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Investment Case for Tobacco Control in Jordan

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Investment Case for Tobacco Control in Jordan

Prepared by
RTI International
Ministry of Health, Jordan
United Nations Development Programme
WHO FCTC Secretariat
World Health Organization

November 2019

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Over 9,000

Jordanians die every year due to **tobacco-related diseases**.

56% of those deaths

occur amongst Jordanians under age 70.

Tobacco costs Jordan

JOD 1.6 billion

every year, equivalent to about

6% of its GDP

in 2015.

Investing now in six tobacco control measures will save

47,500 lives

and avert

JOD 6.5 billion

in health costs and economic losses by 2033.

For every **Jordanian dinar** invested in six tobacco-control measures now, Jordan receives **JOD 110** in averted costs and economic losses by 2023, **JOD 227** by 2030, and **JOD 247** by 2033.

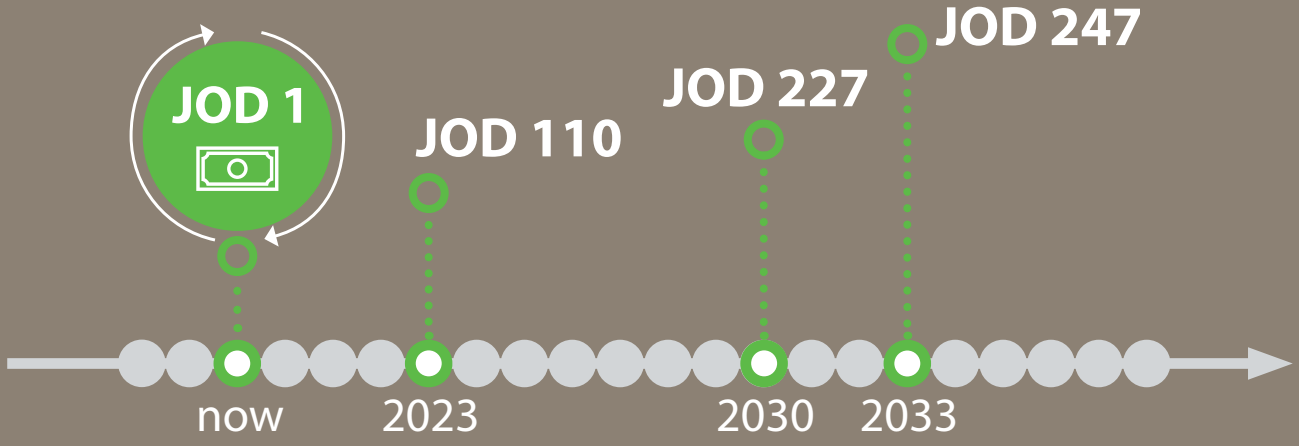

Table of Contents

List of figures and tables

The report recommends concrete actions the Government of Jordan can take to strengthen a whole-of-government approach to tobacco and its development consequences. Through the FCTC 2030 Project, the FCTC Secretariat, UNDP and WHO stand ready to support the Government of Jordan to reduce the social, economic and environmental burdens that tobacco continues to place on its country.

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1. Executive summary

Tobacco is a health, economic and sustainable development issue. Its consumption and production causes early death and disease, results in high healthcare costs and economic losses, widens socioeconomic inequalities, and contributes to environmental degradation. Tobacco use is an epidemic in Jordan. As a key risk factor for major non-communicable diseases (NCDs) which account for nearly **80 percent** of all deaths in Jordan—including cancers, diabetes, chronic respiratory disease and cardiovascular disease—tobacco use is one of Jordan's biggest public health threats.

This report presents the findings of the case for investing in tobacco control in Jordan. In line with the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC) Global Strategy to Accelerate Tobacco Control and according to the stated priorities of the Government of Jordan, the report measures the costs and benefits—in health and economic terms—of implementing tobacco control policy measures.

A. From a macro-economic perspective

2015 Tobacco Burden

Each year, tobacco use causes JOD 1.6 billion in total economic losses, the equivalent of 6 percent of GDP in 2015. These costs include a) **JOD 204.4 million** in healthcare expenditures, and b) **JOD 1.389 billion** in lost productive capacities due to premature mortality, disability, and workplace smoking. Large productivity losses from tobacco use (87 percent of all tobacco-related costs) indicate that tobacco use impedes development in Jordan beyond health. Multisectoral engagement is required for effective tobacco control; businesses and other sectors benefit substantially from supporting tobacco control investments.

Every year tobacco use kills 9,027 Jordanians. Fifty-six percent of these deaths are considered premature deaths, meaning they occur in individuals under age 70. About **1,600 Jordanians die every year** due to the effects of exposure to secondhand smoke.

By acting now, the Government of Jordan can curb the burden of tobacco use and advance sustainable development. The investment case findings demonstrate that enacting and enforcing WHO FCTC tobacco-control recommended measures would, over the next 15 years:

Return on investment over 15 years

Avoided JOD 6.5 billion in economic losses. This includes **JOD 5.7 billion** in savings from economic output losses. The tobacco-control recommended measures stimulate economic growth by ensuring that less Jordanians 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.

Lead to JOD 843.8 million (JOD 56.3 million annually) in savings through avoidance of smoking-attributable healthcare expenditures. Of this, JOD 548 million would be saved in public health expenditures, JOD 262 million saved in private health expenditures and 34 million saved in other sources of health expenditures.

Save around 47,500 lives (3,170 lives annually). The WHO FCTC measures contribute to Jordan's efforts to meet Sustainable Development Goal (SDG) Target 3.4 to reduce by one third premature mortality (under age 70) from NCDs by 2030. Enacting the FCTC measures would move Jordan 22 percent of the way toward fulfillment of the Target.

Provide economic benefits (JOD 6.5 billion) that significantly outweigh the implementation cost (JOD 26.4 million). Each of the WHO FCTC recommended measures is highly cost-effective with a **total return on investment (ROI) of JOD 1: 247** for the whole package implementation. Enacting more stringent bans on tobacco advertising, promotion and sponsorship has an ROI of JOD 1: 423, followed by graphic warning labels (JOD 1:324), enforcing bans on smoking in public places (JOD 1:180), implementing plain packaging of tobacco products (JOD 1:164), and implementing a mass media campaign (JOD 1:130). Increasing taxes on cigarettes has the highest ROI (JOD 1:1,547). The World Bank Group tobacco control country brief for Jordan (2019) recommends an annual increase of at least 20 percent, in parallel with strengthening the tobacco use surveillance and monitoring systems (including illicit trade tracking and tracing system).

B. From a micro-economic perspective

According to the 2019 Households Expenditures and Income Survey from the National Jordanian Department of Statistics, households with at least one smoker spent on average **74 dinar per month on tobacco products in 2017/2018**. In total, Jordanian families spent **JOD 717 million (equivalent to more than US$ 1 billion)** on tobacco products over the year 2017/2018. About **59 percent** of the households subsidized by the **National Aid Fund** have a least one smoker. This is an important factor to take into account in terms of poverty reduction efforts in Jordan. The FCTC Investment Case results for Jordan show that there is an evidence-based opportunity to halt the tobacco epidemic and reduce its social and economic burdens through preventative actions that target tobacco use. By investing now in tobacco control measures, Jordan can accelerate its efforts towards achieving the Sustainable Development Goals.

2. Introduction

In Jordan, around 43 percent of all individuals over age 15 smoked tobacco in 2015 [2], meaning millions of Jordanians are at a substantially increased risk of morbidity and early mortality from cancer, cardiovascular disease, respiratory illnesses, and many other tobacco-attributable diseases. Tobacco use is responsible for 9,027 deaths per year, and 56 percent of these tobacco-related deaths occur under the age of 70 [3]. Many more Jordanians are at risk from exposure to secondhand smoke.

Alongside the cost to health, tobacco imposes a substantial economic burden. In 2012, worldwide, healthcare expenditures to treat diseases and injuries caused by tobacco totaled nearly six percent of global health expenditures [4]. Further, tobacco use can reduce productivity by permanently or temporarily removing individuals from the work force due to poor health [5]. When individuals die prematurely, the labour output that they would have produced in their remaining years is lost. In addition, individuals with poor health are more likely to miss days of work (absenteeism) and, when they are at work, to operate at a reduced capacity (presenteeism, workplace smoking) [6, 7].

Tobacco use displaces household expenditure on basic needs, including food and education [8–10], and can push families into poverty and hunger [11,12]. 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 [13–15]. 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.

The 2030 Agenda recognizes that current tobacco use trends, in Jordan and around the world, are incompatible with sustainable development. Through SDG Target 3.4., Agenda 2030 commits Member States to achieve a one-third reduction in premature mortality from NCDs (i.e. deaths between 35 and 69) by 2030. Accelerating progress on NCDs requires strengthened implementation of the World Health Organization Framework Convention on Tobacco Control (WHO FCTC); SDG Target 3.a. Tobacco control is not just a primary means to improve population health, but also a proven approach to reduce poverty and inequalities (SDGs 1 and 10 respectively), grow the economy (SDG 8), address environmental issues (SDGs 13 and 15), and advance sustainable development broadly.

Jordan became a State Party to the WHO FCTC in 2004. In 2008, Jordan introduced several tobacco control provisions through the Public Health Law 47 with several ammendments in 2017. These measures include placing advertising restrictions on traditional forms of media (e.g., television,

billboards), mandating graphic warning labels on all tobacco products, and enacting legislation that mandates smoke-free public places.

