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INVESTMENT CASE FOR TOBACCO CONTROL IN MYANMAR

The Case for Investing in WHO FCTC Implementation

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December 2018

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World Health Organization

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The Case for Investing in WHO FCTC Implementation

Prepared for
Ministry of Health and Sports, Myanmar
United Nations Development Programme
WHO FCTC Secretariat

Prepared by
RTI International
United Nations Development Programme

Report
December 2018

Funded by UK Government

64,000

Myanmar citizens die every year due to **tobacco-related diseases**.

28%

of those deaths are among the **poorest income** quintile.

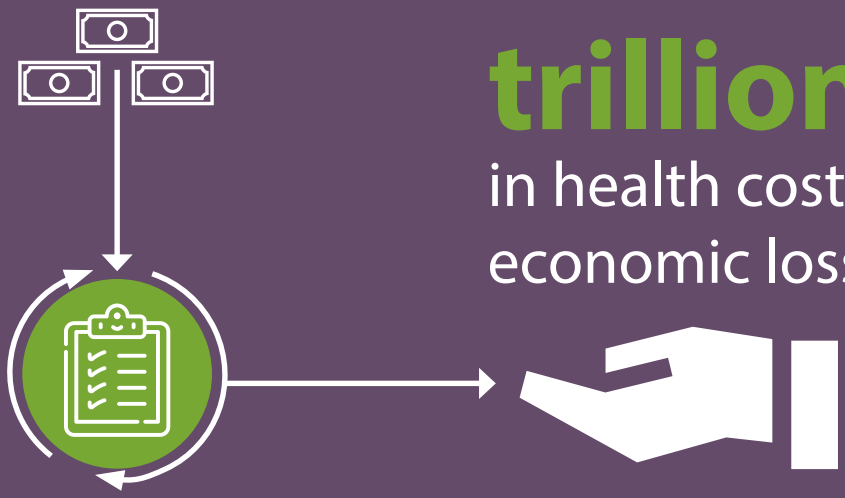
Every year...

Tobacco costs Myanmar **MMK 2.6 trillion** = equivalent to **3.3% of GDP** in 2016

Investment in

five FCTC measures

now...



will save

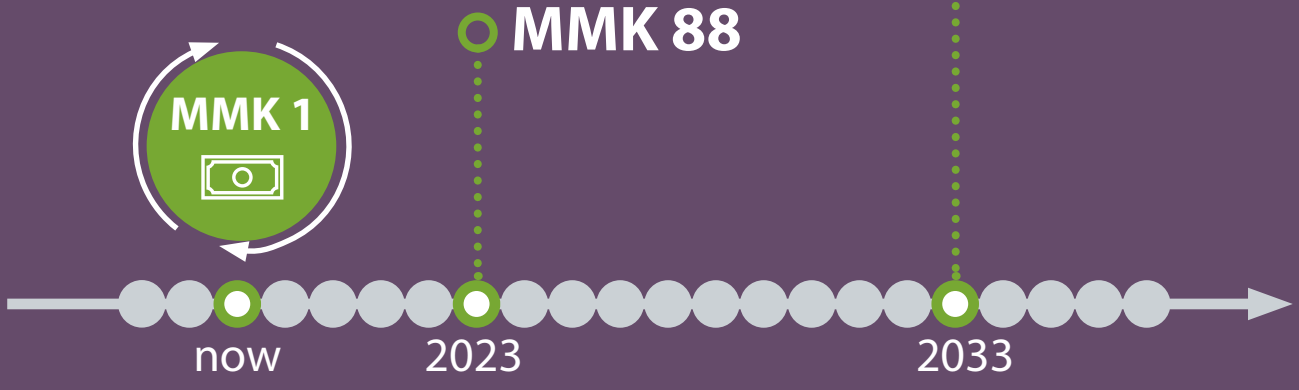
255,000 lives

and avert

MMK 8 trillion

in health costs and economic losses by 2033.

For every **MMK 1** invested in five FCTC interventions now Myanmar will receive **MMK 88** in averted costs and economic losses **by 2023** and **MMK 225 by 2033.**



List of Figures and Tables

Table of Contents

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Executive Summary

The WHO FCTC Investment Case examines the current burden of tobacco use in Myanmar, and analyzes the extent to which investing in key WHO FCTC tobacco control provisions can generate health and economic returns. The investment case finds:

> In 2016, tobacco use cost the Myanmar economy MMK 2.6 trillion, equivalent to 3.3% of its GDP. Tobacco-related healthcare expenditures totaled MMK 307 billion. In addition, the economy lost MMK 2.3 trillion in indirect productivity costs due to tobacco-attributable premature mortality, disability, and workplace smoking.

By acting now to curb tobacco use, Myanmar can reduce the annual health and economic burden of tobacco use. Over the next 15 years, implementing five cost-effective tobacco control provisions would:

- **Save 255,000 lives and reduce the incidence of disease.**

- **Lead to MMK 962 billion in savings through avoidance of tobacco-attributable healthcare expenditures.** Of this, MMK 710 billion will be saved in out-of-pocket health-care costs, advancing the Government's goal of extending access to a Basic Essential Package of Health Services to the entire population by 2020 while increasing financial protection.

- **Increase workforce productivity, adding to GDP, and spurring growth and development.** The tobacco control provisions would lead to productivity gains as a result of decreased numbers of Myanmar citizens (1) dropping out of the workforce due to premature mortality, (2) missing days of work due to tobacco-attributable diseases, and 3) working at a reduced capacity due to tobacco-attributable diseases and/or smoking breaks.

- **Provide economic benefits (MMK 8.0 trillion) that significantly outweigh the costs (MMK 35.7 billion).** Each of the WHO FCTC provisions is highly cost-effective. Raising cigarette taxes has the highest return on investment (ROI): for every kyat spent to administer and collect the cigarette taxes, the Government can expect to receive 1,057 kyat in return. Enacting more stringent bans on advertising has the next highest ROI (669), followed by expanding and enforcing bans on smoking in public places (344), implementing plain packaging of tobacco products (320), and anti-tobacco mass media campaigns (206).

Strengthening tobacco control in Myanmar will confer social benefits to all, but particularly to the poor. Forty percent of the deaths averted from increasing cigarette taxes will be among the poorest income quintile. The poorest 20 percent of the population cease smoking at a higher rate than wealthier individuals, helping them to avoid illness and catastrophic healthcare expenditures. Cigarette tax increases would further benefit the poor if the resulting Government tax revenue were reinvested in national development priorities such as universal health coverage including tobacco cessation support. Evidence from around the world indicates that overall government revenue goes up, not down, from raised cigarette taxes.

The FCTC Investment Case results for Myanmar show that there is an evidence-based opportunity to reduce the health, economic and other development burdens of tobacco through preventative actions that target tobacco use. By investing now in tobacco control measures, Myanmar can accelerate its efforts towards achieving the Sustainable Development Goals.

The report recommends six actionable steps, in addition to the modeled WHO FCTC provisions, that the Government of Myanmar can take to strengthen a whole-of-government approach to tobacco and its consequences. Through the FCTC 2030 Project, the FCTC Secretariat, UNDP and WHO stand ready to support the Government of Myanmar to reduce the enormous burdens that tobacco continues to place on its country.

Credit: © Mark Garten/UN

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 Myanmar, over half of adults (54.4 percent) use some form of tobacco [1]. Tobacco use in Myanmar claims the lives of approximately 64,000 citizens per year, with 56 percent of deaths occurring among individuals under age 70 [2]. The poor are disproportionately impacted by tobacco use in Myanmar, as 28 percent of tobacco-related deaths occur in Myanmar's poorest income quintile.

Alongside the cost to health, tobacco imposes a substantial economic burden. In 2012, worldwide, health care expenditures to treat diseases and injuries caused by tobacco use totaled nearly six percent of global health expenditure [3]. Further, tobacco use can reduce productivity by permanently or temporarily removing individuals from the labor market due to poor health [4]. When individuals die prematurely, the labor output that they would have produced in their remaining years is lost. In addition, individuals with poor health are more likely to miss days of work (absenteeism) or to work at a reduced capacity while at work (presenteeism) [5, 6].

Tobacco use displaces household expenditure on basic needs, including food and education, and can push families into poverty and hunger. It imposes health and socio-economic challenges on the poor, women, youth and other vulnerable populations. Meanwhile, tobacco production causes environmental damage including soil degradation, water pollution and deforestation. Given the far-reaching development impacts of tobacco, effective tobacco control requires the engagement of non-health sectors within the context of a whole-of-government approach.

Myanmar signed the WHO Framework Convention on Tobacco Control (WHO FCTC) in 2003 and ratified the treaty the following year [7]. Since that time, Myanmar has made significant progress in tobacco control. For example, it passed a strong tobacco control law in 2006 and has enacted several policies to reduce tobacco use, including: prohibiting smoking in many indoor public places, mandating that graphic warning labels cover 75 percent of cigarette packs, and banning tobacco advertising on traditional and new forms of media (e.g., television, the internet) [7].

By legislating and funding these important measures, Myanmar is helping to curb the tobacco epidemic and has set the stage for strengthened efforts. Intensifying existing policies and implementing new measures can draw the tobacco use prevalence curve further downward and generate additional health and economic gains. For example, opportunities exist in Myanmar to extend advertising bans to product displays at the point of sale, and mandate smoke free indoor

offices, public transportation, and cafes [7]. Realizing the full potential benefits of such measures depends on concerted and coordinated efforts from multiple sectors of government as well as high-level leadership and an informed public.

In May 2018, the WHO Convention Secretariat, UNDP, WHO and the FCTC Knowledge Hub on Tobacco Taxation (Cape Town) undertook a joint mission to Myanmar to conduct needs and situational assessments as part of the FCTC 2030 project. The FCTC 2030 Project is a global initiative funded by the UK Government to support countries to strengthen FCTC implementation to achieve the Sustainable Development Goals (SDGs). Myanmar is one of just 15 countries worldwide receiving this dedicated project support.

