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Investment Case for Tobacco Control in

ARMENIA

The case for scaling up WHO FCTC implementation

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The Case for Investing in WHO FCTC Implementation in Armenia

Prepared by
Ministry of Health Armenia
RTI International
United Nations Development Programme
Secretariat of the WHO Framework Convention on Tobacco Control
World Health Organization

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More than **5,500** Armenians die every year due to tobacco-related illness, accounting for nearly **20%** of all deaths in the country.

Tobacco costs Armenia

AMD 273.1 billion

every year, equivalent to

4.2% of its GDP

in 2017.

Investing now in seven tobacco control measures will prevent more than

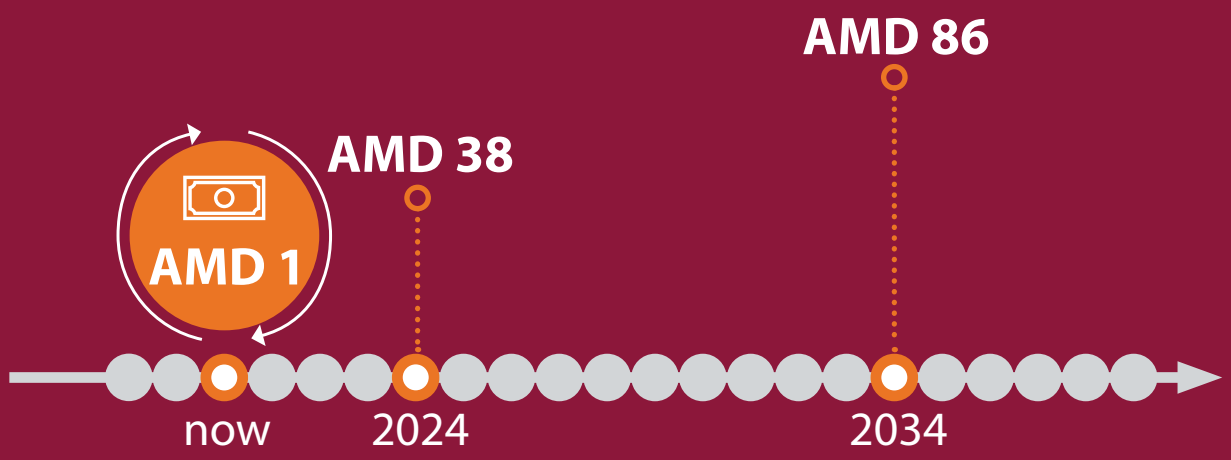
23,200 deaths

and avert

AMD 889.1 billion

in health costs and economic losses by 2034.

For every **Armenian dram** invested in the seven tobacco-control measures today, Armenia will receive **AMD 38** in averted costs and economic losses by 2024 and **AMD 86** by 2034.



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This report recommends actionable steps, in addition to the modeled WHO Framework Convention on Tobacco Control provisions, that the Government of Armenia can take to strengthen a whole-of-government approach to tobacco and its development consequences. Through the FCTC 2030 Project, the Convention Secretariat, UNDP and WHO stand ready to support the Government of Armenia to reduce the social, economic and environmental burdens that tobacco continues to place on its country.

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1. Executive summary

Overview

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

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

1. **Increase cigarette taxation to reduce the affordability of tobacco products.** (*WHO FCTC Article 6*)
2. **Enforce bans on smoking in public places to protect people from tobacco smoke.** (*WHO FCTC Article 8*)
3. **Mandate that large graphic health warnings cover at least 50 percent of tobacco product packaging.** *(WHO FCTC Article 11)*
4. **Implement plain packaging.** (*WHO FCTC Article 11 Guidelines*)
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. **Enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship.** *(WHO FCTC Article 13)*
7. **Support reducing tobacco dependence and cessation by training health professionals to provide brief advice to quit smoking.** *(WHO FCTC Article 14)*

Main findings

In 2017, tobacco use cost the Armenian economy AMD 273.1 billion. These costs are equivalent to 4.2 percent of Armenia's GDP and are about three times more than the revenue generated by cigarette taxes. These annual costs include a) AMD 75.8 billion in healthcare expenditures, and b) AMD 197.3 billion in lost productive capacities due to premature mortality and disability as well as workplace smoking breaks. The productivity losses from current tobacco use in Armenia – 72 percent of all tobacco-related costs – indicate that tobacco use impedes development in Armenia beyond health; multisectoral engagement is required for effective tobacco control, and other sectors benefit substantially from supporting tobacco control investments through a healthier and more productive labour force.

Every year, tobacco use kills more than 5,500 Armenians, with 52 percent of these deaths among individuals under age 70 (i.e. premature death). Nearly one-fifth (19 percent) of lives lost from tobacco use are due to exposure to secondhand smoke, which is more than double the global average.

The Government of Armenia has taken historic steps to reduce tobacco use with the enactment of the 2020 Law on Reduction and Prevention of the Damage Caused to Health by the Use of Tobacco Products and Substitutions for Them.[1] Strong enforcement of the law as it enters into force, and continued action to implement additional tobacco control measures, can reduce the national burden from tobacco use. The investment case findings demonstrate that enacting and enforcing seven proven FCTC tobacco control measures would, over the next 15 years:

Avert AMD 889 billion in economic losses. Of this total, AMD 643 billion is restored economic output. The tobacco control measures stimulate economic growth by ensuring that fewer people 1) drop out of the workforce due to premature mortality, 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 an additional AMD 246 billion in savings through avoidance of tobacco-attributable healthcare expenditures. Of this, the Government would save AMD 32 billion in healthcare expenditures, citizens would save AMD 207 billion in out-of-pocket health-care costs, and AMD 7.1 billion would be saved from other sources of healthcare expenditures.

1 See https://www.tobaccocontrollaws.org/files/live/Armenia/Armenia%20-%202020%20TC%20Law.pdf

Save 23,245 lives and reduce the incidence of disease. The recommended WHO FCTC tobacco control measures contribute to Armenia's efforts to achieve SDG Target 3.4 to reduce by one-third premature mortality (under age 70) from non-communicable diseases (NCDs) by 2030. Enacting the WHO FCTC measures would prevent more than 7,800 premature deaths from the four main NCDs by 2030, the equivalent of about 20 percent of the needed reduction in premature mortality to achieve SDG Target 3.4.

Provide economic benefits (AMD 889 billion) that significantly outweigh the costs of implementing the 7 WHO FCTC measures (AMD 10.4 billion). Enforcing bans on tobacco advertising, promotion, and sponsorship has the highest return-on-investment (888:1), followed by increasing cigarette taxes (383:1), mandating large graphic health warnings (292:1), enforcing bans on smoking in indoor public places (216:1), implementing plain packaging of tobacco products (99:1), mass media campaigns (56:1), and cessation by training health professionals to provide brief advice to quit smoking (13:1).

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

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Recommendations

1. **Ensure compliance with the tobacco control regulations stipulated by the new tobacco law.** The top priority for the Government now is to ensure full and effective implementation of all provisions of the 2020 law, which would include establishing appropriate monitoring and enforcement mechanisms.
2. **Increase taxes on tobacco products to meet WHO recommendations and Armenia's obligations under the Eurasian Economic Union.** Increasing taxes on tobacco products would reduce their affordability, decrease consumption, reduce the burden of tobacco-related diseases, and increase revenue, allowing Armenia to meet its obligations under the agreement signed in 2019 as part of the Eurasian Economic Union.
3. **Strengthen the multisectorality of Armenia's tobacco control response.** Under the leadership of the Ministry of Health, the national coordination mechanism for tobacco control advised to be established with dedicated resources and staff.

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

Every year, tobacco use causes…	Over 15 years, implementing new tobacco control measures or intensifying existing ones would…
More than **5,500 deaths**	**Prevent** more than **23,200 deaths**
AMD 76 billion in health care expenditures	**Save AMD 246 billion** in healthcare expenditures
AMD 200 billion in economic productivity losses	**Prevent AMD 651 billion** in economic losses
Overall economic costs equivalent to **4.2% of GDP**	**Generate economic benefits** (AMD 889 billion) that greatly outweigh the cost (AMD 10.4 billion) of implementation and enforcement – an overall 86:1 return on investment

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 Armenia, around 28.0 percent of people currently use some form of tobacco product [1], leading to an estimated 5,529 deaths[2] every year [2]. More than half of those deaths occur among those under age 70 [2].

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

Current tobacco use trends, in Armenia and around the world, are incompatible with sustainable development. Through Sustainable Development Goal (SDG) Target 3.4, the Agenda 2030 for Sustainable Development commits Member States to achieve a one-third reduction in premature mortality from NCDs (i.e. deaths between 30 and 70) by 2030. Accelerating progress on NCDs requires strengthened implementation of the WHO Framework Convention on Tobacco Control (SDG Target 3.a). Tobacco control is not just a primary means to improve population health, but also a proven approach to reduce poverty and inequalities, grow the economy and advance sustainable development. Tobacco control is an SDG accelerator as it can contribute to many goals

2 The investment case uses all-cause and tobacco-attributable mortality and morbidity data from the Global Burden of Disease (GBD) study, which reports deaths disaggregated by disease, sex, and five-year age group. The Armenia Statistical Yearbook for 2017 reports 27,157 all-cause deaths compared to the 28,294 all-cause deaths reported by GBD, or, 4 percent fewer deaths. To align with in-country estimates, all all-cause and tobacco-attributable death statistics from GBD have been reduced by 4 percent in the investment case.

simultaneously across the economic, social and environmental spheres. However, more work must be done to reverse the tobacco epidemic including by accelerating implementation of the Convention.

Armenia ratified the WHO Framework Convention on Tobacco Control (WHO FCTC) in 2004 [16]. Since that time, Armenia has made significant progress in tobacco control. Most recently, in February 2020 Armenia enacted the Law on Reduction and Prevention of the Damage Caused to Health by the Use of Tobacco Products and Substitutions for Them, a law that bans smoking in all indoor public places; enacts a total ban on advertising, promotion and sponsorship; and implements plain packaging of tobacco products [17]. In addition, as a member of the Eurasian Economic Union (EAEU), Armenia is committed to implementing large graphic warning labels on tobacco products and continued tobacco tax increases in harmony with EAEU countries. Ensuring enforcement of the measures in the new tobacco control law and intensifying existing measures can reduce tobacco use prevalence and generate additional health and economic gains. Realizing the full 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. It also requires attention to protect against tobacco industry interference in policymaking.

In 2020, the Convention Secretariat, UNDP and WHO undertook a virtual joint mission with partners in Armenia to initiate an investment case as part of the FCTC 2030 Project. The FCTC 2030 Project is a global initiative funded by the governments of the UK, Norway and Australia that supports 33 countries to strengthen WHO FCTC implementation to achieve the SDGs. Armenia is one of 33 countries worldwide receiving dedicated FCTC 2030 project support.

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

1. **Increase cigarette taxation to reduce the affordability of tobacco products.***(WHO FCTC Article 6)*
2. **Bans on smoking in all public places to protect people from tobacco smoke.** *(WHO FCTC Article 8)*
3. **Large graphic health warnings that cover at least 50 percent of tobacco packaging.** *(WHO FCTC Article 11)*
4. **Plain packaging[3] of tobacco products.** *(WHO FCTC Article 11: Guidelines for implementation, and Article 13)*
5. **Mass media campaigns against tobacco use.** *(WHO FCTC Article 12)*
6. **Bans on tobacco advertising, promotion, and sponsorship.** *(WHO FCTC Article 13)*
7. **Reducing tobacco dependence and promoting cessation measures by training health professionals to provide brief advice to quit smoking.** *(WHO FCTC Article 14)*

Section 3 of this report provides an overview of tobacco control in Armenia, including tobacco use prevalence as well as challenges and opportunities. **Section 4** summarizes the methodology of the investment case (see *Annex* and *Technical Appendix*[4] for more detail). **Section 5** reports the main findings of the economic analysis. The report concludes under **Section 6** with recommendations.