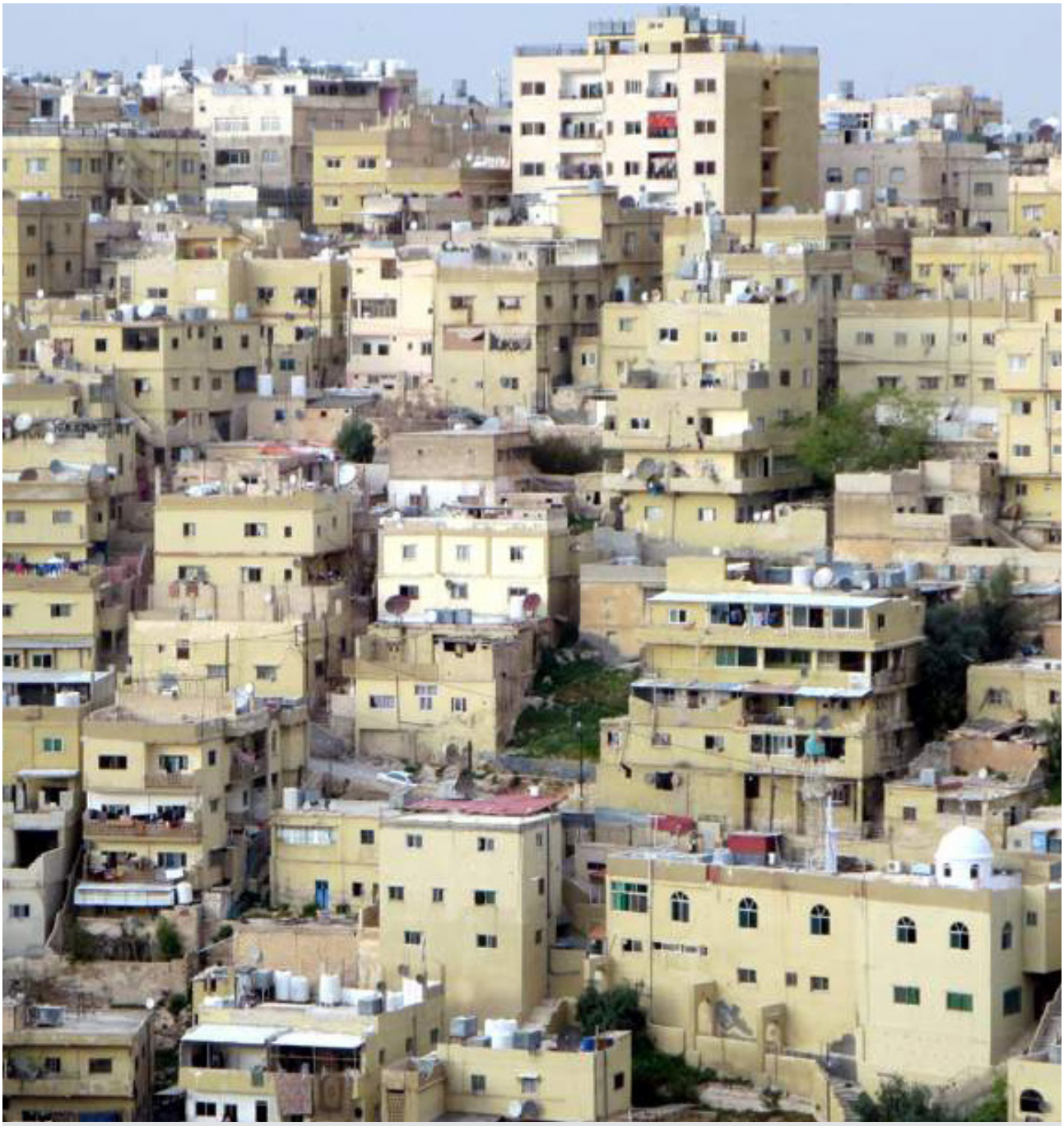
By legislating and funding these important measures, Jordan has set the stage for curbing the tobacco epidemic. However, intensifying existing policies and implementing new measures can draw the tobacco use prevalence curve further downward and generate additional health and economic gains.

Given these considerations, a joint programming mission to Jordan was undertaken in October 2017 to launch an investment case. Led by Jordan's Ministry of Health, the mission consisted of representatives from the FCTC Secretariat, United Nations Development Programme (UNDP), World Health Organization (WHO), and Research Triangle Institute International (RTI). The Ministry of Health formed a national committee to provide the most current available national data and validate the investment case methodology and findings.

An investment case analyses 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-reduction measures can produce the largest health and economic returns for Jordan (the return on investment; ROI). In consultation with Jordan's Ministry of Health, and in accordance with the WHO FCTC Global Strategy to Accelerate Tobacco Control [16], six FCTC provisions were selected to model in the investment case:

1. **Increase tobacco taxation to reduce the affordability of tobacco products.** *(WHO FCTC Article 6)*
2. **Enforce bans on smoking in all public places to protect people from tobacco smoke.** *(WHO FCTC Article 8)*
3. **Mandate that tobacco products carry large graphic health warnings, and regularly rotate warning labels to maintain the warning's effect.** *(WHO FCTC Article 11)*
4. **Implement plain packaging of tobacco products.** *(FCTC Article 11: Guidelines for Implementation)*
5. **Increase the frequency and coverage of mass media campaigns.** *(FCTC Article 12)*
6. **Enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion and sponsorship.** *(FCTC Article 13)*

This report proceeds as follows. **Section 3** provides an overview of tobacco control in Jordan, including a discussion of tobacco use prevalence as well as challenges and opportunities. **Section 4** summarizes the methodology of the investment case, and **Section 5** reports the main findings of the economic analysis. The report concludes under **Section 6** with a set of recommendations. An Annex provides supplemental information on the investment case methodology.



Credit: © David Stanley via Flickr

3. Tobacco control in Jordan: Status and context

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

> *"Even many nurses and doctors smoke, and the Jordanian soccer team was once fined for smoking at halftime of a game in Australia"* — Public health expert

Jordan has the highest male smoking prevalence in the Eastern Mediterranean Region and the second highest in the world. According to 2015 estimates, 70.2 percent of male adults above the age of 15 smoke tobacco, compared to 10.7 percent of females [2] (see **Figure 1**). Prevalence among females is likely underestimated, however, due to cultural sensitivities. Prevalence is also high among youth aged 13–15; 33.9 percent of boys and 13.8 percent of girls consume tobacco, and 45 percent have tried tobacco products. This is the highest prevalence in the region among youth.

In Jordan, the two main forms of tobacco consumption are cigarettes and waterpipes; e-cigarettes and heated tobacco products are on the rise. Cigarettes are the most commonly used form of tobacco; 76.2 percent of all tobacco users smoke cigarettes, 13.4 percent use waterpipes, and 10.4 percent smoke both waterpipes and cigarettes. On average, cigarette smokers consume more than 1 pack per day, and 2.1 molasses rocks (heads) per week. This higher-than-average consumption level leads to additional death and disease, including earlier in life.

About one out of every four smokers in Jordan use waterpipes to consume tobacco (shisha or nargila) [2]. Shisha—widely available in cafes and restaurants—is associated with many of the same diseases (e.g., cardiovascular and respiratory diseases, cancers) caused by cigarette smoking [17–19]. Waterpipe sessions (45 minutes to 1 hour) expose the smoker to an equivalent harm of smoking 60–200 cigarettes [17]. [1]

A cross-sectional survey conducted in five governates found that most Jordanians were aware of the harmful effects of smoking shisha. However, a majority also perceived shisha use to be more socially acceptable than cigarette smoking [20], which helps explain why waterpipe consumption among females and youth is on the rise [21, 22]. Waterpipe usage is associated with higher rates of cigarette smoking initiation among Jordanian adolescents, indicating that it can be a gateway to other forms of tobacco use [23].

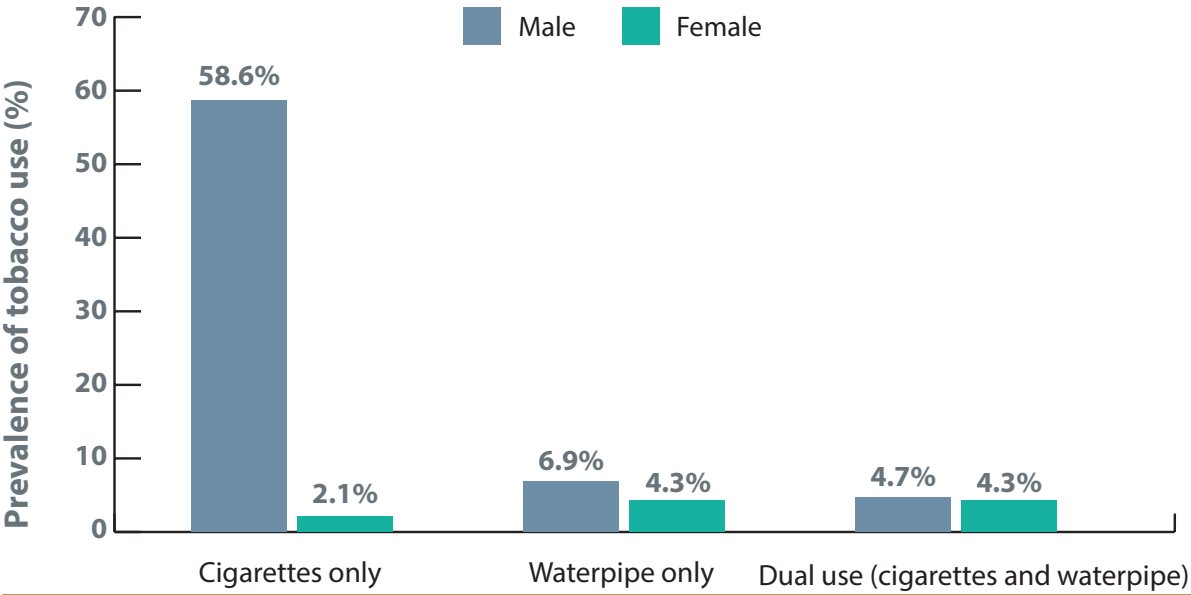
1 *Waterpipe tobacco smoking and cigarette equivalence*. The British journal of general practice : the journal of the Royal College of General Practitioners, **62**(596), 127-127. doi:10.3399/bjgp12X631231

E-cigarettes and Heated Tobacco Products (HTPs), pose an emerging and growing challenge as well. These products enter the Jordanian market illegally and target youth specifically. Rather than offering opportunities for cigarette smokers to quit smoking, evidence shows that they serve as an attractive gateway for smoking initiation and a lifetime addiction among a new generation of young people. While many countries have authorized these emerging products within their domestic markets, these countries already have in place comprehensive tobacco control regulations, strong enforcement mechanisms and high taxation, which are essential in order to decrease affordability and protect youth.

Low socioeconomic status is significantly associated with higher cigarette smoking prevalence in Jordan [24]. Cross-sectional studies of tobacco smokers from household income surveys show that the bottom two income quintiles of the Jordanian population are nearly twice as likely to smoke cigarettes as the top income quintile, and that the poorest smokers spent 25 times more on cigarettes than on health, 10 times more on cigarettes than on education, and 1.5 times more on cigarettes than on food [25]. According to the latest 2017 Household Expenditures and Income Survey, after meat, Jordanian families spend more on tobacco than any other consumable commodity. For families in half of Jordan's governorates, tobacco is the top expenditure among consumable commodities [26].

Tobacco also affects nonsmokers through secondhand smoke. In Jordan, 68 percent of adults [27] and 62 percent of youth are exposed to second-hand tobacco smoke [28]. A 2012 national survey found that smoking is allowed in approximately half of Jordanian homes and is "sometimes allowed" in another 23 percent of homes [29]. Public spaces often offer little protection; smoking is banned in public places by law, but compliance and enforcement is low, and indoor smoking areas are very common and not well regulated [30].

Fig. 1: Adult prevalence of tobacco use, by gender [1].



3.2 Tobacco control regulatory measures

Jordan has a set of tobacco control policies in place to reduce demand for tobacco products and protect its population. In 2004, Jordanian Standard 446/2004 was the first regulation to place requirements for warning labels on cigarette packages [31]. Since that time, Jordan has implemented over a dozen laws and policies relating to tobacco control, including Public Health Law 47/2008 which was amended in 2017. The law addresses smoke-free places, most tobacco advertising and promotion (but not sponsorship), and tobacco products display and sanctions to violations.

The Tobacco Products Display Regulations of 2013, amended in 2015, regulates point of sale, though it excludes tobacco shops from most of the display regulations. Other laws and regulations that address tobacco control are Jordan Standard 466/2012, which addresses cigarette packaging and labeling, and Jordan Standard 787/2014, which addresses waterpipe content (molasses) and its specifications under Jordan Standards and Metrology Organization. Moreover, the Traffic Law of 2008 prohibits smoking while driving and the Juvenile Conduct Law 2006 prohibits the sale of tobacco to minors.

