



# Investment Case for Tobacco Control in **Bhutan**



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## Investment Case for Tobacco Control in

# Bhutan

The case for scaling-up  
WHO FCTC implementation

# Investment Case for Tobacco Control in Bhutan

More than

**400** people die every year due to tobacco-related illness, accounting for **10%** of all deaths in Bhutan.



Investing now in six proven tobacco control measures will prevent more than

**1,200 deaths**

and avert

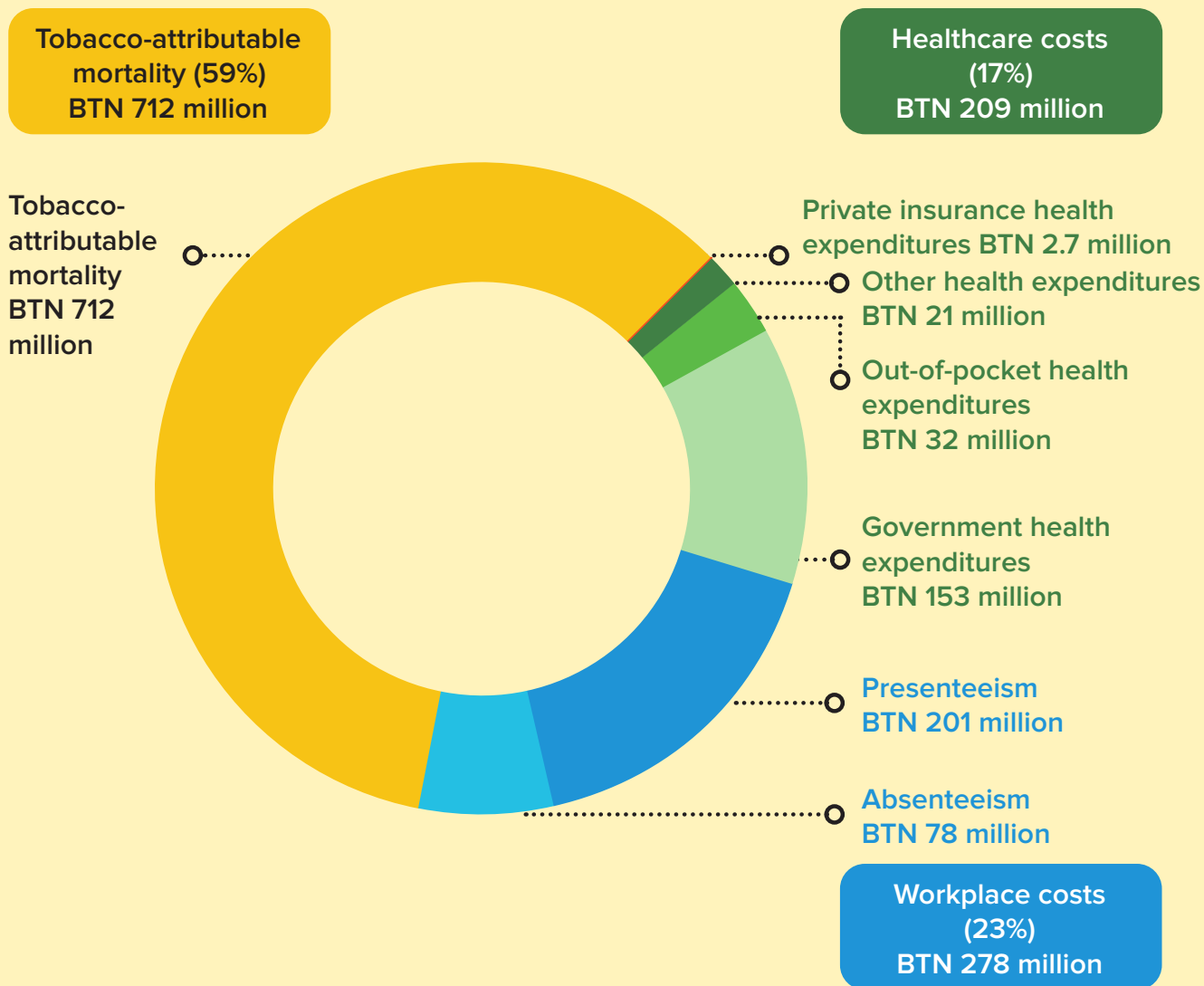
**2.3 billion Bhutanese ngultrum (BTN)**

in economic losses by 2037.



The equity analysis finds that 18 percent of the deaths that would be averted during the first two years of tax increases modelled in the investment case would be among the **poorest 20 percent** of the population, despite this group accounting for only **8 percent of total smokers**.

Breakdown of the share of the cost of tobacco-attributable mortality, workplace costs, and healthcare costs in Bhutan (BTN millions) 2019



For every Bhutanese ngultrum invested in the six tobacco control measures today, Bhutan will avert **BTN 2** in economic losses by 2027 and **BTN 7** by 2037.

Tobacco costs Bhutan **BTN 1.2 billion every year**, equivalent to **0.7% of its annual GDP** in 2019.



## **Acknowledgements**

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A wide-angle photograph of a mountainous region. In the foreground, there is a rugged, brownish-orange rocky slope. The middle ground shows a valley with patches of green vegetation and a winding path. In the background, high, dark mountains rise, some with snow-capped peaks partially obscured by mist or clouds. The overall scene is dramatic and scenic.

This tobacco control investment case highlights the enormous costs of tobacco in Bhutan 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 Bhutan.





# Executive summary

## Overview

Tobacco is a significant threat to health, national economy, environment and sustainable development. Tobacco causes premature death and preventable disease that results in high health costs and economic losses, widens socioeconomic inequalities, and impedes progress towards the achievement of the Sustainable Development Goals (SDGs).

Tobacco could be considered as incompatible with Bhutan's philosophy and four pillars of Gross National Happiness: fair and sustainable socio-economic development; conservation and promotion of a vibrant culture; environmental protection; and good governance [1]. In Bhutan, around one quarter of adults currently use tobacco, with a higher prevalence of smokeless tobacco compared to smoked tobacco. Other forms of tobacco use are also common in Bhutan, such as smokeless tobacco and areca nut products with around half Bhutanese adults and youth reporting consuming it [2].

This report summarizes the costs and benefits—in health and economic terms—of implementing six key policy actions of the WHO Framework Convention on Tobacco Control (WHO FCTC) that focus on demand reduction. The six actions are:

- 1) **Increasing tobacco taxation to reduce the affordability of tobacco products** (*WHO FCTC Article 6*).
- 2) **Creating smoke-free public places and workplaces to protect people from the harms of tobacco smoke** (*WHO FCTC Article 8*).
- 3) **Requiring graphic warning labels on tobacco product packaging that describe the harms of tobacco use** (*WHO FCTC Article 11*).
- 4) **Implementing plain packaging of tobacco products** (*WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13*).
- 5) **Promoting and strengthening 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) **Promoting of cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use** (*WHO FCTC Article 14*).

## Main findings

**In 2019, tobacco use in Bhutan caused around 1.2 billion Bhutanese Ngultrum (BTN) in economic losses. These losses are equivalent to 0.7 percent of Bhutan's gross domestic product (GDP).<sup>1</sup>** They include a) **BTN 209 million** in direct health-care expenditures, b) tobacco-attributable mortality valued at **BTN 712 million**, and c) **BTN 278 million** in reduced workplace productivity from absenteeism and presenteeism. Productivity losses from current tobacco use in Bhutan, representing **23 percent** of all tobacco-related economic costs, shows how tobacco use impedes development in Bhutan 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 use kills more than 400 people in Bhutan representing one-tenth of all deaths in the country, with 44 percent of these deaths being premature, among those under the age 70.** About 16 percent of lives lost from tobacco use is because of exposure to secondhand smoke. All deaths from tobacco are entirely preventable.

**By acting now, the Government of Bhutan can reduce the national burden from tobacco use.** The investment case findings demonstrate that implementing and enforcing six key evidence-based measures set out in the WHO FCTC would, over the next 15 years (2023-2037)<sup>2</sup>:

**Save more than 1,200 lives and reduce the incidence of disease.** The key WHO FCTC measures would contribute to Bhutan's efforts to achieve Sustainable Development Goal (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 six key WHO FCTC policy actions would prevent premature deaths from the four main NCDs – cardiovascular disease (CVD), diabetes, cancers, and chronic respiratory disease – by 2030, in the equivalent of about 6.5 percent of the needed reduction in premature mortality to achieve SDG Target 3.4.

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1 Tobacco burden includes smoking-attributable, secondhand smoke-attributable, and chewing tobacco-attributable outcomes.

2 The investment case considers only cigarette smoking for the benefits of investing in the six WHO FCTC policy actions given the available evidence.

**Avert BTN 2.3 billion in economic losses, coming from:**

- **BTN 547 million due to workplace productivity losses.** The tobacco-control actions should 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.
- **BTN 411 million in savings through avoidance of tobacco-attributable health-care expenditures.** Of this, the government would save BTN 302 million in health-care expenditures, citizens would save BTN 63 million in out-of-pocket health-care costs, with remaining savings accruing to other payers.
- **BTN 1.3 billion in averted economic costs from tobacco-attributed mortality.**

**Provide a return of investment (ROI) of 7:1.**<sup>3</sup> This means that economic benefits (BTN 2.3 billion) significantly outweigh the costs of implementing the six WHO FCTC policy actions (BTN 330 million). For each individual measure, mandating graphic warning labels have the highest ROI (21:1), followed by increasing taxes on cigarettes (15:1), public awareness of tobacco control issues (12:1), implementing plain packaging of tobacco products (11:1), creating smoke-free public places and workplaces (6:1), and cessation support by training health professionals to provide brief advice to quit tobacco use (0.9:1).

These benefits consider only the impact these policy actions have on cigarette smoking. Considering the variety and popularity of other forms of tobacco in Bhutan, further benefits are possible if these actions are applied to all tobacco and areca nut products.

In addition to these main findings, the investment case separately examined the equity implications increasing cigarette taxes has on the poor. Raising cigarette taxes will confer social benefits to all, but particularly the poor. Those with lower incomes are more likely to quit smoking when cigarette prices rise, helping them to avoid illness and catastrophic health-care expenditures [3]. During the first two years of the modeled tax increase, price increases are expected to cause 1 in every 21 Bhutanese smokers among the poorest **20 percent** of the population to quit compared to about 1 in every 36 smokers among the wealthiest **20 percent**.

Cigarette tax increases would further benefit Bhutanese people with lower incomes if the resulting government tax revenue were reinvested in further WHO FCTC implementation and national development priorities such as universal health coverage. There is potential for even greater revenue increases from increasing taxes for all tobacco products, not only cigarettes.

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3 For every 1 BTN invested in the six key WHO FCTC policy actions today, Bhutan will avert BTN 2 in economic losses by 2027 and BTN 7 by 2037.

## Recommendations

This report provides comprehensive recommendations that the Government of Bhutan can take to protect public health and realise the benefits of the WHO FCTC as a sustainable development accelerator, and it is not only focused on the five WHO FCTC policy actions modeled in this investment case.

Photo: © [Freepik.com](https://www.freepik.com)



## Recommendations

- 1** Commit to fully implement the WHO FCTC in Bhutan
- 2** Restructure the tax system and increase tax rates on all tobacco products (WHO FCTC Article 6)
- 3** Implement the other five tobacco control policies studied in this investment case:
  - comprehensive policies to make all public and work places smoke-free (WHO FCTC Article 8);
  - prominent large graphic health warnings on tobacco product packaging (WHO FCTC Article 11);
  - plain packaging\* of tobacco products (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 (WHO FCTC Article 12); and
  - promote cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use (WHO FCTC Article 14).
- 4** Strengthen national tobacco control legislation and enforcement (WHO FCTC Articles 5.2(b))
- 5** Develop a national tobacco control strategy for Bhutan (WHO FCTC Article 5.1)
- 6** Strengthen multisectoral planning and coordination for tobacco control (WHO FCTC Article 5.2(a))
- 7** Join the Protocol to Eliminate Illicit Trade in Tobacco Products and build capacity to combat illicit trade of tobacco and tobacco products (WHO FCTC Article 15)
- 8** Implement measures to protect public health policies from the commercial and other vested interests of the tobacco industry (WHO FCTC Article 5.3)
- 9** Identify opportunities to link the implementation of the WHO FCTC with wider sustainable development strategies including Bhutan's Gross National Happiness Index

\*Plain (or neutral) packaging requirements prohibit the use of logos, colors, brand images, or promotional information on packaging other than brand names and product names displayed in a standard color and font style. Further information is available at: <https://www.who.int/publications/i/item/9789240051607>

Through the FCTC 2030 project, the Secretariat of the WHO FCTC, the United Nations Development Programme (UNDP) and the World Health Organization (WHO) stand ready to support the Government of Bhutan to reduce the tobacco-induced social, economic and environmental burdens through the implementation of evidence-based tobacco control laws and policies.

**Table ES1. Summary of the main results of the Investment Case for Tobacco Control in Bhutan 2023-2037\***

**Every year, tobacco use causes:**

- **More than 400 deaths.**
- **BTN 209 million in healthcare expenditures.**
- **BTN 278 million in workplace productivity losses.**
- **Tobacco-attributable mortality valued at BTN 712 million.**
- **Total social and economic losses equivalent to 0.7% of GDP in 2019.**

**Implementing the modeled WHO FCTC measures now would, over the next 15 years:**

- **Prevent more than 1,200 deaths.**
- **Save BTN 411 million in healthcare expenditures.**
- **Generate economic benefits\* (BTN 2.3 billion) that significantly outweigh costs (BTN 330 million) of implementation and enforcement – a 7:1 return on investment.**
- **Prevent BTN 1.3 billion in losses due to tobacco-attributable mortality.**
- **Prevent BTN 547 million in workplace productivity losses.**

\* Figures subject to rounding

# 1. Introduction

The tobacco epidemic is one of the greatest public health threats the world has faced, killing more than 8 million people a year, including some 1.2 million deaths from exposure to secondhand smoke [4]. Tobacco use is a main risk factor for non-communicable diseases (NCDs) including cardiovascular disease (CVD), diabetes, cancer, and chronic respiratory disease, as well as a cause of many other diseases [5]. In Bhutan, around one quarter of adults currently use some form of tobacco product, with a higher prevalence among males (33 percent) than females (12 percent) [2]. The use of smokeless tobacco is more prevalent among Bhutanese adults compared to smoked tobacco (14.5 percent compared to 10.6 percent respectively) [2]. Betel or areca nut<sup>4</sup> use is very common in Bhutan with more than half of adults (57 percent) reporting consuming it [2]. Tobacco causes more than 400 deaths every year in Bhutan, which accounts for over 10 percent of all deaths in the country [6], [7]. About 44 percent of those tobacco-attributable deaths are premature, occurring among those under age 70 [7].

In addition to the cost to health and well-being, tobacco use also imposes a heavy economic burden throughout the world. A 2018 study (based on 2012 data) found that the costs of smoking<sup>5</sup> 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 [8].

Tobacco use reduces productivity by permanently or temporarily removing individuals from the labour market due to poor health [9]. 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) [10], [11]. The labour and health consequences affect not only smokers, but also the people in their households who often need to take time off from work or school to care for those with tobacco-related diseases.

Tobacco use also displaces household expenditure that would otherwise go to fulfilling basic needs, including food and education [12]–[14], and it contributes to hunger and impoverishment of families [15], [16]. The use of tobacco imposes health and socio-economic challenges on vulnerable populations including the poor, women, and young people [17].

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4 Betel and areca nut chewing is traditionally practiced in many parts of Asia and has been found to be carcinogenic. Betel quid usually consists of betel leaf, areca nut and slaked lime, and tobacco is often added. For more information, see <https://www.who.int/news/item/07-08-2003-iacr-monographs-programme-finds-betel-quid-and-areca-nut-chewing-carcinogenic-to-humans>

5 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.



Tobacco production causes environmental damage, including soil degradation, water pollution, and deforestation. The annual impact of tobacco on climate change represents 0.2 percent of the total global greenhouse gas emissions. This is comparable to entire countries' emissions. As a result of the shift of tobacco production from richer countries to lower income countries its environmental impacts are now mostly borne by developing regions. By depleting these countries' valuable resources, polluting, and damaging their ecosystems, tobacco puts their livelihoods and development at risk [18]–[20].

Given the far-reaching health and development impacts of tobacco, and the multisectoral nature of the interventions required, effective tobacco control needs the engagement of non-health sectors to be operating in support of a whole-of-government and whole-of-society approach to policy making and implementation of the WHO Framework Convention on Tobacco Control (WHO FCTC).

The WHO FCTC, an evidence-based treaty that reaffirms the right of all people to the highest standard of health, was developed in response to the globalization of the tobacco epidemic. The Convention represents a milestone for the promotion of public health and provides new legal dimensions for international health cooperation. Bhutan ratified the WHO FCTC in 2004 [21].

Tackling tobacco use across the world is a priority within the 2030 Agenda for Sustainable Development. Tobacco control is relevant to the achievement of many Sustainable Development Goals (SDGs), particularly SDG Target 3.4 that calls on action to achieve a one-third reduction in premature mortality from NCDs by 2030. Target 3.a is a means of implementation of SDG 3.4 and calls for strengthened implementation of the WHO FCTC [22]. But beyond health, tobacco control is also a proven approach to reduce poverty and inequalities, strengthen and expand 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 [23]. In addition, reducing tobacco use is a one of the nine targets of the WHO Global Action Plan for the Prevention and Control of Non-communicable Diseases 2013-2030 [24].

### **Box 1. 2030 Agenda for Sustainable Development**

In 2015, all UN Member States adopted the 2030 Agenda for Sustainable Development, outlining peace and prosperity. The core components of the Agenda are the 17 Sustainable Development Goals (SDGs) which are an urgent call for all countries to act together, recognizing that efforts to address poverty, inequalities, health, education, economy and climate change must be done in unison [25].

In 2004, Bhutan became the first country to implement a nationwide ban on the sale of tobacco products. That same year it also ratified the FCTC. Since this time Bhutan has implemented a number of tobacco control measures in line with its obligations under the treaty. Bhutan passed the Tobacco Control Act in 2010, which prohibits the cultivation, production and sale of tobacco and tobacco products in Bhutan, but allows for the importation of approved quantities of tobacco for personal consumption [26]. It also regulates smoke-free places, tobacco advertising, promotion and sponsorship (TAPS), and tobacco packaging and labelling, among other measures. In June 2021, as part of COVID-19 border measures, the Tobacco Control (Amendment) Act of Bhutan 2021 was passed, which reversed the sales ban for a temporary (currently unspecified) period of time, among other measures [26], [27]. Despite these measures, there remains a substantial burden of tobacco use in Bhutan [35], and the country has also faced large amounts of trade in illicit tobacco [31].

With Bhutan's tobacco control efforts focused primarily on implementation of its nationwide sales ban, several key demand reduction measures within the WHO FCTC remain to be implemented and some existing measures require strengthening in line with the Convention. Opportunities for Bhutan to improve implementation of the WHO FCTC include: mandating large graphic health warnings for all tobacco packaging; introducing plain packaging; strengthening tobacco tax structures and increasing tax rates; implementing comprehensive policies to make all public places and workplaces smoke-free; promoting and strengthening public awareness of tobacco control issues; and promoting cessation of tobacco use and treatment for tobacco dependence, including by training primary health care providers to provide brief advice to quit tobacco use. Realizing the full benefits of the WHO FCTC will depend on concerted and coordinated efforts by multiple sectors of government with the support of intergovernmental organisations and civil society.

In 2021, the Secretariat of the WHO FCTC, UNDP, and WHO undertook a virtual joint mission with partners in Bhutan to initiate this investment case. The investment case is part of support made available to Bhutan as an FCTC 2030 project country.<sup>6</sup>

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<sup>6</sup> The FCTC 2030 project is a global initiative funded by the Governments of Australia, Norway and the United Kingdom to support countries to strengthen WHO FCTC implementation to achieve the SDGs. As of 2022, Bhutan is one of 33 countries worldwide that have participated in the FCTC 2030 project [28].

