WHO says e-cigarettes 'undoubtedly harmful'

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News

AFP/File / EVA HAMBACH **The World Health Organization has issued a new warning about e-cigarettes and called for tougher regulation**

Electronic cigarettes are "undoubtedly harmful" and should be regulated, the WHO said Friday as it warned against the use of vaping products by smokers trying to quit their deadly habit.

The growing popularity of e-cigarettes, battery-powered devices that enable users to inhale addictive nicotine liquids, has raised fears among policymakers worldwide of a new gateway addiction for young people.

While vaping exposes users to lower levels of toxins than smoking, the World Health Organization said the devices still pose "health risks" to users.

"Although the specific level of risk associated with ENDS (electronic nicotine delivery systems) has not yet been conclusively estimated, ENDS are undoubtedly harmful and should therefore be subject to regulation," the WHO said in a new report on the global smoking epidemic.

There was also "insufficient evidence" to support claims of their effectiveness in assisting smokers trying to quit conventional cigarettes, it said.

"In most countries where they are available, the majority of e-cigarette users continue to use e-cigarettes and cigarettes concurrently, which has little to no beneficial impact on health risk and effects," the report said.

Big tobacco companies have been aggressively marketing e-cigarette and heated tobacco products in recent years as they seek new customers.

They argue such products are far less dangerous than traditional cigarettes and can help some smokers completely switch to "safer" alternatives.

But the WHO warned misinformation spread by the tobacco industry about e-cigarettes was "a present and real threat."

As well as nicotine, e-cigarettes also contained metal-laced aerosols, which Vinayak Prasad, who leads the WHO's Tobacco Free Initiative, said "are known to damage the heart, all of them are known to damage the lungs."

"They're also now looking at the long-term effect whether it can even cause cancer, but it's not very well established," Prasad told AFP.

Restrictions on the use of e-cigarettes around the world is increasing. San Francisco last month banned the sale and manufacture of the products.

China, home to nearly a third of the world's tobacco smokers, is also planning to regulate the vaping devices.

More effort was needed to help smokers quit, the WHO said in the report, noting only "30 percent of the world's population have access to appropriate tobacco cessation services," such as counseling, telephone hotlines and medication.

Without assistance, only four percent of attempts to stop smoking succeed.

Tobacco claims more than eight million lives each year either from direct use or second-hand smoke, according to the WHO.

While the number of users has declined slightly since 2007, it remains stubbornly high at 1.4 billion, the vast majority of them men.

"People who quit tobacco can live longer, healthier and more productive lives," the WHO said.

27 Jul 2019

WHO launches new report on the global tobacco epidemic

who.int/news-room/detail/26-07-2019-who-launches-new-report-on-the-global-tobacco-epidemic

WHO/S. Volkov
TOBACCO - Tobacco kills more than 7 million people each year. Thanks to WHO and partners, tobacco control measures, such as graphic warnings on cigarette packs, advertising bans and smoke-free laws, protect two-thirds of the world's population.

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Many governments are making progress in the fight against tobacco, with 5 billion people today living in countries that have introduced smoking bans, graphic warnings on packaging and other effective tobacco control measures - four times more people than a decade ago. But a new WHO report shows many countries are still not adequately implementing policies, including helping people quit tobacco, that can save lives from tobacco.

The seventh WHO Report on the global tobacco epidemic analyses national efforts to implement the most effective measures from the WHO Framework Convention on Tobacco Control (WHO FCTC) that are proven to reduce demand for tobacco.

These measures, like the "MPOWER" interventions, have been shown to save lives and reduce costs from averted healthcare expenditure. The MPOWER report was launched in 2007 to promote government action on six tobacco control strategies in-line with the WHO FCTC to:

- Monitor tobacco use and prevention policies.
- Protect people from tobacco smoke.
- Offer help to quit tobacco use.
- Warn people about the dangers of tobacco.
- Enforce bans on tobacco advertising, promotion and sponsorship.
- Raise taxes on tobacco.

Tobacco cessation services must be stepped up

The focus of the latest report is on the progress countries have made to help tobacco users quit. It is being launched today in Brazil, a country that has become the second, after Turkey, to fully implement all the MPOWER measures at the highest level of achievement.

Dr Tedros Adhanom Ghebreyesus, WHO Director-General, said governments should implement cessation services as part of efforts to ensure universal health coverage for their citizens.

“Quitting tobacco is one of the best things any person can do for their own health,” said Dr Tedros. “The MPOWER package gives governments the practical tools to help people kick the habit, adding years to their life and life to their years.”

Progress is being made, with 2.4 billion people living in countries now providing comprehensive cessation services (2 billion more than in 2007). But only 23 countries are providing cessation services at the best-practice level, making it the most under-implemented MPOWER measure in terms of number of countries offering full coverage.

Tobacco cessation services include national toll-free quit lines, “mCessation” services to reach larger populations via mobile phones, counselling by primary health care providers and cost-covered nicotine replacement therapy.

Michael R. Bloomberg, WHO Global Ambassador for Noncommunicable Diseases and Injuries and founder of Bloomberg Philanthropies, said the report shows government-led efforts to help people quit tobacco work when properly implemented.

“More countries are making tobacco control a priority and saving lives, but there’s still much more work to be done,” said Mr Bloomberg. “The WHO’s new report shines a spotlight on global efforts to help people quit using tobacco and it details some of our most important gains.”

The report, funded by Bloomberg Philanthropies, showed that while only 23 countries have implemented cessation support policies at the highest level, 116 more provide fully or partially cost-covered services in some or most health facilities, and another 32 offer services but do not cost-cover them, demonstrating a high level of public demand for support to quit.

Tobacco use has also declined proportionately in most countries, but population growth means the total number of people using tobacco has remained stubbornly high. Currently, there are an estimated 1.1 billion smokers, around 80% of whom live in low- and middle-income countries (LMICs).

Editor’s note

Since the last report, issued in 2017, the WHO report on the global tobacco epidemic, 2019, also finds that:

- 36 countries have introduced one or more MPOWER measures at the highest level of achievement.
- Over half of the world’s population – 3.9 billion people living in 91 countries – benefit from large graphic pack warnings featuring all recommended characteristics, making it the MPOWER measure with both the highest population coverage and the most countries covered.
- 14 countries have implemented large graphic warning laws at best practice level, making it the MPOWER policy with the greatest growth in terms of country uptake

during the last two years.
- The greatest growth in population coverage was seen in tobacco taxation. The population coverage from this MPOWER policy has almost doubled from 8% in 2016 to 14% in 2018. But while being the most effective way to reduce tobacco use, taxation is still the MPOWER policy with the lowest population coverage.
- Of the 5 billion people protected by at least one MPOWER policy, 3.9 billion live in LMICs (or 61% of all people in LMICs).
- 59 countries have yet to adopt a single MPOWER measure at the highest level of achievement – 49 are LMICs.
- In the world's 34 low-income countries, 17 today have at least one MPOWER policy in place at best-practice level compared to three in 2007, showing that income level is not a barrier to best-practice tobacco control

For each MPOWER measure, there have been new countries that have implemented some of the measures at the best practice level since the last report:

- 7 (Antigua and Barbuda, Benin, Burundi, Gambia, Guyana, Niue and Tajikistan) have adopted complete smoke-free laws covering all indoor public places and workplaces.
- 4 (Czechia, Saudi Arabia, Slovakia and Sweden) advanced to best-practice level with cessation services. But during the same period, six other countries dropped from the highest group, resulting in a net loss of two countries.
- 14 (Barbados, Cameroon, Croatia, Cyprus, Georgia, Guyana, Honduras, Luxembourg, Pakistan, Saint Lucia, Saudi Arabia, Slovenia, Spain and Timor-Leste) adopted large graphic pack warnings.
- 10 (Antigua and Barbuda, Azerbaijan, Benin, Congo, Democratic Republic of the Congo, Gambia, Guyana, Niue, Saudi Arabia and Slovenia) introduced comprehensive bans on tobacco advertising, promotion and sponsorship.

10 (Andorra, Australia, Brazil, Colombia, Egypt, Mauritius, Montenegro, New Zealand, North Macedonia and Thailand) raised taxes to comprise at least 75% of retail prices.

E-cigarette use, flavorings may increase heart disease risk, study finds

med.stanford.edu/news/all-news/2019/05/e-cigarette-use-and-flavorings-may-increase-heart-disease-risk.html
Krista Conger

Joseph Wu is the senior author of a study that investigated the effect of e-cigarette liquids on endothelial cells, which line the interior of blood vessels.
Steve Fisch

The flavoring liquid for electronic cigarettes, or e-cigarettes, may increase the risk of cardiovascular disease when inhaled, according to a study led by researchers at the School of Medicine.

The scientists investigated the effect of the e-liquids on cells called endothelial cells that line the interior of blood vessels. They found that, when grown in a laboratory, endothelial cells exposed to the e-liquids — or to blood collected from e-cigarette users shortly after vaping — are less viable and exhibit significantly increased levels of molecules implicated in DNA damage and cell death. The cells are also less able to form new vascular tubes and to migrate and participate in wound healing.

The severity of the damage, aspects of which occur even in the absence of nicotine, varies among popular flavors, the researchers said. Cinnamon and menthol were found to be particularly harmful.

“Until now, we had no data about how these e-liquids affect human endothelial cells,” said Joseph Wu, MD, PhD, director of the Stanford Cardiovascular Institute and professor of cardiovascular medicine and of radiology. “This study clearly shows that e-cigarettes are not a safe alternative to traditional cigarettes. When we exposed the cells to six different flavors of e-liquid with varying levels of nicotine, we saw significant damage. The cells were less viable in culture, and they began to exhibit multiple symptoms of dysfunction.”

The researchers studied human endothelial cells generated in the laboratory from what are called induced pluripotent stem cells, or iPS cells. IPS cells can become many different cell types, and they provide an ideal way for researchers to closely study cells that would be difficult to isolate directly from a patient.

This study was the first to use endothelial cells derived from iPS cells to directly investigate the effect of e-liquids with and without nicotine on their viability and function.

A paper describing the findings was published online May 27 in the *Journal of the American College of Cardiology*. Wu is the senior author. Former postdoctoral scholars Won Hee Lee, PhD, now an assistant professor at the University of Arizona, and Sang-

Ging Ong, PhD, now an assistant professor at University of Illinois-Chicago, are the lead authors.

E-cigarette use has skyrocketed

In the United States, cardiovascular disease is responsible for about one-third of smoking-associated deaths in smokers, and secondhand smoke causes approximately 34,000 early deaths from heart disease each year in nonsmokers. Endothelial cells line the interior surface of blood vessels and play a critical role in heart and cardiovascular health. Although some studies have suggested that e-cigarettes deliver lower levels of carcinogens to users than do conventional cigarettes — perhaps decreasing the risk of cancer — the effect of e-cigarette use on vascular health has been unclear.

Despite these uncertainties, the use of e-cigarettes has skyrocketed since their introduction about a decade ago, particularly among young people. The Food and Drug Administration estimates that more than 3.5 million middle and high school students used e-cigarettes in 2018, though sales to minors are prohibited. In 2018, the FDA restricted the sale of flavored e-cigarettes to adult-only venues, with the exception of tobacco, menthol and mint flavors, which can be sold wherever traditional cigarettes are sold.

“One in five high school students have tried e-cigarettes, perhaps because they feel they are relatively safe,” Lee said. “But we found the e-liquids caused changes in the endothelial cells that are closely related to those seen during the development of cardiovascular disease.”

The researchers investigated the effect of six different popular e-liquid flavors — fruit, tobacco, sweet tobacco with caramel and vanilla, sweet butterscotch, cinnamon, and menthol — with nicotine levels of 0, 6, and 18 milligrams per milliliter on endothelial cells derived from human iPS cells. They found that while several of the liquids were moderately toxic to the endothelial cells, the cinnamon- and menthol-flavored e-liquids significantly decreased the viability of the cells in culture even in the absence of nicotine.

> One in five high school students have tried e-cigarettes.

Exposure to the e-liquids also increased the relative levels of reactive oxygen species — molecules that can cause DNA damage — and the levels of molecules associated with programmed cell death.

The researchers also found that exposure to the cinnamon and menthol flavored e-liquids significantly disrupted the ability of the cultured cells to form capillary-like tubular structures associated with the growth of new blood vessels. The e-liquid flavored with caramel and vanilla also disrupted growth, but not as severely. The cells exposed to cinnamon flavor and caramel and vanilla flavors exhibited an increased uptake of low-

density lipoproteins and lipids — processes commonly associated with inflammation and endothelial dysfunction — and a reduction in their ability to migrate to heal wounds or scratches.

Some of the effects of exposure to the various e-liquids were dependent on the nicotine concentration, but others, like cellular migration and decreases in cell viability, were independent of nicotine, suggesting a combined effect of nicotine concentrations and flavoring components.

Comparing nicotine levels

Finally, the researchers compared the levels of nicotine in the blood serum of people after they had vaped e-cigarettes with the levels in people who smoked traditional cigarettes. They found that the amounts of nicotine in the blood were similar between the two groups after 10 minutes of smoking at a constant rate.

“When you’re smoking a traditional cigarette, you have a sense of how many cigarettes you’re smoking,” Wu said. “But e-cigarettes can be deceptive. It’s much easier to expose yourself to a much higher level of nicotine over a shorter time period. And now we know that e-cigarettes are likely to have other significantly toxic effects on vascular function as well. It’s important for e-cigarette users to realize that these chemicals are circulating within their bodies and affecting their vascular health.”

Other Stanford co-authors are research assistant Yang Zhou; postdoctoral scholars Lei Tian, PhD, and Hongchao Guo, PhD; graduate student Hye Ryeong Bae; undergraduate student Natalie Baker; and professor of pediatrics Kari Nadeau, MD, PhD.

Researchers from the University of Arizona College of Medicine, the University of Illinois College of Medicine, the University of California-San Francisco and the University of Louisville School of Medicine also contributed to the study.

The study was supported by the National Institutes of Health, the American Heart Association, the Stanford Diabetes Research Center, the University of California Tobacco Related Disease Research Program and the FDA.

Stanford’s Department of Medicine also supported the work.

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Modeling Cardiovascular Risks of E-Cigarettes With Human-Induced Pluripotent Stem Cell–Derived Endothelial Cells

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ABSTRACT

BACKGROUND Electronic cigarettes (e-cigarettes) have experienced a tremendous increase in use. Unlike cigarette smoking, the effects of e-cigarettes and their constituents on mediating vascular health remain understudied. However, given their increasing popularity, it is imperative to evaluate the health risks of e-cigarettes, including the effects of their ingredients, especially nicotine and flavorings.

OBJECTIVES The purpose of this study was to investigate the effects of flavored e-cigarette liquids (e-liquids) and serum isolated from e-cigarette users on endothelial health and endothelial cell–dependent macrophage activation.

METHODS Human-induced pluripotent stem cell–derived endothelial cells (iPSC-ECs) and a high-throughput screening approach were used to assess endothelial integrity following exposure to 6 different e-liquids with varying nicotine concentrations and to serum from e-cigarette users.

RESULTS The cytotoxicity of the e-liquids varied considerably, with the cinnamon-flavored product being most potent and leading to significantly decreased cell viability, increased reactive oxygen species (ROS) levels, caspase 3/7 activity, and low-density lipoprotein uptake, activation of oxidative stress-related pathway, and impaired tube formation and migration, confirming endothelial dysfunction. Upon exposure of ECs to e-liquid, conditioned media induced macrophage polarization into a pro-inflammatory state, eliciting the production of interleukin-1β and -6, leading to increased ROS. After exposure of human iPSC-ECs to serum of e-cigarette users, increased ROS linked to endothelial dysfunction was observed, as indicated by impaired pro-angiogenic properties. There was also an observed increase in inflammatory cytokine expression in the serum of e-cigarette users.

CONCLUSIONS Acute exposure to flavored e-liquids or e-cigarette use exacerbates endothelial dysfunction, which often precedes cardiovascular diseases. (J Am Coll Cardiol 2019;73:2722–37) © 2019 by the American College of Cardiology Foundation.

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Cigarette smoking causes 1 of every 3 deaths that result from cardiovascular disease (CVD), leading to >480,000 premature deaths each year in the United States alone (1). While the detrimental effects of conventional cigarette smoking in CVD are well documented and smoking prevalence is declining, an explosive increase in the use of electronic cigarettes (e-cigarettes), especially among youth, is happening with scarce scientific evidence on their toxicity and health effects (2,3).

SEE PAGE 2738

E-cigarettes are devices designed to deliver an aerosol containing nicotine by heating a liquid solution (often called e-liquid or e-juice) that typically uses propylene glycol (PG) and/or glycerol (glycerin) as a vehicle for nicotine and flavoring agents. Although e-cigarettes are relatively new to the market, they are an increasingly popular alternative to conventional tobacco cigarettes and encompass a wide range of product types and brands. As of 2014, there were >450 e-cigarette products with nearly 8,000 unique flavors available (4). Although most of the flavoring chemicals in e-liquids may meet the generally recognized safe standard for ingestion as food additives, they have not been adequately tested as inhalants. In fact, some popular flavorings are known to be toxic, including diacetyl (buttery flavor), acetyl propionyl (caramel or buttery flavor), and benzaldehyde (fruity taste). Recently, the Food and Drug Administration released a statement limiting the sales of flavored e-cigarettes except tobacco, menthol, and mint flavor in an effort to prevent a new generation of nicotine addicts (5). Despite the rapid increase in popularity, the potential for harmful cardiovascular effects following the use of inhaled e-cigarette flavoring chemicals has been largely unexplored.

To date, the toxicological studies conducted on e-cigarettes have been mostly limited to cytotoxicity studies using established cell lines. Early on, limited studies of e-cigarette vapor showed that e-cigarettes delivered much lower levels of carcinogens in aerosols when compared with conventional cigarette smoke (6,7). At this time, the cardiovascular risk of e-cigarettes is not clear; however, some e-liquid flavorings have been shown to be cytotoxic in cellular models including pulmonary fibroblasts, human embryonic stem cells, and neural stem cells (6,8).