3 Plain (or neutral) packaging requirements prohibit the use of logos, colors, brand images, or promotional information on packaging other than brand names and product names displayed in a standard color and font style.

4 Available upon request.

3. Tobacco control in Armenia: status and context

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

In Armenia, over a quarter of the population (28 percent) aged 18 to 69 currently use some form of tobacco. Almost all users are current cigarette smokers (26 percent) [1]. Smokers in Armenia consume a high quantity of cigarettes – on average smoking 1.25 packs of cigarettes (24 cigarettes) each day [1]. This is much higher than the global average of 18 cigarettes per day and the average in the WHO Europe Region of 21 cigarettes per day (**Figure 1**) [1], [18]. High consumption levels lead Armenian smokers to spend on average AMD 15,460 per month on cigarettes, approximately 9 percent of the average monthly wage [1], [19]. This money could be better invested in education, savings, or purchasing food and other necessities, instead of undermining health.

Smoking prevalence varies greatly between demographic groups. Nearly one out of every two men smoke, compared to only about 1 in 50 women. Smoking prevalence is lowest in southern Armenia, with the highest rates seen in Yerevan and Aragatsotn (35 and 38 percent, respectively) [20]. Unlike many countries, smoking prevalence is higher among wealthier individuals in Armenia, with 30 percent prevalence observed among the wealthiest 20 percent of the population compared to a 18 percent prevalence among the poorest 20 percent [1] (**Figure 2**).

Fig. 1: Smoking intensity by country in WHO Europe Region

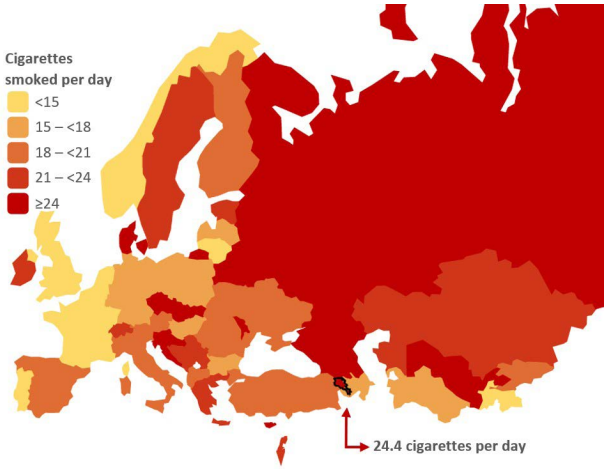
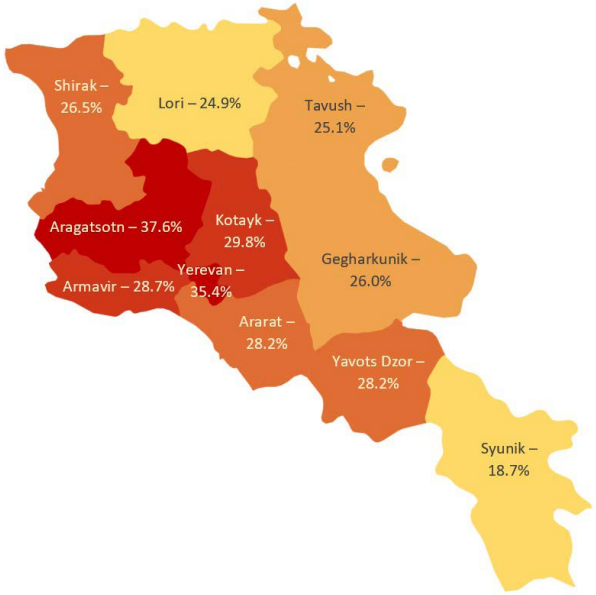
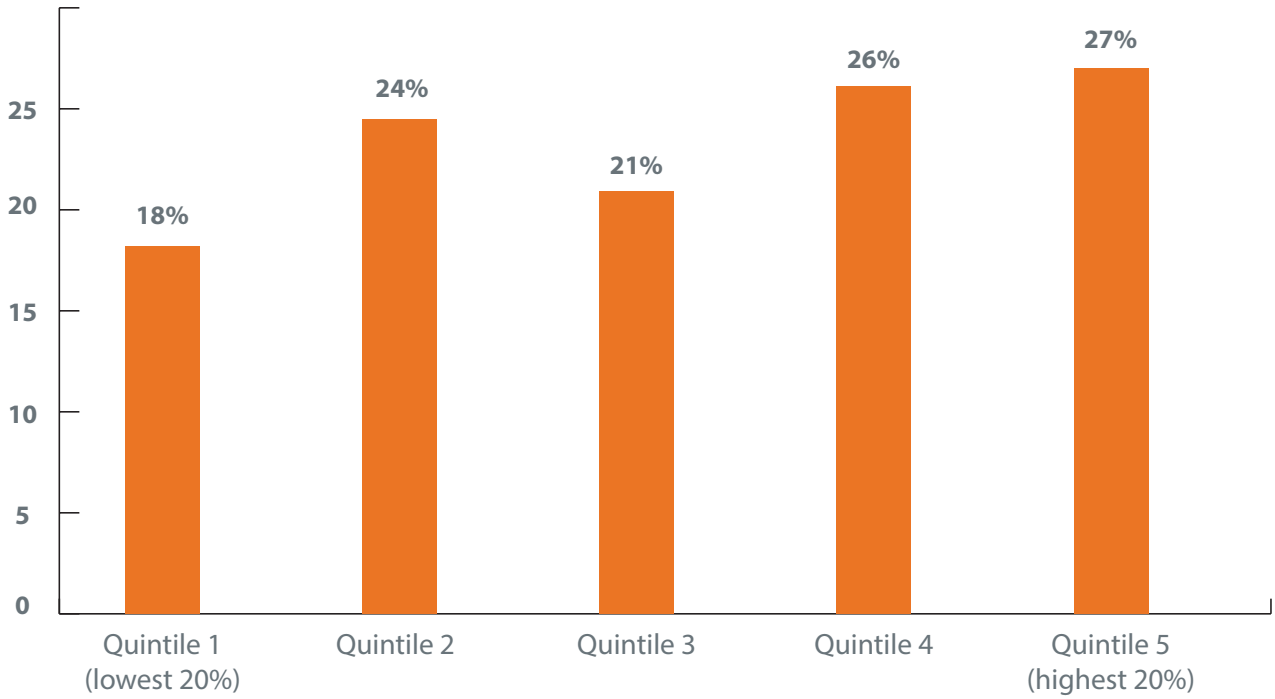


Fig. 2: Smoking prevalence in Armenia, by province*



**Source of prevalence data by province is the Armenia Demographic and Health Survey (DHS) 2015-16, while the source of current cigarette smoking prevalence used in the investment case model is the 2016 STEPS National Survey 2016. The DHS Survey is used here only to demonstrate regional differences in smoking prevalence.*

Fig. 3: Smoking prevalence, by income quintile



Widespread smoking in Armenia leads to high exposure to secondhand smoke. During the past 30 days, more than half of adults aged 18 to 69 were exposed to secondhand smoke at home and about 1 in 4 were exposed in the workplace [1]. The effects of secondhand smoke are not limited to adults – each year 17 children under the age of 5 die in Armenia as a result of lower respiratory infections due to secondhand smoke exposure [2].

According to the 2014 Health Behaviour in School-aged Children Survey, boys aged 15 to 17 have a positive view of smoking, associating it with relaxation, improved mood, weight control, attractiveness and other benefits [21]. Over a quarter (26 percent) of Armenians were current smokers by the time they were 17 years old and an additional 11 percent had tried smoking at least once [21].

3.2 The status of WHO FCTC tobacco control demand-reduction measures

Strong fiscal and regulatory measures powerfully influence societal norms by signalling to the population that tobacco use is harmful, not just for users but also for the people around them—including family, colleagues, and workers. Evidence suggests that the Armenian Government's tobacco control efforts are making an impact. Over a quarter (28 percent) of Armenian smokers thought about quitting due to health warnings on cigarette packages [1].

In September 2017, the Government approved the Tobacco Control Strategy and List of Actions 2017 – 2020 [1] which aimed to engage all stakeholders in tobacco control efforts; develop capacity of organizations engaged in the fight against tobacco; implement measures to prevent smoking uptake among adolescents; implement data collection related to tobacco use and effects; and increase public awareness of the consequences of tobacco use. One of the actions resulting from the Tobacco Control Strategy was the review and amendment of Armenia's legislative framework, which led to the passage of the Law on Reduction and Prevention of the Damage Caused to Health by the Use of Tobacco Products and Substitutions for Them in February 2020. This new legislation bans smoking in all indoor public places beginning in 2022; enacts a total ban on advertising, promotion and sponsorship; and implements plain packaging of tobacco products in 2024 [17]. However, some of those provisions came into force in March 2020 and January 2021, and only one point concerning the ban on the use of tobacco products in public catering facilities will enter into force on 15 March 2022. In addition, as a member of the Eurasian Economic Union (EAEU), Armenia is committed to implementing large graphic warning labels on tobacco products and continued tax increases in harmony with neighboring EAEU countries.

With the enactment of this suite of new policies, Armenia will fulfill many of its obligations under the WHO FCTC. However, policies are only effective when they are well-funded and consistently and robustly enforced. Below, we describe the status of existing measures and the target level that are examined within the investment case —as laid out in the 2020 legislation or corresponding with WHO FCTC obligations.

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

Armenia currently has a total tax rate on cigarettes that accounts for 44 percent of the retail price of the most sold cigarette brand. The World Health Organization (WHO) recommends that taxes represent at least 75 percent of the retail price of tobacco products, inclusive of at least a 70 percent excise tax, and that tax rates are monitored and increased on a regular basis to ensure tobacco products do not become more affordable over time (e.g. due to growth in income). In 2019, Armenia signed an agreement by the Eurasian Economic Union (EAEU) stipulating gradual increases in national excise taxes from the current rate of about €13 per 1,000 cigarettes to €35 per 1,000 cigarettes by 2024—with the ability to increase or decrease planned annual increases by 20 percent. The investment case examines the impact of raising taxes to levels that would meet WHO recommendations and Armenia's obligations under the EAEU. Beginning in 2020, taxes will be raised according to EAEU stipulations, with additional increases in ensuing years to quadruple the cost of a pack of cigarettes by 2034—a real increase of AMD 2,432.

Implement and enforce bans on smoking in all public places to protect people from tobacco smoke (WHO FCTC Article 8)

The Law on Reduction and Prevention of the Damage Caused to Health by the Use of Tobacco Products and Substitutions for Them, passed in February 2020, bans smoking in all indoor public places including healthcare facilities, educational facilities, universities, government buildings, workplaces, restaurants, cafes and bars, and public transportation. By March 2022 ban of smoking in indoor places will cover all indoor places. The investment case examines the impact of ensuring that the recently passed ban is fully implemented as planned, with high levels of enforcement.

Mandate that tobacco products and packaging carry large graphic health warnings describing the harmful effects of tobacco use (WHO FCTC Article 11)

As a member of the Eurasian Economic Union, Armenia is obligated to enact graphic warning labels covering at least 50 percent of the tobacco package by 2024, thus meeting WHO FCTC coverage requirements. The impact of graphic warnings decreases with time, and images should be rotated on a regular basis, so they do not lose impact. The investment case examines the impact of implementing and enforcing rotating graphic warning labels covering 50 percent of the tobacco package beginning in 2024.