Investment cases for tobacco control analyse the health and economic costs of tobacco use as well as the opportunities for potential gains from scaled-up implementation of key WHO FCTC measures. It identifies which WHO FCTC demand reduction measures are likely to produce the largest health and economic returns for Bhutan, based on the return on investment (ROI). Taking into account the current implementation of WHO FCTC measures in Bhutan, the investment case models the impact of the following six key WHO FCTC provisions:

- 1 Increase tobacco taxation to reduce the affordability of tobacco products.**  
(WHO FCTC Article 6)
- 2 Create smoke-free public and work places to protect people from the harms of tobacco smoke.**  
(WHO FCTC Article 8)
- 3 Require large graphic health warnings on tobacco product packaging that describe the harms of tobacco use** (WHO FCTC Article 11)
- 4 Implement plain packaging<sup>7</sup> of tobacco products.**  
(WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)
- 5 Enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship.**  
(WHO FCTC Article 13)
- 6 Promote cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use.**  
(WHO FCTC Article 14)

**Chapter 2** of this report provides an overview of tobacco control in Bhutan, including tobacco use prevalence as well as challenges and opportunities. **Chapter 3** summarizes the methodology of the investment case (see the annex on methodology and the separate *Technical Appendix*, available upon request, for more detail). **Chapter 4** reports the main findings of the economic analysis. **Chapter 5** details the results of a complementary analysis examining the equity implications of increasing tobacco taxes, as well as the contribution of the WHO FCTC demand reduction measures to meeting SDG Target 3.4 to reduce premature mortality due to NCDs by one third by 2030. **Chapter 6** summarizes the results and provides recommendations to the government to further tobacco control. The annex provides information on the methods underlying the various analyses described in the report.

7 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>, as well as the Guidelines for implementation of Article 13 of the WHO Framework Convention on Tobacco Control, available at: <https://fctc.who.int/publications/m/item/tobacco-advertising-promotion-and-sponsorship>

## 2. Tobacco control in Bhutan: status and context

### 2.1 Tobacco use prevalence, social norms, and awareness-raising

In Bhutan, 24 percent of the population aged 15-60 currently use tobacco products, according to the most recent WHO STEPwise approach to surveillance (STEPS) survey conducted in 2019. Of these, 10.6 percent used smoked tobacco, 14.5 percent used smokeless tobacco and 1.4 percent used both. Bhutanese men are almost three times more likely to use tobacco products than women (33 percent vs 11.8 percent) [2].

The STEPS survey also revealed that smoking prevalence is significantly higher in the western (26 percent) and central (27 percent) regions compared to the eastern region (9.9 percent). Smoking cigarettes is more frequent among those with higher educational levels and higher incomes, whereas use of smokeless tobacco is more frequent among those with lower educational levels and from lower wealth quintiles (**Figures 1 and 2**). There is a higher prevalence of current smoking among younger age groups (14.9 percent of those 15-24 years old compared to 3.5 percent of those 55-69 years old), while current smokeless tobacco use is higher among older age groups (17.6 percent of those 55-69 years old compared to 8.8 percent of those 15-24 years old) [2].

More than half of respondents (57 percent) consumed betel or areca nut<sup>8,9</sup> and among current users, 65 percent used it daily. Lower education levels and older age are associated with increased consumption of betel nut [2].

Exposure to secondhand smoke is also high in Bhutan. Forty-two percent of people 15-69 years old report being exposed to secondhand smoke at work, while 13.1 percent report being exposed to secondhand smoke at home [2].

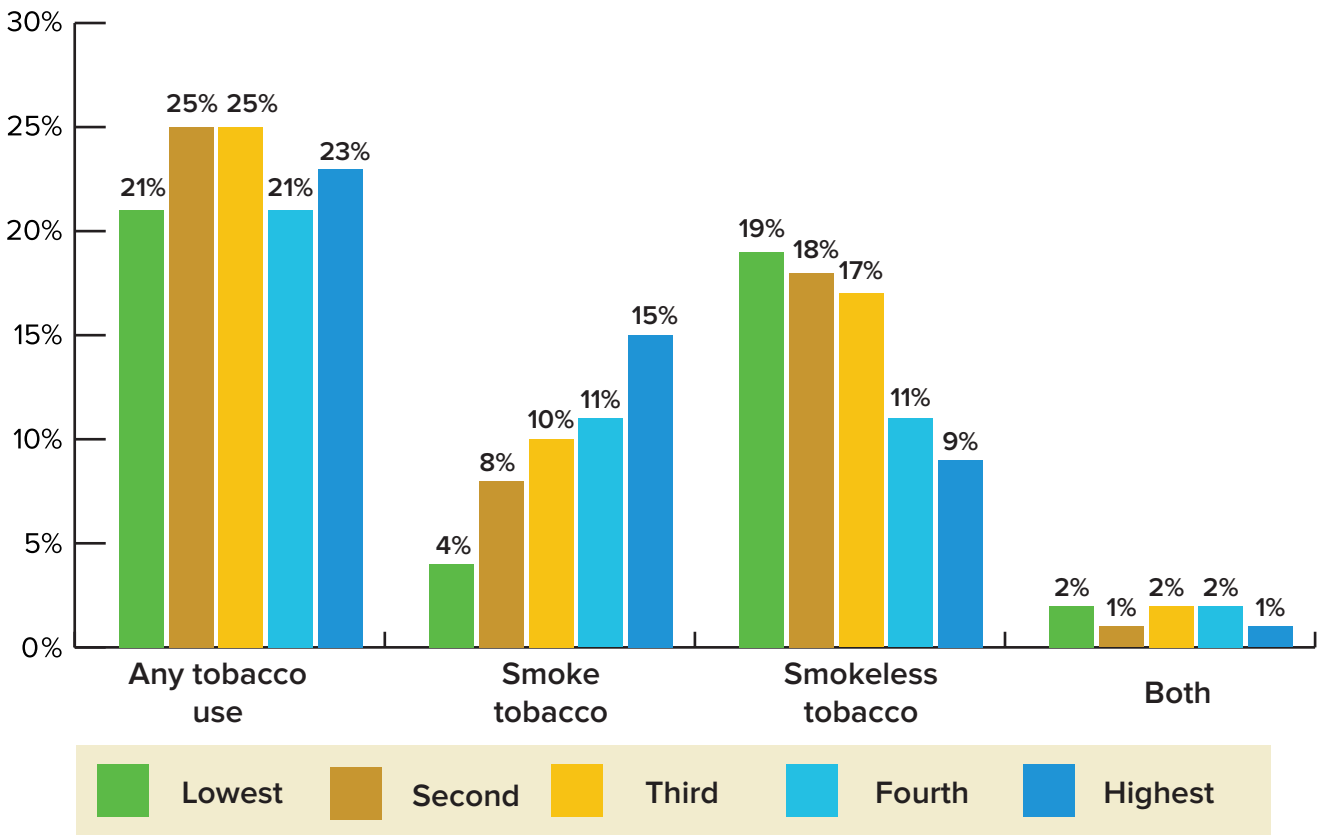
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8 The STEPS survey considers betel and areca nut as different than smokeless tobacco.

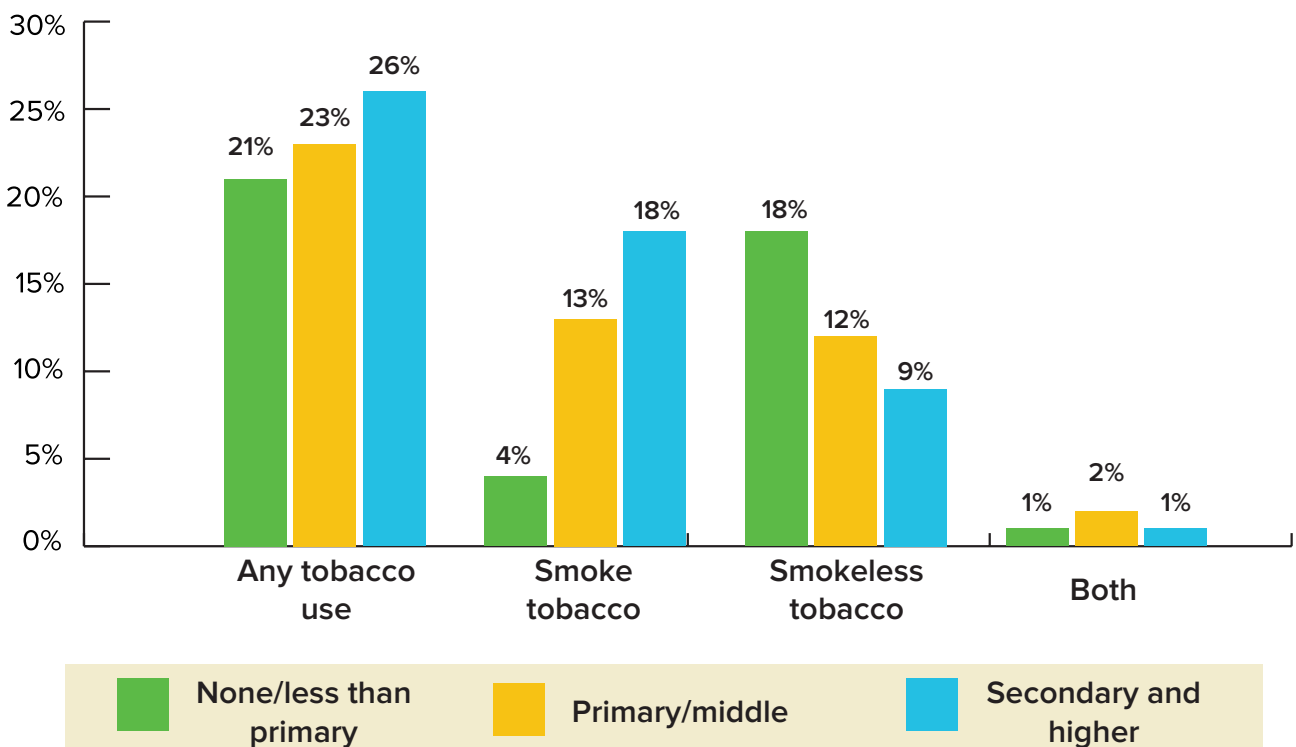
9 Betel and areca nut chewing is traditionally practiced in many parts of Asia and has been found to be carcinogenic. Betel quid usually consists of betel leaf, areca nut and slaked lime, and tobacco is often added. Betel quid can be consumed with or without tobacco. For more information, see <https://www.who.int/news/item/07-08-2003-iacr-monographs-programme-finds-betel-quid-and-areca-nut-chewing-carcinogenic-to-humans>

**Fig. 1: Proportion of tobacco users by wealth quintile in Bhutan (%), 2019**

Source: Non-communicable disease Risk Factors: Bhutan STEPS Survey 2019 [2]

**Fig. 2: Proportion of tobacco users by education level in Bhutan (%), 2019**

Source: Non-communicable disease Risk Factors: Bhutan STEPS Survey 2019 [2]



### **2.1.1 Tobacco prevalence among youth**

Despite the national ban on sales until 2021 (described in detail below), tobacco products have remained accessible and available to youth in Bhutan. According to the most recent Global Youth Tobacco Survey (GYTS) in Bhutan, the prevalence of current tobacco use among students 13-15 years old was 22 percent in 2019 (31 percent of boys and 13.5 percent of girls) [42]. Of these, 17.3 percent of students were current tobacco smokers, 14.7 percent were current cigarette smokers, and 12.5 percent were current users of smokeless tobacco products. More than 4 in 10 cigarette smokers in Bhutan report starting smoking when they were 12-13 years old [29].

In 2019, when the national sales ban on tobacco was still in place, most current tobacco users (85 percent) bought tobacco products from within Bhutan [42]. Moreover, according to the 2019 GYTS, 58 percent of current cigarette smokers and 59 percent of current youth who use smokeless tobacco were not prevented from buying these products at stores despite their age [29].

The widespread use of areca and betel nut among youth are also a cause of concern.<sup>10</sup> The 2019 GYTS included the use of doma khamtog, meetha paan and areca nut<sup>11</sup> for the first time to monitor prevalence. Almost half (49 percent) of students in Bhutan currently use doma khamtog or meetha paan, while 57 percent consume areca nut or its various products [29] indicating large-scale prevalence of areca nut products among the youth.

Finally, exposure to secondhand smoke among youth in Bhutan is also a significant concern. The 2019 GYTS found that 37 percent of students were exposed to secondhand tobacco smoke inside enclosed public places and 17 percent were exposed to tobacco at home. More than half (55 percent) have seen someone smoking in a school building or outside on school premises [29].

Making tobacco products less affordable is one of the most effective measures to reduce demand for tobacco, and young people are particularly sensitive to the price of tobacco [30]. Higher tobacco prices from tax increases can make smoking too costly for young people and reducing the incentive to start or continue to smoke. A 2021 study demonstrated that higher tobacco prices, such as through tax increases, are associated with a decreased risk of smoking initiation among youth and young adult [31].

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10 The 2019 GYTS considers betel nut separately from smokeless tobacco.

11 Doma khamtog is a tobacco and betel nut product, and meetha paan is betel nut wrapped in betel leaf [29].

### Box 2. Tobacco and gender

While, worldwide women and girls tend to use tobacco at lower rates than men, they can still be subjected to the harms of tobacco use—including exposure to secondhand smoke [32] and the effects of household income diverted to tobacco use. Since tobacco use prevalence is often lower for women than men, the tobacco industry see this as an opportunity to scale up marketing targeted at women and girls [33]. In Bhutan, less women notice messages about the dangers of smoking or the benefits of quitting in comparison to men. Out of the current smokers in Bhutan, less women report being advised by a doctor or health worker to quit smoking in comparison to men [2].

### Box 3. Tobacco and pregnancy

Tobacco use during pregnancy imposes significant health risks on the fetus, infant and mother. It increases the likelihood of miscarriages, stillbirths, preterm births, low birth weight, birth defects, and sudden infant death syndrome, among others [34], [35]. Exposure to secondhand smoke during pregnancy also increases the risks of having low birthweight babies, in turn increasing the risk of a mother and child developing health issues [35]. Mothers face additional health risks as pregnant smokers are more likely to experience heart and lung complications than pregnant nonsmokers [36]. Despite the strong evidence, the tobacco industry continues to aggressively target women and girls [35]. It is estimated that the global prevalence of smoking during pregnancy is 1.7 percent [37]. A study of pregnant women in Bhutan found that over half chewed betel quid during pregnancy [38].

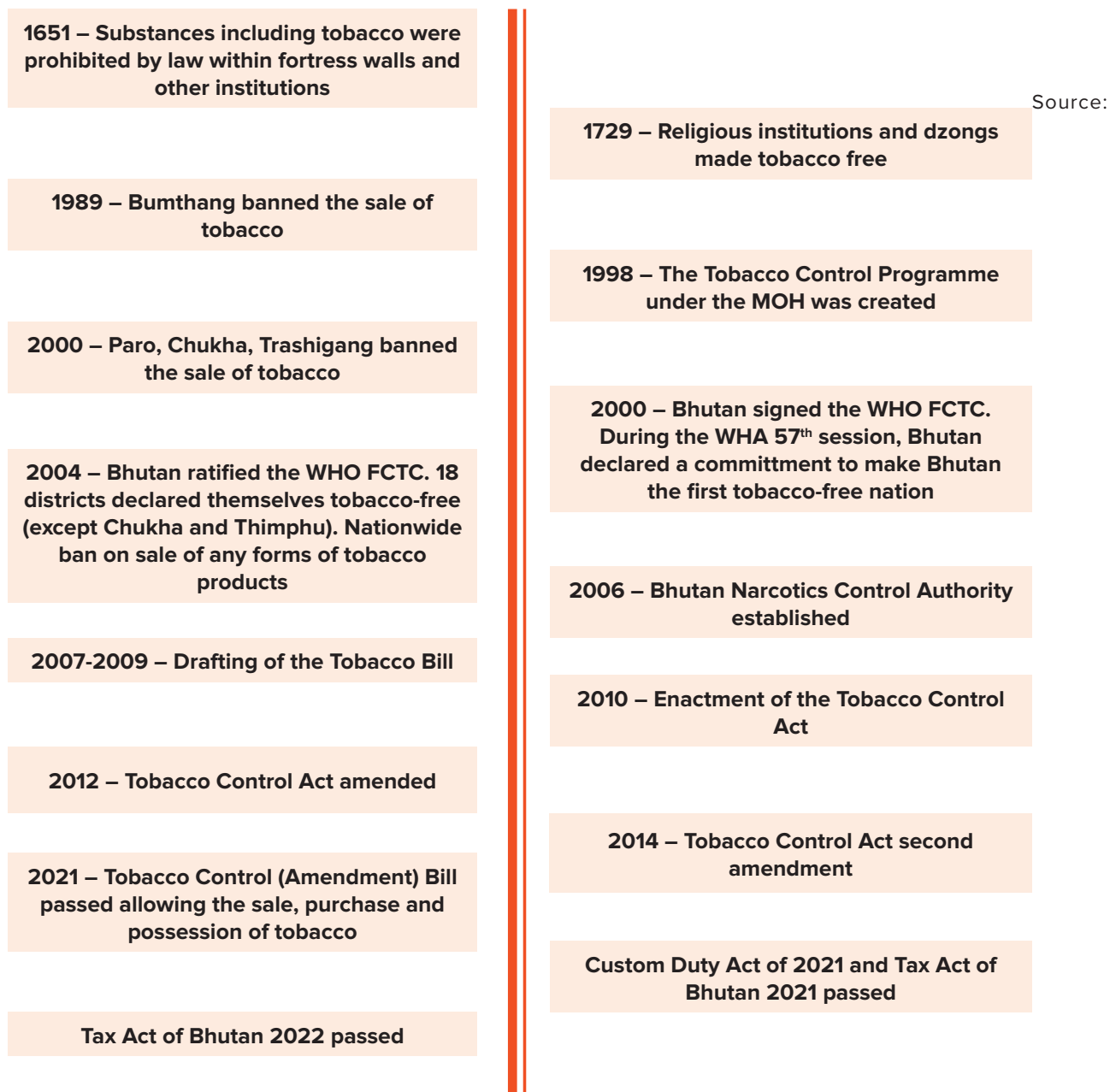
#### 2.1.2 *Smokeless tobacco*

Smokeless tobacco use is higher than smoked tobacco among adults in Bhutan [2]. The overall prevalence of smokeless tobacco use is growing among youth, with overall prevalence of smokeless tobacco use among Bhutanese students 13-15 years old increasing from 9.4 percent in 2009 to 12.5 percent in 2019. Among girls 13-15 years old, 8.1 percent use smokeless compared to 7.7 percent who smoke cigarettes [29]. There is insufficient data to indicate trends in the use of electronic nicotine delivery products.

## 2.2 National tobacco control legislation, strategy and coordination

### 2.2.1 Tobacco control legislation

**Fig. 3: History of key tobacco control legislation in Bhutan**



Adapted from Bhutan Ministry of Health and World Health Organization Bhutan, *The Big Ban, Bhutan’s journey towards a tobacco-free society*. 2019 [39].



Bhutan has a long history of tobacco control, starting in 1651 with the prohibition of intoxicating substances, including tobacco and alcohol within important institutions. In 1729, a legal code was issued to condemn the use of tobacco in particular, ensuring religious institutions and dzongs (a fortress or fortified monastery<sup>12</sup>) were to be tobacco free [39]. More tobacco control efforts were initiated from the 1980s, including several Dzongkhags (districts) banning tobacco and nationwide anti-tobacco awareness campaigns run in collaboration with WHO [40].

In 2004, Bhutan ratified the WHO FCTC [41]. That same year, it also became the first country to introduce a nationwide ban on tobacco sales [39], and in 2005 it introduced comprehensive smoke-free provisions. In 2010 Bhutan further strengthened its tobacco control initiatives by enacting the Tobacco Control Act, which provided a comprehensive legal framework for tobacco control in the country [39]. The Act prohibited the sale, cultivation, manufacturing, and trade of tobacco, imposed bans on tobacco advertising, promotion, and sponsorship (TAPS) including restrictions in films, mandated smoke-free places, and required that imported tobacco products bear the health warnings required in their countries of origin [42]. The Act was amended in 2012 and again in 2014.