Taxation and Pricing

Jordan has a mixed tax system consisting of tiered specific excise taxes that vary by cigarette price, and a sales tax. Together, these taxes represent about 81 percent of the retail price of the most sold brand of cigarettes. While this is the second highest (after the West Bank and Gaza Strip) total tax share in the cigarette price in the region, cigarette prices and taxes (in monetary terms) in Jordan are lower than in Lebanon, Saudi Arabia, West Bank and Gaza Strip [32]. Cigarette excise rates were increased in Jordan in 2014–2018, however, this was not sufficient to substantially decrease tobacco consumption. The Guidelines for implementation of Article 6 of the WHO FCTC recommend a focus on reducing "affordability", defined as the price relative to per capita income: "When establishing or increasing their national levels of taxation Parties should take into account – among other things – … changes in household income, to make tobacco products less affordable over time in order to reduce consumption and prevalence".

Hence it is recommended the Government increase excise rates for tobacco products (including molasses) to further reduce affordability. The World Bank Group tobacco control country brief for Jordan [32] recommends an annual increase by at least 20 percent, in parallel with strengthening the tobacco use surveillance and monitoring systems.

Smoking Ban in Public Places

In 2017, an amendment to the Public Health Law 47 clarified that **smoking bans** extend to all public places, and the amendment also raised fines for non-compliance. However, national experts from government, NGOs, public health, and the WHO agree that current levels of compliance and enforcement of the ban are "low" [33]. Smoking in restaurants, cafes, governmental establishments, hospitals, schools, and other public places remains prominent, and cafes serving shisha are everywhere [34].

Tobacco Advertising, Promotion and Sponsorship

The **tobacco advertising and promotion** sections of the Public Health Law 47/2008 are comprehensive with the exception of sponsorship. Jordan bans most direct forms of advertising and promotion on major forms of media (domestic TV and radio, newspapers, billboards, the internet) and at point-of-sale. However, the law only bans few indirect forms of tobacco advertising and promotion, including free distribution of tobacco products and on displaying products at the point of sale (except for in tobacco shops).

Regarding promotions, non-tobacco products that have tobacco brands on them—like cards, tissues, umbrellas—are available in markets and cafes. Promotions on social media and classical media are also evident. The industry funds student scholarships, and contributes to vocational training and food packages for families in need [35]. National experts report "medium" levels of compliance with existing regulations [33]. For instance, tobacco company representatives reportedly target individuals at venues such as music concerts and malls, where cigarette packs are freely offered to replace the packs of competing brands [36]. Law amendments to tackle the aforementioned problems are urgently needed, including a strict system to penalize violators.

Warning Labels and Packaging

Jordan requires that **large graphic warning labels** cover 40 percent of the packaging of smoked tobacco products, short of WHO recommendations [37]. The current warnings are put on the bottom of the pack, and do not cover the pack edge-to-edge. Misleading words like low tar, less smell, slim, ultra, etc. are used on packs, with display of tar, carbon monoxide and nicotine contents. While the Public Health Law 47 requires that the content of health warnings rotate, it does not specify a set date or time period during which that action is required to take place. However, the current set of warning labels has not been replaced since 2013, while the last update for the molasses packs warnings was in 2014.[2]

There is no law requiring **plain packaging**—neutral-color packaging, without branding and logos—of tobacco products. The World Health Organization (WHO) recommends regularly rotating pictorials, increasing their size, implementing plain packaging, removing misleading messages, placing pictorials on the top of packaging, and ensuring that they stretch across the entire width of the pack.

Anti-tobacco Awareness Campaigns

Jordan has undertaken **mass media campaigns** to raise awareness of tobacco control issues and educate the public about the harms of tobacco use. Several small-scale campaigns have been conducted variously by NGOs or government entities (e.g., MOH or Greater Amman Municipality). In 2017, a one-month national campaign raised awareness using social and traditional forms of media. Recently, in January–February 2019, an awareness campaign was conducted to educate the public about Public Health Law 47, and to empower citizens to complain to the Ministry of Health if they witness violations. The campaign focused on Amman—covering 48 percent of the population—in the first two months, with future plans to expand to the rest of the country. Continuous, expansive national-scale public-awareness campaigns about the harms of tobacco use can influence social norms around tobacco use and further draw the prevalence curve downward.

2 One cross-sectional survey of young adults found that 36 percent of Jordanian smokers considered quitting as a result of seeing the pictorial health warning. However, if warnings do not rotate, their impact begins to diminish as smokers grow used to seeing its messages [38].

Table 1 summarizes the existing state of WHO FCTC measures analyzed in the Investment Case and compares them against the WHO FCTC obligations for each measure. Where Jordan has not yet met the FCTC target, the investment case analyzes the impact that reaching that goal would have on tobacco consumption, population health, and the economy.

Credit: © UNDP

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

Tobacco Policy	Baseline	Target
Increase taxation of cigarettes to reduce the affordability of tobacco products. *(FCTC Article 6)*	In 2016, taxes on the most sold brand of cigarettes represented about 81 percent of the retail price. Taxes are not harmonized across tobacco products, however, and the tax system is tiered, reducing the effectiveness of taxes.	Jordan is currently meeting FCTC obligations to ensure that the tax share represents at least 75 percent of the retail price of cigarettes. However affordability of cigarettes in Jordan is still high, and further tax increases would secure health and revenue gains.[3]
Enforce bans on smoking in all public places to protect people from tobacco smoke. *(FCTC Article 8)*	Jordan currently bans smoking in all public places. However, bans are not well-enforced. National public health experts rate compliance with the law as low, scoring it as two on a 10-point scale. Indoor smoking areas are allowed.	Strengthen enforcement and compliance to achieve 100% smoke-free indoor public spaces.
Mandate that tobacco products and packaging carry large graphic health warnings describing the harmful effects of tobacco use. *(FCTC Article 11)*	Graphic warning labels are required to cover 40% of tobacco packaging. The content of warning labels has not been updated since 2013, and warning labels are losing their effect [38].	Increase the size of graphic warning labels to cover 50 percent of tobacco packaging. Regularly rotate (update) the content of graphic warning labels.
Mandate plain packaging of all tobacco products. *(FCTC Article 11: Guidelines for Implementation)*	There is no law that mandates plain packaging of tobacco products.	Implement a law requiring plain packaging.
Promote and strengthen public awareness about tobacco control issues and the harms of tobacco use through mass media information campaigns. *(FCTC Article 12)*	An anti-tobacco mass-media campaign aired across radio, television, print, and online media in June 2017. Another campaign was conducted in January 2019.	Air national-scale, mass media campaigns that are researched and tested with a targeted audience, aired on TV and radio for at least three months, and evaluated for impact.
Enact and enforce a comprehensive ban on all forms of tobacco advertising sponsorship and promotion (TAPS). *(FCTC Article 13)*	Advertising is banned on most major forms of media (TV, radio, billboards, print), and at the point-of-sale. National health experts rate compliance as "medium", as enforcement is considered low. Some indirect forms of TAPS remain legal, including sponsorship.	Strengthen enforcement of existing laws, and expand the existing law to comprehensively ban indirect forms of TAPS, including sponsorship.

* Information in this table is derived from the WHO Report on the Global Tobacco Epidemic: Country profile – Jordan [33], and from MOH input in 2019.

3 The investment case analyzes the impact of tax increases that increase the price of cigarettes by an average of 17 percent from 2019 through 2024, and an average of three percent annually from 2025–2033.

3.3 Enforcement of tobacco control measures

Violations of tobacco laws are common in Jordan. Consequently, sensitizing the public to Public Health Law 47 and having police officers and inspectors enforce penalties on those who violate tobacco control laws, are urgent, needed actions.

In key informant interviews, stakeholders suggested that oversight of the ban on public smoking is not clarified within Public Health Law 47, and indicated that enforcement is divided between multiple institutions—Ministry of Health, Ministry of Environment, Ministry of Tourism, and municipalities—creating coordination challenges [36]. Another challenge is that inspectors are currently not compensated for working extra hours or for conducting late night inspections, and they must pay for their own transportation when inspecting or testifying to the court. This issue can be alleviated by recovering a portion of enforcement-related expenses by allocating 1–5 percent of the total sanction paid by the violators. Further, supporting the Ministry of Health with a computerized system (following inspection law recommendations) can also facilitate reporting and data generation under the current inspection mechanism, which is highly bureaucratized.

3.4 Tobacco industry interference

The tobacco industry lobby is strong in Jordan. Among the Tobacco Industry (TI) Interference Index scores, Jordan was tied for second with Indonesia and outpaced only by Japan for countries experiencing the highest level of interference [39]. The tobacco industry directly influences key decisions, supported by front groups. Unnecessary interaction with the industry is also noted, with governmental officials attending ceremonies and events hosted by the industry or their front groups. As such, in line with FCTC Article 5.3 Guidelines, Jordan should:

- ban the industry and front groups from all committees that decide or discuss public health related topics including tobacco control policies;
- put in place laws that regulate the interaction between the government and the industry and their front groups;
- mandate disclosure of all interactions made with public officials;
- ban all forms of corporate social responsibility and sponsorship by the industry, and;
- support FCTC Article 5.3 education and training among governmental employees at all levels.

3.5 Waterpipes

Tobacco consumption through waterpipes is becoming trendier and more common, particularly among females and youth. Key factors that influence females and youth to initiate waterpipe consumption include fruity, seemingly healthy flavors, and social settings such as coffee shops.

Social acceptance of smoking waterpipes in general, and for females in particular, is exacerbating this trend.

High availability of waterpipes in restaurants and cafes continues to delay and hinder implementation of indoor smoking bans. While Public Health Law 47 declares restaurants and cafes as public places, most continue to allow smoking indoors by claiming that serving shisha is their core business. In addition, regulations conflicting with Public Health Law 47 are in effect, whereby night clubs, restaurants, and cafes can—as tourism venues—establish designated smoking areas. This hinders full implementation of indoor smoking bans, and designated smoking areas still expose patrons to harmful secondhand smoke. Smoking areas are allowed by law, necessitating ammendments to ban smoking areas.

A major concern for businesses is that the indoor public smoking ban, if properly implemented as intended by the Public Health Law 47, would reduce business revenue generated by shisha sales. However, as per a study conducted in 2009 by the Jordan Restaurant Association (JRA) [40], most visitors to cafes and restaurants are not concerned about the supplement of shisha or the ability to smoke, as less than 5 percent were concerned about these topics. The most important element was location and atmosphere for restaurants and quality of service for cafes. Food and prices were also significantly important.

The same JRA study indicated that ensuring smoke-free venues for Jordanians could increase business revenue, finding that around six in ten Jordanians refuse to take their spouses to a café or restaurant that permits smoking, and nearly seven in ten refuse to bring their children to restaurants or cafes that permit smoking.

As of 2015, 50,713 employees work in the food service industry [41]. Without full implementation of the indoor smoking ban as intended under the Public Health Law 47, each of these employees is at a higher risk of morbidity and mortality due to tobacco-related NCDs, given their high exposure to secondhand smoke throughout the workday. If they develop diseases and are not insured under the Social Security Corporation (SSC)[4], they may be subject to high healthcare expenditures that can worsen their economic condition. Even if they are insured under the SSC, the government incurs direct costs from treating tobacco-related diseases, and indirectly, both government and industry incur costs in the form of reduced productivity, absenteeism, and early retirement.

