



Investment Case for Tobacco Control in

LAO PDR

The case for scaling up
WHO FCTC implementation



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The Case for Investing in WHO FCTC Implementation in Lao PDR

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More than **6,700** Laotians die every year due to tobacco-related illness, accounting for nearly **15%** of all deaths in the country.

Tobacco costs Lao PDR

LAK 3.6 trillion

every year, equivalent to

2.3% of its GDP

in 2017.



Investing now in seven tobacco control measures will prevent more than

25,000 deaths

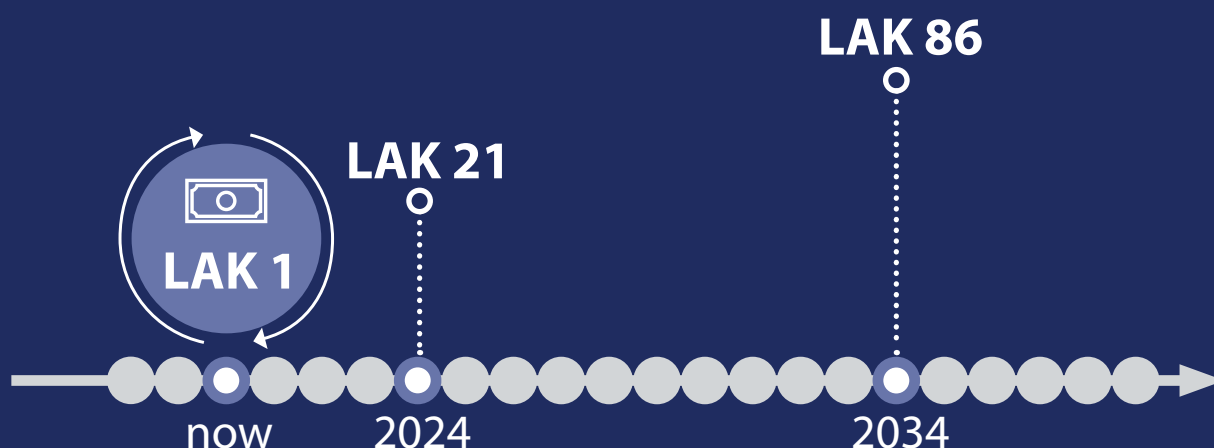
and avert

LAK 10 trillion

in health costs and economic losses by 2034.



For every **Lao kip** invested in the seven tobacco control measures today, Lao PDR will receive **LAK 21** in averted costs and economic losses by 2024 and **LAK 86** by 2034.



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Table of Contents

1. Executive summary	1
2. Introduction	5
3. Tobacco control in Lao PDR: status and context	8
3.1 Tobacco use prevalence, social norms, and awareness-raising	8
3.2 The status of WHO FCTC demand reduction measures	9
3.3 Tobacco use and the COVID-19 pandemic	14
3.4 National tobacco control legislation, strategy and coordination	14
4. Methodology	17
5. Results	18
5.1 The current burden of tobacco use: health and economic costs	18
5.2 Implementing policy measures that reduce the burden of tobacco use	21
5.3 Health benefits – lives saved	22
5.4 Economic benefits – costs averted	22
5.5 The return on investment (ROI)	25
6. Examining additional impacts: Equity, tax revenue, and the SDGs	29
6.1 Equity analysis: benefits for lower-income populations of increasing cigarette taxes	29
6.2 Tax analysis: the impact of increasing cigarette taxes on government revenue	31
6.3 The Sustainable Development Goals and the WHO FCTC	33
7. Conclusion and recommendations	34
8. Methodology annex	37
8.1 Overview	37
8.2 Component one: current burden	38
8.3 Component two: policy/intervention scenarios	40
8.4 Tax revenue analysis	49
9. References	51

This tobacco control investment case highlights the enormous costs of tobacco in Lao People's Democratic Republic (Lao PDR) 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 (WHO FCTC) can play an important role in strengthening sustainable development in Lao PDR.



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1. Executive summary

Overview

Tobacco is a health and sustainable development issue. 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).

This report presents the findings of the case for investing in tobacco control in Lao PDR. In line with the the [WHO Framework Convention on Tobacco Control \(WHO FCTC\) Global Strategy to Accelerate Tobacco Control](#) and according to the stated priorities of the Government of Lao PDR, it measures the costs and benefits—in health and economic terms—of implementing seven priority tobacco control measures. The seven measures are:

- 1 Increase tobacco taxation to reduce the affordability of tobacco products.**
(WHO FCTC Article 6)
- 2 Enforce ban on smoking in all indoor public and work places to protect people from the harms of tobacco smoke.** (WHO FCTC Article 8)
- 3 Enforce rotation of graphic health warnings that cover 75 percent of packaging.**
(WHO FCTC Article 11)
- 4 Implement plain packaging of tobacco products** (WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)
- 5 Promote and strengthen public awareness about tobacco control issues and the harms of tobacco use through mass media information campaigns.**
(WHO FCTC Article 12)
- 6 Implement and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship.**
(WHO FCTC Article 13)
- 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)

Main findings

In 2017, tobacco use cost the Lao economy LAK 3.6 trillion, equivalent to 2.3 percent of its GDP. These annual costs include a) LAK 240 billion in healthcare expenditures, and b) LAK 3.3 trillion in lost productive capacities due to tobacco-attributable mortality and disability as well as workplace smoking breaks. The productivity losses from current tobacco use in Lao PDR—93 percent of all tobacco-related costs—indicate that tobacco use impedes development in Lao PDR 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 more productive labour force.

Every year, tobacco use kills more than 6,700 Laotians, with 61 percent of these deaths among individuals under age 70 (i.e. premature death). More than 20 percent of lives lost from tobacco use are due to exposure to secondhand smoke.

By acting now, the Government of Lao PDR can reduce the national burden from tobacco use. The investment case findings demonstrate that implementing seven proven WHO FCTC measures would, over the next 15 years (2020-2034):

Avert LAK 10.1 trillion in economic losses. Of this total, LAK 9.4 trillion is attributable to avoiding indirect losses due to tobacco-attributable mortality and ill-health. The tobacco control measures stimulate economic growth by ensuring that fewer people 1) die due to tobacco-attributable diseases, 2) miss days of work due to disability or sickness, and 3) work at a reduced capacity due to smoking breaks or tobacco-related health issues.

Lead to LAK 679 billion in savings through avoidance of tobacco-attributable healthcare expenditures. Of this, the Government would save LAK 315 billion in healthcare expenditures, citizens would save LAK 329 billion in out-of-pocket health-care costs, and LAK 34 billion would be saved from other sources of healthcare expenditures.

Save 25,269 lives and reduce the incidence of disease. This would contribute to Lao PDR's efforts to achieve SDG Target 3.4, which aims to reduce by one-third premature mortality from non-communicable diseases (NCDs) by 2030. Implementing the WHO FCTC measures would prevent over 8,000 premature deaths from the four main NCDs—cardiovascular disease (CVD), diabetes, cancer, and chronic respiratory disease—by 2030, the equivalent of about 12 percent of the needed reduction in premature mortality to achieve SDG Target 3.4.

Provide economic benefits (LAK 10.1 trillion) that significantly outweigh the costs of implementing the seven WHO FCTC measures (LAK 118 billion). Each of the WHO FCTC provisions is highly cost-effective. Increasing cigarette taxes has the highest return-on-investment (758:1), followed by expanding and enforcing comprehensive bans on tobacco advertising, promotion, and sponsorship (324:1), mass media campaigns (124:1), implementing plain packaging of tobacco products (124:1), enforcing smokefree public and work places (84:1), requiring rotation of health warnings (83:1), and cessation support by training health professionals to provide brief advice to quit tobacco use (11:1).

In addition to these main findings, this investment case separately examined a hypothetical scenario in which the Investment License Agreement (ILA), which places a moratorium on tobacco taxation increases, was never signed and implemented. In this examined scenario, tax increases over the next five years would generate nearly LAK 1.8 trillion¹ in government revenue. This represents LAK 354 billion annually, which is equivalent to over one-fifth (22 percent) of the Government's 2018 total healthcare expenditures.

Increasing cigarette taxes in Lao PDR 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 healthcare expenditures [48], [88]. During the first year of the modeled tax increase, **nearly 57 percent of the deaths averted from increasing cigarette taxes will be among the poorest 40 percent of the population.** Cigarette tax increases would further benefit Lao 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 increases in tax for all tobacco products (not only cigarettes).

1 Discounted value - 3 percent discount rate.

Recommendations

This report recommends actionable steps, in addition to the modeled WHO FCTC provisions, that the Government of Lao PDR can take to strengthen a whole-of-government approach to tobacco and its development consequences. By investing in these recommendations, Lao PDR can accelerate its efforts towards achieving the Sustainable Development Goals (SDGs) including the target for a one-third reduction in premature mortality from NCDs as well as goals to end poverty, reduce inequality and grow the economy. Through the FCTC 2030 Project, the Secretariat of the WHO FCTC, UNDP and WHO and other partners stand ready to support the Government of Lao PDR to reduce the social, economic, and environmental burdens that tobacco continues to place on its country.

- 1** Ensure that the Investment License Agreement (ILA) with the tobacco industry is not extended so that taxes can be raised and other tobacco control measures implemented fully, for public health and economic benefits. Any agreements should be in line with the laws of Lao PDR and be compatible with the obligations under the WHO FCTC and its protocols.
- 2** Fully implement and enforce the Tobacco Control Law (Amended) 2021, adopted by the National Assembly on 16 November 2021 and promulgated with the approval of the President on 29 December 2021. This replaces the 2009 law and includes strengthened tobacco control measures, such as prohibiting the use, production, import, export and sale of novel and emerging nicotine and tobacco products; plain packaging; requiring a report on ingredients in tobacco products, marketing costs and others; and comprehensively banning tobacco advertising, promotion and sponsorship, including a ban on point of sale product display and advertising and sale of tobacco products through electronic and social media.
- 3** Strengthen multisectoral coordination on tobacco control by empowering the National Committee for Tobacco Control and the Tobacco Control Unit, and by having a comprehensive tobacco control strategy, financed by the Tobacco Control Fund with proper oversight and accountability procedures in place.
- 4** Take action to protect public health policy making from tobacco industry interference, such as through a Code of Conduct applicable to the whole of government.

2. Introduction

Tobacco is one of the world's leading health threats, and a main risk factor for non-communicable diseases (NCDs) including cancers, diabetes, chronic respiratory disease and cardiovascular disease. In Lao PDR, around 1.5 million people (32 percent of adults aged 15 and older) use tobacco products [1], leading to more than 6,700 deaths every year [2]. Sixty-one percent of those deaths occur among those under age 70 [2].

Alongside the cost to health, tobacco imposes a substantial economic burden. A 2018 study (based on 2012 data) found that the costs of smoking² 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 [3]. Further, tobacco use can reduce productivity by permanently or temporarily removing individuals from the labor market due to poor health [4]. When people die prematurely, the labor output that they would have produced in their remaining years is lost. In addition, people with poor health are more likely to miss days of work (absenteeism) or to work at a reduced capacity while at work (presenteeism) [5], [6].

Tobacco use may displace household expenditure that would otherwise go to fulfilling basic needs, including food and education [7]–[9], contributing to hunger and impoverishment of families [10], [11]. It imposes health and socio-economic challenges on vulnerable populations including the poor, women and young people [12]. Further, tobacco production causes environmental damage including soil degradation, water pollution and deforestation [13]–[15]. Given the far-reaching health and development impacts of tobacco, and the multisectoral nature of the interventions required, effective tobacco control requires the engagement of non-health sectors within the context of a whole-of-government and whole-of-society approach.

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 SDGs, particularly SDG 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. 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 [16].

2 Defined as either 'direct costs' such as hospital fees or 'indirect costs' representing the productivity loss from morbidity and mortality.

Lao PDR signed the WHO Framework Convention on Tobacco Control (WHO FCTC) in 2004 and ratified it in 2006 [17]. In 2009, Lao PDR adopted the national Tobacco Control Law; and in subsequent years, additional legislation were passed to support implementation of the law [18], [19], [20].

In 2021, Lao PDR adopted a comprehensive tobacco control law that closed many of the gaps in the 2009 law and is more in line with the WHO FCTC. This is now Lao PDR's primary tobacco control legislation. A Prime Minister's Decree adopted in 2019 details the penalties and measures to implement the tobacco control law and regulations will need to be updated to reflect the provisions of the 2021 Tobacco Control Law (Amended). The Code of Conduct issued by the Minister of Health in 2018, articulates principles on the interaction between government officials and the tobacco industry to ensure adherence to WHO FCTC Article 5.3 [19].

Full implementation and enforcement of existing policies can generate additional health and economic gains for Lao PDR. For example, through strengthening taxes on tobacco products, smokefree public and work places, packaging and labelling, the ban tobacco advertising, promotion and sponsorship, and provision of cessation services. Realizing the full benefits of these measures depends on concerted and coordinated efforts from multiple sectors of government, from high-level leadership as well as the support of civil society and an informed public. It also requires due attention to protecting against tobacco industry interference in policy-making.

In 2020, the Secretariat of the WHO FCTC, UNDP, WHO and the Southeast Asia Tobacco Control Alliance (SEATCA) undertook a joint mission with partners in Lao PDR to initiate this investment case. The investment case is part of the support made available to Lao PDR as an FCTC 2030 project country.³

3 The FCTC 2030 project is a global initiative funded by the Governments of the Australia, Norway and the United Kingdom to support countries to strengthen WHO FCTC implementation to achieve the SDGs. As of 2022, Lao PDR is one of 33 countries worldwide that have participated in the FCTC 2030 project [21].