The vascular endothelium plays an important role in vascular function through elaboration of paracrine factors that regulate vascular tone, cell adhesion, fibrinolysis, and blood flow (9). Smoking causes endothelial dysfunction, which is a risk factor for CVD (10). It has been hypothesized that the use of e-cigarettes is associated with endothelial cell damage leading to acute endothelial dysfunction (11), but further in-depth studies are warranted. Despite the extensive use of induced pluripotent stem cells (iPSCs) in other areas of research, no previous studies have leveraged the powerful platform of human-induced pluripotent stem cell-derived endothelial cells (iPSC-ECs) to assess the potential health risks of e-cigarettes on endothelial integrity. Here, we used iPSC-ECs to evaluate the effects of flavored e-liquids on endothelial health and to understand the cross-talk between endothelial cells and macrophages. We further validated our results using serum collected from e-cigarette users and conventional cigarette smokers to assess the potential effects of e-cigarette use on cardiovascular function.

ABBREVIATIONS AND ACRONYMS

CVD = cardiovascular disease

e-cigarette = electronic cigarette

e-liquids = electronic cigarette liquids

iPSC-ECs = induced pluripotent stem cell-derived endothelial cells

PG = propylene glycol

PLT = platelet

ROS = reactive oxygen species

VG = vegetable glycerin

METHODS

Detailed methods and supporting data are available in the Online Appendix.

DIFFERENTIATION OF iPSC-ECs. The iPSCs (over passage 20) from 3 healthy individuals were split in a 1:12 ratio using EDTA, as described previously (12), and were grown for 3 to 4 days until they reached ~75% confluence. For the endothelial cell differentiation and characterization protocol, please refer to the Online Appendix.

E-CIGARETTE LIQUIDS (E-LIQUIDS). Six different e-liquids were purchased online: Freedom Smoke USA (Tucson, Arizona), Johnson Creek (Johnson Creek, Wisconsin), and E Liquid Market (Birmingham, Alabama) in 0, 6, and 18 mg/ml of nicotine concentrations and were stored at 4°C in the dark (Online Table 1). The bottles were chosen to represent the 3 most common vehicle types (50% PG/50% vegetable glycerin [VG], 80% PG/20% VG, and 100% VG) and a range of popular flavors.

24RT-0039 (to Dr. Schick), NIH R01 HL120062 and the U.S. Food and Drug Administration Center for Tobacco Products (to Dr. Springer), and NIH U54 HL120163 (to Dr. Bhatnagar). Dr. Springer's wife is on advisory boards for Bayer, ADC Therapeutics, and Seattle Genetics. Dr. Wu is a co-founder of Khloris Biosciences but has no competing interests, as the work presented here is completely independent. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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PATIENTS' SERUM SAMPLE COLLECTION. The subject population consisted of 5 healthy nonsmokers (nonsmoker), 5 active cigarette smokers (cigarette), and 2 dual users of e-cigarettes and cigarettes as well as 2 sole users of e-cigarettes (e-cigarette). We included serum from both sole users of e-cigarettes and dual users of e-cigarettes and combustible cigarettes in our study because both patterns of use are common. We combined the 2 into a single group (e-cigarette) as most recruited participants were traditionally long-term cigarette smokers who started the use of e-cigarettes as an alternative to quitting the use of cigarettes. This is also due to the recruited population having a mean average age of 29 years, whereas most solely e-cigarette users with no prior smoking history tend to be younger. Depending on the population and the wording of the questions, 25% to 70% of e-cigarette users describe themselves as dual users (13,14). The participants classified as e-cigarette users reported using their e-cigarettes an average of 27.5 ± 5.0 days/month, with 9.8 ± 3.3 e-cigarette sessions (>2 puffs) per day. Dual users smoked <2 packs of cigarettes/month. Cigarette smokers reported 29.8 ± 0.4 days of smoking in the past 30 days and 10.1 ± 3.4 cigarettes/day. All subjects were healthy individuals free of other major cardiovascular risk factors. Demographic and clinical characteristics of subjects are summarized in Online Table 2. Informed consent was obtained from all subjects, and the conduct of the study was approved by the University of California, San Francisco Institutional Review Board.

Participants in the study were asked not to use combustible cigarettes for 7 days before all study visits and to abstain from the use of cigarettes, e-cigarettes, food, and caffeinated drinks for 12 h prior to the study day. To ensure abstinence from tobacco products, carbon monoxide (CO) and nicotine levels were tested at the start of each visit. For the e-cigarette study, the subjects used an e-cigarette containing RY4-flavored e-liquid (Changning Dekang Ltd, Shenzhen, China) with 16 mg/ml nicotine and instructed to use it for a total of 10 min (1 puff every 30 s, each puff lasting 2 s). For the cigarette condition, subjects smoked a Marlboro cigarette for 10 min or until the cigarette went out, by taking 2 puffs/min, each puff lasting 2 s.

STATISTICAL ANALYSIS. Statistical analysis and graphs of data were performed with SigmaPlot version 13.0 (Systat Software, San Jose, California). Either a paired or unpaired 2-tailed Student's *t*-test for normal distributed variables and Mann-Whitney *U* test for non-normal distributed variables were used for 2-group comparisons. Differences of >2 groups were performed using analysis of variance (ANOVA) with Bonferroni post hoc analysis. When >2 independent variables were present, a 2-way ANOVA with Bonferroni correction was used. To test for serial changes, a 1-way repeated-measures ANOVA was used. Normal distribution was tested with the Shapiro-Wilks test. All data were summarized as mean ± SD or mean ± SEM, and Bonferroni correction was used for multiple comparisons as indicated. A p value <0.05 was considered statistically significant.

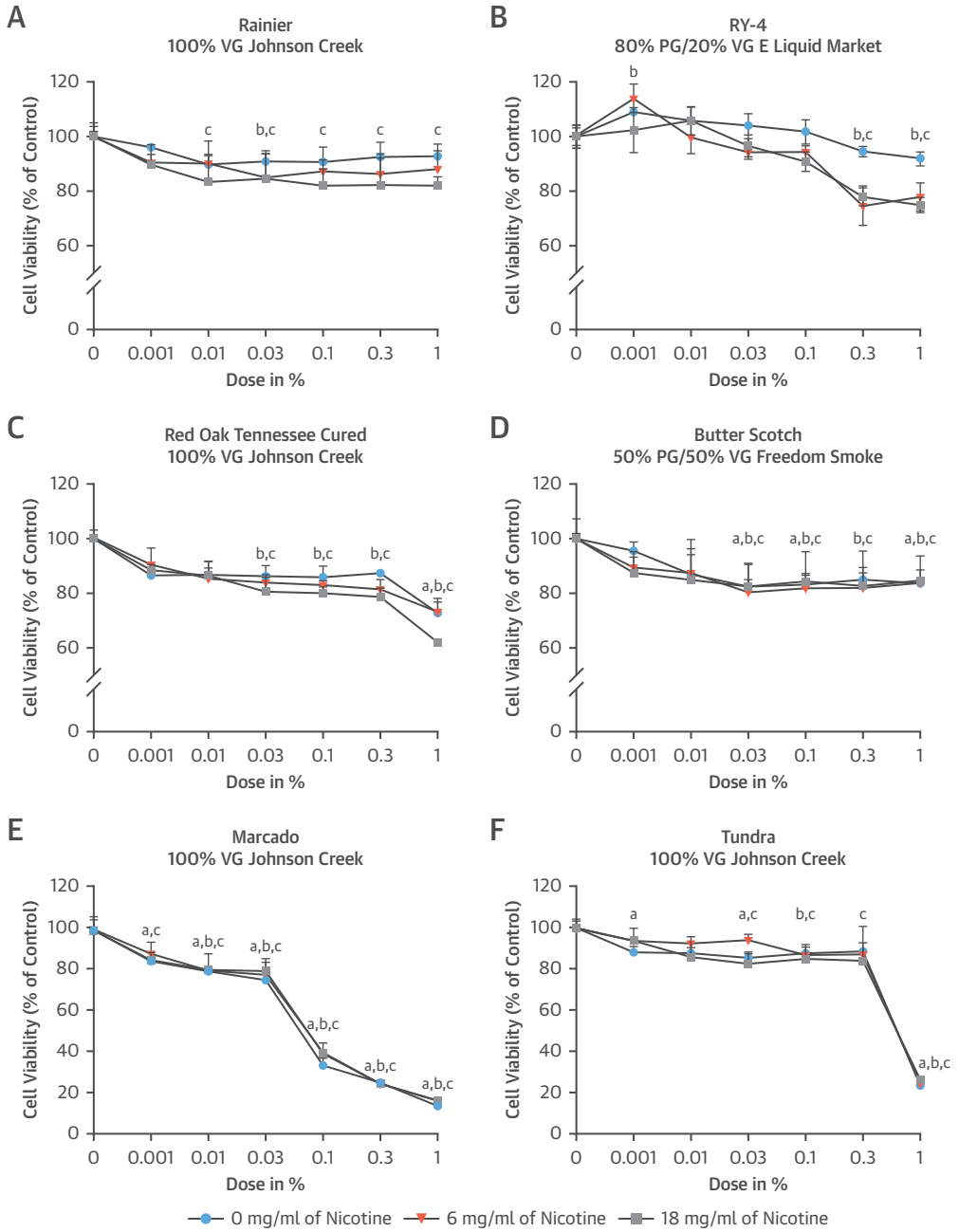
RESULTS

ASSESSMENT OF CELL VIABILITY, REACTIVE OXYGEN SPECIES GENERATION, AND APOPTOSIS IN iPSC-ECs AFTER EXPOSURE TO E-CIGARETTE LIQUIDS. iPSCs from 3 healthy individuals were differentiated into ECs using chemically defined conditions (Online Figure 1A). Following CD144 purification, iPSC-ECs maintained their identity as demonstrated by a higher expression of endothelial-specific marker genes and proteins (Online Figures 1B to 1E). Immunostaining showed an increase in the expression of intracellular adhesion molecule-1 (ICAM-1) upon cytokine tumor necrosis factor-α stimulation. Lipid uptake was also confirmed using fluorescent acetylated-low density lipoprotein (LDL), demonstrating the in vitro functionality of these iPSC-ECs.

To examine the effects of e-liquids on cell viability, iPSC-ECs were treated with serial dilutions of 6 commercially available e-liquids at varying nicotine concentrations (0, 6, and 18 mg/ml) for 48 h (Online Table 1). We observed that flavored e-liquids had varying effects on cell survival. While the fruit-flavored Rainier (**Figure 1A**), sweet tobacco with undertones of caramel and vanilla-flavored RY4 (**Figure 1B**), tobacco-flavored Red Oak Tennessee Cured (**Figure 1C**), and sweet-flavored Butter Scotch (**Figure 1D**) had moderate cytotoxic effects on iPSC-ECs, treatment with cinnamon-flavored Marcado led to a strong cytotoxic effect (**Figure 1E**). In addition, the menthol tobacco-flavored Tundra (**Figure 1F**) also had strong cytotoxic effects on iPSC-ECs at 1% dose of concentration with or without nicotine.

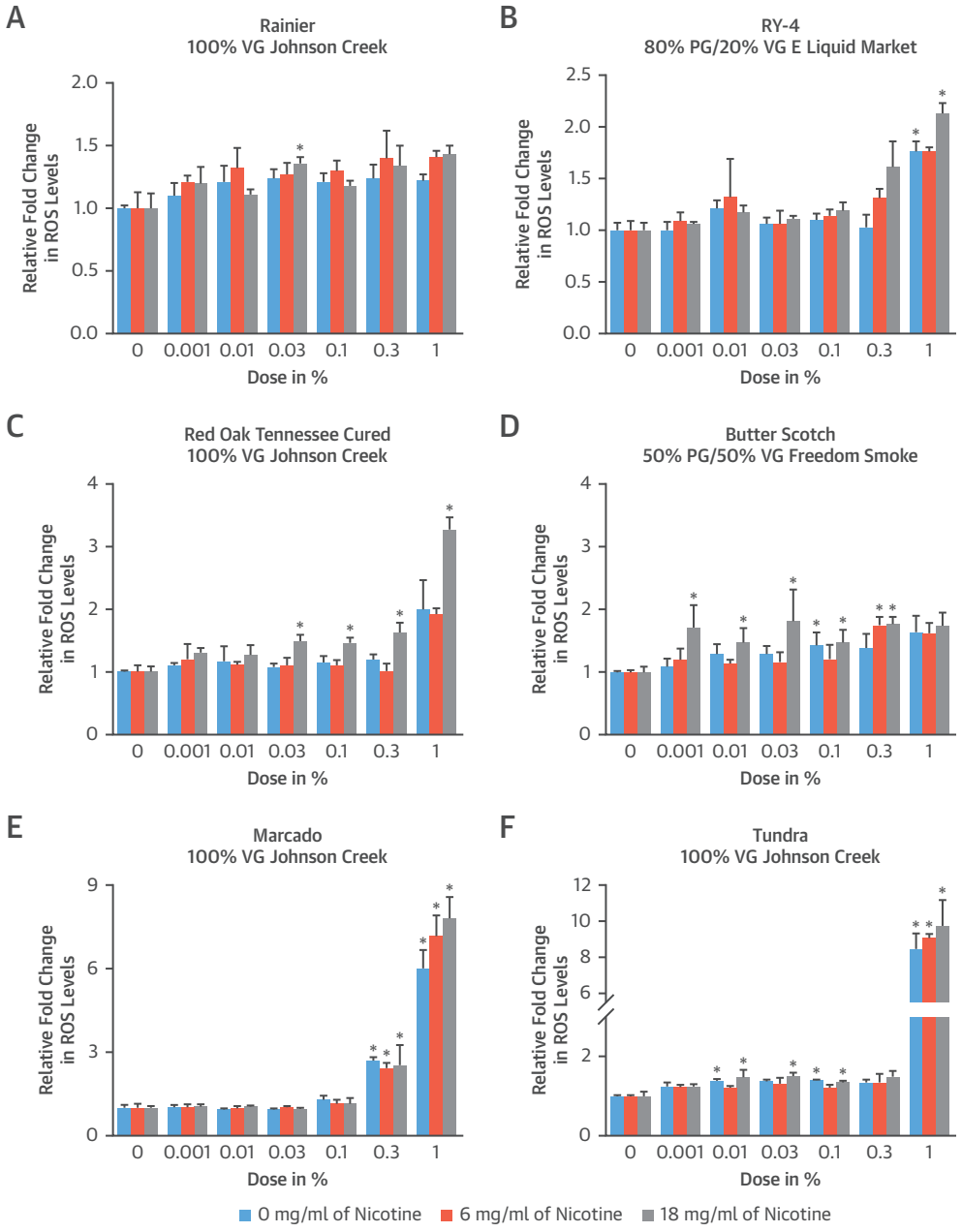
Oxidative stress has been widely implicated as a major factor in endothelial injury (15). To determine whether e-liquids regulate reactive oxygen species (ROS) production, H_2O_2 levels in iPSC-ECs were determined after exposure to increasing doses of flavored liquids. As shown in **Figure 2**, most e-liquid exposure for 48 h, regardless of the flavor, led to increased H_2O_2 in a dose-dependent manner. This

FIGURE 1 Assessment of E-Liquid Flavor-Induced Cytotoxicity in iPSC-ECs



(A to F) Effects of 6 electronic cigarette liquid (e-liquid) flavors with different nicotine concentrations on induced pluripotent stem cell–derived endothelial cell (iPSC-EC) viability after 48 h treatment were determined using a luminescent CellTiter-Glo 2.0 assay (Promega, Madison, Wisconsin). The data were obtained using iPSC-ECs from 3 healthy donors per group, one cell line per donor, and the assay was repeated twice. Data are represented as mean ± SD. [a]$p < 0.05$, compared with untreated controls within 0 mg/ml of the nicotine group; [b]$p < 0.05$ compared with untreated controls within 6 mg/ml of the nicotine group; [c]$p < 0.05$ compared with untreated controls within 18 mg/ml of the nicotine group. [a,b,c]Statistically significant from untreated controls (Bonferroni-adjusted $p < 0.05$). PG = propylene glycol; VG = vegetable glycerin.