4 The independent administrative and financial organization leading the pension system in Jordan.

3.6 Illicit trade

Jordan faces challenges in illicit trade of tobacco; WHO estimated that in 2013, illicit trade comprised 41.1 percent of the total market of cigarettes in Jordan, and that 16.6 percent of cigarettes were smuggled [42]. This percentage has likely dropped due to closing the Syrian borders and increased patrols, searches and seizures. Illicit tobacco remains a challenge, however, entering the market from free zones, nearby markets through land or sea crossings, and factories located within industrial zones or illegal factories producing forged brands.

Illicit trade not only undermines the collection of tax revenue, but it reduces the benefits of tobacco tax increases as a demand reduction measure; tobacco consumers switch to more inexpensive illicit products, if they are readily available on the market. In 2018, needed amendments to the Jordanian Customs Bylaw were made resulting in more stringent fines and penalties for smugglers of illicit products, including tobacco. Jordan can take additional steps to combat illicit trade, such as implementing track-and-trace systems (e.g. digital stamps) to follow tobacco products through the supply chain from production and import, to sale to consumers. Signing and ratifying the Protocol to Eliminate Illicit Trade in Tobacco Products would enhance international cooperation between Parties to the Protocol, including through exchange of best practices and technologies.

3.7 National coordination, strategy and planning

Strengthened tobacco control in Jordan requires improved national coordination under the National Coordination Mechanism. The committee was recently reformulated under the Prime Minister with the membership of 12 Ministers. The National Multi-Sectoral Committee should adopt measures to improve transparency and accountability, including in the identification and management of conflicts of interest. It should ensure that the tobacco industry is entirely excluded from participation.

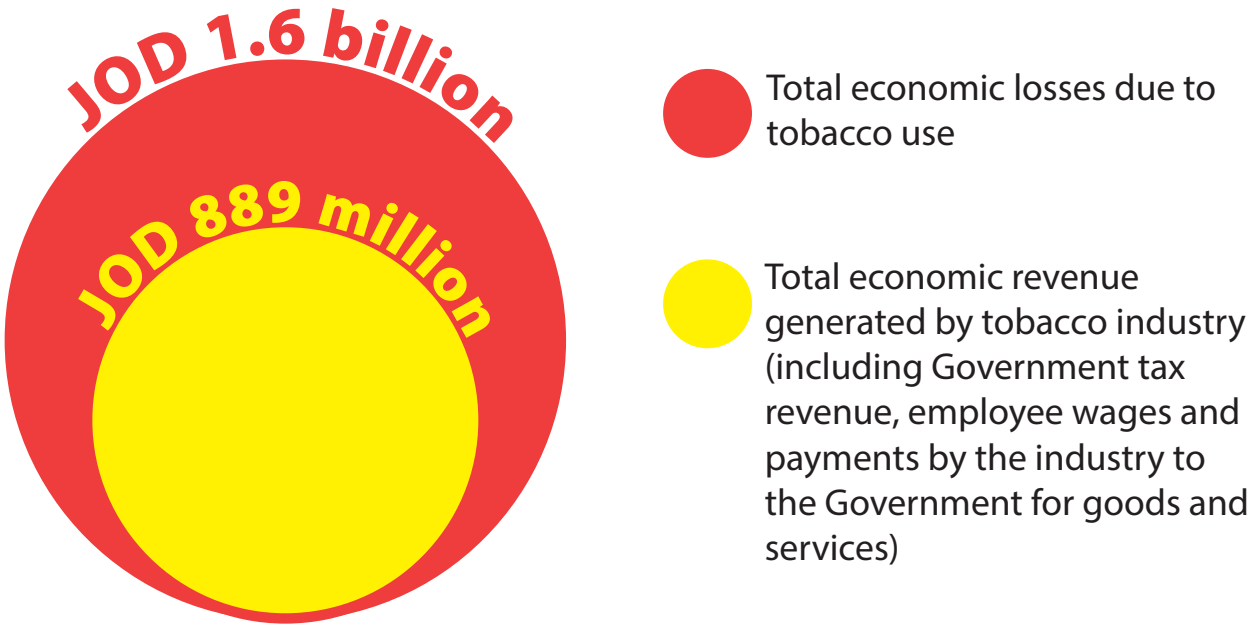
Jordan's national tobacco control strategy ended in December 2018. This strategy was supplemented by a Road Map outlining how the strategy should be implemented. A priority should be establishing a new national strategy that is endorsed by the Prime Minister and included under the national budget with delineated contributions from and responsibilities of different governmental and non-governmental agencies.

3.8 Tobacco industry and the economy

A) From a macro-economic perspective

The tobacco industry claims that it contributes substantially to national economies—the opposite is true for Jordan. Data from the Department of Statistics and Ministry of Finance from 2015 reveal that the amount of economic activity generated by the tobacco industry in Jordan is about half of the total economic burden tobacco use poses on Jordanians (see **Figure 2**)[43–45]. Specifically, the tobacco industry generates about JOD 889 million in economic activity each year, inclusive of: 1) direct payments from the industry to the Government for work permits, licensing fees, etc., 2) industry payments for inputs and services from the Jordanian economy, 3) payments to industry employees and income tax generated, and 4) government tax revenue collected on cigarettes and molasses. Meanwhile, annual economic losses to Jordan from current levels of tobacco use total JOD 1.6 billion, equivalent to 6 percent of GDP in 2015.

Fig. 2: Economic burden of tobacco consumption compared to its economic revenue in 2015

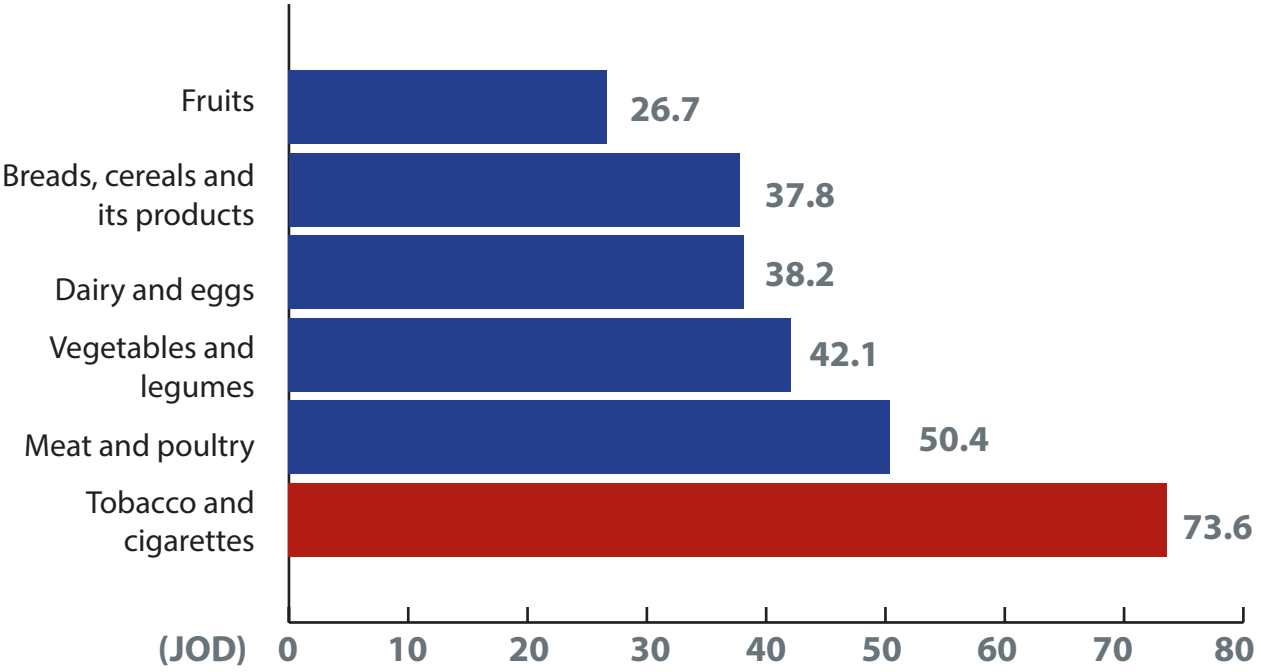


B) From a micro-economic perspective

Not included in the calculation of industry generated economic activity are household expenditures: most of the money spent by consumers on tobacco products is funneled out of the country to multi-national companies. This is money that could otherwise be spent on local products and services, especially those which do not impose economic losses on Government budgets and the economy. According to a national survey from the Jordanian Department of Statistics, households with at least one smoker spent on average 74 dinar per month on tobacco products in 2017/2018. In total, Jordanian families spent 717 million JOD (equivalent to more than 1 billion US$) on tobacco products over the year 2017/2018. About 59 percent of the households subsidized by the National Aid Fund have a least one smoker. This is an important factor to take into account in terms of poverty reduction efforts in Jordan [26].

Reducing consumer consumption and spending on tobacco products could lead to consumers spending more money on locally produced goods and services. Those whose incomes rely on supporting the tobacco industry in Jordan could be supported to engage in other, more lucrative economic activities. Reducing demand through higher taxes on tobacco products would raise Government revenue, not lower it as the tobacco industry regularly claims.

Fig. 3: Average monthly expenditure of Jordanian households on basic consummable commodities in 2017/2018 (JOD)



Credit: © David Stanley via Flickr

4. Methodology

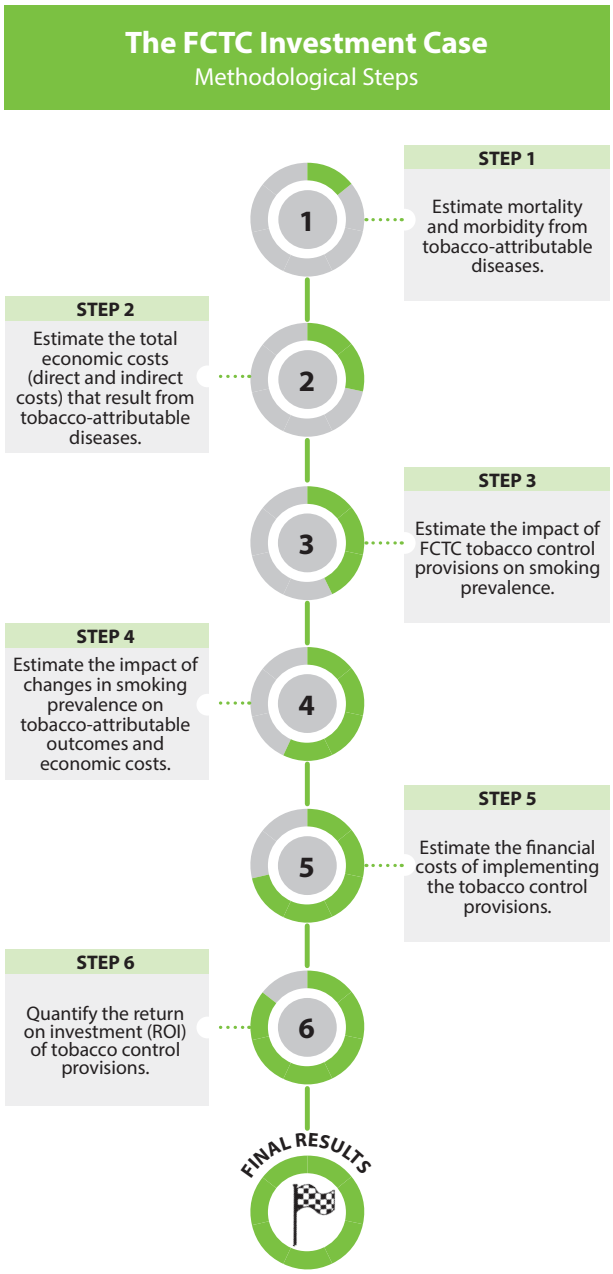
The purpose of the FCTC Investment Case is to quantify the current health and economic burden of tobacco use in Jordan and to estimate the impact that implementing tobacco control measures would have on reducing the burden.