Mandate plain packaging of all tobacco products (WHO FCTC Guidelines for Articles 11 and 13)

Plain packaging—neutral colors, without branding and logos—is also included in Armenia's recently passed tobacco control legislation. Plain packaging of tobacco products is scheduled to be implemented in 2024. The investment case models the impact of implementing and enforcing plain packaging requirements beginning in 2024, as planned.

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

The Armenia Tobacco Control Strategy's Strategic Direction Number 6 is to increase public awareness of the harms and consequences of tobacco use. Specific actions under the strategy include working with non-governmental organizations, dissemination of information and materials and organizing anti-tobacco mass media campaigns. The investment case models the impact of strengthening the effectiveness of these campaigns by ensuring that they include all components recommended by WHO, such as target audience research, testing of materials, working with journalists to gain publicity and provide science-based information, and evaluating the impact of the campaign. Launching a best-practice mass media campaign would further promote and strengthen public awareness about tobacco control issues and the harms of tobacco use.

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

Armenia's new 2020 tobacco control legislation strengthens existing bans on tobacco advertising, promotion, and sponsorship (TAPS), to cover all forms of advertising on TV, radio, the internet, billboards, magazines and newspapers. All forms of promotion, sponsorship, free distribution, and other types of indirect advertising are banned. The investment case models the impact of implementing and enforcing this recently passed total ban on tobacco advertising, promotion, and sponsorship.

Provide support for reducing tobacco dependence and cessation: Offer brief advice to quit at the primary care level (WHO FCTC Article 14)

Almost one out of every three current smokers in Armenia report having received advice from health providers to quit using tobacco within the past 12 months [1]. Part of the Armenia Tobacco Control Strategy is to develop programs for diagnosing and treating tobacco dependence for medical professionals in primary healthcare units. Supportive cessation advice from trained providers can motivate individuals to quit or increase quit attempts. The investment case examines the impact of expanding training for health providers to offer cessation advice in primary care settings.

Table 1 summarizes the existing state of WHO FCTC demand-reduction measures and compares them against the WHO FCTC target goals 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 A1**.

Photo credit: © Freepik.com

Table 1. Summary of the current state of WHO FCTC demand reduction measures in Armenia and target goals

Tobacco Control Policy	Armenia Baseline*	Modeled WHO FCTC Target
Increase tobacco taxation to reduce the affordability of tobacco products. *(WHO FCTC Article 6)*	Tax share equivalent to 44% of the retail price of the most sold cigarette brand.	Increase taxes on cigarettes and smokeless tobacco 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.[5]
Implement and enforce bans on smoking in all public places to protect people from tobacco. smoke *(WHO FCTC Article 8)*	New legislation bans smoking in indoor places, covering all indoor places from 2022.	Implementation of 2020 legislation banning smoking in all indoor public places, with high levels of enforcement to drive compliance.
Mandate that tobacco products and packaging carry large graphic health warnings describing the harmful effects of tobacco use. *(WHO FCTC Article 11)*	EAEU membership requires that graphic warning labels covering 50% of tobacco packaging be implemented by 2024. There is currently not a requirement that warnings be rotated.	Mandate that graphic warning labels cover at least 50 percent of tobacco packaging, and that labels are regularly rotated and refreshed (at least every two years) to ensure continued impact.
Mandate plain packaging of all tobacco products. *(WHO FCTC Article 11: Guidelines, and Article 13)*	New legislation mandates plain packaging, beginning in 2024.	Implementation of the recently passed law requiring plain packaging.
Promote and strengthen public awareness about tobacco control issues and the harms of tobacco use through mass media information campaigns. *(WHO FCTC Article 12)*	Anti-smoking media campaigns have been conducted recently in Armenia but have not included all components recommended by WHO.	Implement a nationwide anti-smoking mass media campaign that is researched and tested with a targeted audience, and evaluated for impact.
Enact and enforce a comprehensive ban on all forms of tobacco advertising sponsorship and promotion. *(WHO FCTC Article 13)*	New legislation bans advertising on major forms of media (e.g., TV, radio, internet, billboards, print), as well as all forms of promotion and sponsorship.	Implementation and enforcement of the recently passed TAPS ban.
Provide support for reducing tobacco dependence and cessation: Offer brief advice to quit at the primary care level. *(WHO FCTC Article 14)*	Two out of three current smokers in Armenia have never received advice to quit using tobacco from a health provider.	Expand training of 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.

* Information in this column is derived from the Law on Reduction and Prevention of the Damage Caused to Health by the Use of Tobacco Products and Substitutions for Them, approved the Tobacco Control Strategy and List of Actions 2017 – 2020.

5 The investment case examines the impact of raising tobacco taxes to levels that would fulfill WHO tax share recommendations. Beginning in 2020 taxes are steadily raised (on average AMD 173 annually), quadrupling the cost of a pack of cigarettes by 2034—a real increase of AMD 2,432.

3.3 Tobacco use and the COVID-19 pandemic

The global COVID-19 pandemic is straining health systems worldwide, and the economic impact of the outbreak is immense. People living with pre-existing NCDs, including those caused by tobacco use, are likely more vulnerable to becoming severely ill with COVID-19 [22]. According to WHO, smokers have up to a 50 percent increased risk of developing severe disease or dying from COVID-19 [23]. However, more research needs to be conducted. Well-designed population-based studies are necessary to address questions about hospitalization, COVID-19 severity and the risk of infection by SARS-CoV-2 among smokers [24].

3.4 National tobacco control legislation, strategy and coordination

In early 2020 the Government of Armenia passed the *Law on Reduction and Prevention of the Damage Caused to Health by the Use of Tobacco Products and Substitutions for Them*,[6] marking a significant advance in the country's tobacco control efforts. It also amended the following existing laws:

- "Law on Making Amendments and Supplements to the Code on Administrative Offences of the Republic of Armenia"
- "Law on Making Amendments in the Law on Local Duties and Payments"
- "Law on Making Amendments in the Law on Advertising"
- "Law on making Amendments and Supplements in the Law on Local Self-Government"

These laws and their respective amendments ban smoking in all public places as of 2022, mandates plain packaging as of 2024 and bans the all forms of advertising (TV, internet, billboards, radio, print). The bill had been discussed in the economic council, indicating the economic relevance of tobacco regulation. The new control tobacco law further defines enforcement bodies. However, dedicated funds for enforcement are not ensured. Legislation still permits Armenia to import, sell and produce tobacco products and their substitutes whereas wholesale and retail sales of snus is prohibited.[7]

These laws and their respective amendments ban all forms of tobacco advertising (TV, internet, billboards, radio, print), ban tobacco using in all indoor public places[8] from 2022, and mandate plain packaging from 2024. They also establish a targeted State Programme on Cessation and provision of free medical aid and services for tobacco users who seek treatment for nicotine addiction and effects from tobacco use.

6 Available at https://www.arlis.am/DocumentView.aspx?docid=139759

7 Available at https://www.arlis.am/DocumentView.aspx?docid=139759, Article 3

8 Available at https://www.arlis.am/DocumentView.aspx?docid=139759

The technical regulation of tobacco products in Armenia is aligned to Eurasian Economic Commission Council Decision No. 107 on Technical Regulations of the Customs Union "Technical Regulation for Tobacco Products", issued on 12 November 2014 and entered into force on 15 May 2016. These regulations protect health and the environment by ensuring consumers are not misled about the purpose and safety of tobacco products in circulation. The decision also considers preparation of an international agreement to ban production, import and circulation of smokeless tobacco products on the territories of the Member States of the Customs Union and the Common Economic Space. The effective date of implementation of the requirements in Armenia has been delayed to 1 January 2024.[9] The Government has expressed interest in further regulating novel tobacco products.

Armenia's current tobacco control strategy includes a 2021-2025 action plan with main objectives of raising public awareness, ensuring law enforcement, increasing tobacco product taxes, ratifying the Protocol to Eliminate Illicit Trade in Tobacco Products, and ensuring a whole-of-government, whole-of-society response to the tobacco epidemic.

9 Pursuant to Eurasian Economic Commission Council Decision No. 209 of 18 December, 2018.

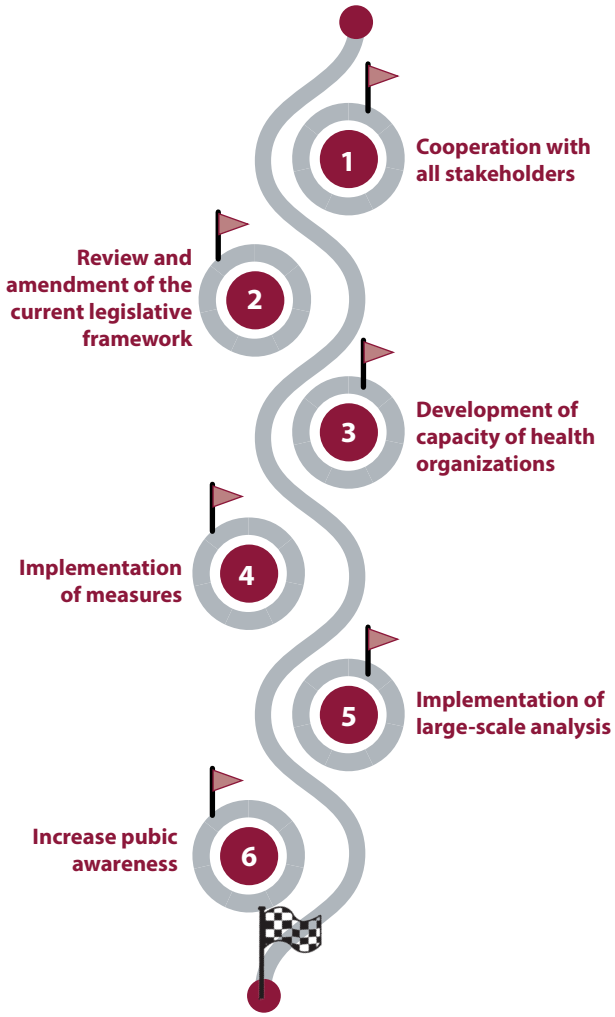
The main directions of the 2017-2020 strategy are:[10]

- **Strategic direction 1.** The effective and active cooperation with all stakeholders in the fight against smoking in the Republic of Armenia.
- **Strategic direction 2.** Review and amendment of the current legislative framework for the fight against smoking.
- **Strategic direction 3.** Development of capacity of health organizations engaged in the fight against smoking.
- **Strategic direction 4.** Implementation of measures against smoking among adolescents
- **Strategic direction 5.** Implementation of the large-scale analysis of the data and level of the adverse effects on health from the use of tobacco products, identification of the main factors, causes and implementation of an effective epidemiological surveillance.
- **Strategic direction 6.** Increasing public awareness of the harms and consequences of tobacco use.

In 2019, programme initiatives focused on awareness-raising through videos, posters and info banners in different regions. In 2020, they focused on building the capacity of medical center staff and development of information booklets and guidelines. The COVID pandemic delayed progress.

A new strategy is being developed for 2021-2025 led by a multisectoral working group, under the coordination of the Ministry of Health.