In an effort to prevent the spread of COVID-19 through illegal cross-border trading of tobacco products, Bhutan lifted its tobacco ban. In 2021, the country's National Assembly passed the Tobacco Control (Amendment) Act 2021, allowing for the sale, purchase, and possession of tobacco, while maintaining the prohibition of cultivation, manufacturing and production of tobacco [43]. As of 2023, draft specific Regulations under the Tobacco Control (Amendment) Act 2021 have not yet been made.

The Bhutan Narcotics Control Authority (BNCA) published the interim measures for the implementation of the Tobacco Control (Amendment) Act 2021 until the Act entered force on 2 July 2021. The BNCA, Royal Bhutan Police, the Department of Revenue and Customs, and the Department of Trade were appointed to monitor the measures [27]. The interim measures permitted only "Micro General Shops" to sell tobacco and tobacco products, and only authorized tobacco shops and wholesale dealers to import tobacco and tobacco products. The measures also prohibited the sale of tobacco and tobacco products to individuals below 18 years of age; the sale of loose cigarette sticks; the sale of tobacco and tobacco products within the vicinity of schools, hospitals, clinics, basic health units, monasteries, dzongs and all heritage sites; displaying or advertising tobacco and tobacco products on counters or any other media channels; and consumption of tobacco and tobacco products outside of designated areas, among other measures [27].

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12 Interpretation of dzong based on descriptions from UNESCO <https://whc.unesco.org/en/tentativelists/5695/>

In November 2021, the Tax Act of Bhutan 2021 was enacted, reducing the 100 percent sales tax on tobacco products to 0 percent [44]. However, the following year the Tax Act of Bhutan 2022 was enacted reinstating the 100 percent sales tax rate and reforming the customs duty to a rate of 10 percent for tobacco and tobacco products [45].

### **2.2.2 Tobacco control strategy and coordination**

The BNCA was established in 2006 and is responsible for the implementation of the Tobacco Control Act. Under the Tobacco Control Act, the BNCA is to serve as the Secretariat to the Tobacco Control Board and implement the provisions of the act. The BNCA has two divisions: supply reduction and demand reduction. The supply reduction division focuses on enforcement and compliance with the Act, including controlling illicit trade, compliance with smoke-free areas and cooperation with organizations and agencies to reduce tobacco use and related crimes. The demand reduction division focuses on activities such as awareness, advocacy and public education to reduce demand [46].

A tobacco control office has been established under the BNCA, which is responsible for developing, implementing and monitoring the tobacco control response in Bhutan in close coordination with other relevant sectors and agencies. The office is also mandated to monitor relevant agencies regarding the implementation and enforcement of provisions under the Tobacco Control Amendment Act. As of 2023, the Government of Bhutan has merged the BNCA, the Drug Regulations Authority (DRA) and the Bhutan Agriculture and Food Regulatory Authority (BAFRA) and is renamed the Bhutan Food and Drug Authority (BFDA) [from interviews during development of the investment case]. Now that these agencies are merged, it is important that the tobacco control office is considered and how it would be affected by this merger.

As mentioned in the 2018 Core Questionnaire of the Reporting Instrument of the WHO FCTC, the Ministries of Health, Economic Affairs, Finance, Education, Home and Cultural Affairs and Information and Communication, as well as the Royal Bhutan Police, all have key roles in the implementation of provisions of the Tobacco Control Act [47]. The tobacco control office is also responsible for promoting tobacco cessation and tobacco dependence treatment through the tobacco cessation clinic at the national referral hospital [48].

As of 2020, Bhutan has a dedicated focal point for tobacco control under the BNCA. Bhutan has indicated via WHO FCTC reporting instruments that there is a comprehensive multisectoral national tobacco strategy, and a national coordinating mechanism (NCM) for tobacco control [49]. However, it is not clear to what the extent the NCM operates in practice and there is no evidence of an existing national tobacco control strategy in Bhutan.

## 2.3 The status of WHO FCTC 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 co-workers.

While Bhutan has demonstrated progress towards implementing key demand reduction measures, more than 58,000 Bhutanese continue to smoke [2] and many more use smokeless tobacco. Implementing additional demand reduction measures or intensifying existing measures will move Bhutan into closer alignment with the WHO FCTC and reduce the substantial costs imposed by tobacco use. Below, the status of each of the demand reduction measures in relation to WHO FCTC recommendations is discussed.

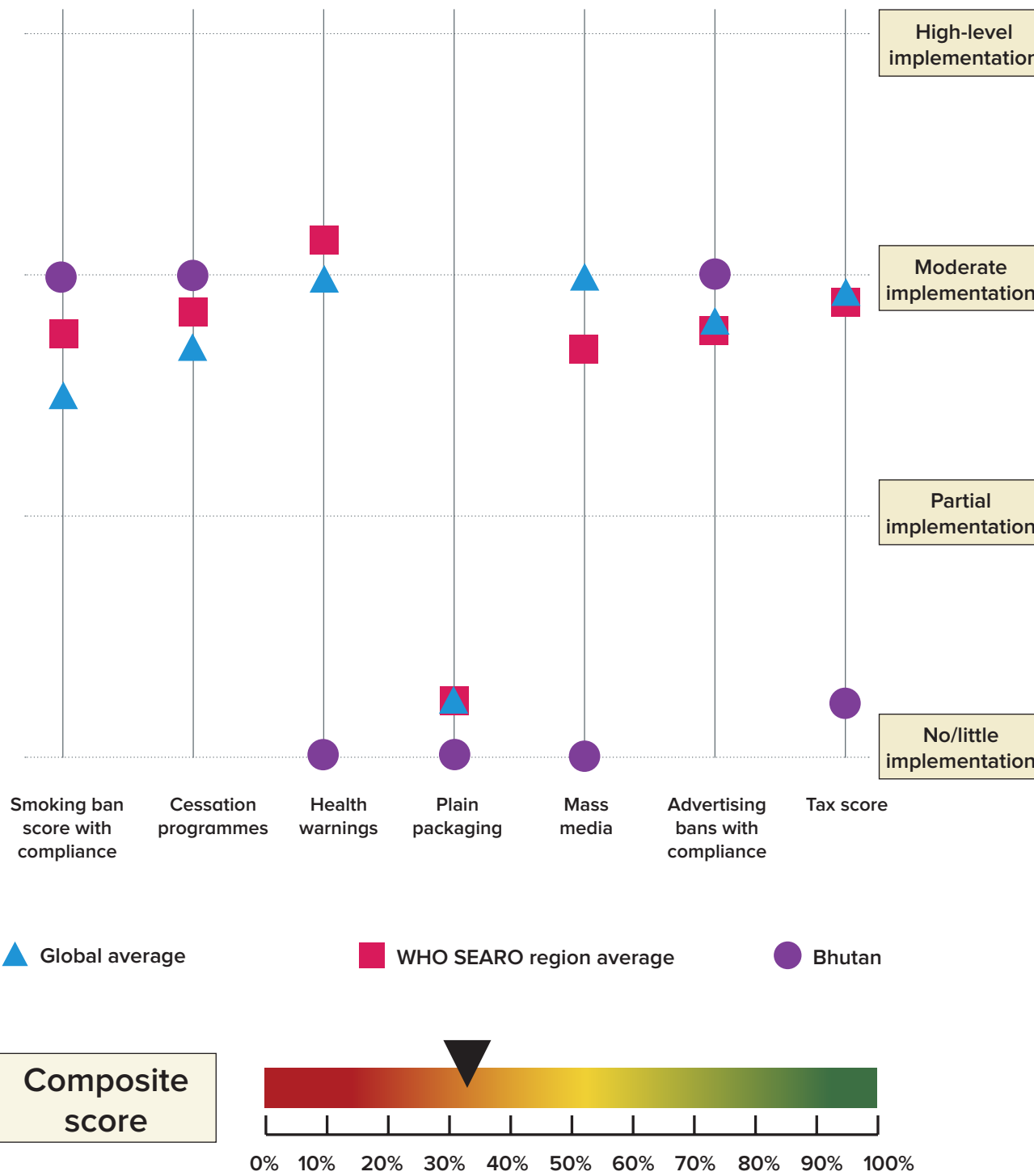
**Figure 4** summarizes the status of tobacco control demand reduction measures in Bhutan from the WHO Report on the Global Tobacco Epidemic, 2021 [50] and, for each, progress toward meeting the WHO FCTC obligations. Overall, Bhutan is assessed to be 33 percent of the way toward fulfilling the key WHO FCTC demand reduction measures, below the global average of 53 percent and below the WHO Southeast Asia regional average of 58 percent.<sup>13</sup>



Photo: © World Bank

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

**Fig. 4: Implementation of WHO FCTC demand reduction measures in Bhutan**



Source: WHO Report on the Global Tobacco Epidemic, 2021 [50]

## 1. Increase tobacco taxation to reduce the affordability of tobacco products (WHO FCTC Article 6)

In Bhutan, total taxes comprise about 8 percent of the retail price of the most sold brand of cigarettes. This tax consists solely of an ad valorem excise tax [50]. There was previously a 100 percent sales tax on tobacco products, but the Tax Act of Bhutan 2021 reduced that tax to 0 percent [44]. In November 2022, the Tax Act of Bhutan 2022 was enacted, reinstating the 100 percent sales tax and reducing the customs duty on tobacco products to 10 percent<sup>14</sup> [45].

The Good and Services Tax (GST) Act of Bhutan 2020 was expected to come into force in 2021 [51] but has been deferred until 2024 [52]. The GST Act includes excise equalization taxes (EET) levied on goods considered harmful to health and includes a 100 percent EET rate on tobacco [51]. If the GST act comes into force, the sales tax would be subsumed, but since the tax rate is 100 percent under the Tax Act of Bhutan 2022, there would effectively be no change to the tax rate on tobacco.

There is substantial scope for action to reach what is considered in the WHO Report on the Global Tobacco Epidemic as a high-level of achievement, which is for total taxes to represent at least 75 percent of the retail price<sup>15</sup> [50]. On tax design for tobacco products, WHO makes a number of recommendations including that governments should rely more on specific tobacco excises (rather than rely only on ad valorem excise duties), increase taxes significantly to reduce the affordability of tobacco products and automatically adjust specific tobacco taxes for inflation and income growth [53].

The investment case examines the impact of raising cigarette taxes to levels considered in the *WHO Report on the Global Tobacco Epidemic, 2021* as a high-level of achievement [50]. It models the impact of real price increases, averaging 8 percent annually from 2027 to 2037 (see the annex on methodology for detailed information).

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14 This 2022 tax increase was established after the modelling was done. Therefore, the baseline tax scenario used in the modelling was from the WHO Report on the Global Tobacco Epidemic, 2021 with total taxes representing 8 percent of the retail price of the most sold brand of cigarettes [50].

15 The WHO Report on the Global Tobacco Epidemic classifies total tax share of 75 percent or more of the retail price as a high-level of achievement [50].

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

The Tobacco Control Act 2010 bans smoking in many public places, including health-care facilities, educational facilities, indoor offices and workplaces, restaurants and public transport, among other places in Bhutan [42]. In addition, compliance assessments by national experts<sup>16</sup> indicate there is high compliance with existing smoking bans (8 out of 10) [50]. However, cafes, pubs and bars are not currently smoke-free as designated smoking areas are allowed [54]. Additionally, since the 2021 Amendment of the Tobacco Control Act, the BNCA says there is public misunderstanding and they are now finding many people smoking in public places [55].

The investment case examines the impact of enacting and enforcing comprehensive smoke-free measures for all indoor public places and workplaces.

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

The sale of tobacco and tobacco products was banned in Bhutan until 2021. Prior to the Tobacco Control Amendment Act 2021, it was permitted to import tobacco and tobacco products of approved quantities for personal consumption [42]. As of 2021, the importation for commercial purpose is also allowed, and the law no longer stipulates it must be of an approved quantity [56]. All imported products must display the country of origin as well as health warnings from the country of origin [42]. The majority of tobacco imports come from India [57] where health warnings are mandated to cover 85 percent of the front and back of packaging [58]. Thus, while health warnings are mandated in Bhutan, there are no requirements that health warnings be written in the principal language, rotate, include photographs or graphics, nor describe the harmful effects of tobacco use on health, among other limitations, in line with Article 11 of the WHO FCTC [50].

Evidence shows that images increase the awareness of health risks related to tobacco consumption and that pictorial health warnings increase quit attempts and decrease smoking uptake [59].

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<sup>16</sup> Five national experts provided assessments of compliance with existing laws for the WHO report on the global epidemic 2021: addressing new and emerging products, including one senior government official in charge of tobacco control, one head of a nongovernmental organization that works on tobacco control, one health professional, one academic, and one tobacco control focal point at the WHO country office.

The investment case models the impact of mandating graphic health warnings in line with WHO FCTC obligations.

#### **4. 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 by law in Bhutan. The investment case models the impact of implementing and enforcing plain packaging requirements.

#### **5. Promote and strengthen public awareness about tobacco control issues and the addictive nature and harms of tobacco use through mass media information campaigns (WHO FCTC Article 12)**

Bhutan has not implemented an anti-tobacco national mass media information campaign between July 2018 and June 2020 (lasting at least three weeks) [50]. The investment case examines implementing a best-practice mass media information campaign in Bhutan.

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

Bhutan has a comprehensive ban on tobacco advertising, promotion and sponsorship (TAPS). In addition, compliance assessments by national experts<sup>17</sup> indicate that compliance with the ban is high (10 out of 10) [50]. The ban includes national and international television and radio, internet, print media, billboards, outdoor advertising and point of sale. The ban on indirect advertising is not comprehensive, however, as only free distribution, the appearance of tobacco products on television and films, identifying non-tobacco products with tobacco brand names and publicity of tobacco industry sponsorship are prohibited [50]. While sponsorship is banned, corporate social responsible (CSR) activities are not [41]. In addition, the 2019 GYTS found that more than 3 in 10 students who visited points of sale in the past 30 days noticed advertisements or promotions, and more than 8 in 10 students who watched television, videos or movies in the past 30 days noticed someone using tobacco [29].

<sup>17</sup> Five national experts provided assessments of compliance with existing laws for the WHO report on the global epidemic 2021: addressing new and emerging products, including one senior government official in charge of tobacco control, one head of a nongovernmental organization that works on tobacco control, one health professional, one academic, and one tobacco control focal point at the WHO country office.

Given the decade-long ban on the sale of tobacco, followed by the recent lifting of that ban in 2021, it was not possible to effectively model this intervention in the investment case. The model uses smoking prevalence data from 2019, thus it was not appropriate to examine the effect of a TAPS ban on very different tobacco environments. Nevertheless, Bhutan should implement a comprehensive TAPS ban in line with WHO FCTC obligations, especially considering that tobacco is now available for purchase.

## **7. Promote cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use (WHO FCTC Article 14)**

Tobacco use cessation support is available in Bhutan in most primary care facilities and in some hospitals with the cost partially covered by the government [50]. While it may be available in other settings, the costs are not covered. The provision of brief advice to tobacco users by health-care professionals whenever they access health-care services, especially in the primary care setting, is shown to be effective in increasing successful tobacco cessation [60] and represents a useful early step in rolling out support for tobacco users to quit.

There is a national toll-free quit line in Bhutan, but nicotine replacement therapy (NRT) and other pharmacotherapies like bupropion and varenicline are not available in the country [50].

Smokeless tobacco cessation has been integrated into some tobacco cessation services, including training on community-based tobacco cessation programmes for primary health-care workers. The tobacco quit line also provides cessation support for both smokers and smokeless tobacco users. However, like in other countries in the region, the supply of smokeless tobacco cessation services in Bhutan is insufficient to meet the current demand of users who want to quit [61].

The investment case models the impact of training primary care health providers to identify tobacco users and to provide tobacco cessation advice (see the annex on methodology for detailed information). Further gains would be possible with the provision of further support to tobacco users, such as offering specialized tobacco dependence treatment services, and/or internet based quit support, including local tobacco products such as areca nut in cessation services, and making pharmacotherapies more widely available (free of cost, if possible).



**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. The impact of each policy measure—individually and in combination—is described in Annex Table A4.

**Table 1: Summary of the current state of WHO FCTC demand reduction measures in Bhutan and modeled implementation targets based on the *WHO Report on the Global Tobacco Epidemic, 2021* [50]**

Tobacco Control Policy	Bhutan Baseline*	Modeled Implementation Target
Increase tobacco taxation to reduce the affordability of tobacco products (WHO FCTC Article 6)	Tax share equivalent to 8.13% of the retail price of the most sold cigarette brand.	Increase total tax rates on cigarettes towards the goal of 75% of the retail price, <sup>18</sup> averaging 8 percent annually from 2027 to 2037. Implement regular tax increases to outpace inflation and income growth.
Create smoke-free public places and workplaces to protect people from the harms of tobacco smoke (WHO FCTC Article 8);	Bhutan bans smoking in some public places, but not cafes, pubs and restaurants as designated smoking areas are allowed. There is also a lack of compliance.	Increase total tax rates on cigarettes towards the goal of 75% of the retail price, averaging 8 percent annually from 2027 to 2037. Implement regular tax increases to outpace inflation and income growth.
Require graphic health warnings on tobacco product packaging that describe the harms of tobacco use (WHO FCTC Article 11)	Bhutan bans smoking in some public places, but not cafes, pubs and restaurants as designated smoking areas are allowed. There is also a lack of compliance.	Remove provision for designated smoking areas to make all indoor work and public places 100% smoke-free.
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 cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use (WHO FCTC Article 14)	No national-level anti-tobacco use media campaigns have recently aired in Bhutan.	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.
Promote cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use (WHO FCTC Article 14)	Partially cost-covered smoking cessation support is available in most primary care facilities and some hospitals. It is available in other settings for a cost. There is a national toll-free quit line. NRT is not available.	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.

Source: Information in this table is based on the *WHO Report on the Global Tobacco Epidemic, 2021* [4]

18 In the scenario modeled, cigarette taxes would meet the 75 percent threshold in 2038, after the 15-year period modelled.

## 2.4 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 non-smokers. 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 diseases [62]. Moreover, tobacco use is also proven to worsen the outcomes of other communicable diseases such as tuberculosis and HIV [63].

In Bhutan, the COVID-19 pandemic led to increased smuggling of tobacco products across the border. To reduce the risk of cross-border transmission, the Government of Bhutan lifted the ban on tobacco to allow the sale of tobacco in the country [64], [65].

## 2.5 Financing

Under the Tobacco Control Amendment Act of Bhutan 2021, the government is responsible for providing sufficient financial support for its implementation. [56].

According to the latest available data (from 2014), government expenditure on tobacco control was equivalent to US\$23,000 (1,893,130 BTN)<sup>19</sup> [41]. Finances and human resources were reported by the Ministry of Health as gaps in implementation of the WHO FCTC in the 2018 *Core Questionnaire of the Reporting Instrument of the WHO FCTC* [47].

## 2.6 Illicit trade in tobacco products

Illicit trade in tobacco products poses a serious threat to public health. Illicit trade increases the accessibility and affordability of tobacco products, fuelling the tobacco epidemic and undermining tobacco control policies. It also causes substantial losses in government revenues, and at the same time contributes to the funding of transnational criminal activities [66]. Despite the tobacco industry's claims, changes in illicit tobacco trade levels are very loosely connected with changes in tobacco taxes. Increasing tobacco taxes does not necessarily lead to more tobacco smuggling, as demonstrated by multiple studies [67].

Considerable amounts of smuggling and illicit sale of tobacco products emerged following the country's sales ban in 2004 [39]. According to a joint report by the Ministry of Health and WHO Country Office in Bhutan [39], ambiguities in key provisions of the Tobacco Control Act may have contributed to difficulties in enforcement of the law. For example, while inspections

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19 Using an exchange rate of 1 USD = 82.31 BTN according to the UN Operational Rates of Exchange as of October 1, 2022 <https://treasury.un.org/operationalrates/OperationalRates.php#B>

by enforcement officers were commonplace, shopkeepers could claim that any tobacco was for self-consumption, taking advantage of the permissible quantity allowed. Additionally, shopkeepers often receive inspection information beforehand, enabling them to conceal tobacco products before enforcement authorities arrive [39].

