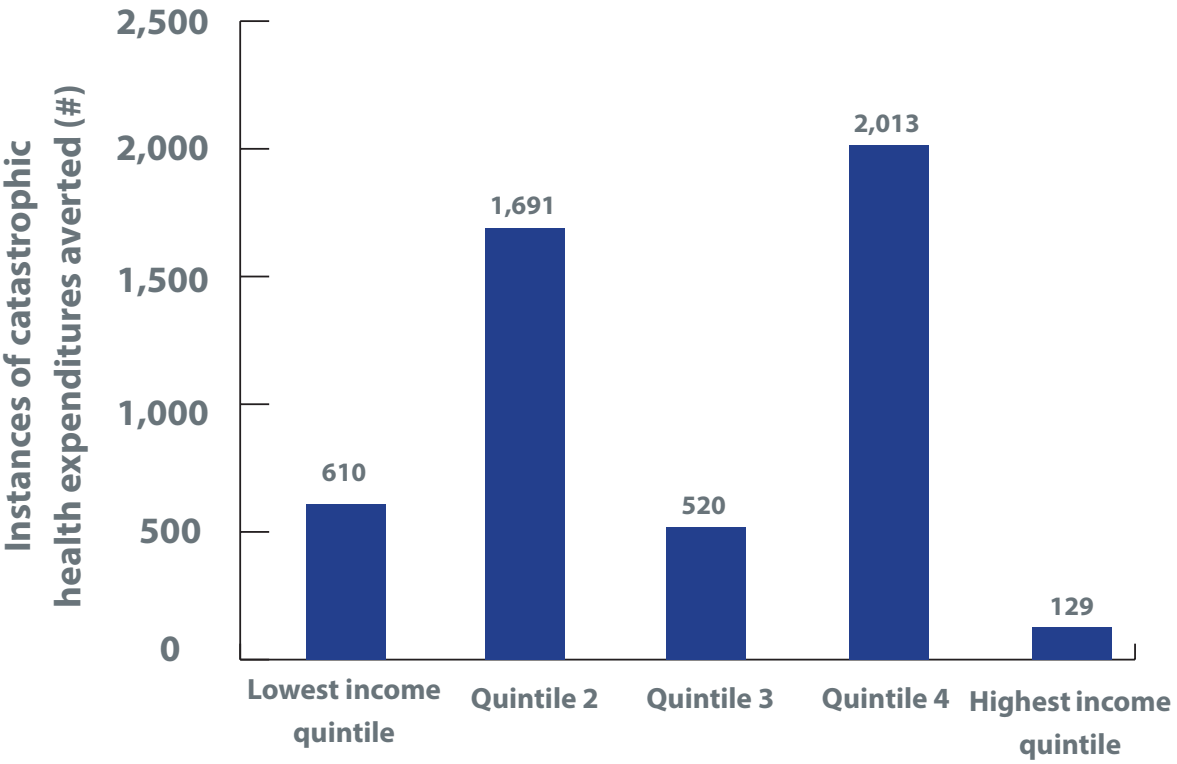


Reductions in disease and death result in lower out-of-pocket heath expenditures, providing financial risk protection for individuals. The analysis reports two measures of financial risk protection: "cases of medical impoverishment averted" and "catastrophic health expenditures averted".

Cases of medical impoverishment averted measure the extent to which the tax increase changes the likelihood that individuals fall below the poverty line due to OOP spending from a tobacco attributable disease. By enacting the aforementioned tax increase, it is estimated that in one year Nepal can prevent 2,512 new cases of poverty that would otherwise occur if no tax increase is enacted. Continuing tax increases in future years would grow and accelerate this impact. The second measure of financial risk protection is the total reduction in catastrophic health expenditures, where catastrophic is defined as an OOP expenditure that is more that 10 percent of a household's total expenditures. This measure is more inclusive than cases of medical

impoverishment averted because it includes households who are already below the poverty line and wealthier households in which OOP spending may be a significant portion of available resources, but where the expenditure is not enough to take them below the poverty line. **Figure 13** shows that the described tax increase could avert 4,963 catastrophic health expenditures in one year.

Fig. 13: Catastrophic healthcare expenditures averted, by income quintile



Within the analysis, OOP expenditures have been adjusted to account for the fact that higher income quintiles often spend more on treatment. Thus, the cost of treating cancer, heart diseases, diabetes, and respiratory diseases is estimated to be three and a half times more expensive for the second richest quintile than for the poorest quintile, and almost seven times as much for the richest quintile. Because the fourth quintile has higher OOP costs, incidence of one of these diseases is more likely to account for over ten percent of their expenditures and therefore to be considered a catastrophic expenditure. In part for this reason, the fourth quintile averts the highest number of catastrophic healthcare expenditures. The poorest 40 percent of the population still accounts for 46 percent of total averted catastrophic healthcare expenditures, however, demonstrating the pro-poor effect of the tobacco tax increase.

5.2 The Sustainable Development Goals and the WHO FCTC

Implementing the package of five WHO FCTC policy actions will support Nepal to meet SDG Target 3.a to strengthen implementation of the WHO FCTC. Moreover, acting now will contribute to Nepal's efforts to meet SDG Target 3.4 to reduce by one-third premature mortality from NCDs by 2030: the measures would contribute the equivalent of about 12 percent of the needed reduction in mortality for Nepal to achieve SDG Target 3.4.

The WHO FCTC is an accelerator for sustainable development, and its implementation will benefit the achievement of many SDGs, including those outside of the health and well-being domain [23]. For example, stronger tobacco control will contribute to the reduction of poverty and inequalities (SDGs 1 and 10, respectively) and economic growth (SDG 8).

Credit: © Eric Montfort via World Bank

6. Conclusion and recommendations

Each year, tobacco use costs Nepal NPR 45.2 billion in economic losses and causes substantial human development losses. Fortunately, the investment case shows that there is an opportunity to reduce the social and economic burden of tobacco in Nepal. Enacting the recommended multisectoral tobacco control provisions would save 7,630 lives each year and reduce the incidence of disease, leading to savings from averted medical costs and averted productivity losses. In economic terms, these benefits are substantial, adding to NPR 88.1 billion over the next 15 years. Further, the economic benefits of strengthening tobacco control in Nepal greatly outweigh costs of implementation (NPR 88.1 in benefits versus just NPR 3.6 in costs).

By investing now in the package of five WHO FCTC policy actions modeled in this investment case, Nepal would not only reduce tobacco consumption, improve health, reduce government health expenditures, and grow the economy, it would also reduce hardships faced by many Nepalese . The country can also reinvest savings from government health-care expenditures and revenue from increased tobacco taxes into national development priorities such as universal health coverage and other social protection measures, as well as COVID-19 response and recovery efforts.

Based on the findings of this investment case, these key actions for Nepal are recommended to be pursued simultaneously:

1 Increase taxes and harmonize the tax rates on all tobacco products.

Tobacco tax levels are notably lower in Nepal (around 27 percent of the retail price) and far below the WHO-recommended of minimum 75 percent of retail price. Increasing taxes on tobacco products to reduce their affordability is the most cost-effective measure proposed in this investment case: for one Nepalese rupee invested in tobacco control, one can expect 281 rupees back in averted healthcare spending and economic productivity gains. Ministries of Finance and Industry, and the Inland Revenue Department are in a key position to promote urgent tobacco tax increases, while resisting tobacco industry's attempts to influence the process.

Nepal is encouraged to reform its tobacco taxation structure to introduce a specific excise tax on tobacco products in accordance with recommendations made in the WHO FCTC implementation guidelines for Article 6 [66] and by WHO in the WHO Technical Manual on Tobacco Tax Policy and Administration [68]. It is also encouraged, to substantially raise the total tax share of the retail price of tobacco to meet or exceed 75 percent of the retail price (considered in the WHO Report on the Global Tobacco Epidemic, 2021 as a high-level of achievement) [15].

The introduction of a specific tobacco excise tax is recommended because it is more difficult for the tobacco industry to manipulate and easier for authorities to implement [68], [69]. Tobacco taxes should aim to reduce affordability, including by increasing at a rate that outpaces inflation and income growth [68].