An investment case analyzes the health and economic costs of tobacco use as well as the potential gains from scaled-up implementation of WHO FCTC measures. It identifies which WHO FCTC demand-reduction measures are likely to produce the largest health and economic returns for Lao PDR, based on the return on investment (ROI). In consultation with the Government of Lao PDR, the following seven key WHO FCTC provisions were selected to be modeled within the investment case:

- 1** **Beginning in 2026, increase cigarette taxation to reduce the affordability of tobacco products as soon as possible.** *(WHO FCTC Article 6)*
- 2** **Enforce bans on smoking in all indoor public and work places to protect people from the harms of tobacco smoke.** *(WHO FCTC Article 8)*
- 3** **Enforce rotation of graphic health warnings that cover 75 percent of packaging.** *(WHO FCTC Article 11)*
- 4** **Implement plain packaging⁴ of tobacco products.** *(WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)*
- 5** **Promote and strengthen public awareness about tobacco control issues and the harms of tobacco use through mass media information campaign.** *(WHO FCTC Article 12)*
- 6** **Implement and enforce a comprehensive ban on all forms of tobacco advertising, promotion and sponsorship.** *(WHO FCTC Article 13)*
- 7** **Promote cessation of tobacco use and treatment for tobacco dependence.** *(WHO FCTC Article 14)*

Chapter 3 of this report provides an overview of tobacco control in Lao PDR, including tobacco use prevalence as well as challenges and opportunities. **Chapter 4** summarizes the methodology of the investment case (see **Annex** and **Technical Appendix⁵** for more detail). **Chapter 5** reports the main findings of the economic analysis. **Chapter 6** examines the impact that increasing cigarette taxes has on government revenue and equity, as well as the contributions that tobacco control measures make to Lao PDR's fulfillment of the Sustainable Development Goals. The report concludes under **Chapter 7** with recommendations.

4 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>

5 Available upon request.

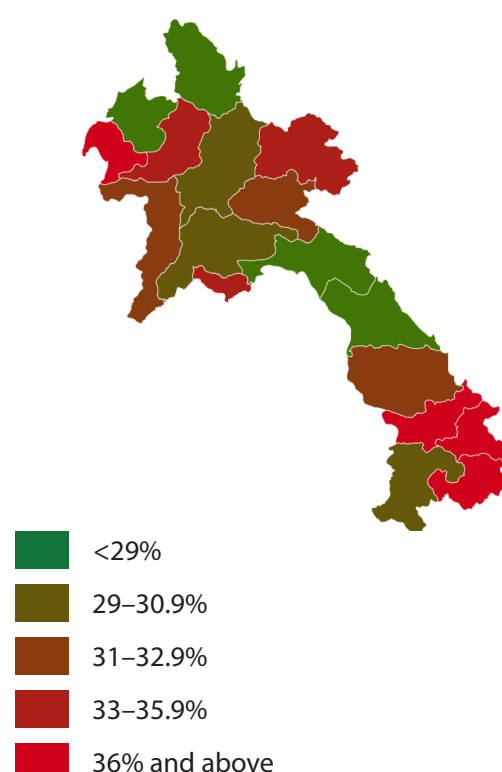
3. Tobacco control in Lao PDR: status and context

3.1 Tobacco use prevalence, social norms, and awareness-raising

Tobacco prevalence in Lao PDR is among the highest in the Southeast Asia region [1].⁶ According to the paper by Xangsayarath, P. et al on results from the 2015 National Tobacco Adult Tobacco Survey, 32 percent of Lao people aged 15 years or older were current tobacco users (51 percent of men and 15.4 percent of women); and tobacco use increases with age where among individuals aged 55 or older, more than six in 10 men and four in 10 women use tobacco [1]. According to findings from the Lao Social Indicator Survey II conducted in 2017, tobacco use is most pronounced in the Saravane, Attapeu, and Sekong provinces in southern Lao PDR (see **Figure 1**) [22]. High prevalence rates may be linked in part to cultural norms around smoking, with cigarettes often given as gifts during ceremonial events; offered to welcome visitors into homes; and linked with masculinity and male social bonding in some segments of Laotian society [23].

Cigarette use is the most prevalent form of tobacco use among men, representing 95 percent of all tobacco use [1]. Tobacco consumption is more mixed among women, with about 60 percent consuming chewing tobacco and the remainder consuming cigarettes. Over 92 percent of cigarette users smoke daily, and on average they consume over a half of pack of cigarettes each day [1].

Fig. 1: Tobacco use prevalence, by province⁷



⁶ From the WHO Report on the Global Tobacco Epidemic 2019, Tables 1.3 and 1.6, the adult daily smoking prevalence in the Southeast Asian countries are as follows (from highest to lowest): Indonesia 28%, Timor-Leste 28%, Lao PDR 24%, the Philippines 19%, Malaysia 18%, Thailand 17%, Cambodia 16%, Myanmar 16%, Singapore 13%, Brunei 12%, Viet Nam (n/a) [24].

⁷ The source for tobacco use prevalence by province is the Lao Social Indicator Survey II 2017 (LSIS II 2017) rather than the Lao PDR National Adult Tobacco Survey used in the investment case model and cited throughout the report, resulting in slightly different prevalence figures.

According to an analysis of the results of the 2015 NATS, 19.1 percent of current cigarette smokers say they will quit someday, while 73 percent have no interest in quitting [1].

3.2 The status of WHO FCTC demand reduction measures

Strong fiscal and regulatory measures influence societal norms by signalling that tobacco use is harmful, not only for users but also for the people around them including family, colleagues and co-workers. Evidence suggests that the Laotian government's tobacco control efforts are making a material impact. Current smokers who noticed anti-tobacco media messaging or health warnings on cigarette packages were three times more likely to have made a quit attempt in the past year compared to those who did not notice [25].

When this investment case report was prepared, the 2009 Tobacco Control Law and several decrees were in effect. In December 2021, Lao PDR adopted the 2021 Tobacco Control Law (Amended), which includes a comprehensive ban on smoking in indoor public and work places; novel and emerging tobacco and nicotine products; tobacco advertising, promotion and sponsorship; and included a provision for plain packaging. This new law closes many of the gaps in the previous one. Strong implementation of the 2021 Tobacco Control Law will enable Lao PDR to protect the health of its population and fulfill its obligations as a Party to the WHO FCTC. This section summarizes the state of WHO FCTC demand reduction measures and the target level advocated for and analyzed within the investment case.



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

In Lao PDR, taxes account for 18.8 percent of the retail price of the most sold cigarette brand. A 25-year Investment License Agreement (ILA) dated 23 November 2001 between the Government of Lao PDR, Coralma International and S3T Pte Ltd, with about 79 percent of the market share in 2019, restricts the government from raising taxes on its products [26], [27]. Frozen tax rates coupled with rising income means that cigarettes are becoming more affordable [24]. In addition, the government is also unable to capitalize on a valuable source of revenue.

There is substantial scope to reach what is considered in the WHO Report on the Global Tobacco Epidemic as the highest level of achievement, which is for total taxes to represent at least 75 percent of the retail price. Additionally, WHO and the WHO FCTC Article 6 Guidelines for implementation recommend uniform specific taxes, for tax rates to be monitored, increased and adjusted on a regular basis, potentially annually, taking into account inflation and income growth.

The investment case examines a scenario in which cigarette taxes are increased to reach at least 75 percent of the retail price, as considered in the WHO Report on the Global Tobacco Epidemic as the highest level of achievement, and specific excise taxes are increased to reach 70 percent of the retail price, as recommended in the WHO Technical Manual on Tobacco Tax Administration. Beginning in 2026 when the ILA expires, taxes are steadily raised, quadrupling the cost of a pack of cigarettes by 2034—a real price increase of LAK 21,000.



Enforce ban on smoking in all indoor public and work places to protect people from the harms of tobacco smoke (WHO FCTC Article 8)

The 2009 Tobacco Control Law bans smoking in all indoor public places, work places and public transport; and the 2016 Ministry of Health's Agreement "Governing Implementation of the Tobacco Control Law" states that smoking is permitted only in designated outdoor areas and at least 10 meters away from the building [19]. These provisions are also in the newly adopted 2021 Tobacco Control Law (Amended). However, there are concerns related to compliance. According to the 2015 National Adults Tobacco Survey, about six in 10 adults were exposed to second-hand smoke in government buildings and restaurants [28]. The WHO Report on the Global Tobacco Epidemic 2019 also indicated a "moderate" average compliance score and "low" compliance in cafes, pubs and bars [24]. The investment case examines the impact of strengthened enforcement and high compliance with the law.



Enforce rotation of graphic health warnings that cover 75 percent of packaging (WHO FCTC Article 11)

The 2016 Ministry of Health Agreement provided six graphic health warnings for use and stated that these should cover 75 percent of the principal surface areas and should be changed from time to time, every two years or at other intervals based on specialist research [29]. Reports indicate that tobacco companies have not complied with this graphic health warning requirement [27]. The investment case examines the impact of enforcing the law and requiring regular rotation of graphic health warnings.



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

Lao PDR currently does not require plain packaging of tobacco products. However, the 2021 Tobacco Control Law (Amended), includes a provision on plain packaging. The investment case examines the impact of implementing and enforcing plain packaging requirements.



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

According to the WHO Report on the Global Tobacco Epidemic 2019, Lao PDR has not implemented an anti-tobacco national mass media campaign in the last few years [24]. The investment case examines the impact of conducting a mass media campaign that promotes and strengthens public awareness about tobacco control issues and the harms of tobacco use, and is researched and tested with a targeted audience and evaluated for impact.



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

Through the 2009 Tobacco Control Law, 2010 Decree on tobacco advertising, promotion and sponsorship, and the 2016 Ministry of Health Agreement governing implementation of the Tobacco Control Law, Lao PDR has a comprehensive ban on tobacco advertising, promotion and sponsorship (TAPS), with the exception of point of sale advertising, depiction of tobacco use or tobacco products in media, brand stretching or brand sharing and some forms of promotional practices (e.g. promotional discounts, retailer incentives) [19]. These gaps have now been closed by the 2021 Tobacco Control Law (Amended), though the Prime Minister's Decree on "Penalties and Measures to Implement the Tobacco Control Law and Regulations" will need to be updated with these amended provisions and enforced. Evidence shows that comprehensive marketing bans are effective in reducing tobacco use while partial bans have little to no effect, and with tobacco companies' ability and agility to engage in a wide variety of marketing activities, incomplete bans are being exploited [30]. The investment case examines the impact of implementing and enforcing a comprehensive ban on tobacco advertising, promotion and sponsorship.



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)

A cross-sectional national survey administered to 855 medical doctors in provincial health facilities throughout the central, northern and southern regions of Lao PDR in 2007 found that 78 percent were engaged in providing cessation support though only 24 percent had received any training. Nearly all agree that health professionals should routinely ask about their patients' smoking habits and to advise them to quit [31]. According to the 2015 National Adult Tobacco Survey findings, only 19.5 percent of current cigarette smokers have ever been advised to quit by a health care provider [1]. The investment case examines the impact of training primary health care providers to provide tobacco cessation advice.

Table 1 summarizes the existing state of WHO FCTC demand reduction measures and compares them against a target that would represent a high level of implementation for each measure. Reaching target goals can further reduce tobacco consumption. The impact of each policy measure—individually and in combination—is described in **Annex Table A2**.

Table 1: Summary of the current state of WHO FCTC demand reduction measures in Lao PDR and target goals

Tobacco Control Policy	Lao PDR Baseline*	Modeled Implementation Target
Increase tobacco taxation to reduce the affordability of tobacco products (<i>WHO FCTC Article 6</i>)	Tax share equivalent to 18.8% of the retail price of the most sold brand of cigarettes.	Increase taxes on cigarettes to at least 75% of the retail price with at least a 70% share of excise tax. Implement regular tax increases to outpace inflation and income growth. ⁸
Enforce ban on smoking in all indoor public and work places to protect people from the harms of tobacco smoke (<i>WHO FCTC Article 8</i>)	Smoking is prohibited in all indoor public and work places. Compliance with the law is described as “medium”.	Strengthen enforcement of the law to drive high compliance levels.
Require tobacco packaging to carry graphic health warnings describing the harmful effects of tobacco use (<i>WHO FCTC Article 11</i>)	Graphic warning labels are required to cover 75% of tobacco packaging and rotated regularly; however tobacco companies have not complied with the regulation.	Enforce the law to ensure warning labels are regularly rotated and refreshed (at least every two years).
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>)	Plain packaging requirements are not currently in place.	Implement and enforce plain packaging of tobacco products.
Promote and strengthen public awareness about tobacco control issues and the harms of tobacco use through mass media information campaigns (<i>WHO FCTC Article 12</i>)	No national anti-smoking mass media campaigns have recently been conducted.	Implement a nationwide anti-smoking mass media campaign that is researched and tested with a targeted audience, and evaluated for impact.
Implement and enforce a comprehensive ban on all forms of tobacco advertising, promotion and sponsorship (<i>WHO FCTC Article 13</i>)	Most forms of TAPs are banned; however, some have not been banned (e.g. point of sale advertising, product depiction in media, promotional discounts, free distribution).	Implement and enforce a comprehensive ban on all forms of tobacco advertising, promotion and sponsorship.
Promote cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use (<i>WHO FCTC Article 14</i>)	Four in five smokers have never received advice to quit using tobacco from a health provider.	Train health providers to identify tobacco users and to provide tobacco cessation advice; scale up 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, 2019: Lao PDR Country profile [24]

8 The investment case examines the impact of raising taxes to levels that would meet what is considered in the WHO Report on the Global Tobacco Epidemic as the highest level of achievement, which is for total taxes to represent at least 75 percent of the retail price and the recommendation in the WHO Technical Manual on Tobacco Administration for excise taxes to represent at least 70 percent of the retail price. Beginning in 2026 when the agreement with Imperial Tobacco expires, taxes are steadily raised, quadrupling the cost of a pack of cigarettes by 2034—a real increase of LAK 21,000.