National tobacco control strategy 2017-2020
Main directions

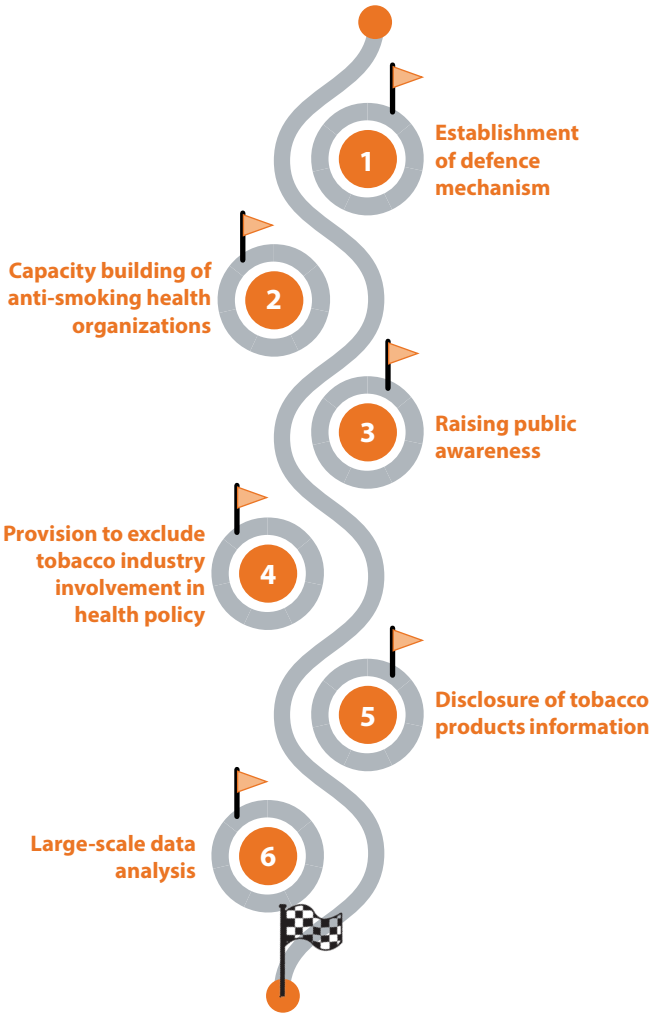


10 Available at http://www.irtek.am/views/act.aspx?aid=91361

The newly-drafted strategy aims to promote full implementation and enforcement of the 2020 law through the following directions:

- **Strategic direction 1.** Establishment of a mechanism to reduce the use of tobacco products, tobacco substitutes.
- **Strategic direction 2.** Capacity building of anti-smoking health organizations and smoking cessation activities.
- **Strategic direction 3.** Raising the level of public awareness about the damage and consequences caused by the use of tobacco products, substitutes of tobacco products.
- **Strategic direction 4.** Provision of mechanisms to exclude the involvement of the tobacco industry in health policy.
- **Strategic direction 5.** Ensuring the disclosure of information on the composition of tobacco products, substitutes for tobacco products.
- **Strategic direction 6.** Carrying out the analysis of the data and scale of the damage caused to health by the use of tobacco products and substitutes of tobacco products in the Republic of Armenia, the identification of the main factors, causes, the effective process of epidemiological control.

National tobacco control strategy 2021-2025
Main directions



There is currently no national tobacco control coordination mechanism in Armenia. However, Armenia's 2021-2025 tobacco control strategy establishes a National Intersectoral Tobacco Control Commission. The Commission will be led by the Ministry of Health and consist of agencies coordinating the new tobacco control strategy. Several ministries, including the Ministry of Finance and the Ministry of Economy, are engaged in implementation of the tobacco control legislation. The Center for Health Services, Research and Development (CHSR), part of the American University of Armenia (AUA), conducts research and public outreach. Its research has assessed smoking cessation training in Armenia and perceived barriers to tobacco dependence treatment.

CHSR operates an e-learning platform on tobacco cessation assistance for physicians and online cessation support material. However, systematic trainings on tobacco control for health workers, community workers, social workers, media professionals, educators, decision makers and other relevant groups are neither provided by government entities nor non-governmental organizations. Tobacco control is not included in the curricula of graduate and post-graduate programmes of medical students. AUA is also at the helm of "Tobacco-free Armenia", a consortium of roughly 30 non-governmental organizations active in tobacco control. However, funding for activities has been insufficient.

Financing

The Government of Armenia considers several sources for funding the strategic activities, which include: (i) the state budget of Armenia (from resources allocated to the Ministry of Health); (ii) international organizations through targeted programmes such as the UK, Norway and Australia funding received as part of the FCTC 2030 project; (iii) other means not prohibited by the legislation of Armenia.

The state budget allocated for implementation of "healthy lifestyle" and anti-smoking activity in both 2019 and 2020 was AMD 100 milllion,[11] which was focused on increasing public awareness, implementation of a smoking cessation hotline service and implementation of educational activities among medical workers, among other activities.

Dedicated funds for enforcement of the new law is a top need and priority.

11 MoH, Mid-term expenditures program for 2020-2022, Budget financing application for 2020 [https://www.moh.am/#1/1415]

4. Methodology

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

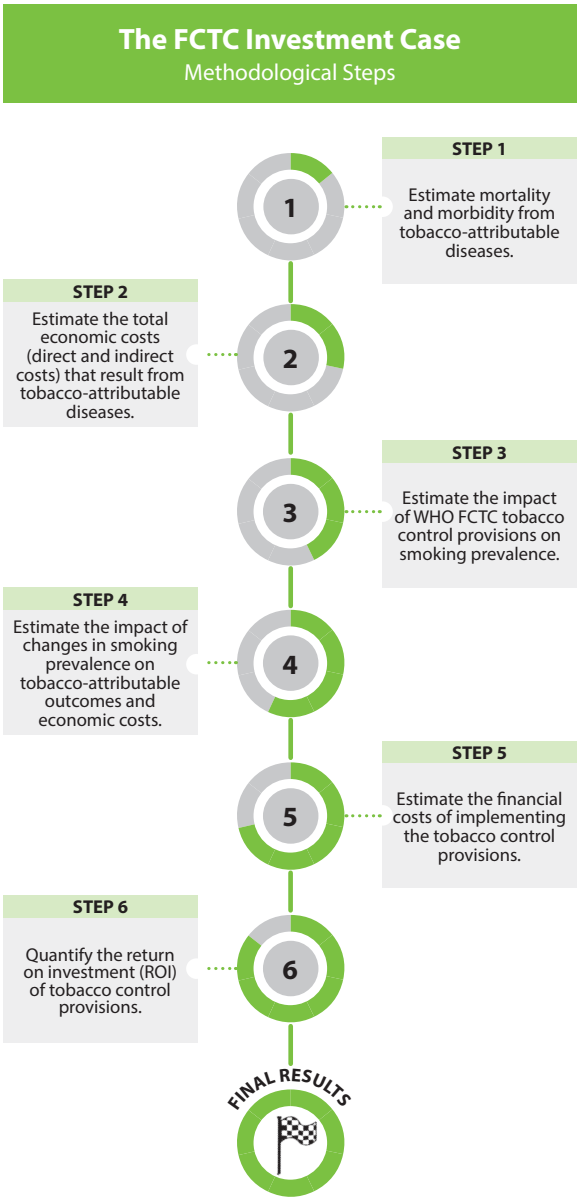
An RTI International-developed static model incorporating a population-attributable fraction approach was created to conduct the investment case and to perform the methodological steps in **Figure 4**. This methodology has been used for previous national FCTC investment cases under the FCTC 2030 project.

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[12] for a more thorough account of the methodology.

The investment case team worked with stakeholders in Armenia 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 Armenian dram (AMD) and discounted at an annual rate of 3 percent.

Fig. 4: Building the FCTC investment case



12 Available upon request.

5. Results

5.1 The burden of tobacco use: health and economic costs[13]

Tobacco use undermines economic growth. In 2017, tobacco use caused an estimated 5,500 deaths in Armenia, 52 percent of which occurred among those under 70 years. These deaths amount to 81,600 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 premature mortality are estimated at AMD 155 billion.

While the costs of premature mortality are high, the consequences of tobacco use begin long before death. As individuals 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 Armenian Government AMD 9.9 billion in 2017 and caused Armenian citizens to spend AMD 64 billion in out-of-pocket (OOP) healthcare expenditures. Private insurance and non-profit institutions serving households spent AMD 2.2 billion on treating tobacco-attributable diseases in 2017. In total, healthcare expenditures attributable to smoking amounted to AMD 76 billion.

The share of out-of-pocket payments in the current health expenditures increased over the period of 2000-2017, by comprising 84 percent in 2017 (+22 percentage points compared to the level of 2000).[14] Detailed information, describing the health expenditures in Armenia are expressed in **Table 2**.

13 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 ascertain those losses.

14 Available at https://apps.who.int/nha/database/country_profile/Index/en

Table 2. Health expenditure profile in Armenia

Indicator	2005	2011	2017
GDP per capita (US$ constant 2017)	2,398	3,145	3,934
CHE per capita (US$ constant 2017)	141	295	408
Public spending in % of GDP	5.9%	9.4%	10.4%
GGHED in % of CHE	25%	18%	13%
GGHED in % of GDP	1.5%	1.7%	1.4%
OOPS in % of CHE	63%	78%	84%
GGHED in % of GGE	7.4%	6.7%	5.3%
Population	2,981,259	2,875,581	2,930,450

GDP - Gross Domestic Product; CHE - Current Health Expenditure; GGHED - Domestic Public Health Expenditure; OOPS - Out-of-pocket payments; GGE - Total General Government Expenditure

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 AMD 7.5 billion and the cost of presenteeism due to cigarette smoking was AMD 20 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 [25]. If 10 minutes of time is valued at the average worker's salary, the compounding impact of 299,139 employed smokers taking ten minutes per day for smoke breaks is equivalent to losing AMD 14 billion in productive output annually.

In total, tobacco use cost Armenia's economy AMD 273 billion[15] in 2017, or about 4.2 percent of Armenia's 2017 GDP. **Figure 6** breaks down direct and indirect costs. **Figure 7** and **Figure 8** illustrate the annual health losses that occur due to tobacco use.

15 Component parts may not add exactly to AMD 273.1 billion due to rounding.

The current burden of tobacco use

Fig. 6: Breakdown of the share of direct and indirect economic costs (AMD millions) in 2017