During the mission, the Government of Myanmar requested the development of a tobacco control investment case. An investment case analyzes the health and economic costs of tobacco use as well as the potential gains from scaled up implementation of FCTC measures. It identifies which FCTC demand-reductions measures can produce the largest health and economic returns for Myanmar (the return on investment (ROI)). In consultation with the Government of Myanmar, five FCTC provisions were selected to model within the investment case:

- Increasing tobacco taxation to reduce the affordability of tobacco products (FCTC Article 6);
- Enforcing bans on smoking in all public places to protect people from tobacco smoke (FCTC Article 8);
- Implementing plain packaging (FCTC Article 11: Guidelines for implementation);
- Instituting mass media campaigns against tobacco use (FCTC Article 12); and
- Implementing and enforcing a comprehensive ban on tobacco advertising, sponsorship, and promotion (FCTC Article 13).

In addition, the investment case includes an equity analysis on how increasing taxation on cigarettes would impact different socio-economic groups in Myanmar.

This report proceeds in four sections. Section I provides an overview of tobacco control in Myanmar, including a discussion of tobacco use prevalence as well as challenges and opportunities. Section II summarizes the methodology of the investment case, and Section III reports the main findings of the economic analysis, including the equity impact of cigarette tax increases on different socio-economic groups. The report concludes under Section IV with recommendations. An Annex provides supplemental information on the investment case methodology.

I. Tobacco Control in Myanmar: Status and Context

Tobacco control in Myanmar is at an important crossroads. The country has made some remarkable achievements in tobacco control in recent years, but it acknowledges that more needs to be done to protect current and future populations. This section explores some of the main tobacco control issues in Myanmar, relying on both the literature and in-country discussions with key stakeholders.

Tobacco use prevalence, social norms and awareness-raising

In Myanmar, 54.4 percent of adults use some form of tobacco; 26.1 percent of adults are current tobacco smokers and 43.2 of adults percent currently use smokeless tobacco [1]. Smoking prevalence is higher among men than women in Myanmar (see Figure 1). Males also smoke more intensely than females: men who smoke consume an average of 5.6 sticks per day compared to an average of 3.2 per day for women [1].

Among youth, 30 percent of boys use some form of tobacco, with rates of cigarette smoking showing a strong increase over the past decade; only 8.5 percent of boys were reported to smoke cigarettes in 2007, compared to 17 percent in 2016 [8]. Stakeholders reported early initiation of smoking among youth, especially in rural areas. There is a traditional practice of fathers passing on tobacco use to their sons, often starting with a young boy helping his father 'light up.'

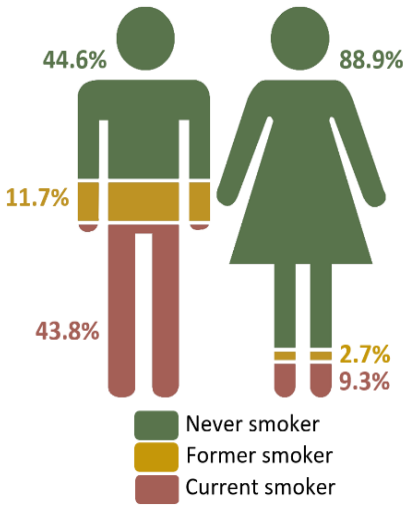


Fig. 1: Current smoking prevalence, by sex

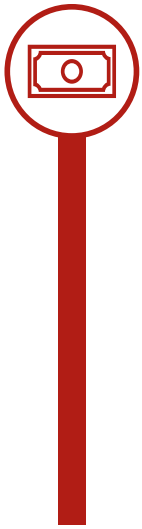
Tobacco use is also common among the poor. The poorest 20 percent of the population are more likely to smoke (18%) than the middle 20 percent of income earners (15%). Those with no education are substantially more likely to smoke (23%) than those with primary education or higher (~15%).

The most common type of smoked tobacco is cheroots. Sixty-four percent of current smokers report smoking cheroots, whereas 33 percent of smokers report smoking manufactured cigarettes, 20 percent report smoking hand-rolled cigarettes, and three percent report smoking other tobacco products [1].

Tobacco control regulatory measures

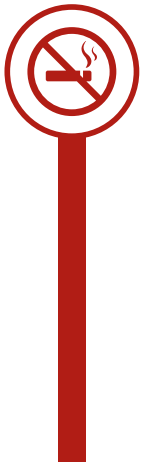
Beyond raising awareness, strong fiscal and regulatory measures can powerfully influence norms by signalling to the population that smoking is harmful. Myanmar has a set of tobacco policies already in place to reduce demand for tobacco products and protect the health of its population.

The Control of Smoking and Consumption of Tobacco Product Law (Law No. 5/2006), enacted in 2006, is the first and primary law that regulates smoke free public places; tobacco promotion, sponsorship, and advertising; and labeling and packaging requirements for tobacco products [9].



Excise Tax

Myanmar has a four-tier cigarette **excise tax** that ranges from 80 to 320 kyat based on the sales price of a pack of 20 cigarettes [10]. The VAT is set at a rate of 5 percent [11]. In 2016, taxes were reported to account for 35.3 percent of the retail price of the most sold brand of cigarettes (Red Ruby) [7]. Recent recommendations from the Southeast Asia Tobacco Control Alliance recommend that Myanmar "collapse the tobacco tax tiers to be a uniform specific tax rate for all tobacco products", and increase taxes. Scaling up taxes to represent 75 percent of the retail price, in line with FCTC Article 6 Guidelines, would generate additional health and revenue gains.



Smoking Ban in Public Places

Myanmar is yet to enact a **ban on smoking in all public places**. While smoking is prohibited in many indoor public places, such as healthcare facilities, government buildings and restaurants, smoking is still permitted in indoor offices, cafes, and on public transportation. In addition, in places where smoking is banned, compliance is low, especially for restaurants, government facilities and universities [7].

According to the most recent Global Youth Tobacco Survey for Myanmar, 28 percent of youth aged 13 to 15 were exposed to tobacco smoke in enclosed public places within the past week [12].

Warning Labels and Packaging

Myanmar requires that large **graphic warning labels** cover 75 percent of the packaging of smoked tobacco products, well exceeding the FCTC's 50 percent requirement [7]. Additionally, the law requires that labels be rotated and regulates the language, style, and graphics that appear on cigarette packaging. However, **plain packaging**—neutral colors, without branding and logos—is currently not regulated. A law requiring plain packaging would offer Myanmar another tool to reduce tobacco companies' marketing of lethal products.

Anti-tobacco Campaigns

The Government of Myanmar has sponsored and led targeted **anti-tobacco mass media campaigns**, including an anti-betel chewing media campaign in September and October of 2017, broadcast through public and private media. A survey showed that nearly 90 percent of people targeted remember the campaign.

Running frequent, national-scale anti-tobacco mass media campaigns, including anti-smoking campaigns, presents another opportunity for Myanmar to combat tobacco use through education and communication.

TAPS

Although Myanmar regulates several forms of tobacco **advertising, promotion, and sponsorship (TAPS)**, some forms such as advertising at the point of sale, promotional discounts and product placement remain unregulated. According to one stakeholder, "*Under existing regulations, tobacco companies can promote their name by offering scholarships to children, sponsoring community projects or using social networking sites such as Facebook.*" Additional regulations would protect the population. The Ministry of Information and local media could work together to close information channels for those promoting tobacco use.

Raising awareness about the harms of tobacco use

An overall "pro-tobacco" environment, as described by one stakeholder, and higher levels of smoking among the less educated, confirm the need to raise awareness of tobacco use harms in Myanmar. Mass media campaigns, TV/film restrictions on tobacco advertising/ product placement, smoke-free places, integrating tobacco control into school curricula and use of celebrity anti-tobacco ambassadors could all positively influence social norms.

Smoking bans in public places effectively change public perceptions of smoking, by de-normalizing smoking and signaling that exposure to second-hand smoke is dangerous. Evidence suggests that once smoking bans are enforced and observed beyond a certain point, the policies become self-enforcing because new norms dictate social pressure not to smoke.

The Ministry of Education could work with the Ministry of Health and Sports to incorporate tobacco control into revisions of the national education curriculum (2020-2023). The Ministry of Health and Sports could also activate health workers and hospitals as information sources on the dangers of tobacco use. The Ministry of Information can raise awareness through its offices across the country.

Credit: © UNICEF

Table 1 summarizes the existing state of FCTC demand-reduction provisions that are analyzed in the investment case and compares them against the FCTC target goals for each measure. Reaching target goals can further reduce tobacco consumption.

Table 1: Summary of the current state of FCTC demand measure in Myanmar, and target goals

Tobacco Policy	Baseline	Target
Increase taxes to raise the sales price of tobacco products	Tax share = 35% of the retail price of an average priced pack of cigarettes.	Scale up cigarette taxes to 75% of the retail price, with regular increases to outpace inflation and income growth.
Ban smoking in public places in order to protect people from tobacco smoke	Smoking bans in some public places, but allowed in offices, cafes, and public transportation.	Extend the existing law to include all public places and enforce to ensure compliance.
Mandate that tobacco product packages carry large health warnings describing the harmful effects of tobacco use	Graphic warning labels are required to cover 75% of tobacco packaging and to rotate every six months.	√ Currently meeting the FCTC size and rotation obligations.
Mandate plain packaging of all tobacco products	No law mandates plain packaging of tobacco products.	Implement a law requiring plain packaging.
Enact comprehensive bans on all forms of tobacco advertising, promotion, and sponsorship	Advertising banned on most major forms of media (TV, radio, billboards, print). Product displays at POS and some indirect forms of promotion and sponsorship remain legal.	Bans on all forms of direct and indirect TAPS, with enforcement to ensure compliance.
Raise awareness about the harms of tobacco use: Mass media campaigns	National-scale anti-smoking mass media campaigns have not recently been conducted in Myanmar.	Implement consistent, national-scale education and public awareness campaigns to warn about the harms of tobacco use.

* Unless otherwise noted, information in this table is derived from the WHO Report on the Global Tobacco Epidemic: Country profile – Myanmar [7].

Enforcement of tobacco control measures

Myanmar, like many countries, faces enforcement challenges related to tobacco control. These challenges relate to smoke-free places, selling to minors, illicit trade, and advertisement, promotion and sponsorship. Barriers to stronger enforcement include penalties which are described by stakeholders as too small, pressure from industry, and acceptance of smoking/tobacco use among the general public. The Ministry of Home Affairs and the Police recognize the need for stronger enforcement and have discussed the possibility of regular training/sensitization of the police force in relation to their tobacco-related responsibilities.