3.3 Tobacco use and the COVID-19 pandemic

The global COVID-19 pandemic has strained health systems worldwide, and the economic impact of the outbreak has been immense. According to WHO, evidence indicates that smokers are more likely to suffer more severe outcomes of COVID-19, such as admission into intensive care units and death, than never smokers. Furthermore, severe forms of COVID-19 or deaths due to COVID-19 are more frequent in people with comorbidities that are related to tobacco use, including chronic obstructive pulmonary disease, lung cancer and cardiovascular disease [32]. Moreover, tobacco use is also proven to worsen the outcomes of other communicable diseases such as tuberculosis and HIV/AIDS [33].

3.4 National tobacco control legislation, strategy and coordination

Amendment of Tobacco Control Law

When this investment case report was being developed, the 2009 Tobacco Control Law was in effect [19]. There were also additional legislation to support implementation of the law—for example, Decree No. 369/PMO in 2010 on the “Ban on advertising that promotes the consumption of tobacco products”; Decree No. 214/PMO in 2012 on the “National Tobacco Control Committee”; Decree No. 155/G in 2013 on the “Tobacco Control Fund”; Decree No. 2073/MoF in 2014 on the “Tobacco Control Fund Collection” and Agreement No. 1067/MoH in 2016 on the “Governing implementation of the Tobacco Control Act” [19]. Some key legislative gaps include: i) not requiring the disclosure of the content and emission of tobacco products; ii) not specifying that tobacco taxes are to be increased regularly taking into account income growth and inflation; and iii) not banning internet sales of tobacco products, point of sale advertising, depiction of tobacco in media, among others.

Since January 2022, following the adoption of the 2021 Tobacco Control Law (Amended) by the National Assembly in November 2021 and the approval of the President on 29 December 2021, the new law came into effect 15 days after publication in the official gazette. The 2021 Tobacco Control Law (Amended) is comprehensive, includes provisions such as a ban on novel and emerging nicotine and tobacco products, introduces plain packaging and closes the aforementioned gaps in the 2009 law.

The Prime Minister’s Decree No. 52 adopted in 2019 details the penalties and measures to implement the tobacco control law. This will be updated to reflect the provisions in the 2021 Tobacco Control Law (Amended).

The Code of Conduct issued by the Minister of Health, No. 3217/MOH in 2018, articulates principles on the interaction between government officials and the tobacco industry to ensure adherence to WHO FCTC Article 5.3 [34].

Multisectoral coordinating mechanism and financing

The 2009 Tobacco Control Law established the National Committee for Tobacco Control and the 2012 Decree describes its organization and activities [20]. The Committee is multisectoral, chaired by the Minister of Health and composed of five ministries—namely Ministries of Finance, Industry and Commerce, Education and Sports, Information, Culture and Tourism and Planning and Investment. The Committee meets every six months. There are also provincial tobacco control committees in 10 of the 17 provinces.

Despite the presence of the multisectoral governance mechanism, engagement from non-health ministries in tobacco control seem limited, possibly because of the absence of a budget and a national tobacco control strategy that would provide overall strategic directions, clear areas of action, and monitoring and accountability mechanisms. As part of the FCTC 2030 project, the process of supporting the development of the multisectoral national tobacco control strategy has started.

A national tobacco control strategy with financial resources made available through the Tobacco Control Fund, will enable stronger multisectoral engagement and collaboration on tobacco control.

The National Committee for Tobacco Control is responsible for the management of the Tobacco Control Fund, as stipulated in the 2021 Tobacco Control Law (Amended). The law states that the sources of the Tobacco Control Fund are the State budget, a percentage of excise tax revenue, 200 LAK on each unit packet, donations and other income-generating activities. The Fund is to be used for implementation of tobacco control activities; for activities of the Tobacco Control Committee at each level; to improve quality of health services; and to contribute to the National Health Insurance Fund. However, to date, challenges persist as tobacco companies have not complied with these requirements and arrangements are still to be finalized for the National Committee for Tobacco Control to access and utilize these funds.

The Investment License Agreement (ILA) and industry interference

The 25-year Investment License Agreement (2001-2026) between the Government of Lao PDR, Coralma International and S3T Pte. Ltd. indicates that the excise tax rate applicable for this period are 15 percent of production cost if production cost is less than 1,500 LAK per pack of 20 units and 30 percent of production cost if production cost is equal to or more than 1,500 LAK per pack of 20 units. It also states that no other excise taxes will be payable by the Joint Venture (JV) or the aforementioned companies for the duration of the JV. As such, the tobacco companies have refused to comply with several regulations by citing the ILA:

- i. The 2015 Tax Law indicated that the tax rate for cigarettes are to be 30 percent of wholesale price in 2016-2017, 45 percent in 2018-2019 and 60 percent in 2020 and after [35].
- ii. The 2018 Prime Minister's Order and Ministry of Finance Agreement that increased specific excise tax from 500 LAK to 600 LAK per pack of cigarettes, which tobacco companies have stopped complying with since October 2019.
- iii. Tobacco companies are not complying with several legislation that requires them to pay 2 percent of their profit tax and 200 LAK per pack of local and imported tobacco product to the Tobacco Control Fund. Due to the ILA and the tobacco companies' non-compliance with other tax laws, Lao PDR has the lowest tobacco tax level in the WHO Western Pacific Region [24]. It is estimated that Lao PDR has lost nearly US\$142.9 million in tax revenue between 2002 and 2019 because of the ILA [27].

The restrictions the ILA places on Lao PDR's legislative and public health efforts are an infringement on the country's sovereignty and policy autonomy. The negative impact of the ILA also appears to transcend taxation. According to the Global Tobacco Industry Interference Index 2021, Lao PDR has a score of 72 and ranks 62 out of the 80 countries analyzed (moving from a score of 68 in 2019 to 72 in 2021, in a ranking system where a lower score indicates less interference) [36]. The report stated that the tobacco companies, after being unable to stop the adoption of the law requiring 75 percent graphic health warnings on cigarette packs, refused to comply and requested multiple extensions. It also mentioned that the government receives assistance for anti-smuggling enforcement activities and that not all meetings or interactions with the tobacco industry are public disclosed. Lao PDR has an opportunity to address the tobacco industry's negative influence on health and sustainable development through full implementation of the WHO FCTC and the 2021 Tobacco Control Law (Amended).

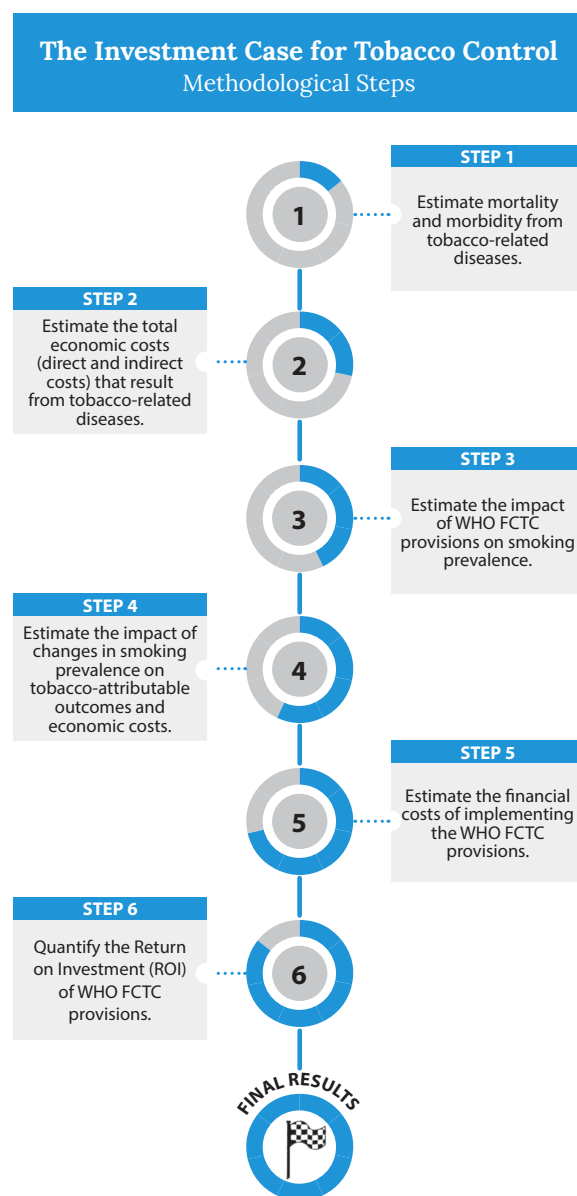
4. Methodology

The purpose of the investment case is to quantify the current health and economic burden of tobacco use in Lao PDR (in the context of tobacco control measures that are currently in place), and estimate the impact that implementing new tobacco control measures—or strengthening existing ones—would have on reducing this burden.

RTI International developed a static model to conduct the investment case and to perform the methodological steps in **Figure 2**. This methodology has been used for previous national WHO FCTC investment cases under the FCTC 2030 project. The tools and methods used to perform these steps are described in this report's Annex. Interested readers are also referred to this report's separate *Technical Appendix*⁹ for a more thorough account of the methodology.

The investment case team worked with MoH and other stakeholders in Lao PDR to collect national data inputs for the model. Where data was unavailable from government or other in-country sources, the team utilized publicly available national, regional, and global data from sources such as the World Health Organization (WHO), the World Bank database, the Institute for Health Metrics and Evaluation's (IHME) Global Burden of Disease (GBD) study, and academic literature. Within the investment case, costs and monetized benefits are reported in constant 2018 Lao kip (LAK) and discounted at an annual rate of 3 percent.

Fig. 2: Building the investment case



⁹ Available upon request.

5. Results

5.1 The current burden of tobacco use: health and economic costs¹⁰

Tobacco use undermines economic growth. In 2017, tobacco use caused more than 6,700 deaths in Lao PDR, 61 percent occurring among those under 70 years. These deaths amount to 128,000 years of life lost, which are lost productive years in which many of those individuals would have contributed to the workforce. The economic losses in 2017 due to tobacco-related mortality are estimated at LAK 2.3 trillion.

While the costs of mortality are high, the consequences of tobacco use begin long before death. As individuals suffer from tobacco-attributable diseases (e.g. cardiovascular diseases, respiratory conditions, cancers), expensive medical care is required to treat them. Spending on medical treatment for illnesses caused by smoking cost the Government LAK 111 billion in 2017 and caused Lao citizens to spend LAK 116 billion in out-of-pocket (OOP) healthcare expenditures. Private insurance and non-profit institutions serving households spent LAK 12 billion on treating tobacco-attributable diseases in 2017. In total, healthcare expenditures attributable to smoking amounted to LAK 240 billion.

In addition to healthcare costs, as individuals become sick, they are more likely to miss days of work (absenteeism) or to be less productive at work (presenteeism). In 2017, the cost of excess absenteeism due to tobacco-related illness was LAK 191 billion and the cost of presenteeism due to cigarette smoking was LAK 515 billion.

Finally, even in their healthy years, workers who smoke are more likely to incur productivity loss than workers who do not smoke. Smokers take an estimated ten additional minutes per day in breaks than non-smoking employees [37]. If ten minutes of time is valued at the average worker's salary, the compounding impact of 535,100 employed smokers taking ten minutes per day for smoke breaks is equivalent to losing LAK 359 billion in productive output annually.

In total, tobacco use cost Lao PDR's economy LAK 3.6 trillion¹¹ in 2017, or about 2.3 percent of Lao PDR's 2017 GDP. **Figure 3** breaks down direct and indirect costs. **Figure 4** and **Figure 5** illustrate the annual health losses that occur due to tobacco use.

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

11 Figures subject to rounding.

The current burden of tobacco use

Fig. 3: Breakdown of the share of direct and indirect economic costs (LAK millions) in 2017*



*Figures subject to rounding.

Fig. 4: Tobacco-attributable deaths by disease in Lao PDR, 2017 (Source: Results are from the IHME Global Burden of Disease Results Tool. Other diseases include subarachnoid hemorrhage, peptic ulcer disease, liver cancer, stomach cancer, colon and rectum cancer, larynx cancer, leukemia, esophageal cancer, lip and oral cavity cancer, bladder cancer, cervical cancer, pancreatic cancer, aortic aneurysm, breast cancer, nasopharynx cancer, prostate cancer, other pharynx cancer, kidney cancer, atrial fibrillation and flutter, and gallbladder and biliary disease.)