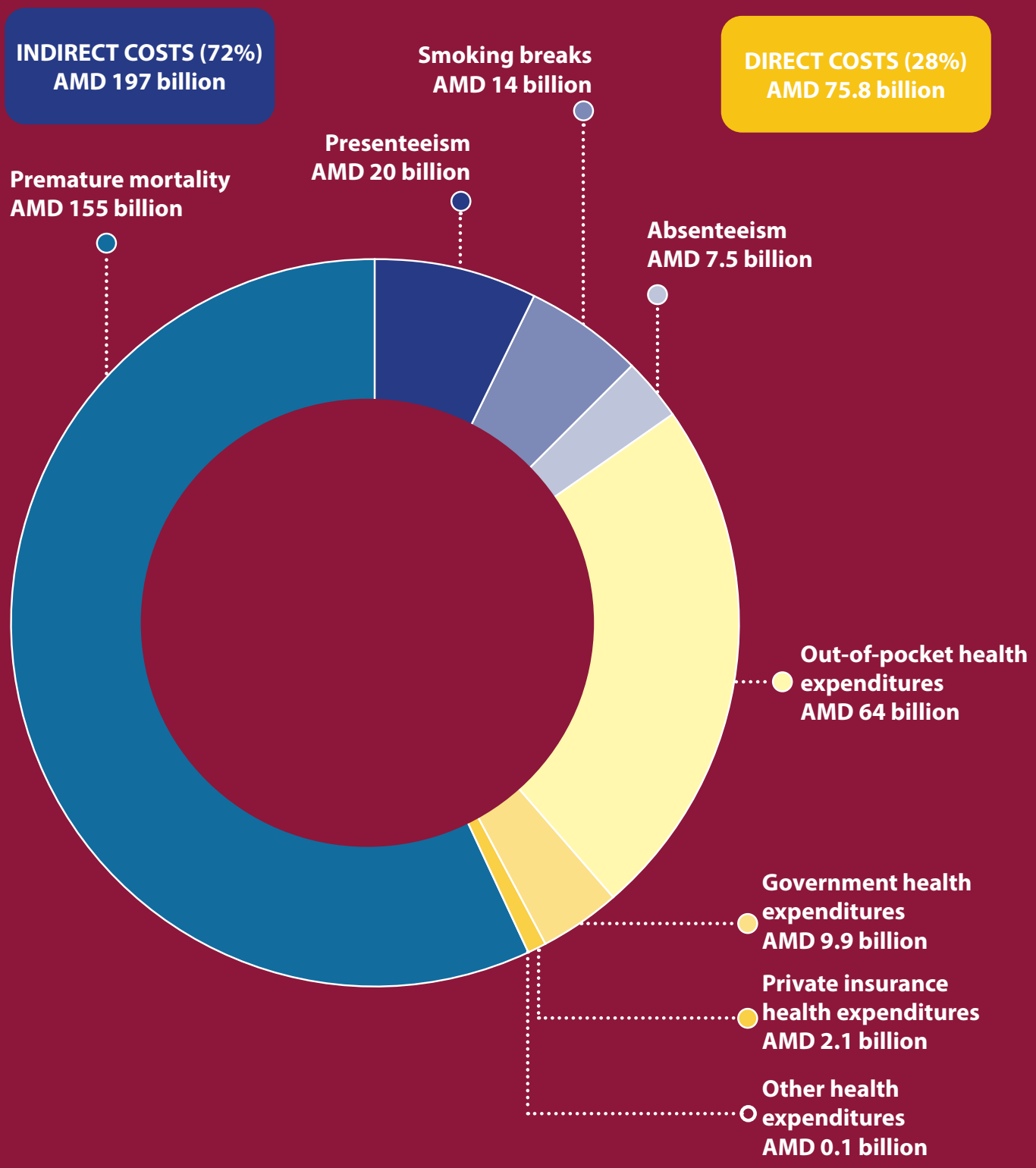


Fig. 7: Tobacco-attributable deaths by disease in Armenia, 2017 *(Source: Results are from the IHME Global Burden of Disease Results Tool. Other diseases include pancreatic cancer, larynx cancer, liver cancer, colon and rectum cancer, peptic ulcer disease, leukemia, tuberculosis, esophageal cancer, prostate cancer, breast cancer, kidney cancer, lip and oral cavity cancer, other pharynx cancer, atrial fibrillation and flutter, cervical cancer, gallbladder and biliary diseases, asthma, nasopharynx cancer, peripheral artery disease, and multiple sclerosis.)*

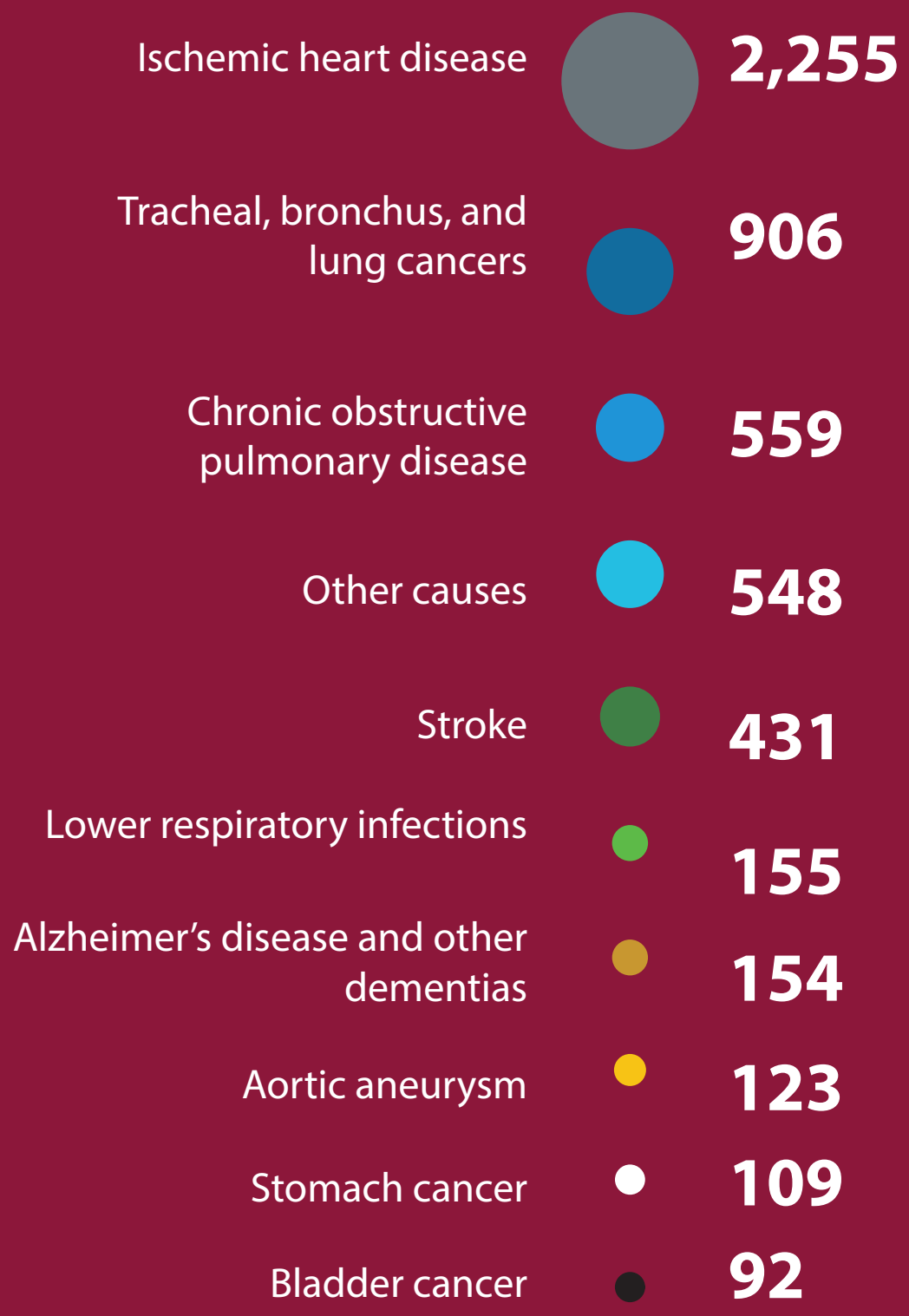
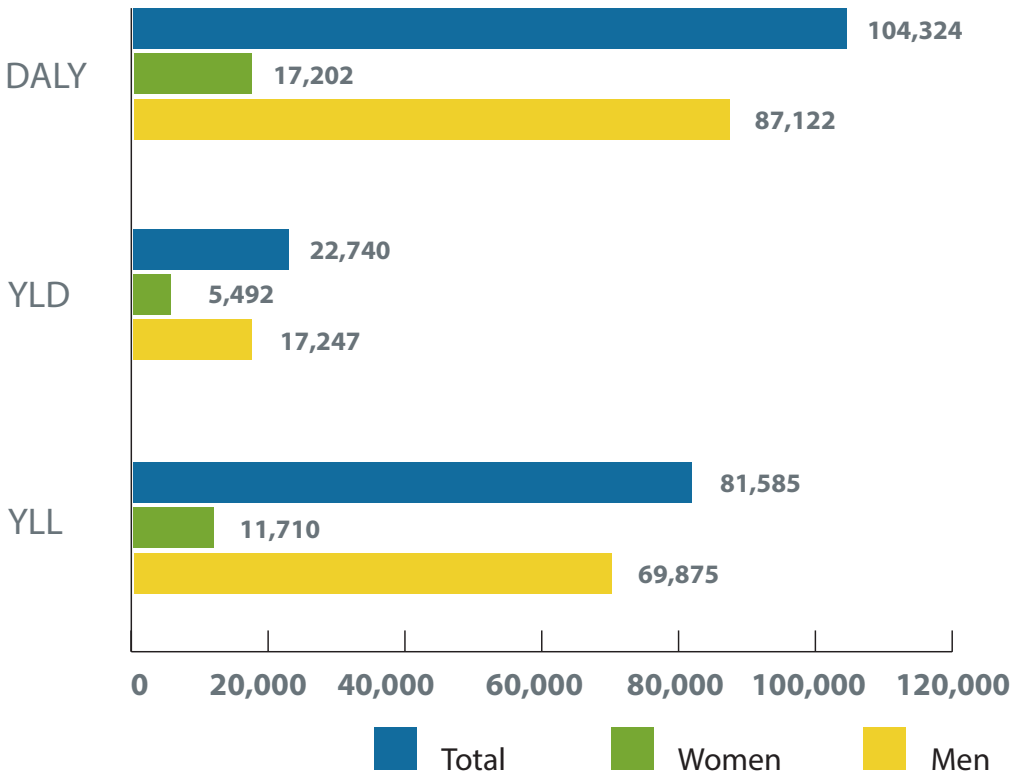


Fig. 8: Tobacco-attributable DALYs, YLDs, and YLLs in Armenia, by sex , 2017[16]



5.2 Implementing policy measures that reduce the burden of tobacco use

Strong enforcement of the Law on Reduction and Prevention of the Damage Caused to Health by the Use of Tobacco Products and Substitutions for Them, and continued action to implement additional tobacco control measures, can reduce the national burden of tobacco use. Through these actions, Armenia can secure significant health and economic returns, and begin to reduce the AMD 273.1 billion 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 cigarette taxation to reduce the affordability of tobacco products; 2) implement bans on smoking in indoor public places; 3) mandate that large graphic health warnings cover at least 50 percent of the packaging; 4) implement plain packaging of tobacco products; 5) institute best-practice national anti-tobacco mass media campaigns to increase awareness about the harms of tobacco use; 6) expand and enforce bans on tobacco advertising, promotion and sponsorship; and 7) support reducing tobacco dependence and cessation by training health professionals to provide brief advice to quit smoking.

16 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

Putting in place the full package of tobacco control measures (inclusive of all seven of the measures listed above) would lower the prevalence of tobacco use, leading to substantial health gains now and into the future. Specifically, enacting the package would reduce the prevalence of cigarette smoking by 52 percent (in relative terms) over 15 years, saving 23,245 lives from 2020-2034, or 1,550 lives annually.

5.4 Economic benefits—costs averted

Implementing the tobacco control policy package would result in Armenia avoiding 26 percent of the economic loss that it is expected to incur from tobacco use over the next 15 years if the status quo remains. **Figure 9** illustrates the extent to which Armenia can shrink the economic losses it is expected to incur under the status quo.