There is also opportunity for Nepal to simplify the current tax system by moving towards a uniform specific excise tax rate for all cigarettes. A uniform specific tax or a mixed tax structure that relies on specific excise taxes are easier to administer and are more likely to increase cigarette prices, increase the average excise level and lead to less variability in prices of taxed products compared to a tiered system [68]. In addition, a uniform tax structure may reduce the incentive for consumers to simply switch to a different brand, supporting cessation measures.

It is also recommended to ensure robust tobacco taxation policies are in place for all types of tobacco (including for shisha, smokeless tobacco and novel tobacco products).

2 Commit to fully implement the WHO FCTC and invest in strengthening the WHO FCTC policy actions modeled in this investment case to reduce tobacco use prevalence and protect the population.

As a Party to the WHO FCTC, Nepal has undertaken to fully implement the Convention. The WHO FCTC is an evidence-based treaty that sets out a clear blueprint for action to protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to tobacco smoke. Nepal is encouraged to commit to fully implementing the treaty, with a focus on the recommendations made for Parties in the Global Strategy to Accelerate Tobacco Control: Advancing Sustainable Development through the Implementation of the WHO FCTC 2019-2025, in relevant WHO FCTC implementation guidelines, in WHO FCTC Needs Assessment reports and in this investment case.

The investment case has shown the health and economic benefits of strengthening implementation of the modeled WHO FCTC measures. Thus in addition to increasing tobacco taxes, Nepal is recommended to take immediate action to implement the following:

- Make all public places and workplaces smoke-free to protect people from the harms of tobacco smoke, in line with WHO FCTC Article 8 and its guidelines for implementation;
- Consider implementing plain packaging to reduce the attractiveness of tobacco products and

make health warnings more prominent, in line with WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13;
- Promote and strengthen public awareness of tobacco control issues, including the health risks of tobacco use and tobacco smoke, addiction, and the benefits of cessation in line with WHO FCTC Article 12;
- Scale up of brief advice to quit for tobacco users in primary care clinics. In addition, other evidence-based support for tobacco users should be considered including the establishment of a national toll-free quit line and/or internet based quit support; and making pharmacotherapies available to support successful quitting, free of cost if possible, in line with WHO FCTC Article 14 and its guidelines for implementation.

Strengthen national multisectoral tobacco control planning and coordination to drive a whole-of-government and whole-of-society approach to tobacco control.

The investment case demonstrates that tobacco is not just a health issue for Nepal but a sustainable development issue, with implications for a range of stakeholders including but not limited to the Ministries overseeing economy, commerce, agriculture, environment, education, employment, youth and sports, local government, poverty alleviation; medical associations; civil society; businesses; academia; and youth groups.

It is recommended that Nepal use the investment case findings as a catalyst to strengthen coordination and collaboration across sectors, and make the case for policy coherence. This is necessary to close gaps in legislation and implementation and accelerate tobacco control and sustainable development.

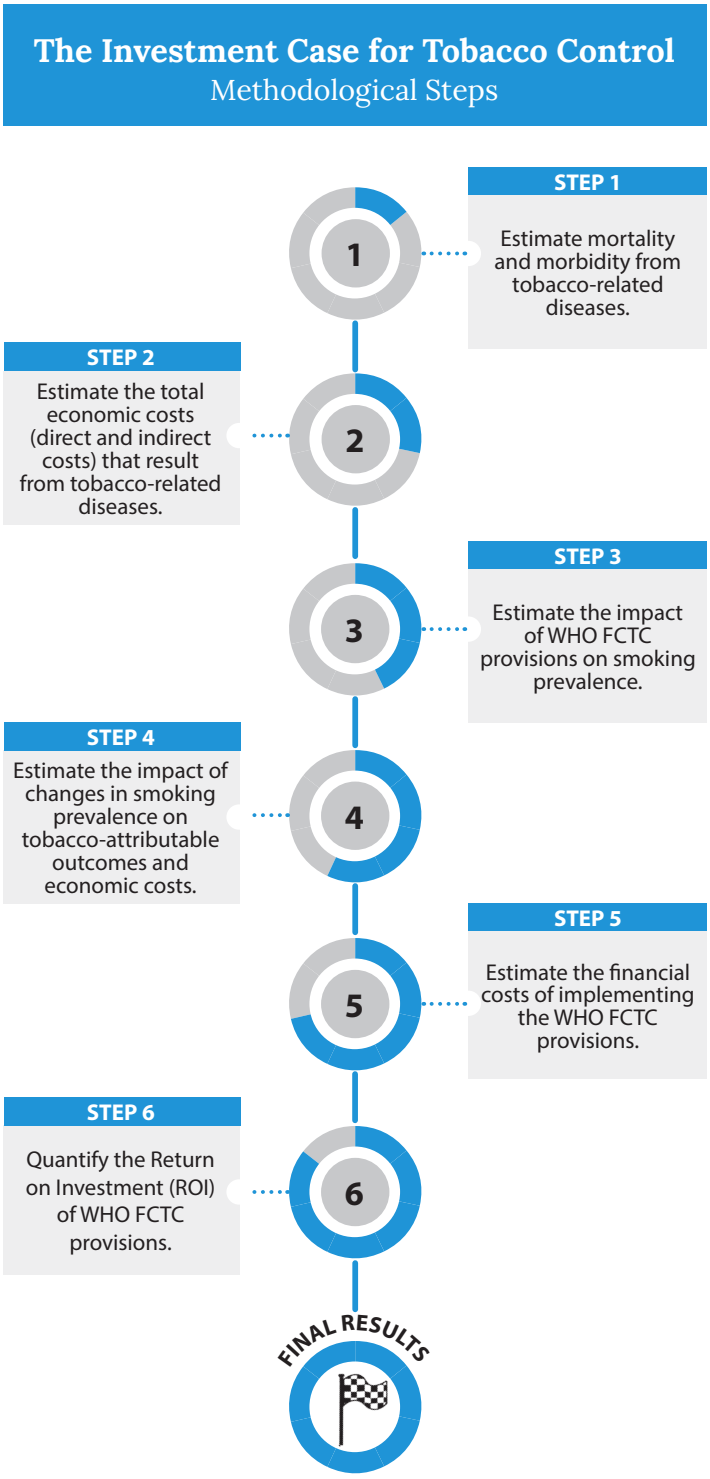
Tobacco control in Nepal is widely regarded as a worthy priority among government ministries. Readiness to participate in the shaping and delivery of tobacco control policy is high. Rather than creating new structures, it is recommended to include tobacco control as a continuing, high- priority agenda item in the work of the existing NCD coordination mechanism. This group should also invite additional sectors and non-governmental participants to join its work, including the civil society. Establishing a tobacco control steering group is also needed at provincial level. It is important that all tobacco control efforts are applied throughout the new (2018) federal government system, at all levels of governments (local/provincial/national).

7. Methodology annex

7.1 Overview

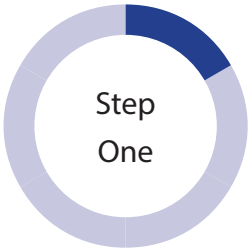
The economic analysis consists of two components: 1) assessing the current burden of tobacco use and 2) examining the extent to which WHO FCTC provisions can reduce the burden. The first two methodological steps depicted in **Figure A1** are employed to assess the current burden of tobacco use, while methodological steps 3-6 assess the impact, costs, and benefits of implementing or intensifying WHO FCTC provisions to reduce the demand for tobacco. The tools and methods used to perform these methodological steps are described in detail below.

Fig. A1: Building the investment case



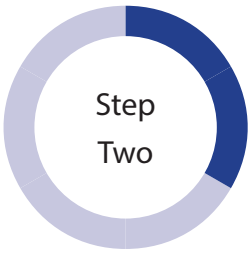
7.2 COMPONENT ONE: CURRENT BURDEN

The current burden model component provides a snapshot of the current health and economic burden of tobacco use in Nepal.