FIGURE 2 Assessment of E-Liquid Flavor-Induced ROS Production in iPSC-ECs

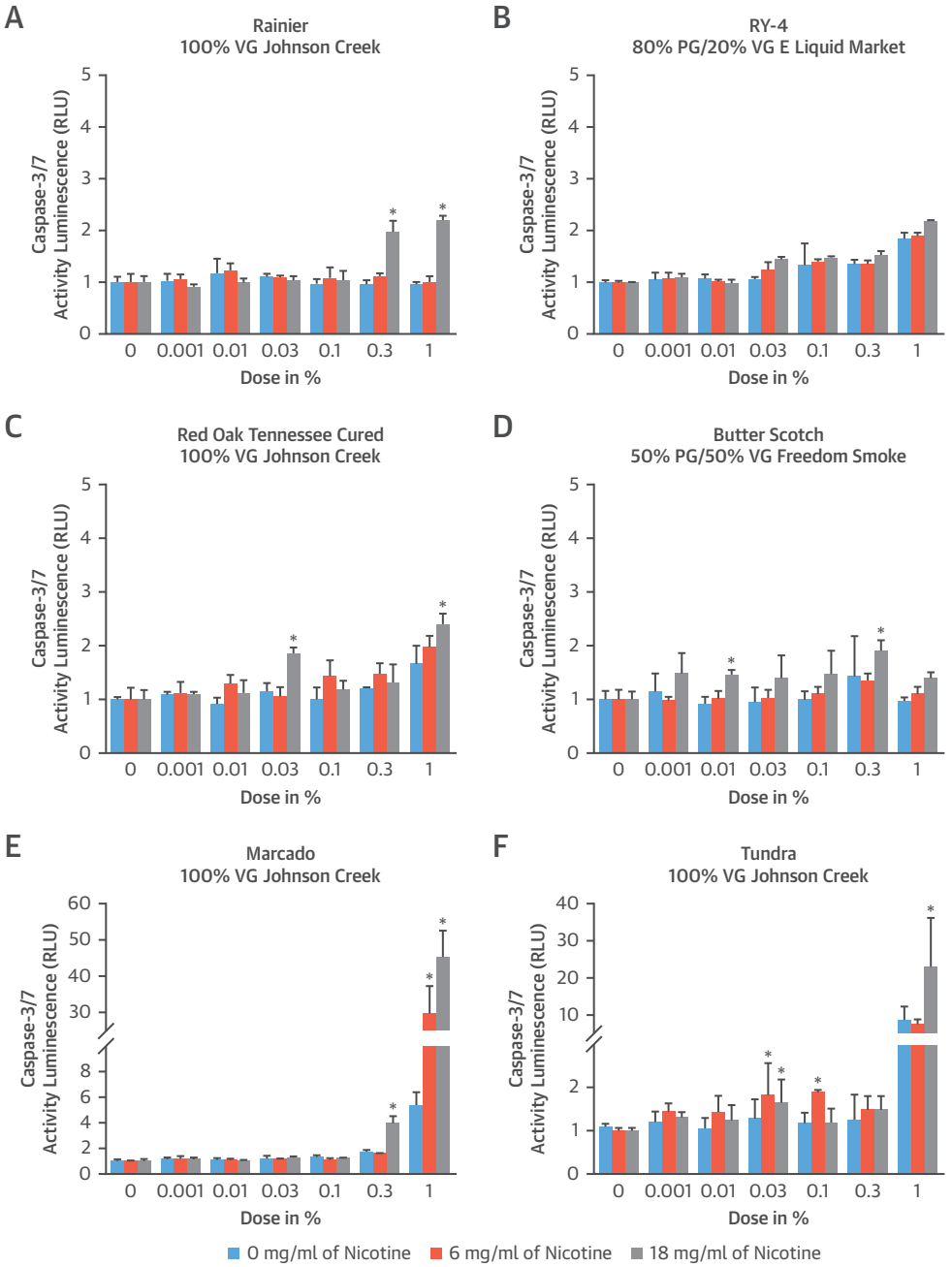


(A to F) Effects of 6 e-liquid flavors with different nicotine concentrations on intracellular ROS production in iPSC-ECs after 48 h treatment were determined using a ROS-Glo H_2O_2 assay (Promega, Madison, Wisconsin). The data were obtained using iPSC-ECs from 3 healthy donors per group, one cell line per donor, and the assay was repeated twice. Data are represented as mean ± SD. *$p < 0.05$ compared with untreated controls within each group. *Statistically significant from untreated controls (Bonferroni-adjusted $p < 0.05$). ROS = reactive oxygen species; other abbreviations as in Figure 1.

increase in ROS was especially marked when iPSC-ECs were exposed to the cinnamon-flavored Marcado e-liquid at 0.3% and 1% dose (Figure 2E) or the menthol tobacco-flavored Tundra e-liquid at 1% dose (Figure 2F).

To elucidate the mechanisms underlying the reduction in iPSC-EC viability by e-liquid exposure, we then examined the activities of caspase-3 and -7 in iPSC-ECs following e-liquid treatments. Both caspases were significantly more active in iPSC-ECs

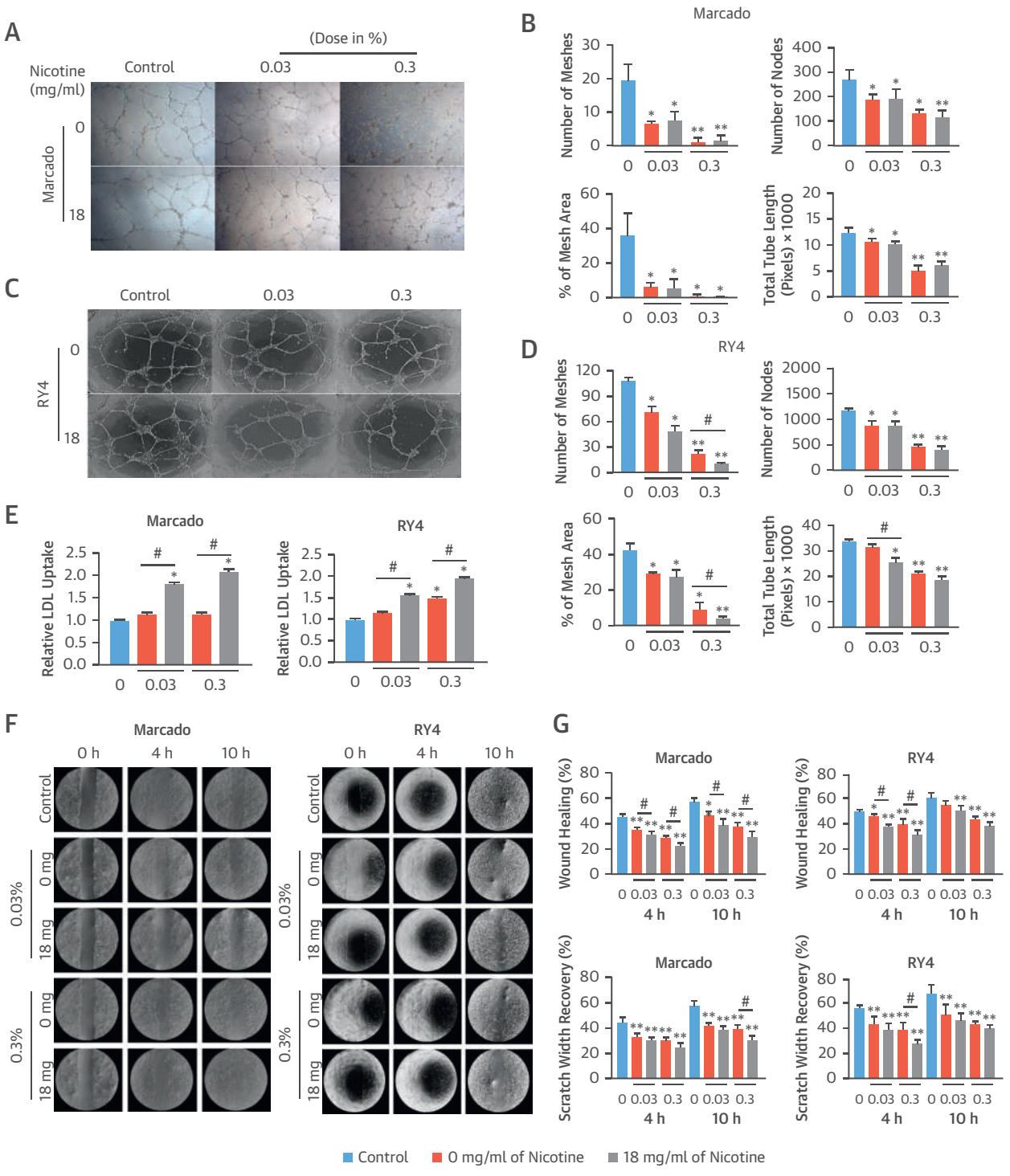
FIGURE 3 Assessment of E-Liquid Flavor-Induced Caspase 3/7 Activity in iPSC-ECs



(A to F) Effects of 6 e-liquid flavors with different nicotine concentration on caspase 3/7 activity for apoptosis in iPSC-ECs after 48 h treatment were determined using a Caspase-Glo 3/7 (Promega, Madison, Wisconsin). The data were obtained using iPSC-ECs from 3 healthy donors per group, one cell line per donor, and the assay was repeated twice. Data are represented as mean ± SD. *$p < 0.05$ compared with untreated controls within each group. *Statistically significant from untreated controls (Bonferroni-adjusted $p < 0.05$). Abbreviations as in Figure 1.

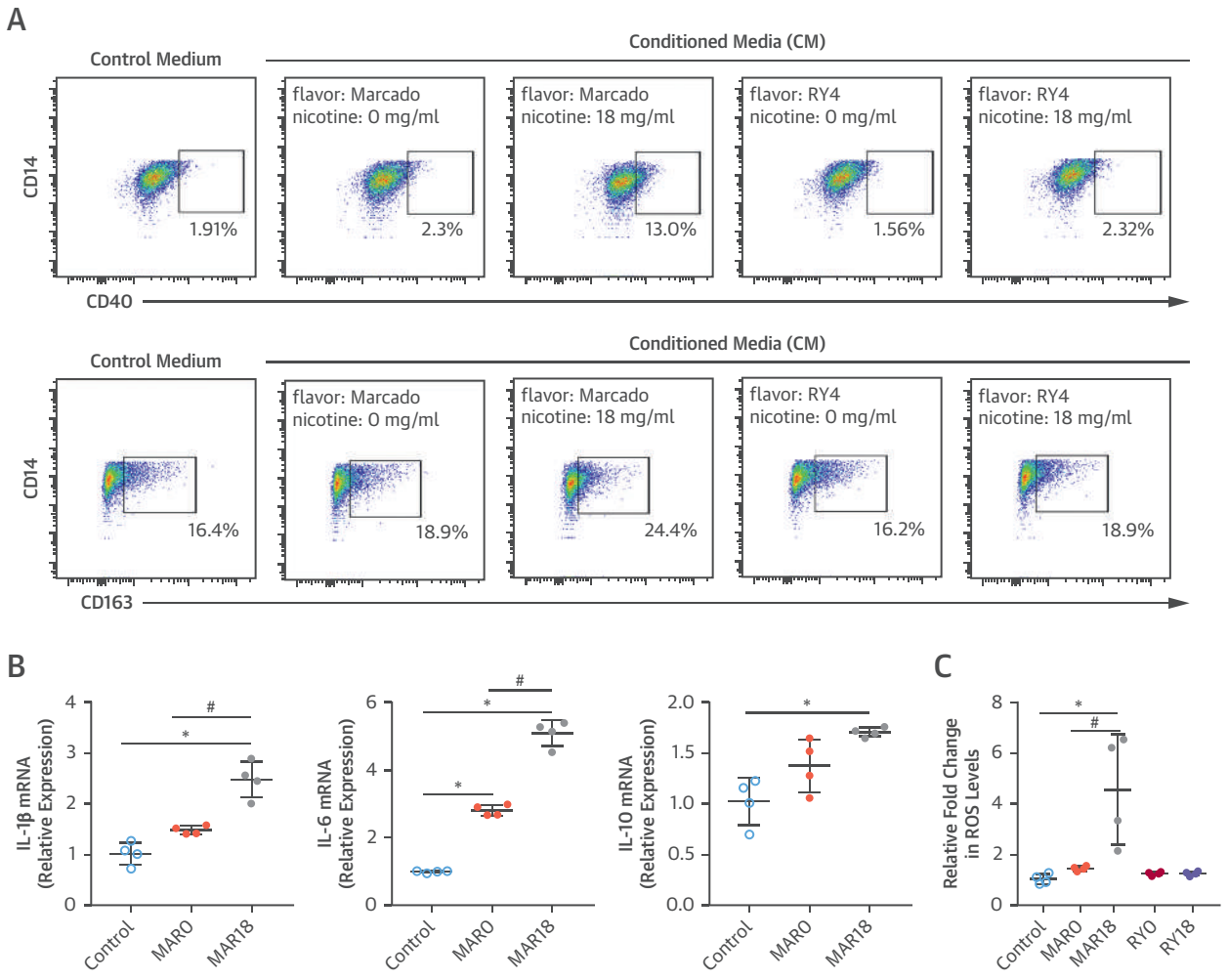
treated with most e-liquids compared with control subjects, and the maximum response was observed when cells were treated with either Marcado- or Tundra-flavored e-liquids (Figure 3). In all measured parameters, including cytotoxicity, ROS generation, and apoptotic activities, we observed an increasing trend as the nicotine concentration increased, although the overall difference was not significant.

FIGURE 4 Effect of E-Liquid Treatment on Endothelial Function of iPSC-ECs



(A and C) The cells were incubated with each e-liquid flavor for 16 h to allow the formation of capillary-like structures on Matrigel (Corning, Bedford, Massachusetts) and then imaged by phase-contrast microscopy (×20). **(B and D)** Quantitative data from the tube-formation assay. **(E)** Low-density lipoprotein (LDL) uptake was measured in iPSC-ECs after treatment of the e-liquid for 2 days. **(F)** Representative images and **(G)** quantitative data from the migration assay at 0, 4, and 10 h in the presence of the e-liquid flavors Marcado and RY4. The migration data were normalized to time point 0 h. The data were obtained using iPSC-ECs from 3 healthy donors, one cell line per donor, and the assay was repeated twice. Data are represented as mean ± SEM. *$p < 0.05$ and **$p < 0.001$ compared with control subjects; #$p < 0.05$ compared with groups treated with 0 mg/ml of nicotine. Abbreviations as in Figure 1.

FIGURE 5 Effect of Conditioned Media From iPSC-ECs Treated With E-Liquid on Macrophage Polarization



(A) Conditioned media was collected from iPSC-ECs after 48 h of incubation with each e-liquid flavor, and then exposed to macrophage-like cells for 48 h. Phenotype of macrophages was analyzed by flow cytometry for M1 (CD40) and M2 (CD163) markers. **(B)** After 48 h incubation with conditioned media, the media was replaced with the fresh macrophage culture media for 16 h to determine cytokine expression and ROS levels. Expression of cytokines produced by macrophages was determined by quantitative real-time reverse transcription polymerase chain reaction. **(C)** Intracellular ROS levels produced by macrophages was determined using a ROS-Glo H_2O_2 assay. Data are represented as mean ± SEM of 4 independent experiments. *p < 0.05, compared to controls. #p < 0.05, compared to groups treated with MARO. *,# Statistically significant from control subjects (Bonferroni-adjusted p < 0.05). MARO = Marcado e-liquid without nicotine; MAR18 = Marcado e-liquid with 18 mg/ml of nicotine; RYO = RY4 e-liquid without nicotine; RY18 = RY4 e-liquid with 18 mg/ml of nicotine; other abbreviations as in Figures 1 and 2.

Finally, 2 solvents that were used in all 6 flavored e-liquids, VG and PG, did not affect cell viability, ROS level, or caspase activities (Online Figure 2).

ASSESSMENT OF ENDOTHELIAL FUNCTION IN iPSC-ECs AFTER ADDITION OF E-CIGARETTE LIQUIDS. We investigated the influence of e-liquids on tube formation of iPSC-ECs, which reflects properties relevant to angiogenesis. Tubes were evaluated 16 h after seeding in growth medium supplemented with 3 e-liquids: Marcado, RY4, and Tundra. The addition of the 2 most toxic e-liquids, cinnamon-flavored Marcado (**Figures 4A and 4B**) and menthol tobacco-flavored Tundra (Online Figure 3A and 3B), led to a significant decrease in the number of meshes and nodes, percent of mesh area, and the total tube length in iPSC-ECs compared with control subjects. Similar findings were also observed in iPSC-ECs supplemented with the less toxic RY4 (**Figures 4C and 4D**).

TABLE 1 Plasma Nicotine and Cotinine Levels at Baseline, Immediately After, and 1 and 3 h After Smoking

	Baseline	Immediately After	1 h After	3 h After	p Value*	p Value†
E-cig						
Nicotine	1.0 ± 0.6	12.3 ± 3.3*	4.5 ± 0.8	2.3 ± 0.4	0.001	–
Cotinine	127.5 ± 16.7	116.8 ± 16.0	91.6 ± 30.4	82.0 ± 26.5*	0.01	–
Cig						
Nicotine	0.6 ± 0.1	12.6 ± 1.9*	5.8 ± 0.8†	2.8 ± 0.4	<0.001	0.04
Cotinine	99.4 ± 33.9	94.1 ± 32.5	96.9 ± 29.8	91.0 ± 27.7	–	–

Values are mean ± SEM (in ng/ml). Baseline was defined as 1 h prior, and immediately after as 0 h. *,†Statistically significant from baseline.
E-cig = electronic cigarette; Cig = cigarette.

Next, we investigated the effect of Marcado or RY4 e-liquid on more specific endothelial functions, such as LDL and lipid uptake and cell migration. Our results indicate that incubation with e-liquid of both flavors led to increased uptake of both LDL (**Figure 4E**) and free fatty acids in iPSC-ECs (Online Figure 3C), which is an important link in the onset of inflammation and impaired endothelial function (16,17). The increase in LDL uptake was dependent on nicotine concentration within e-liquid. In addition, as shown in **Figures 4F and 4G**, exposure to each e-liquid caused a significant reduction in iPSC-EC migration, as determined by the rate of wound closure and scratch width recovery. Similarly, using HUVECs as a positive control, we found free fatty acids to be significantly increased (Online Figure 3D), and migration rate to be severely compromised in the presence of e-liquids (Online Figures 3E and 3F). The results on cell migration were mostly independent of nicotine concentration, suggesting that the observed impairment of endothelial cell functions is associated with the combination of flavor additives and nicotine.

CROSS-TALK BETWEEN E-LIQUID TREATED ENDOTHELIAL CELLS AND MACROPHAGES. To understand the impact of e-liquid on the cross-talk between endothelial cells and macrophages, we analyzed macrophages exposed to conditioned media from iPSC-ECs treated with e-liquid. Conditioned media from iPSC-ECs without e-liquid treatment was included as a control condition. As shown in **Figure 5A**, e-liquids, such as Marcado and RY4, triggered macrophage dual polarization compared with control groups. Especially for Marcado flavor, we found that the percentage of macrophages expressing CD40 (M1 marker) and CD163 (M2 marker) was increased with iPSC-EC-conditioned media treated with 18 mg/ml of nicotine compared with 0 mg/ml of nicotine (13.0 ± 0.1% vs. 2.3 ± 0.2% and 24.4 ± 1.8% vs. 18.9 ± 1.6%, respectively).

We also examined the effects of conditioned media collected from iPSC-ECs treated with e-liquid on pro- and anti-inflammatory cytokine production in macrophages. We found that exposure to conditioned media from iPSC-ECs treated with e-liquid Marcado significantly increased inflammatory factors produced by M1 macrophages, such as interleukin (IL)-1β and -6, and M2-related cytokine IL-10 (**Figure 5B**), whereas no significant changes in cytokine expression were found in those with e-liquid RY4 (data not shown). We also found that intracellular ROS levels in the macrophages were significantly increased following treatment with conditioned media from iPSC-ECs treated with Marcado containing 18 mg/ml of nicotine (**Figure 5C**).