RTI International developed a model to conduct the investment case, and perform the methodological steps in **Figure 3**. 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 Technical Appendix for a more thorough account of the methodology.[5]

Partners in Jordan developed the scope of the analysis, collected national data inputs for the model, and assisted with the analysis. Where data was unavailable from government or other in-country sources, the team used 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 Jordanian dinars, and discounted at a rate of three percent.

Fig. 4: Building the FCTC investment case



5 Available upon request

5. Results

5.1 The burden of tobacco use: health and economic costs

Tobacco use undermines economic growth. In 2017, tobacco use caused 9,027 deaths in Jordan, 56 percent of which occurred in Jordanians under age 70 [3].[6] As a result, Jordan lost productive years in which those individuals would have contributed to the workforce. The annual economic losses due to tobacco-attributable premature mortality are estimated at JOD 399 million.

While the costs of premature mortality are high, the consequences of tobacco use begin well before death. As individuals begin to acquire tobacco-attributable diseases (e.g., cardiovascular disease, cancer, chronic obstructive pulmonary disease), expensive medical care is required to treat them. Spending on medical treatment for illnesses caused by smoking cost the Government JOD 132.8 million in 2015, with private sources (consisting of individuals' out-of-pocket expenditures (OOP) and private insurance) covering JOD 64.3 million. An additional JOD 7.4 million in smoking-related healthcare expenditures was covered by other sources. In total, smoking generated JOD 204.4 million in healthcare expenditures in 2015.

In addition to generating healthcare costs, as individuals become sick, they are more likely to miss days of work (absenteeism) or to acquire illnesses or diseases that cause them to be less productive at work (presenteeism). The cost of excess absenteeism due to tobacco-attributable illnesses in 2015 was JOD 132.5 million and the costs of presenteeism was JOD 349.7 million.

Finally, even in their healthy years, working smokers are less productive than non-smokers. In Jordan, individuals often smoke while at work, distracting from their tasks. Assuming that the average smoker consumes about 11 cigarettes during working hours, that each cigarette takes about 6 minutes to smoke, and that smokers are 50 percent less productive while smoking, smokers lose about 33 minutes of productive activity each day. The compounding impact of 1.5 million employed daily smokers losing 33 minutes each day is equivalent to losing JOD 508 million in productive output annually.

In total, the investment case model finds that tobacco use cost Jordan's economy JOD 1.6 billion[7] in 2015, the equivalent of about six percent of Jordan's gross domestic product (GDP) that year. **Figure 5** breaks down direct and indirect costs, and **Figure 6** and **Figure 7** illustrate the annual health losses that occur due to tobacco use.

6 Annual all-cause deaths in Jordan—as communicated by country partners—are 50 percent higher than the all-cause deaths reported in GBD. The investment case model maintains the distribution of tobacco-attribute deaths by age, gender, and disease type reported by GBD, but scales the total number to account for the higher number of all-cause deaths reported by country partners.

7 Component parts may not add up exactly to 1.6 billion due to rounding.

The current burden of tobacco use

Fig. 5: Breakdown of the share of annual direct and indirect economic costs

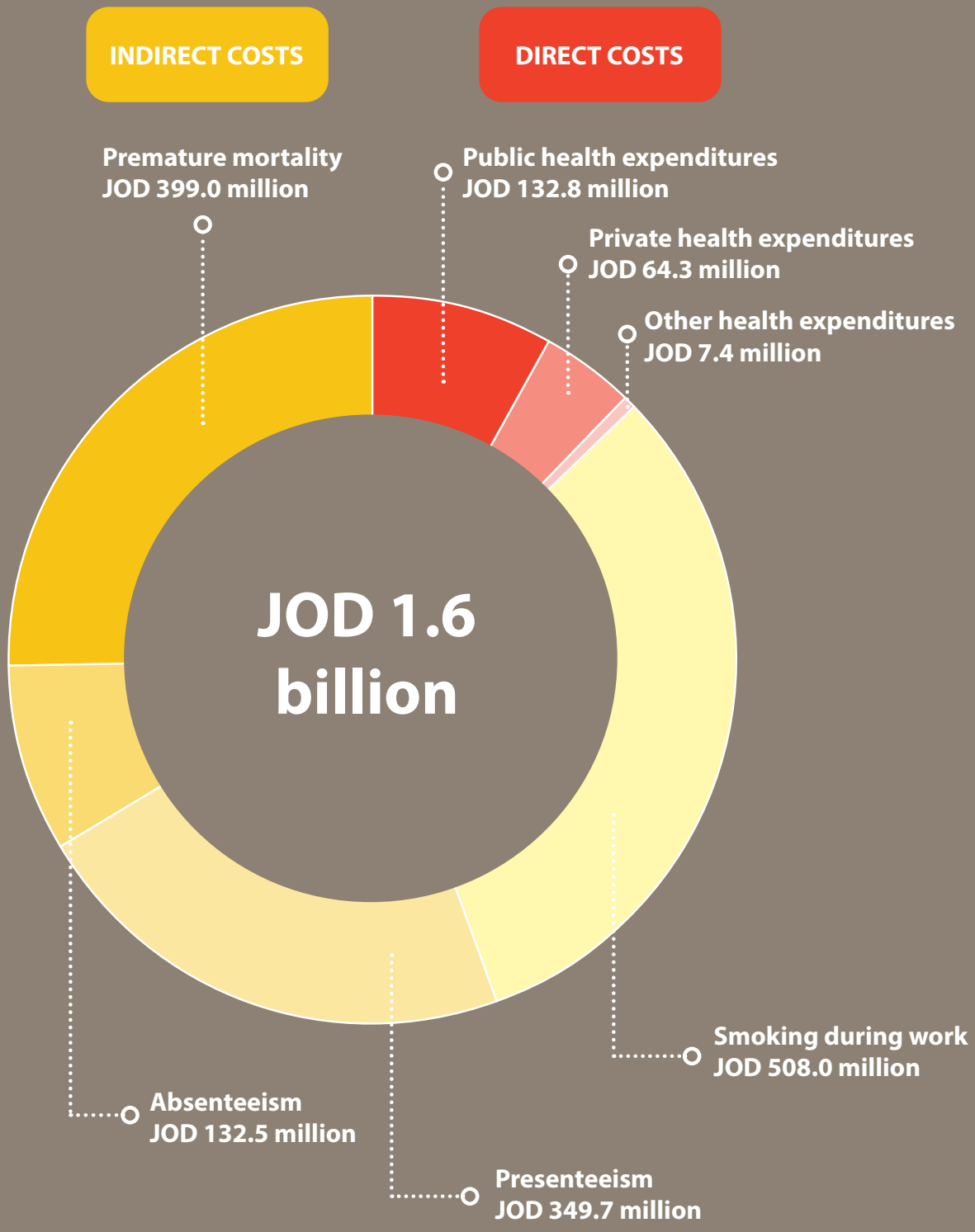


Fig. 6: Tobacco-attributable deaths by disease, 2017 *(Source: Results are from the IHME Global Burden of Disease Results Tool. Other diseases include Alzheimer's disease and other dementias, stomach cancer, peptic ulcer disease, asthma, colon and rectum cancer, larynx cancer, subarachnoid hemorrhage, prostate cancer, bladder cancer, aortic aneurysm, leukemia, cervical cancer, breast cancer, lip and oral cavity cancer, pancreatic cancer, other pharynx cancer, gallbladder and biliary diseases, kidney cancer, atrial fibrillation and flutter, and nasopharynx cancer.)*