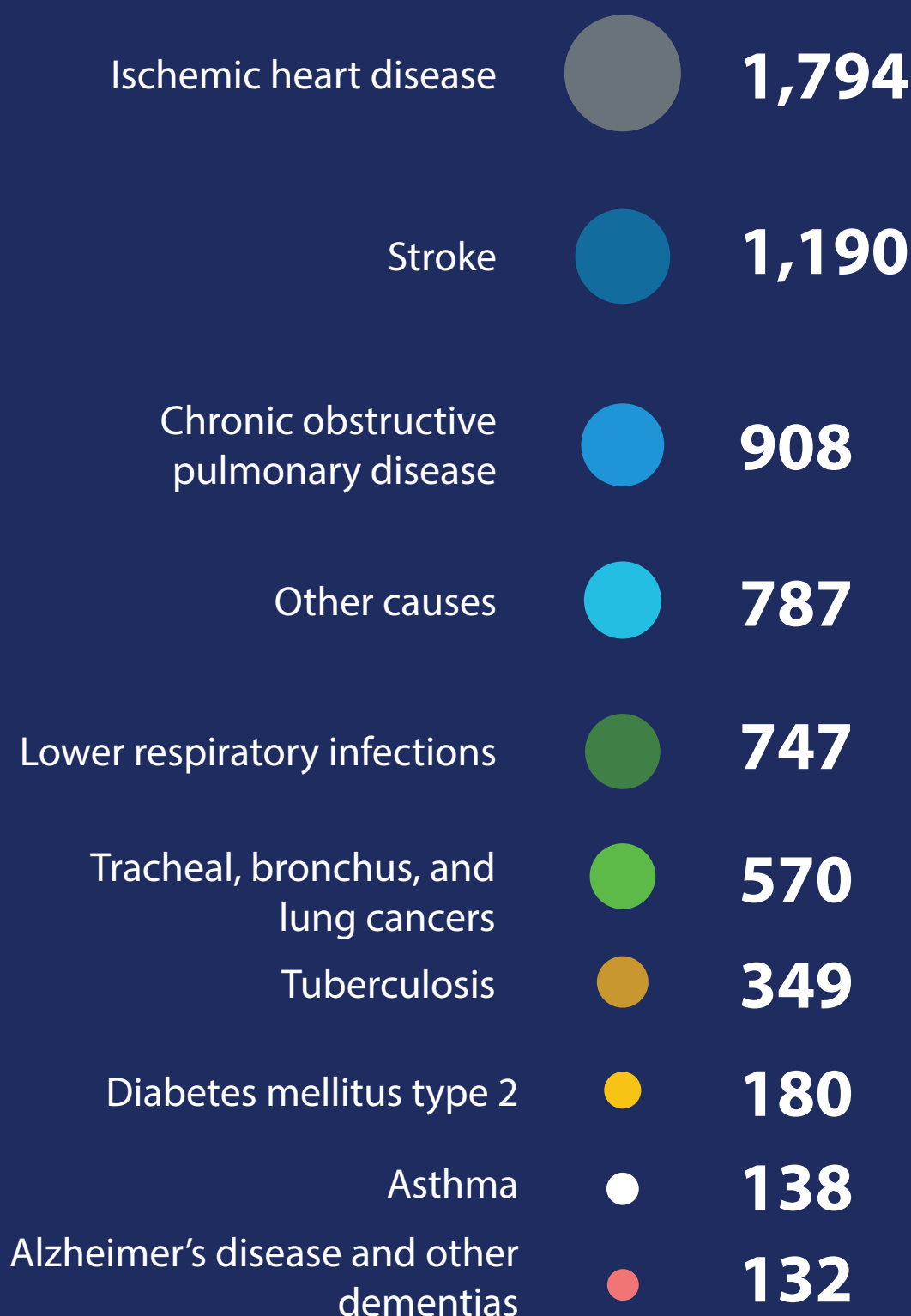
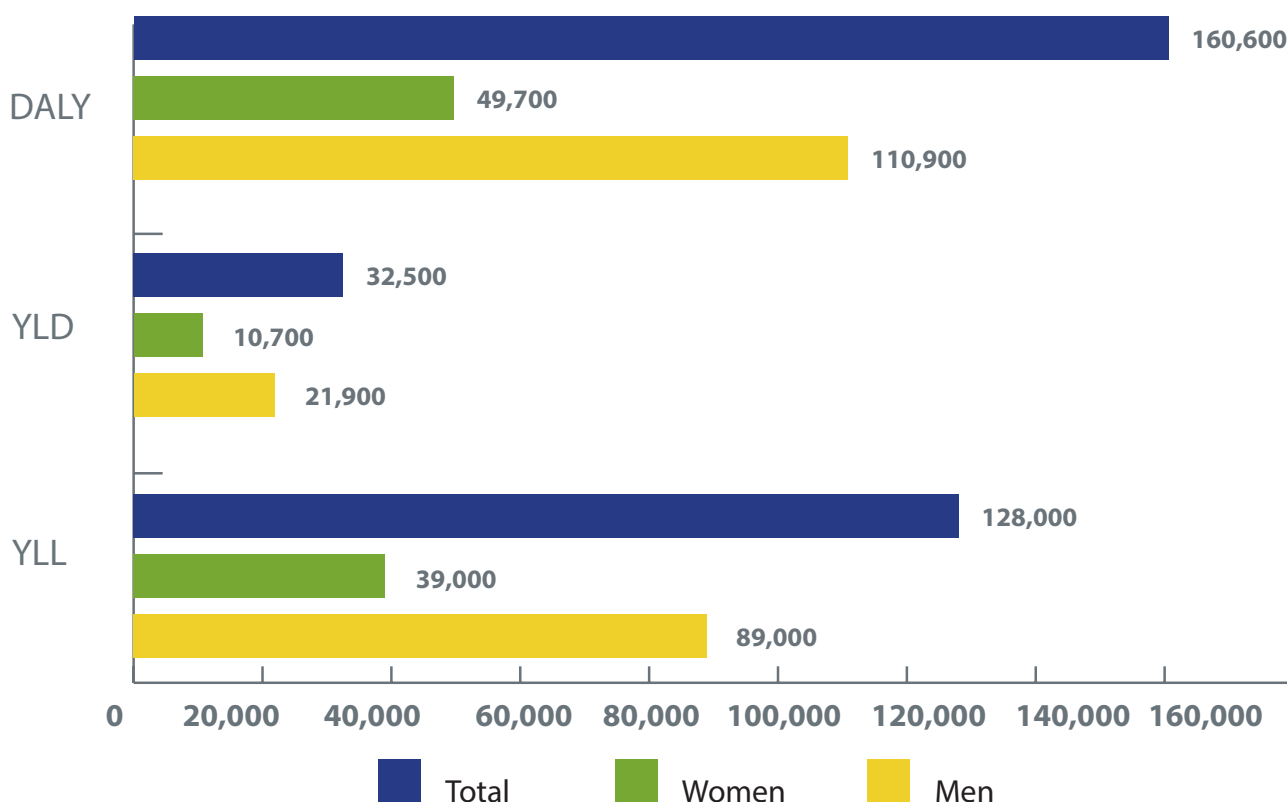


Fig. 5: Tobacco-attributable DALYs, YLDs and YLLs, 2017, by sex¹²

5.2 Implementing policy measures that reduce the burden of tobacco use

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, Lao PDR can secure significant health and economic returns, and begin to reduce the LAK 3.6 trillion in annual direct and indirect economic losses from tobacco use.

The next two subsections present the health and economic benefits that result from seven WHO FCTC policy actions to: 1) increase tobacco taxation to reduce the affordability of tobacco products; 2) enforce bans on smoking in indoor public and work places; 3) require rotation of graphic health warnings that cover 75 percent of packaging; 4) implement plain packaging of tobacco products; 5) institute national anti-tobacco mass media campaigns to increase awareness about tobacco control issues and the harms of tobacco use; 6) implement and enforce a comprehensive ban on all forms of tobacco advertising, promotion and sponsorship; and 7) promote cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit smoking.

12 YLDs are “years lived in less than ideal health...[YLDs are] measured by taking the prevalence of a [disease] condition multiplied by the disability weight for that condition. Disability weights reflect the severity of different conditions.” YLLs are “calculated by subtracting the age at death from the longest possible life expectancy for a person at that age.” DALYs “equal the sum of YLLs and YLDs. One DALY equals one lost year of healthy life.” Source: IHME. (2018). Frequently asked questions. Retrieved from <<http://www.healthdata.org/gbd/faq#What%20is%20a%20DALY?>>

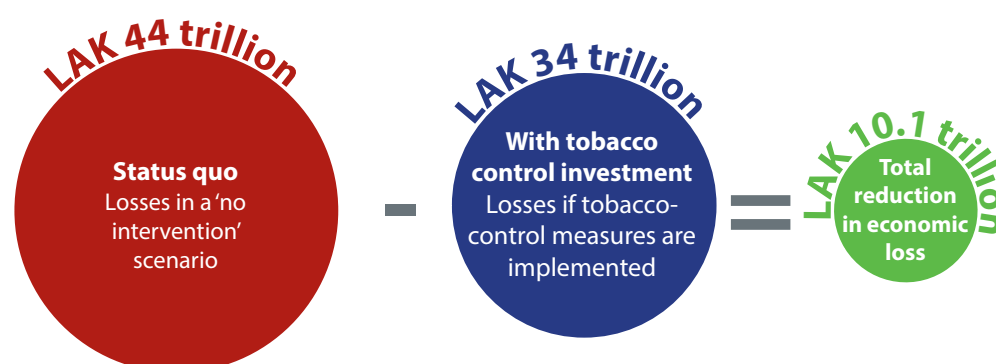
5.3 Health benefits – lives saved

The full implementation of the WHO FCTC in Lao PDR (inclusive of all seven of the measures listed above) would lower the prevalence of tobacco use, leading to substantial health gains for the country. Implementing the package of seven WHO FCTC policy actions that are the focus of this investment case would reduce the prevalence of cigarette smoking by 49 percent (in relative terms) over 15 years, saving 25,269 lives from 2020-2034, or 1,700 lives annually.

5.4 Economic benefits – costs averted

Implementing the package of seven key WHO FCTC policy actions would result in Lao PDR avoiding 23 percent of the economic loss that it is expected to incur from tobacco use over the next 15 years. **Figure 6** illustrates the extent to which Lao PDR can shrink the economic losses it is expected to incur under the status quo.

Fig. 6: Tobacco-related economic losses over 15 years (2020-2034)

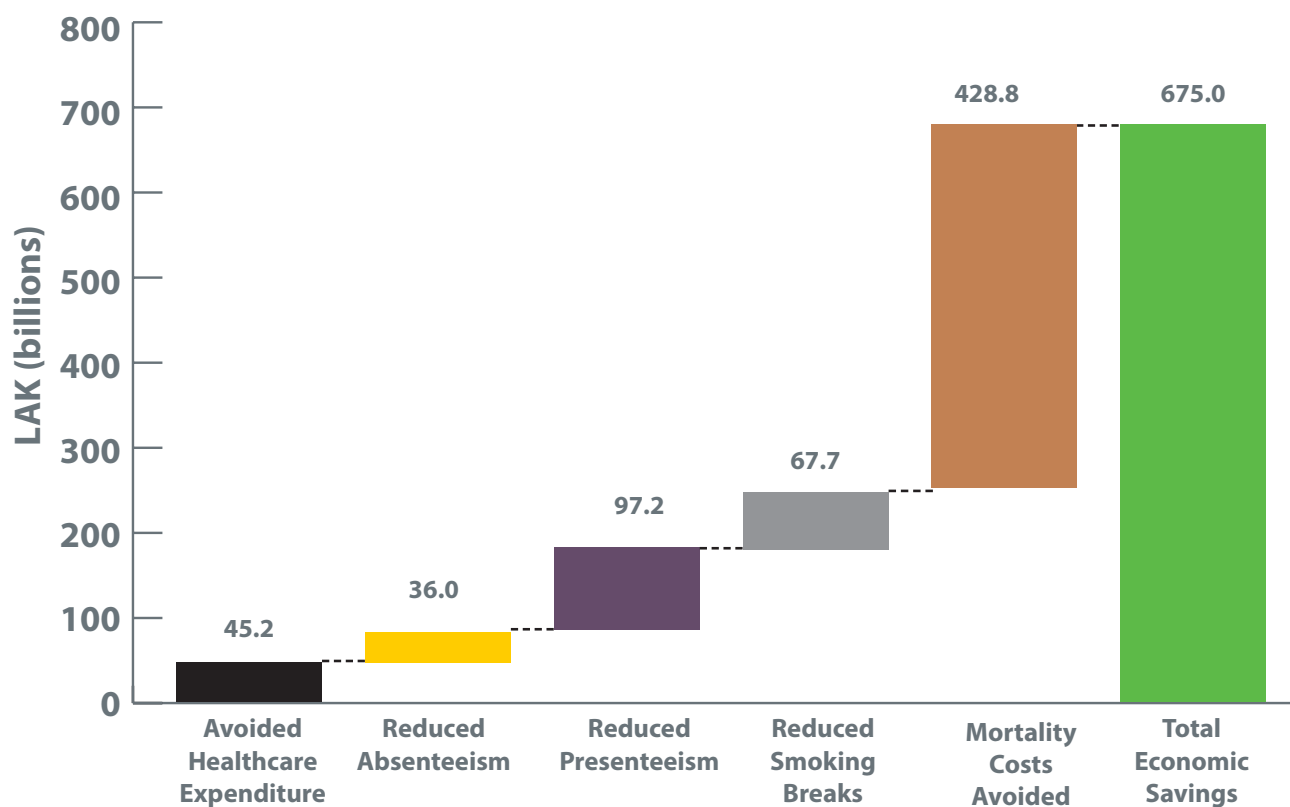


In total, over 15 years Lao PDR would save about LAK 10.1 trillion that would otherwise be lost if the package of seven key WHO FCTC policy actions were not implemented. This is equivalent to about LAK 7 billion in annual avoided economic losses.

With better health that would arise from implementation of the WHO FCTC, fewer individuals would need access to healthcare 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, illness or disability. Workers miss fewer days of work (absenteeism) and are less hindered by health complications while at work (presenteeism). Finally, because the prevalence of smoking declines, fewer smoke breaks are taken in the workplace.

Figure 7 breaks down the sources from which annual avoided costs accrue from implementation of the package of seven WHO FCTC policy actions. The largest annual avoided costs result from averted tobacco-attributable mortality (LAK 429 billion). The next highest source is reduced presenteeism (LAK 97 billion), followed by reduced numbers of smoking breaks (LAK 68 billion), avoided healthcare expenditures (LAK 45 billion), and reduced absenteeism (LAK 36 billion).