Estimate mortality and morbidity from tobacco-related diseases.

The investment case model is populated with country-specific data on tobacco attributable mortality and morbidity from the 2019 Global Burden of Disease Study (GBD) [67]. The study estimates the extent to which smoking and exposure to second-hand smoke contribute to the incidence of 31 diseases, healthy life years lost, and deaths, across 195 countries.



Estimate the total economic costs associated with tobacco-related diseases.[13,14]

Next, the model estimates the total economic costs of disease and death caused by tobacco use. The total economic costs include tobacco-attributable healthcare expenditures, the value of tobacco-attributable mortality, and workplace productivity losses: absenteeism and presenteeism.

Healthcare expenditures – Healthcare expenditures include tobacco-attributable public (government-paid), private (insurance, individual out-of-pocket), and other healthcare expenditures. The proportion of healthcare costs attributable to smoking was calculated using the formula developed by Goodchild et al. (2018), who estimate the smoking attributable fraction

14 In assessing the current burden of tobacco use, the economic costs of mortality include the cost of deaths due to any form of exposure to tobacco (including smoking, secondhand smoke exposure, and the use of other types of tobacco products). Only smoking-attributable (not tobacco-attributable) costs are calculated for healthcare expenditures, absenteeism and presenteeism. While other forms of tobacco may also cause losses in these categories, no data is available to precisely ascertain those losses.

15 All diseases are assumed to decrease in proportion to smoking prevalence when the decrease in prevalence occurs. While the model overestimates how quickly health benefits will accrue for some diseases, for example cancers—recent evidence suggests notable declines in the risk of lung cancer incidence begin two to five years after smoking prevalence decreases [28]. On the other hand, the risk of incidence of other diseases, for example CVD, declines significantly in the years immediately following quitting [29].

(SAF) of healthcare expenditures for most countries [2]. The SAF calculated for Nepal is 6.2 percent. To calculate the share of smoking-attributable healthcare expenditures borne by public, non-profit, and private entities, it was assumed that each entity incurred smoking-attributable healthcare costs in equal proportion to its contribution to total health expenditure. Healthcare expenditures were obtained from the WHO Global Healthcare Expenditure Database (GHED) [21]. The latest year for which data is available in WHO GHED is 2019. To obtain 2020 values, we took the average annual increase in healthcare expenditures in Nepal over the past 10 years and applied that increase to the 2019 healthcare expenditure values.

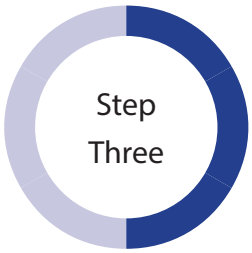
Workplace costs and the cost of tobacco-attributable mortality – Workplace costs and the cost of tobacco-attributable mortality represents the monetized value of lost time, productive capacity, or quality of life as a result of tobacco-related diseases. The cost of tobacco-attributable mortality accrues when tobacco use causes mortality, eliminating the unique economic and social contributions that an individual would have provided in their remaining years of life. Workplace costs accrue when tobacco use results in productivity losses. Compared to non-tobacco users, individuals who use tobacco are more likely to miss days of work (absenteeism) and to be less productive at work due tobacco-related illnesses (presenteeism).

- *The economic cost of tobacco-attributable mortality* – Tobacco-attributable mortality was monetized using a "value of a statistical life" (VSL) measure. VSL is a measure of individuals' willingness to pay for small changes in the risk of death and it is commonly used in economic evaluations of health programmes and policies to monetize health outcomes [30]. Few studies have assessed VSL in low- and middle-income countries [31]. We extrapolated a country-specific estimate of VSL following guidance from the Reference Case Guidelines for Benefit-cost analysis in Global Health and Development [30], estimating the value of one additional year of life for Nepal at NPR 71,362 (value of a statistical life year [VSLY]). Using GBD data on the age at which tobacco-attributable deaths occur, the model calculates the total number of years of life lost due to tobacco, across the population. Each future year of life is multiplied by VSLY to calculate the cost of tobacco-attributable mortality.

- *Productivity costs* – Productivity costs consist of costs due to absenteeism and presenteeism, and are counted only among employed cigarette smokers The model uses estimates from academic literature on the number of extra working days missed due to active smoking (2.9 days per year) [32]. Presenteeism losses are obtained similarly, under research that shows that smokers in China, the US, and five European countries experience about 22 percent more impairment at work because of health problems compared to never-smokers—losses equivalent to about 7.5 days of work [33]. The number of employed smokers is multiplied by days of work missed due to absenteeism or presenteeism by the average daily country wage to obtain estimates of losses.

7.3 COMPONENT TWO: POLICY/INTERVENTION SCENARIOS

This component estimates the effects of FCTC tobacco control provisions on mortality and morbidity, as well as on total economic costs (direct and indirect) associated with tobacco use. Mortality and morbidity, as well as economic costs, for the tobacco control policy/ intervention scenarios are compared to the status quo scenario, which is based on the current burden estimates.



Estimate the effects of WHO FCTC tobacco control provisions on tobacco-attributable mortality, morbidity and total economic costs (direct and indirect).

Selection of priority WHO FCTC measures modeled within the investment case align with the Global Strategy to Accelerate Tobacco Control developed following a decision at the Seventh session of the Conference of the Parties (COP7) to the WHO FCTC. Under Objective 1.1 of the Strategy, Parties seek to accelerate WHO FCTC implementation by setting clear priorities where they will be likely to have the greatest impact in reducing tobacco use. This includes priority implementation of price and tax measures (WHO FCTC Article 6) and time-bound measures of the Convention, including bans on smoking in all public places (WHO FCTC Article 8), health warnings and plain tobacco packaging (WHO FCTC Article 11 guidelines and WHO FCTC Article 13), and comprehensive bans on tobacco advertising, promotion, and sponsorship (WHO FCTC Article 13). In addition, given the importance of awareness in behavior change and shaping cultural norms, the investment cases include instituting mass media campaigns against tobacco use (WHO FCTC Article 12). The impacts of implementing the WHO FCTC provisions are obtained from the literature. The impact of enforcing smoke-free air laws, implementing plain packaging, intensifying advertising bans, and conducting mass media campaigns are derived from Levy et al. (2018) [22] and Chipty (2016) [34], as adapted within the Tobacco Use Brief of Appendix 3 of the WHO Global NCD Action Plan 2013-2020 [35], and adjusted based on assessments of Nepal's baseline rates of implementation. For plain packaging, the analysis used Appendix 3's low-end effect size for plain packaging given that 90 percent of tobacco packaging is already covered by graphic health warnings.

Except for taxes—the impact of which is dependent on the timing of increases in tax rates (described below)—the full impact of the measures is phased in over a five-year period. The phase-in period follows WHO assumptions [36] that two years of planning and development are required before policies are up and running, followed by three years of partial implementation that are reflective of the time that is needed to roll out policies, and work up to full implementation and enforcement.

Tobacco taxes. The impact of cigarette tax increases on cigarette use prevalence was estimated using an Excel-based tool developed to analyze the impact of tax increases on a fixed population cohort. The tool is populated with data, including on current cigarette smoking prevalence, the tax structure and applied tax rates, cigarette prices, demand elasticities, and inflation and income projections (see **Table A1**).

Table A1: Key parameters used in the tax revenue analysis

Parameter name	Value	Source
Price elasticity of demand	-0.5	[37]
Prevalence elasticity of demand	-0.25	Assumption – half of price elasticity [38]
Income price elasticity of demand	0.32	[39]
Income prevalence elasticity of demand	0.16	Assumption – half of price elasticity
Projected real income growth rate*	4.7%	[40]

*Projected real income growth is used as a proxy for wage growth. The International Monetary Fund projects [40] real GDP growth at an average of 4.7 percent annually through 2025.