Tobacco industry interference

The tobacco industry lobby is strong in Myanmar. According to the fourth Tobacco Industry (TI) Interference Index, Myanmar ranks third highest out of 9 ASEAN countries analyzed [13]. According to the survey, TI interference in Myanmar increased from 2015 to 2016. Based on the report, the industry has worked to delay implementation of the 2016 legislation requiring pictorial health warnings on cigarette packs. There are still tobacco packs being sold which are not compliant with the requirement. Policymakers in Myanmar should consider strengthening safeguards against TI interference, for example by instituting a code of conduct for Government officials that requires disclosure of conflict of interests.

Fiscal measures, i.e. tobacco taxes

Increasing taxes on tobacco products is the most effective measure a government can take to reduce tobacco use among the population while increasing government revenue. The 2015 Addis Ababa Action Agenda on Financing for Development specifies price and tax measures on tobacco as an important revenue stream to finance national development efforts. A recent analysis found that by gradually collapsing the number of cigarette excise tax tiers over the 2018–2023 period, and aggressively raising tax rates, Myanmar could raise an additional 1,807.2 billion kyats each year[1] [14]. This revenue could finance the NCD action plan, a national tobacco control action plan, universal health coverage, or any Government priority.

Myanmar has one of the lowest cigarette prices in all of ASEAN. Its taxation rate on cigarettes is 35 percent, and cigarettes are over 30% more affordable in 2014 compared to 2010, the worst cigarette affordability change in ASEAN over this time-frame. Scaling up cigarette taxes to represent 75 percent of the retail price, in line with FCTC Article 6 Guidelines, would generate large health and

1 Revenue projections within the referenced study do not account for the Government's recent October 2018 tax increase, though modelling projections are in the process of being updated. In addition, the revenue projections only account for cigarettes. Increasing taxes on cheroots and smokeless tobacco would provide additional government revenue.

economic gains. Further, restructuring the tax system to eliminate having multiple tax tiers would substantially increase the benefits of tax increases. Most of the health gains would accrue among the poorest segments of society, as will be evidenced in the last section of this report.

National coordination, strategy and planning

Strengthening the tobacco control measures discussed above requires coordination between sectors of government, and parliamentary support. Civil society and international development partners, including the UN Country Team, are also important partners.

Myanmar's national tobacco control law established the country's national coordination mechanism – the Central Tobacco Control Committee (CTCC). As of the UN delegation visit to Myanmar in May 2018, the CTCC was not meeting regularly, though non-health sectors expressed interest in participating in the CTCC. Myanmar can reinvigorate the CTCC, by expanding the committee's membership, further delineating the committee's powers and responsibilities, and having a high-level political figure convene the committee with the Minister of Health as chair.

Myanmar has taken important recent steps to strengthen national coordination for tobacco control, a general obligation under WHO FCTC Article 5.2a. In June 2018, the Ministry of Health and Sports held a CTCC meeting in Nay Pyi Taw, presided over by the Health Minister and attended by high-level government officials including the Deputy Minister of Trade and Commerce, Deputy Attorney General, and Director-Generals from many ministries. A new terms of reference for the committee, list of committee members and other key items were agreed.

Another priority for the Government of Myanmar is a national tobacco control action plan (WHO FCTC Article 5.1), which would guide the workplan of the CTCC. A multisectoral, costed national strategy for tobacco control aligns sectors along common strategies, goals and targets, facilitates resource mobilization, and enhances accountability and transparency. In Myanmar, there are opportunities to link a new national tobacco control strategy to national development plans and different sectoral plans. These include the 'Myanmar Sustainable Development Plan 2018-2030' and the 'National Strategic Plan for Prevention and Control of NCDs 2017-2021'.

Finally, the Government of Myanmar can draw on expertise and leverage ongoing activities conducted in partnership with international partners and in-country stakeholders, especially The Union, People's Health Foundation and SEACTA.

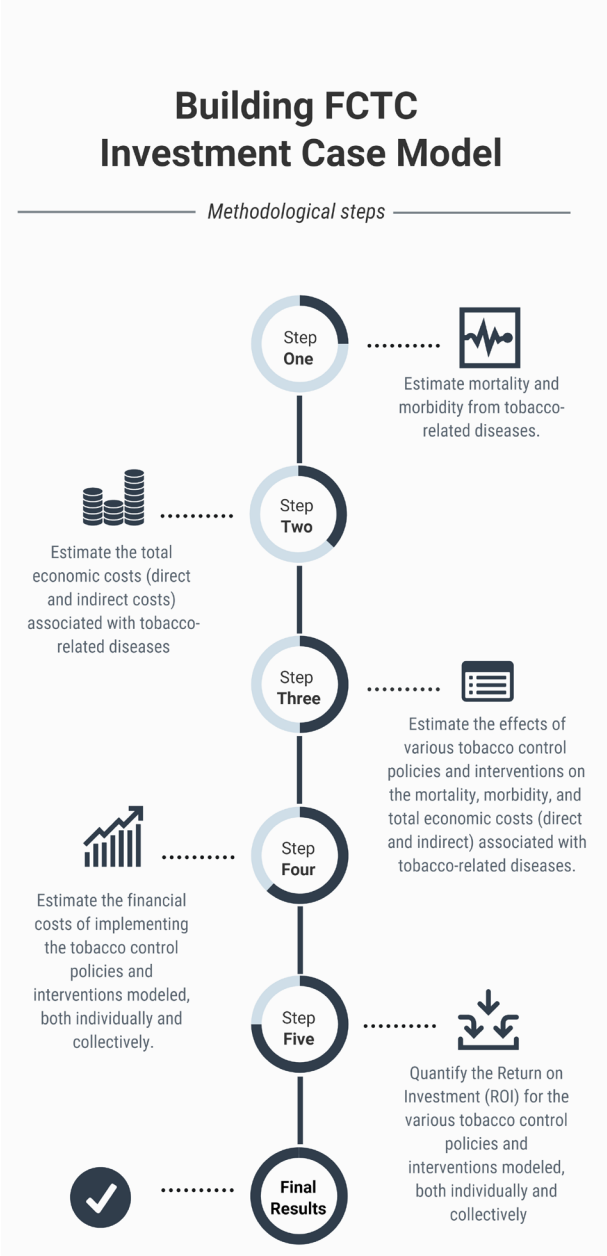
II. Methodology

The purpose of the FCTC Investment Case is to quantify the current health and economic burden of tobacco use in Myanmar; estimate the impact that implementing tobacco measures would have on reducing the burden; and provide analysis of other impacts—e.g., tax revenue, equity, illicit trade[2]—that may factor into Government decisions to implement tobacco control measures.

A RTI International-developed model was developed to conduct the investment case, and perform the methodological steps in Figure 2. The tools and methods used to perform these steps are described in this report's Annex. Interested readers are referred to this report's separate, forthcoming Technical Appendix for a more thorough account of the methodology.
The FCTC Investment Case team worked with partners in Myanmar 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), World Bank database, Global Burden of Disease (GBD) study, and academic literature.

Within the investment case, costs and monetized benefits are reported in constant 2017 Myanmar kyats, and discounted at a rate of three percent.

Fig. 2: Methodological Steps



2 Of these three, only an equity analysis was carried out for Myanmar.

III. Results

The current burden of tobacco use: health and economic costs[3]

Tobacco use undermines economic growth. In 2016, tobacco use caused 64,033 deaths in Myanmar (See Figure 3), 56 percent of which occurred among citizens under the age 70 [2].[4] As a result, Myanmar lost productive years in which those individuals would have contributed to the workforce. The economic losses in 2016 due to tobacco-related premature mortality are estimated at MMK 1.32 trillion.

While the costs of premature mortality are high, the consequences of tobacco use begin long before death. As individuals begin to suffer from tobacco-attributable diseases (e.g. heart disease, strokes, cancers), expensive medical care is required to treat them. Spending on medical treatment for illnesses caused by smoking cost the Government MMK 71.9 billion in 2016, and caused Myanmar citizens to spend MMK 226.7 billion in out-of-pocket (OOP) healthcare expenditures. OOP healthcare expenditures have significant implications for poverty reduction efforts given the relationship between OOP health spending and impoverishment. The social security scheme and non-profit institutions serving households spent MMK 8.8 billion on treating tobacco-attributable diseases in 2016. In total, smoking generated MMK 307.4 billion in healthcare expenditures.

In addition to generating 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 2016, the costs of excess absenteeism due to tobacco-related illness was MMK 162.7 billion and the costs of presenteeism due to cigarette smoking were MMK 448.8 billion.