There is little data quantifying illicit trade in tobacco products in Bhutan, but reports of illicit tobacco seizures may provide some insight into the scale of the problem. A newspaper article from 2021 describes increasing seizures of illicit tobacco in recent years, with 3.7 million tobacco products seized in 2018, increasing to 5.8 million in 2019, 14.1 million in 2020 and 11.9 million in just the first six months of 2021 [68] , although this may be due to increased enforcement activity.

While it is reported that there is coordination by the police in southern districts of Bhutan with counterparts on the other side of the border, monitoring and controlling illicit tobacco along the border remains difficult. There is an absence of a designated customs check points when entering the country, and there is insufficient enforcement capacity along the border to check vehicles for tobacco. In addition, there is a lack of other resources such as scanners, restricting the ability of customs officials to detect tobacco products at the frontier [39].

Joint inspections are organized annually by BNCA with officials from other responsible inspection agencies, including the police, the Department of Revenue and Customs and the MoH. In 2019, this joint inspection resulted in the collection of more than BTN 130,000 in fines for illegal possession and seized more than 5,400 cigarettes and more than 400 packets of chewing tobacco [39].

Bhutan has yet to join the Protocol to Eliminate Illicit Trade in Tobacco Products [69]. Doing so would be an important step in Bhutan's efforts to eliminate the problem of illicit tobacco. The Protocol supplements the WHO FCTC as a comprehensive tool to guide action towards the elimination of illicit trade in tobacco products and strengthened international cooperation.

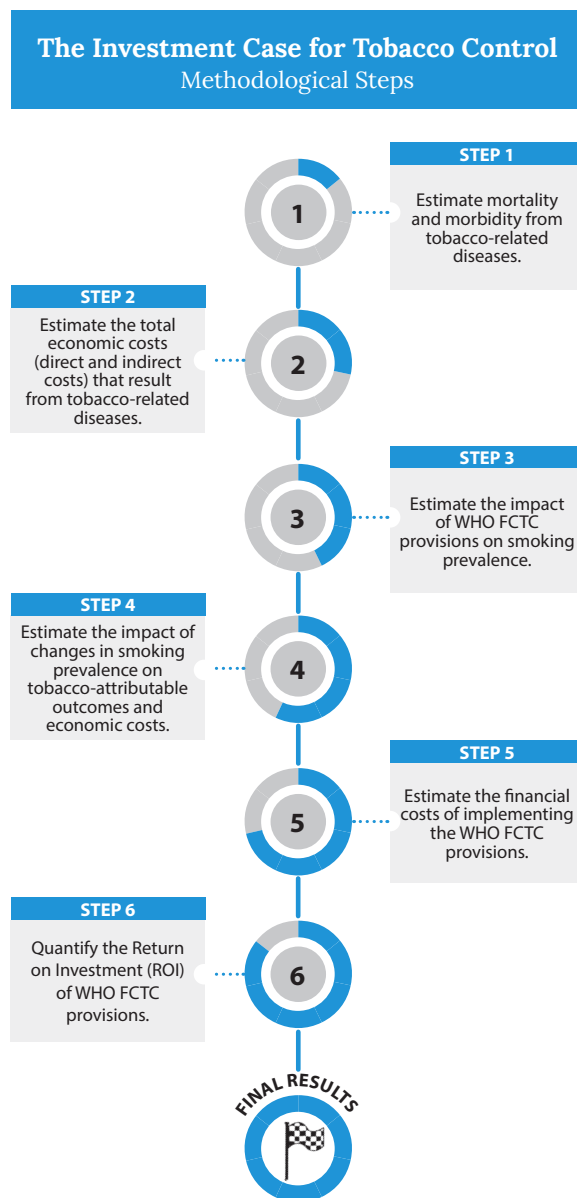
### 3. Methodology

The purpose of the investment case is to quantify the current health and economic burden of tobacco use in Bhutan (in the context of WHO FCTC measures that are currently in place), and to estimate the impact that implementing new WHO FCTC measures—or strengthening 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 5**. This methodology has been used for previous national WHO FCTC investment cases under the WHO FCTC 2030 project. The tools and methods used to perform these steps are described in this report’s annex on methodology. Interested readers are also referred to this report’s separate *Technical Appendix*<sup>20</sup> for a more thorough account of the methodology.

The investment case team worked with the MoH and other stakeholders in Bhutan to collect national data inputs for the model. Where data were unavailable from government or other in-country sources, the team utilized publicly available national, regional, and global data from sources such as the WHO, the World Bank database, the Global Burden of Disease study by the Institute for Health Metrics and Evaluation (IHME), and academic literature. Within the investment case, costs and monetized benefits are reported in constant 2020 Bhutanese ngultrums (BTN) and discounted at an annual rate of 5 percent.

**Fig. 5: Building the Investment Case**



20 Available upon request.

## 4. Results

### 4.1 The current burden of tobacco use: health and economic costs<sup>21</sup>

In 2019, tobacco use caused an estimated 418 deaths in Bhutan, 44 percent of which were premature (i.e. the deaths occurred among those under 70 years) [70]. These deaths amount to 6,234 years of life lost (YLLs), which are lost productive years in which many of those individuals would have contributed to the workforce [70]. Monetizing years of life lost due to tobacco use by applying an estimate of the value of a statistical life year (VSLY) to each year of life lost, the investment case identifies BTN 712 million in losses due to tobacco-attributable mortality.

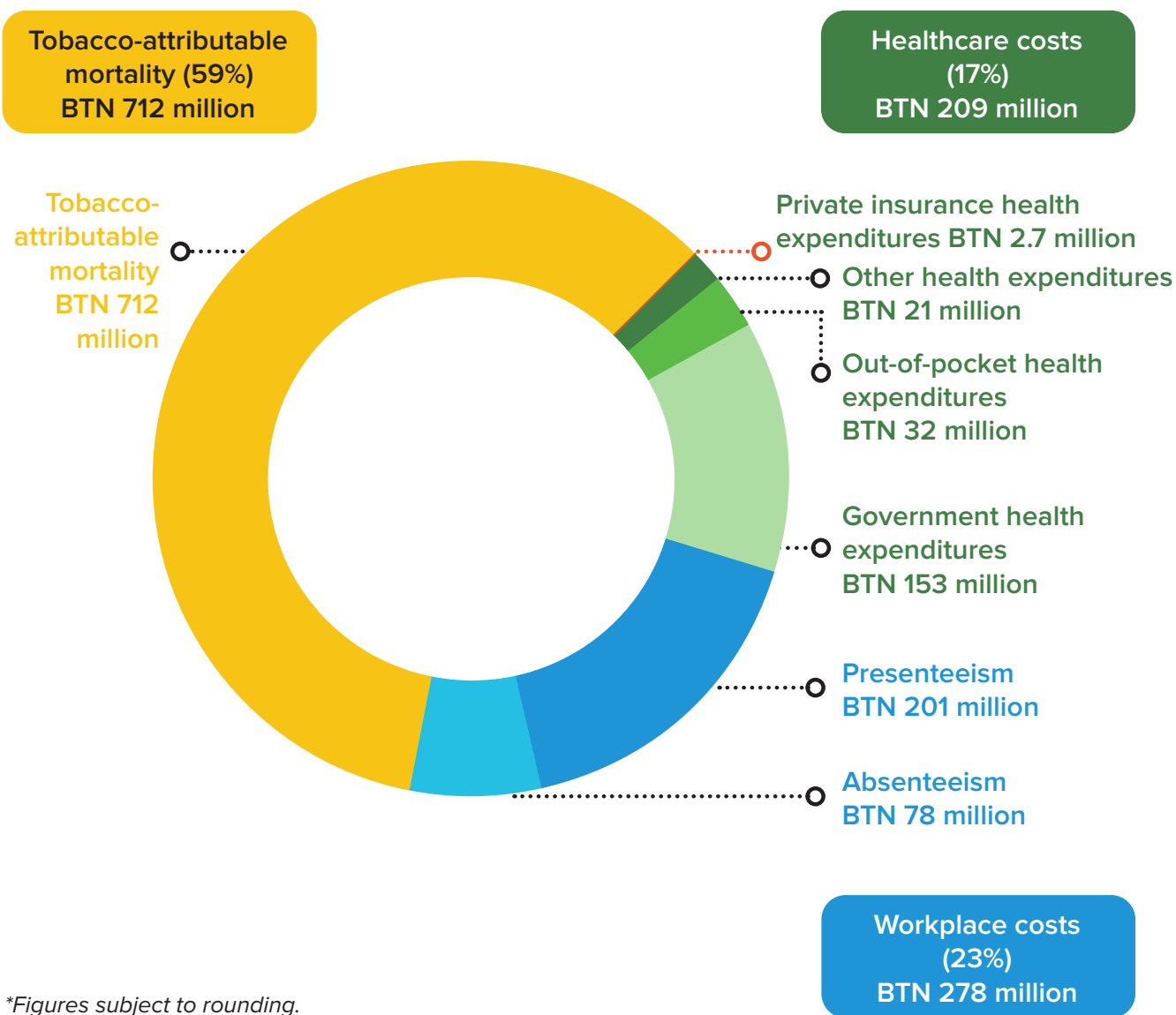
While the costs of tobacco-attributable mortality are high, the consequences of tobacco use begin long before death. As individuals suffer from tobacco-attributable diseases (e.g., heart disease, strokes, respiratory diseases, cancers), expensive medical care is required to treat them. Spending on medical treatment for illnesses caused by smoking cost the government BTN 153 million in 2019 and caused Bhutanese citizens to spend BTN 32 million in out-of-pocket (OOP) health-care expenditures. Private insurance and non-profit institutions serving households spent BTN 23 million on treating tobacco-attributable diseases. In total, health-care expenditures attributable to smoking amounted to BTN 209 million.

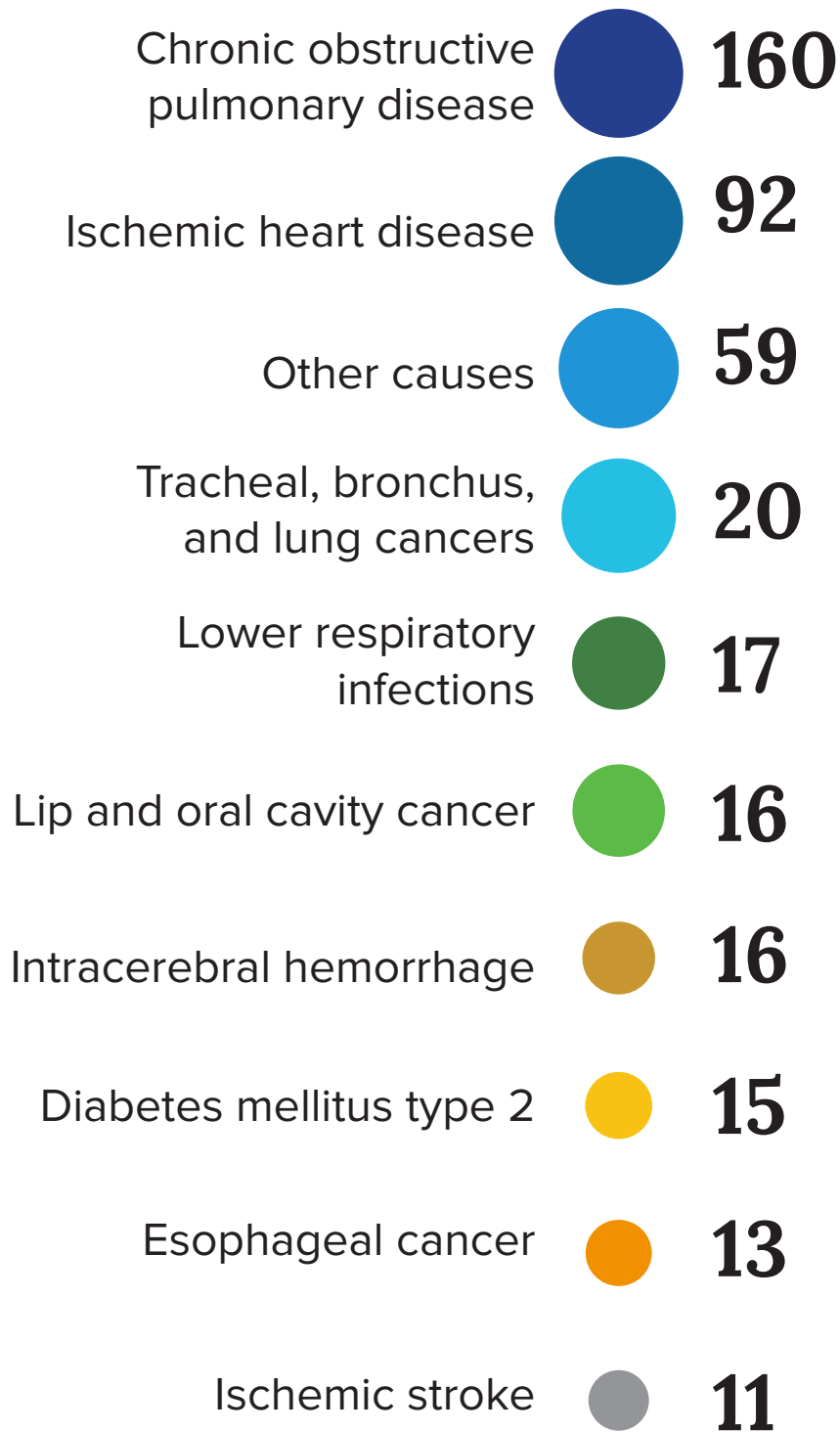
In addition to health-care costs, as people become sick, they are more likely to miss days of work (absenteeism) or to be less productive at work (presenteeism). In 2019, the cost of excess absenteeism due to tobacco-related illness was BTN 78 million and the cost of presenteeism due to cigarette smoking was BTN 201 million.

In total, tobacco use caused BTN 1.2 billion in economic losses in 2019, equivalent to about 0.7 percent of Bhutan's GDP or about BTN 22,300 per adult smoker. **Figure 6** illustrates the share of the economic burden attributable to tobacco-attributable mortality, workplace costs, and health-care costs. **Figure 7** and **Figure 8** illustrate the annual health losses that occur due to tobacco use.

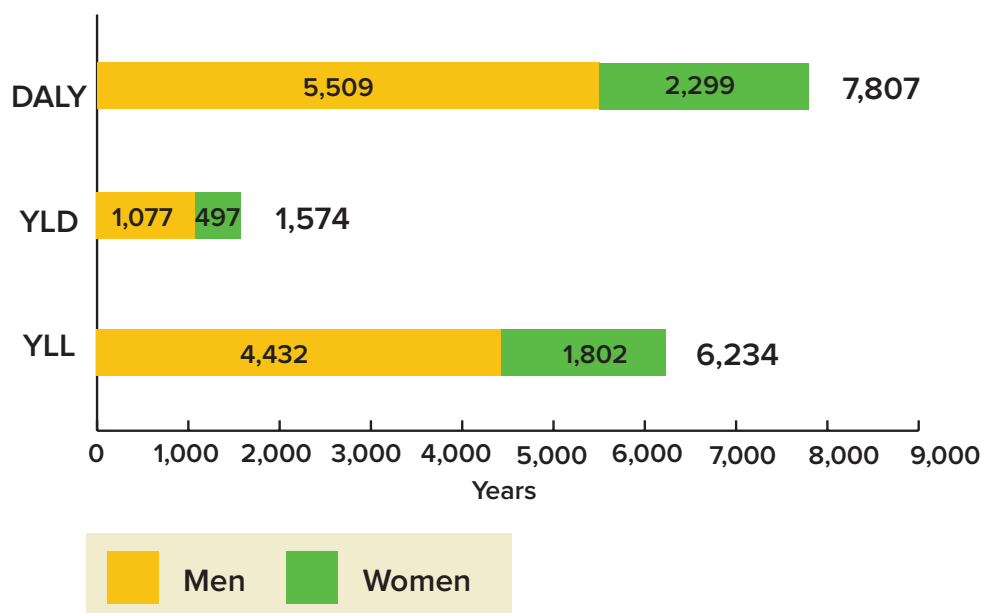
<sup>21</sup> In assessing the 'current burden' of tobacco use, the economic costs of tobacco-attributable mortality include the cost of deaths due to any form of exposure to tobacco (including smoking, secondhand smoke, and the use of other types of tobacco products). Only smoking-attributable (not tobacco-attributable) costs are calculated for health-care 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.

**Fig. 6: Breakdown of the share of the cost of tobacco-attributable mortality, workplace costs, and health-care costs in Bhutan (BTN millions), 2019\***



**Fig. 7: Tobacco-attributable deaths by disease in Bhutan, 2019**

Source: Results are from the IHME Global Burden of Disease Results Tool. Other causes tuberculosis, Alzheimer's disease and other dementias, other pharynx cancer, larynx cancer, asthma, peptic ulcer disease, subarachnoid haemorrhage, stomach cancer, aortic aneurysm, colon and rectum cancer, leukaemia, bladder cancer, liver cancer, pancreatic cancer, cervical cancer, breast cancer, prostate cancer, and nasopharynx cancer.

**Fig. 8: Tobacco-attributable DALYs, YLDs, and YLLs in Bhutan, by gender, 2019**

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 [71].

## 4.2 Implementing policy measures that reduce the burden of tobacco use<sup>22</sup>

The WHO FCTC provides a framework for tobacco control measures to be implemented by Parties at national and international levels to reduce continually and substantially the prevalence of tobacco use and exposure to tobacco smoke. Through the full implementation of the tobacco control measures in the WHO FCTC, Bhutan can secure significant health and economic returns, and begin to reduce the BTN 1.2 billion in annual economic losses from tobacco use.

The next two subsections present the health and economic benefits that result from six key WHO FCTC policy actions: 1) to increase tobacco taxation to reduce the affordability of tobacco products; 2) to create smoke-free public places and workplaces to protect people from the harms of tobacco smoke; 3) to require graphic warning labels on tobacco packaging; 4) to implement plain packaging of tobacco products; 5) to promote and strengthen public

<sup>22</sup> The investment case considers only cigarette smoking for the benefits of investing in the six WHO FCTC policy actions given the available evidence.



awareness of tobacco control issues; and 6) to promote cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use. These benefits consider only the impact these policy actions have on cigarette smoking. Considering the variety and popularity of other forms of tobacco in Bhutan, further benefits are possible if these actions are applied to all tobacco products.

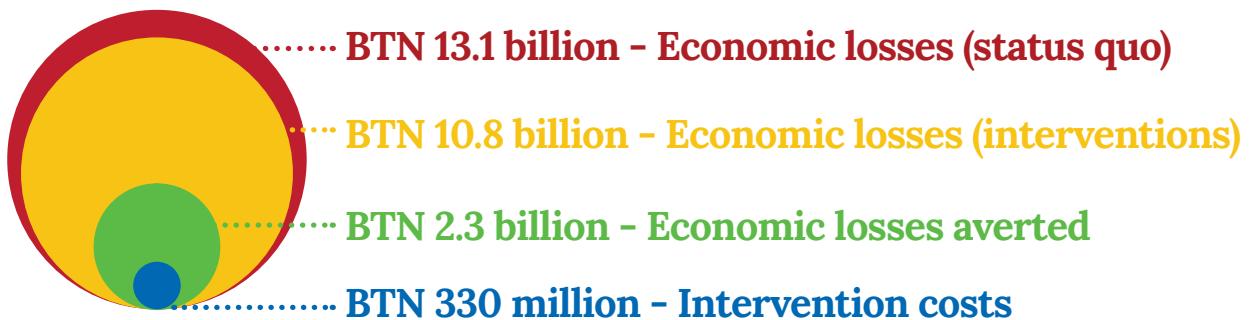
#### 4.2.1 Health benefits—lives saved

The full implementation of the WHO FCTC in Bhutan (inclusive of all six of the measures listed above) would lower the prevalence of tobacco use, leading to substantial health gains for the country. Implementing the package of six key WHO FCTC policy actions that are the focus of this investment case would reduce the prevalence of cigarette smoking by 34 percent (in relative terms) over 15 years, saving 1,204 lives over 2023-2037, or about 80 lives annually.