The investment case analysis examines a tax increase scenario in which Nepal chooses to enact strong tax increases. In the hypothetical scenario, VAT tax rates stay the same, while the specific excise tax increases (in real terms) from around NPR 38 to NPR 192 in 2026. In the scenario, price net of taxes remains static (full pass through of the tax increase). **Table A2** breaks down cigarette pack price components from 2023 to 2027 under the described specific excise tax increases. Additional specific excise taxes triggering real price increases of an average of 5.9 percent annually are modelled from 2028 to 2037, bringing the total tax share to 75 percent by the end of the analysis and the excise tax share to 63 percent.

Table A2: Projected real cigarette pack price in the tax increase scenario (NPR)

Price component*	2023	2024	2025	2026	2027
Price net of taxes	204.40	204.40	204.40	204.40	204.40
Specific excise	38.39	36.48	95.32	151.23	192.24
Value added tax	32.20	31.97	39.62	46.88	52.21
Other taxes	5.01	5.01	5.01	5.01	5.01
Final Consumer Price	280.00	277.86	344.35	407.53	453.86

* Component parts may not sum to final consumer price due to underlying rounding.

The impact of these increases on revenue and cigarette use prevalence is dependent on prevailing elasticities: the extent to which individuals change use of a product (e.g., decrease consumption or quit) because of changes in the price of a tobacco product. Changes are calculated following Joosens and colleague's (2009) [41], who use a log-log function to ensure large price increases do not result in implausible reductions in consumption or prevalence. Below, Equation A1 provides an example of calculations to ascertain the impact of a change in price on smoking prevalence, considering changes in income.

Equation A1:

$$\Delta SP_i = SP_{i-1} * ((EXP\left(\varepsilon p * LN(op_{np})\right)) - 1 - \left[\frac{1+\varepsilon_i\left(\frac{GDP_2-GDP_1}{GDP_2+GDP_1}\right)}{1-\varepsilon_i\left(\frac{GDP_2-GDP_1}{GDP_2+GDP_1}\right)}\right]$$

Where:
SP = smoking prevalence (# of smokers) in year i
Ɛp = prevalence elasticity
Op_np = the ratio of the old price of a pack of cigarettes to the new price after tax increases
Ɛi = income elasticity
GDP = Gross domestic product in year

There are several limitations to the tax analysis. First, the tax tool assumes that the price and tax structure of the most sold brand of cigarettes is representative of the market, and it does not incorporate other market segments (high or low-end cigarettes). More detailed models that account for switching between segments or between products (e.g., movement to hand-rolled cigarettes) would capture nuance helpful to framing tobacco tax policy and estimating impact. Second, the analysis assumes a full pass through the tax increases.

This assumption reflects a "middle ground" approach, but the tobacco industry may increase or decrease prices in reaction to the price increase. Third, we did not obtain Nepal-specific estimates of price and income elasticities. In addition, the most recent available information on the tax structure and number of packs sold was from 2020.

Brief advice to quit tobacco. We calculate the effect of scaling up the provision of brief advice to quit smoking at the primary care level. First, we calculate the baseline population quit rate (PQR, the percent of smokers who quit annually) drawing on previously published methods by Levy and colleagues (2010) [42]. The PQR is calculated (see Equation A2) using three parameters: quit attempts, treatment utilization rates (i.e. counselling, pharmaceutical therapy) and treatment effectiveness.

Equation A2: Calculating Population Quit Rate, from Levy et al (2010) [42]

$$PQR = QA * \sum_{i=1..4} (TxUse_i * TxEff_i)$$

Where:
PQR = Population quit rate
QA = % of smokers who make a quit attempt at least once annually
TxUse = the percent of those who make a quit attempt who use treatment category i
TxEff = The percent of those who use a given treatment who succeed in quitting annually (Treatment efficacy)
i = is one of four treatment categories: 1) no evidence-based treatment; 2) counselling; 3) pharmacological treatment (e.g. nicotine replacement therapy), or 4) both counselling and pharmacological therapy.

Again following Levy et al (2010), "to account for the effect of multiple quit attempts among those who fail at their first attempt, it was assumed that half of those that make at least one quit attempt per year go on to make a second attempt, and half of those [who make a second attempt] make a third, and so on," and that treatment effectiveness does not change based on whether it is a persons' first quit attempt or a succeeding one.

After establishing baseline PQR, we calculated how the population quit rate would change if provision of brief advice to quit at the primary care level became more prevalent. In this "intervention scenario", over the 15-year time horizon of the analysis, half of all primary health care providers are trained to provide brief advice to quit to adult tobacco users—a value selected based on evidence of the current intervention coverage gap; on average, in low- and middle-income countries less than half (47.8 percent) of adult smokers who visit a health provider are advised to quit. Once trained, it is assumed that the provider administers the brief advice when they encounter a patient who uses tobacco.

Taking into account the number of primary health care providers in the country, the patient panel size per provider, adult smoking rates, and the percent of adult smokers who present within the health system for at least one primary care visit per year, in each year of the analysis we calculate the number of adult tobacco users who would encounter a newly trained health provider and receive the brief intervention—which increases the likelihood that an individual makes a quit attempt by 60 percent over baseline levels [46]. With increases in population quit attempts driven by the provision of brief advice, we recalculate PQR to estimate the number of smokers who quit as a result of the intervention. Data used to inform these calculations is shown in **Table A3**.

Table A3: Provision of brief advice – key parameters to calculate intervention impact

Parameter name	Value	Source
Population quit rate (PQR)		
Annual quit attempt rate (QA)	41%	[1]
Increase (%) in QA as a result of receiving brief advice	60%	[42]
Treatment use (Tx Use)		
No evidence-based treatment	81%	[1]
Pharmaceutical assistance	7%	[1]
Counselling	11%	[1]
Both pharmaceutical assistance and counselling	1%	[1]
Treatment effectiveness		
No evidence-based treatment	7%	[42]
Pharmaceutical assistance	15%	[43]*
Counselling	12%	[43]*
Both pharmaceutical assistance and counselling	22%	[43]*
% of adult smokers who visit primary care clinic annually	38%	**
% of smokers who relapse after successfully quitting	60%	[44]
Number of primary care health providers	83,940	[45]***
Annual patient panel size per health provider (# of patients)	550	[46]****

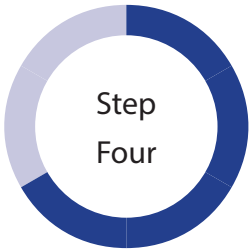
* Compared to quit attempts that are made with no assistance from any form of evidence-based therapy, pharmaceutical assistance is 100 percent more effective, counselling 60 percent more effective, and combined therapy 200 percent more effective
** Analysts pulled data from GATS surveys conducted between 2009 to 2018 and averaged values from low- and middle-income countries.
*** Sum of two indicators in the WHO Global Health Observatory (GHO) for the latest year for which information was available: 1) number of general physicians and 2) number of nursing personnel. Given that specific estimates for primary care nursing personnel are not given from the source, we assume the proportion of primary care nurses is the same as the proportion of generalist doctors to all doctors as given in the GHO.
**** Study results show that a primary care health provider working under a nondelegated model of care can reasonably care for a panel of 983 patients in a year and that in a conservative scenario where non-physician providers assume some responsibility for care patient panel sizes can expand to 1387 patients. In most countries, a nondelegated model of care is the status quo. However, in this analysis, nurses are trained to offer brief advice and assume some responsibility for administering it. Therefore a patient panel size is likely to be somewhere in the range of 983 to 1,387 patients. We assume a panel size of 1,100 and that an individual practitioner on the team covers half of the patients (550) per year.

Summary: the impact of tobacco demand reduction measures. The impact sizes of all policy measures examined in the investment case are displayed in **Table A4**. Additional information on their derivation can be found in the Technical Appendix.