EFFECTS OF ACUTE CIGARETTE USE AND SMOKING ON SERUM NICOTINE LEVELS AND CIRCULATING LEUKOCYTE POPULATIONS. We then sought to gain a better understanding of the effects of e-cigarette use in vivo by recruiting nonsmokers, cigarette smokers, and e-cigarette users (sole or dual users of cigarettes). As nicotine is the key active ingredient in both e-cigarettes and conventional cigarettes, serial changes in the levels of nicotine and its major proximate metabolite, cotinine, were assessed in participants' blood prior to (−1 h), immediately after (0 h), and 1 and 3 h post-usage. Serum nicotine concentrations before tobacco product use (−1 h) were below 1.5 ng/ml in both groups, demonstrating compliance with the overnight hold on tobacco products (**Table 1**). In both groups, there was a significant increase in serum nicotine concentrations immediately after product use. The uptake of nicotine from an e-cigarette was similar to a conventional cigarette, with maximal mean serum nicotine concentrations reaching 12.3 and 12.6 ng/ml, respectively. Furthermore, results of total white blood cells (WBCs) and their subpopulations revealed no significant differences among nonsmokers, e-cigarette users, and smokers (**Table 2**). Similarly, there were no significant differences between e-cigarette and cigarette smoker groups pre- and post-smoking in terms of the mean platelet (PLT) count, although PLT at −1 h was

TABLE 2 Peripheral Blood Counts and Lymphocyte Subpopulation in 5 Nonsmokers, 4 E-Cigarette Users, and 5 Cigarette Smokers Before and After Exposure to Smoke

		E-Cig User		Cig Smokers	
	Nonsmokers	Before	After	Before	After
WBC, k/μl	5.5 ± 0.9	5.5 ± 0.6	5.6 ± 0.8	6.0 ± 0.7	6.4 ± 0.5
Lymphocytes, %	33.7 ± 0.7	35.7 ± 4.7	33.7 ± 3.9	31.0 ± 3.9	26.1 ± 2.5
Neutrophils, %	54.9 ± 0.5	51.7 ± 4.6	54.5 ± 3.9	59.5 ± 3.2	63.2 ± 2.3
Monocytes, %	6.2 ± 0.4	6.2 ± 0.6	6.5 ± 0.3	6.6 ± 0.6	6.2 ± 0.7
Eosinophils, %	3.1 ± 0.5	3.4 ± 0.6	2.7 ± 0.7	3.0 ± 0.7	2.4 ± 0.8
Basophils, %	0.5 ± 0.1	0.5 ± 0.1	0.5 ± 0.1	0.3 ± 0.1	0.4 ± 0.1
RBC, mil/μl	4.7 ± 0.5	4.6 ± 0.1	4.6 ± 0.2	4.3 ± 0.1	4.2 ± 0.1
HGB, g/dl	13.7 ± 1.4	13.8 ± 0.3	14.0 ± 0.3	13.0 ± 0.4	12.8 ± 0.4
HCT, %	41.2 ± 4.1	41.1 ± 0.8	41.4 ± 1.0	39.5 ± 1.2	38.3 ± 1.1
MCV, fl	87.2 ± 1.8	89.9 ± 2.3	90.7 ± 2.1	91.9 ± 1.3*	91.4 ± 1.2
PLT, k/μl	304.3 ± 4.2	213.3 ± 21.8*	208.5 ± 25.1	206.8 ± 17.0†	201.3 ± 19.1

Values are mean ± SD. *,†Statistically significant from nonsmokers (*$p < 0.05$ and †$p < 0.001$).

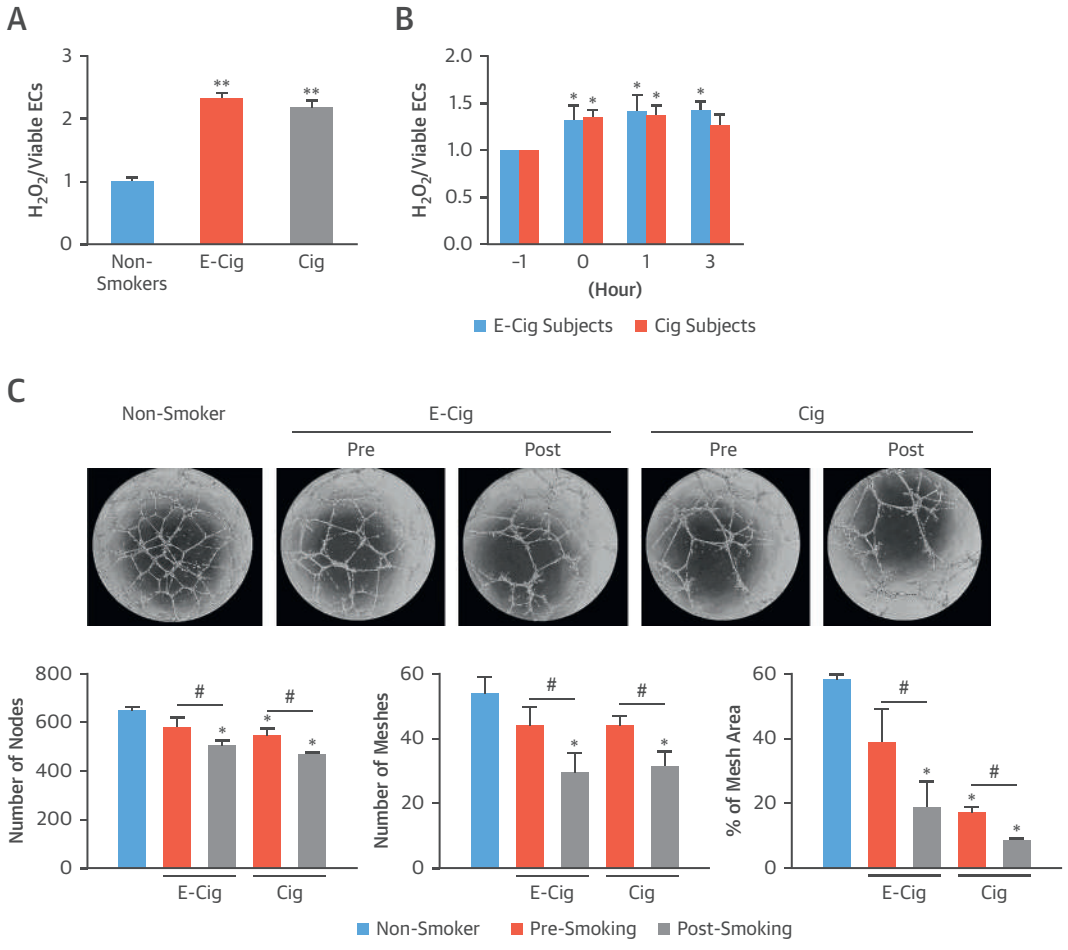
HCT = hematocrit; HGB = hemoglobin; MCV = mean volume of red blood cells; PLT = platelet; RBC = red blood cell; WBC = white blood cell; other abbreviations as in Table 1.

significantly lower (after adjustment for multiple comparisons) in both cigarette smoker and e-cigarette user groups in relation to nonsmokers.

ACUTE EFFECTS OF TOBACCO PRODUCT USE ON INTRACELLULAR ROS AND TUBE FORMATION OF iPSC-ECs AND INFLAMMATORY CYTOKINES IN SERUM. To explore how the use of tobacco products affects ROS production and angiogenic signaling in vivo, we next incubated iPSC-ECs with serum derived from nonsmokers, e-cigarette users, and cigarette smokers, as described in the previous text. In the −1 h samples collected after an overnight hold on food, alcohol, and tobacco, we observed significantly higher intracellular ROS in the cells incubated with serum from e-cigarette users and smokers as compared with serum from nonsmokers (**Figure 6A**), further heightened by the serum collected immediately after (0 h) and 1 and 3 h post-usage of a single e-cigarette or cigarette (**Figure 6B**). Treatment of iPSC-ECs with serum collected before and 3 h after smoking also revealed impairment of the tube-formation capability compared with control subjects treated with serum from nonsmokers (**Figure 6C**). We subsequently measured 62 human inflammatory cytokines in the serum from e-cigarette and cigarette users pre- and post-smoking (Online Table 3). Levels of IL-6, ICAM-1, macrophage colony-stimulating factor, and monocyte chemoattractant protein-1 in serum of e-cigarette users and cigarette smokers after smoking were significantly higher than prior to smoking (**Figure 7**), but lost statistical significance after adjustment for multiple comparisons. In addition, a trend toward increased levels of all other cytokines was observed in the serum of both e-cigarette users and cigarette smokers after smoking compared with the levels before smoking, and no cytokine level showed a significant difference between e-cigarette users and cigarette users.

GENE AND FUNCTIONAL ENRICHMENT ANALYSIS WITH THE ADDITION OF E-CIGARETTE LIQUIDS. Based on the results from our in vitro experiments, we next investigated the effects of 2 flavored e-liquids on the transcriptomic profile of iPSC-ECs (GEO accession number: GSE125217). We chose an e-liquid with high cytotoxicity, Marcado (MAR) (0.03% concentration), and one with low cytotoxicity, RY4 (RY) (0.3% concentration), both with and without nicotine. Optimal concentrations for each e-liquid flavor were set at 80% cell viability of iPSC-ECs after 24 h exposure in vitro. Using principal component (PC) analysis, we observed that PC1 reflected the differences between iPSC-ECs that were derived from 2 different individuals (Online Figure 4A), whereas PC2 identified distinct clusters corresponding to MAR-treated samples from RY-treated samples, and PC3 further separated RY18-treated samples from either RY0-treated or control samples (Online Figure 4B). Collectively, these data demonstrate that both MAR0 and MAR18 treatment markedly affect the transcriptome of iPSC-ECs, whereas RY treatment has little influence at either nicotine concentration. Gene ontology (GO) analysis using a false positive discovery rate cutoff <0.05 identified a total of 104 differentially expressed genes (DEGs) (including 64 up-regulated DEGs and 40 down-regulated DEGs) in iPSC-ECs after exposure to either MAR0 or MAR18 compared with control subjects (Online Figure 5A, Online Table 4). GO enrichment analysis found that

FIGURE 6 Effects of Sera From Active E-Cigarette Users and Cigarette Smokers on ROS Generation and Tube Formation of iPSC-ECs In Vitro



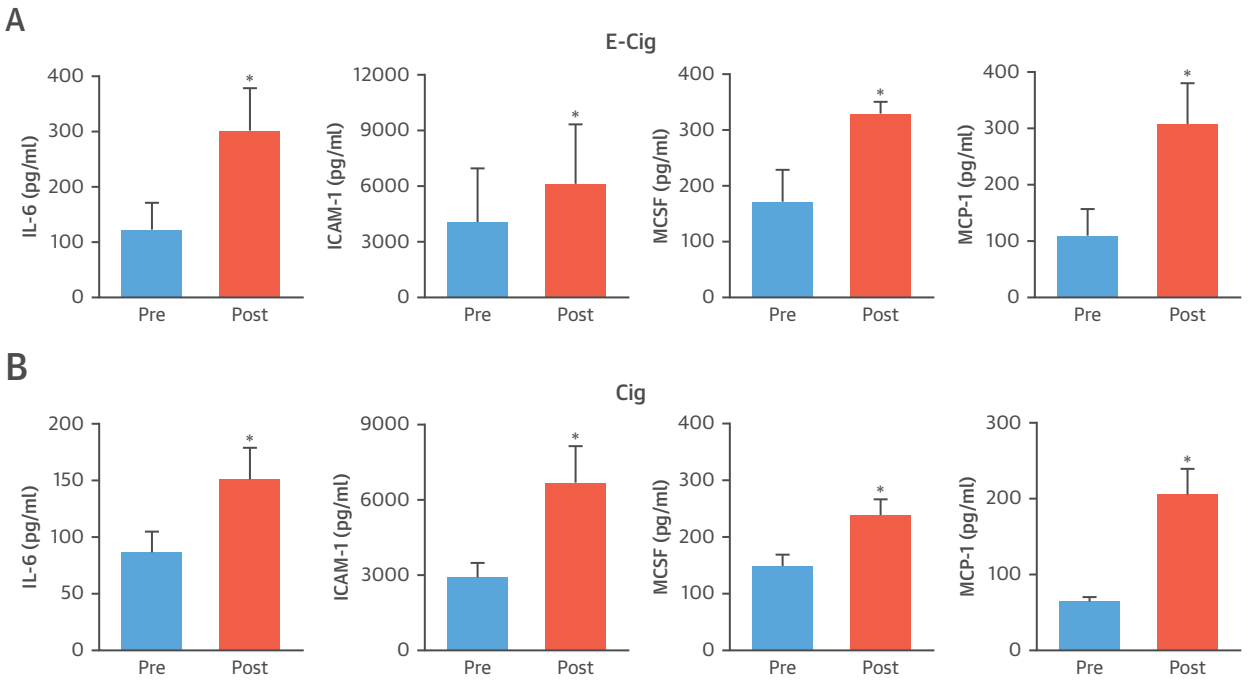
iPSC-ECs were incubated with 10% serum from nonsmokers (n = 5), e-cigarette users (n = 4), and cigarette smokers (n = 5) for 48 h. **(A)** Intracellular ROS production in iPSC-ECs treated with sera collected from nonsmokers, e-cigarette users, or cigarette smokers at baseline. **(B)** Serial changes of ROS production in iPSC-ECs treated with serum collected from smokers before (−1 h; shown in detail in **A**) and after (0, 1, and 3 h) smoking. **(C)** iPSC-ECs (1×10^4) treated with serum samples from nonsmokers or smokers were seeded onto 15-well μ-slide Angiogenesis (ibidi, Germany) containing Matrigel Basement Membrane Matrix for 16 h, and the formation of capillary-like structures were then imaged by phase-contrast microscopy (× 20) and quantified. Data are represented as mean ± SD. The assay was repeated 3 times. *p < 0.05 and **p < 0.001 compared with nonsmokers or baseline; #p < 0.05 compared with pre-smoking within each group. EC = endothelial cell; other abbreviations as in Figures 1 and 2.

the most preserved expression profiles between MAR-treated and control samples were related to the oxidation-reduction process, extracellular matrix organization, and response to toxic substances (Online Figures 5B and 5C). A chord diagram for the top 5 over-represented pathways (p < 0.05) included differential expression of genes involved in response to toxic substances, membrane bounded vesicles, growth factor binding, pentose biosynthetic process, and oxidation reduction process (Online Figure 5D). Interestingly, when we compared differential gene expression in iPSC-ECs exposed to MAR0 or MAR18, no significant enriched annotation cluster was detected (data not shown).

DISCUSSION

Understanding the health effects of e-liquids, especially flavorings, is important for establishing the short- and long-term safety of e-cigarettes. In this study, we compared the biological effects of flavored e-liquids (both with and without nicotine) on

FIGURE 7 Serum Cytokine Levels in Active E-Cigarette Users and Cigarette Smokers Obtained Before and After Smoking

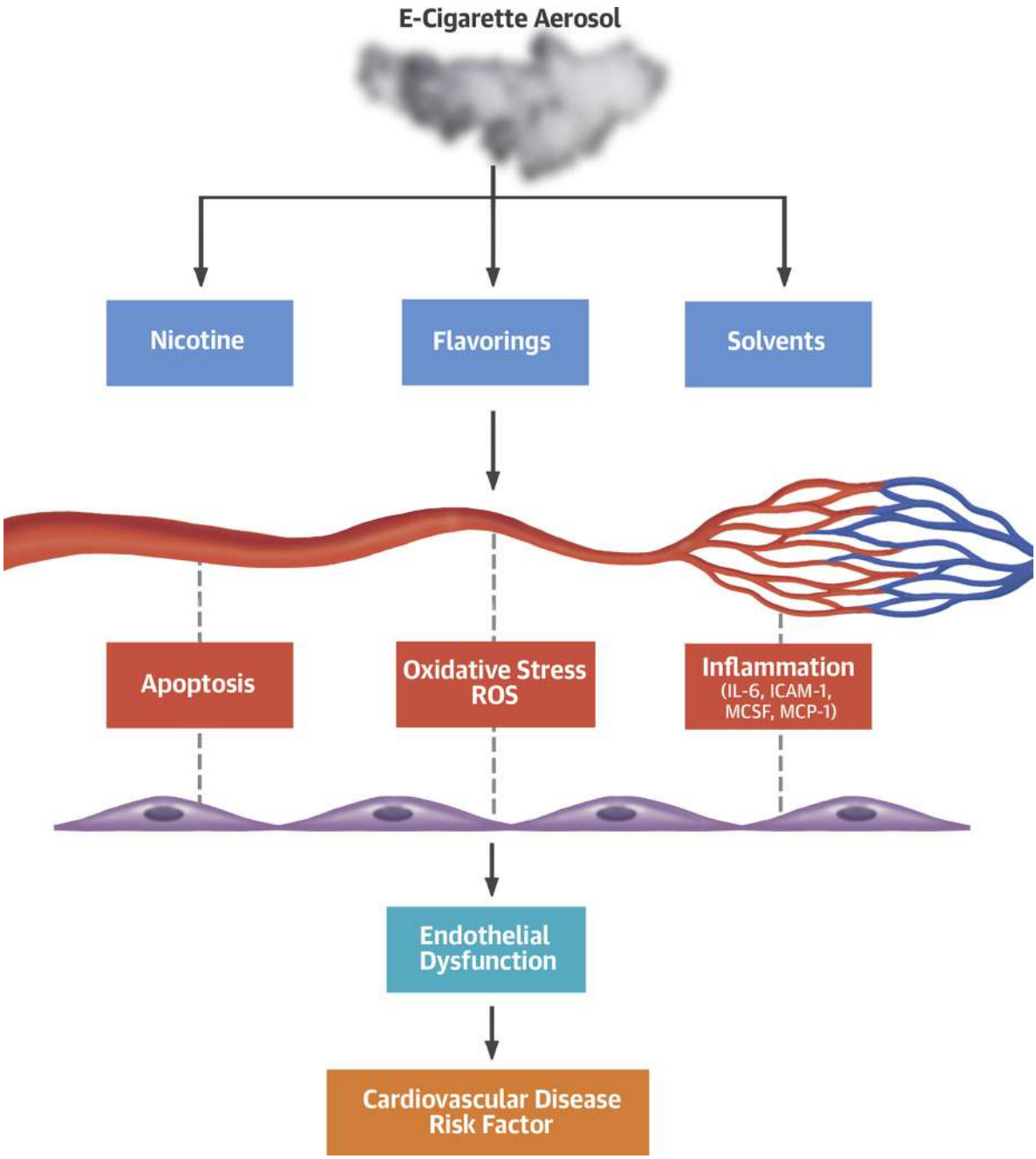


Concentration of IL-6, ICAM-1, MCSF, and MCP-1 in serum from 4 e-cigarette users **(A)** or 5 cigarette smokers **(B)** were compared before (Pre) and 3 h after smoking (Post). Data are represented as mean ± SEM. *p < 0.05 compared with pre-smoking. ICAM = intracellular adhesion molecule; IL = interleukin; MCP = monocyte chemoattractant protein; MCSF = macrophage colony-stimulating factor.

iPSC-ECs and found that some flavorings had toxic effects on endothelial cell viability and function (**Central Illustration**). The cinnamon-flavored product (Marcado) was the most toxic sample tested, producing strong cytotoxicity in iPSC-ECs that led to decreased cell survival, impaired angiogenic responses, and increased ROS levels and caspase 3/7 activity. Our findings are concordant with the results of recent studies showing that cinnamon-flavored e-liquids and aerosols are highly volatile, cytotoxic, and genotoxic to human embryonic cells and adult lung cells (8,18). Notably, our results showed that the effects of e-liquid flavorings on endothelial phenotypes and function including cytotoxicity, ROS level, caspase 3/7 activity, pro-angiogenic properties, and migration, were stronger than those of nicotine concentration. Similar biological effects of e-liquid flavoring on iPSC-ECs were also observed in a gene set enrichment and GO enrichment analyses. We identified changes in the expression of genes involved in multiple biological functions, including response to toxic substances, membrane-bounded vesicle, growth factor binding, pentose biosynthetic process, and oxidation reduction process 24 h post-exposure to e-liquid flavor, Marcado, with or without nicotine. Some of these enriched functional categories from our study were also highlighted in previously reported studies performed on a primary 3-dimensional airway cell system and mouse lungs exposed to e-cigarette aerosol or cigarette smoking, respectively (19,20).