#### 4.2.2 Economic benefits—costs averted

Implementing the package of six key WHO FCTC policy actions would result in Bhutan avoiding 17 percent of the economic loss that is expected to occur from tobacco use over the next 15 years. **Figure 9** illustrates the extent to which Bhutan can shrink the economic losses it is expected to incur under the status quo.

**Fig. 9: Tobacco-related economic losses over 15 years, 2023-2037**

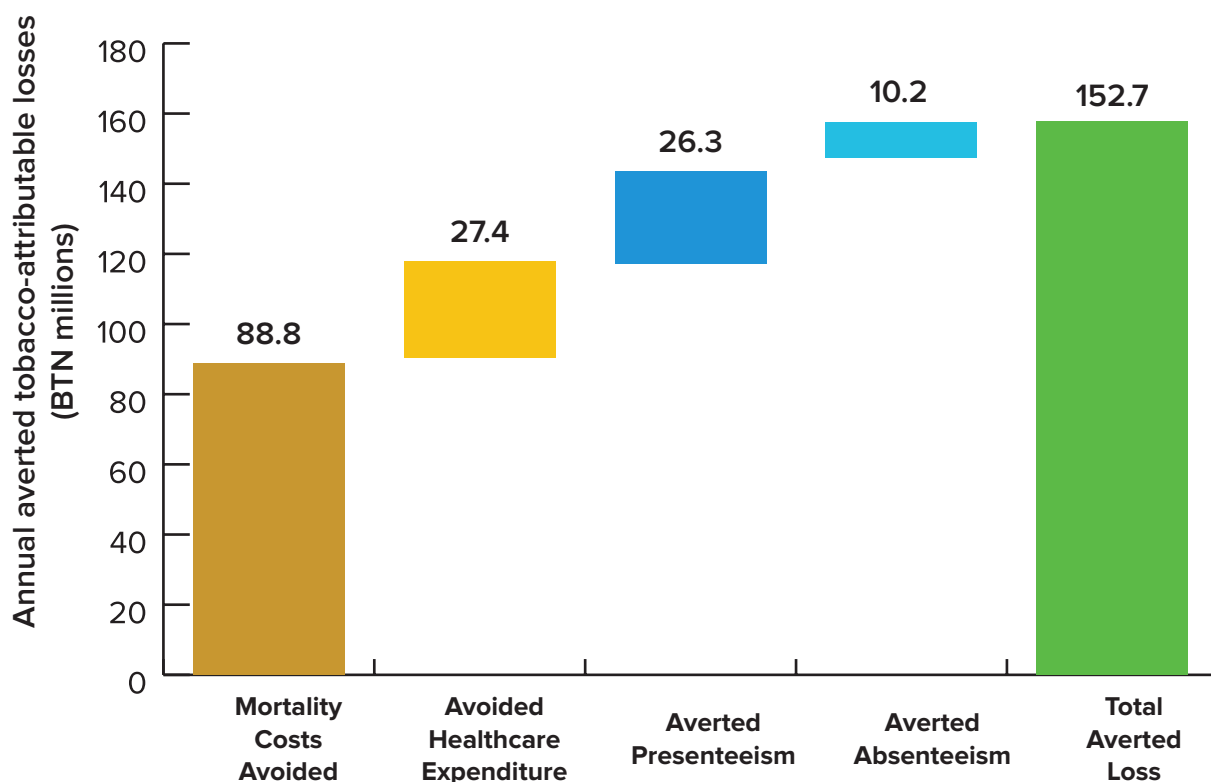


**In total, over 15 years Bhutan would save about BTN 2.3 billion that would otherwise be lost if the package of six key WHO FCTC policy actions is not implemented.** This is equivalent to around BTN 153 million in annual avoided losses.

With better health that would arise from the implementation of the WHO FCTC, fewer individuals would need health-care services due to tobacco-related diseases, resulting in direct cost savings to the government and citizens. Better health also leads to increased productivity. Fewer working-age individuals leave the workforce prematurely due to death. Workers miss fewer days of work (absenteeism) and are less hindered by health complications while at work (presenteeism).

**Figure 10** breaks down the sources from which annual avoided costs accrue from implementation of the package of six WHO FCTC policy actions. The largest annual avoided costs result from averted tobacco-attributable mortality (BTN 89 million). The next highest source is avoided health-care expenditures (BTN 27 million), followed by averted presenteeism (BTN 26 million) and reduced absenteeism (BTN 10.2 million).

**Fig. 10. Sources of annual avoided economic costs as a result of implementing the tobacco control policy package in Bhutan\***



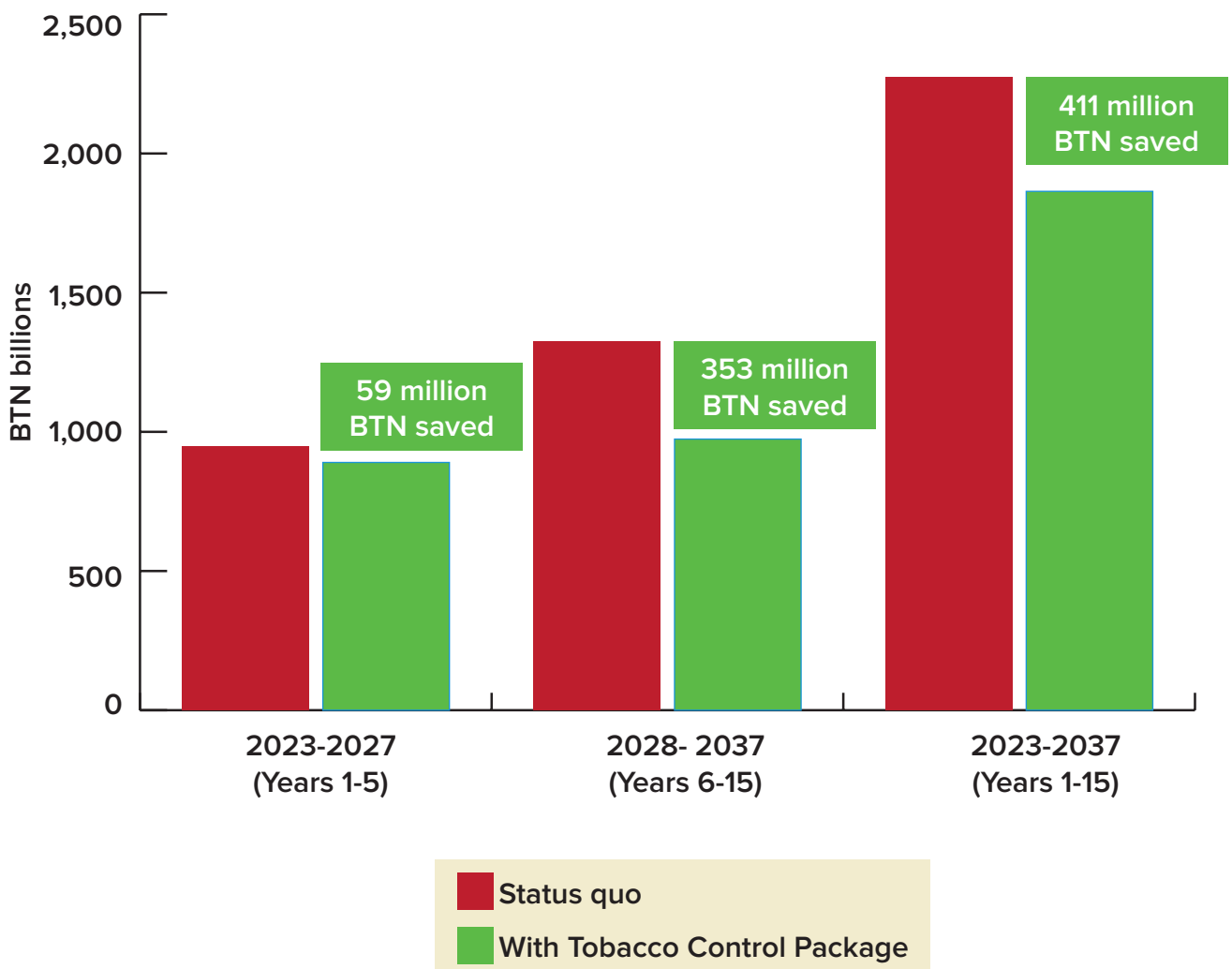
\*Figures subject to rounding.

Implementing the package of six WHO FCTC policy actions examined in the investment case will reduce medical expenditure both for citizens and the government. Presently, total private and public health-care expenditures in Bhutan are about BTN 8.7 trillion annually [72], and 2.4 percent of this amount is directly related to treating disease and illness due to tobacco use [8] ( $\approx$  BTN 209 million).

Year-on-year, the package of interventions would lower tobacco use prevalence, leading to less illness, and, consequently, less health-care expenditure (see **Figure 11**). Over the 15-year time horizon of the analysis, the package of interventions averts almost BTN 411 million in health-care expenditures, or BTN 27 million annually. Of these savings, 73 percent would go to the government and 15 percent would go to individual citizens who would have had to make

OOP payments for health care. The remainder of the savings would go to private insurance and other sources of health-care expenditures. From reduced health-care costs alone, the government would expect to save about BTN 302 million over 15 years. Simultaneously, the government would successfully reduce the health expenditure burden that tobacco imposes on Bhutanese people through OOP payments, supporting efforts to reduce economic hardship on families. For families with tobacco users who quit, spending that would have been on tobacco products or health care, could instead be invested in nutrition, education, and other productive inputs to secure a better future.

**Fig. 11: Private and public health-care costs (and savings) in Bhutan over the 15-year time horizon, 2023-2037**



### **4.2.3 The return on investment**

While the health gains from strengthening tobacco control in Bhutan are by themselves enough to justify the cost of the interventions, the economic gains that will also accrue make the case for WHO FCTC implementation even stronger.

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 tobacco control investments by the costs of the investments.

For this investment case, the ROI for each intervention was evaluated in the short-term (five years), to align with planning and political cycles, and in the medium-term (15 years) to align with the original timeframe allotted for the SDGs. The ROI was also evaluated for each of the six key WHO FCTC policy actions, and also for the full package of measures combined. Total benefits (avoided economic losses due to tobacco-attributable mortality, health-care expenditures, and diminished workplace productivity) 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 tobacco use (an individual-level intervention with higher initial personnel costs), interventions deliver an ROI greater than one within the first five years, meaning that even in the short-term, the benefits of implementing the interventions outweigh the costs. Depending on the intervention, over the first five years, the government will gain economic benefits ranging from between 0.2 to 5 times its investment. Given the long-term nature of many tobacco-related illnesses, with disease often only developing after years of tobacco use, the ROIs for each intervention would 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, in Bhutan (BTN millions), 2023-2027 and 2023-2037**

Return on investment, by tobacco control measure	First 5 years (2023-2027)			All 15 years (2023-2037)		
	Total Costs (millions)	Total Benefits (millions)	ROI	Total Costs (millions)	Total Benefits (millions)	ROI
<b>Tobacco control package*</b> <i>(all policies/interventions implemented simultaneously)</i>	<b>160</b>	<b>329</b>	<b>2</b>	<b>330</b>	<b>2,290</b>	<b>7</b>
<b>Increase tobacco taxation (cigarette taxation modeled)<sup>23</sup></b> <i>(WHO FCTC Art. 6)</i>	32	88	3	60	894	15
<b>Create smoke-free public and work places</b> <i>(WHO FCTC Art. 8)</i>	31	43	1	53	299	6
<b>Require graphic health warnings</b> <i>(WHO FCTC Article 11)</i>	17	94	5	31	653	21
<b>Implement plain packaging</b> <i>(WHO FCTC Guidelines for implementation of Articles 11 and 13)</i>	17	47	3	31	3,312	11
<b>Promote and strengthen public awareness of tobacco control issues</b> <i>(WHO FCTC Article 12)</i>	19.4	80	4	46	556	12
<b>Promote tobacco cessation and treatment for dependence by training health professional to provide brief advice to quit</b> <i>(WHO FCTC Article 14)</i>	28	4.4	0.2	75	69	0.9

\* 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 PR<sub>i</sub> and PR<sub>j</sub>, (1-PR<sub>i</sub>) x (1-PR<sub>j</sub>) [is] applied to the current smoking prevalence [73]. 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 program.

Over the 15-year period, requiring graphic warning labels are expected to have the highest return on investment (21:1). Increasing cigarette taxes is expected to have the next highest return on investment (15:1). The return will be even higher with increasing tax on all tobacco products. This is followed by promoting and strengthening public awareness of tobacco control issues (12:1), implementing plain packaging of tobacco products (11:1), creating smoke-free public places and workplaces to protect people from the harms of tobacco smoke (6:1), and finally to promote cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use (0.9:1).

23 Raise taxes to what is considered in the WHO Report on the Global Tobacco Epidemic, 2021 as the highest level of achievement, which is for total taxes to represent at least 75 percent of the retail price [4]. In the scenario modeled, cigarette taxes would meet the 75 percent level by 2032.

## 5. Examining additional impacts: government revenue, equity, and the SDGs

The investment case examines how increasing taxes would impact equity, and contributions that stronger WHO FCTC implementation would make towards Bhutan's fulfilment of SDG Target 3.4.

### 5.1 Tax analysis: the impact of increasing cigarette taxes on government revenue

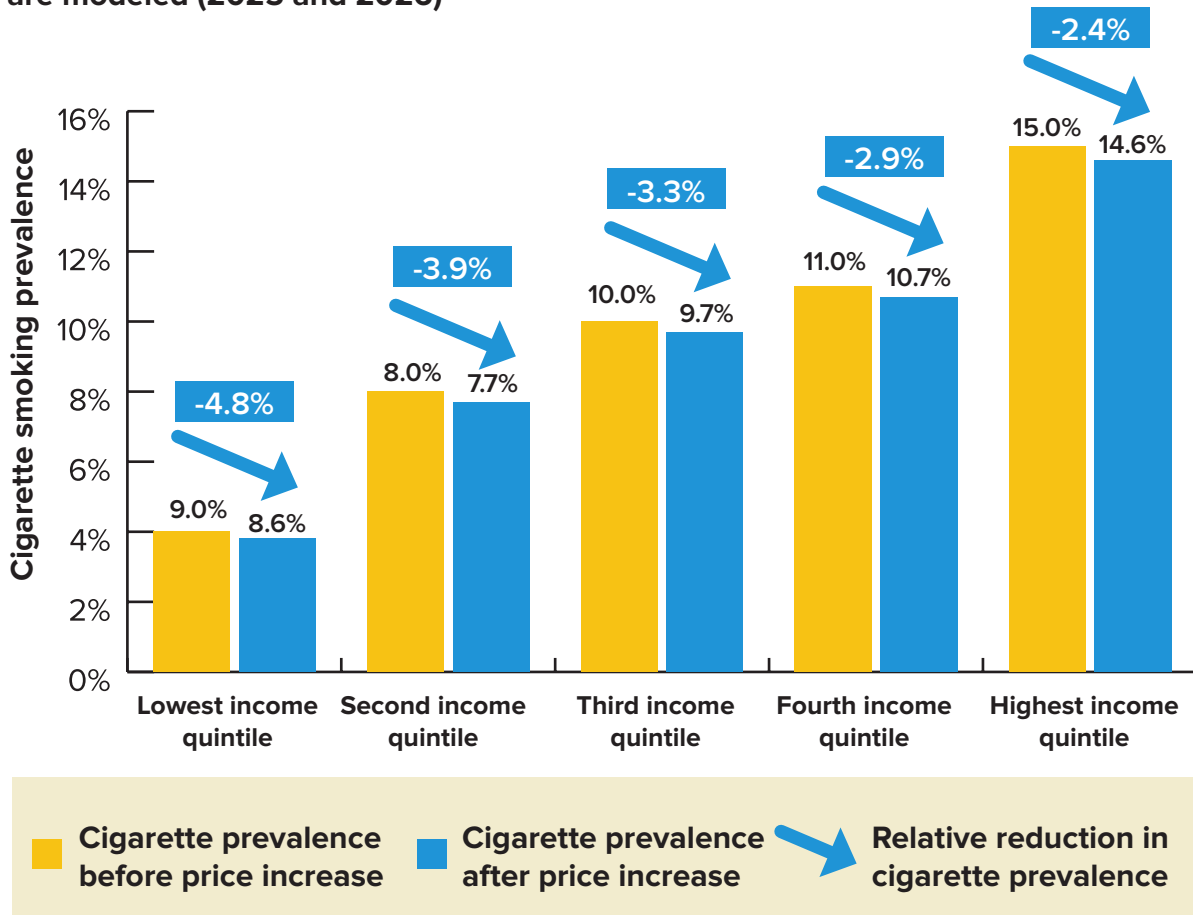
A common misconception is that taxes on tobacco products may disproportionately harm poor tobacco users, since the tax burden represents a higher proportion of their income than that of wealthier tobacco users. However, evidence shows that the poor actually stand to benefit most from raised tobacco taxes [74]. Relative to richer smokers, lower-income smokers are more likely to quit or not begin smoking when taxes are increased [30], meaning they benefit from subsequent decreases in tobacco-related health problems, and resulting medical costs, which can be financially catastrophic. In Lebanon [75], 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 [76].

To examine the extent to which a cigarette tax increase could be considered pro-poor in Bhutan, an equity analysis has been undertaken as part of the investment case. The analysis divides Bhutan's population into five equal groups, by income, where quintile one is composed of the poorest 20 percent of people, and quintile five 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 12 percent (BTN 61). This is representative of only the first two years 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.

Unlike most countries, in Bhutan, the wealthy smoke at much higher rates than the poor (4 percent among the poorest income quintile compared to 15 percent in the wealthiest quintile). 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 12** shows the smoking prevalence in each income quintile before and after the tax increase, as well as the relative change in smoking prevalence.

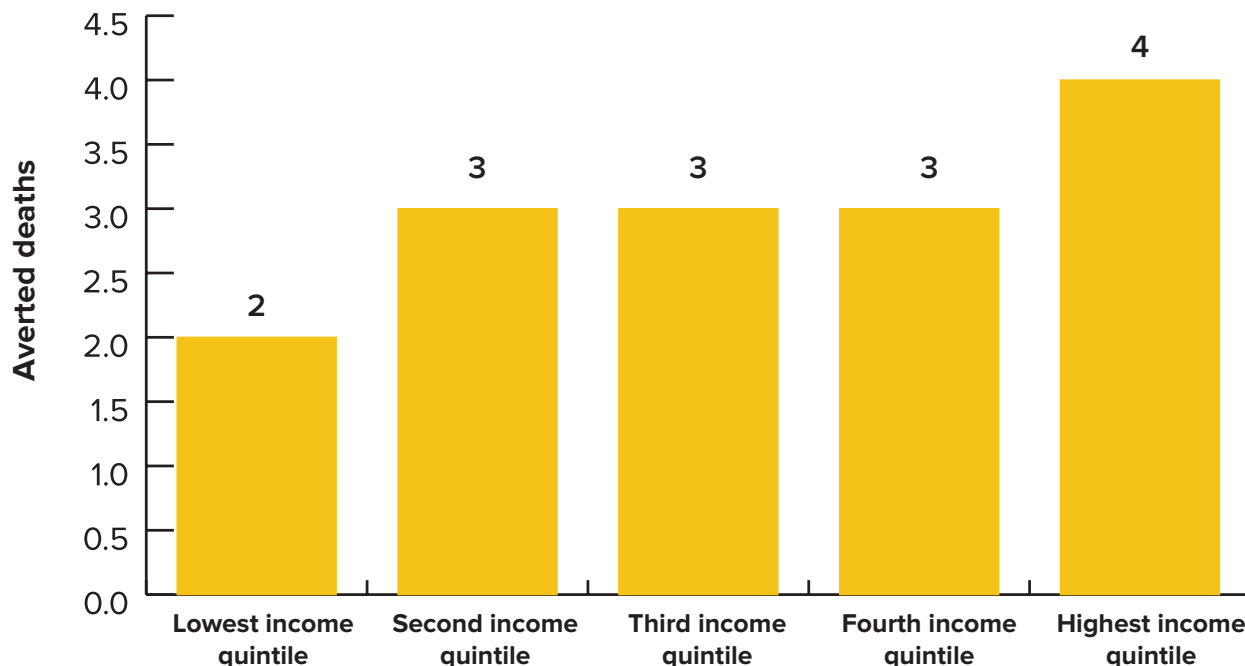
**Fig. 12. Relative reduction in cigarette smoking prevalence before and after the cigarette tax increase in Bhutan, by income quintile, during the first two years of tax increases that are modeled (2025 and 2026)\***



\*Figures subject to rounding.