Table A4: Impact size: Relative reduction in the prevalence of current smoking by tobacco control policy/intervention, over a period of 15 years

WHO FCTC Tobacco Policy/Intervention	Relative reduction in the prevalence of current smoking	
	First 5 Years (2023–2026)	Over 15 Years (2023–2037)
Tobacco Control Package (All policies/interventions implemented simultaneously)*	**19.2%**	**31.0%**
Increase tobacco taxation to reduce the affordability of tobacco products *(WHO FCTC Article 6)*	**10.1%**	**16.4%**
Create smoke-free public places and workplaces to protect people from the harms of tobacco smoke *(WHO FCTC Article 8)*	**2.2%**	**3.6%**
Mandate that tobacco product packages carry large health warnings *(WHO FCTC Article 11)*	**Fully implemented – not included in model**	
Implement plain packaging of tobacco products *(WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)*	**1.2%**	**2.0%**
Promote and strengthen public awareness of tobacco control issues, including the health risks of tobacco use and tobacco smoke, addiction, and the benefits of cessation *(WHO FCTC Article 12)*	**6.7%**	**11.2%**
Enact comprehensive bans on advertising, promotion, & sponsorship *(WHO FCTC Article 13)*	**Fully implemented – not included in model**	
Scale up of brief advice to quit for tobacco users in primary care clinics *(WHO FCTC Article 14)*	**0.1%**	**0.8%**

* The combined impact of all interventions is not the sum of individual interventions. Following Levy and colleagues' (2018) "effect sizes [are applied] as constant relative reductions; that is, for policy i and j with effect sizes PRi and PRj, (1-PR ii) x (1-PR j) [is] applied to the current smoking prevalence [1].



Estimate the financial costs of implementing the tobacco control policies and interventions modeled, both individually and collectively.

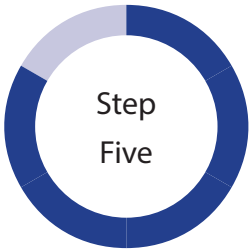
To analyze the impact of policy measures on reducing the health and economic burden of smoking, the investment case calculates and compares two scenarios. In the status quo scenario, current efforts are 'frozen', meaning that, through the year 2037 (end of the analysis), no change occurs from the tobacco control provisions that are currently in place. In the intervention scenario, Nepal implements new tobacco measures or intensifies existing ones, to reduce the prevalence of smoking. The difference in health and economic outcomes between the status quo and intervention scenarios represents the gains that Nepal can achieve by taking targeted actions to reduce tobacco use.

The marginal effects of the policies are calculated using the status quo scenario as the comparison group. To calculate marginal effects, the model subtracts the outcome (risk factor attributable deaths, healthcare expenditures, etc.) under the intervention scenario from the same outcome under the status quo scenario. The difference between the two outcomes is the amount of change in the outcome associated with the policy.

Marginal Effects = Outcome Base Scenario — Outcome Intervention Scenario

Marginal effects are calculated as follows for each outcome:

- Health outcomes: To calculate the reductions in mortality and morbidity due to implementation of the policy measures, forecasted changes in smoking prevalence are applied directly to the GBD risk factor attributable outcomes from the status quo scenario. This means that the model adjusts the risk factor attributable outcomes for mortality and morbidity as reported by GBD based on year-over-year relative changes in smoking prevalence for each outcome.
- For healthcare expenditures, the model applies forecasted annual relative changes in smoking prevalence for each intervention scenario to the SAFs. SAFs are adjusted in proportions equal to the relative change in smoking prevalence for each intervention scenario.
- Workplace smoking outcomes are recalculated substituting actual (status quo) smoking prevalence for estimated annual smoking prevalence for each of the intervention scenarios that are modeled.



Estimate the financial costs of implementing the tobacco control policies and interventions modeled, both individually and collectively.

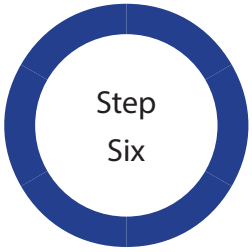
The financial costs to the government of implementing new measures – or of intensifying or enforcing existing ones – is estimated using the WHO NCD Costing Tool. Full explanations of the costs and assumptions embedded in the WHO NCD Costing tool are available [36].

The Tool uses a 'bottom up' or 'ingredients-based' approach. In this method, each resource that is required to implement the tobacco control measure is identified, quantified, and valued. The Tool estimates the cost of surveillance, human resources – for programme management, transportation, advocacy, and enacting and enforcing legislation – trainings and meetings, mass media, supplies and equipment, and other components. Within the Tool, costs accrue differently during four distinct implementation phases: planning (year 1), development (year 2), partial implementation (years 3-5), and full implementation (years 6 onward).

Across these categories, the Tool contains default costs from 2011, which are sourced from the WHO CHOICE costing study. Following Shang and colleagues, the Tool is updated to reflect 2019 costs by updating several parameters: the US$ to local currency unit exchange rate (2019), purchasing power parity (PPP) exchange rate (2019), GDP per capita (US$, 2019), GDP per capita (PPP, 2019), population (total, and share of the population age 15+, 2019), labour force participation rate (2019), gas per liter, and government spending on health as a percent of total health spending (2018) [47]. Unless government or other in-country parameters are received, data is from the World Bank database, with the exception of data on the share of government health spending and population figures. The share of government spending on health as a percent of total health spending is derived from the WHO Health Expenditures database, and population figures are from the UN Population Prospects.

To cost the scale up of the provision of brief advice to quit smoking, the analysis adds to the programmatic costs embedded in the WHO Costing Tool by including costs to train health providers and the direct costs of the primary care visits in which the brief advice is administered. Over the 15-year time horizon of the analysis, half of all primary care health providers are trained to administer brief advice to quit tobacco. Based on WHO's training package for treating tobacco dependence in primary care [48], we assume that training sessions last 2.5 days, are conducted with a maximum of 30 participants, and are led by a team of two facilitators. We further assume that the training occurs in person in a rented facility space. Costs of training include those to rent the facility, pay

facilitators, and provide per diems to facilitators and attendees, and we also assume that trainees (doctors and nurses) are compensated for their time at their wage rate.[16] Once trained, providers are assumed to provide brief advice if they encounter a patient who smokes. The cost of providing brief advice during primary care visits is based on modeled, country-specific estimates from WHO-CHOICE of the cost or primary care outpatient visits [49]. The derivation of these estimates is detailed elsewhere [50], but in overview, the estimates reflected the "hotel cost" of a ten-minute visit[17] to a health facility with beds. We updated the estimates to 2020 local currency units, using 2010 purchasing power parity conversion factors and local consumer price indices [51]. For the purposes of the investment case, administration of the 5A's brief intervention is assumed to take 10 minutes [52]. Following WHO CHOICE methodology, we estimate the cost of those extra 10 minutes as an extra 21 percent of the original cost of the primary care visit.



Quantify the Return on Investment (ROI) for the various tobacco control policies and interventions modeled, both individually and collectively.

The return on investment (ROI) analysis measures the efficiency of tobacco control investments by dividing the discounted monetary value of health gains from investments by their discounted respective costs.

ROIs were calculated for each of the five tobacco control policies modeled, and for the five interventions together as a package. Estimates from Steps 3 and 4 were used to calculate ROIs at 5- and 15-year intervals.

$$\textbf{Return on Investment} = \frac{\text{Benefits of Intervention/Policy}}{\text{Costs of Implementing Intervention/Policy}}$$

16 Compensation costs for trainers, per diem estimates, and provider salaries are obtained from the WHO Costing Tool.
17 The analysis assumes that the mean duration of a clinic visit is 10-minutes, following guidance from the WHO NCD Costing Tool.

7.4 Equity analysis

We used elasticity of smoking participation by income group to assess the equity implications of increases in cigarette taxation. No studies were identified that examine the elasticity of smoking participation in Nepal. Instead, we use the average of income-group-specific elasticities in low- and middle-income countries, as compiled in a World Bank policy research working paper [53]. The working paper provides elasticities by deciles. To apply the elasticities to the smoking prevalence data available for Nepal, which is presented as quintiles, we take the average of the first and second decile to obtain the elasticity for the first quintile, and so on. The average elasticity for each quintile from the working paper that are used to calculate reductions in smoking prevalence and smoking attributable mortality are shown in **Table A5** below.

Table A5: Average elasticities used in investment case equity analysis

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Price elasticity	-0.60	-0.49	-0.41	-0.36	-0.30

For the equity analysis, we use prevalence by income quintile obtained from the 2019 STEPS NCD Risk Factor Survey for Nepal [1].