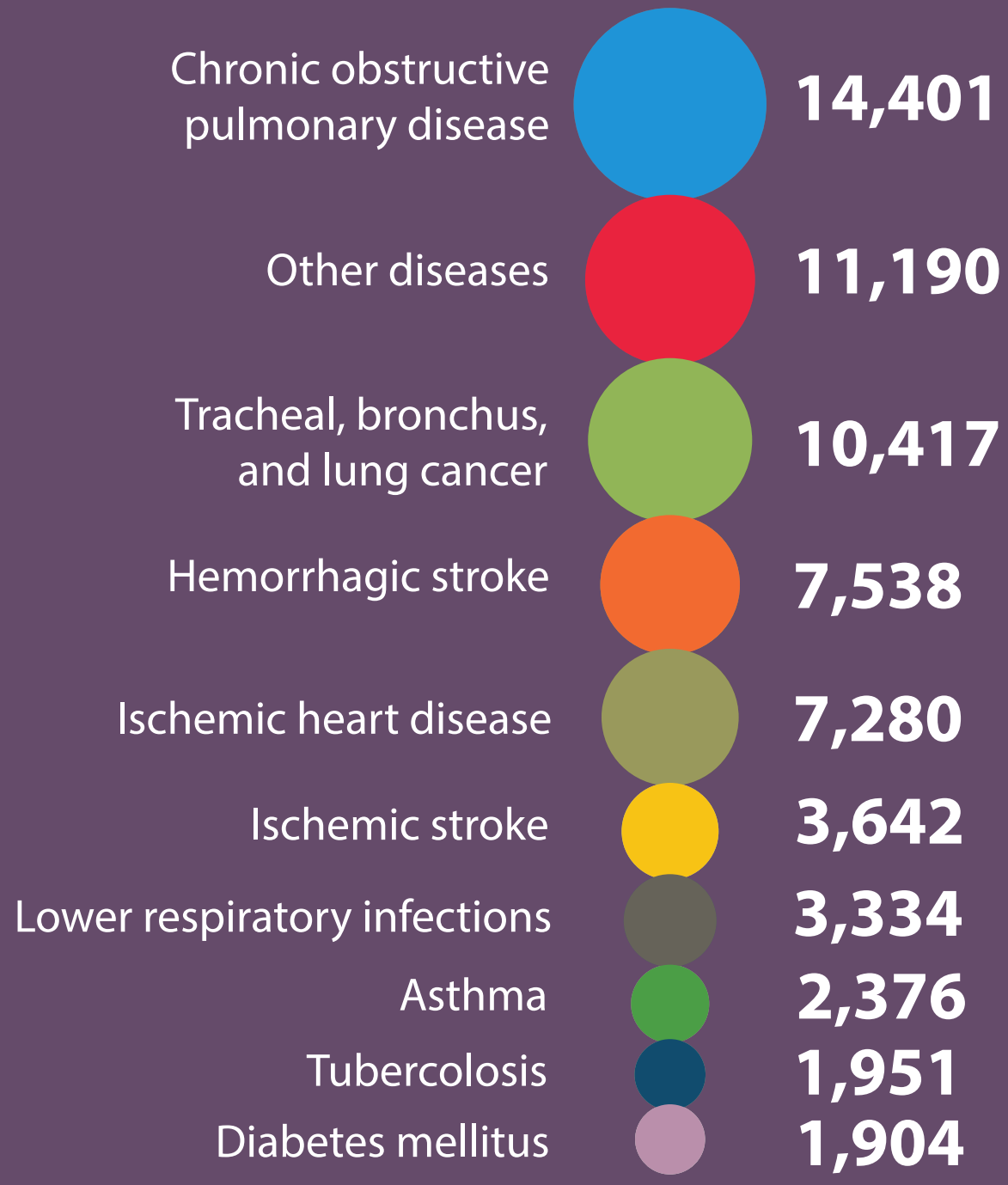
Finally, even in their healthy years, working smokers are less productive than non-smokers. Smokers take at least ten more minutes per day in breaks than non-smoking employees [15]. If ten minutes of time is valued at the average worker's salary, the compounding impact of 6.8 million employed daily smokers taking five minutes per day for smoke breaks is equivalent to losing MMK 346.2 billion in productive output annually.

In total, tobacco use cost Myanmar's economy MMK 2.62 trillion[5] in 2016, equivalent to about 3.3 percent of Myanmar's GDP that year. Figure 4 breaks down direct and indirect costs.

3 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, second-hand smoke, and the use of other types of tobacco products). Only smoking-attributable (not tobacco-attributable) costs are calculated for healthcare expenditures, absenteeism, presenteeism, and smoking breaks. While other forms of tobacco may also cause losses in these categories, no data is available to precisely calculate those losses.
4 Results extrapolated from IHME Global Burden of Results Tool and scaled based on country input.
5 Component parts may not add up exactly to 2.62 trillion due to rounding.

The current burden of tobbaco use: health costs

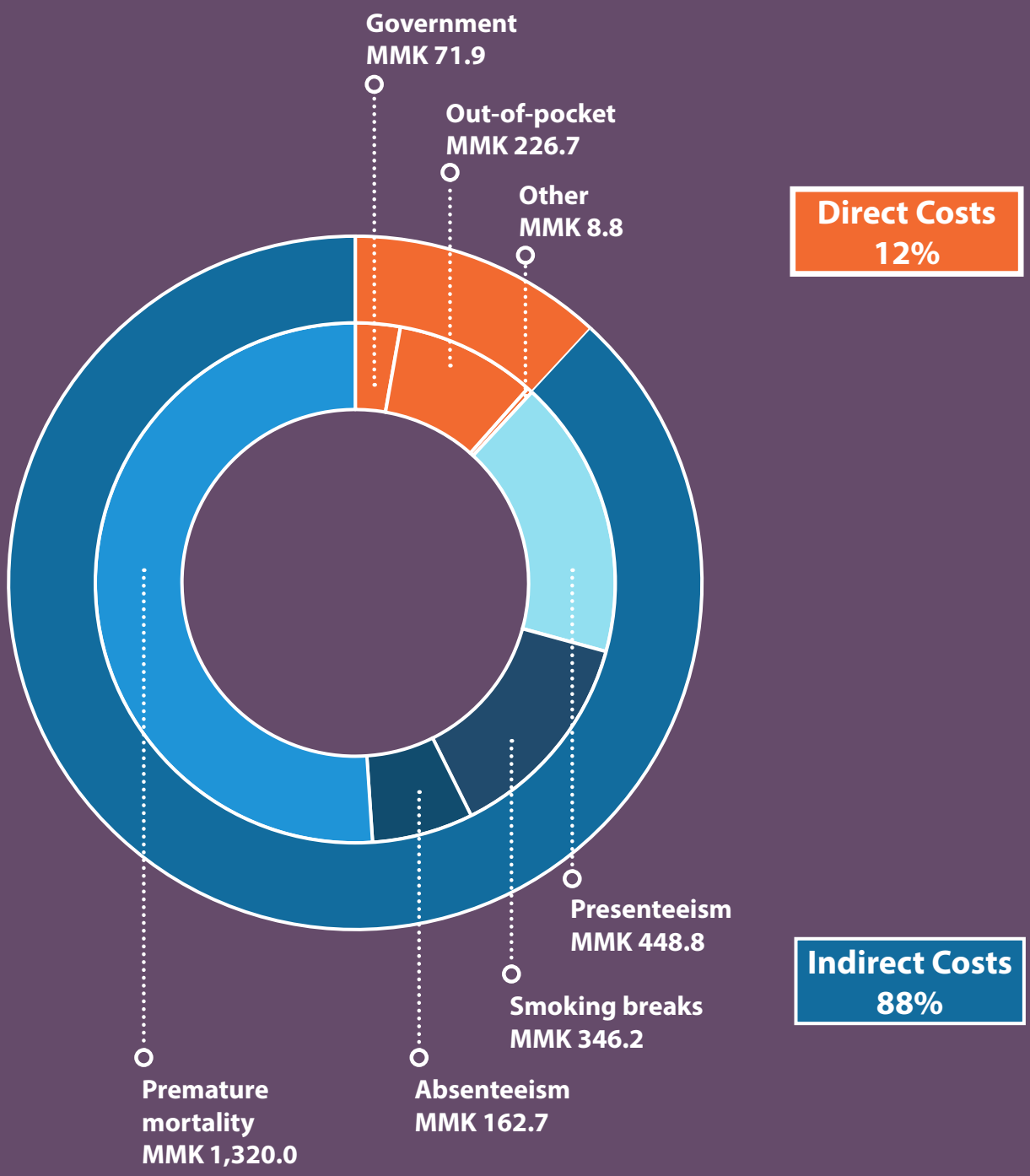
Fig. 3: Tobacco-attributable deaths by disease, 2016



Source: Results pulled from the IHME Global Burden of Disease Results Tool. Other diseases include hypertensive heart disease, lip and oral cavity cancer, esophageal cancer, larynx cancer, liver cancer, stomach cancer, other cardiovascular and circulatory diseases, peptic ulcer disease, pancreatic cancer, nasopharynx cancer, colon and rectum cancer, cervical cancer, bladder cancer, leukemia, aortic aneurysm, atrial fibrillation and flutter, kidney cancer, other chronic respiratory diseases, peripheral artery disease, and rheumatoid arthritis.

The current burden of tobbaco use: economic costs

Fig. 4: Breakdown of the share of direct and indirect economic costs (MMK billions)



Implementing Policy Measures that Reduce the Burden of Tobacco Use

By implementing new FCTC policy measures, or intensifying existing ones, Myanmar can secure significant health and economic returns, and begin to reduce the MMK 2.62 trillion in annual direct and indirect economic losses that occur due to tobacco use.

This section presents the health and economic benefits that result from individual policy actions to: 1) increase cigarette taxation to reduce the affordability of tobacco products; 2) expand the ban on smoking in public places to include all public spaces, and increase compliance with the law; 3) run national anti-tobacco, including anti-smoking, mass media campaigns to increase awareness about the harms of tobacco use; 4) enact a comprehensive ban on tobacco advertising, promotion and sponsorship, and; 5) implement plain packaging of tobacco products.

Health Benefits—Lives Saved

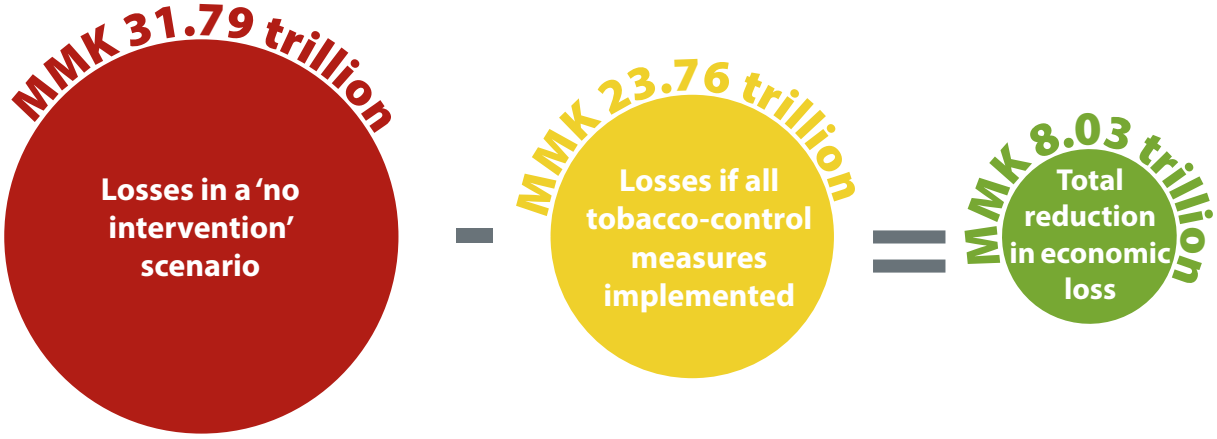
Enacting the tobacco policy package (inclusive of all the 5 provisions listed above) would lower the prevalence of cigarette smoking, leading to substantial health gains. Specifically, enacting the package would reduce the prevalence of cigarette smoking by 44.7 percent over 15 years, saving 255,425 lives from 2019-2033, or 17,028 lives annually.