Fig. 7: Sources of annual avoided economic costs as a result of implementing the tobacco control policy package in Lao PDR

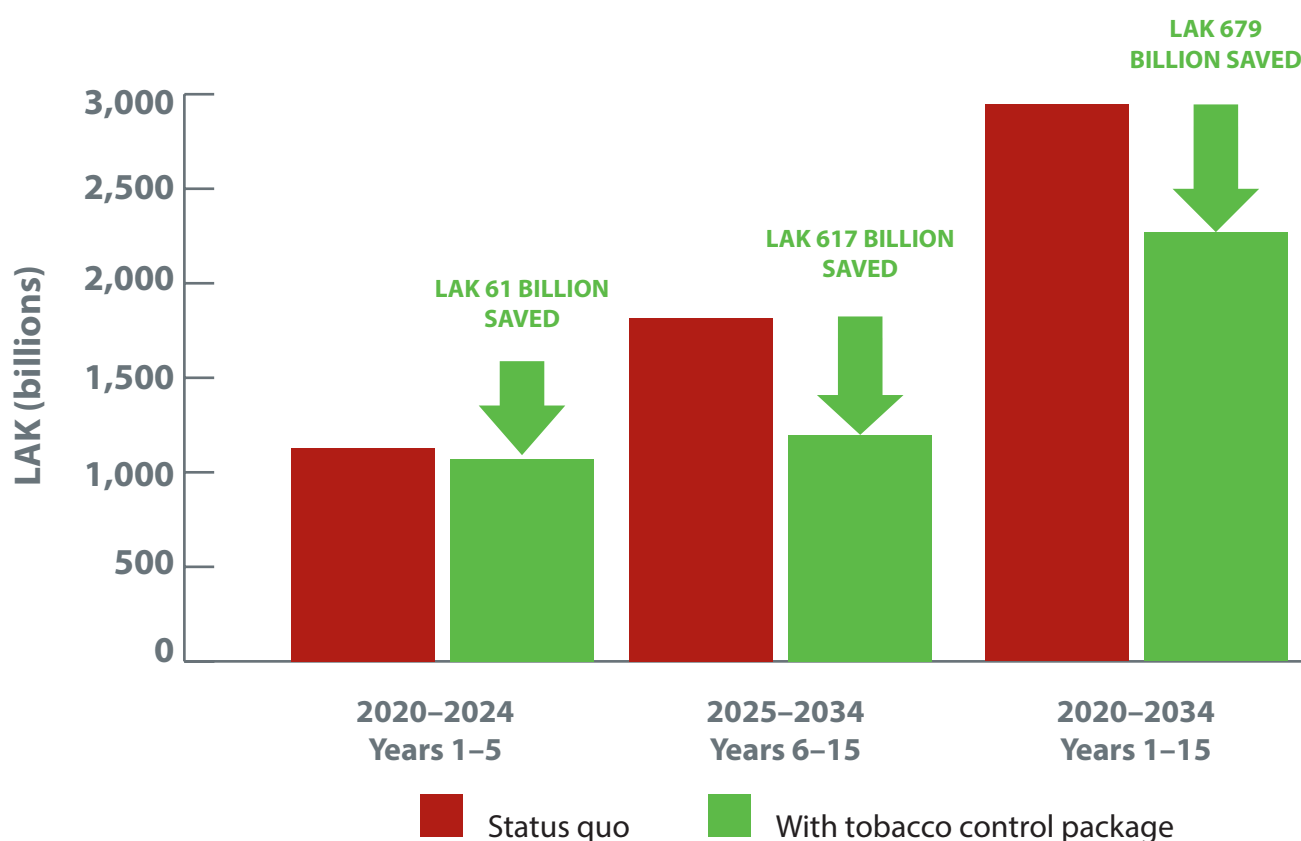


Implementing the package of seven WHO FCTC policy actions examined in this investment case will reduce medical expenditures, both for citizens and the government. Presently, total private and public annual health care expenditures in Lao PDR are about LAK 3.4 trillion, 7.0 percent of which is directly related to treating disease and illness due to tobacco use [3] (\approx LAK 239.7 billion).

Year-on-year, the package of interventions would lower tobacco use prevalence, leading to less illness, and consequently less healthcare expenditure (see **Figure 8**). Over the 15-year time horizon of the analysis, the package of interventions averts LAK 679 billion in healthcare expenditures, or LAK 45 billion annually. Of this, 46 percent of savings would go to the Government and 49 percent accrue to individual citizens who would have had to make out-of-pocket payments for healthcare. The remainder of savings goes to private insurance and other sources of healthcare expenditures.

Thus, from reduced healthcare costs alone, the Government stands to save about LAK 315 billion over 15 years. Simultaneously, the Government would successfully reduce the health expenditure burden tobacco imposes on Lao PDR's citizens, supporting efforts to reduce economic hardship on families. For families with tobacco users that quit, spending that would have been on tobacco products or healthcare, could instead be invested in nutrition, education, and other productive inputs to secure a better future.

Fig. 8: Public and private healthcare costs (and savings) in Lao PDR, over the 15-year time horizon, 2020-2034



5.5 The return on investment (ROI)

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 policy actions by the costs of the investments. For the Lao PDR investment case, the ROI for each intervention was evaluated in the short-term (period of five years), to align with planning and political cycles, and in the medium-term (period of 15 years) to align with the SDGs and beyond. The ROI shows the return on investment for each intervention, and for the full package of measures. Total benefits (avoided economic losses due to tobacco-attributable mortality, healthcare 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 taxation (which is not increased during the first five years), all interventions deliver a 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 1.6 to 89 times its investment. The ROIs for each intervention continue to grow over time, reflective of the increasing effectiveness of policy measures as they move from planning and development stages, to full implementation.



Table 2: Return on investment, by tobacco control measure (LAK billions) over five (2020-2024) and 15 (2020-2034) years*

Return on investment, by tobacco control measure (LAK billions)	First 5 years (2020–2024)			All 15 years (2020–2034)		
	Total Costs (billions)	Total Benefits (billions)	ROI	Total Costs (billions)	Total Benefits (billions)	ROI
Tobacco control package** (combined interventions)	44	913	21	118	10,125	86
Increase tobacco taxation (cigarette taxation modeled)¹³ (WHO FCTC Article 6)	2.3**	0.0	0.0	7.2	5,460	758
Implement and enforce a comprehensive TAPS ban (WHO FCTC Article 13)	3.5	315	89	7.6	2,447	324
Run a mass media information campaign to promote public awareness about tobacco control issues (WHO FCTC Article 12)	7.2	299	42	18.7	2,328	124
Implement plain packaging of tobacco products (WHO FCTC Guidelines for implementation of Articles 11 and 13)	3.6	119	33	7.6	935	124
Enforce ban on smoking in all indoor public and work places (WHO FCTC Article 8)	7.4	158	21	14.8	1,242	84
Enforce graphic health warnings (WHO FCTC Article 11)	3.6	80	22	7.6	631	83
Promote cessation: brief advice to quit (WHO FCTC Article 14)	12.3	19	1.6	44.7	490	11

* Rounded to the nearest whole number.

** 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_i and PR_j, (1-PR_i) x (1-PR_j) [is] applied to the current smoking prevalence [38, p. 454]. The costs of the tobacco package include the costs of the examined policies, as well as programmatic costs to implement and oversee a comprehensive tobacco-control programme.

*** While Lao PDR is restricted from increasing tobacco taxes due to a deal signed with tobacco companies, it is eligible to increase taxes at the end of the five-year period. Two years of "planning" costs are included in the analysis in the first five years in anticipation of beginning implementation of tobacco tax increases in year six.

13 Raise taxes to what is considered in the WHO Report on the Global Tobacco Epidemic as the highest level of achievement, which is for total taxes to represent at least 75 percent of the retail price and the recommendation in the WHO Technical Manual on Tobacco Administration for excise taxes to represent at least 70 percent of the retail price. In the scenario modeled, total cigarette taxes would meet the 75 percent level by 2030 and cigarettes excise taxes would meet the 70 percent level by 2034.

Over the 15-year period, raising cigarette taxes are expected to have the highest return on investment (758:1). Implementing and enforcing a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship have the next highest ROI (324:1), followed by mass media campaigns (124:1), implementing plain packaging (124:1), creating smokefree indoor public and work places (84:1), requiring rotation of graphic health warnings that cover 75 percent of packaging (83:1), and promoting cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit smoking (11:1).



Credit: © World Bank via Flickr

6. Examining additional impacts: Equity, tax revenue, and the SDGs

Lao PDR stakeholders expressed interest in analyzing other outcomes that can result from increasing tobacco taxes. The investment case examines how increasing taxes on tobacco would impact government revenue and equity, and the contributions of stronger WHO FCTC implementation towards Lao PDR's fulfilment of Target 3.4 of the Sustainable Development Goals.

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

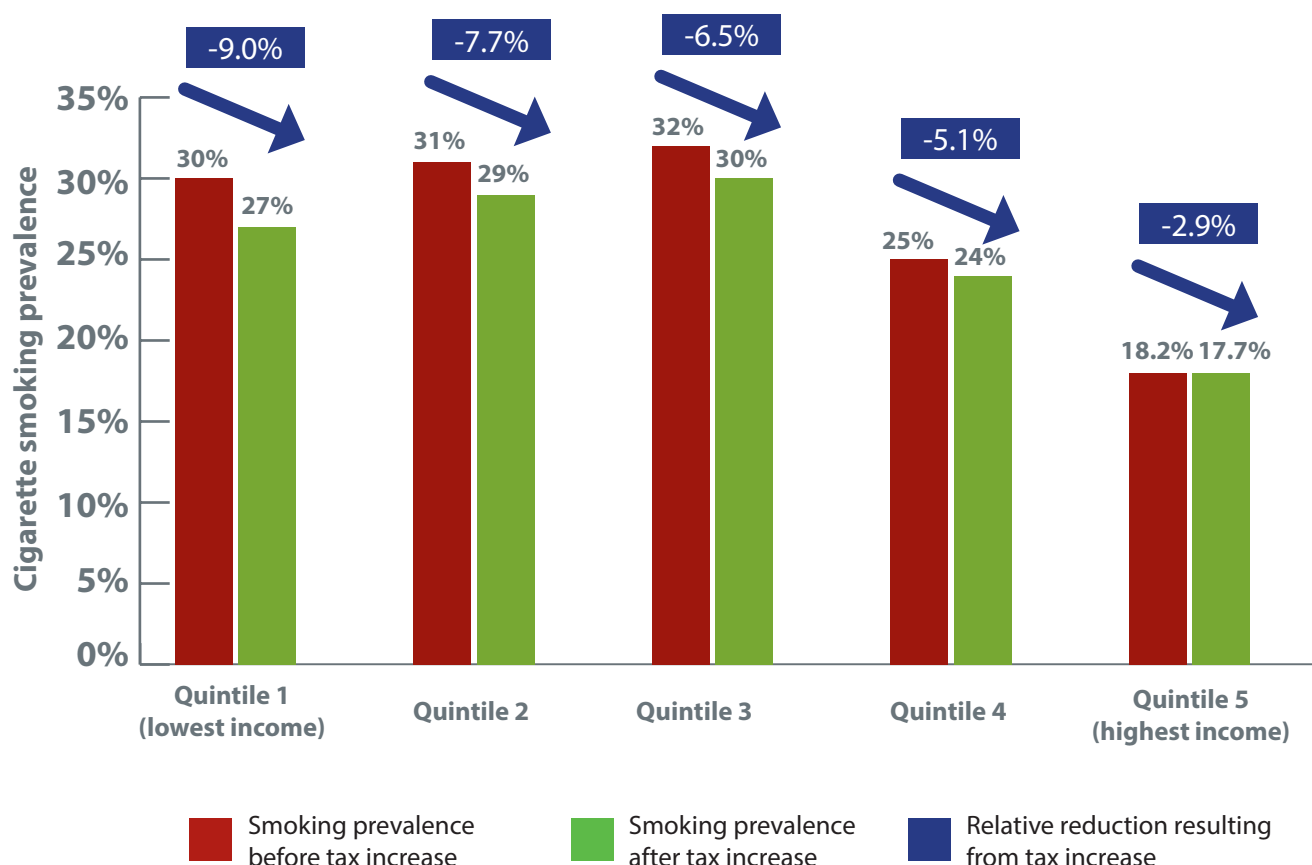
A common misperception is that taxes on tobacco products may disproportionately impact poor tobacco users, since the tax burden represents a higher proportion of their income than that of wealthier tobacco users. However, evidence shows that the poor actually stand to benefit most from raised cigarette taxes [39]. Relative to richer smokers, lower-income smokers are more likely to quit smoking when taxes are increased [40], meaning they benefit from subsequent decreases in tobacco-related health problems, and resulting medical costs. In Lebanon [41], for example, a 50 percent increase in cigarette prices was projected to prevent 23,000 new cases of 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 [42].

To examine the extent to which a cigarette tax increase could be considered pro-poor in Lao PDR, an equity analysis has been undertaken as part of the investment case. The analysis divides Lao PDR's population into five equal groups, by income, where quintile 1 is composed of the poorest 20 percent of people, and quintile 5 is composed of the wealthiest 20 percent. Within each income group, the analysis examines the impact of a hypothetical one-year tax increase that raises the price of the average pack of cigarettes by about 23 percent (LAK 1,640, or about US\$0.18). This is representative of the level of recommended tax increase that could have been implemented in 2021 had Lao PDR not committed to a moratorium on tobacco taxation increases. 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.