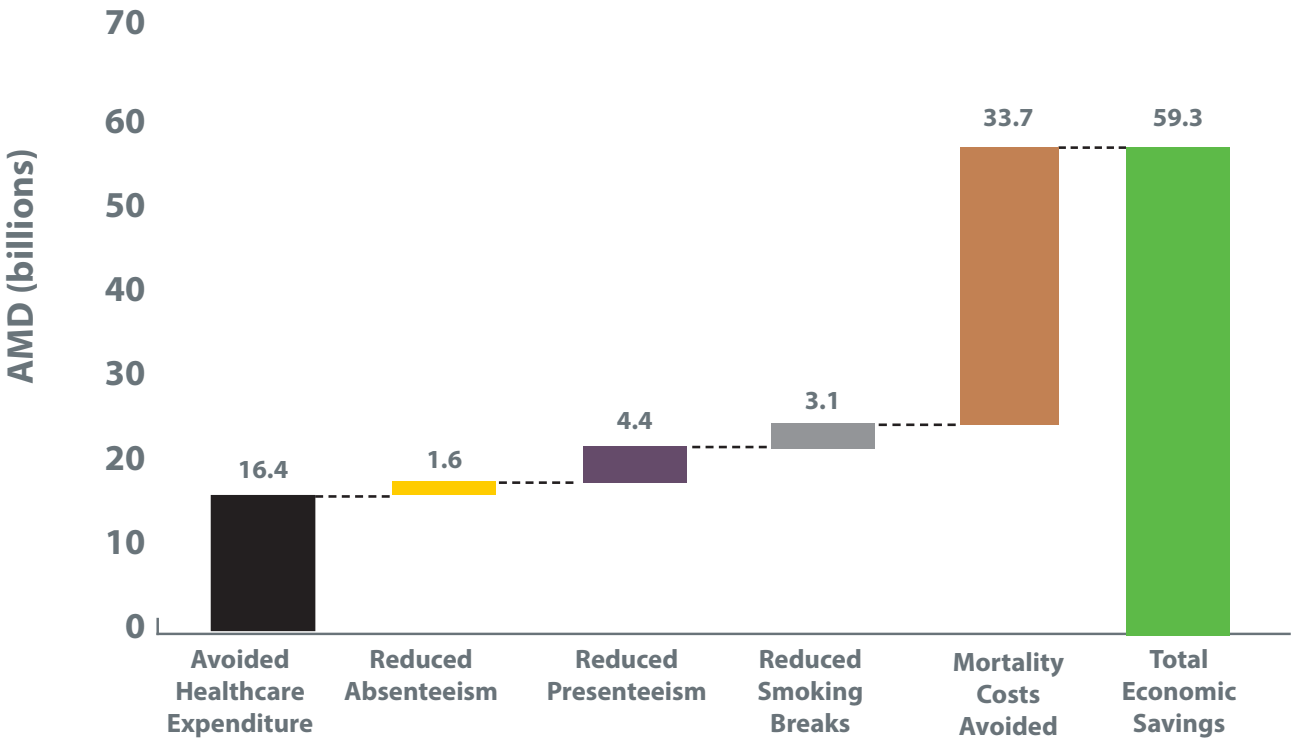
Fig. 9: Tobacco-related economic losses over 15 years: What happens if Armenia does nothing else, versus if the Government strengthens tobacco control measures to reduce demand for smoking?

In total, over 15 years Armenia would save about AMD 889 billion that would otherwise be lost if it does not implement the recommended package of tobacco control measures. These savings are equivalent to about AMD 59 billion in annual avoided economic losses.

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

Figure 10 breaks down the sources from which annual savings accrue as a result of implementing the tobacco control policy package. The largest annual savings result from avoiding premature mortality (AMD 34 billion). The next highest source of annual savings is avoided healthcare expenditures (AMD 16 billion), followed by reduced presenteeism (AMD 4.4 billion), reduced numbers of smoking breaks (AMD 3.1 billion), and reduced absenteeism (AMD 1.6 billion).

Fig. 10: Sources of annual economic savings as a result of implementing the tobacco control policy package

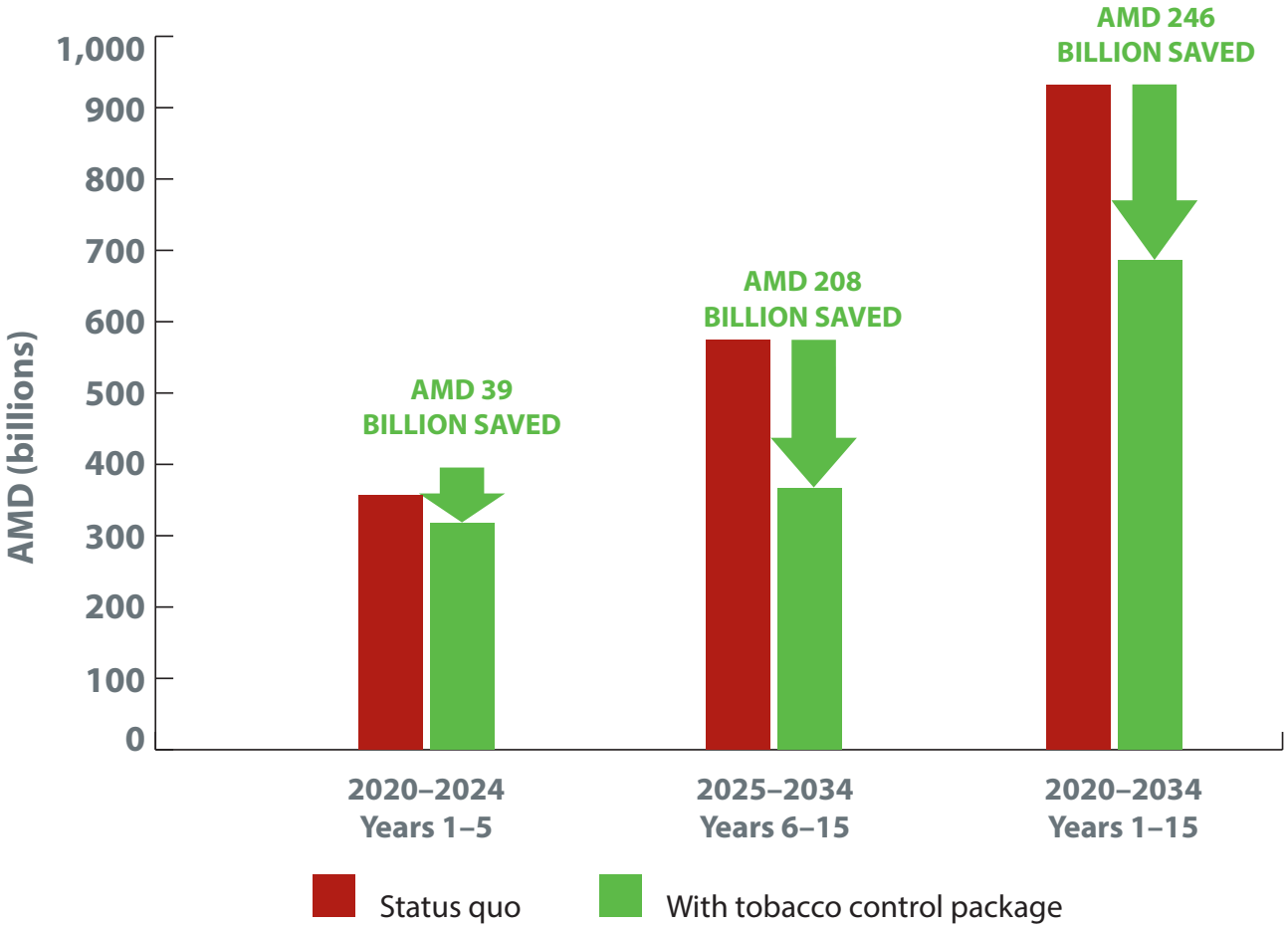


Year-on-year, the package of interventions lowers tobacco use prevalence, which leads to less illness, and consequently less healthcare expenditure (see **Figure 11**). Over the 15-year time horizon of the analysis, the package of interventions averts AMD 246 billion in healthcare expenditures, or AMD 16 billion annually. Of this, 13 percent of savings accrue to the government and 84 percent accrue to individual citizens who would have had to make out-of-pocket payments for healthcare. This aligns with out-of-pocket health expenditure trends in Armenia more broadly.

Out-of-pocket payments as a share of current health expenditures increased to 84 percent in 2017 from 62 percent in 2000. 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 AMD 32 billion over 15 years. Simultaneously, the Government would successfully reduce the health expenditure burden that tobacco imposes on Armenia's citizens, supporting efforts to reduce economic hardship on families.

Rather than spending on treating avoidable disease and routinely spending on tobacco products, these families would be able to invest more in nutrition, education and other productive inputs to secure a better future.

Fig. 11: Public and private healthcare savings over the 15-year time horizon



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 tobacco control investments by the costs of the investments. For the Armenia 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). The ROI projections estimate the economic returns for each intervention, and for the full package of measures. Total benefits are a measure of which interventions are expected to have the largest impact.

Table 3 displays costs, benefits and ROIs by intervention, as well as for all interventions combined. All of the 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 recoup anywhere from 3.3 to 377 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.

Photo credit: © Freepik.com

Table 3: Return on investment, by tobacco control policy/intervention (AMD billions)

Return on investment, by tobacco control measure	First 5 years (2020–2024)			All 15 years (2020–2034)		
	Total Costs (billions)	Net Benefits (billions)	ROI	Total Costs (billions)	Net Benefits (billions)	ROI
Tobacco control package* *(all policies/interventions implemented simultaneously)*	3.6	140	**38**	10.4	889	**86**
Bans on advertising, promotion, and sponsorship *(WHO FCTC Art. 13)*	0.2	80	**377**	0.5	406	**888**
Raise cigarette taxes *(WHO FCTC Art. 6)*	0.3	23	**70**	0.7	271	**383**
Warning labels *(WHO FCTC Art. 11)*	0.1	3.0	**23**	0.4	113	**292**
Protect people from tobacco smoke *(WHO FCTC Art. 8)*	0.4	23	**56**	0.8	177	**216**
Plain packaging *(WHO FCTC Art. 11 Guidelines)*	0.1	1.0	**7.8**	0.4	38	**99**
Mass media campaign *(WHO FCTC Art.12)*	1.2	23	**18.8**	3.2	179	**56**
Cessation: brief advice to quit *(WHO FCTC Art. 14)*	1.0	3.2	**3.3**	3.9	50	**13**

* 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 [26]. The costs of the tobacco package include the costs of the examined policies, as well as programmatic costs to implement and oversee a comprehensive tobacco-control program.

Over the 15-year period, enforcing bans on tobacco advertising, promotion and sponsorship is expected to have the highest return on investment (888:1).[17] Increasing cigarette taxes is expected to have the next highest return on investment (383:1), followed by rotating graphic warning labels (292:1), enforcing bans on smoking in indoor public places (216:1), implementing plain packaging of tobacco products (99:1), mass media campaigns (56:1), and cessation by training health professionals to provide brief advice to quit smoking (13:1)

17 Rounded to the nearest whole number.

6. Examining additional impacts: Government revenue and the SDGs

The investment case examines the impact of increasing cigarette taxes on government revenue and the contributions that tobacco control measures make to Armenia's fulfillment of the Sustainable Development Goals.

6.1 Cigarette taxes and Government revenue

The Addis Ababa Action Agenda on Financing for Development [27] recognizes that price and tax measures on tobacco "represent a revenue stream for financing for development in many countries". Until 2025, Armenia is obligated to gradually increase national excise taxes on tobacco in line with other Eurasian Economic Union (EAEU) countries, from the current rate of about €13 per 1,000 cigarettes to €20, €23, €26, €30, and €35 per 1,000 cigarettes respectively in the years up to 2024. The agreement stipulates that countries may deviate from the set standard by plus or minus 20 percent in each year.

This section analyzes three cigarette tax increase scenarios to estimate the impact of raising taxes on government revenue. A "low" scenario analyzes revenue if Armenia raises taxes at the Eurasian Economic Union minimum (i.e. 20 percent less than the set standards); a medium scenario analyzes revenue if Armenia raises taxes according to the set EAEU standards; and a high scenario examines the revenue impact if taxes are raised at the EAEU maximum (i.e. 20 percent higher than the set standards).