Lower rates of smoking translate to health gains. As the cigarette smoking prevalence is substantially higher in the wealthiest quintile, during the first two years of price increases, the most averted deaths are among this group (**Figure 12**). However, because the largest relative reduction in smoking is among the poorest quintile, health benefits disproportionately accrue to this group. The equity analysis finds that 18 percent of the deaths that would be averted during the first two years of tax increases modeled in the investment case would be among the poorest 20 percent of the population, as shown in **Figure 13**, despite this group accounting for only 8 percent of total smokers.

**Fig. 13. Deaths averted in Bhutan by tax increase, by income group during the first two years of tax increases that are modeled (2025 and 2026)**



## 5.2 The Sustainable Development Goals and the WHO FCTC

Implementing the package of six WHO FCTC policy actions will support Bhutan to meet SDG Target 3.a to strengthen implementation of the WHO FCTC. Moreover, acting now will contribute to Bhutan’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 around 6.5 percent of the needed reduction in mortality for Bhutan 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).



SDG Target 3.4

**By 2030 the WHO FCTC measures would contribute the equivalent of around 6.5 percent of the needed reduction in mortality for Bhutan to achieve SDG Target 3.4.**



## 6. Conclusion and recommendations

Each year, tobacco use costs Bhutan BTN 1.2 billion in economic losses and causes substantial human development losses. Fortunately, as the investment case shows, there is an opportunity to reduce the health, social and economic burden of tobacco in Bhutan. Enacting the six key WHO FCTC policy actions would save 80 lives each year and reduce the incidence of disease and disability, leading to savings from averted medical costs and productivity losses. In economic terms, these benefits are substantial, adding up to BTN 2.3 billion over the next 15 years. Further, the economic benefits of strengthening tobacco control in Bhutan greatly outweigh the costs of implementation (BTN 2.3 billion in benefits versus just BTN 330 million in costs).

Moreover, while the economic burden considers all forms of tobacco use, only cigarette smoking is considered in the benefits. This means even greater benefits are possible if Bhutan applies these policy actions to all tobacco products, especially those most popular including smokeless tobacco, as well as action to reduce the use of areca nut products. By investing now in the package of six WHO FCTC policy actions modeled in this investment case, Bhutan would not only reduce tobacco consumption, improve health, reduce government health expenditures, and grow the economy, but it would also reduce hardships faced by many Bhutanese people. Many countries 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 the investment case, these key actions for Bhutan are recommended to be pursued simultaneously:

## Recommendations

- 1** Commit to fully implement the WHO FCTC in Bhutan
- 2** Restructure the tax system and increase tax rates on all tobacco products (WHO FCTC Article 6)
- 3** Implement the other five tobacco control policies studied in this investment case:
  - comprehensive policies to make all public and work places smoke-free (WHO FCTC Article 8);
  - prominent large graphic health warnings on tobacco product packaging (WHO FCTC Article 11);
  - plain packaging\* of tobacco products (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 (WHO FCTC Article 12); and
  - promote cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use (WHO FCTC Article 14).
- 4** Strengthen national tobacco control legislation and enforcement (WHO FCTC Articles 5.2(b))
- 5** Develop a national tobacco control strategy for Bhutan (WHO FCTC Article 5.1)
- 6** Strengthen multisectoral planning and coordination for tobacco control (WHO FCTC Article 5.2(a))
- 7** Join the Protocol to Eliminate Illicit Trade in Tobacco Products and build capacity to combat illicit trade of tobacco and tobacco products (WHO FCTC Article 15)
- 8** Implement measures to protect public health policies from the commercial and other vested interests of the tobacco industry (WHO FCTC Article 5.3)
- 9** Identify opportunities to link the implementation of the WHO FCTC with wider sustainable development strategies including Bhutan's Gross National Happiness Index

\*Plain (or neutral) packaging requirements prohibit the use of logos, colors, brand images, or promotional information on packaging other than brand names and product names displayed in a standard color and font style. Further information is available at: <https://www.who.int/publications/i/item/9789240051607>

**1****Commit to fully implement the WHO FCTC in Bhutan**

As a Party to the WHO FCTC, Bhutan 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. Bhutan 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 [77] and in this investment case.

Through the FCTC 2030 project, the WHO FCTC Secretariat’s flagship development assistance project, Bhutan is receiving support to take policy actions towards the full implementation of the treaty. As a FCTC 2030 project country, Bhutan is accessing technical and financial resources, including intensive support from the WHO FCTC Secretariat, WHO and UNDP.

**2****Given the effectiveness of tobacco taxation, strengthen tobacco tax structures and increase tax rates (WHO FCTC Article 6)**

Bhutan 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 [78] and by WHO in the WHO Technical Manual on Tobacco Tax Policy and Administration [53]. 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) [50].

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 [53], [79]. Tobacco taxes should aim to reduce affordability, including by increasing at a rate that outpaces inflation and income growth [79].

The investment case modeled only the potential gains from increasing taxes on cigarettes, not all tobacco products, meaning that if Bhutan were to increase taxation on all tobacco and tobacco products, it would benefit even further. It is recommended that Bhutan take immediate steps to comprehensively strengthen taxes for all types of tobacco, especially smokeless tobacco, and also for shisha and novel tobacco products.

There is clear evidence that raising cigarette prices through increased taxes is a highly effective measure for reducing smoking among youth, young adults, and people from lower socioeconomic communities. Increasing the price of tobacco will have disproportionate benefit for these vulnerable populations.

### 3

#### **Take action to strengthen, implement and enforce the other four key WHO FCTC policy actions modeled in this investment case by:**

- implementing comprehensive policies to make all public places and workplaces 100 percent smoke-free by strengthening legislation and removing designated smoking areas (WHO FCTC Article 8);
- requiring large graphic health warnings on tobacco product packaging that describes the harms of tobacco use. Further gains would be possible if large graphic health warnings were required on all tobacco products available. Bhutan can consider best practices in the region including Timor-Leste, which mandates health warnings cover 92.5 percent of the principal display area [80] (WHO FCTC Article 11);
- considering implementation of plain packaging to reduce the appeal of tobacco products and to make health warnings more prominent (WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13);
- continuing to 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
- continuing to promote cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use, especially in primary care settings. Further gains would be possible with the provision of additional support to tobacco users, such as offering specialized tobacco dependence treatment services, and/or internet-based quit support and making pharmacotherapies more widely available (free of cost if possible) (WHO FCTC Article 14).

## 4

**Strengthen national tobacco control legislation and enforcement (WHO FCTC Articles 5.2(b))**

Bhutan's tobacco control legislation can be strengthened to protect the population and secure the full development benefits of tobacco control. The Tobacco Control Act includes comprehensive bans on tobacco advertising, promotion and sponsorship and restrictions on smoking in public places. However, enforcement of these measures, among others, remains a challenge in the country. Bhutan would benefit from strengthening enforcement of their national tobacco control legislation in line with WHO FCTC Article 5.2(b) to fully protect the population of Bhutan from the harms of tobacco. Bhutan can consider amending the existing legislation to close legislative gaps, for example the provision for designated smoking areas, and ensure legislation covers all forms of tobacco.

## 5

**Develop a national tobacco control strategy for Bhutan (WHO FCTC Article 5.1)**

Bhutan would benefit from establishing a national multisectoral tobacco control strategy to coordinate different government sectors, civil society and other stakeholders to advance WHO FCTC implementation in line with national priorities. It is recommended to develop, publish and routinely update a national multisectoral tobacco control strategy for Bhutan. This will, among other things, serve to guide the work of activities of a national coordinating mechanism (NCM), as well as set out plans for strengthening tobacco control policies and legislation. The strategy should be supported with reliable, dedicated funding and must include clear roles and responsibilities for the relevant actors.

The national tobacco control strategy for Bhutan should include actions that would:

- Outline a comprehensive workplan and timeline for the full implementation of the WHO FCTC.
- Outline a comprehensive workplan and timeline to monitor the implementation of the Tobacco Control Amendment Act 2021.
- Identify sustainable funding necessary for tobacco control.

- Implement a comprehensive TAPS ban in line with WHO FCTC obligations, especially considering that tobacco is now available for purchase.
- Strengthen capacity for compliance building and enforcement of tobacco control legislation.
- Sustain regular monitoring and evaluation of tobacco control policies.
- Join the Protocol to Eliminate Illicit Trade in Tobacco Products Tobacco.
- Increase resources to strengthen tobacco control measures at the border to combat illicit trade.
- Ensure tobacco control policies encompass all forms of tobacco, especially smokeless, and areca nut products.
- Prevent children and young people from taking up use of all tobacco products, including smokeless and areca nut products.
- Ensure gender-sensitive approaches to tobacco control policy, programmes, and services.
- Prioritize vulnerable groups including, but not limited to, youth, women and girls, those with disabilities, those with lower education and those with low-income.
- Encourage and support current tobacco users to quit using evidence-based methods.
- Address the common use of areca nut, research the drivers behind its consumption, and increase awareness of the harmful effects of its consumption.
- Protect public health policies from commercial and other vested interests of the tobacco industry.

## 6

### **Strengthen multisectoral planning and coordination for tobacco control (WHO FCTC Article 5.2 (a))**

Multisectoral planning and coordination are at the heart of strong national tobacco control efforts, which is why these areas are general obligations under the WHO FCTC. The BNCA is responsible for implementing provisions of the Tobacco Control Act and engaging with other sectors. The act includes provisions for a Tobacco Control Board, which should coordinate with relevant government agencies for effective tobacco control measures. However, Bhutan would benefit from establishing and formalizing a dedicated tobacco control NCM to advance WHO FCTC implementation in line with national priorities. The NCM should be supported with reliable, dedicated funding and must include clear roles and responsibilities. Structures should also be in place for monitoring and accountability. The role and function of the tobacco control office needs to be considered as the Government of Bhutan is under reform and there is a potential merger of the BNCA, the DRA and the BAFRA. Action to strengthen multisectoral coordination can be guided by the joint Convention Secretariat-UNDP publication, National Coordinating Mechanism for Tobacco Control: Toolkit for Parties to Implement Article 5.2(a) of the WHO FCTC [81].

The findings and recommendations of this investment case can be a powerful catalyst to bring together different stakeholders for the overall benefit of the country and can assist the country to prioritize action into the future.

7

**Join the Protocol to Eliminate Illicit Trade in Tobacco Products and build capacity to combat illicit trade of tobacco and tobacco products (WHO FCTC Article 15)**

While illicit trade is a significant challenge in Bhutan, the country is not yet a Party to the Protocol to Eliminate Illicit Trade in Tobacco Products. Bhutan would benefit from joining the Protocol. Key measures from the Protocol that Bhutan would benefit from implementing include:

- tracking and tracing systems;
- controlling the supply chain through licensing and record keeping requirements;
- due diligence requirements; and
- raising, technical assistance, and cooperation in scientific, technical and technological matters.

Increased investment is also necessary to overcome the lack of resources and capacity challenges that impede Bhutan’s implementation and enforcement of tobacco control, including the elimination of illicit tobacco.

8

**Implement measures to protect public health policies from the commercial and other vested interests of the tobacco industry (WHO FCTC Article 5.3)**

It is recommended that Bhutan take action to protect the country’s public health policies from the commercial and other vested interests of the tobacco industry. A resolution made by the World Health Assembly in 2001, citing the findings of the Committee of Experts on Tobacco Industry Documents, states that “the tobacco industry has operated for years with the express intention of subverting the role of governments and of WHO in implementing public health policies to combat the tobacco epidemic” [82].

The Preamble of the WHO FCTC recognizes that Parties “need to be alert to any efforts by the tobacco industry to undermine or subvert tobacco control efforts and the need to be informed of activities of the tobacco industry that have a negative impact on tobacco control efforts”. The WHO FCTC includes a specific obligation that “in setting and implementing their public health policies with respect to tobacco control, Parties shall act to protect these policies from

commercial and other vested interests of the tobacco industry in accordance with national law”. The 2021 global progress report on implementation of the WHO Framework Convention on Tobacco Control reported that the most frequently mentioned barrier to the implementation of the Convention by Parties is the interference by the tobacco industry, including the industries producing novel and emerging tobacco products and nicotine products [83].

Bhutan is encouraged to review current policies and legislation in light of the Implementation Guidelines for WHO FCTC Article 5.3 [84], and then address outstanding gaps by implementing the recommendations made in those guidelines. Attention should also be given to ensuring policy coherence across government policy-making to prioritise public health and WHO FCTC implementation.



## **Identify opportunities to link the implementation of the WHO FCTC with wider sustainable development strategies in Bhutan**

With the vast health, economic, social and environment costs of tobacco, the case is clear: implementing the WHO FCTC is a powerful means for Bhutan to improve the lives of citizens, achieve the SDGs, and improve the conditions and future of their country. All sectors have a role to play in tackling tobacco use, and the benefits of full WHO FCTC implementation will enrich all aspects of life in Bhutan. Tobacco control aligns with the philosophy of, and will help Bhutan achieve, the four pillars of Gross National Happiness: fair and sustainable socio-economic development; conservation and promotion of a vibrant culture; environmental protection; and good governance [1].

The Government of Bhutan should prioritize the implementation of the WHO FCTC in sustainable development strategies.

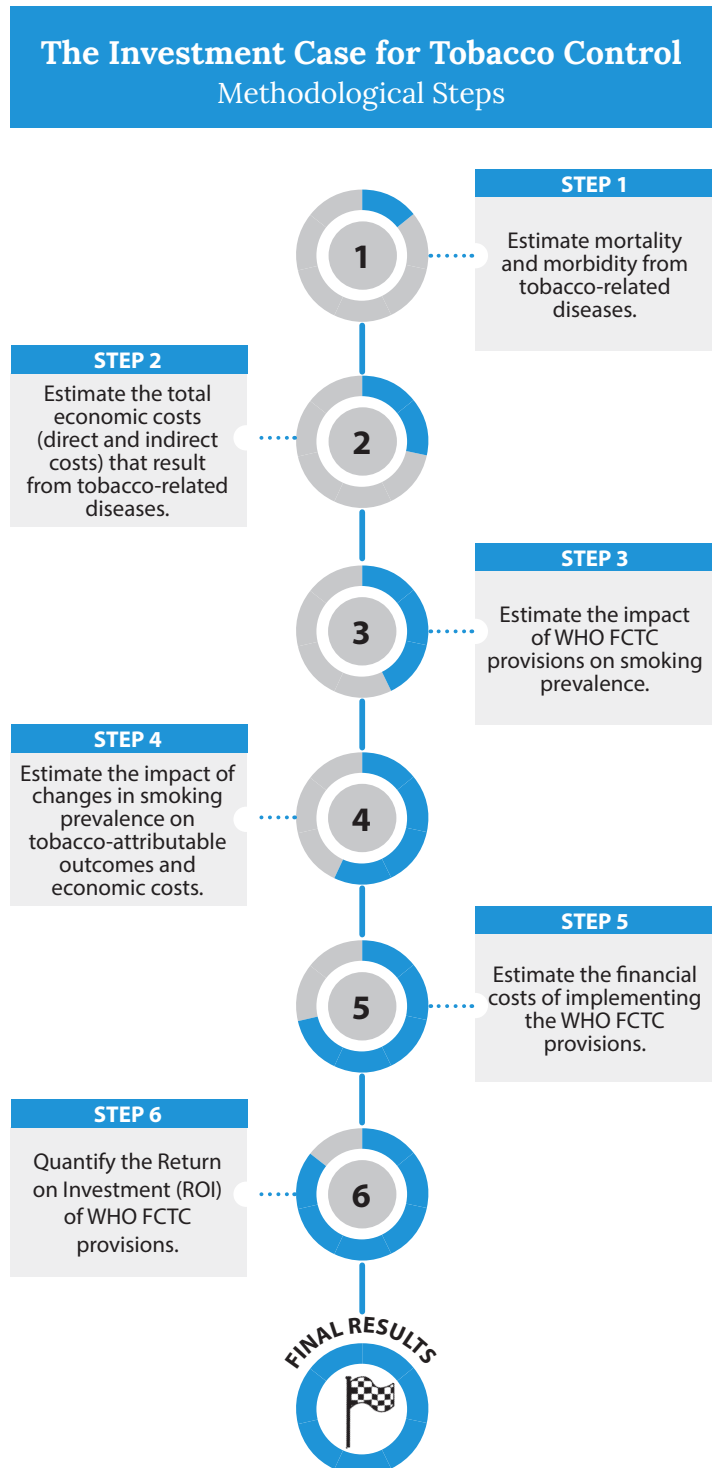


# Methodology annex

## A1.1 Overview

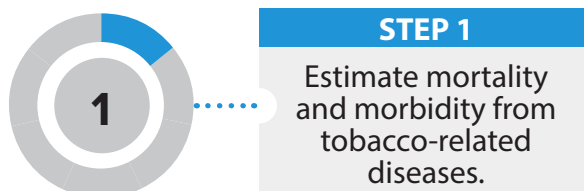
The economic analysis consists of two components: 1) assessing the current burden of tobacco use and 2) examining the extent to which WHO FCTC provisions can reduce the burden. The first two methodological steps depicted in **Figure A1** are employed to assess the current burden of tobacco use, while 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: Steps in the Investment Case



## A1.2 Component one: current burden

The current burden model component provides a snapshot of the health and economic burden of tobacco use in Bhutan in the most recent year for which data is available.



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) [7], [85]. The study estimates the extent to which smoking and secondhand tobacco smoke exposure contribute to the incidence of 37 diseases, healthy life years lost, and deaths, across 195 countries.



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 smoking-attributable public (government-paid), private (insurance, individual out-of-pocket), and other healthcare expenditures. The proportion of healthcare costs attributable to smoking was obtained using the formula for estimating smoking attributable fraction (SAF) of healthcare expenditures from Goodchild et al. (2018) [8]. The SAF for Bhutan is estimated at 2.4 percent. To calculate the share of smoking-attributable health-care expenditures borne by public, non-profit, and

24 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.

25 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 [98]. On the other hand, the risk of incidence of other diseases, for example CVD, declines significantly in the years immediately following quitting [99].

private entities, it was assumed that each entity incurred smoking-attributable health-care costs in equal proportion to the entity's contribution to total health expenditure. Health-care expenditures were obtained from the WHO Global Health-care Expenditure Database (GHED) [72]. The latest year for which data are available in WHO GHED is 2019. To obtain 2020 values, we took the average annual increase in health-care expenditures in Bhutan over the past 10 years and applied that increase to the 2019 health-care expenditure values.

**Workplace costs and the cost of tobacco-attributable mortality** – Workplace costs and the cost of tobacco-attributable mortality represent the monetized value of lost time, productive capacity, or quality of life as a result of tobacco-attributable 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**).