Nicotine, 1 of the major active constituents in most smoking products, is primarily metabolized by the liver into cotinine (21). Although it has been reported that nicotine absorption rate and plasma nicotine levels are lower from e-cigarette use compared with conventional cigarette smoking, it could still reach a delayed but comparable level compared to a tobacco cigarette (21). As intensive puffing (i.e., more puffs and greater puff volume) may influence nicotine delivery, we applied a similar study design for e-cigarette users and smokers (one 2-s puff every 30 s for 10 min). We found that the effect of e-cigarette use on mean plasma nicotine levels was similar to tobacco cigarette smoking. Peak plasma nicotine concentration for both conventional cigarette and e-cigarette users was observed immediately after smoking,

CENTRAL ILLUSTRATION **Human-Induced Pluripotent Stem Cell-Derived Endothelial Cells for Evaluating E-Cigarette Risk**



Lee, W.H. et al. J Am Coll Cardiol. 2019;73(21):2722–37.

Mechanistic overview by which e-cigarette use might cause acute endothelial dysfunction. Exposure of endothelial cells to e-cigarette flavorings or serum of e-cigarette users leads to endothelial dysfunction associated with increased apoptosis, reactive oxygen species, and inflammation. ICAM = intracellular adhesion molecule; IL = interleukin; MCP = monocyte chemoattractant protein; MCSF = macrophage colony-stimulating factor; ROS = reactive oxygen species.

which is consistent with previous reports (21,22), indicating that e-cigarettes provide nicotine via rapid pulmonary absorption.

Although studies with conventional cigarettes have shown that acute and long-term exposure to smoking increases the risk of CVD via enhanced oxidative stress (9,23), inflammation (9), endothelial dysfunction (9,10), and elevated blood pressure (24), studies on the effects of e-cigarette nicotine and liquid flavors have been somewhat limited. In the present study, we observed that pro-inflammatory markers such as IL-6, ICAM-1, macrophage colony-stimulating factor, and monocyte chemoattractant protein-1 were elevated in the serum of users of e-cigarettes and conventional cigarettes 3 h after use compared with serum collected prior to smoke, highlighting the danger of even short-term exposure to e-cigarette aerosol in vivo. These inflammatory markers are known to play a critical role in the pathogenesis of vascular disease.

We also demonstrated that e-cigarette and cigarette users' serum expressed elevated basal ROS when compared with nonsmokers, which may be linked to activated inflammatory mediators. The already elevated basal ROS levels in e-cigarette users' serum increased rapidly after smoking. Accumulating evidence suggests that ROS plays an important role in physiological and pathological angiogenesis (9,25). In this study, we found that conditioned media from iPSC-ECs with exposure to e-liquid treatment promoted polarization of both M1 and M2 macrophages, with a higher tendency of M1 polarization. These M1 polarized macrophages may be, in part, responsible for strong pro-inflammatory profiles, which are linked to increased ROS generation. This is consistent with previous studies demonstrating that macrophages produce high levels of ROS, which also acts in a feedback-loop regulating macrophage phenotype (25,26). However, the exact role of ROS in macrophages activation still requires further investigation. Importantly, our data further validated that the presence of ROS in e-cigarette users' serum after vaping flavored e-liquids was associated with endothelial cell dysfunction, as shown by altered tube formation in iPSC-ECs. Consistent with this finding, Carnevale et al. (23) observed negative effects on markers of oxidative stress (i.e., soluble NOX2-derived peptide and 8-iso-prostaglandin F2α) and flow-mediated dilation after a single use of e-cigarette, raising concerns regarding vascular safety of e-cigarettes. The results from these studies lend further support to the harmful effects of e-cigarette use and cigarette smoking in increasing oxidative stress and endothelial dysfunction.

Finally, we performed a characterization of leukocyte responses in smokers, as it has been reported that acute and chronic cigarette smoking is followed by a transient elevation of WBC count, considered to be a well-established cardiovascular risk factor in epidemiological studies (27). In our study, there were no statistically significant differences in either total or subpopulation leukocyte counts between nonsmokers and smokers of either e-cigarettes or conventional cigarettes, which is consistent with a previous study (28). However, we did find a significantly lower PLT count in smokers compared with nonsmokers, which could be due to the decreased thrombopoietic activity induced by nicotine commonly seen in chronic smokers (29). Regardless of the underlying mechanisms, these changes are important indications of how e-cigarette use could compromise host immunity.

STUDY LIMITATIONS. Despite its many strengths, our study has several limitations. First, as we were interested in assessing the direct effects of these liquids on vascular health, the results from our in vitro evaluation of e-liquid flavoring using iPSC-ECs were restricted to e-liquids and not their aerosols, as no heating or combustion was involved. We did, however, add serum from e-cigarette users into culture media of iPSC-ECs to mimic cellular exposure to e-cigarette aerosol that occurs in vivo, including exposure to toxicants that have undergone metabolic activation or deactivation. The presence or absence of aerosols may explain the difference observed in nicotine effects: nicotine present in e-liquids seemed to only have a slight effect on ROS production and no effect on tube formation, whereas serum collected from both e-cigarette and cigarette smokers after smoking, which contains increased levels of nicotine, significantly increased ROS production and impaired tube formation. These effects may be due to the lack of combustion used in the in vitro settings, which could make e-cigarettes potentially more toxic compared with serum collected from both e-cigarette and cigarette smokers that involves combustion. Another factor that may contribute to the differential responses is the increased molecular complexity of serum collected from patients due to systemic effects of other cell types beyond endothelial cells that may be affected by e-cigarettes or cigarettes. Further studies exploring the chemical toxicants in the e-liquids, e-cigarette aerosol, and serum in relation to the endothelial cytotoxicity and function are needed to better understand the potential risk from toxic compounds generated by e-cigarette products. Second, a fixed puffing protocol used in our study at an

experimental setting may not reflect actual user puff practice. However, this fixed protocol was necessary to allow us to directly compare the results between different subjects across separate studies in a standardized manner. It should be noted that our results on 6 selected flavors may not be universally applicable to all e-cigarettes, given the wide variety of e-liquids in the market that can vary in composition by brand. Third, the relatively small volume and sample size of sera available precluded the possibility of performing additional assays, and additional sample collection may be needed to extrapolate the findings of our study to the general population of e-cigarette users.

CONCLUSIONS

Our data demonstrated that selected e-liquid flavorings have detrimental effects on endothelial cell viability and function, changes that are accompanied by increased ROS and caspase 3/7 activity. We also showed that the use of e-cigarettes alone is capable of increasing plasma nicotine concentrations comparable to levels achieved via conventional cigarettes, indicating that e-cigarettes provide effective and measurable nicotine delivery. In addition, our results show increased ROS generation and inflammatory cytokines present in serum was observed in concert with acute e-cigarette use-induced endothelial dysfunction, as indicated by impaired tube formation of iPSC-ECs. As e-cigarette use becomes more widespread, additional studies of their health effects become more urgent as this understanding could inform both public health policy and regulation. Nonetheless, our current findings are an important first step in filling this gap by providing mechanistic insights on how e-cigarettes cause endothelial injury and dysfunction, which are an important risk factors for the development of CVD.

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PERSPECTIVES

COMPETENCY IN MEDICAL KNOWLEDGE: Human iPSC-ECs exposed to the compounds in e-cigarette liquid or serum from e-cigarette users develop endothelial dysfunction associated with decreased viability, accumulation of ROS, and impaired proangiogenic properties.

TRANSLATIONAL OUTLOOK: Because endothelial dysfunction often precedes clinical manifestations of disease, clinical studies are needed to examine the long-term effects of e-cigarettes on cardiovascular outcomes.

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KEY WORDS e-cigarette aerosol, e-liquid flavoring, endothelial dysfunction, iPSC-ECs

APPENDIX For an expanded Methods section as well as supplemental figures and tables, please see the online version of this paper.

WHO report on the global tobacco epidemic 2019

who.int/tobacco/global_report/en/

26 July 2019 -- The report "Offering help to quit tobacco use" tracks the status of the tobacco epidemic and interventions to combat it.
The report finds that more countries have implemented tobacco control policies, ranging from graphic pack warnings and advertising bans to no smoking areas. About 5 billion people – 65% of the world's population – are covered by at least one comprehensive tobacco control measure, which has more than quadrupled since 2007 when only 1 billion people and 15% of the world's population were covered.

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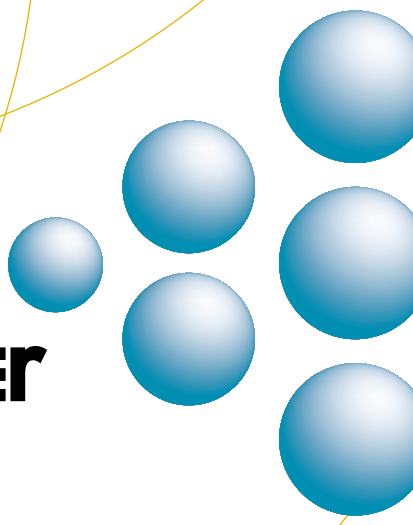
WHO REPORT ON THE GLOBAL TOBACCO EPIDEMIC, 2019

Offer help to quit tobacco use



fresh and alive

mpower

Chances of quitting tobacco can more than double with the right support.

Quitting tobacco has major and immediate health benefits.

We will not reach global targets to reduce tobacco use and related deaths if we do not help people to quit now.

mpower

Monitor	Monitor tobacco use and prevention policies
Protect	Protect people from tobacco smoke
Offer	Offer help to quit tobacco use
Warn	Warn about the dangers of tobacco
Enforce	Enforce bans on tobacco advertising, promotion and sponsorship
Raise	Raise taxes on tobacco

Helping people to quit has more impact when efforts are combined with other tobacco control strategies.

WHO report on the global tobacco epidemic, 2019: Offer help to quit tobacco use is the seventh in a series of WHO reports that tracks the status of the tobacco epidemic and interventions to combat it.

WHO Report on the Global Tobacco Epidemic, 2019
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WHO REPORT ON THE GLOBAL TOBACCO EPIDEMIC, 2019

Offer help to quit tobacco use

Made possible by funding from
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Appendices VI to XII are available online at http://www.who.int/tobacco/global_report/en

“Providing access to, and encouraging the use of, effective cessation interventions greatly increases the likelihood of successfully quitting tobacco.”

Dr Tedros Adhanom Ghebreyesus, WHO Director-General

THE NUMBER OF PEOPLE PROTECTED BY AT LEAST ONE MPOWER MEASURE HAS MORE THAN QUADRUPLED SINCE 2007

Tobacco control is a perfect example of what can be achieved in global health through global commitments. Since the adoption of the WHO Framework Convention on Tobacco Control (WHO FCTC) in 2003, most countries have made great strides in implementing tobacco control measures. In 2008, WHO introduced the six MPOWER measures to help countries implement the WHO FCTC using effective interventions that are proven to reduce demand for tobacco.

Since the introduction of MPOWER, the number of countries that have adopted at least one measure at best-practice level has more than quadrupled. We can now report that 136 countries covering 5 billion people have implemented at least one of the key policy interventions to reduce tobacco demand. More than ever, people are aware of tobacco’s harms and consequences. Due in part to these successes, many tobacco users now want to quit; and we know how to help them.

This seventh *WHO report on the global tobacco epidemic* focuses on the “O” of MPOWER: “Offer help to quit tobacco use”. Today’s tobacco users will make up the majority of future tobacco-related deaths, which will disproportionately affect low- and middle-income countries. Providing access to, and encouraging the use of, effective cessation interventions greatly increases the likelihood of successfully quitting tobacco.

Article 14 of the WHO FCTC calls for tobacco cessation services to be put in place at country level. Recommended approaches include: brief advice at primary care level, national toll-free tobacco quit lines, cost-covered nicotine replacement therapies and the use of digital and mobile technologies to empower those who want to quit. These interventions work best in combination but can be introduced in a step-wise approach where resources are limited.

Help to quit tobacco can and should be incorporated into any universal health coverage strategy. Over the past decade there has been a dramatic increase in middle-income countries incorporating partially or fully cost-covered quit interventions into some or most of their primary care services – population coverage rose from 16% in 2007 to 78% in 2018. Among high-income countries, the rate has increased from 61% to 97%. Implementation of a full package of cessation services at best-practice levels however, remains remarkably uncommon in most countries. As of 2018 only 23 countries (including only six middle-income countries and one low-income country) offered comprehensive cessation support for tobacco users seeking help to quit.

Governments must recognize this unmet need and act on it immediately as part of a comprehensive tobacco control strategy. Population-level, cost-effective tobacco cessation interventions must be a priority for countries. At the same time, innovation is to be encouraged and mobile technologies should be fully harnessed to improve access to large and hard-to-reach populations.

The importance of tobacco control and cessation for global health are reflected in the Sustainable Development Goals, which call for strengthened implementation of the WHO FCTC. The MPOWER measures can assist governments by providing key tools to combat the global tobacco epidemic. Only if we help people quit tobacco now will we be able to reach our global targets to reduce the prevalence of tobacco use and avert years of debilitating illness and millions of preventable deaths.

Dr Tedros Adhanom Ghebreyesus
Director-General
World Health Organization

“Tobacco control is a perfect example of what can be achieved in global health through global commitments.”

“Together, by working to replicate proven strategies across the world, we can save millions more lives.”

Michael R. Bloomberg, WHO Global Ambassador for Noncommunicable Diseases
Founder of Bloomberg Philanthropies

FIVE BILLION PEOPLE NOW COVERED BY MPOWER POLICIES SHOWING COUNTRIES CAN WIN FIGHT AGAINST THE TOBACCO EPIDEMIC

Tobacco use poses an enormous threat to public health worldwide, killing more than eight million people every year. More countries are making tobacco control a priority and saving lives, but there is much more work to be done.

The World Health Organization and Bloomberg Philanthropies are committed to accelerating the reduction of tobacco use worldwide. The challenges are daunting, but together, we are proving that this is a winnable fight.

WHO tracks the implementation of the six MPOWER strategies to reduce tobacco use, and by showing their impact we help spur more countries to adopt them. The MPOWER measures, in line with the WHO Framework Convention on Tobacco Control, have helped countries make unprecedented progress. Since 2007, the share of the global population covered by at least one MPOWER policy has more than quadrupled. The result is that today, five billion people are protected from the harmful effects of tobacco use, and the number of countries with best-practice cessation policies has more than doubled from 10 to 23. In addition to advice from primary care providers and toll-free quit lines, digital technology is transforming how people access cessation services and get help quitting.

This report shines a spotlight on global efforts to help people quit tobacco, and it details some of our most important gains. India, for example, has greatly increased access to services through an innovative program that allows participants to enroll and receive tailored support to quit on their mobile phones. And Brazil is now the second country in the world that has passed all MPOWER policies at the highest level.

Noncommunicable diseases (NCDs) cause more than two thirds of deaths in developing countries, and tobacco use is a major risk factor for NCDs such as cancer and heart disease. Yet, programs to reduce NCDs remain chronically underfunded. Only 2% of development funding goes toward their prevention.

Bloomberg Philanthropies works in close partnership with Director-General Tedros Ghebreyesus and WHO to combat NCDs, and global support for effective policies is growing. But the fight against an aggressive and ever evolving industry is far from over. More national governments can focus greater attention on the scourge of tobacco. More can take strong, life-saving action. And together, by working to replicate proven strategies across the world, we can save millions more lives.

Michael R. Bloomberg
WHO Global Ambassador for Noncommunicable Diseases and Injuries
Founder, Bloomberg Philanthropies

“WHO tracks the implementation of the six MPOWER strategies to reduce tobacco use, and by showing their impact, we help spur more countries to adopt them.”

“The overarching objective of the treaty is to protect present and future generations from the devastating health, economic, social and environmental impact of tobacco.”

“It goes without saying that strong tobacco cessation support is needed to achieve the SDG targets on tobacco control.”