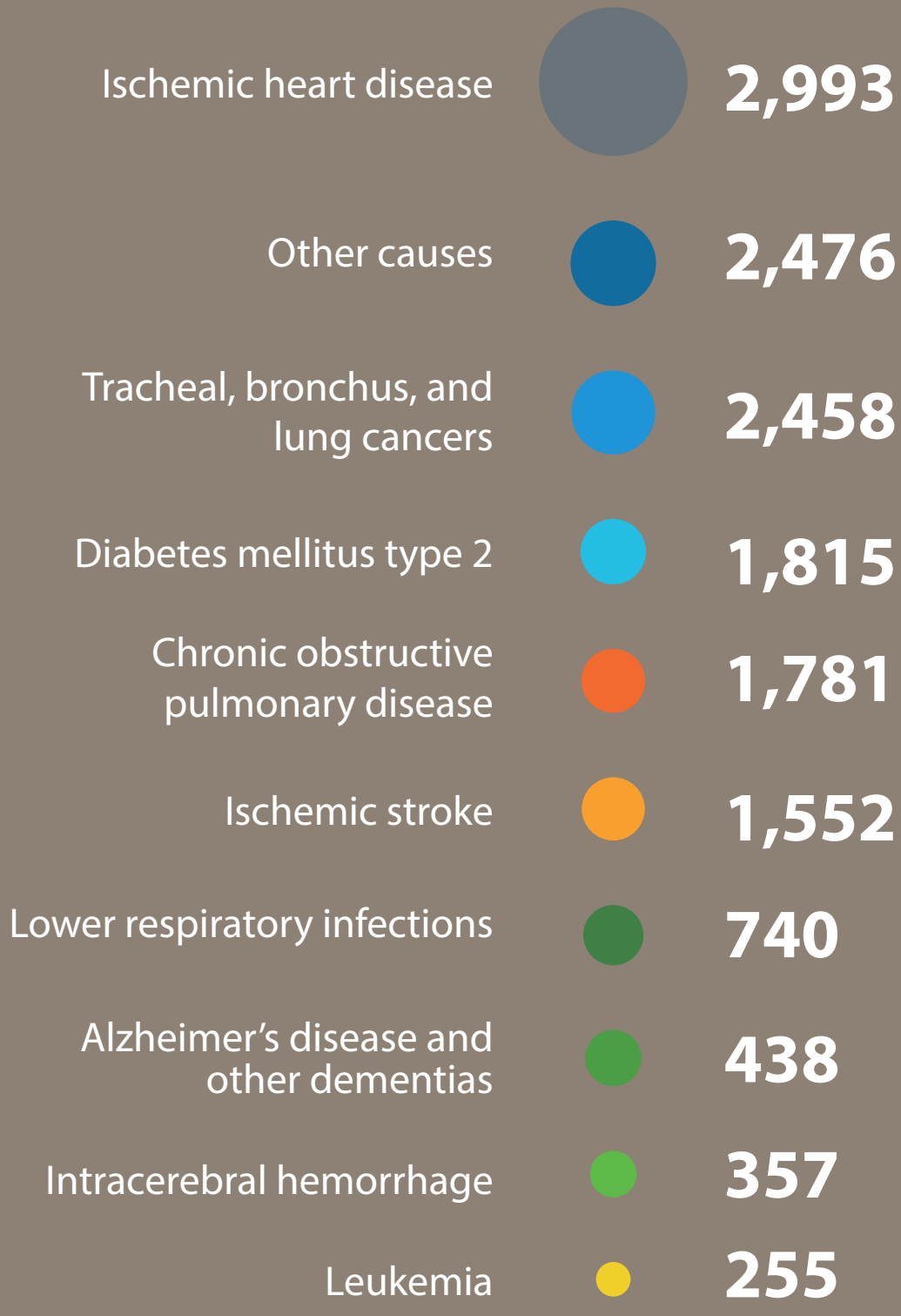
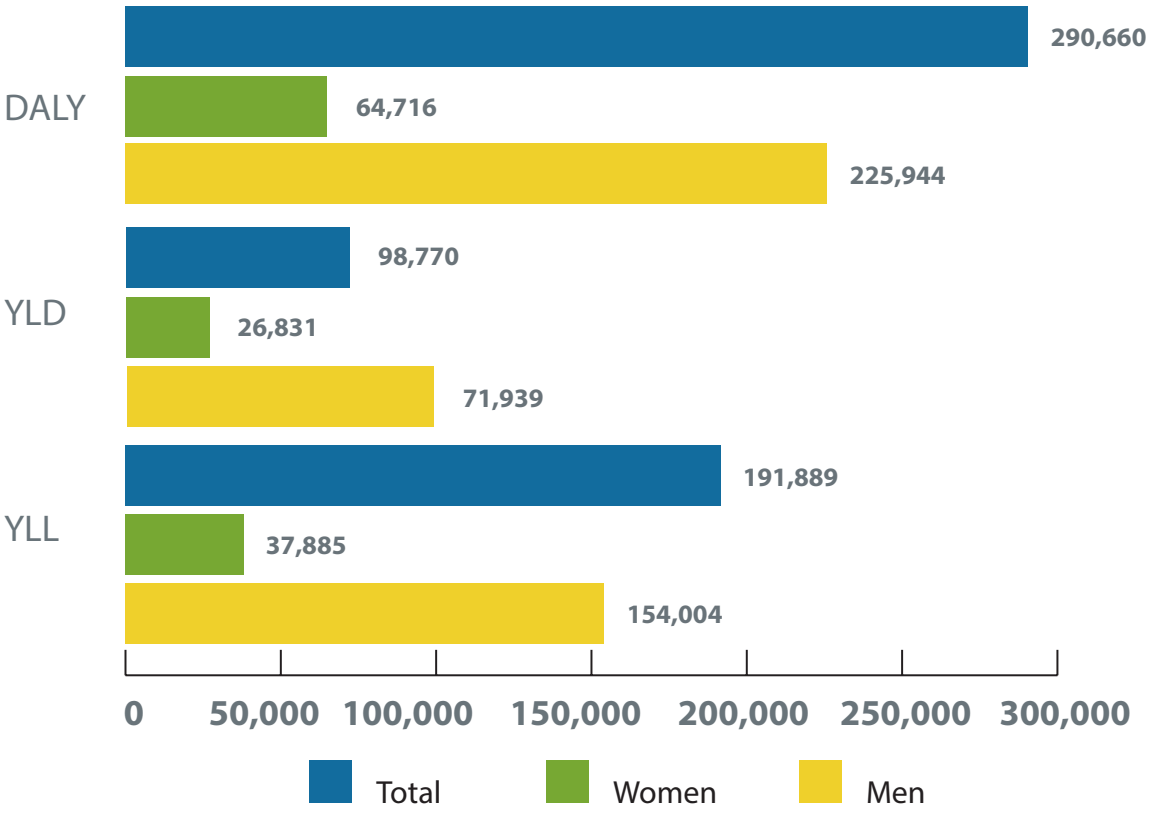


Fig. 7: Tobacco-attributable DALYs, YLDs and YLLs, 2017, by gender[8]



5.2 Implementing policy measures that reduce the burden of tobacco use

By implementing new FCTC policy measures, or intensifying existing ones, Jordan can secure significant health and economic returns, and begin to reclaim the 1.6 billion dinars it loses annually to tobacco use.

This section presents the health and economic benefits that result from selected policy actions to: 1) raise taxes to reduce the affordability of cigarettes; 2) increase enforcement of bans on smoking in public places; 3) update graphic warning labels, and increase their size; 4) enact a law requiring plain packaging of tobacco products; 5) enact and enforce comprehensive bans on advertising, promotion and sponsorship, and; 6) conduct regular, national-scale tobacco-control information campaigns to warn about the harms of tobacco use and increase compliance with the law. In addition, this section presents the return on investment (ROI) of each policy measure by comparing the economic benefits versus costs of implementing each measure.

8 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?>

Fig. 8: Causal chain: The impact of implementing FCTC demand reduction measures

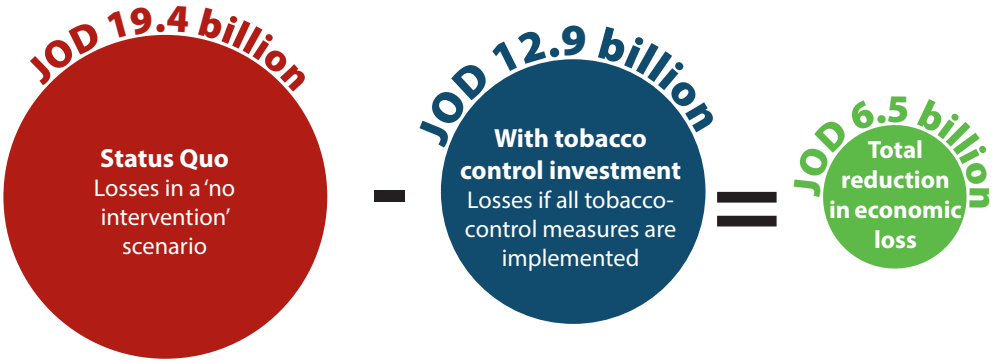
5.2.1 Health benefits—Lives saved

Enacting the WHO FCTC measures as a complete policy package would lower the prevalence of smoking, leading to substantial health gains. Specifically, enacting the package would reduce the prevalence of cigarette smoking by 57.4 percent over 15 years, saving 47,556 lives from 2019–2033, or about 3,170 lives annually.

5.2.2 Economic benefits

Implementing the package of policy measures would result in Jordan avoiding 34 percent of the economic losses that it is expected to incur from smoking over the next 15 years. **Figure 9** illustrates the extent to which Jordan can shrink the economic losses that it is expected to incur if no action is taken.

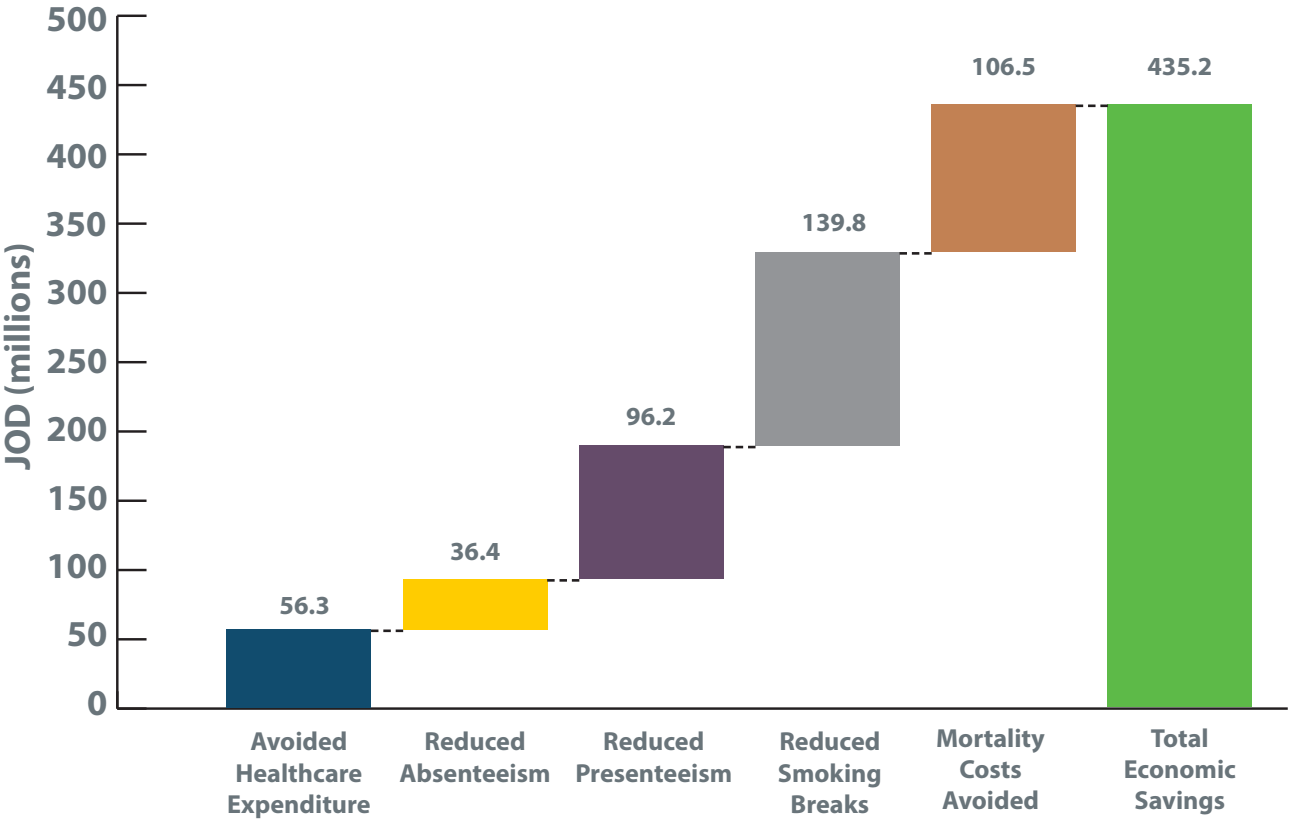
Fig. 9: Tobacco-attributable economic losses over 15 years: What happens if Jordan does nothing, versus if the Government implements measures to reduce demand for smoking?



In total, over 15 years Jordan would save about JOD 6.5 billion that would otherwise be lost if it does not implement the package of tobacco control measures, the equivalent of about JOD 435.2 million in annual avoided economic losses.

Figure 10 breaks down the sources from which annual savings accrue. The largest savings result from reducing productivity losses during the workday due to smoking (JOD 139.8 million), followed by avoiding premature mortality (JOD 106.5 million). The next highest source of savings is derived from reduced presenteeism (JOD 96.2 million), then avoided healthcare expenditures (JOD 56.3 million), and reduced absenteeism (JOD 36.4 million).