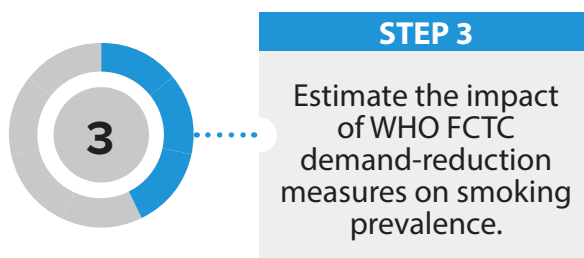
- *The economic cost of tobacco-attributable mortality.* Tobacco-attributable mortality was monetized using a “value of a statistical life” (VSL) measure. VSL is a measure of individuals’ willingness to pay for small changes in the risk of death and it is commonly used in economic evaluations of health programmes and policies to monetize health outcomes [86]. Few studies have assessed VSL in low- and middle-income countries [87]. We extrapolated a country-specific estimate of VSL following guidance from the Reference Case Guidelines for Benefit-cost analysis in Global Health and Development, we estimated the value of one additional year of life for Bhutan at BTN 213,110 (value of a statistical life year, or 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) [88]. Presenteeism losses are obtained similarly, under research that shows that smokers in China, the United States, 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 [89]. 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.

### A1.3 Component two: policy/intervention scenarios

This component estimates the effects of WHO FCTC measures on mortality and morbidity, as well as on total economic costs (direct and indirect) associated with tobacco use.

A static model using a population-attributable fraction (PAF) approach was used to estimate the total impact of the tobacco control measures. In the model, aside from smoking prevalence, variables do not change throughout the 15-year time horizon. The model follows a population that does not vary in size or makeup (age/gender) over time in two scenarios: a status quo scenario in which smoking prevalence remains at present-day rates, and an intervention scenario in which smoking prevalence is reduced according to the impact of tobacco control measures that are implemented or intensified. Published studies have used similarly static models to estimate the impact of tobacco control measures on mortality and other outcomes [90], [91].

Within the investment case, mortality and morbidity, as well as economic costs that are computed in the intervention scenario are compared to the status quo scenario to calculate the extent to which tobacco control measures can reduce health and economic costs.



Selection of key WHO FCTC measures modeled within the investment case align with the [Global Strategy to Accelerate Tobacco Control](#) [106] 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, priority is given to enabling action to accelerate WHO FCTC implementation, including effective forms of technical and financial assistance to support Parties in the identified priority action areas. This includes Parties giving priority to, inter alia, the implementation of price and tax measures (WHO FCTC Article 6) and time-bound measures of the Convention. The time-bound measures, are for creating smokefree public and work places (WHO FCTC Article 8), prominent health warnings on tobacco packaging (WHO FCTC Article 11) and comprehensive bans on tobacco advertising, promotion, and sponsorship (WHO FCTC Article 13).

In addition, given the importance of awareness in behaviour change and shaping cultural norms, the investment cases include promoting and strengthening 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). Effect sizes for the WHO FCTC demand reduction measures are obtained from the literature. The impact of brief advice to quit offered to tobacco use is from Levy et al. 2010 [92]. The impact of enforcing smoke-free air laws, implementing plain packaging, intensifying advertising bans, and promoting and strengthening public awareness of tobacco control issues are derived from Levy et al. (2018) [73] and Chipty (2016) [93], as adapted within the Tobacco Use Brief of Appendix 3 of the WHO Global Action Plan for the Prevention and Control of Non-communicable Diseases 2013-2020 [94], and adjusted based on assessments of Bhutan's baseline rates of implementation. Of note, baseline rates were adjusted for Bhutan's unique context—until late 2020, cigarette sales were completely banned in the country. Thus, we assumed that strengthening bans on advertising would have no additional impact, given that advertising was already not allowed in the country prior to 2021.

Further, among the population, we assumed some exposure already to graphic warning labels given that any cigarettes smuggled into Bhutan from surrounding countries prior to 2021 would have had the graphic warning labels required in those countries (e.g. Nepal mandates graphic warning labels that cover more than 50 percent of tobacco packaging, India mandates warnings cover 85 percent of packaging, while China has text-only warnings required to cover 35 percent of packaging). Finally, for public awareness of tobacco control issues, we assumed that the harms of tobacco use were to some extent already internalized in the population given the historical ban on smoking. Thus, we assumed a moderate impact of implementing a mass media campaign.

Except for taxes—the impact of which is dependent on the timing of increases in tax rates (see below)—and the brief advice intervention—the impact of which is guided by rates of training for primary health-care providers (see also below)—the full impact of the demand reduction policy measures is phased in over a five-year period. The phase-in period follows WHO assumptions [95] 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 revenue and cigarette use prevalence was estimated using an Excel-based tool developed to analyse the impact of tax increases on a fixed population cohort. The tool is populated with data, including 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	-0.49	Ho et al (2017). The effect of cigarette price increases on cigarette consumption, tax revenue, and smoking-related death in Africa from 1999 to 2013 [96]
Prevalence elasticity of demand	-0.24	Goodchild et al (2016). Modelling the impact of raising tobacco taxes on public health and finance [97] Assumption – half of price elasticity
Income price elasticity of demand	0.32	Nargis et al (2021). Price, Income, and Affordability as the Determinants of Tobacco Consumption: A Practitioner’s Guide to Tobacco Taxation [98]
Income prevalence elasticity of demand	0.16	Assumption – half of income price elasticity
Projected real income growth rate*	4.5%	International Monetary Fund (2020). Real GDP Growth - Annual percent change [99]

\* Projected real income growth is used as a proxy for wage growth. The International Monetary Fund projects [99] real GDP growth at an average of 4.5 percent annually through 2025.

The investment case analysis examines a hypothetical increase in cigarette prices. The investment case looked at the impact of real price increases triggered hypothetically by changes to the tax structure and increases in tax rates. **Table A2** breaks down cigarette pack prices analysed from 2023 to 2027 under the described scenario. For the main investment case analysis, additional real price increases averaging 8 percent annually are modelled from 2027 to 2037. In the scenario modeled, cigarette taxes would meet the 75 percent threshold in 2038, after the 15-year period modelled.

**Table A2: Projected cigarette pack price in the tax increase scenario, 2023-2027 (BTN, in real terms)**

Price component	2023	2024	2025	2026	2027
Price net of taxes					
Specific excise					
Ad valorem					
Value added tax					
Other taxes					
Final consumer price *	360.00	360.00	391.46	421.07	478.65

\* Figures subject to rounding.

The impact of tax increases on revenue and cigarette use prevalence is dependent on prevailing elasticities: the extent to which individuals change the 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) [100], 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: The impact of changes in price on smoking prevalence**

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

Where:

SP = smoking prevalence (# of smokers) in year i

$\epsilon_p$  = prevalence elasticity

Op\_np = the ratio of the old price of a pack of cigarettes to the new price after tax increases

$\epsilon_i$  = 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 Bhutan-specific estimates of price and income elasticities.

**Brief advice to quit tobacco.** We calculate the effect of scaling up the provision of brief advice to quit tobacco use 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) [92]. 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) [92]**

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

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 (48 percent) of adult smokers who visit a health provider are advised to quit.<sup>26</sup> 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 [92]. 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
<b>Population quit rate (PQR)</b>		
Annual quit attempt rate (QA)	41%	Average values from the Global Adult Survey (GATS) of low- and middle-income countries (LMICs) conducted between 2009 to 2018*
Increase (%) in QA as a result of receiving brief advice	60%	Levy et al (2010). Modelling the impact of smoking-cessation treatment policies on quit rates [92]
<b>Treatment use (Tx Use)</b>		
No evidence-based treatment	81%	Average values from GATS of LMICs conducted between 2009 to 2018*

26 Analysts pulled data from GATS surveys conducted between 2009 to 2018 and averaged values from low- and middle-income countries.



Pharmaceutical assistance	7%	Average values from GATS of LMICs conducted between 2009 to 2018*
Counselling	11%	Average values from GATS of LMICs conducted between 2009 to 2018*
Both pharmaceutical assistance and counselling	1%	Average values from GATS of LMICs conducted between 2009 to 2018*
<b>Treatment effectiveness</b>		
No evidence-based treatment	7%	Levy et al (2019). Modeling the impact of smoking-cessation treatment policies on quit rates [92]
Pharmaceutical assistance	15%	Abrams et al (2010). Boosting population quits through evidence-based cessation treatment and policy [101]**
Counselling	12%	Abrams et al (2010). Boosting population quits through evidence-based cessation treatment and policy [101]**
Both pharmaceutical assistance and counselling	22%	Abrams et al (2010). Boosting population quits through evidence-based cessation treatment and policy [113]**
% of adult smokers who visit primary care clinic annually	38%	Average values from GATS of LMICs conducted between 2009 to 2018*
% of smokers who relapse after successfully quitting	60%	García-Rodríguez et al (2013). Probability and predictors of relapse to smoking: Results of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) [102]
Number of primary care health providers	140	WHO (2021). Global Health Observatory [103]***
Annual patient panel size per health provider (# of patients)	550	Altschuler et al (2012). Estimating a Reasonable Patient Panel Size for Primary Care Physicians With Team-Based Task Delegation [104]****

\* Analysts pulled data from GATS conducted between 2009 to 2018 and averaged values from low- and middle-income countries.

\*\* 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

\*\*\* 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.

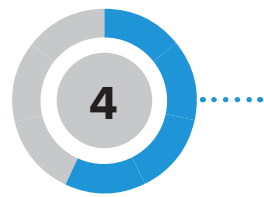
**Summary: the impact of tobacco demand reduction measures.** The impact sizes of all policy measures examined in the investment case are displayed in **Table A4**. Additional information on their derivation can be found in the *Technical Appendix*.<sup>27</sup>

**Table A4: Impact size: Relative reduction in the prevalence of current smoking by tobacco control policy/intervention, over a period of five (2023-2027) and 15 years (2023-2037)**

WHO FCTC Policy Actions	Relative reduction in the prevalence of current smoking	
	First 5 years (2023-2027)	Over 15 Years (2023-2037)
<i>Tobacco Control Package*</i> (all policies/interventions implemented simultaneously)	<b>17.4%</b>	<b>34.1%</b>
Increase cigarette taxation ( <i>WHO FCTC Article 6</i> )	5.0%	15.4%
Create smoke-free public places and workplaces ( <i>WHO FCTC Article 8</i> )	2.2%	3.6%
Require that tobacco product packages carry large health warnings ( <i>WHO FCTC Article 11</i> )	4.8%	8.0%
Implement plain packaging of tobacco products ( <i>WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13</i> )	2.4%	4.0%
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 ( <i>WHO FCTC Article 12</i> )	4.1%	6.8%
Promote tobacco cessation and treatment for dependence ( <i>WHO FCTC Article 14</i> )	0.24%	1.58%

\* 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 PR<sub>i</sub> and PR<sub>j</sub>, (1-PR<sub>i</sub>) x (1-PR<sub>j</sub>) [is] applied to the current smoking prevalence" [83].

27 Available upon request.

**STEP 4**

Estimate the impact of changes in smoking prevalence on tobacco-attributable health outcomes and economic costs.

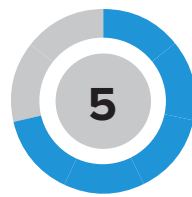
To analyse the impact of policy measures on reducing the health and economic burden of smoking, the investment case calculates and compares two scenarios. In the “status quo scenario”, current efforts are “frozen”, meaning that, through the year 2037 (end of the analysis), no change occurs from the tobacco control provisions that are currently in place. In the “intervention scenario”, Bhutan 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 Bhutan 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, health-care 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.

$$\text{Marginal Effects} = \text{Outcome Base Scenario} - \text{Outcome Intervention Scenario}$$

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.



### STEP 5

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—are estimated using the WHO NCD Costing Tool. Full explanations of the costs and assumptions embedded in the WHO NCD Costing tool are available [95].

The Costing 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 Costing 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 Costing Tool, costs accrue differently during four distinct implementation phases: planning (year 1); development (year 2); partial implementation (years 3-5); and full implementation (year 6 and onward).

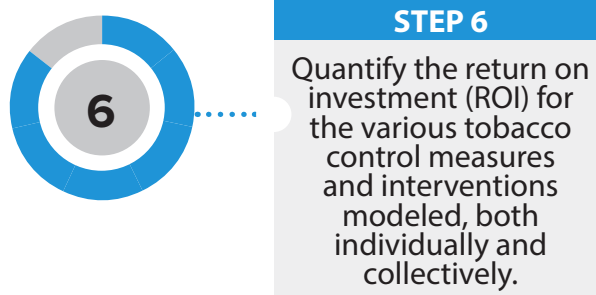
Across these categories, the Costing Tool contains default costs from 2011, which are sourced from the WHO CHOICE costing study. Following Shang and colleagues, the Costing Tool is updated to reflect 2020 costs by updating several parameters: the US\$ to local currency unit exchange rate (2020), purchasing power parity (PPP) exchange rate (2020); GDP per capita (US\$, 2020); GDP per capita purchasing power parity (PPP, 2020); population (total, and share of the population age 15+, 2020); labour force participation rate (2020); gas per liter; and government spending on health as a percent of total health spending (2019) [105]. Unless government or other in-country parameters are received, data are 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 tobacco use, 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.<sup>28</sup> Based on WHO’s training

<sup>28</sup> The analysis assumes a 10 percent of health workers turn over annually [106].

package for treating tobacco dependence in primary care [107], 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,<sup>29</sup> 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.<sup>30</sup>

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 of primary care outpatient visits [109]. The derivation of these estimates is detailed elsewhere, [110] but in overview, the estimates reflected the “hotel cost” of a 10-minute visit<sup>31</sup> to a health facility with beds. We updated the estimates to 2020 local currency units, using 2010 PPP conversion factors and local consumer price indices [111]. For the purposes of the investment case, administration of the 5A’s (Ask, Advise, Assess, Assist and Arrange) brief intervention is assumed to take 10 minutes [112]. Following the 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.



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 policy actions 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.

$$\text{Return on investment (ROI)} = \frac{\text{Benefits of Intervention/Policy}}{\text{Costs of Implementing Intervention/Policy}}$$

29 Rental costs per square foot are obtained from the WHO Costing Tool with the room size estimated is based on square feet per person estimates for collaboration rooms [108].

30 Compensation costs for trainers, per diem estimates, and provider salaries are obtained from the WHO Costing Tool

31 The analysis assumes that the mean duration of a clinic visit is 10-minutes, following guidance from the WHO NCD Costing Tool.

## A1.4 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 Bhutan. 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 [113]. The working paper provides elasticities by deciles. To apply the elasticities to the smoking prevalence data available for Bhutan, which are presented as quintiles, we take the average of the first and second deciles 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

Source: Average of income-group-specific elasticities in low- and middle-income countries, as compiled in a World Bank policy research working paper (Fuchs et al (2019). *Distributional Effects of Tobacco Taxation: A Comparative Analysis*. Accessible at <https://openknowledge.worldbank.org/handle/10986/31534>) [125].

## A1.5 Summary of WHO FCTC demand-reduction measure status

Figure 2 is based on data from the *WHO Report on the Global Tobacco Epidemic, 2021* [50]. In the figure, the level-of-implementation categories of “no/little implementation”, “partial implementation”, “moderate implementation”, and “high-level implementation” are mapped to the descriptions in **Table A6**, as specified and further detailed in Technical Note I of the WHO report (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, smokefree public and work places, and TAPs bans, we adjusted the level-of-implementation score creating a decimal value as follows:

- For 1) smokefree public and work 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 [114]. 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 –  $(0.5 \times \text{Compliance Score} / 10) = 2 - (0.5 \times (5/10)) = 1.75$ . 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:  $3 \times (\text{Total tax share} / 0.75)$ . Thus a country with a total tax share of 35 percent received a score of 1.4 ( $3 \times (.35 / .75)$ ).

Ultimately, most measures are weighted equally (counting as 3 points if fully implemented) except for plain packaging (counting as 1 point if fully implemented). Analysts selected 1 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 is not (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 WHO Report on the Global Tobacco Epidemic 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 WHO FCTC implementation status in Figure 2**

WHO FCTC demand-reduction measure	No/little implementation	Partial implementation	Moderate implementation	High-level implementation
<b>Increase cigarette taxation to reduce the affordability of tobacco products</b> ( <i>WHO FCTC Article 6</i> )	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.
<b>Create smokefree public and work places to protect people from the harms of tobacco smoke</b> ( <i>WHO FCTC Article 8</i> )	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).

WHO FCTC demand-reduction measure	No/little implementation	Partial implementation	Moderate implementation	High-level implementation
<b>Require tobacco packaging to carry graphic health warnings describing the harmful effects of tobacco use (WHO FCTC Article 11)</b>	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.
<b>Implement plain packaging of tobacco products (WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)</b>	Plain packaging is not mandated.	-	-	Plain packaging is mandated.
<b>Promote and strengthen public awareness about tobacco control issues and the addictive nature and harms of tobacco use through mass media information campaigns (WHO FCTC Article 12)</b>	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.
<b>Enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship – TAPS (WHO FCTC Article 13)</b>	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).
<b>Develop infrastructure to support tobacco cessation and treatment of tobacco dependence (WHO FCTC Article 14)</b>	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 cessation services routinely cost-covered.

Source: Information in this table is based on the WHO Report on the Tobacco Epidemic, 2021 [50].



## References

- [1] "Gross National Happiness – Royal Bhutanese Embassy New Delhi." <https://www.mfa.gov.bt/rbedelhi/bhutan-at-glance/gross-national-happiness/> (accessed Aug. 02, 2022).
- [2] Department of Public Health, Ministry of Health, Royal Government of Bhutan, "Noncommunicable Disease Risk Factors: Bhutan STEPS Survey Report, 2019." World Health Organization, 2020.
- [3] Tobacconomics, "Tobacco & Poverty." Feb. 2018. [Online]. Available: [https://tobacconomics.org/uploads/misc/2018/03/UIC\\_Tobacco-and-Poverty\\_Policy-Brief.pdf](https://tobacconomics.org/uploads/misc/2018/03/UIC_Tobacco-and-Poverty_Policy-Brief.pdf)
- [4] World Health Organization, "Tobacco," May 24, 2022. <https://www.who.int/news-room/fact-sheets/detail/tobacco>
- [5] U.S. Department of Health and Human Services, "The Health Consequences of Smoking - 50 Years of Progress," 2014. [Online]. Available: [https://www.ncbi.nlm.nih.gov/books/NBK179276/pdf/Bookshelf\\_NBK179276.pdf](https://www.ncbi.nlm.nih.gov/books/NBK179276/pdf/Bookshelf_NBK179276.pdf)
- [6] National Statistics Bureau, Royal Government of Bhutan, 2021 Vital Statistics Report Bhutan. 2021. [Online]. Available: [https://www.nsb.gov.bt/wp-content/uploads/dlm\\_uploads/2022/04/VSR-2021-WEB.pdf](https://www.nsb.gov.bt/wp-content/uploads/dlm_uploads/2022/04/VSR-2021-WEB.pdf)
- [7] 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: 10.1016/S0140-6736(20)30752-2.
- [8] 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.
- [9] 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: 10.1007/s10654-015-0026-5.
- [10] 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: 10.1089/pop.2010.0049.
- [11] 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: 10.1097/01.jom.0000100200.90573.df.
- [12] 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: 10.1371/journal.pone.0205120.
- [13] 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: 10.1016/j.socscimed.2007.11.020.