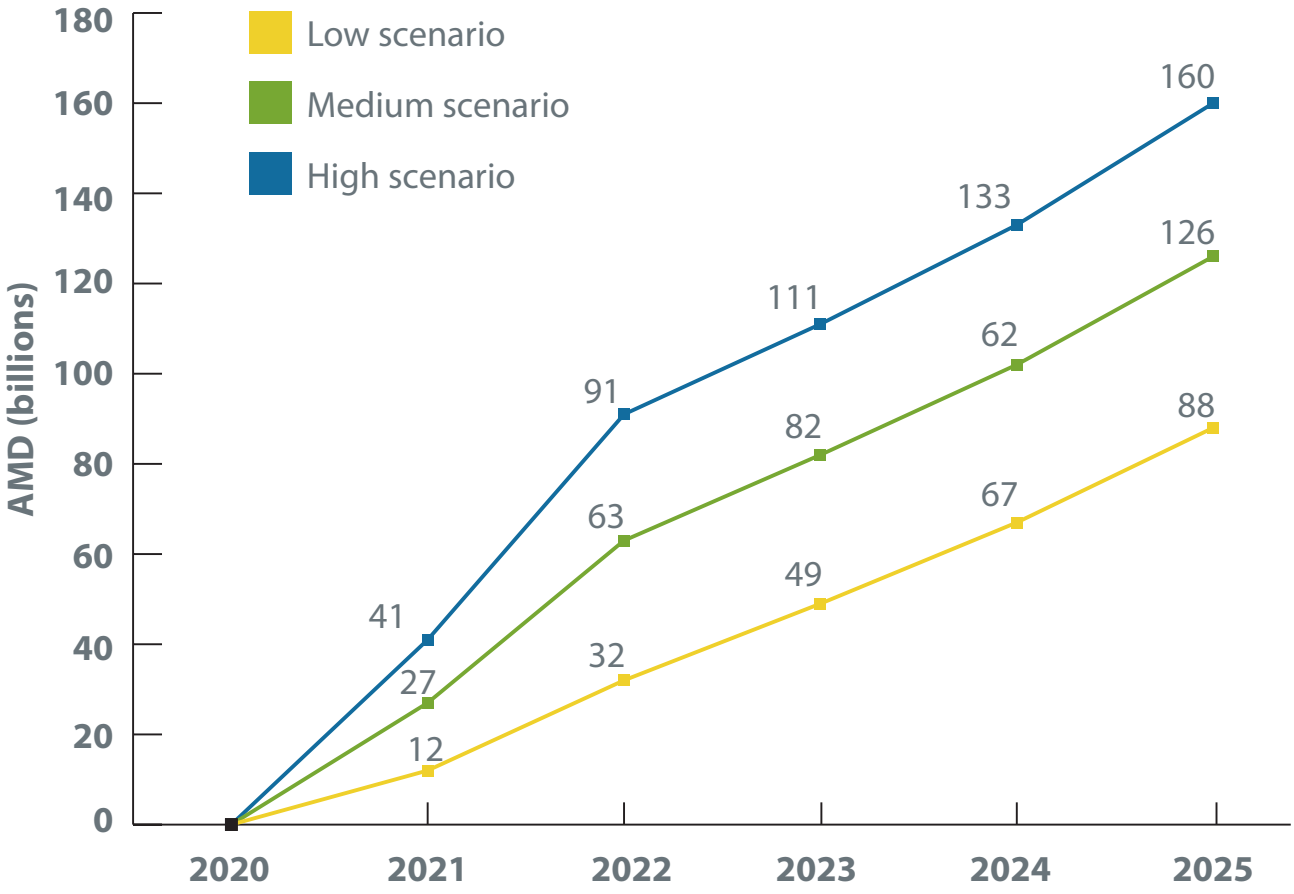
Evidence from low-and middle-income countries shows that on average a 10 percent increase in price of cigarettes is expected to result in a 5 percent decrease in consumption. Thus, purchases of cigarettes remain relatively unresponsive to price changes. In Armenia, under the "medium" scenario tax increase pattern and described demand elasticity, annual consumption of legally sold cigarettes would, from the years 2020 to 2025, drop from the present amount of about 390 million packets to 368 million. To prevent consumers shifting from one tobacco product to another, taxes should be increased proportionally on filtered cigarettes, non-filtered cigarettes and roll-your-own tobacco.

When cigarette taxes are increased, overall revenue gains occur because although reducing the affordability of tobacco products does lead some people to quit smoking or reduce consumption, many others continue to smoke—largely because of the addictive nature of tobacco—paying higher taxes to the government on each purchase.

Figure 12 shows, for each tax increase scenario, the discounted cumulative revenue that the Armenian government can gain over the 5-year period, compared to not raising taxes at all. In each scenario the government collects more tax revenue, with the intensity of the cigarette tax increases significantly impacting the amount of revenue gained. In the "high" scenario, the government collects AMD 160 billion in additional revenue over 5 years, compared to only 88 billion in the low scenario. Thus, if Armenia maximizes the opportunity afforded in the EAEU agreement to raise taxes to 20 percent over the set standard, it can expect an extra AMD 72 billion in revenue compared to if it follows the low scenario.

Under the medium scenario, the government collects an additional AMD 126 billion, which is equivalent to over one-fifth (21 percent) of total healthcare expenditures in 2018. 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. 12: Additional tax revenue (cumulative, discounted) in comparison to the baseline scenario, 2020-2025



6.2 The Sustainable Development Goals and the WHO FCTC

Enacting and strengthening the seven WHO FCTC measures recommended in this report will reduce demand for tobacco in Armenia, advancing its fulfillment of SDG Target 3. A to strengthen implementation of the WHO FCTC. Moreover, acting now will contribute to Armenia's efforts to meet SDG Target 3.4 to reduce by one-third premature mortality from NCDs by 2030. These health gains will support development more broadly, including reduction of poverty and inequalities (SDGs 1 and 10, respectively) and economic growth (SDG 8).

In Armenia in 2017, over 10,600 premature deaths (between the ages of 30 to 70) were caused by the four main NCDs (CVD, diabetes, cancer, and chronic respiratory disease) [2]. Over a quarter (27 percent) of these premature deaths occurred due to tobacco use [2]. Enacting the WHO FCTC measures identified in the investment case would reduce tobacco use prevalence—a key risk factor driving NCD incidence—preventing 7,801 premature deaths from the four main NCDs over the next 11 years (2020 through 2030). Preventing those deaths contributes the equivalent of about 20 percent of the needed reduction in premature mortality for Armenia to achieve SDG Target 3.4.

Achieving SDG Target 3.4 by 2030

By 2030 the WHO FCTC measures would...

Lower the prevalence of tobacco use by over 48 percent from present day levels.

Reduce economic costs due to tobacco use by AMD 664 billion, including saving AMD 184 billion in healthcare expenditures.

Lead to savings (AMD 184 billion) that significantly outweigh the costs (AMD 8.5 billion), with an overall return on investment of 78:1.

7. Conclusion and recommendations

Each year, tobacco use costs Armenia AMD 273 billion in economic losses and causes substantial human development losses. Fortunately, the investment case shows that there is an opportunity to reduce the social and economic burden of tobacco in Armenia. Enacting the recommended tobacco control measures would save 1,550 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 AMD 889 billion over the next 15 years. Further, the economic benefits of strengthening tobacco control in Armenia greatly outweigh costs of implementation (AMD 889 billion in benefits versus AMD 10.4 billion in costs).

By investing now to intensify implementation of the seven proven tobacco control measures modeled under this investment case, Armenia would not only reduce tobacco consumption, improve health, reduce government health expenditures and grow the economy, it would also reduce hardships among Armenians, particularly among low-income populations. Many countries reinvest savings from healthcare expenditures and revenue from increased tobacco taxes into national development priorities including social protection measures, such as universal health coverage, which the Armenian government is committed to achieve.

The investment case has identified strong tobacco control investments that Armenia can make. It offers compelling economic and social arguments to implement core WHO FCTC measures. The full benefits of the investment case are more likely to be realized if the following actions are pursued:

Increase taxes on tobacco products to meet WHO recommendations and Armenia's obligations under the Eurasian Economic Union

Raised cigarette taxes are one of the most cost-effective measures examined in the investment case. Over 15 years, they are expected to deliver an impressive return of over 383 drams in economic benefits for every 1 dram invested.

In 2019, the Government of Armenia signed an agreement with the Eurasian Economic Union (EAEU) to gradually increase national excise taxes on cigarettes over the years leading up to 2024. Fulfilling this agreement would bring Armenia closer to meeting the WHO recommendation of a tax rate equivalent to 75 percent of the retail price, though to be fully achieved subsequent tax

increases beyond 2025 are needed. Increased taxes on cigarettes would reduce the affordability of tobacco products, decrease consumption, reduce the burden of tobacco-related diseases, and increase revenue. In addition, raising cigarette taxes in line with WHO recommendations would strengthen the economy by averting premature mortality and preserving labour force production. It is estimated that the total economic benefits that would result from reduced tobacco consumption due to the recommended tax increase over the next 15 years are equivalent to 4.1 percent of GDP of Armenia in 2017.

The recommended increase of cigarette taxes would provide the Armenian Government with significant additional revenue. By raising taxes in conformity with the EAEU agreement, the Armenian Government would collect between AMD 88 billion and AMD 160 billion in additional revenue over a five-year period, depending on levels of increases, or the equivalent of between 15 percent and 27 percent of Armenia's health budget in 2018.

In the context of the above, it is recommended that the Ministry of Health works with the Ministry of Finance to create an enabling political, policy, and social environment for further tax increases on tobacco products. The Government should also extend tax increases to all tobacco products (not just cigarettes), including new electronic nicotine delivery systems (e.g. e-cigarettes, vaping devices) which also endanger the health of the user and others exposed to the toxic vapors. Demand reduction measures must be applied evenly to the whole range of tobacco products so as to prevent tobacco consumers from simply switching between products.

2 Ensure compliance with the tobacco control regulations stipulated by the new tobacco law

In 2020 the Government of Armenia enacted the Law on Reduction and Prevention of the Damage Caused to Health by the Use of Tobacco Products and Substitutions for Them. This new landmark legislation bans smoking in all indoor public spaces, workplaces and public transport beginning in 2022, introduces a total ban on advertising, promotion, and sponsorship, and requires plain packaging of tobacco products by 2024. Full enactment of this Law will bring Armenia in compliance with many of its obligations under the WHO FCTC and lead to the realization of four interventions recommended by this investment case, including the intervention that is projected to yield the highest return.

The task for the Government now is to ensure full and effective implementation of all provisions of the Law, which would include establishing appropriate monitoring and enforcement mechanisms. For that purpose, the Ministry of Health is encouraged to mobilize and coordinate closely with relevant bodies and institutions that could help supervise the compliance with the new restrictions.

For example, the Ministry of Health could work with the Ministry of Labour and Social Affairs to make verification of smoking restrictions part of the mandatory checks conducted by the labour inspectors during visits to workplaces.

Dedicating permanent staff and creation of a cross-agency working group is recommended to ensure that the implementation of the new legislation is taking place, especially since some of the new regulations have to be put in place by 2022. To fund the required expenditure, revenues from increased tobacco taxes could be used. In fact, according to the results of the cost assessment, the entire investment required to implement the ban on smoking in public places, plain packaging, and a comprehensive ban on advertising, promotion, and sponsorship over the next 15 years would amount to just 2 percent of the revenues that the Government of Armenia is projected to collect over the next 5 years from raising taxes on cigarettes under the "low" scenario.

Moreover, raising awareness about the new restrictions among the stakeholders subject to the regulations (e.g. restaurants and pubs, kiosks, etc.) should also be considered as a potential measure to ensure compliance. Public guidance could be issued and disseminated among the owners and managers of the spaces concerned to help them adapt to the new regulations and make sure that they recognize the importance of the measures and their responsibilities.