7.5 Summary of WHO FCTC demand-reduction measure status

Figure 2 is based on data from the WHO Report on the Global Tobacco Epidemic, 2021. In the Figure, the level-of-implementation categories of "no/little implementation", "partial implementation", "moderate implementation", and "meeting WHO FCTC recommendations" are mapped to the descriptions in **Table A6**, as specified and further detailed in Technical Note I of the GTCR (see page 119).

Investment case analysts assigned scores between 0 to 3 for each demand reduction measure, depending on the level of implementation. For four measures—graphic warning labels, plain packaging, mass media campaigns, and tobacco cessation—we assigned whole number scores (i.e. 0, 1, 2, or 3) that mapped to the four levels of implementation described above and detailed in **Table A6**. For increases in cigarette taxation, bans on smoking in public places, and TAPs bans, we adjusted the level-of-implementation score creating a decimal value as follows:

- For 1) bans on smoking in public places and 2) TAPS bans, we adjusted the score to account for reported levels of compliance in the GTCR (Compliance Score). Following previously published assumptions by Levy and colleagues (2013), we assumed that respectively 25 percent and 50 percent of the effect of these measures depends on levels of compliance [54]. Thus, for a country with "moderate implementation" of TAPS bans but a compliance score (as detailed in the GTCR) of 5 out of 10, we calculated the score as follows: Measure Score – (0.5*Compliance Score/10) = 2 – (0.5*(5/10) = 1.75. For countries that did not report a compliance score we assumed the average of compliance scores worldwide.
- For 3) cigarette taxation, all countries in which the total tax share equalled 75 percent or above received a score of 3. All countries below that mark were assigned a score as follows: 3*(Total tax share/0.75). Thus a country with a total tax share of 35 percent received a score of 1.4 (3*(.35/.75)).

Ultimately, most measures are weighted equally (counting as three points if fully implemented) except for plain packaging (counting as one point if fully implemented). Analysts selected one point for plain packaging because: 1) Unlike for the other measures, plain packaging operates on a 0,1 scale—either the measure is in place or it isn't (i.e. there are no gradations of the policy—there is little benefit to mandating that half of the package is "plain" while the rest is open to colouring or other attributes; 2) In the GTCR plain packaging is scored as a "star" on top of the graphic warning labels acting as a supportive add on to other labelling requirements.

The total score a country can receive for implementation of the key demand reduction measures (i.e. composite tobacco control score) is 19. A country with a composite tobacco control score of 12/19 may be said to have implemented about 63 percent of the WHO FCTC key demand reduction measures agenda.

Table A6: Definition of FCTC implementation status in Figure 2.

WHO FCTC demand-reduction measure	No/little implementation	Partial implementation	Moderate implementation	Meeting WHO FCTC recommendations
Increase cigarette taxation to reduce the affordability of tobacco products *(WHO FCTC Article 6)*	0% of retail price is tax, or no data is reported	≥ 25% and <50% of retail price is tax	≥ 50% and <75% of retail price is tax	≥ 75% of retail price is tax
Create smoke-free public places and workplaces to protect people from the harms of tobacco smoke *(WHO FCTC Article 8)*	Complete absence of ban, or up to two public places completely smoke-free, or no data is reported	Three to five public places completely smoke-free	Six to seven public places completely smoke-free	All public places completely smoke-free (or at least 90% of the population covered by complete subnational smoke-free legislation)
Require tobacco packaging to carry graphic health warnings describing the harmful effects of tobacco use *(WHO FCTC Article 11)*	No warnings or small warnings, or data not reported	Medium size warnings missing some appropriate characteristics OR large warnings missing many appropriate characteristics	Medium size warnings with all appropriate characteristics OR large warnings missing some appropriate characteristics	Large warnings with all appropriate characteristics
Implement plain packaging of tobacco products *(WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)*	Plain packaging is not mandated	-	-	Plain packaging is mandated
Promote and strengthen public awareness of tobacco control issues, including the health risks of tobacco use and tobacco smoke, addiction, and the benefits of cessation *(WHO FCTC Article 12)*	No national campaign conducted between July 2018 and June 2020 with a duration of at least 3 weeks, or no data is reported	National campaign conducted with one to four appropriate characteristics	National campaign conducted with five to six appropriate characteristics	National campaign conducted with at least seven appropriate characteristics including airing on television and/or radio
Enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship - TAPS *(WHO FCTC Article 13)*	Complete absence of ban, or ban that does not cover national television, radio and print media	Ban on national television, radio and print media only	Ban on national television, radio and print media as well as on some but not all other forms of direct and/or indirect advertising	Ban on all forms of direct and indirect advertising (or at least 90% of the population covered by subnational legislation completely banning tobacco advertising, promotion and sponsorship)
Scale up of brief advice to quit for tobacco users in primary care clinics *(WHO FCTC Article 14)*	None, or no data is reported	NRT and/or some cessation services (neither cost-covered)	NRT and/or some cessation services (at least one of which is cost-covered)	National quit line, and both NRT and some cessation services cost-covered

8. References

[1] M. Dhimal et al., "Noncommunicable Disease Risk Factors: STEPS Survey Nepal 2019," Nepal Research Institute, Kathmandu. [Online]. Available: https://www.who.int/docs/default-source/nepal-documents/ncds/ncd-steps-survey-2019-compressed.pdf?sfvrsn=807bc4c6_2

[2] M. Goodchild, N. Nargis, and E. T. d'Espaignet, 'Global economic cost of smoking-attributable diseases', Tobacco control, vol. 27, no. 1, pp. 58–64, 2018, doi: https://doi.org/10.1136/tobaccocontrol-2016-053305

[3] L. Chaker et al., "The global impact of non-communicable diseases on macro-economic productivity: a systematic review," Eur J Epidemiol, vol. 30, no. 5, pp. 357–95, May 2015, doi: https://doi.org/10.1007/s10654-015-0026-5.

[4] A. Anesetti-Rothermel and U. Sambamoorthi, "Physical and Mental Illness Burden: Disability Days among Working Adults," Population Health Management, vol. 14, no. 5, pp. 223–230, Apr. 2011, doi: https://doi.org/10.1089/pop.2010.0049.

[5] P. S. Wang et al., "Chronic medical conditions and work performance in the health and work performance questionnaire calibration surveys," J. Occup. Environ. Med., vol. 45, no. 12, pp. 1303–1311, Dec. 2003, doi: https://doi.org/10.1097/01.jom.0000100200.90573.df.

[6] M. J. Husain, B. K. Datta, M. K. Virk-Baker, M. Parascandola, and B. H. Khondker, "The crowding-out effect of tobacco expenditure on household spending patterns in Bangladesh," PLoS ONE, vol. 13, no. 10, p. e0205120, Oct. 2018, doi: https://doi.org/10.1371/journal.pone.0205120.

[7] R. M. John, "Crowding out effect of tobacco expenditure and its implications on household resource allocation in India," Soc Sci Med, vol. 66, no. 6, pp. 1356–1367, Mar. 2008, doi: https://doi.org/10.1016/j.socscimed.2007.11.020.

[8] G. Paraje and D. Araya, "Relationship between smoking and health and education spending in Chile," Tob Control, vol. 27, no. 5, pp. 560–567, Sep. 2018, doi: https://doi.org/10.1136/tobaccocontrol-2017-053857.

[9] J. de Beyer, C. Lovelace, and A. Yürekli, "Poverty and tobacco," Tob Control, vol. 10, no. 3, pp. 210–211, Sep. 2001, doi: https://doi.org/10.1136/tc.10.3.210.

[10] D. Efroymson et al., "Hungry for tobacco: an analysis of the economic impact of tobacco consumption on the poor in Bangladesh," Tob Control, vol. 10, no. 3, pp. 212–217, Sep. 2001, doi: https://doi.org/10.1136/tc.10.3.212.

[11] L. Greaves et al., "What Are the Effects of Tobacco Policies on Vulnerable Populations?," Can J Public Health, vol. 97, no. 4, pp. 310–315, Jul. 2006, doi: https://doi.org/10.1007/BF03405610.