Dr Vera Luiza da Costa e Silva, Head of the WHO FCTC Secretariat

TOBACCO CONTROL IS A KEY PART OF THE SUSTAINABLE DEVELOPMENT GOALS, MAKING SWIFT AND FULL IMPLEMENTATION OF THE WHO FCTC MORE URGENT THAN EVER

The Convention Secretariat of the WHO Framework Convention on Tobacco Control (WHO FCTC) and the Protocol to Eliminate Illicit Trade in Tobacco Products welcomes the publication of the seventh *WHO report on the global tobacco epidemic*.

The 181 Parties to the WHO FCTC have committed themselves to saving lives through tobacco control. Based on strong evidence, the WHO FCTC sets minimum standards to guide Parties in adopting strong tobacco control policies and legislation to tackle the tobacco epidemic, which causes 8 million deaths a year worldwide. The overarching objective of the treaty is to protect present and future generations from the devastating health, economic, social and environmental impact of tobacco.

In the past year we have seen two major achievements in tobacco control. The first was the entering into force of the Protocol to Eliminate Illicit Trade in Tobacco Products on 25 September 2018. Fifty-five Parties to the WHO FCTC had already adhered to the Protocol by June 2019 – a sign of their deepening commitment to tackle the issue.

The second major achievement was the adoption by the Conference of the Parties (COP, the governing body of the WHO FCTC) of the Global Strategy to Accelerate Tobacco Control: Advancing Sustainable Development through the Implementation of the WHO FCTC 2019–2025 in October 2018. This strategy guides implementation of the WHO FCTC for the next 7 years, including the work of the Parties, the Convention Secretariat and other stakeholders, and serves as the basis for work planning and budgeting for the next three biennia.

Since entering into force in 2005, the WHO FCTC has benefitted from the mandatory biannual *Global progress report on implementation of the WHO Framework Convention on Tobacco Control*, which reports on all provisions of the WHO FCTC. This report is submitted to every COP session and is published by the Convention Secretariat on its website. The last report, published in 2018, sets out Parties’ growing commitment to implementing the WHO FCTC.

Published every 2 years since 2008, the *WHO report on the global tobacco epidemic* provides comparable data to enable analysis of progress towards protecting the world’s people from what is now globally the biggest single preventable cause of death. As this latest edition shows, there is much to applaud. Already 5 billion people are now covered by at least one core demand reduction measure of the WHO FCTC at the highest level of achievement. And 136 countries now protect their populations by having one or more of these policies adopted at best-practice level (as defined in the report). However, while some Parties are making steady progress, many are lagging, and more needs to be done.

It is no secret that the tobacco industry is our greatest obstacle to ending the tobacco epidemic. This industry makes vast profits from selling tobacco and making people dependent upon it – and they do not want anything to change. But for the sake of public health, and in the interests of our children and future generations, things must change. We are deeply concerned by the fact that the tobacco epidemic is shifting to the developing world, where less-well resourced countries find themselves unable to counter tobacco industry exploitation of new markets – often through blatant interference with public health policy-making. Implementing Article 5.3 of the WHO FCTC, which requires Parties to protect public health policy from the tobacco industry, is a critical step to preventing tobacco industry interference in public health policy-making.

This report focuses on tobacco cessation and outlines progress to date on the implementation of Article 14 of the WHO FCTC. Reducing demand for tobacco through cessation support is one of the WHO FCTC’s core demand reduction strategies. Article 14 of the WHO FCTC and its Guidelines call upon Parties to implement a series of measures to assist tobacco users to quit. When countries implement such measures they could ensure, at the same time, that these interventions become integral parts of universal health coverage.

What this report further highlights is that cessation policies are still among the least implemented of all WHO FCTC demand reduction measures, with only 23 countries in total providing best-practice cessation services, the majority of which are high-income countries. Clearly there is room for greater action and the reason speaks for itself: if tobacco cessation measures had been adopted at the highest level of achievement in 14 countries between 2007 and 2014, 1.5 million lives could have been saved.

Successful case-studies for implementation of this Article have also recently been documented by the Convention Secretariat in relation to comorbidities where tobacco use impacts on the diseases burden (e.g. tuberculosis and HIV/AIDS interventions as well as noncommunicable diseases).

Today we have over a decade of experience and expertise in tackling tobacco use. Our role in promoting sustainable development is now recognized within the Sustainable Development Goals (SDGs) 2030 agenda, as Target 3A calls for strengthening the implementation of the WHO FCTC in all countries. It goes without saying that strong tobacco cessation support is needed to achieve the SDG targets on tobacco control.

We welcome this new report for providing quality information and comparable data on progress in implementing selected demand reduction measures. Quitting tobacco has an immediate impact on health outcomes, and ensuring that strong cessation services are part of any tobacco control strategy will maximize the potential of these services to save lives.

Dr Vera Luiza da Costa e Silva
Head of the WHO FCTC Secretariat

Summary

Progress in global tobacco control has been strong since MPOWER was introduced in 2007 as a tool to help countries implement WHO FCTC demand reduction measures. Five billion people – about 65% of the world's population – are now covered by at least one MPOWER measure at the highest level of achievement. This number has more than quadrupled since 2007 when only 1 billion people – 15% of the world's population – were protected by at least one MPOWER measure (not including Monitoring or Mass media campaigns, which are assessed separately).

Since the last *WHO report on the global tobacco epidemic*, two years ago, progress has been steady, with 15 countries that previously had no best-practice measures taking action to reach best-practice level on one or more measures, and a further 21 countries that had at least one measure in place adding at least one more. This means a total of 36 countries introduced one or more MPOWER measures at the highest level of achievement between 2016 and 2018.

Tobacco cessation needs attention

Offering help to quit – the focus of this seventh *WHO report on the global tobacco epidemic* – is an essential component of any tobacco control strategy. Global targets for reducing tobacco use will not be reached unless current tobacco users quit, and indeed, many tobacco users report that they want to quit. With the help of cost-effective population-based interventions, as outlined in the "O" measure of MPOWER (Offer help to quit tobacco use), tobacco users greatly increase their chances of successfully quitting.

Unfortunately, only 13 new countries have started providing comprehensive cessation programmes since 2007. There are now 23 countries protected by this measure, up from 10 countries in 2007.

However, in terms of population coverage, progress is still promising. One third of the world's population – 2.4 billion people in 23 countries – have access to cessation services provided at best-practice level. This is 2 billion more people (26% of the world's population) protected by comprehensive cessation support programmes since 2007, meaning that cessation programmes are now the second most adopted MPOWER measure in terms of population coverage. This is thanks to two large countries, India and Brazil, adopting comprehensive cessation support at best-practice level.

Significant progress has been made in low- and middle-income countries

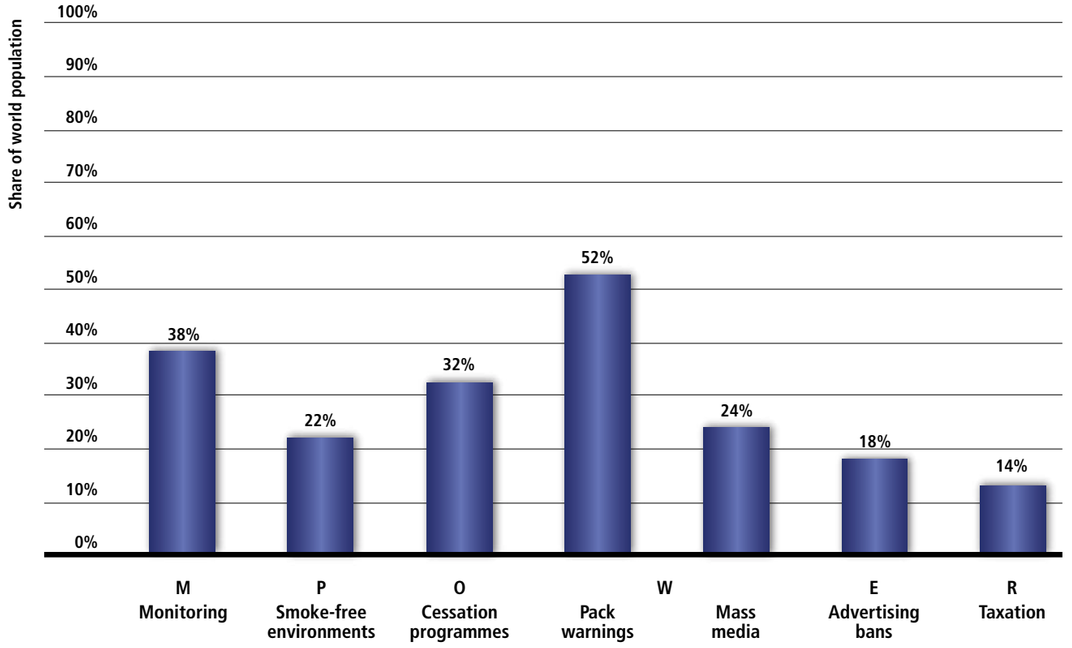
Of the 5 billion people protected by at least one complete MPOWER measure, 3.9 billion live in low- and middle-income countries. Brazil and Turkey, the only two countries that have adopted all MPOWER measures at the highest level, are both middle-income countries. In all, 61% of the population living in low- and middle-income countries are protected by at least one complete MPOWER measure, and 44% are protected by at least two complete MPOWER measures.

There has been great improvement in low-income countries since 2007, when only three of the 34 countries in this income group had a single measure adopted. Today, half (17) of all low-income countries have at least one MPOWER measure in place at best-practice level.

There are now eight low-income countries that have one best-practice measure in place, five that have two, three (Chad, Nepal, Senegal) that have three and one (Madagascar) that has four measures in place. Disappointingly, of the 17 low-income countries with no measures in place at best-practice level, only three run a tobacco control programme from their Ministry of Health with at least five full-time equivalent staff.

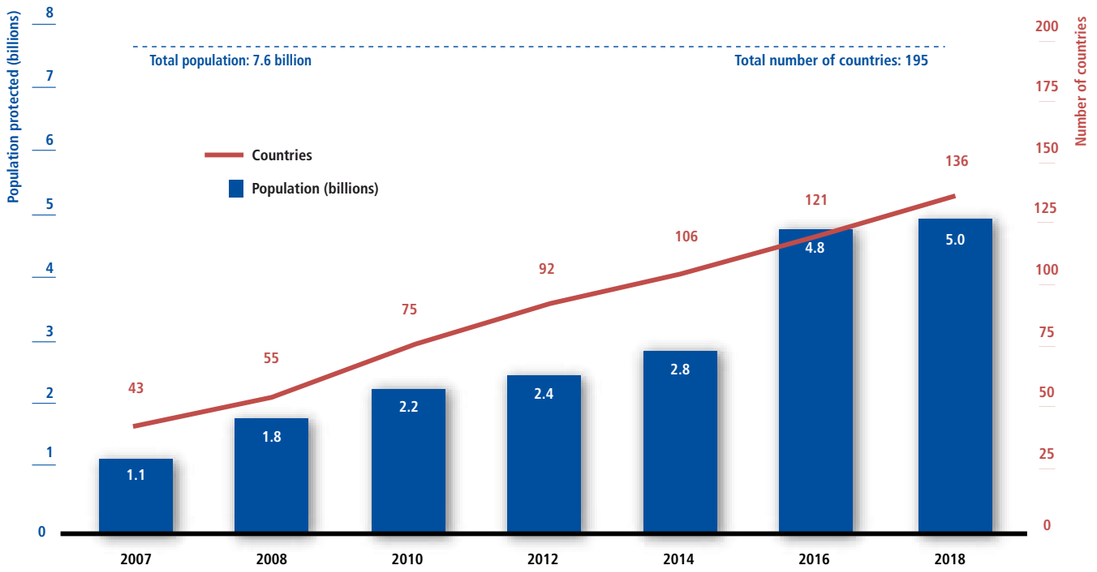
Five billion people – about 65% of the world's population – are now covered by at least one MPOWER measure at the highest level of achievement.

SHARE OF THE WORLD POPULATION COVERED BY SELECTED TOBACCO CONTROL POLICIES, 2018

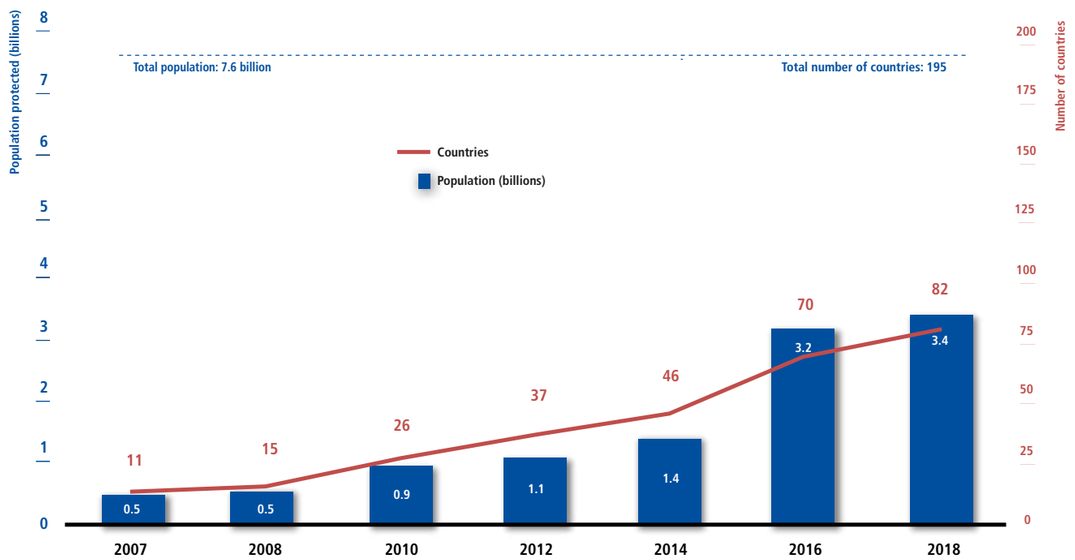


Note: The tobacco control policies depicted here correspond to the highest level of achievement at the national level; for the definitions of these highest categories refer to Technical Note I.

AT LEAST **ONE** MPOWER POLICY AT HIGHEST LEVEL OF ACHIEVEMENT (2007–2018)



AT LEAST **TWO** MPOWER POLICIES AT HIGHEST LEVEL OF ACHIEVEMENT (2007–2018)



Countries in all regions are adopting new measures

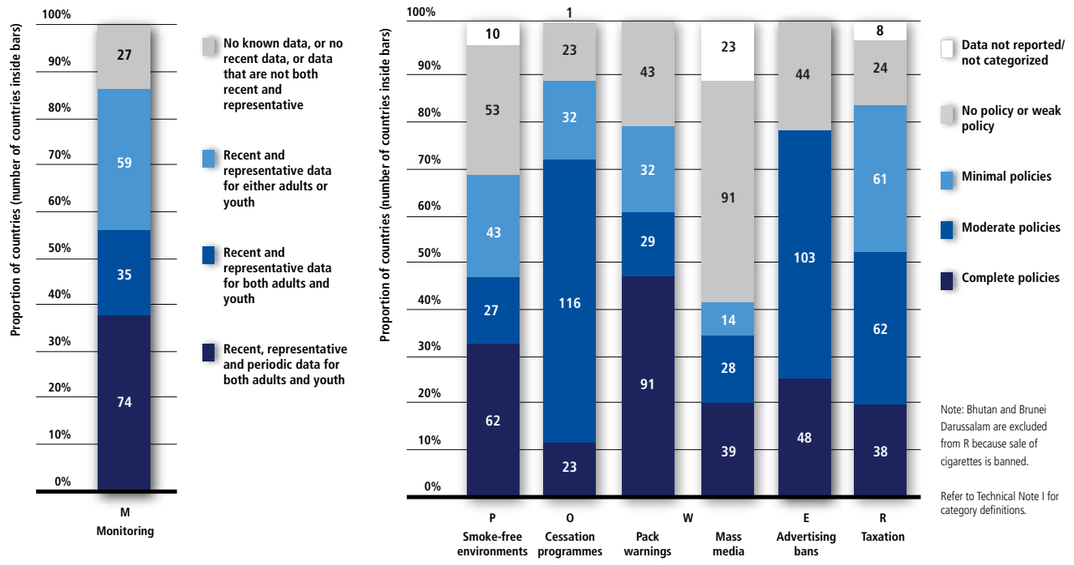
Each MPOWER measure has been adopted at best-practice level by new countries since the last report:

- Seven countries (Antigua and Barbuda, Benin, Burundi, Gambia, Guyana, Niue and Tajikistan) newly adopted complete smoke-free laws covering all indoor public places and workplaces.
- Four countries (Czechia, Saudi Arabia, Slovakia and Sweden) advanced to best-practice level with their tobacco use cessation services. However, during the same time period, six other countries dropped from the highest group, resulting in a net loss of two countries.
- Fourteen countries (Barbados, Cameroon, Croatia, Cyprus, Georgia, Guyana, Honduras, Luxembourg, Pakistan, Saint Lucia, Saudi Arabia, Slovenia, Spain and Timor-Leste) adopted large graphic pack warnings, including plain packaging for Saudi Arabia.
- Ten countries (Antigua and Barbuda, Azerbaijan, Benin, Congo, Democratic Republic of the Congo, Gambia, Guyana, Niue, Saudi Arabia and Slovenia) introduced comprehensive bans on tobacco advertising, promotion and sponsorship (TAPS), including at point-of-sale.
- Ten countries (Andorra, Australia, Brazil, Colombia, Egypt, Mauritius, Montenegro, New Zealand, North Macedonia and Thailand) moved to the top group for taxes so that they comprise at least 75% of retail prices.

Over half of the world's population – 3.9 billion people living in 91 countries – benefit from large graphic pack warnings featuring all recommended characteristics, making it the MPOWER measure with both the highest population coverage and the most countries covered. It is also important to note that by the end of 2018, 10 countries had adopted legislation mandating plain packaging of tobacco products and had issued regulations with implementation dates (Australia, France, Hungary, Ireland, New Zealand, Norway, Saudi Arabia, Thailand, United Kingdom and Uruguay). Plain packaging legislation is also in progress in at least nine other countries.

There are 1.6 billion people living in the 62 countries that have completely banned smoking in public places and workplaces, making this the second most realised MPOWER measure in terms of country adoption.

THE STATE OF SELECTED TOBACCO CONTROL POLICIES IN THE WORLD, 2018



Note: Bhutan and Brunei Darussalam are excluded from R because sale of cigarettes is banned.