3 Strengthen multisectoral engagement in tobacco control

The investment case demonstrates that tobacco control is a sustainable development issue for Armenia with implications for a wide range of national stakeholders, including the Ministry of Economy, Ministry of Labour and Social Affairs, Ministry of Finance, parliamentarians, worker and patient associations, and civil society. The investment case findings should be used to strengthen collaboration and coordination among sectors. Under the leadership of the Ministry of Health, the national coordination mechanism for tobacco control should be established with dedicated resources and staff. The UNDP and the Convention Secretariat to the WHO Framework Convention on Tobacco Control "Toolkit for Parties to implement Article 5.2 (a) of the WHO FCTC" provides sample terms of reference, rules of procedure, and codes of conduct, among other tools. A joint UNDP and the Convention Secretariat discussion paper demonstrates how tobacco impacts virtually every SDG.

To strengthen the multisectoral response, all relevant stakeholders need to be included in the finalization of the new tobacco control strategy 2021-2025, and its implementation.

The policy measures modeled in this investment case can help define the near- and medium-term priorities under the new strategy. Different ministries and policymakers can and should champion the integration of tobacco control into national strategic and policy documents. Currently, Armenia's Development Strategy 2014-2025 and the Program of the Government of the Republic of Armenia 2019-2023 contain few references to tobacco control. Particularly, the tobacco control policy is also reflected in the 5-year Action Plan of the Government for 2019-2023. For instance, Action 21.1 (concerning public education) and Action 21.2 (concerning trainings on treatment and smoking cessation advice for primary care physicians). While the two documents acknowledge the harmful impact of tobacco, they do not set targets or goals related to prevention or control. Including targets and goals related to the interventions recommended in this investment case in national strategic and policy documents will encourage a whole-of-government and whole-of-society response to tobacco, delivering benefits across sectors and stakeholders.

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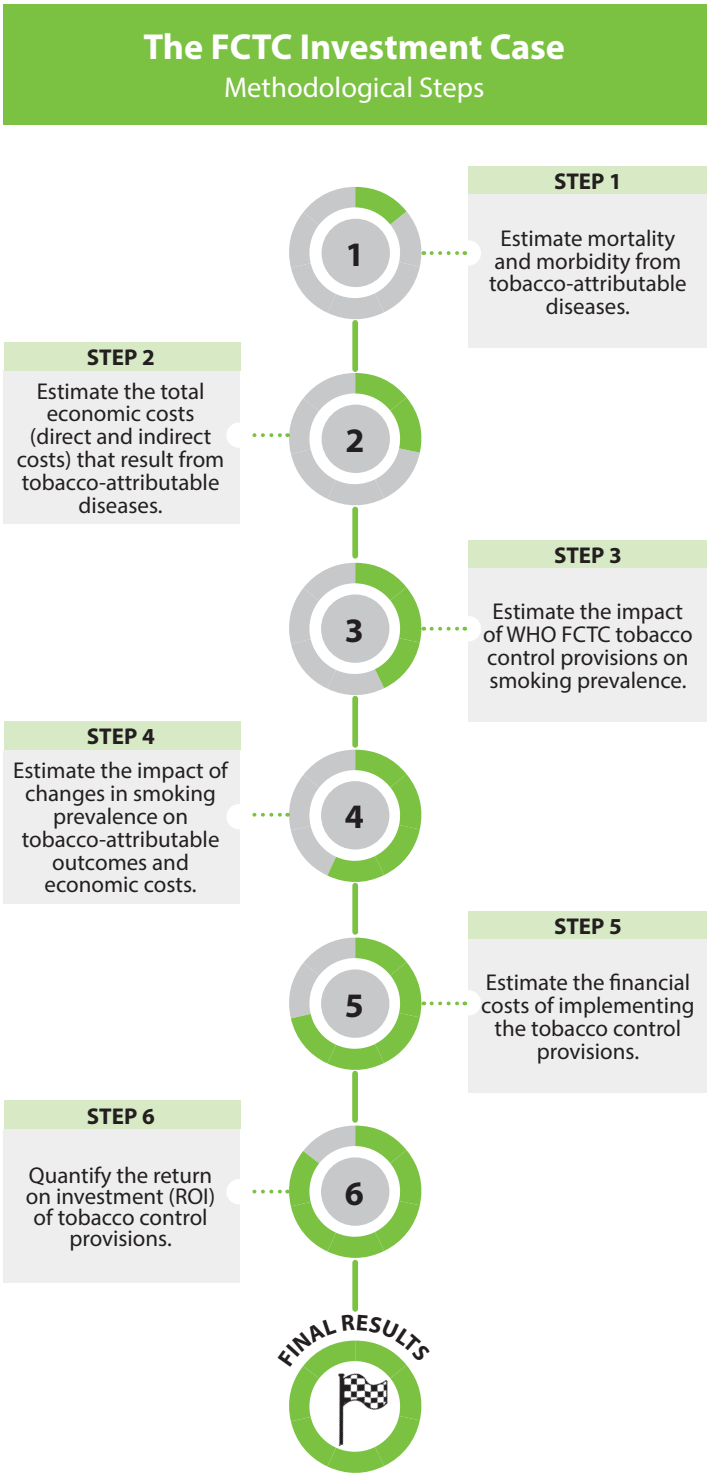
8. Methodology annex

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 below.

Fig. A1: Steps in the FCTC 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 Armenia.

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) [28]. 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.[18] *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 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 from Goodchild et al. (2018), who estimate the smoking attributable fraction (SAF) of healthcare expenditures for most countries [3]. The Goodchild paper estimates that 12.6 percent of total healthcare expenditures are attributable to smoking in Armenia. 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.

18 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.

Healthcare expenditures were obtained from the National Health Accounts provided by country stakeholders.

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 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 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) [29].

- *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) [30]. 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 [31]. Lost productivity due to smoking breaks is valued under the conservative assumption that working smokers take ten minutes of extra breaks per day [26].

8.3 COMPONENT TWO: POLICY/INTERVENTION SCENARIOS	This component estimates the effects of WHO FCTC tobacco control measures on mortality and morbidity, as well as on total economic costs (direct and indirect) associated with tobacco use.

This component estimates the effects of WHO FCTC tobacco control 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 [32], [33].

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 tobacco control provisions 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, Parties seek to accelerate WHO FCTC implementation by setting clear priorities where they will be likely to have the greatest impact in reducing tobacco use. This includes priority implementation of price and tax measures (Article 6) and time-bound measures of the Convention, including bans on smoking in all public places (Article 8), health warnings and plain tobacco packaging (Articles 11 and 13), and comprehensive bans on tobacco advertising, promotion and sponsorship (Article 13). In addition, given the importance of awareness in behavior change and shaping cultural norms, the investment cases include instituting mass media campaigns against tobacco use (Article 12). The impacts of implementing the WHO FCTC provisions are obtained from the literature. The impact of enforcing smoke-free air laws, implementing plain packaging, intensifying advertising bans, and conducting mass media campaigns are derived from Levy et al. (2018) [26] and Chipty (2016) [34], as adapted within the Tobacco Use Brief of Appendix 3 of the WHO Global NCD Action Plan 2013-2020 [35], and adjusted based on assessments of Armenia's baseline rates of implementation.

Within the analysis, implementation or intensification of new tobacco control measures follows the implementation pattern described in the Law on the Reduction and Prevention of the Damage Caused to Health by the Use of Tobacco Products and Substitutions for Them and EAEU agreements to implement tax increases and graphic warning labels. With the exception of taxes—the impact of which is dependent on the timing of increases in tax rates (described below)—the full impact of the measures is phased in over a five-year period. The phase-in period follows WHO assumptions [36] that two years of planning and development are required before policies are up and running, followed by three years of partial implementation that are reflective of the time that is needed to roll out policies, and work up to full implementation and enforcement.

Table A1 displays the impact sizes used within the investment case analysis. Additional information on their derivation can be found in the Technical Appendix.[19]

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 and income projections.

A tax increase scenario was constructed to accord with meeting WHO recommendations per the WHO Technical Manual on Tobacco Tax Administration and WHO targets (taxes equivalent to at least 75 percent of the retail price of tobacco products, and specific excise taxes equivalent to 70 percent of the retail price) by 2034. Through 2025, taxes are raised according to the current EAEU agreement, followed by stronger annual tax increases in the years through 2034. In real terms, this results in an average annual increase in the specific excise tax of AMD 145, more than quadrupling the cost of a pack of cigarettes by 2034—a real increase of about AMD 2,600.

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 Armenia. Price elasticity in developing countries is found to commonly fall within the range -0.4 to -0.8 [37]. We assume that price elasticity is -0.5 and that prevalence elasticity is approximately one-half of price elasticity (-0.25) [38].

Changes in the prevalence of tobacco use are calculated following Joosens and colleague's (2009) [38], who use a log-log function to ensure that large price increases do not result in implausible reductions in prevalence. The income price elasticity of demand is assumed to be 0.5 [38], and income prevalence elasticity is assumed to be 0.25.

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

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

19 Available upon request.

Table A1: Impact size: Relative reduction in the prevalence of current smoking by tobacco control policy/intervention, over a period of 15 years

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)	**24.8%**	**51.9%**
Increase taxes on cigarettes (WHO FCTC Art. 6)	2.5%	21.9%
Strengthen compliance with the ban on smoking in public places and workplaces (WHO FCTC Art. 8)	4.6%	8.0%
Mandate that tobacco product packages carry large health warnings (WHO FCTC Art. 11)	1.2%	6.4%
Plain packaging of tobacco products (WHO FCTC Art. 11 – Guidelines and Art. 13)	0.4%	2.1%
Run a mass media campaign to promote awareness about tobacco control (WHO FCTC Art.12)	4.7%	8.1%
Enact comprehensive bans on advertising, promotion, & sponsorship (WHO FCTC Art. 13)	**13.2%**	**17.2%**
Cessation: Brief advice to quit tobacco use (WHO FCTC Art. 14)	**0.7%**	**3.9%**

* 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" [26].

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, Armenia 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 Armenia can achieve by taking targeted actions to reduce tobacco use.

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

Marginal Effects = Outcome Base Scenario — Outcome Intervention Scenario

Marginal effects are calculated as follows for each outcome:

- **Health outcomes:** To calculate the reductions in mortality and morbidity due to implementation of the policy measures, forecasted changes in smoking prevalence are applied directly to the GBD risk factor attributable outcomes from the status quo scenario. This means that the model adjusts the risk factor attributable outcomes for mortality and morbidity as reported by GBD based on year-over-year relative changes in smoking prevalence for each outcome.

- **For healthcare expenditures**, the model applies forecasted annual relative changes in smoking prevalence for each intervention scenario to the SAFs. SAFs are adjusted in proportions equal to the relative change in smoking prevalence for each intervention scenario.

- **Workplace smoking outcomes** are recalculated substituting actual (status quo) smoking prevalence for estimated annual smoking prevalence for each of the intervention scenarios that are modeled.

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 [36].

The Tool uses a 'bottom up' or 'ingredients-based' approach. In this method, each resource that is required to implement the tobacco control measure is identified, quantified, and valued. The Tool estimates the cost of surveillance, human resources—for 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 four distinct implementation phases: planning (year 1), development (year 2), partial implementation (years 3-5), and full implementation (years 6 onward).

Across these categories, the Tool contains default costs from 2011, which are sourced from the WHO CHOICE costing study. Following Shang and colleagues, the Tool is updated to reflect 2019 costs by updating several parameters: the US$ to local currency unit exchange rate (2019), purchasing power parity (PPP) exchange rate (2019), GDP per capita (US$, 2019), GDP per capita (PPP, 2019), population (total, and share of the population age 15+, 2019), labor force participation rate (2019), gas per liter, and government spending on health as a percent of total health spending (2017) [40]. 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.

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.

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

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

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