In Lao PDR, the low- and middle-income quintiles smoke cigarettes at relatively similar rates, with the highest prevalence seen in the middle-income quintile (32 percent) [22]. 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, and because the low- and middle-income quintiles smoke at higher rates in Lao PDR, the tax increase causes the largest

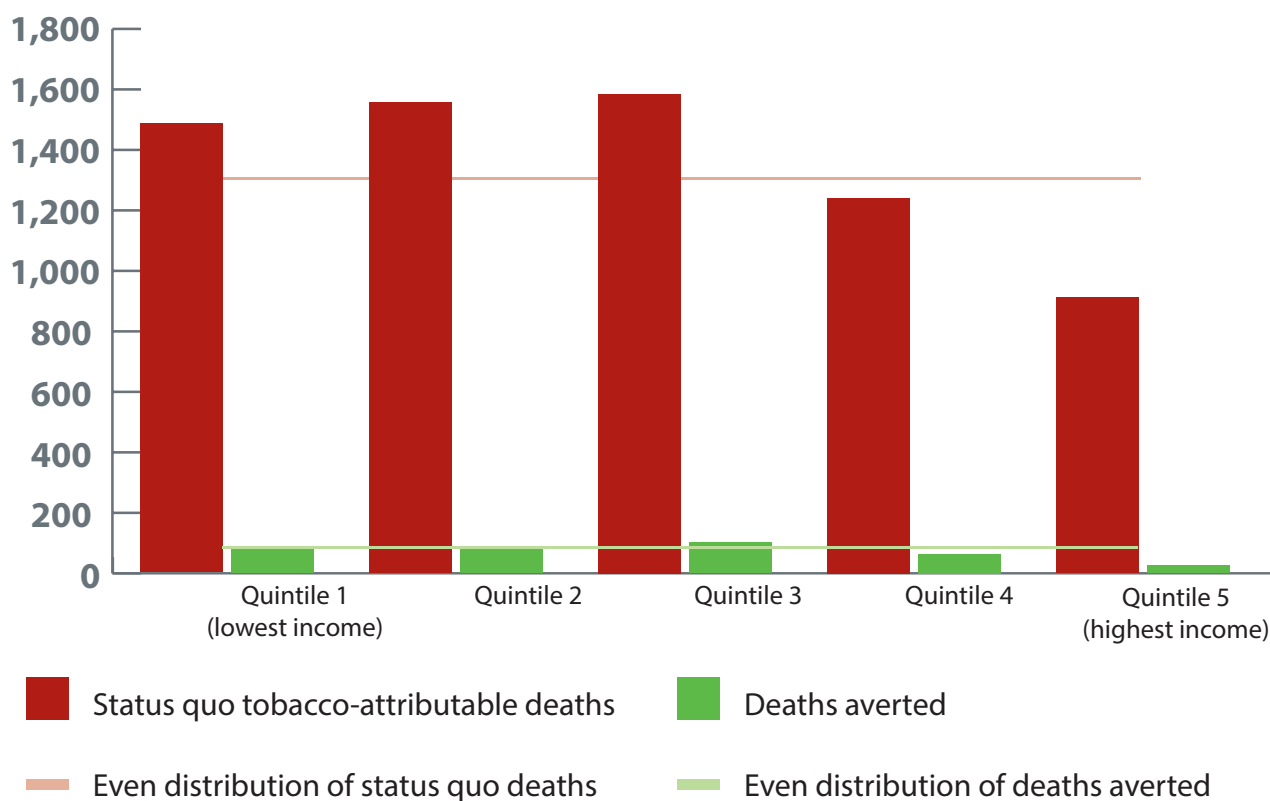
drop in smoking prevalence among the poorest income quintiles. **Figure 9** shows the smoking prevalence in each income quintile before and after the tax increase, as well as the relative change in smoking prevalence.

Fig. 9: Smoking prevalence before and one year after tax increase, by income quintile



Lower rates of smoking translate to health gains. Prior to the tax increase, of the more than 6,700 tobacco-related deaths observed in 2017, 45 percent occurred among the poorest 40 percent of the population (quintiles 1 and 2). As the cigarette tax increase causes cigarette smoking prevalence to fall the most in the two poorest quintiles, health benefits disproportionately accrue to the poor.

The equity analysis finds that 57 percent of the 445 deaths that could be averted over one year due to the cigarette tax increase would be among the poorest 40 percent of the population, as shown in **Figure 10**.

Fig. 10: Status quo deaths and deaths averted by tax increase, by income quintile¹⁴

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

The Addis Ababa Action Agenda on Financing for Development [43] agreed with the adoption of the Sustainable Development Goals, noting that tobacco price and tax measures “represent a revenue stream for financing for development”. In Lao PDR, a 25-year agreement with Imperial Tobacco, which has about 79 percent of the market share in 2019 [27], restricts the government from raising taxes on its products [26], [27]. Given this agreement, the government is largely unable to capitalize on a valuable source of revenue.

This section includes analysis of a hypothetical scenario in which the agreement ended in 2020, and the government of Lao PDR chose to raise taxes by an average of LAK 940 over the years from 2021-2025, pulling the share of taxes up from 19 to 53 percent, and increasing the retail price of cigarettes by 75 percent in real terms over present-day levels. The resulting revenue gains demonstrate that tobacco taxation can be leveraged not only to reduce the health burden of tobacco use, but also to generate significant revenue: a win-win for government.

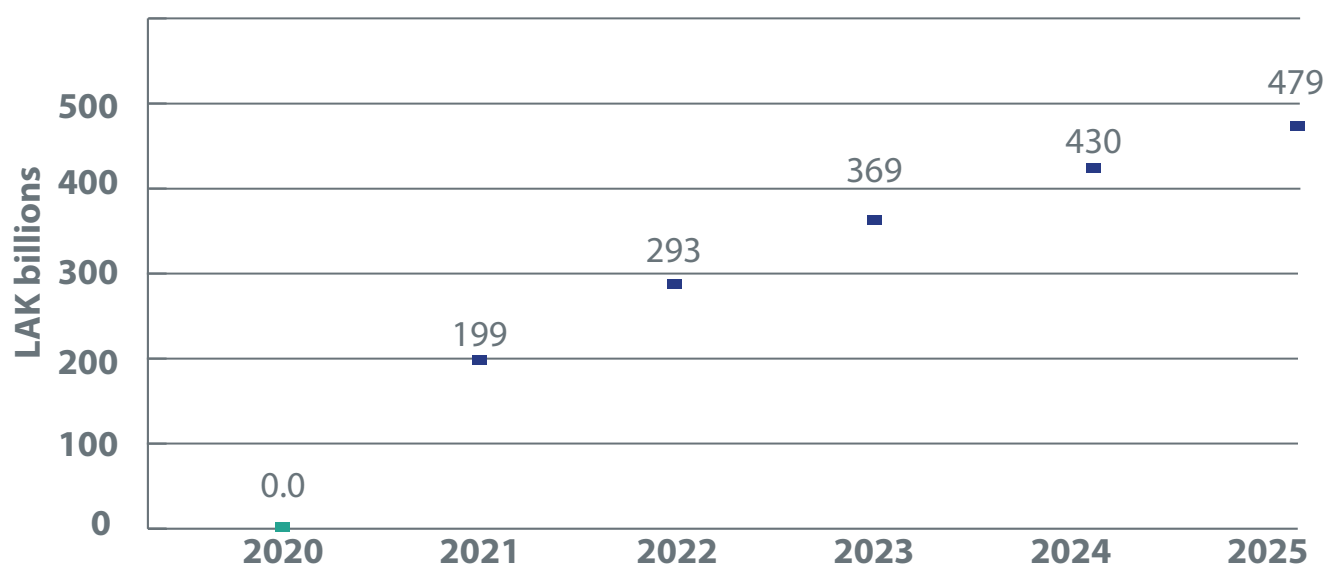
¹⁴ The light red horizontal line shows what the number of status quo deaths would be if they were evenly distributed among the quintiles, and the light green line demonstrates the number of averted deaths if they were distributed evenly among quintiles.

Even though there are drops in consumption, revenue gains will still occur. Although reducing the affordability of tobacco products leads people to quit smoking or reduce consumption, many people will continue to smoke, largely because of the addictive nature of tobacco, paying higher taxes to the government each time they purchase cigarettes.

Evidence from low-and middle-income countries of the Asia-Pacific region shows that in countries with gross national income per capita similar to Lao PDR, a 10 percent increase in price is expected to result in a 4.9 percent decrease in consumption [44]. Thus, purchases of cigarettes remain relatively unresponsive to price changes. In Lao PDR, under the described tax increase pattern and elasticity, licit cigarette consumption would drop from the present amount of about 153 million packets annually,¹⁵ to 114 million over the period from 2020 to 2025.

Even though fewer cigarettes are being consumed, they are being purchased at higher tax rates. Thus, government revenue increases. **Figure 11** shows the additional estimated tax revenue that Lao PDR would collect each year, with the government of Lao PDR adding an expected LAK 1.8 trillion¹⁶ in revenue during the first five years after the changes. This is LAK 354 billion annually, which is equivalent to over one-fifth (22 percent) of the Government's 2018 total healthcare expenditures [45]. Tobacco taxation has the potential to play a meaningful health financing role as the government seeks to fulfill its commitments to universal health coverage.

Fig. 11: Additional annual tax revenue (discounted) in comparison to the baseline scenario, 2020-2025



15 According to the WHO Report on the Global Tobacco Epidemic, 2019: Lao PDR Country Profile, in 2017, total excise revenue (ad valorem and specific) was 103,806,645,734 LAK. Assuming that the tax share of the most sold brand of cigarettes is relatively representative of the market, we divide the total excise revenue by the excise taxes per pack of cigarette to approximate that 153 million packs of cigarettes are licitly sold each year in Lao PDR.

16 Discounted value – 3 percent discount rate.

6.3 The Sustainable Development Goals and the WHO FCTC

Implementing the package of seven WHO FCTC policy actions will support Lao PDR to meet SDG Target 3.a to strengthen implementation of the WHO FCTC. Moreover, acting now will contribute to Lao PDR's efforts to meet SDG Target 3.4 to reduce by one-third premature mortality from NCDs by 2030.

In Lao PDR in 2017, nearly 18,000 premature deaths between the ages of 30 to 70 were caused by the four main NCDs (cardiovascular disease, diabetes, cancer and chronic respiratory disease) [2]. Roughly 19 percent of these premature deaths occurred due to tobacco use [2]. Implementing the package of seven WHO FCTC policy actions would reduce tobacco use prevalence—a key risk factor driving NCD incidence—preventing 8,072 premature deaths from the four main NCDs over the next 11 years (2020 to 2030). Preventing those deaths contributes about 12 percent of the needed reduction in premature mortality for Lao PDR 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 [16]. For example, stronger tobacco control will contribute to the reduction of poverty and inequalities (SDGs 1 and 10, respectively) and economic growth (SDG 8).



Achieving SDG Target 3.4 by 2030

By 2030 the WHO FCTC measures would...



Lower the prevalence of tobacco use by over 46% from present day levels.

Reduce economic costs due to tobacco use by LAK 7.3 trillion, including saving LAK487 billion in healthcare expenditures.

Lead to savings (LAK 7.1 trillion) that significantly outweigh the costs (LAK 99 billion) of implementation and enforcement, with an overall return on investment of 74:1.

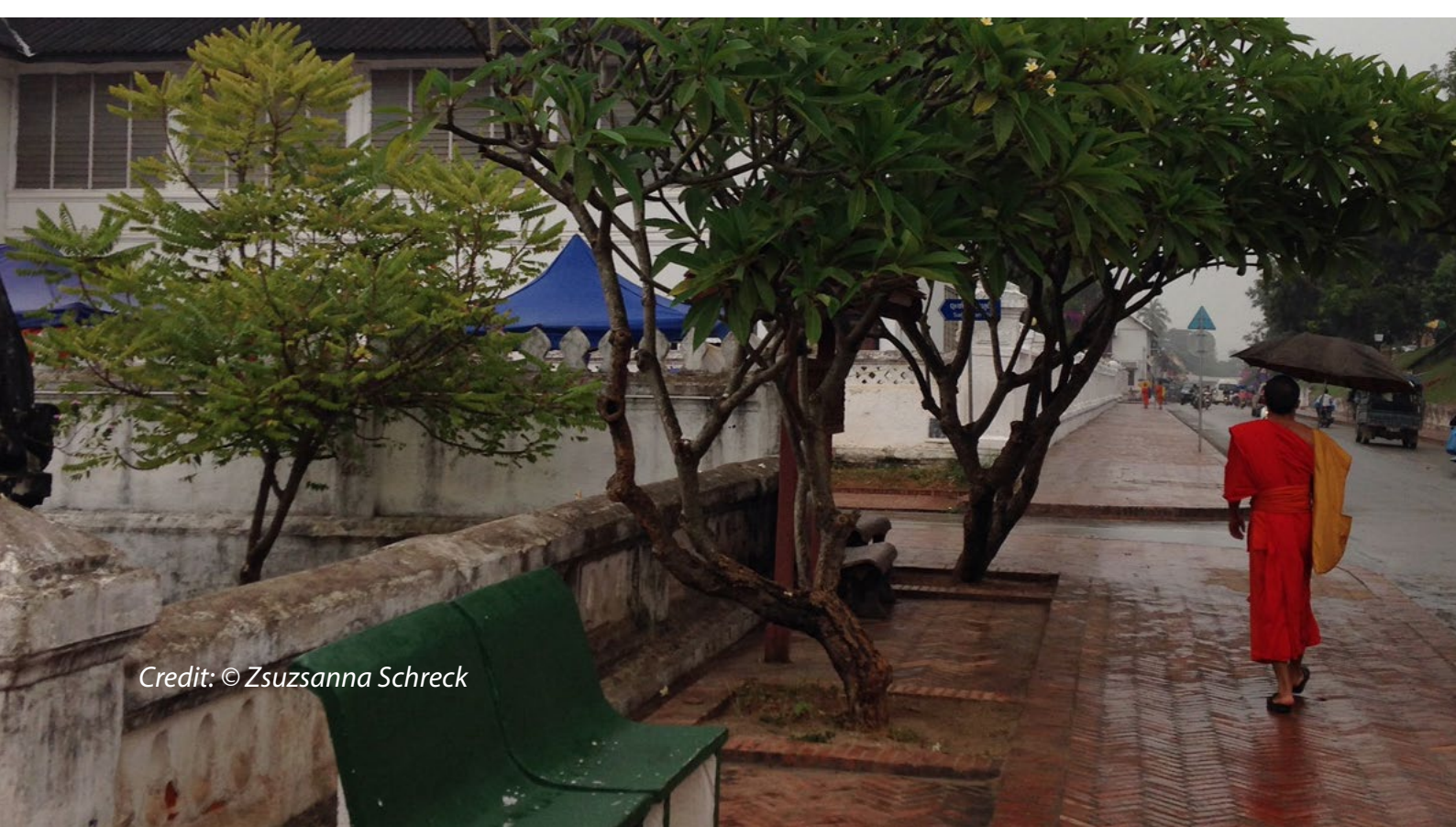
7. Conclusion and recommendations

Each year, tobacco use costs Lao PDR 3.6 trillion in economic losses and causes substantial human development losses. Fortunately, the investment case shows that there is an opportunity to reduce the social and economic burden of tobacco in Lao PDR. Enacting the seven key WHO FCTC policy actions would save over 1,600 lives each year and reduce the incidence of disease, leading to savings from averted medical costs and averted productivity losses.