- [14] 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: 10.1136/tobaccocontrol-2017-053857.
- [15] J. de Beyer, C. Lovelace, and A. Yürekli, "Poverty and tobacco," *Tob Control*, vol. 10, no. 3, pp. 210–211, Sep. 2001, doi: 10.1136/tc.10.3.210.
- [16] 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: 10.1136/tc.10.3.212.
- [17] 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: 10.1007/BF03405610.
- [18] World Health Organization, Tobacco and its environmental impact: an overview. 2017. Accessed: Oct. 22, 2020. [Online]. Available: <http://apps.who.int/iris/bitstream/10665/255574/1/9789241512497-eng.pdf?ua=1>
- [19] M. Zafeiridou, N. S. Hopkinson, and N. Voulvoulis, "Cigarette Smoking: An Assessment of Tobacco's Global Environmental Footprint Across Its Entire Supply Chain," *Environ Sci Technol*, vol. 52, no. 15, pp. 8087–8094, 07 2018, doi: 10.1021/acs.est.8b01533.
- [20] "The Environmental Burden of Cigarette Butts," *Tobacco Control*, vol. 20, no. Suppl 1, May 2011, Accessed: Oct. 22, 2020. [Online]. Available: [https://tobaccocontrol.bmj.com/content/20/Suppl\\_1](https://tobaccocontrol.bmj.com/content/20/Suppl_1)
- [21] United Nations Treaty Collection, "4. WHO Framework Convention on Tobacco Control," Mar. 30, 2022. [https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=IX-4&chapter=9&clang=en](https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IX-4&chapter=9&clang=en) (accessed Mar. 30, 2022).
- [22] World Health Organization Europe, "Targets of Sustainable Goal 3." <https://www.who.int/europe/about-us/our-work/sustainable-development-goals/targets-of-sustainable-development-goal-3> (accessed Oct. 19, 2022).
- [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] World Health Organization, Global action plan for the prevention and control of noncommunicable diseases, 2013-2020. 2013. Accessed: Jul. 22, 2021. [Online]. Available: <https://apps.who.int/iris/handle/10665/94384>
- [25] United Nations Department of Economic and Social Affairs, "Do you know all 17 SDGs?" <https://sdgs.un.org/goals> (accessed Aug. 10, 2022).
- [26] Parliament of Bhutan, "Tobacco Control Act of Bhutan." <https://bnca.gov.bt/wp-content/uploads/2021/08/Tobacco-Control-Act-of-Bhutan-2010-Consolidated.pdf> (accessed Feb. 08, 2022).

- [27] Royal Government of Bhutan, Bhutan Narcotics Control Authority, "Notification BCNA/DG/1(1)/2021-2022/095," Jul. 30, 2021. <https://bnca.gov.bt/wp-content/uploads/2021/08/Final-Notification-1.pdf> (accessed Feb. 08, 2022).
- [28] The Secretariat of the WHO FCTC, "FCTC 2030," WHO FCTC. <https://fctc.who.int/who-fctc/development-assistance/fctc-2030> (accessed Aug. 10, 2022).
- [29] World Health Organization. Regional Office for South-East Asia, Global Youth Tobacco Survey (GYTS), Bhutan, 2019. New Delhi: World Health Organization. Regional Office for South-East Asia, 2020. Accessed: Jan. 27, 2022. [Online]. Available: <https://apps.who.int/iris/handle/10665/337196>
- [30] 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.
- [31] D. E. Apollonio, L. M. Dutra, and S. A. Glantz, "Associations between smoking trajectories, smoke-free laws and cigarette taxes in a longitudinal sample of youth and young adults," PLoS ONE, vol. 16, no. 2, p. e0246321, Feb. 2021, doi: 10.1371/journal.pone.0246321.
- [32] U.S. Centers for Disease Control and Prevention, "Health Effects of Secondhand Smoke," Feb. 27, 2020. [https://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/secondhand\\_smoke/health\\_effects/index.htm](https://www.cdc.gov/tobacco/data_statistics/fact_sheets/secondhand_smoke/health_effects/index.htm) (accessed Aug. 30, 2022).
- [33] Campaign for Tobacco-free Kids, "Global Issues Women and Tobacco," Nov. 12, 2020. <https://www.tobaccofreekids.org/what-we-do/global/women> (accessed Mar. 15, 2022).
- [34] U.S. Centers for Disease Control and Prevention, "Substance Use During Pregnancy," Reproductive Health, May 23, 2022. [https://www.cdc.gov/reproductivehealth/maternalinfanthealth/substance-abuse/substance-abuse-during-pregnancy.htm#:~:text=Top%20of%20Page-,Tobacco,infant%20death%20syndrome%20\(SIDS\)](https://www.cdc.gov/reproductivehealth/maternalinfanthealth/substance-abuse/substance-abuse-during-pregnancy.htm#:~:text=Top%20of%20Page-,Tobacco,infant%20death%20syndrome%20(SIDS)) (accessed Jul. 21, 2022).
- [35] Campaign for Tobacco-free Kids, "A Lifetime of Damage How Big Tobacco's predatory marketing harms the health of women and girls," May 2021. [Online]. Available: [https://www.tobaccofreekids.org/assets/content/press\\_office/2021/womens-report.pdf](https://www.tobaccofreekids.org/assets/content/press_office/2021/womens-report.pdf)
- [36] J. Roelands, M. G. Jamison, A. D. Lyerly, and A. H. James, "Consequences of Smoking during Pregnancy on Maternal Health," Journal of Women's Health, vol. 18, no. 6, pp. 867–872, Jun. 2009, doi: 10.1089/jwh.2008.1024.
- [37] S. Lange, C. Probst, J. Rehm, and S. Popova, "National, regional, and global prevalence of smoking during pregnancy in the general population: a systematic review and meta-analysis," The Lancet Global Health, vol. 6, no. 7, pp. e769–e776, Jul. 2018, doi: 10.1016/S2214-109X(18)30223-7.
- [38] Karasawa, Yuka, "The impact of betel quid chewing during pregnancy on pregnancy outcomes in Bhutan.," PHD, London School of Hygiene & Tropical Medicine, 2017. Accessed: Feb. 08, 2022. [Online]. Available: <https://doi.org/10.17037/PUBS.04189861>

- [39] Bhutan Ministry of Health and World Health Organization Bhutan, *The Big Ban, Bhutan's journey towards a tobacco-free society*. 2019.
- [40] M. Givel, "Tobacco Policymaking and Administration in Bhutan from 1991 to 2009," *International Journal of Public Administration*, vol. 34, no. 12, pp. 775–782, Oct. 2011, doi: 10.1080/01900692.2011.597479.
- [41] World Health Organization, "WHO report on the global tobacco epidemic, 2021. Country profile Bhutan.," 2021. Accessed: Feb. 08, 2022. [Online]. Available: [https://cdn.who.int/media/docs/default-source/country-profiles/tobacco/who\\_rgte\\_2021\\_bhutan.pdf?sfvrsn=b6061cc2\\_5&download=true](https://cdn.who.int/media/docs/default-source/country-profiles/tobacco/who_rgte_2021_bhutan.pdf?sfvrsn=b6061cc2_5&download=true)
- [42] Parliament of Bhutan, "The Tobacco Control Act of Bhutan." 2010.
- [43] *Addiction Journal*, "Bhutan lifts decade long tobacco ban to prevent COVID-19 transmission," Oct. 10, 2020. <https://www.addictionjournal.org/posts/bhutan-lifts-decade-long-tobacco-ban-to-prevent-covid-19-transmission> (accessed Feb. 08, 2022).
- [44] Parliament of Bhutan, "Tax Act of Bhutan 2021." 2021. [Online]. Available: <https://www.mof.gov.bt/wp-content/uploads/2021/07/Tax-ACT2407202101.pdf>
- [45] Parliament of Bhutan, "Tax Act of Bhutan 2022." Nov. 08, 2022. [Online]. Available: <https://www.nab.gov.bt/assets/uploads/docs/acts/2022/Tax Act of Bhutan 2022.pdf>
- [46] Bhutan Narcotics Control Authority, "Supply Reduction Division." <https://bnca.gov.bt/divisions/supply-reduction-division/> (accessed Aug. 02, 2022).
- [47] "2018 - CORE QUESTIONNAIRE OF THE REPORTING INSTRUMENT OF WHO FCTC."
- [48] Asia Pacific Observatory on Health Systems and Policies, "The Kingdom of Bhutan Health System Review," Vol.7 No.2, 2017. Accessed: Feb. 08, 2022. [Online]. Available: <https://apps.who.int/iris/bitstream/handle/10665/255701/9789290225843-eng.pdf?sequence=1>
- [49] Secretariat of the WHO FCTC, "Bhutan, Factsheet," WHO Framework Convention on Tobacco Control, 2020. <https://untobaccocontrol.org/impldb/bhutan/> (accessed Oct. 19, 2022).
- [50] World Health Organization, "WHO report on the global tobacco epidemic, 2021," Geneva, Switzerland, 2021. [Online]. Available: <https://www.who.int/publications/item/9789240032095>
- [51] Parliament of Bhutan, "Goods and Services Tax Act of Bhutan 2020." Jan. 16, 2020. [Online]. Available: <https://www.mof.gov.bt/wp-content/uploads/2020/07/GSTAct2020.pdf>
- [52] Orbitax, "Bhutan to Defer GST Implementation a Further Two Years — Orbitax Tax News & Alerts," Jun. 14, 2022. <https://www.orbitax.com/news/archive.php/Bhutan-to-Defer-GST-Implementa-50070> (accessed May 03, 2023).
- [53] World Health Organization, "WHO Technical Manual on Tobacco Tax Policy and Administration," Geneva, 2021.
- [54] Bhutan Narcotic Control Agency, Royal Government of Bhutan, "Public Notification BNCA/ Noti/11-12/7345." Jan. 20, 2012. [Online]. Available: <https://www.tobaccocontrollaws.org/files/live/Bhutan/Bhutan%20-%20Pub.%20Notification%20No.%207345.pdf>

- [55] P. Seldon Tshering and T. Zam, "Lifting the ban on sale of tobacco products misinterpreted as ticket to smoking in public spaces: BNCA," BBS, Jul. 28, 2022. <http://www.bbs.bt/news/?p=172653> (accessed Oct. 19, 2022).
- [56] Parliament of Bhutan, "The Tobacco Control Amendment Act 2021," 2021. [Online]. Available: <https://bnca.gov.bt/wp-content/uploads/2022/03/Tobacco-Control-Amendment-Act-2021.pdf>
- [57] The Observatory of Economic Complexity, "Processed Tobacco in Bhutan," 2020. <https://oec.world/en/profile/bilateral-product/processed-tobacco/reporter/btn> (accessed Oct. 19, 2022).
- [58] Tobacco Control Laws, "Legislation by Country India. Health Warnings/Messages Features," Accessed: Nov. 23, 2022. [Online]. Available: <https://www.tobaccocontrolaws.org/legislation/india/packaging-labeling>
- [59] World Health Organization Regional Office for Europe, "Evidence brief. How large pictorial health warnings on the packaging of tobacco products affect knowledge and behaviour." Accessed: Aug. 02, 2022. [Online]. Available: [https://www.euro.who.int/\\_data/assets/pdf\\_file/0006/276558/How-large-pictorial-health-warnings,-Evidence-Brief-Eng.pdf](https://www.euro.who.int/_data/assets/pdf_file/0006/276558/How-large-pictorial-health-warnings,-Evidence-Brief-Eng.pdf)
- [60] Secretariat of the WHO FCTC, "Guidelines for implementation of Article 14," Jan. 2013. [Online]. Available: <https://fctc.who.int/publications/m/item/guidelines-for-implementation-of-article-14>
- [61] World Health Organization Regional Office for South-East Asia, "CATCH Approach for Smokeless Tobacco Cessation in the South-East Asia Region," 2018. [Online]. Available: <https://apps.who.int/iris/bitstream/handle/10665/272608/9789290226307-eng.pdf?sequence=1&isAllowed=y>
- [62] World Health Organization, "Coronavirus disease (COVID-19): Tobacco," May 25, 2022. <https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-covid-19-tobacco> (accessed Aug. 02, 2022).
- [63] 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>
- [64] The Straits Times, "Bhutan lifts tobacco ban to temper demand for smuggled cigarettes during Covid-19 pandemic," Aug. 29, 2020. <https://www.straitstimes.com/asia/south-asia/bhutan-lifts-tobacco-ban-to-temper-demand-for-smuggled-cigarettes-during-covid-19> (accessed Feb. 08, 2022).
- [65] P. C. Gupta, Puntambekar, Namrata, and Assunta, Mary, "South Asia's evolving tobacco hydra: moving from quandary to hope," Tobacco Control, vol. 31, pp. 142–145, doi: oi:10.1136/tobaccocontrol-2021-057013.

- [66] Secretariat of the WHO FCTC, "Protocol to Eliminate Illicit Trade in Tobacco Products." May 03, 2013. [Online]. Available: <https://fctc.who.int/publications/i/item/9789241505246>
- [67] M. Gallien and G. Occhiali, "No smoking gun: tobacco taxation and smuggling in Sierra Leone," *Tob Control*, p. tobaccocontrol-2021-057163, Jun. 2022, doi: 10.1136/tobaccocontrol-2021-057163.
- [68] Lamsang, Tenzing, "RBP says large scale and uncontrollable Tobacco smuggling likely to bring COVID into the heart of Bhutan," *The Bhutanese*, Jun. 19, 2021. <https://thebhutanese.bt/rbp-says-large-scale-and-uncontrollable-tobacco-smuggling-likely-to-bring-covid-into-the-heart-of-bhutan/> (accessed Aug. 02, 2022).
- [69] Conference of the Parties to the WHO Framework Convention on Tobacco Control, "4. a Protocol to Eliminate Illicit Trade in Tobacco Products," *United Nations Treaty Collection*, Mar. 15, 2022. [https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=IX-4-a&chapter=9&clang=en](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IX-4-a&chapter=9&clang=en) (accessed Mar. 15, 2022).
- [70] Institute for Health Metrics and Evaluation (IHME), "The Global Burden of Disease Results Tool." University of Washington, Seattle, WA, 2019. [Online]. Available: <http://ghdx.healthdata.org/gbd-results-tool>
- [71] Institute for Health Metrics and Evaluation (IHME), "Frequently Asked Questions." <https://www.healthdata.org/gbd/faq#What%20is%20a%20DALY> (accessed May 08, 2023).
- [72] World Health Organization, "Global Health Expenditures Database." online, 2020. [Online]. Available: <https://apps.who.int/nha/database>
- [73] 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: 10.1097/PHH.0000000000000780.
- [74] 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>
- [75] 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: 10.1016/j.socscimed.2016.10.020.
- [76] 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.
- [77] Convention Secretariat, "Needs Assessment for implementation of the WHO Framework Convention on Tobacco Control in Bhutan," May 2011. [Online]. Available: file:///C:/Users/racha/Downloads/bhutan-needs-assessment-2011.pdf
- [78] Secretariat of the WHO FCTC, "Guidelines for implementation of Article 6." Jan. 01, 2017. [Online]. Available: <https://fctc.who.int/publications/m/item/price-and-tax-measures-to-reduce-the-demand-for-tobacco>

- [79] 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.
- [80] World Health Organization, "WHO Report on the Global Tobacco Epidemic, 2021. Country profile Timor-Leste." [Online]. Available: [https://cdn.who.int/media/docs/default-source/country-profiles/tobacco/who\\_rgte\\_2021\\_timor-leste.pdf?sfvrsn=147a152c\\_5&download=true](https://cdn.who.int/media/docs/default-source/country-profiles/tobacco/who_rgte_2021_timor-leste.pdf?sfvrsn=147a152c_5&download=true)
- [81] UNDP and Secretariat of the WHO FCTC, "National Coordinating Mechanisms for Tobacco Control: Toolkit for Parties to implement Article 5.2 (a) of the WHO FCTC." UNDP and FCTC Secretariat. Accessed: Feb. 03, 2021. [Online]. Available: <http://www.who.int/fctc/implementation/cooperation/5-2-toolkit/en/>
- [82] World Health Assembly, "Fifty-fourth World Health Assembly, Transparency in tobacco control process." May 22, 2001. [Online]. Available: [https://apps.who.int/gb/archive/pdf\\_files/WHA54/ea54r18.pdf](https://apps.who.int/gb/archive/pdf_files/WHA54/ea54r18.pdf)
- [83] "2021 global progress report on implementation of the WHO Framework Convention on Tobacco Control." <https://fctc.who.int/publications/i/item/9789240041769> (accessed Jun. 07, 2023).
- [84] Secretariat of the WHO FCTC, "Guidelines for implementation of Article 5.3." Jan. 01, 2013. [Online]. Available: <https://fctc.who.int/publications/m/item/guidelines-for-implementation-of-article-5.3>
- [85] T. Vos et al., "Global burden of 369 diseases and injuries 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. 1204–1222, Oct. 2020, doi: 10.1016/S0140-6736(20)30925-9.
- [86] 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>
- [87] 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.
- [88] 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: 10.5271/sjweh.3848.
- [89] 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: 10.1111/ijcp.12900.
- [90] D. Levy, D. B. Abrams, J. Levy, and L. Rosen, "Complying with the framework convention for tobacco control: an application of the Abridged SimSmoke model to Israel," *Isr J Health Policy Res*, vol. 5, Sep. 2016, doi: 10.1186/s13584-016-0101-8.

- [91] D. T. Levy, H. Fouad, J. Levy, A. D. Dragomir, and F. El Awa, "Application of the Abridged SimSmoke model to four Eastern Mediterranean countries," *Tob Control*, vol. 25, no. 4, pp. 413–421, 2016, doi: 10.1136/tobaccocontrol-2015-052334.
- [92] 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: 10.1016/j.amepre.2009.11.016.
- [93] T. Chipty, "Study of the Impact of the Tobacco Plain Packaging Measure on Smoking Prevalence in Australia," Analysis Group, Inc., 2016. [Online]. Available: [http://www.health.gov.au/internet/main/publishing.nsf/content/491CE0444F7B0A76CA257FBE00195BF3/\\$File/PIR%20of%20Tobacco%20Plain%20Packaging%20-%20with%20Addendum.docx](http://www.health.gov.au/internet/main/publishing.nsf/content/491CE0444F7B0A76CA257FBE00195BF3/$File/PIR%20of%20Tobacco%20Plain%20Packaging%20-%20with%20Addendum.docx)
- [94] World Health Organization, "Tobacco Interventions for the Appendix 3 of the Global Action Plan for Non Communicable Disease.," 2017. [https://cdn.who.int/media/docs/default-source/ncds/mnd/2022\\_technical\\_brief\\_tobacco\\_31\\_may\\_r1.pdf?sfvrsn=70a3c835\\_3](https://cdn.who.int/media/docs/default-source/ncds/mnd/2022_technical_brief_tobacco_31_may_r1.pdf?sfvrsn=70a3c835_3)
- [95] 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>
- [96] LM. Ho, C. Schafferer, JM. Lee, CY. Yeh, and CJ. Hsieh, "Raising cigarette excise tax to reduce consumption in low-and middle-income countries of the Asia-Pacific region:a simulation of the anticipated health and taxation revenues impacts," *BMC public health*, vol. 18, no. 1, Oct. 2018, doi: 10.1186/s12889-018-6096-z.
- [97] 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*, 2016, pp. 250–7. doi: 10.2471/blt.15.164707.
- [98] 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: 10.1093/ntr/ntaa134.
- [99] International Monetary Fund, "Real GDP Growth - Annual percent change," *World Economic Outlook Dataset*. [https://www.imf.org/external/datamapper/NGDP\\_RPCH@WEO/OEMDC/ADVEC/WEOWORLD](https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD) (accessed Dec. 17, 2020).
- [100] 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.
- [101] 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: 10.1016/j.amepre.2009.12.011.



- [102] 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: 10.1016/j.drugalcdep.2013.03.008.
- [103] World Health Organization, "Global Health Observatory (GHO)," 2021. <https://www.who.int/data/gho> (accessed Mar. 14, 2021).
- [104] 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: 10.1370/afm.1400.
- [105] 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: 10.1371/journal.pone.0204903.
- [106] S. Castro Lopes, M. Guerra-Arias, J. Buchan, F. Pozo-Martin, and A. Nove, "A rapid review of the rate of attrition from the health workforce," in *Hum Resour Health*, 2017. doi: 10.1186/s12960-017-0195-2.
- [107] World Health Organization, "Part III. Training for primary care providers," Geneva, 2013.
- [108] "New Occupant Load Factors Coming to NFPA 101," MeyerFire Blog, 2017. <https://www.meyerfire.com/blog/new-occupant-load-factors-coming-to-nfpa-101>
- [109] World Health Organization, "WHO-CHOICE Unit Cost estimates for service delivery - Estimation File." http 2010.
- [110] 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: 10.1186/s12962-018-0095-x.
- [111] The World Bank, "World Bank Open Data: Free and open access to global development data." The World Bank Data Catalog, 2019.
- [112] Health Services Executive of Ireland, "Brief Intervention for Smoking Cessation," 2012.
- [113] 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: 10.1596/1813-9450-8805.
- [114] 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: 10.2471/BLT.12.113878.