For every MMK 140,000 that the Government spends to implement and enforce the five FCTC provisions, the Government would save one life.

Economic Benefits

Implementing the tobacco policy package would result in Myanmar avoiding 25 percent of the economic losses that it is expected to incur from smoking over the next 15 years. Figure 5 illustrates the extent to which Myanmar can shrink the economic losses that it is expected to incur under the status quo response.

Fig. 5: Tobacco-related economic losses over 15 years: What happens if Myanmar does nothing, versus if the government implements tobacco measures to reduce demand for smoking?

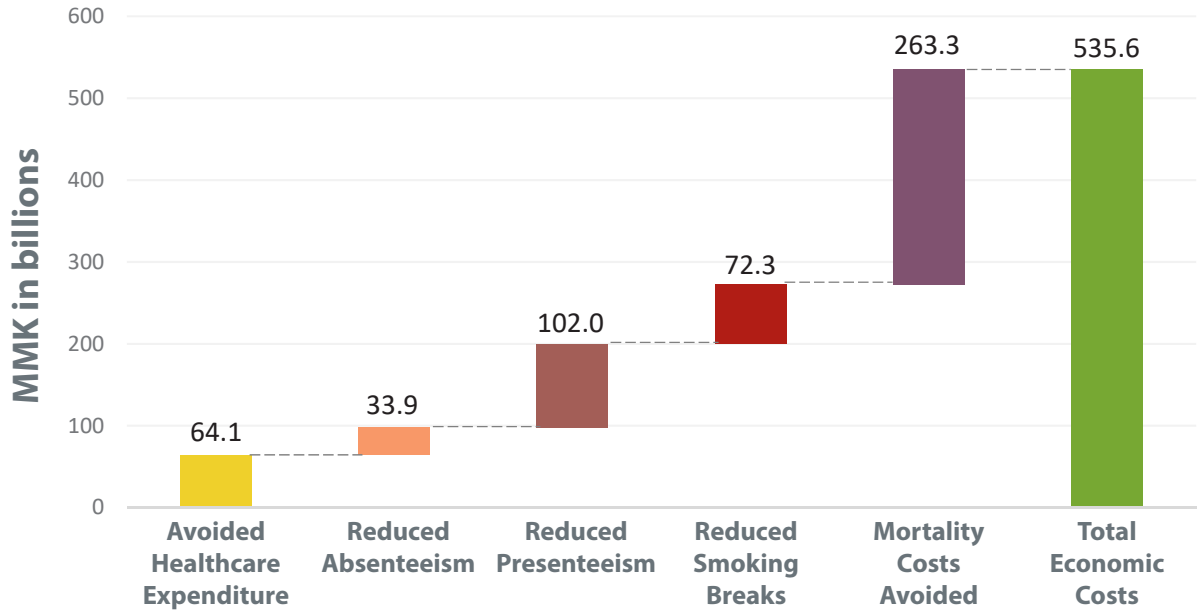


In total, over 15 years Myanmar would save about MMK 8.03 trillion that would otherwise be lost if it does not implement the package of tobacco measures. That is equivalent to about MMK 535.6 billion in annual avoided economic losses.

The avoided economic losses derive from lowering direct and indirect costs of tobacco use. With better health, fewer individuals need to be treated for complications from disease, resulting in direct cost savings to the Government. In addition, better health leads to increased worker productivity. Fewer working-age individuals leave the workforce prematurely due to death. Laborers miss fewer days of work (absenteeism) and are less hindered by health complications while at work (presenteeism). Finally, because the prevalence of smoking declines, fewer individuals take smoke breaks in the workplace.

Figure 6 breaks down the sources from which annual savings accrue. The largest annual savings result from avoiding premature mortality (MMK 263.3 billion). The next highest source of annual savings is reduced presenteeism (MMK 102.0 billion), followed by reduced numbers of smoking breaks (MMK 72.3 billion), avoided healthcare expenditures (MMK 64.1 billion), and reduced absenteeism (MMK 33.9 billion).

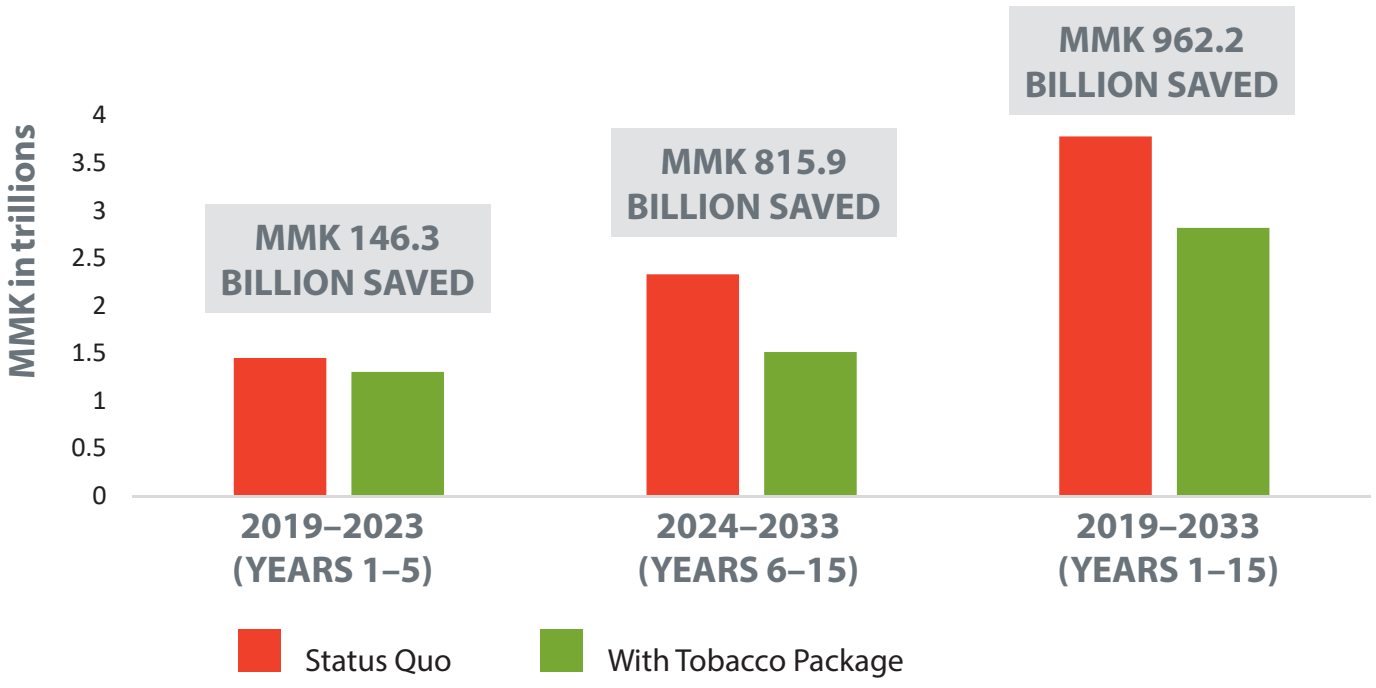
Fig. 6: Sources of annual economic savings as a result of implementing the tobacco policy package.



Implementing the package of tobacco control measures reduces medical expenditure for citizens and the Government. Presently, total private and public annual health care expenditures in Myanmar is about MMK 3.6 trillion [16], of which an estimated 8.5 percent is directly related to treating disease and illness due to tobacco use (≈ MMK 307 billion).

Year-over-year, the package of interventions lowers smoking prevalence, which leads to less illness, and consequently less healthcare expenditure. Over the time horizon of the analysis, the package of interventions averts MMK 962.2 billion in healthcare expenditures, or about MMK 64.1 billion annually (see Figure 7), with 23 percent of those savings accruing to Government, 74 percent to individual citizens who would have paid out-of-pocket for healthcare, and the remainder to social security schemes or non-profit institutions serving households. Thus, from the reduced healthcare costs alone, the Government stands to save about MMK 221.3 billion over 15 years. Simultaneously, the Government would successfully reduce the health expenditure burden tobacco imposes on Myanmar's citizens, supporting efforts to reduce economic hardship on families. Rather than spend on treating avoidable disease, these families would be able to invest more in nutrition, education and other inputs to secure a better future.

Fig. 7: Private and Public Healthcare costs (and savings) over the 15-year time horizon



The Return on Investment

An investment is considered worthwhile from an economic perspective if the gains from making it outweigh the costs. A return on investment (ROI) analysis measures the efficiency of the tobacco investments by dividing the economic benefits that are gained from implementing the FCTC measures by the costs of the investments. For the Myanmar 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. The ROI shows the best return on investment for each intervention, and for the full package of measures. Net benefits are a measure of which interventions are expected to have the largest impact.

Table 2 displays costs, benefits and ROIs by intervention, as well as for all interventions combined. All individual interventions deliver a positive ROI within the first five years, meaning that even short-term results would be achieved. Depending on the intervention, over the first five years, the Government will recoup anywhere from 80 to 316 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 policy/intervention (MMK billions)

	First 5 years (2019-2023)			All 15 years (2019-2033)		
	Total Costs (billions)	Net Benefits (billions)	ROI	Total Costs (billions)	Net Benefits (billions)	ROI
Tobacco Package* (all policies/interventions implemented simultaneously)	13.94	1,220	**88**	35.71	8,030	**225**
Raise cigarette taxes (FCTC Art.6)	1.03	323.80	**316**	2.35	2,480	**1,057**
Protect people from tobacco smoke (FCTC Art.8)	3.63	363.47	**100**	8.12	2,800	**344**
Bans on advertising (FCTC Art.11)	1.02	195.00	**192**	2.28	1,520	**669**
Plain packaging (FCTC Art.13)	1.48	146.92	**100**	3.60	1,150	**320**
Mass media campaign (FCTC Art. 12)	4.62	368.86	**80**	13.76	2,830	**206**

* The combined impact of all interventions is not the sum of individual interventions. To assess the combined impact of interventions, following Levy and colleagues' (2018), "effect sizes [are applied] as constant relative reductions; that is, for policy i and j with effect sizes PRi and PRj, (1-PR ii) x (1-PR j) [is] applied to the current smoking prevalence [17, p. 454].