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

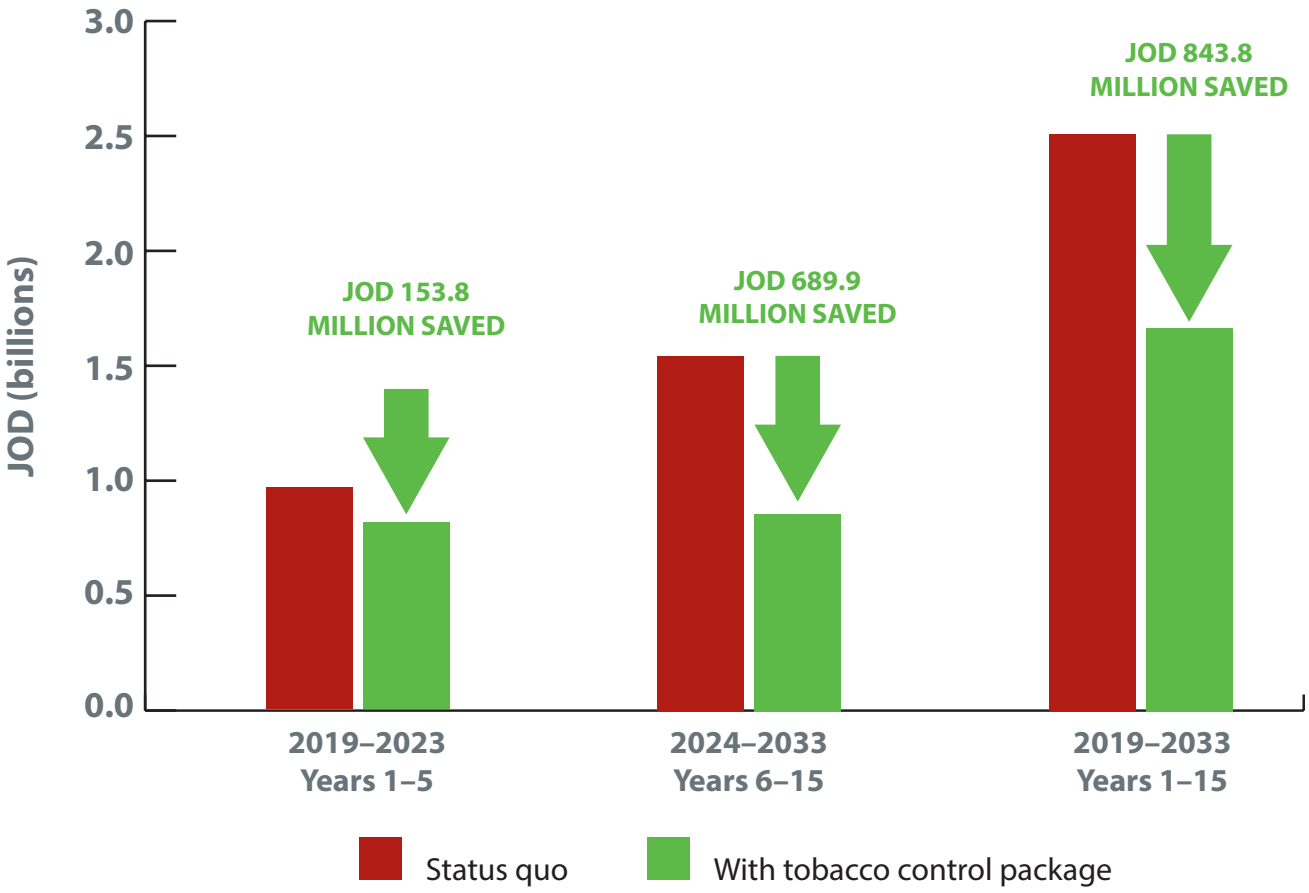


Implementing the package of tobacco control measures reduces medical expenditure for both citizens and for the Government. In 2015, private and public annual healthcare expenditures in Jordan totaled about JOD 2.3 billion [46], of which an estimated 9.1 percent [47][9] is directly related to treating disease and illness due to tobacco use (≈ JOD 204.7 million).

Year-by-year, the package of policy measures lowers smoking prevalence, which leads to less illness, and consequently less healthcare expenditure. Over the 15-year time horizon of the analysis, the package of policy measures averts JOD 843.8 million in healthcare expenditures, or JOD 56.3 million annually, with 65 percent of those savings accruing to Government, 31 percent to private individuals or entities, and the remainder to international organizations.

9 The investment case calculates the smoking-attributable fraction (SAF) of healthcare expenditures using the formula supplied by Goodchild et al (2017). New estimations of the smoking-attributable death rate—derived from the Global Burden of Disease databse and adjusted based on national estimates of all-cause deaths—were inputted into the formula to calculate a SAF equal to 9.1 percent.

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



5.2.3 The Return on Investment (ROI)

An investment is considered worthwhile if the gains from making the investment outweigh the costs. A return on investment (ROI) analysis measures the efficiency of the tobacco control investments by dividing the economic benefits that are gained from implementing the WHO FCTC measures, by the costs of the investments. For the investment case, the ROI for each measure was evaluated in the short-term (five years) and in the medium- (10 years) to long-term (15 years). The ROI shows the highest return on investment for each measure, and for the full package of measures. Net benefits indicate which measures are expected to have the largest impact.

Table 2 displays costs, benefits, and ROIs by policy measure, as well as for all policy measures combined. All are highly cost-effective, with positive ROI within the first five years, meaning that the government will recoup anywhere from 47 to 647 times its investment in the first five years, depending on the policy measure. The ROIs continue to grow over time, reflective of the increasing effectiveness of policy measures as they move from planning and development stages, to full implementation.

Table 2: Return on investment, by tobacco control measures policy (JOD millions)

	First 5 years (2019–2023)			All 15 years (2019–2033)		
	Total Costs (JOD millions)	Net Benefits (JOD millions)	ROI	Total Costs (JOD millions)	Net Benefits (JOD millions)	ROI
Tobacco control package* *(combined interventions)*	10.8	1,190.5	**110**	26.4	6,527.9	**247**
Raise cigarette taxes *(FCTC Article 6)*	1.3	832.9	**647**	3.0	4,663.1	**1,547**
Protect people from tobacco smoke *(FCTC Article 8)*	2.6	133.4	**51**	5.8	1,038.5	**180**
Warning labels *(FCTC Article 11)*	1.3	125.2	**99**	3.0	975.4	**324**
Plain Packaging *(FCTC Article11 Guidelines)*	1.3	62.9	**49**	3.0	494.3	**164**
Mass media campaign *(FCTC Article12)*	1.5	71.0	**47**	4.3	557.7	**130**
Bans on advertising, promotion and sponsorship *(FCTC Article 13)*	1.2	166.4	**134**	3.0	1,288.9	**423**

* The combined impact of all policy measures is not the sum of individual policy measures. To assess the combined impact, 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 [48, p. 454].

Over the 15-year period, raising taxes on cigarettes is expected to have the highest return on investment: for every Jordanian dinar invested in legislating and enforcing taxes, one can expect to see 1,547 dinars in economic benefits in return. Bans on advertising, promotion and sponsorship have the next highest ROI (423:1), followed by graphic warning labels (324:1), protecting people from tobacco smoke (180:1), plain packaging (164:1), and implementing a mass media campaign (130:1). The higher ROIs for fiscal and regulatory measures, relative to the lower ROI for awareness-raising, are reflective of the high impact of fiscal and regulatory measures towards achieving health and development benefits.

The financial costs to the government of implementing the six WHO FCTC measures are assessed using the WHO NCD Costing Tool. 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. Full explanations of the costs and assumptions embedded in the WHO NCD Costing Tool are available [55].

The Tool assumes that the country has no tobacco control framework in place and is establishing its national programme from the start. However, these costs may be overestimates for Jordan, which has already allocated budgets for a national programme of work, including human and financial resources for tobacco control. For instance, costs listed here for Pictorial Health Warnings and Plain Packaging are likely overestimated, as expenses related to this area of work are already covered by the regular budget and would lead to few additional costs to the Government.

5.2.4 Tobacco control as an accelerator for the SDGs

Enacting six tobacco control measures designed to reduce demand for tobacco will enable Jordan to fulfill SDG Target 3.A to strengthen implementation of the WHO FCTC. Moreover, taking action now will contribute to Jordan's efforts to meet SDG Target 3.4 to reduce by one third premature mortality from NCDs by 2030. The economic analysis demonstrates that the six measures would also advance SDG 8 on economic growth, while reducing poverty and inequalties (e.g. by reducing private out-of-pocket health expenditures).

In Jordan in 2017, 20,177 premature deaths between the ages of 30 to 69 were caused by the four main NCDs (CVD, diabetes, cancer, and COPD) [3].[10] Roughly 22 percent of these premature deaths occurred due to tobacco use.

Enacting the FCTC measures identified in the Investment Case would reduce tobacco use prevalence—a key risk factor driving NCD incidence—preventing 17,396 premature deaths from the four main NCDs over the next 12 years (2019 to 2030). Preventing those deaths contributes the equivalent of about 22 percent of the needed reduction in premature mortality to fulfill SDG Target 3.4.

SDG Target 3.4

By 2030 the FCTC measures would...

Lower the prevalence of tobacco use by over one-half from present day levels.

Reduce economic costs due to tobacco use by JOD 5.0 billion.

10 Global Burden of Disease results are scaled within the investment case to account for the higher number of all-cause deaths reported by country partners.

Credit: © David Stanley via Flickr

6. Conclusion and recommendations

Each year, tobacco use costs Jordan JOD 1.6 billion in economic losses and causes substantial human development losses. The investment case shows that there is an opportunity to reduce the social and economic burden of tobacco in Jordan. Enacting the recommended multisectoral tobacco control provisions would save over 3,100 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 JOD 6.5 billion over the next fifteen years. Further, the economic benefits of strengthening tobacco control measures in Jordan and implementing new ones greatly outweigh the costs of implementing them over 15 years (JOD 6.5 billion in benefits versus JOD 26.4 million in costs).

By investing now in tobacco control measures, Jordan would reduce tobacco consumption, improve health, reduce government health expenditures and grow the economy. It would also reduce financial hardship among Jordanian citizens, particularly among those with low incomes. The investment case identified strong tobacco control investments that Jordan can take. 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:

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.

Strengthen tobacco control coordination and planning.

The investment case demonstrates that tobacco control is a sustainable development issue for Jordan, with implications for Ministries Finance, Trade and Industry, Labour, Interior and Health, as well as for Parliamentarians. These findings should be used to advocate stronger collaboration and coordination among sectors under the newly establishing National Coordination Mechanism (NCM) under the Prime Minister's Office. Further, the NCM should take the lead in developing a new, national and multisectoral tobacco control strategy and action plan/road map to replace the last strategy which ended in December 2018.

The NCM could utilize the 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, Ministry of 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 Jordan see tobacco control as a win-win opportunity.

Strengthen compliance with and enforcement of tobacco control laws.

For every year that provisions under the current tobacco control laws are under-enforced, Jordan suffers avoidable health and economic losses. Deeply engrained cultural and social acceptance of tobacco use, particularly waterpipes, remain a barrier to compliance with tobacco control measures. It is recommended that the National Coordination Mechanism meet to agree on how to jointly strengthen enforcement and compliance of tobacco control laws, which involves strengthening enforcement mechanisms, raising awareness and sensitizing different sectors and the public to the harms of tobacco and requirements of the law.

Many Government stakeholders including the Municipality of Amman, expressed a need for stronger enforcement, particularly preventing sales of tobacco to and by minors, enforcing smoking bans in public places, bans on tobacco advertisement, promotion and sponsorship, and stemming illicit trade in tobacco products. Stronger coordination between enforcement agencies and training enforcement officials on

the requirements of the law while ensuring sufficient resources and staff for effective enforcement, are steps Jordan could take to strengthen enforcement. The Government should complete its phase-in strategy of implementing smoking bans in public places by enforcing the law at cafes and restaurants, also where waterpipes are concerned. The Government should also fully implement smoking bans on government premises, which would demonstrate commitment and set a model for society.