Refer to Technical Note I for category definitions.

Incomplete or partial policies are a stepping stone to complete policies

Even where best-practice levels have not yet been achieved, each of the MPOWER measures has received some level of attention in the majority of the world's countries. In addition to the 62 countries with a complete law on smoke-free environments, 70 countries have minimal to moderate laws that ban smoking in some but not all public spaces and workplaces, laying the groundwork for establishing a fully effective law in the future. This means that although the partial bans do not currently effectively protect these populations from the harms of second-hand smoke, growing public support will mean that, for most countries, only amendments to the law will be needed in some of these countries, whereas the adoption of a new law will be necessary in others.

While only 23 countries have cessation support policies that meet the criteria for best-practice adoption, there are an additional 116 countries that provide fully or partially cost-covered services in health facilities, and 32 more that provide services but do not provide cost-coverage for them. This makes a total of 171 countries in which tobacco users wanting to quit can find some level of support.

In addition to the 91 countries that mandate strong graphic health warnings on cigarette packs, 61 other countries have minimal to moderate laws that require some kind of warning on packs. These less-prominent warnings, while not as effective as the best-practice warnings, show some effort is being made to communicate the dangers of tobacco use to consumers, and provide an avenue for these 61 countries to strengthen their mandated warnings to best-practice level in the future.

In addition to the 48 countries that have adopted a TAPS ban, another 103 countries have partial TAPS bans in place, so at least some forms of advertising, promotion and sponsorship are already illegal – and once the principle of a ban is established and accepted, it becomes easier to extend it to best-practice level.

While only 38 countries levy taxes as high as the WHO-recommended 75% of the retail price of a pack of cigarettes, another 62 countries levy taxes comprising between 50% and 75% of the price, and a further 61 levy taxes between 25% and 50%. Essentially, these countries are well-positioned to further raise taxes as tobacco taxation gains more widespread support.

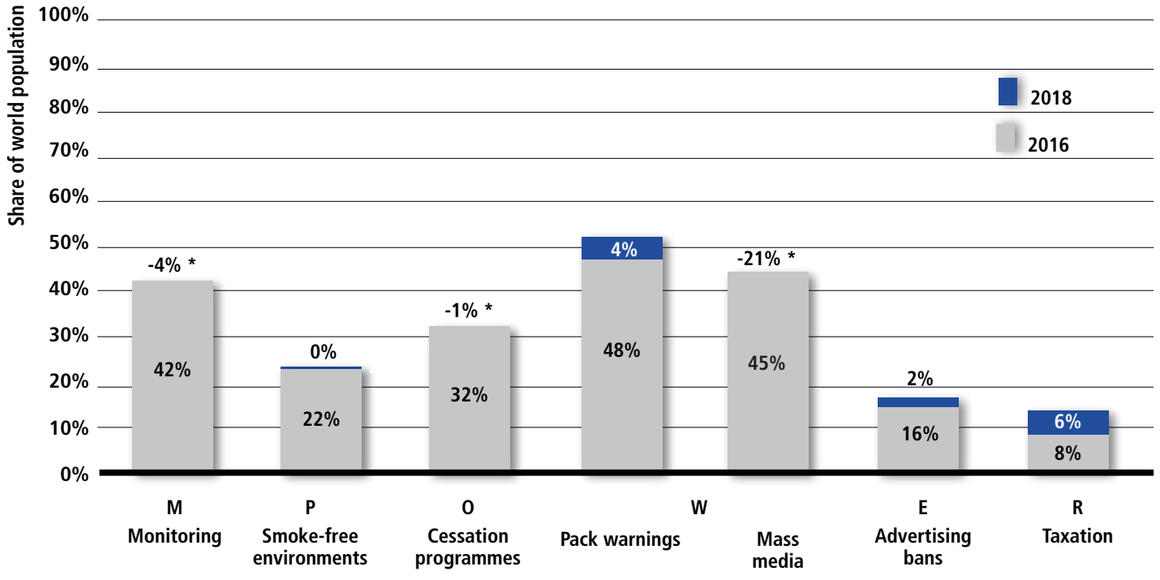
The population covered by protective measures is growing

Since 2016, 14 new countries have adopted large graphic warning laws at best-practice level, making it the most adopted MPOWER measure over the last 2 years. Advertising bans also saw double-digit growth at best-practice level, with 10 additional countries adopting complete TAPS bans. Two MPOWER measures – creating smoke-free environments and raising taxes – saw seven countries begin covering their population at best-practice level.

The greatest growth in population coverage since 2016 was seen in taxation. The population coverage from this MPOWER measure has almost doubled from 8% in 2016 to 14% in 2018. Even so, taxation, although the most effective way to reduce tobacco use, is still the MPOWER measure with the lowest population coverage. The population covered by pack warnings increased by 4%, and the population covered by advertising bans increased by 2%. Although seven countries advanced their smoke-free environment laws to best-practice levels, the population coverage did not change visibly because the countries were not populous.

The population covered by measures on Monitoring tobacco use and prevention policies, Cessation programmes and Mass media campaigns have all decreased since 2016. Coverage of cessation programmes declined by 1% owing to the net loss of two countries from the best-practice group. The decline in Monitoring coverage is most likely not a true decline, as it typically takes 1–3 years for surveys to

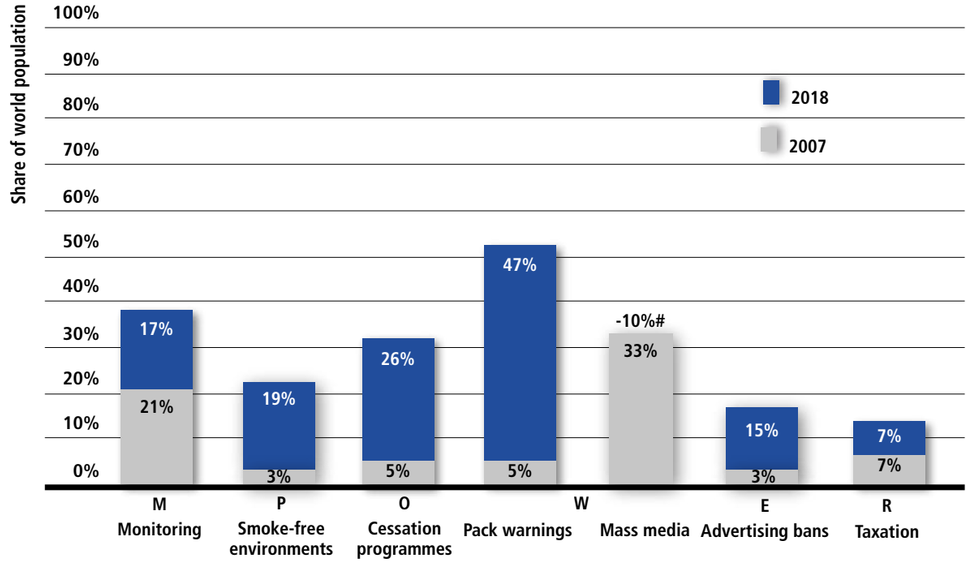
INCREASE IN THE SHARE OF THE WORLD POPULATION COVERED BY SELECTED TOBACCO CONTROL POLICIES, 2016 TO 2018



Note: The tobacco control policies depicted here correspond to the highest level of achievement at the national level; for the definitions of these highest categories, refer to Technical Note I.

* The share of the world's population covered by this measure decreased since 2016.

INCREASE IN THE SHARE OF THE WORLD POPULATION COVERED BY SELECTED TOBACCO CONTROL POLICIES, 2007* TO 2018



Note: The tobacco control policies depicted here correspond to the highest level of achievement at the national level.
* Mass media coverage refers to 2010, not 2007. Taxation coverage refers to 2008, not 2007.
#The population covered by mass media campaigns decreased since 2010.

be published after fieldwork is completed and only then will they be reported here. Some surveys that were conducted in 2017 and 2018 therefore will not be captured until the next *WHO report on the global tobacco epidemic* in 2021. The 21% decline in the population coverage of Mass media campaigns is concerning, since the maintenance of regular mass media campaigns is crucial to keeping the conversation open with the public about the harms of tobacco and the need for tobacco control efforts to continue.

It is inspiring that 91 countries have large graphic warning requirements, making it the most adopted measure to date. More countries have adopted the graphic warning requirement since MPOWER began than any other measure, with 82 additional countries now covered at best-practice level, up from just nine in 2007. It is followed by the adoption of smoke-free requirements in public and workplaces, which has 52 additional countries at best-practice level, up from just 10 in 2007, and advertising, promotion and sponsorship bans, adopted by an additional 41 countries, up from just 7 in 2007.

Some countries have yet to adopt a single MPOWER measure

All countries have the ability to implement strong tobacco control policies to protect their populations from tobacco use and second-hand smoke exposure, and the illness, disability and death that they cause. Although the adoption of comprehensive tobacco control policies has advanced steadily since 2007, there is much work to be done. There are 59 countries that have yet to adopt a single MPOWER measure at the highest level of achievement – and 49 of them are low- and middle-income countries. Additionally, the pace of progress for adopting some MPOWER measures has been slower than for others. For example, the adoption of complete TAPS bans and the raising of tobacco taxes to sufficiently high levels is much too slow in the majority of countries.

There are 59 countries that have yet to adopt a single MPOWER measure at the highest level of achievement.

The WHO Framework Convention on Tobacco Control and the Protocol to Eliminate Illicit Trade in Tobacco Products

In May 2003, WHO Member States made history by adopting the **WHO Framework Convention on Tobacco Control (WHO FCTC)** *(1)* – the first modern treaty specifically related to public health. Today 181 parties are signatories to the WHO FCTC, enabling it to cover more than 90% of the global population. It is one of the most widely adopted United Nations instruments.

In negotiating the WHO FCTC, countries took a brave and forward-looking stand against an industry that, as admitted in its own internal documents, manufactures addictive, deadly products in the pursuit of profit. For decades the industry has targeted the most vulnerable people – women, children, and those on low incomes – with sophisticated advertising campaigns to ensure they capture the full market. They have also manipulated their product design to maximize addictiveness.

The WHO FCTC has also established a forum for discussions to address new challenges as they emerge, for example the promotion in new markets of tobacco products from traditional cultures such as *narghiles* and smokeless tobacco, and hundreds of categories and brands of novel products such as electronic nicotine delivery systems and heated tobacco. These new challenges point to the need for further regulation.

By ratifying the WHO FCTC, countries have firmly articulated their commitment to curbing the tobacco epidemic. As strong as the WHO FCTC is, its Parties recognize that there are aspects of tobacco control that need highly tailored responses. One of these areas is the illicit (often cross-border) trade in tobacco products. This trade poses a serious threat to public health because it undermines strong measures such as pictorial health warnings and increases access to often cheaper tobacco products, thus fueling the tobacco epidemic and undermining tobacco control policies. It also causes substantial losses in government revenues, and at the same time contributes to the funding of international criminal activities. This matter is so serious that the Parties to the Convention negotiated a new international treaty that complements the WHO FCTC.

By ratifying the WHO FCTC, countries have firmly articulated their commitment to curbing the tobacco epidemic.

FCTC
WHO FRAMEWORK CONVENTION ON TOBACCO CONTROL

The Protocol to Eliminate Illicit Trade in Tobacco Products

The Protocol to Eliminate Illicit Trade in Tobacco Products *(2)* is the first protocol to the WHO FCTC. The Protocol was adopted by consensus of the Fifth Session of the Conference of the Parties in 2012 and currently has 55 Parties. As a legally binding instrument, the Protocol sets out binding legal obligations in much the same way as the WHO FCTC itself.

The Protocol aims at eliminating all forms of illicit trade in tobacco products. It provides tools for preventing illicit trade by securing the supply chain, including licensing and establishing an international tracking and tracing system for tobacco products and countering illicit trade through dissuasive law enforcement measures and a suite of actions to enable international cooperation. This new treaty in its own right entered into force in 2018. The first session of the Meeting of the Parties (MOP1) to the Protocol was held in Geneva, just after its entering into force *(3, 4)*.

Reflecting the WHO FCTC itself, the Protocol has 10 parts. It contains an introduction and general obligations (Parts I and II), substantive parts comprising supply chain control, offences and international cooperation (Parts III, IV and V), and reporting (Part VI). Parts VII, VIII, IX and X cover institutional arrangements, settlement of disputes, development of the Protocol and final provisions.

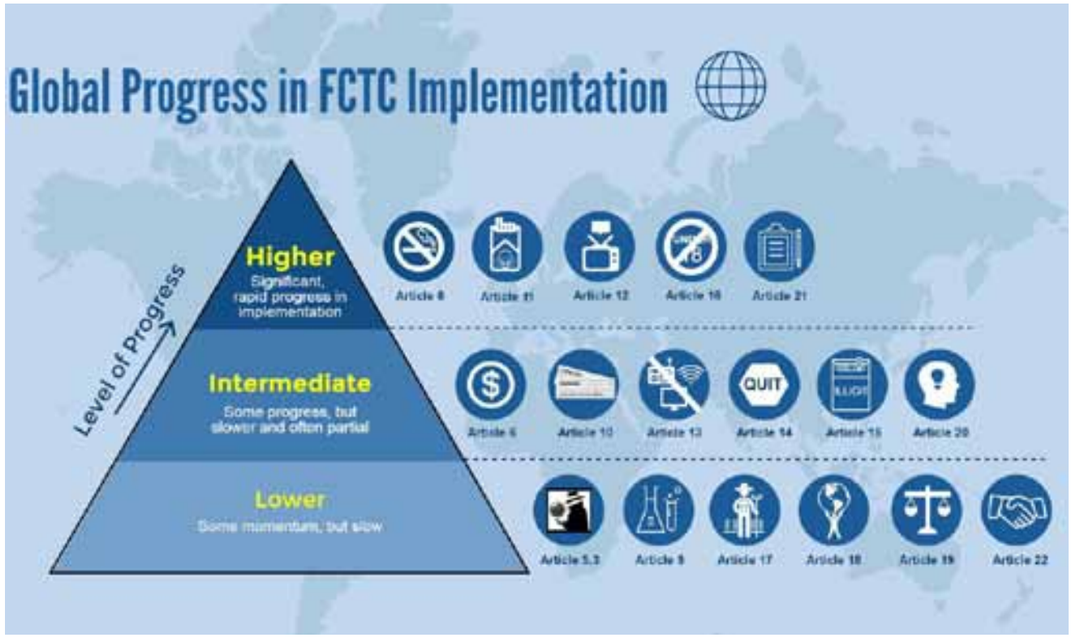
Examples of the topics addressed in the 47 provisions of the Protocol include licensing or an equivalent approval or control system (Article 6); tracking and tracing (Article 8); duty free sales (Article 12); unlawful conduct including criminal offences (Article 14); assistance and cooperation including mutual administrative (Article 28) and mutual legal assistance (Article 29).

Parts of the WHO Framework Convention on Tobacco Control

The WHO FCTC is unique among framework conventions in the depth and breadth of the substantive obligations it contains on both the demand and supply sides.

Demand reduction

- Article 6. Price and tax measures to reduce the demand for tobacco
- Article 7. Non-price measures to reduce the demand for tobacco
- Article 8. Protection from exposure to tobacco smoke
- Article 9. Regulation of the contents of tobacco products



Global Progress in the WHO Framework Convention on Tobacco Control (WHO FCTC) *(5)*

- Article 10. Regulation of tobacco product disclosures
- Article 11. Packaging and labelling of tobacco products
- Article 12. Education, communication, training and public awareness
- Article 13. Tobacco advertising, promotion and sponsorship
- Article 14. Demand reduction measures concerning tobacco dependence and cessation

Supply reduction

- Article 15. Illicit trade in tobacco products
- Article 16. Sales to and by minors
- Article 17. Provision of support for economically viable alternative activities

As part of its general obligations, the WHO FCTC obliges Parties to protect their policy-making and implementation from the influence of tobacco interests (Article 5.3). With this inclusion, the WHO FCTC addresses the full chain of tobacco product production, distribution and sale.

Parties have also adopted, by consensus, guidelines for implementation of key provisions of the WHO FCTC, which help them meet their legal obligations through recommended actions that elaborate on the provisions. They were developed through intergovernmental processes and adopted by the Parties at different sessions of the COP.

The First session of the Meeting of the Parties (MOP1) held in Geneva, Switzerland, in October 2018

Governance of the WHO Framework Convention on Tobacco Control and the Protocol to Eliminate Illicit Trade in Tobacco Products

The WHO FCTC's governing body is the Conference of the Parties (COP) and it comprises all 181 Parties. Similarly, the Meeting of the Parties (MOP) provides governance for the Protocol to Eliminate Illicit Trade in Tobacco Products and includes all Parties to the Protocol. Both bodies meet every 2 years, with the last sessions taking place in late 2018.

The work of the COP and MOP is governed by their respective Rules of Procedure *(3, 4)* and keeps under regular review the implementation of the WHO FCTC and the Protocol, and takes decisions necessary to promote their effective execution, including the establishment of subsidiary bodies such as working groups and expert groups *(6)*. Focused on their respective instruments, the COP and the MOP monitor implementation progress, identify challenges and opportunities, and review ongoing business. Housed at WHO headquarters, the Convention Secretariat supports the Parties to both treaties, working closely with WHO and the observers to ensure complementarity and synergy.

Article 14 – Demand reduction measures concerning tobacco dependence and cessation

The WHO FCTC directly speaks to the importance of reducing the number of current tobacco users through cessation measures in Article 14 – Demand reduction measures concerning tobacco dependence and cessation *(7)*. This Article states:

1. Each Party shall develop and disseminate appropriate, comprehensive and integrated guidelines based on scientific evidence and best practices, taking into account national circumstances and priorities, and shall take effective measures to promote cessation of tobacco use and adequate treatment for tobacco dependence.

2. Towards this end, each Party shall endeavour to:
   (a) design and implement effective programmes aimed at promoting the cessation of tobacco use, in such locations as educational institutions, health care facilities, workplaces and sporting environments;

   (b) include diagnosis and treatment of tobacco dependence and counselling services on cessation of tobacco use in national health and education programmes, plans and strategies, with the participation of health workers, community workers and social workers as appropriate;

   (c) establish in health care facilities and rehabilitation centres programmes for diagnosing, counselling, preventing and treating tobacco dependence; and

   (d) collaborate with other Parties to facilitate accessibility and affordability for treatment of tobacco dependence including pharmaceutical products pursuant to Article 22. Such products and their constituents may include medicines, products used to administer medicines and diagnostics when appropriate.