In economic terms, these benefits are substantial, adding to LAK 10.1 trillion over the next 15 years. Further, the economic benefits of strengthening tobacco control in Lao PDR greatly outweigh costs of implementation (LAK 10.1 trillion in benefits versus just LAK 0.1 trillion in costs).

By investing now in the package of seven WHO FCTC policy actions modeled under this investment case, Lao PDR would not only reduce tobacco consumption, improve health, reduce government health expenditures and grow the economy, it would also reduce hardships among Laotians, particularly among low-income populations. Many countries reinvest savings from healthcare expenditures and revenue from increased tobacco taxes into national development priorities such as universal health coverage and other social protection measures, as well as COVID-19 response and recovery efforts.

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



Credit: © Zsuzsanna Schreck



Increase tobacco taxes.

The Investment License agreement (ILA) prevents Lao PDR from implementing one of the most effective measures for public health. Raising tax is the single most important measure, as is evidenced in the Investment Case. Over the 15-year period, raising cigarette taxes are expected to have the highest return on investment (758:1). Furthermore, the equity analysis shows that raising taxes are pro-poor, and taxes can not only reduce the health burden of tobacco use, but generate significant revenues for the government.

The investment case provides strong evidence and recommends that the ILA with the tobacco industry is not extended so that taxes can be raised and other tobacco measures implemented fully. The ILA is contrary to the public health interest of the Lao people; undermines national sovereignty and policy-making autonomy; prevents Lao PDR from fulfilling its treaty obligations; and is a missed opportunity to generate revenue for development.

Among Asian and Pacific economies, Lao PDR has the lowest tax-to-GDP ratio at 8.9 percent, well below the 15 percent widely regarded as the minimum level for social protection and sustainable development [46]. Lao PDR has an opportunity to increase its revenue through increasing tobacco taxes.

The WHO FCTC Article 6 and its guidelines for implementation [47] as well as the WHO Technical Manual on Tobacco Tax Policy and Administration are available for reference to support Lao PDR in fulfilling its obligations as a Party to the WHO FCTC and in the achievement of its health targets, revenue objectives and development goals [48].



Strengthen enforcement of tobacco control measures.

Lao PDR has made significant progress in tobacco control, with the passage of the Tobacco Control Law in 2009 and the Tobacco Control Law (Amended) in 2021. The 2021 Tobacco Control Law closes many of the gaps in the previous law—for example, it imposes a comprehensive TAPS ban including on point of sale advertising and promotion and on internet sales; bans novel and emerging nicotine and tobacco products (NENTPs); and includes a provision on plain packaging, among others. With this comprehensive law in place, it is recommended that Lao PDR strengthen and fund its implementation and enforcement to drive the tobacco use prevalence curve downwards and accrue the health and economic benefits which the investment case

findings has shown. Lao PDR is further recommended to raise awareness about the harms of tobacco use as well as NENTPs through information campaigns and promote cessation of tobacco use by training health professionals to provide brief advice to quit.



Strengthen multisectoral coordination and planning.

Given the far-reaching health and development impacts of tobacco, and the multisectoral nature of the interventions required, effective tobacco control requires the engagement of non-health sectors, and a whole-of-government and whole-of-society approach. Lao PDR has multisectoral committees for tobacco control at national and provincial levels and their role in implementing, enforcing and promoting compliance with the 2021 Tobacco Control Law would be critical. Collaboration across sectors and administrative levels may be further strengthened with the development of a comprehensive national tobacco control strategy, with clearly defined roles and responsibilities for each sector, institution and level, and anchored with budget allocations from the Tobacco Control Fund. Priorities defined in the national tobacco control strategy, taking into consideration recommendations in the [Global Strategy to Accelerate Tobacco Control](#), in relevant WHO FCTC implementation guidelines and in this investment case, can form the basis for the Tobacco Control Fund action plan. It would also be important for Lao PDR to establish proper oversight and accountability procedures to ensure the tobacco control strategy, action plan and funds are executed well.



Adopt a Code of Conduct applicable to the whole of government.

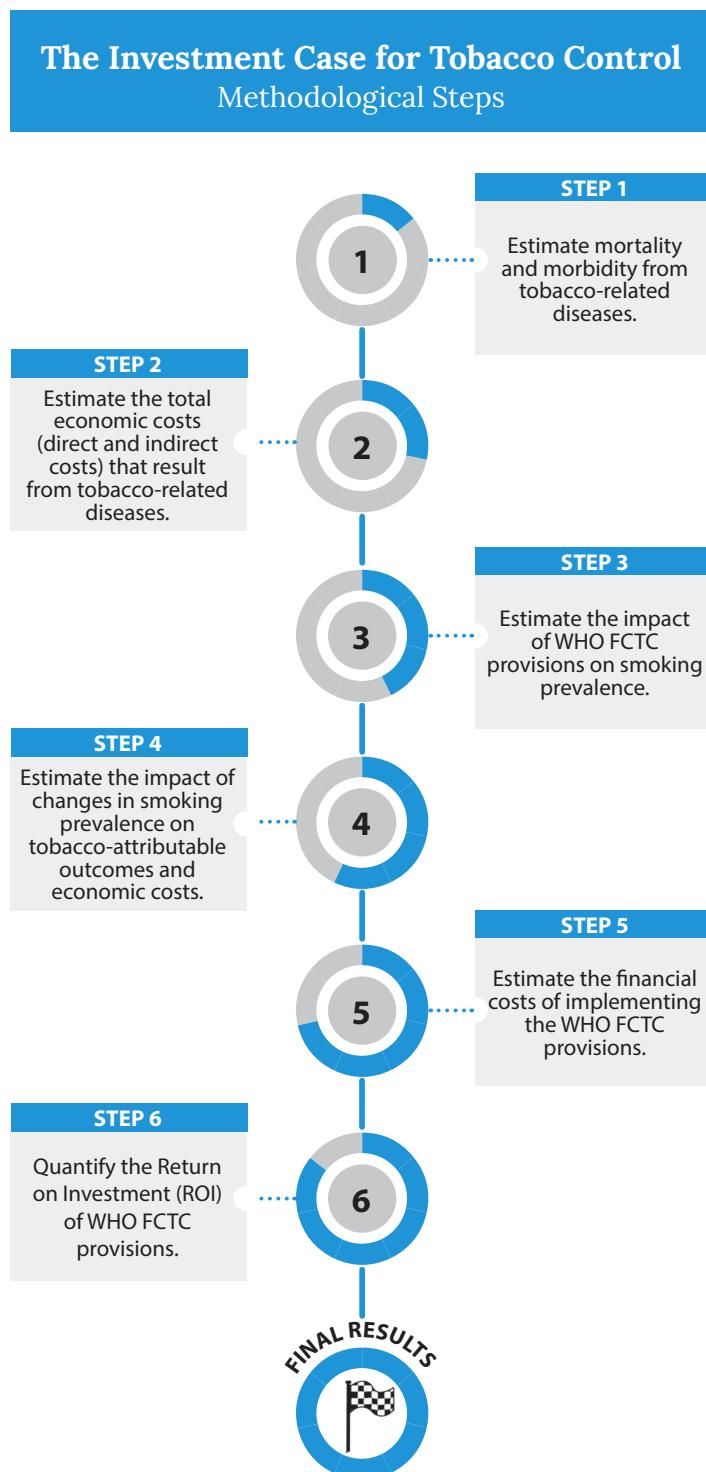
One of the achievements of Lao PDR is the issuance of a Code of Conduct by the Minister of Health in 2018 that articulates principles on the interaction between government officials and the tobacco industry. However, the tobacco industry is a significant obstacle to ending the tobacco epidemic. To be able to overcome tobacco industry interference and influence in policymaking, Lao PDR is recommended to adopt a Code of Conduct applicable to the whole of government. There needs to be clear guidelines established to avoid conflict of interest for government officials and employees; to limit interactions with the tobacco industry and ensure transparency of necessary ones; to regulate “socially responsible” activities of the industry; and to prohibit preferential treatment to the tobacco industry.

8. Methodology annex

8.1 Overview

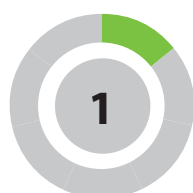
The economic analysis consists of two components: 1) assessing the current burden of tobacco use and 2) examining the extent to which WHO FCTC provisions can reduce the burden. The first two methodological steps depicted in **Figure A1** are employed to assess the current burden of tobacco use, while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

Fig. A1: Steps in the investment case



8.2 COMPONENT ONE: CURRENT BURDEN

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



STEP 1

Estimate mortality and morbidity from tobacco-related diseases.

The investment case model is populated with country-specific data on tobacco attributable mortality and morbidity from the 2017 Global Burden of Disease Study (GBD) [49]. 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.



STEP 2

Estimate the total economic costs (direct and indirect costs) that result from tobacco-attributable diseases.

Next, the model estimates the total economic costs of disease and death caused by tobacco use, including both direct and indirect costs.¹⁷ *Direct* refers to tobacco-attributable healthcare expenditures. *Indirect* refers to the value of lives lost due to tobacco-attributable mortality, and workplace productivity losses: absenteeism, presenteeism, and excess breaks due to smoking.

Direct costs — Direct costs include tobacco-attributable public (government-paid), private (insurance, individual out-of-pocket), and other healthcare expenditures. The proportion of healthcare costs attributable to smoking was obtained using the formula for estimating smoking attributable fraction (SAF) of healthcare expenditures from Goodchild et al. (2018) [3]. The SAF for Lao PDR is estimated at 7 percent. To calculate the share of smoking-attributable healthcare expenditures borne by public, non-profit, and private entities, it was assumed that each entity incurred smoking-attributable healthcare costs in equal proportion to its contribution to total health expenditure, as obtained from the National Health Accounts Report Fiscal Year 2018—from which government is shown to cover 46 percent of total health expenditures, households cover 49 percent through out-of-pocket expenses, and private and other entities cover 5 percent [45].

¹⁷ In assessing the current burden of tobacco use, the economic costs of premature mortality include the cost of premature deaths due to any form of exposure to tobacco (including of 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, presenteeism, and smoking breaks. While other forms of tobacco may also cause losses in these categories, no data is available to pinpoint those losses.

Indirect costs — Indirect costs represent the monetized value of lost time, productive capacity, or quality of life as a result of tobacco-related diseases. Indirect costs accrue when tobacco use causes **mortality**, eliminating the unique economic and social contributions that an individual would have provided in their remaining years of life. In addition, tobacco use results in productivity losses. Compared to non-tobacco users, individuals who use tobacco are more likely to miss days of work (**absenteeism**); to be less productive at work due tobacco-related illnesses (**presenteeism**); and to take additional breaks during working hours in order to smoke.

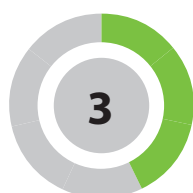
- *The economic cost of tobacco-attributable mortality due to tobacco use* — Tobacco-attributable mortality is valued using the human capital approach, which places an economic value on each year of life lost. Using GBD data on the age at which tobacco-attributable deaths occur, the model calculates the total number of years of life lost due to tobacco, across the population. Each year of life is valued at 1.4 times GDP per capita, following the “full income approach” employed by Jamison et al (2013) [50].
- *Productivity costs* — Productivity costs consist of costs due to absenteeism, presenteeism, and excess work breaks due to smoking. The model incorporates estimates from academic literature on the number of extra working days missed due to active smoking (2.9 days per year) [51]. Presenteeism losses are obtained similarly, under research that shows that smokers in China, the US, and five European countries experience about 22 percent more impairment at work because of health problems compared to never-smokers [52]. Lost productivity due to smoking breaks is valued under the conservative assumption that working smokers take ten minutes of extra breaks per day [53].

8.3 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.

The investment case employs a static model to estimate the total impact of the tobacco control measures, meaning that aside from smoking prevalence, variables do not change throughout the time horizon of the analysis. 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 [54], [55].

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



STEP 3

Estimate the impact of WHO FCTC demand reduction measures on smoking prevalence.