Over the 15-year period, raising cigarette taxes is expected to have the highest return on investment: for every Myanmar kyat invested, the Government can expect to see 1,057 kyats in economic benefits in return. Bans on advertising have the next highest ROI (669), followed by expanding and enforcing smoke free public places (344), plain packaging (320), and implementing a mass media campaign (206). The higher ROIs for fiscal and regulatory measures, relative to the lower ROI for awareness-raising, demonstrates the impact of fiscal and regulatory measures for health and development.

Impact on the poor

Raising cigarette taxes has the highest return on investment of the five policies included in our analysis by a large margin. However, a common concern with increasing cigarette taxes is that the burden could fall disproportionately on poor smokers since the tax burden represents a higher proportion of their income than for wealthier smokers. Yet the poor actually stand to benefit most from raised cigarette taxes; relative to richer smokers, poorer smokers are more likely to quit smoking when taxes are increased, which means they benefit disproportionately from the subsequent decrease in tobacco-related health problems and medical costs. Avoiding these costs is critical to lift the poor out of poverty and to reduce inequalities in Myanmar. Reduced household spending on tobacco-attributable diseases can unlock resources for the poor to potentially invest in food, children's education and other productive investments.

Assessing how different economic groups react to changes in price, as well as how much money they spend on medical costs, are important components of determining whether a policy of increased tobacco taxation is pro-poor. Studies from Lebanon [18], China [19], and other middle-income countries [20] consistently show that the years of life saved, the healthcare expenditures averted, and the additional taxes paid are not evenly distributed, but strongly benefit the poorest income groups. For example, in Lebanon, a 50 percent increase in price is estimated to prevent 23,000 new cases of poverty over 50 years [18], and that same increase would avert 2.1 million catastrophic health expenditures in India, 440,000 catastrophic expenditures in Bangladesh, and 350,000 in Vietnam [20]. To estimate how a cigarette tax increase would affect Myanmar, we estimate the impact of the tax increase modeled in the investment case on different income quintiles. Income quintiles are created by dividing the population into five equal groups, by income, where quintile 1 is composed of the poorest 20 percent of Myanmar and quintile 5 contains the wealthiest 20 percent.

Currently, Myanmar's cigarette tax represents 35.3 percent of the retail price of a pack of cigarettes [7]. In the investment case, we examine the impact of raising the price of cigarettes by about 10 percent, year-over-year, through 2023, followed by more gradual increases of 3-4 percent through

2033. We examined the impact of these price increases on smoking prevalence and health outcomes for five income quintiles.

In Myanmar, smoking prevalence is only slightly higher in the poorest quintile (18.2 percent) than in wealthier quintiles (the middle quintile has the lowest prevalence rate of 15 percent) [21]. However, because people with lower income are more responsive to changes in price, the tax increase causes the greatest drop in smoking prevalence in quintile 1, as shown in Figure 8. Additionally, the change in the amount of money spent on cigarettes due to the tax increase is lowest in the poorest quintile. While quintile 1 (poorest) increases spending on cigarettes by 21.7 percent due to the increased price, quintile 5 (richest) increases spending by 70 percent, as shown in Figure 9.

Fig. 8: Change in prevalence caused by tax increase, by income quintile

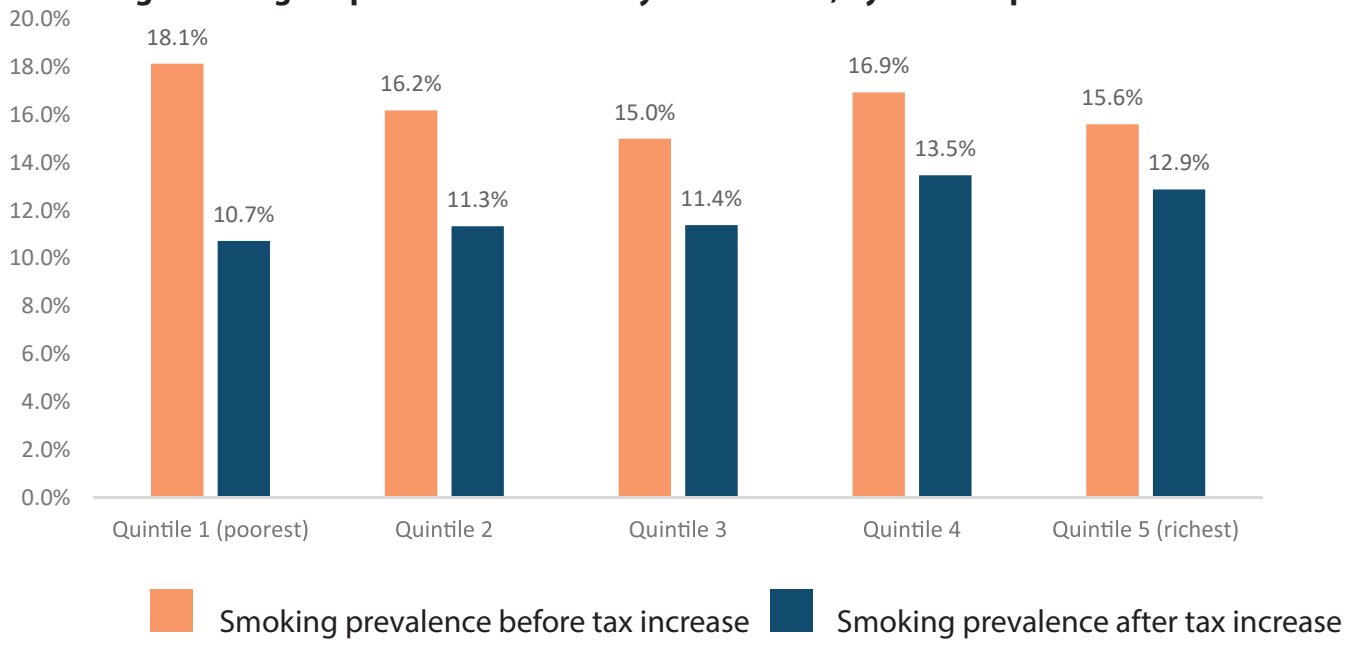
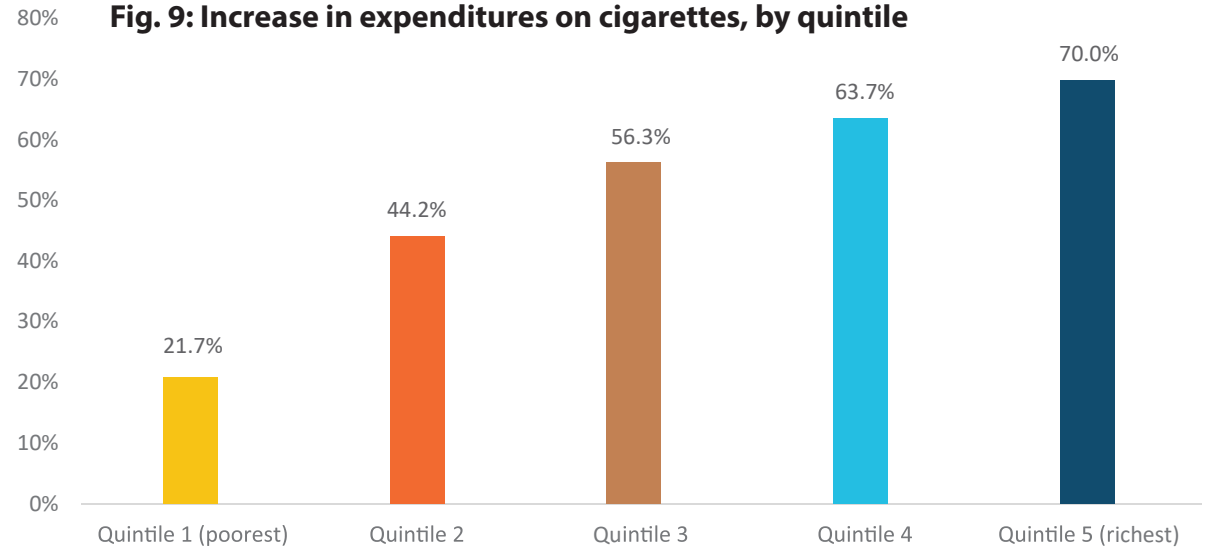