[12] Conference of the Parties to the WHO Framework Convention on Tobacco Control, "4. WHO Framework Convention on Tobacco Control," United Nations Treaty Collection, Apr. 19, 2023. Available: https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IX-4&chapter=9&clang=_en

[13] Tobacco Product (Control and Regulatory) Bill, 2010. Kathmandu, 2010.

[14] Directive on printing warning messages and pictures on tobacco product boxes, packets, cartons, parcels and packaging materials, 2014. 2014.

[15] World Health Organization, "WHO report on the global tobacco epidemic 2021: addressing new and emerging products," Geneva, 2021. Accessed: Sep. 11, 2021. [Online]. Available: https://www.who.int/publications/i/item/9789240032095

[16] IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, Smokeless Tobacco and Some Tobacco-specific N-Nitrosamines. Lyon, France: International Agency for Research on Cancer, 2007. Accessed: Sep. 20, 2022. [Online]. Available: https://www.ncbi.nlm.nih.gov/books/NBK326503/

[17] "Nepal Details | Tobacco Control Laws." Available: https://www.tobaccocontrollaws.org/legislation/country/nepal/summary (accessed Jan. 27, 2022).

[18] World Health Organization, "WHO report on the global tobacco epidemic 2021: addressing new and emerging products," Geneva, 2021. Accessed: Sep. 11, 2021. [Online]. Available: https://www.who.int/publications/i/item/9789240032095

[19] World Health Organization, WHO report on the global tobacco epidemic, 2015: raising taxes on tobacco. Geneva: World Health Organization, 2015. Accessed: Jan. 30, 2022. [Online]. Available: https://www.who.int/publications/i/item/9789241509121

[20] World Health Organization, "WHO report on the global tobacco epidemic, 2017: Monitoring tobacco use and prevention policies," 2017. [Online]. Available: http://apps.who.int/iris/bitstream/10665/255874/1/9789241512824-eng.pdf?ua=1&ua=1

[21] World Health Organization, "Global Health Expenditures Database." online, 2020. [Online]. Available: https://apps.who.int/nha/database

[22] D. T. Levy, J. Tam, C. Kuo, G. T. Fong, and F. Chaloupka, "The Impact of Implementing Tobacco Control Policies: The 2017 Tobacco Control Policy Scorecard," J Public Health Manag Pract, vol. 24, no. 5, pp. 448–457, Oct. 2018, doi: https://doi.org/10.1097/PHH.0000000000000780.

[23] The Secretariat of the WHO FCTC and United Nations Development Programme, "The WHO Framework Convention on Tobacco Control: an accelerator for sustainable development," Apr. 2017. [Online]. Available: https://fctc.who.int/publications/m/item/the-who-framework-convention-on-tobacco-control-an-accelerator-for-sustainable-development

[24] A. Fuchs, P. Marquez, S. Dutta, and F. Gonzalez Icaza, "Is Tobacco Taxation Regressive? Evidence on Public Health, Domestic Resource Mobilization, and Equity Improvements," The World Bank Group, Washington, DC, 2019. [Online]. Available: https://openknowledge.worldbank.org/handle/10986/31575

[25] International Agency for Research on Cancer, Ed., IARC handbooks of cancer prevention, tobacco control, volume 14, Effectiveness of Tax and Price Policies for Tobacco Control. Lyon: IARC, 2011. Available: https://publications.iarc.fr/Book-And-Report-Series/Iarc-Handbooks-Of-Cancer-Prevention/Effectiveness-Of-Tax-And-Price-Policies-For-Tobacco-Control-2011

[26] N. Salti, E. Brouwer, and S. Verguet, "The health, financial and distributional consequences of increases in the tobacco excise tax among smokers in Lebanon," Soc Sci Med, vol. 170, pp. 161–169, 12, doi: https://doi.org/10.1016/j.socscimed.2016.10.020.

[27] Global Tobacco Economics Consortium, "The health, poverty, and financial consequences of a cigarette price increase among 500 million male smokers in 13 middle income countries: compartmental model study," BMJ, vol. 361, p. k1162, Apr. 2018, doi: 10.1136/bmj.k1162

[28] D. R. Smith, A. Behzadnia, R. A. Imawana, M. N. Solim, and M. L. Goodson, "Exposure-lag response of smoking prevalence on lung cancer incidence using a distributed lag non-linear model," Sci Rep, vol. 11, no. 1, p. 14478, Jul. 2021, doi: https://doi.org/10.1038/s41598-021-91644-y.

[29] M. S. Duncan, M. S. Freiberg, R. A. Greevy, S. Kundu, R. S. Vasan, and H. A. Tindle, "Association of Smoking Cessation With Subsequent Risk of Cardiovascular Disease," JAMA, vol. 322, no. 7, pp. 642–650, Aug. 2019, doi: https://doi.org/10.1001/jama.2019.10298.

[30] L. A. Robinson et al., "Reference Case Guidelines for Benefit-Cost Analysis in Global Health and Development," Harvard T.H. Chan School of Public Health, Bill and Melinda Gates Foundation, Boston, MA, May 2019. [Online]. Available: https://cdn1.sph.harvard.edu/wp-content/uploads/sites/2447/2019/05/BCA-Guidelines-May-2019.pdf

[31] L. A. Robinson, J. K. Hammitt, and L. O'Keeffe, "Valuing Mortality Risk Reductions in Global Benefit-Cost Analysis," J Benefit Cost Anal, vol. 10, no. Suppl 1, pp. 15–50, 2019, doi: 10.1017/bca.2018.26.

[32] S. A. Troelstra, P. Coenen, C. R. Boot, J. Harting, A. E. Kunst, and A. J. van der Beek, "Smoking and sickness absence: a systematic review and meta-analysis," Scand J Work Environ Health, vol. 46, no. 1, pp. 5–18, 1, doi: https://doi.org/10.5271/sjweh.3848.

[33] C. L. Baker, N. M. Flores, K. H. Zou, M. Bruno, and V. J. Harrison, "Benefits of quitting smoking on work productivity and activity impairment in the United States, the European Union and China," Int J Clin Pract, vol. 71, no. 1, Jan. 2017, doi: https://doi.org/10.1111/ijcp.12900.

[34] T. Chipty, "Study of the Impact of the Tobacco Plain Packaging Measure on Smoking Prevalence in Australia," Analysis Group, Inc., 2016. [Online]. Available: https://www.health.gov.au/resources/publications/study-of-the-impact-of-the-tobacco-plain-packaging-measure-on-smoking-prevalence-in-australia?language=en#

[35] "Tobacco Interventions for the Appendix 3 of the Global Action Plan for Non Communicable Disease." World Health Organization, 2017. [Online]. Available: https://cdn.who.int/media/docs/default-source/ncds/mnd/2022-app3-technical-annex-v26jan2023.pdf?sfvrsn=62581aa3_5

[36] D. Chisholm, D. Abegunde, S. Mendis, and World Health Organization, Scaling up action against noncommunicable diseases: how much will it cost?. Geneva, Switzerland: World Health Organization, 2011. Accessed: Oct. 22, 2020. [Online]. Available: https://apps.who.int/iris/handle/10665/44706

[37] G. E. Guindon, G. R. Paraje, and F. J. Chaloupka, "The impact of prices and taxes on the use of tobacco products in Latin America and the Caribbean," Am J Public Health, vol. 105, no. 3, pp. e9-19, Mar. 2015, doi: https://doi.org/10.2105/AJPH.2014.302396.

[38] M. Goodchild, A. M. Perucic, and N. Nargis, "Modelling the impact of raising tobacco taxes on public health and finance," in Bull World Health Organ, vol. 94, 2016, pp. 250–7. doi: 10.2471/blt.15.164707.

[39] N. Nargis, M. Stoklosa, C. Shang, and J. Drope, "Price, Income, and Affordability as the Determinants of Tobacco Consumption: A Practitioner's Guide to Tobacco Taxation," Nicotine Tob Res, vol. 23, no. 1, pp. 40–47, Jan. 2021, doi: https://doi.org/10.1093/ntr/ntaa134.