Selection of priority WHO FCTC measures modeled within the investment case align with the [Global Strategy to Accelerate Tobacco Control](#) developed following a decision at the Seventh session of the Conference of the Parties (COP7) to the WHO FCTC. Under Objective 1.1 of the Strategy, 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 plain packaging (WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13), and comprehensive bans on tobacco advertising, promotion and sponsorship (WHO FCTC Article 13). In addition, given the importance of raising awareness of tobacco control issues and the harms of tobacco use, the investment case included instituting mass media campaigns (WHO FCTC

Article 12) as a measure modeled. The impacts of implementing the WHO FCTC provisions are obtained from the literature. The impact of enforcing smoke-free air laws, implementing plain packaging, intensifying advertising bans, and conducting mass media campaigns are derived from Levy et al. (2018) [38] and Chipty (2016) [56], as adapted within the Tobacco Use Brief of Appendix 3 of the WHO Global NCD Action Plan 2013-2020 [57], and adjusted based on assessments of Lao PDR's baseline rates of implementation. The impact of basic evidence-based tobacco cessation in the form of brief advice to quit tobacco use by healthcare professionals in primary care settings is from Levy et al. 2010 [58].

Within the analysis, it is assumed that implementation or intensification of new tobacco control measures does not take place until year three. With the exception of taxes—the impact of which is dependent on the timing of increases in tax rates (described below)— and the brief cessation advice intervention—the full impact of the measures is phased in over a five-year period. The phase-in period follows WHO assumptions [59] 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 prevalence is estimated using an Excel-based tool developed to analyze the impact of tax increases on a fixed population cohort over 15 years. The tool is populated with data, including on current cigarette smoking prevalence, the tax structure and applied tax rates, cigarette prices, prevalence elasticity, and inflation projections. As reported in its “WHO Report on the Global Tobacco Epidemic, 2019: Lao PDR Country profile”, the price of the most sold brand of cigarettes in Lao PDR is LAK 7,000, with three tax types—a specific excise tax, an ad valorem tax, and a value added tax (VAT)— comprising about 19 percent of the cost. The investment case team did not receive additional information on the tax structure or rates, meaning it could not project conditions under the existing tax structure. Therefore, a hypothetical scenario was constructed in which it was assumed that the tax structure is modified to a uniform specific excise tax¹⁸ and VAT only (dropping the ad valorem) component.

A tax increase scenario was constructed to accord with meeting what is considered in the WHO Report on the Global Tobacco Epidemic as the highest level of achievement, which is for total taxes to represent at least 75 percent of the retail price, and the recommendation in the WHO Technical Manual on Tobacco Administration for excise taxes to represent at least 70 percent of the retail price by 2034. A 25-year agreement with Imperial Tobacco, which has about 79 percent of the market share in 2019, restricts the government from raising taxes on its products until 2026 [26], [27].

18 At baseline, the specific excise tax is assumed to be equivalent to LAK 679, or the equivalent of the specific and ad valorem taxes reported in the WHO Report on the Global Tobacco Epidemic, 2019: Lao PDR Country profile.

Therefore, in 2026 a large increase in the specific excise tax (LAK 4,300) is enacted, followed by additional year-over-year increases averaging about LAK 1,000 until 2034. These increases quadruple the price of cigarettes—a real increase of LAK 21,000. The pass-through rate of taxes to the consumer is assumed to be 100 percent.

The prevalence impact of the annual increases in cigarette taxes depends on the prevailing prevalence elasticity: the extent to which individuals cease smoking as a result of changes in the price of tobacco product. No recent evidence on prevalence elasticity is found in Lao PDR. However, in low- and- middle income countries in the Asia-Pacific region with gross national incomes (GNI) similar to Lao’s current GNI, price-elasticity is found to be -0.48 [44], within the range (-0.4 to -0.8) commonly cited for developing countries [30]. We assume that prevalence elasticity is approximately one-half of price elasticity (-0.24) [60].

Changes in the prevalence of tobacco use are calculated following Joossens and colleague’s (2009) [61], who use a log-log function to ensure that large price increases do not result in implausible reductions in prevalence.

Equation A1:

$$\Delta SP_i = SP_{(i-1)} * ((EXP(\epsilon_p * LN(op_np))) - 1)$$

Where:

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

ϵ_p = prevalence elasticity

Op_np = the ratio of the old price of a pack of cigarettes to the new price after tax increases

Brief advice to quit tobacco. We calculate the effect of scaling up the provision of brief advice, we recalculate PQR to estimate the number of smokers who quit as a result of the intervention. 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) [58]. 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) [58]

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

Where:

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

ϵ_p = prevalence elasticity

Op_np = the ratio of the old price of a pack of cigarettes to the new price after tax increases

ϵ_i = income elasticity

GDP = Gross domestic product in year

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

After establishing baseline PQR, we calculated how the population quit rate would change if provision of brief advice to quit at the primary care level became more prevalent. In this “intervention scenario”, over the 15-year time horizon of the analysis, half of all primary health care providers are trained to provide brief advice to quit to adult tobacco users—a value selected based on evidence of the current intervention coverage gap; on average, in low-and middle-income countries less than half (47.8 percent) of adult smokers who visit a health provider are advised to quit.¹⁹ 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 [58]. 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 A1**.

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

Table A1: Provision of brief advice – key parameters to calculate intervention impact

Parameter name	Value	Source
Population quit rate (PQR)		
Annual quit attempt rate (QA)	29%	[25]
Increase (%) in QA as a result of receiving brief advice	60%	[58]
Treatment use (Tx Use)		
No evidence-based treatment	90%	[25]
Pharmaceutical assistance	1%	[25]
Counselling	7%	[25]
Both pharmaceutical assistance and counselling	2%	[25]
Treatment effectiveness		
No evidence-based treatment	7%	[58]
Pharmaceutical assistance	15%	[62]*
Counselling	12%	[62]*
Both pharmaceutical assistance and counselling	22%	[62]*
% of adult smokers who visit primary care clinic annually	50%	[57]**
% of smokers who relapse after successfully quitting	60%	[63]
Number of health providers	8,700	[64]***
<p>*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.</p> <p>** Assumption in line with other WHO studies on the coverage of cessation interventions [57].</p> <p>*** Sum of two indicators in the WHO Global Health Observatory (GHO) for the latest year for which information was available (2017): 1) number of physicians and 2) number of nursing personnel.</p>		

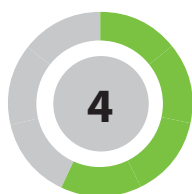
Summary: the impact of tobacco demand reduction measures. The impact sizes of all policy measures examined in the investment case are displayed in Table A2. Additional information on their derivation can be found in the Technical Appendix.²⁰

²⁰ Available upon request.

Table A2: Impact size: Relative reduction in the prevalence of current smoking by tobacco control policy/intervention, over a period of five (2020-2024) and 15 years (2020-2034)

WHO FCTC Measure	Relative reduction in the prevalence of current smoking	
	First 5 Years (2020–2024)	Over 15 Years (2020–2034)
Tobacco Control Package* (all policies)	14.4%	48.7%
Increase taxes on cigarettes (<i>WHO FCTC Art. 6</i>)	0.0%	30.8%
Enforce ban on smoking in all indoor public and work places (<i>WHO FCTC Art. 8</i>)	2.5%	4.3%
Enforce graphic health warnings (<i>WHO FCTC Art. 11</i>)	1.2%	2.1%
Implement plain packaging of tobacco products (<i>WHO FCTC Guidelines for implementation of Art. 11 and WHO FCTC Guidelines for implementation of Art. 13</i>)	1.8%	3.2%
Run a mass media information campaign to promote public awareness about tobacco control issues (<i>WHO FCTC Art. 12</i>)	4.7%	8.1%
Implement and enforce a comprehensive ban on all forms of tobacco advertising, promotion and sponsorship (<i>WHO FCTC Art. 13</i>)	4.9%	8.5%
Promote cessation: brief advice to quit tobacco use (<i>WHO FCTC Art. 14</i>)	0.4%	3.2%

* 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_i and PR_j, (1-PR_i) x (1-PR_j) [is] applied to the current smoking prevalence" [38, p. 454].

**STEP 4**

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

To analyze the impact of policy measures on reducing the health and economic burden of smoking, the investment case calculates and compares two scenarios. In the status quo scenario, current efforts are 'frozen', meaning that, through the year 2034 (end of the analysis), no change occurs from the tobacco control provisions that are currently in place. In the 'intervention' scenario, Lao PDR 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 Lao PDR can achieve by taking targeted actions to reduce tobacco use.

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

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

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—is estimated using the WHO NCD Costing Tool. Full explanations of the costs and assumptions embedded in the WHO NCD Costing tool are available [59].

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

Across these categories, the Tool contains default costs from 2011, which are sourced from the WHO CHOICE costing study. Following Shang and colleagues [66], the Tool is updated to reflect 2017 costs by updating several parameters: the US\$ to local currency unit exchange rate (2017), purchasing power parity (PPP) exchange rate (2017), GDP per capita (US\$, 2017), GDP per capita (PPP, 2017), population (total, and share of the population age 15+, 2017), labor force participation rate (2017), gas per liter, and government spending on health as a percent of total health spending (2015) [59, p. 5]. Unless government or other in-country parameters are received, data is from the World Bank database, with the exception of data on the share of government health spending and population figures. The share of government spending on health as a percent of total health spending is derived from the WHO Health Expenditures database, and population figures are from the UN Population Prospects.

To cost the scale up of the provision of brief advice to quit 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.²¹ Based on WHO’s training package for treating tobacco dependence in primary care [67], 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.

21 The analysis assumes a 10 percent of health workers turn over annually [68].

We further assume that the training occurs in person in a rented facility space. Costs of training include those to rent the facility,²² 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.²³ 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 [69]. The derivation of these estimates is detailed elsewhere [70], but in overview, the estimates reflected the “hotel cost” of a ten-minute visit²⁴ to a health facility with beds. We updated the estimates to 2020 local currency units, using 2010 purchasing power parity conversion factors and local consumer price indices [71]. For the purposes of the investment case, administration of the 5A’s brief intervention is assumed to take 10 minutes [72]. Following WHO CHOICE methodology, we estimate the cost of those extra 10 minutes as an extra 21 percent of the original cost of the primary care visit.

22 Rental costs per sq foot are obtained from the WHO Costing Tool with the room size estimated is based on square feet per person estimates for collaboration rooms [73].

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

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



STEP 6

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

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

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

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

8.4 Tax revenue analysis

A separate tax increase scenario is developed for the tax revenue analysis. The current 25-year agreement with Imperial Tobacco restricts the government from raising taxes on its products until 2026 [26], [27]. In a hypothetical scenario, the tax revenue analysis analyzes the potential increases in revenue that could have accrued in the absence of the agreement. In the scenario, the government of Lao PDR raises taxes by an average of LAK 940 over the years from 2021-2025, pulling the share of taxes up from 19 to 53 percent, and increasing the retail price of cigarettes by 75 percent in real terms over present-day levels.

No information was available on the annual number of licitly sold packs in Lao PDR. The investment case leveraged information in the WHO Report on the Global Tobacco Epidemic, 2019: Lao PDR Country profile to provide a rough estimate of baseline consumption. According to the profile, in 2017, total excise revenue (ad valorem and specific) was LAK 103,806,645,734. Assuming that the tax share of the most sold brand of cigarettes is relatively representative of the market, we divide the total excise revenue by the excise taxes per pack of cigarette to estimate that 153 million packs of cigarettes are licitly sold each year in Lao PDR.

The tax module and price elasticity measures described in Section 8.3 are leveraged to estimate the impact of tax increases on consumption, and the resulting impact on revenue. All revenue projections are discounted at a rate of three percent.

8.5 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 Lao PDR. Instead, we used an average of the elasticities of smoking participation in low- and middle-income countries, as compiled in the International Agency for Research on Cancer Handbooks of Cancer Prevention, Tobacco Control, Volume 14: Effective of Tax and Price Policies for Tobacco Control [40]. Some of the studies in **Table A3** below did not report elasticity by income quintile, instead reporting by income tertile, for example. In order to construct this table, adjustments to the data were made as needed. In the case of tertiles, tertile 1 was assigned to quintile 1, tertile 2 to quintile 3, and tertile 3 to quintile 5. Then, quintile 2 was given as the average of tertiles 1 and 2, and quintile 4 was given as the average of tertiles 2 and 3.

Table A3: Elasticity of smoking participation studies

Country	Author	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Myanmar	Kyaing [74]	-1.09	-1.25	-1.41	-1.38	-1.24
Nepal	Karki [75]	-0.31	-0.26	-0.35	-0.35	-0.31
Viet Nam	Kinh [76]	-0.65	-0.65	-0.54	-0.42	-0.42
Bangladesh	Nargis [77]	-0.33	-0.47	-0.27	-0.21	-0.14
Sri Lanka	Arunatilake [78]	-0.37	-0.35	-0.31	0.02	0.06
Sri Lanka	Arunatilake [79]	-0.17	0.17	0.21	0.01	0.34
Ukraine	Krasovsky [80]	-0.19	-0.20	-0.21	-0.17	-0.12
Ukraine	Krasovsky [80]	-0.14	-0.15	-0.17	-0.12	-0.08
China	Mao [81]	-0.95	-0.67	-0.39	-0.07	0.26
China	Mao [82]	-0.08	-0.04	-0.01	0.06	0.13
Egypt	Nassar [83]	-0.30	-0.33	-0.33	-0.33	-0.32
Thailand	Isra [84]	-0.50	-0.18	-0.07	-0.05	-0.02
Thailand	Isra [84]	-0.25	-0.03	-0.02	-0.08	-0.04
Indonesia	Adioetomo [85]	-0.03	0.03	0.09	0.15	0.20
South Africa	van Walbeek [86]	-0.70	-0.57	-0.55	-0.54	-0.41
Turkey	Onder [87]	-0.12	-0.32	-0.11	-0.02	0.15
Average		-0.38	-0.33	-0.28	-0.22	-0.12

Overall cigarette smoking prevalence was taken from the Lao PDR National Adult Tobacco Survey [1] and applied to the income quintile prevalence distribution reported in the Lao PDR Social Indicator Survey II 2017 (LSIS II) [22].

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