Strengthen current tobacco control laws.

Jordan's Public Health Law 47 is a strong piece of legislation that protects the population. However, the 2008 law, last amended in 2017, does not cover some areas that are critical to effective tobacco control. For example, TAPS provisions under the law could be expanded to include tobacco sponsorship and all forms of corporate social responsibility, as well as other indirect forms of tobacco advertising currently not regulated by the law. Amendments to tobacco control legislation should also ensure that the content of health warnings rotate after a specified period, such as every 12–36 months, and should implement plain packaging. Periodic tobacco tax increases to keep pace with inflation can also be introduced via legislation. The investment case demonstrates the additional benefits of these measures, ensuring that demand reduction measures are fully effective.

The Ministry of Health and the Higher Health Council can initiate the process of reviewing and amending the current legal, policy and regulatory framework for tobacco control to achieve such strengthened measures. This can also include initiating the legal process for joining the Protocol to Eliminate Illicit Trade in Tobacco Products.

Advocate for additional increases in tobacco taxes.

Though all individual interventions would deliver a return on investment at both 5 and 15 years, raised cigarette taxes are by far the most cost-effective of the measures examined. They would deliver an impressive return of 1,547 dinars in economic benefits for every 1 dinar invested. Though Jordan has increased cigarette taxes over the years, it has not substantially raised taxes on other forms of tobacco use, including waterpipes. The Government should increase and harmonize tobacco taxes across the entire range of tobacco products, which will reduce the potential of consumers switching from cigarettes to waterpipes, and counter the trend of increasing youth waterpipe consumption, while generating substantial revenue.

The Ministry of Health should work with the Ministry of Finance to create an enabling environment for tax increases on tobacco products, including by restructuring the tax system from the current tiered specific excise tax to a uniform tax system, and by increasing taxes on a regular basis. The World Bank Group tobacco control country brief for Jordan [49] recommends an annual increase by at least 20 percent to reduce affordability, in parallel with strengthening the tobacco use surveillance and monitoring systems.

A 2017 study showed that a 10 percent increase in the cigarette excise tax in Jordan would generate additional annual government tax revenue of JOD 56 million [50]. Investing some of the increased revenue into more vigorous enforcement against illicit trade of tobacco products and into tracking and tracing systems such as digital tax stamps could further increase tobacco tax revenues from those who continue to smoke, while lowering the availability of less expensive smuggled tobacco products.

Tax increases would not disproportionally burden lower income Jordanians; global evidence shows that cigarette tax increases benefits the poorest segments of society the most. This is especially true if—as many countries do—Jordan reinvests savings from healthcare spending and revenue from increased tobacco taxes into poverty alleviation measures including universal health coverage.

Credit: © UNDP

7. Methodology annex

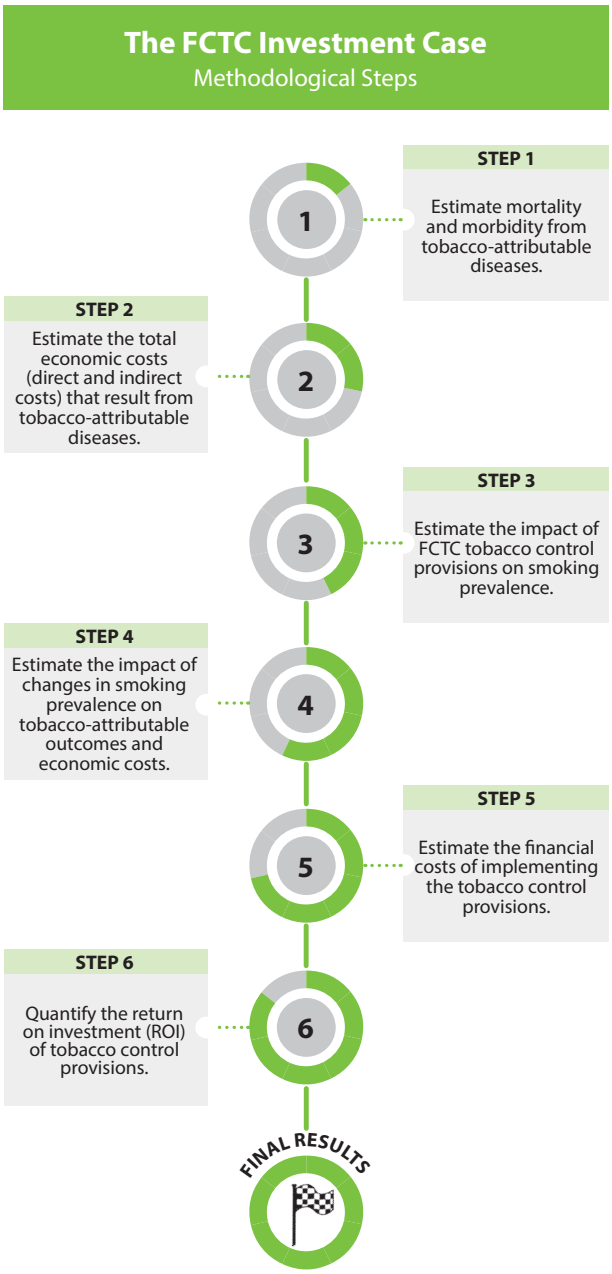
7.1 Building the FCTC Investment Case

The purpose of the FCTC Investment Case is to quantify the current health and economic burden of tobacco use in Jordan; estimate the impact that implementing tobacco measures would have on reducing the burden; and provide analysis of other impacts that may factor into Government decisions to implement tobacco control measures.

RTI International developed a model to conduct the investment case, and perform the methodological steps in **Figure 12**. 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 Technical Appendix for a more thorough account of the methodology.[11]

A Jordanian government team led the investment case, developing the scope of the analysis, collecting national data inputs for the model, and performing the required calculations. 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 Jordanian dinars, and discounted at a rate of three percent.

Fig. 12: Building the FCTC Investment Case



11 Available upon request.

7.2 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 10** are employed to assess the current burden of tobacco use, while methodological steps 3–6 are employed to assess the costs and benefits of implementing or intensifying FCTC measures that reduce demand for tobacco. The tools and methods used to perform these methodological steps are described in detail below.

7.2.1 COMPONENT ONE: CURRENT BURDEN	The current burden model component provides a snapshot of the health and economic burden of tobacco use in Jordan.

STEP 1

Estimate mortality and morbidity from tobacco-attributable 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) [51]. The study estimates the extent to which smoking and exposure to second-hand smoke contribute to the incidence of 37 diseases, healthy life years lost, and deaths, across 195 countries.

GBD estimates of the number of deaths attributable to tobacco use have been adjusted upward to 9,027 deaths, to account for the differences in annual all-cause deaths reported by GBD versus those reported by country partners. Estimates of all-cause deaths from national representatives are fifty percent higher than the all-cause deaths reported in GBD. The investment case model was calibrated to maintain the distribution of tobacco-attribute deaths by age, gender, and disease type reported by GBD.

STEP 2

Estimate the total economic costs (direct and indirect costs) that result from tobacco-attributable diseases.[12]

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 using a formula described in Goodchild et al (2018) [52]. The new smoking-attributable death rate—derived from the Global Burden of Disease databse and adjusted based on national estimates of all-cause deaths (see Step 1)—was inputted into the formula to calculate a SAF equal to 9.1 percent.

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 death, eliminating the unique social and economic 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 to tobacco-related illnesses (presenteeism); and to lose concentration during the workday due to cravings or distraction from work tasks while smoking.

- *The economic cost of premature mortality due to tobacco use* – 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) [53].

- *Productivity costs* – Productivity costs consist of costs due to absenteeism, presenteeism, and time spent smoking (rather than working) during the workday. The model incorporates estimates from academic literature on the number of extra working days missed due to active smoking (two to four days per year) [54]. Presenteeism losses are obtained similarly, under research that shows that smokers experience two to four percent more impairment at work because of health problems compared to never-smokers [55]. The upper bound estimates for absenteeism and presenteeism are used in the Jordan investment case. Lost productivity due to time spent smoking is calculated based on the following assumptions.

12 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.

On average, Jordanian smokers consume 21.9 cigarettes per day, meaning about 11 cigarettes are consumed during the workday. If the average time to consume one cigarette is six minutes, then the average smoker spends 66 minutes smoking during each workday. The investment case assumes that during that time, smoking reduces the smoker's ability to concentrate on work tasks by 50 percent. Thus, each smoker loses 33 minutes of productive work time each day.

7.2.2 COMPONENT TWO: POLICY/INTERVENTION SCENARIOS

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

Policy measures to model were selected in consultation with Jordan's Ministry of Health, and in accordance with the WHO FCTC Global Strategy to Accelerate Tobacco Control [16] developed following a decision of the Parties 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 (*Article 11*), 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*) as a measure modeled.

STEP 3

Estimate the impact of FCTC tobacco control provisions on smoking prevalence.

The impacts of enforcing smoke-free air laws, implementing graphic warning labels, conducting mass media campaigns, implementing plain packaging, and intensifying advertising bans are derived from Levy et al (2018) [48] and Chipty (2016) [56], as adapted within the Tobacco Use Brief of Appendix 3 of the WHO Global NCD Action Plan 2013–2020 [57].

The impact of raising taxes on tobacco use is determined by the "prevalence elasticity", or the extent to which individuals stop smoking as a result of price changes, and modelled changes in

price over the time horizon of the analysis. Prevalence elasticities were obtained from Sweis and Chaloupka (2014), who found the prevalence elasticity of cigarettes in Jordan to be -0.37 [29]. The investment case analyzes the impact of tax increases that increase the price of cigarettes by an average of 17 percent annually through 2024, and an average of three percent annually from 2025–2033.

Within the analysis, it is assumed that implementation or intensification of new tobacco-control measures does not take place until year three of the analysis. 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 [58] 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 displays the impact sizes used within the investment case analysis.

Table 3: Impact size: Relative prevalence reduction over 15 years, by FCTC measure

WHO FCTC Measure	Relative reduction in prevalence of current cigarette smokers
Strengthen compliance with the ban on smoking in public places	8.2%
Enact comprehensive bans on advertising, promotion, and sponsorship	10.2%
Increase taxes on cigarettes	38.3%
Implement large health warning on cigarette packages	7.7%
Implement plain cigarette packaging	3.8%
Run a mass media campaign to promote awareness about tobacco control	4.3%
Tobacco Package (all policies)	**56.8%**

* The combined impact of all policy measures is not the sum of individual policy measures. To assess the combined impact, 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 [48, p. 454].

STEP 4

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

To analyze the impact of policy measures on reducing the health and economic burden of smoking, the investment case calculates and compares two scenarios. In the status quo scenario, current efforts are 'frozen', meaning that, through the year 2033 (end of the analysis), no change occurs from the tobacco control provisions that are currently in place. In the intervention scenario, Jordan 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 Jordan 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 measures.

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 [58].

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 US$ to local currency unit (LCU) exchange rate (2017), purchasing power parity (PPP) exchange rate (2017), GDP per capita (US$, 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) [59, p. 5]. Unless government or other in-country parameters are received, data is from the World Bank database, with the exception of data on the share of government health spending, 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.

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 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 many currency units can it expect to receive in return?

ROIs were calculated for (i) each of the 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 5, 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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