Fig. 9: Increase in expenditures on cigarettes, by quintile

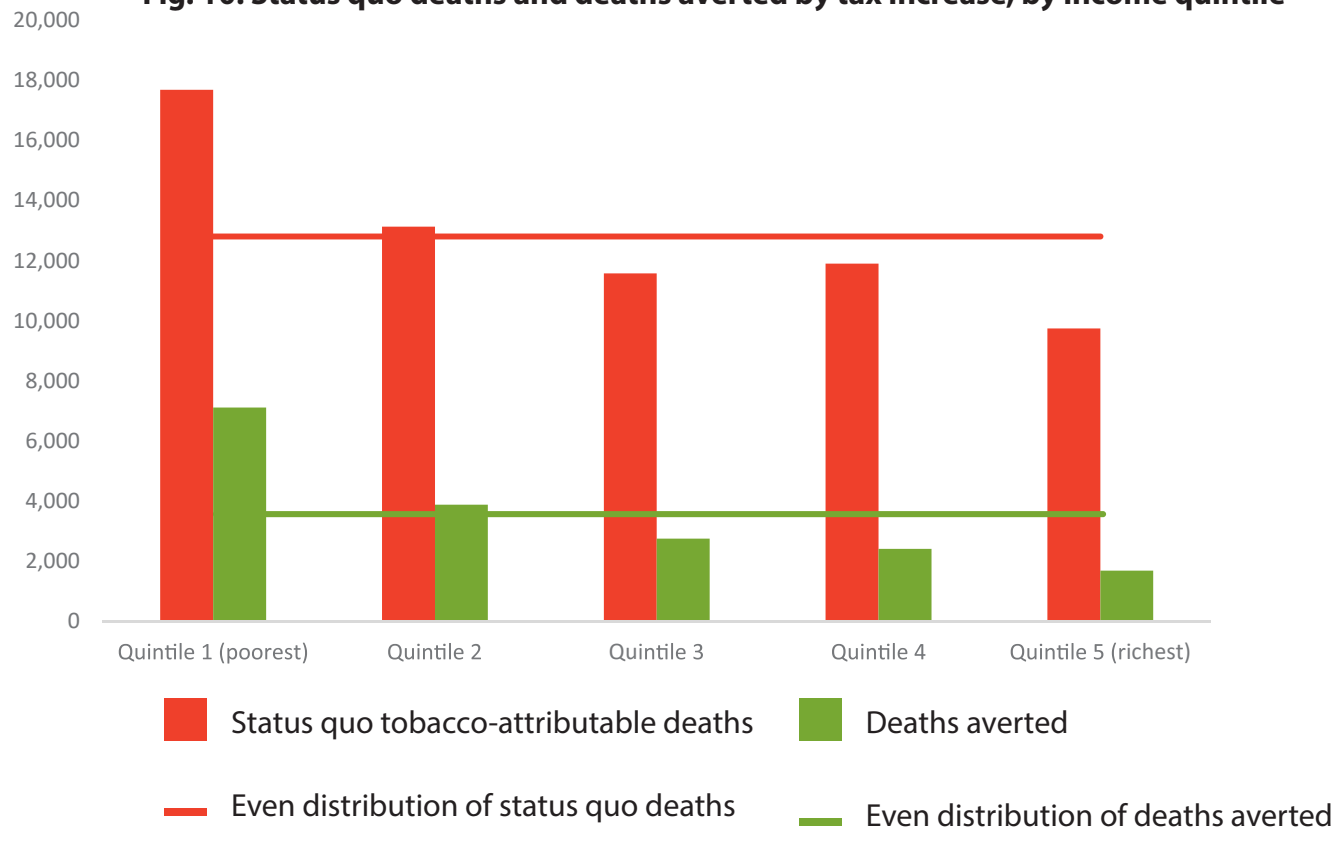


Of the 64,033 tobacco-attributable deaths observed in 2016, 27.6 percent occurred among the poorest 20 percent of the population, demonstrating the disproportionate burden of smoking on the poor. The recommended tobacco control measures, particularly the raised cigarette taxes, can close gaps for the poor.

Indeed, smoking prevalence declines the most in quintile 1 due to the tax increase, and health benefits accrue accordingly. Specifically, of the 17,833 deaths that will be averted over the next 15 years because of the tax increase, 40 percent will be among the poorest 20 percent of the population. The second poorest quintile benefits from 22 percent of the averted deaths, followed by the middle quintile (15 percent), second richest quintile (14 percent), and the richest quintile (nine percent).

As shown in Figure 10,[6] the poorest quintile, and to a lesser extent, the second quintile, receive a disproportionate share of the health benefits resulting from the tax increase. Considering that the poor are typically bombarded with tobacco industry advertisements that prey upon their vulnerabilities and future outlooks to sell deadly products, raising cigarette taxes (and strengthening advertising bans) are a pro-poor tobacco control investment.

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



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

IV. Conclusion and Recommendations

Each year, tobacco use costs Myanmar MMK trillions 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 Myanmar. Enacting the recommended multisectoral tobacco control provisions would save tens of thousands of 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 up to ~3.3% of GDP in 2016 and MMK 8 trillion over the next fifteen years. Further, the economic benefits of strengthening tobacco control measures in Myanmar and implementing new ones greatly outweigh the costs of implementing them (MMK 8 trillion in benefits versus just MMK 0.036 trillion in costs).

By investing now in tobacco control provisions, Myanmar would not only improve health and grow the economy, it would also reduce hardships on the poor. The investment case shows that, contrary to common misperception, tobacco control would benefit lower income earners the most. Raised cigarette taxes would not only help the poor (and others) avoid out-of-pocket health expenditures, it would also raise revenue for the Government to advance any of its sustainable development priorities. Many countries reinvest savings from healthcare spending and revenue from increased tobacco taxes into poverty alleviation measures including universal health coverage.

The investment case has identified the strongest tobacco control investments for Myanmar to take. It offers policymakers a strong social and economic argument to implement core FCTC policy measures. The full benefits of the investment case are more likely to be realized if the following actions are pursued.

1 Raise awareness among the public and government of the true costs of tobacco and the enormous development benefits of tobacco control.

Policymakers across sectors are encouraged to share the investment case findings broadly among all sectors of government, parliament, civil society, the public, development partners and academic institutions. Doing so will strengthen public and political support for tobacco control. An advocacy strategy with key messages, for example on how tobacco control can support economic growth and reduce hardships on the poor, can assist policymakers in disseminating the message.

As recommended in the FCTC Needs Assessment, the Ministry of Health and Sports should work with the Ministry of Education to ensure tobacco control is incorporated into the revised curriculum. Also important is collaboration between the Ministry of Health and Sports, Ministry of Information and others to develop a comprehensive communications strategy.

2 Strengthen tobacco control coordination and planning.

The investment case demonstrates that tobacco control is a sustainable development issue for Myanmar, with implications for the Ministries of Planning and Finance, Commerce, Industry, Trade, Education, Social Welfare, Labour, Agriculture and Health, as well as for Parliamentarians. These findings should be used to advocate stronger collaboration and coordination among sectors. Under leadership of the Ministry of Health and Sports, the Central Tobacco Control Committee should be re-invigorated. Further, a specific National Tobacco Control Action Plan should be developed to align with the current NCD strategy.

The Ministry of Health and Sports could utilize the FCTC Needs Assessment report, FCTC 2030 Strategy and the modelled policy measures in this investment case report to develop near and medium-term national tobacco control priorities, ensuring to include other relevant ministries in the strategy development process. The Ministry of Health and Sports, Ministry of Planning and Finance and other sectors could also champion integration of tobacco control into relevant national and sectoral planning and policy documents. Given the development dimensions of tobacco consumption and production, many ministries in Myanmar see tobacco control as a win-win opportunity.

3 Strengthen the current tobacco control law and/or introduce a newer, stronger and more compressive one.

Myanmar's 2006 tobacco control law is a strong piece of legislation that protects the population. However, the 2006 law does not cover some areas that are critical to effective tobacco control. For example, the investment case demonstrates the additional benefits of expanding the ban on TAPS and the ban on smoking in public places, as well as increasing tobacco excise taxes and implementing new measures such as mass media campaigns and plain packaging.

The Ministry of Health and Sports can initiate the process of amending the current tobacco control law to achieve such strengthened measures, working with the Parliamentary Health and Sports Committee, Attorney General's office and different ministries. International partners can assist with legal expertise. A more immediate tool is for the Ministry of Health and Sports to issue a notification in line with the existing law. This has been done successfully with respect to pictorial health warnings.

4 Ensure adequate funding and resourcing of tobacco control measures.

Sustainable financing is essential to implement the WHO FCTC. Using tobacco tax revenue is an option to finance tobacco control, universal health coverage and the SDGs. Given the economic benefits of tobacco control demonstrated through this investment case, it is recommended that the Ministry of Health and Sports work with the Ministry of Planning and Finance on a sustainable financing mechanism for tobacco control. It is important to create an enabling environment for tax increases on tobacco products. Consideration should be given to restructuring (simplifying) the tax system and increasing tobacco excise tax rates on a regular basis to decrease affordability of tobacco products.

5 Strengthen enforcement.

For every year that provisions under the current tobacco control law are under-enforced, Myanmar suffers avoidable health and economic losses. Many ministries including the Ministry of Home Affairs and the Police expressed a need for stronger enforcement, particularly to prevent the sale of tobacco to and by minors. A deeply engrained cultural and social acceptance of tobacco use (cheroots and betel quid), particularly in rural areas, is a barrier to adoption and enforcement of stronger tobacco control measures. It is recommended that the CTCC meet to agree on how to jointly strengthen enforcement and compliance of the tobacco control law, which involves raising awareness and sensitizing different sectors and the public to the harms of tobacco.

6 Advocate for additional increases in tobacco taxes.

Though all individual interventions delivered a return on investment at both 5 and 15 years, raised cigarette taxes were by far the most cost-effective of the measures examined. They delivered an impressive return of 1,057 kyats in economic benefits for every 1 kyat invested. Cigarette tax levels in Myanmar are currently far below WHO FCTC recommended levels of 75%, as modeled by the investment case.

The Ministry of Health and Sports should work with the Ministry of Planning and Finance to create an enabling environment for tax increases on tobacco products including by restructuring (simplifying) the tax system and increasing tobacco tax rates on a regular basis to decrease affordability of tobacco products. Policymakers can now cite robust, Myanmar-specific evidence from this report that cigarette tax increases would benefit the poorest segments of society the most. Extending tax increases to tobacco products (not just cigarettes) should be pursued.

Credit: © Nyan Zay Hte/UNICEF Myanmar

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Methodology Annex

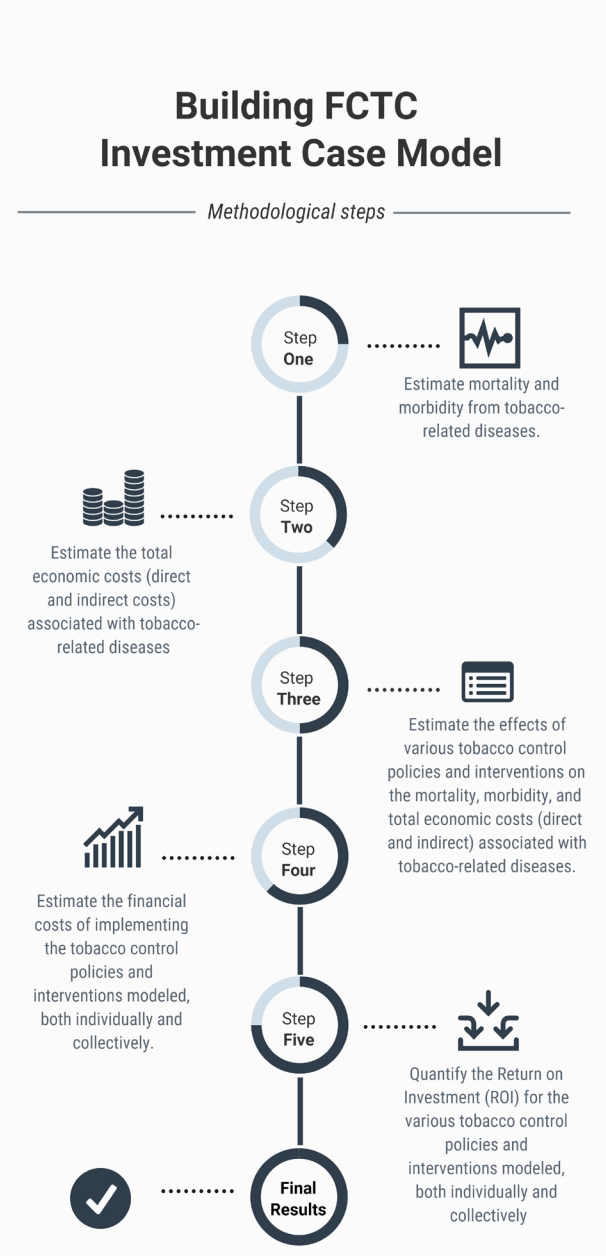
The purpose of the FCTC Investment Case is to quantify the current health and economic burden of tobacco use in Myanmar; estimate the impact that implementing tobacco measures would have on reducing the burden; and provide analysis of other impacts—e.g., tax revenue, equity, illicit trade[7] —that may factor into government decisions to implement tobacco control measures.