[40] International Monetary Fund, "Real GDP Growth - Annual percent change," World Economic Outlook Dataset. Available: https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD (accessed Dec. 17, 2020).

[41] L. Joossens and International Union against Tuberculosis and Lung Disease, How eliminating the global illicit cigarette trade would increase tax revenue and save lives. Paris, France: International Union Against Tuberculosis and Lung Disease, 2009. Available: Available at: https://theunion.org/technical-publications/how-eliminating-the-global-illicit-cigarette-trade-would-increase-tax-revenue-and-save-lives

[42] D. T. Levy, A. L. Graham, P. L. Mabry, D. B. Abrams, and C. T. Orleans, "Modeling the impact of smoking-cessation treatment policies on quit rates," Am J Prev Med, vol. 38, no. 3 Suppl, pp. S364-372, Mar. 2010, doi: https://doi.org/10.1016/j.amepre.2009.11.016.

[43] D. B. Abrams, A. L. Graham, D. T. Levy, P. L. Mabry, and C. T. Orleans, "Boosting population quits through evidence-based cessation treatment and policy," Am J Prev Med, vol. 38, no. 3 Suppl, pp. S351-363, Mar. 2010, doi: https://doi.org/10.1016/j.amepre.2009.12.011.

[44] O. García-Rodríguez, R. Secades-Villa, L. Flórez-Salamanca, M. Okuda, S.-M. Liu, and C. Blanco, "Probability and predictors of relapse to smoking: Results of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC)," Drug Alcohol Depend, vol. 132, no. 3, pp. 479–485, Oct. 2013, doi: https://doi.org/10.1016/j.drugalcdep.2013.03.008.

[45] World Health Organization, "Global Health Observatory (GHO)," 2021. Available: https://www.who.int/data/gho (accessed Mar. 14, 2021).

[46] J. Altschuler, D. Margolius, T. Bodenheimer, and K. Grumbach, "Estimating a Reasonable Patient Panel Size for Primary Care Physicians With Team-Based Task Delegation," Ann Fam Med, vol. 10, no. 5, pp. 396–400, Sep. 2012, doi: https://doi.org/10.1370/afm.1400.

[47] C. Shang et al., "Country-specific costs of implementing the WHO FCTC tobacco control policies and potential financing sources," PLoS One, vol. 13, no. 10, Oct. 2018, doi: https://doi.org/10.1371/journal.pone.0204903.

[48] World Health Organization, "Part III. Training for primary care providers," Geneva, 2013. World Health Organization, Strengthening health systems for treating tobacco dependence in primary care Part III: Training for primary care providers, Geneva, 2013. Available: https://iris.who.int/bitstream/handle/10665/84388/9789241505413_eng_Part-III_service_providers.pdf

[49] World Health Organization, 'WHO-CHOICE Unit Cost estimates for service delivery - Estimation File', Geneva, 2010. [Online]. Available: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fcdn.who.int%2Fmedia%2Fdocs%2Fdefault-source%2Fhealth-economics%2Fwho-choiceunit_cost_estimates_2007_2008.xls%3Fsfvrsn%3Df655108a_2&wdOrigin=BROWSELINK

[50] K. Stenberg, J. A. Lauer, G. Gkountouras, C. Fitzpatrick, and A. Stanciole, "Econometric estimation of WHO-CHOICE country-specific costs for inpatient and outpatient health service delivery," Cost Effectiveness and Resource Allocation, vol. 16, no. 1, pp. 1–15, Mar. 2018, doi: https://doi.org/10.1186/s12962-018-0095-x.

[51] The World Bank, 'World Bank Open Data: Free and open access to global development data', 2019. Available: https://data.worldbank.org/

[52] Health Services Executive of Ireland, 'Brief Intervention for Smoking Cessation', 2014. Available: https://www.hse.ie/eng/about/who/tobaccocontrol/news/briefreport.pdf

[53] A. Fuchs, F. González Icaza, and D. Paz, "Distributional Effects of Tobacco Taxation: A Comparative Analysis," World Bank, Washington, DC, Working Paper, Apr. 2019. doi: https://doi.org/10.1596/1813-9450-8805.

[54] D. T. Levy, J. A. Ellis, D. Mays, and A.-T. Huang, "Smoking-related deaths averted due to three years of policy progress," Bull World Health Organ, vol. 91, no. 7, pp. 509–518, Jul. 2013, doi: https://doi.org/10.2471/BLT.12.113878.

[55] World Health Organization, "Coronavirus disease (COVID-19): Tobacco," May 25, 2022. Available: https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-covid-19-tobacco)

[56] WHO Framework Convention on Tobacco Control Secretariat and United Nations Development Programme, "Integrating Tobacco Control into Tuberculosis and HIV Responses: Implementing the WHO Framework Convention on Tobacco Control to address co-morbidities," Nov. 2018. [Online]. Available: https://fctc.who.int/publications/m/item/integrating-tobacco-control-into-tuberculosis-and-hiv-responses

[57] Public Health Update (2019)Tobacco Products (Control and Regulatory) Act, 2068 (2011). Available: https://publichealthupdate.com/tobacco-products-control-and-regulatory-act-2068-2011/

[58] Nepal Government Ministry of Home Affairs, "Main Functions." Available: https://moha.gov.np/en/page/main-functions

[59] Top Nepali, "List of 77 Districts in Nepal with Provinces Name," Apr. 16, 2023. Available: https://topnepali.com/districts-in-nepal

[60] A. K. Dahal, "Tobacco Control In Nepal – Challenges And Countermeasures," Elsevier Ltd. 2013. Available: https://core.ac.uk/display/82111994?utm_source=pdf&utm_medium=banner&utm_campaign=pdf-decoration-v1

[61] Khanal GN, Khatri RB, "Burden, prevention and control of tobacco consumption in Nepal: a narrative review of existing evidence," Int Health. 2021;13(2):110-121. doi: https://doi.org/10.1093/inthealth/ihaa055

[62] United Nations, "Addis Ababa Action Agenda on Financing for Development," Sustainable Development Goals Knowledge Platform, 2015. Available: https://sustainabledevelopment.un.org/frameworks/addisababaactionagenda (accessed Oct. 21, 2020).

[63] Assunta M. Global Tobacco Industry Interference Index 2023. Global Center for Good Governance in Tobacco Control (GGTC). Bangkok, Thailand. Nov. 2023. Available: https://globaltobaccoindex.org/report-summary

[64] Parliament of Nepal, "Finance Bill 2080," 2023. Available: https://www.mof.gov.np/site/publication-category/66

[65] Nepal Development Research Institute, "Taxing Tobacco in Nepal: What can be done," 2020. https://www.ndri.org.np/wp-content/uploads/2020/11/Tobacco-Taxation-in-Nepal-What-can-be-done.pdf

[66] Secretariat of the WHO FCTC, "Guidelines for implementation of Article 6." Jan. 01, 2017. [Online]. Available: https://www.ndri.org.np/storage/publication/15-2023-06-19-5294456.pdf

[67] C. J. L. Murray et al., "Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019," The Lancet, vol. 396, no. 10258, pp. 1223–1249, Oct. 2020, doi: https://doi.org/10.1016/S0140-6736(20)30752-2.

[68] World Health Organization, "WHO Technical Manual on Tobacco Tax Policy and Administration," Geneva, 2021. World Health Organization, 'WHO Technical Manual on Tobacco Tax Policy and Administration', Geneva, 2021. [Online]. Available: https://www.who.int/publications/i/item/9789240019188

[69] G. Rodriguez-Iglesias and E. Blecher, "Tax Structures are Key in Raising Tobacco Taxes & Revenues," Tobacconomics, Health Policy Center, Institute for Health Research and Policy, University of Illinois at Chicago, Chicago, IL, Oct. 2018. Available: https://tobacconomics.org/files/research/469/Tobacco-Tax-Structures-Policy-Brief_FINAL-Web-Version.pdf

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