A RTI International-developed model was developed to conduct the investment case, and perform the methodological steps in Figure 9. The tools and methods used to perform these steps are described below. Interested readers are referred to this report's separate, forthcoming Technical Appendix for a more thorough account of the methodology.

The FCTC Investment Case team worked with partners in Myanmar 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), World Bank database, and Global Burden of Disease (GBD) study, and academic literature.

Within the investment case, costs and monetized benefits are reported in constant 2017 Myanmar kyats, and discounted at a rate of three percent.

Fig. 11: Building the FCTC Investment Case



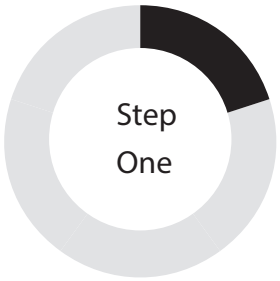
7 Of these three, only an equity analysis was carried out for Myanmar.

OVERVIEW

The economic analysis consists of two components: 1) assessing the current burden of tobacco use and 2) examining the extent to which FCTC provisions can reduce the burden. The first two methodological steps depicted in Figure 9 are employed to assess the current burden of tobacco use, while methodological Steps 3–5 assess the costs and benefits of implementing or intensifying FCTC provisions to reduce demand for tobacco. The tools and methods used to perform these methodological steps are described in detail below.

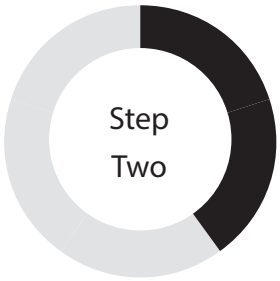
COMPONENT ONE: CURRENT BURDEN

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



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 2016 Global Burden of Disease Study (GBD) [22]. The study estimates the extent to which smoking and exposure to second-hand smoke contribute to the incidence of 31 diseases, healthy life years lost, and deaths, across 195 countries.



Estimate the total economic costs (direct and indirect costs) associated with tobacco-related diseases.[8]

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

8 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, second-hand smoke, and the use of other types of tobacco products). Only smoking-attributable (not tobacco-attributable) costs are calculated for healthcare expenditures, absenteeism, presenteeism, and smoking breaks. While other forms of tobacco may also cause losses in these categories, no data is available to precisely calculate those losses.

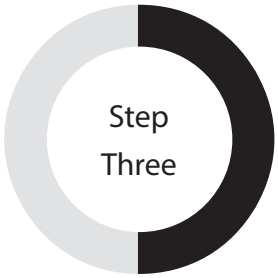
Direct costs — Direct costs include both tobacco-attributable public (government-paid), private (insurance, individual out-of-pocket), and other healthcare expenditures. The proportion of healthcare costs attributable to smoking was obtained from Goodchild and colleagues (2018), who estimated tobacco to account for 8.5 percent of all healthcare expenditures in Myanmar [23].

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 premature death, eliminating the unique economic and social contributions that an individual would have contributed 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 premature mortality due to tobacco use* — Premature 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) [24].
- *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 (2.6 days per year) [15]. Presenteeism losses are obtained similarly, under research that shows that smokers in China, the US, and five European countries experience about 22% more impairment at work because of health problems compared to never-smokers [25]. Lost productivity due to smoking breaks is valued under the conservative assumption that working smokers take ten minutes of extra breaks per day [15].

COMPONENT TWO:
POLICY/INTERVENTION SCENARIOS

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



Estimate the effects of various tobacco control policies and interventions on the mortality, morbidity and total economic costs (direct and indirect) associated with tobacco-related diseases.

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 2033 (end of the analysis), no change occurs from the tobacco control provisions that are currently in place. In the intervention scenario, Myanmar 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 Myanmar can achieve by taking targeted actions to reduce tobacco use.

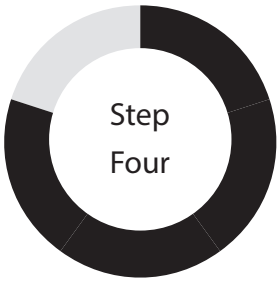
The impacts of implementing the FCTC provisions are obtained from the literature. The impact of enforcing smoke-free air laws, implementing plain packaging, intensifying advertising bans, and conducting mass media campaigns are derived from Levy et al. (2018) [17] and Chipty (2016) [26], as adapted within the Tobacco Use Brief of Appendix 3 of the WHO Global NCD Action Plan 2013-2020 [27]. The impact of raising taxes on the prevalence of tobacco use is determined by the 'prevalence elasticity', or the extent to which individuals stop smoking as a result of price changes. Following evidence that price elasticity ranges between -0.4 to -0.8 in developing countries [28], it is assumed that the price elasticity of demand in Myanmar is -0.5, and that prevalence elasticity is approximately one-half of price elasticity (-0.25) [29]. Table 3 displays the impact sizes used within the investment case analysis. Additional information on their derivation can be found in the Technical Appendix.

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—the full impact of the measures is phased in over a five-year period. The phase-in period follows WHO assumptions [30] 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.

Table 3: Estimated Prevalence Reduction Per WHO FCTC Intervention

FCTC Tobacco Policy/Intervention	Relative Reduction in the Prevalence of Current Smoking		
	First 5 Years (2019-2023)	Years 6 - 15 (2024-2033)	Over 15 Years (2019-2033)
Tobacco Package* (all policies/ interventions implemented simultaneously)	26.8%	17.8%	44.7%
Increase taxes on cigarettes (FCTC Art.6)	6.8%	8.0%	14.8%
Extend and strengthen compliance with the ban on smoking in public places (FCTC Art.8)	8.0%	5.9%	14.0%
Enact comprehensive bans on advertising, promotion, & sponsorship (FCTC Art. 11)	4.2%	3.1%	7.4%
Run a mass media campaign to promote awareness about tobacco control (FCTC Art. 12)	8.1%	5.9%	14.0%
Mandate that tobacco product packages carry large health warnings (FCTC Art.13)	**Already fully implemented**		
Implement plain cigarette packaging (FCTC Art.13)	3.2%	2.4%	5.5%

* The combined impact of all interventions is not the sum of individual interventions. Following Levy and colleagues' (2018) "effect sizes [are applied] as constant relative reductions; that is, for policy i and j with effect sizes PRi and PRj, (1-PR ii) x (1-PR j) [is] applied to the current smoking prevalence [17, p. 454].



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 [30].

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 program 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 five distinct implementation phases: planning (year 1), development (year 2), partial implementation (years 3-5), and full implementation (years 6 onward).

Across these categories, the Tool contains default costs from 2011, which are sourced from the WHO CHOICE costing study. Following Shang and colleagues, the Tool is updated to reflect 2017 costs by updating several parameters: the USD to local currency unit (LCU) exchange rate (2017), purchasing power parity (PPP) exchange rate (2017), GDP per capita (USD, 2017), GDP per capital (PPP, 2017), population (total, and share of the population age 15+, 2017), labor force participation rate (2017), and government spending on health as a percent of total health spending (2015) [31, 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, population figures, and the price of gas per liter. 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.

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 monetary value of health gains from investments by their respective costs. The ROI answers the following question: for every currency unit that the government invests in tobacco control measures, how much can it expect to receive in return?

ROIs were calculated for (i) each of the five tobacco control policies and interventions modeled, (ii) total economic losses and (iii) specific outcomes, such as lives saved or healthcare expenditures. Estimates from Step 3 and 4, were used to calculate ROIs for at 5- and 15-year intervals.

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

Equity Analysis

To assess how increased cigarette taxation affects different income groups, different income groups' responses to changes in price were estimated, i.e. their elasticity of smoking participation. One identified study provided elasticity by income quintile for Myanmar, however, the rates were out of line with the established literature and the author credits this to potentially faulty income data [32]. This study is thus excluded. Instead, a regional average from other countries is used, summarized in the table below [33-37].

Income Quintile	Thailand (urban)*	Thailand (rural)*	Indonesia **	Indonesia ***	Bangladesh **	Vietnam ****	Average
1	-0.5017	-0.2433	-0.03	-0.36625	-0.29	-0.885	-0.386041667
2	-0.1777	-0.0232	0.03	-0.328	-0.313	-0.885	-0.282816667
3	-0.06295	-0.014	0.09	-0.30625	-0.336	-0.735	-0.227366667
4	-0.04905	-0.0738	0.145	-0.29375	-0.303	-0.585	-0.193266667
5	-0.0209	-0.0343	0.2	-0.27775	-0.27	-0.585	-0.164658333

* Only overall price elasticity reported, prevalence elasticity derived by halving price elasticity.

** Study only reported on low, middle, and high, income groups. Second and fourth quintiles are averages.

*** Study reported on income deciles, quintiles derived from averaging two deciles. Only overall price elasticity reported, prevalence elasticity derived by halving price elasticity.

**** Study reported elasticity of top two quintiles together and bottom two quintiles together. Only overall price elasticity reported, prevalence elasticity derived by halving price elasticity.

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The Case for Investing in WHO FCTC Implementation

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