Although Article 14 is the only article dedicated to cessation, a number of provisions in the WHO FCTC refer indirectly to cessation – for instance, all demand reduction measures will implicitly impact cessation. Additionally, Article 12, Education, communication, training and public awareness, includes a number of references to raising awareness of the dangers of tobacco use across sectors and the health benefits of cessation. This includes a direct reference in paragraph (b), which commits each Party to adopt and implement effective legislative, executive, administrative or other measures to promote "public awareness about the health risks of tobacco consumption and exposure to tobacco smoke, and about the benefits of the cessation of tobacco use and tobacco-free lifestyles as specified in Article 14.2" *(8)*.

Article 14 of the WHO FCTC speaks directly to the importance of reducing the number of current tobacco users through cessation measures.

The 2018 *Global progress report on implementation of the WHO Framework Convention on Tobacco Control*: a report based on information from the WHO FCTC reporting system

Based on the implementation reports of the Parties submitted to the Conference of the Parties in accordance with Article 21 of the Convention, the Convention Secretariat regularly prepares biennial global progress reports. The 2018 *Global progress report* was launched at COP8 *(9)*.

Guidelines for implementation of Article 14 of the Convention

Adopted by COP4 in 2010 as decision FCTC/COP4(8), Guidelines for Implementation of Article 14 are intended to "assist Parties in meeting their obligations under Article 14 of the WHO FCTC, consistent with their obligations under other provisions of the Convention and with the intentions of the Conference of the Parties, on the basis of the best available scientific evidence and taking into account national circumstances and priorities".

To this end, the guidelines:

(i) encourage Parties to strengthen or create a sustainable infrastructure that motivates attempts to quit, ensures wide access to support for tobacco users who wish to quit, and provides sustainable resources to ensure that such support is available;

(ii) identify the key, effective measures needed to promote tobacco cessation and incorporate tobacco dependence treatment into national tobacco control programmes and health care systems; and

(iii) urge Parties to share experiences and collaborate in order to facilitate the development or strengthening of support for tobacco cessation and tobacco dependence treatment.

As the foundation for the guidelines, the Parties drafted a set of underlying considerations for implementing cessation programmes. The principles that Parties should follow when integrating cessation into their health systems include:

- Recognizing that tobacco use is highly addictive
- Tobacco dependence treatment measures should be implemented synergistically with other tobacco control measures
- Tobacco cessation and tobacco dependence treatment strategies should be based on the best available evidence of effectiveness
- Treatment should be accessible and affordable
- Tobacco cessation and tobacco dependence treatment should be inclusive
- Monitoring and evaluation are essential
- Active partnership with civil society
- Development and implementation of tobacco control cessation policies should be protected from all commercial and vested interests
- Sharing experiences among Parties greatly enhances Parties' abilities to implement the guidelines
- Strengthening existing health care systems to promote tobacco cessation and tobacco dependence treatment is essential.

As the foundation for the guidelines, the Parties drafted a set of underlying considerations for implementing cessation programmes.

Guidelines for implementation of Article 14

In addition to a set of defined terms, each substantive section of the Guidelines includes recommendations to assist Parties in their implementation of Article 14 of the Convention. The key recommendations are the following:

Developing an infrastructure to support tobacco cessation and treatment of tobacco dependence

Suggested actions include conducting a national situation analysis; creating or strengthening national coordination; developing and disseminating comprehensive guidelines; addressing tobacco use by health care workers and others involved in tobacco cessation; developing training capacity; using existing systems and resources to ensure the greatest possible access to services; making the recording of tobacco use in medical notes mandatory; encouraging collaborative working; and establishing a sustainable source of funding for cessation help.

Key components of a system to help tobacco users quit

It is recommended that cessation support and treatment is provided in all health care settings and by all health care providers. Providing cessation support and treatment in non-health care settings and by suitably trained non-health care providers should also be considered, especially where scientific evidence suggests that some groups of tobacco users may be better served in this way.

Actions for Parties include establishing population-level approaches; establishing more intensive individual approaches; making medications available; and considering emerging research evidence, novel approaches, and mass media.

Developing cessation support: a stepwise approach

Guidelines recommend that Parties should implement measures to promote tobacco cessation and increase demand for tobacco dependence treatment contained in other articles of the WHO FCTC. They should also use existing infrastructure, in both health care and other settings, to ensure that all tobacco users are identified and provided with at least brief advice.

Actions to achieve this include creating an infrastructure and environment that prompts quit attempts by establishing health system components that support cessation (including through adequate funding and training); addressing cessation among health care workers themselves; and integrating brief advice into existing health care systems.

Monitoring and evaluation

The Guidelines recommend that Parties monitor and evaluate all tobacco cessation and tobacco dependence treatment strategies and programmes, including process and outcome measures, to observe trends. Additionally, Parties should benefit from the experience of other countries through the exchange of information.

To ensure that robust monitoring and evaluation takes place, Parties should formulate measurable objectives, determine the resources required, and identify indicators to enable the assessment of progress towards each objective. Additionally, they should encourage health care workers and service providers to participate in the monitoring of service performance through clearly defined indicators, taking account of national circumstances and priorities. Lastly, Parties should use data collection systems that are practical and efficient, built on strong methodologies, and appropriate to local circumstances.

International cooperation

The Guidelines recommend that Parties collaborate internationally to ensure that they are able to implement the most effective tobacco cessation measures.

To this end, Parties should share their tobacco cessation and treatment experiences with other Parties, including strategies to develop and fund support for cessation of tobacco use, national treatment guidelines, training strategies, and data and reports from evaluations of tobacco dependence treatment systems. Where appropriate, it is suggested that Parties use international reporting mechanisms such as regular reporting on the implementation of the WHO FCTC and take advantage of bilateral and multilateral contacts and agreements. Finally, Parties should review and revise these guidelines periodically to ensure they continue to provide effective guidance and assistance.

FCTC 2030

Through a development assistance project called FCTC 2030 *(10)*, the Convention Secretariat is supporting 15 low- and middle-income countries to strengthen implementation of the WHO FCTC by integrating tobacco control with other health and development activities. Many of the FCTC 2030 countries are working to develop and implement tobacco cessation programmes in line with Article 14 of the WHO FCTC and the Convention Secretariat has been working with the governments of FCTC 2030 countries to promote the integration of tobacco cessation into primary health and care systems. Examples of outcomes of the project include the development of an online course on tobacco cessation in Colombia and the provision of Trainings of Trainers to health professionals in all seven provinces in Nepal.

Through FCTC 2030, the Convention Secretariat has also partnered with the United Nations Development Programme (UNDP) to develop an Issue Brief that aims to build awareness of the options to incorporate tobacco cessation activities into grants from The Global Fund to Fight AIDS, Tuberculosis and Malaria *(11)*. The document outlines how tobacco consumption worsens tuberculosis and HIV outcomes, and how the integration of tobacco control into these grants could increase health benefits and efficiencies.

Group activity as part of the El Salvador cessation programme of the 'Addiction Prevention and Treatment Centers'

Global commitment to the WHO FCTC

Each of the outcome documents of the three High-level Meetings held by the United Nations' General Assembly (UNGA) on noncommunicable diseases has endorsed and encouraged countries to implement the WHO FCTC. The same approach was taken by UN Member States when adopting the Sustainable Development Goals (SDG) agenda, streamlining through UNGA the implementation of the WHO FCTC through Target 3A: to "strengthen the implementation of the WHO FCTC in all countries, as appropriate". Additionally, the Eighth Conference of the Parties to the WHO FCTC adopted the *Global Strategy to Accelerate Tobacco Control: Advancing Sustainable Development through the Implementation of the WHO FCTC 2019–2025 (12)*.

Offering help to quit tobacco use

Cessation support can more than double the chance of successfully quitting

The success of tobacco control policies has increased demand for support to quit tobacco use. Tobacco cessation support should be made readily accessible in order to have a greater impact on reducing the prevalence of tobacco use.

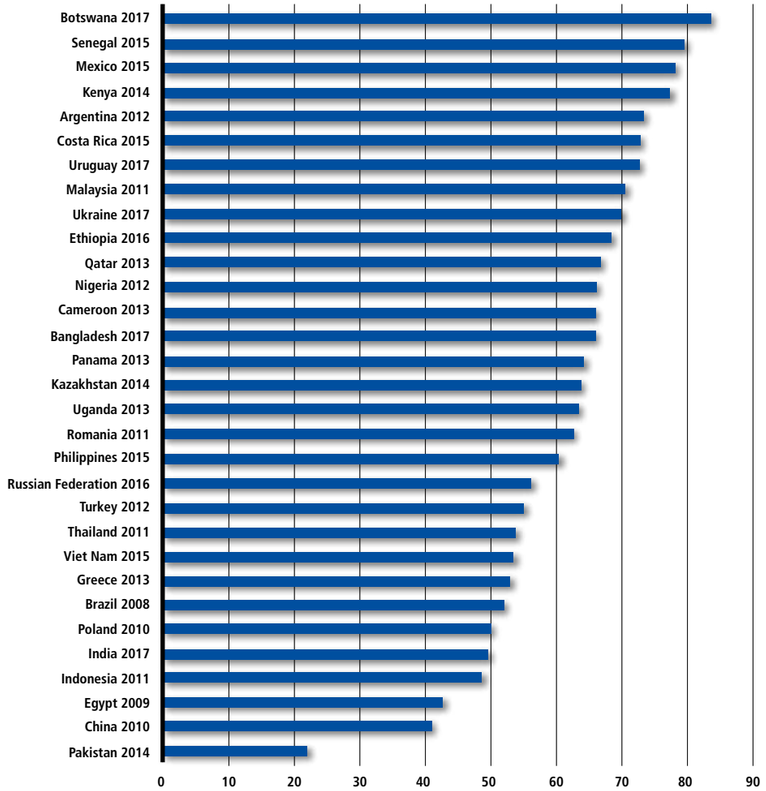
Many tobacco users want to quit and need help to quit

There are 1.1 billion adult smokers globally and at least 367 million smokeless tobacco users *(13)*, many of whom say they want – or intend – to quit *(14, 15)*. While this is encouraging, tobacco cessation support worldwide remains low and many people do not have adequate cessation support available to them. Currently, about 30% of the world's population have access to appropriate tobacco cessation services *(16)*.

Over the past decade, countries have made substantial progress in establishing evidence-based and cost-effective tobacco control measures. In numerous countries, many indoor public spaces are now smoke-free, warnings of the dangers of tobacco use appear on packaging and mass media messages, higher tobacco product prices and taxes have reduced the affordability of tobacco products, and tobacco product advertising, promotion and sponsorship have been prohibited.

All of these efforts have contributed to reduced demand for tobacco products and increased existing tobacco users' intention to quit. On average, across countries where the Global Adult Tobacco Survey has been conducted, over 60% of smokers indicated that they intend to quit, and over 40% had attempted to quit in the 12 months preceding the survey. Tobacco cessation support services complement countries' tobacco control measures and can contribute to reducing the prevalence of tobacco use.

PROPORTION OF CURRENT SMOKERS WHO INTEND TO QUIT (COUNTRIES WITH GLOBAL ADULT TOBACCO SURVEY DATA, VARIOUS YEARS)[a]



Source: Global Adult Tobacco Survey *(14)*

[a] Proportions include those who indicated they were thinking of quitting in the next month, within the next 12 months or sometime in the future.

Cessation support helps tobacco users to quit

Nicotine, a pharmacologically active drug that naturally occurs in the tobacco plant, is highly addictive and delivered rapidly to the brain following inhalation or ingestion of tobacco products, or the use of non-tobacco products that contain nicotine *(17)*. Nicotine is so addictive that the autonomy of a quarter of teens starts to diminish after smoking just three or four cigarettes, and after smoking five packs, nearly 60% are dependent *(18)*. Most people who use tobacco regularly do so because they are addicted to nicotine and can therefore benefit greatly from a range of effective tobacco cessation interventions. For example, the highest-level cessation policies, adopted in 14 countries from 2007 to 2014, will result in about 1.5 million fewer future tobacco-related deaths up to the year 2030 *(19)*.

The health benefits of quitting tobacco are immediate

People start to reap the health benefits within hours or even minutes of quitting tobacco use. In the course of just a day, quitting tobacco can be expected to help reduce a person's heart rate and blood pressure, and blood carbon monoxide levels can be expected to return to normal *(20)*. Within 3 months of quitting smoking, the circulation and lung function of a quitter improves. Coughing and shortness of breath will generally decrease within 1–9 months of quitting smoking *(20)*.

The risk of death due to tobacco use also begins to decrease soon after quitting. Current evidence suggests that the risk of death due to ischemic heart disease is halved within 5 years of quitting, and the risk of stroke returns to that of a never smoker within 5–15 years. Even the risk of death due to lung cancer is reduced by 30–50% within 10 years of quitting smoking *(20)*.

HOW QUITTING TOBACCO HELPS YOUR BODY *(20–25)*

Within 20 minutes
the heart rate and blood pressure drop *(22)*.

Within 12 hours
the carbon monoxide level in the blood drops to normal *(23)*.

2–12 weeks after quitting tobacco use
the circulation improves and lung function increases *(20)*.

6 weeks after quitting smokeless tobacco use
97% of oral leukoplastic lesions are completely resolved *(24)*.

1–9 months after quitting smoking
coughing and shortness of breath decrease *(20)*.

1 year after quitting smoking
the risk of coronary heart disease is about half that of a smoker *(20)*.

1–4 years after quitting smokeless tobacco use
the risk of death falls to nearly half that of a person who continues to use it *(25)*.

5–15 years after quitting smoking
the risk of death due to ischemic heart disease is halved
the risk of stroke is reduced to that of a non-smoker *(20)*.

10 years after quitting smoking
the risk of lung cancer falls to about half that a of a smoker, and the risk of cancer of the mouth, throat, oesophagus, bladder, cervix and pancreas decreases *(20)*.

15 years after quitting smoking
the risk of coronary heart disease is that of a person who never smoked *(20)*.

Strong cessation services save lives, improve health and save money

People who quit tobacco can live longer, healthier and more productive lives. Quitting smoking at any time in life is likely to extend life expectancy – for example, quitting as a 30-year-old can add up to 10 years of life expectancy. Even at the age of 50 years, quitting results in an average of 6 years of life expectancy gained *(21)*. In other words, it is never too late to gain the health benefits from quitting tobacco use. Life years gained can also be expected to be lived in better health, as the diseases caused by tobacco use are commonly chronic and debilitating, and lead to years of diminished quality of life. Quitting can therefore reduce the health care costs associated with long-term illness while also increasing the years of economically and socially productive lives.

Increasing the number of people who quit tobacco will also benefit economies. In 2012, health care expenditures due to smoking-attributable diseases totaled US$ 422 billion globally. If loss of productivity due to smoking-attributable illnesses and deaths are taken into account, this cost is estimated to be as high as US$ 1436 billion, with almost 40% of these costs incurred in low- and middle-income countries *(26)*. Therefore, reducing tobacco consumption through the implementation of comprehensive tobacco control measures – including offering help to quit – can ensure large savings for countries as well as for ex-tobacco users. In one Danish study, the estimated total lifetime health cost savings to society of a moderate smoker quitting at the age of 35 was €24 800 for men and €34 100 for women *(27)*.

Supporting tobacco users to quit is embedded in the global health agenda

Following the Political Declaration on noncommunicable diseases adopted by the UN General Assembly in 2011, WHO developed nine voluntary global targets to reduce global mortality from the four main noncommunicable diseases (NCDs) – cardiovascular diseases, cancer, chronic lung diseases and diabetes – and accelerate action against the leading risk factors for NCDs. The agreed target for tobacco control is a 30% relative reduction in the prevalence of current (daily and occasional) tobacco use in persons aged 15 years and above between 2010 and 2025, which was endorsed by the World Health Assembly in May 2013. To achieve this target, it is not only essential to prevent the uptake of tobacco, but also to ensure that more tobacco users quit. Today, a number of highly effective and inexpensive interventions exist to help make this happen.

The importance of helping current tobacco users quit is reflected in the WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020 *(28)*. The Global Action Plan lists a menu of "best-buys" and cost-effective policy options for countries to address the NCD burden. These include the recommendation that countries should "provide cost-covered, effective and population-wide cessation support (including brief advice, national toll-free quit line services and mCessation) to all those who want to quit" *(28)*. The Sustainable Development Goals (SDGs) reinforce the need for all countries to act decisively to reduce tobacco use by calling for – as a specific target under SDG 3 on good health and well-being – the strengthening of WHO Framework Convention on Tobacco Control (FCTC) implementation globally. Article 14 of the WHO FCTC clarifies both the need for, and the means to achieve, implementation of tobacco cessation policies and cost-covered services.

Despite these commitments, progress towards best-practice cessation support in countries is slow compared to progress on other MPOWER measures (such as smoke-free places, and bans on tobacco advertising, promotion and sponsorship).

Effective cessation interventions are available

There is a wide choice of behavioural and pharmacological tobacco cessation interventions

Without cessation assistance, 4% of attempts to quit tobacco succeed *(29)*. Proven cessation medications and professional support can double a tobacco user's chance of successfully quitting *(30)*. A number of different approaches have been developed to help people stop using tobacco. These range in terms of intensity, cost and effectiveness, and can broadly be categorized as behavioural or pharmacological interventions.

Behavioural interventions

While behavioural interventions for tobacco cessation are generally low cost, they can be very effective. Brief advice from health professionals as part of their routine consultations or interactions is an approach that makes use of existing health care systems. When a tobacco user visits a primary or specialized care service it presents an opportunity for the health care worker to offer and provide them with personalized counselling. Brief advice is a key means of motivating people who might not otherwise seek tobacco cessation support and encouraging them to quit, and as such is an essential component of tobacco cessation services. Countries can easily train physicians and health care workers to provide brief advice effectively to the population they serve.

Toll-free quit lines are a convenient way for tobacco users who are ready to quit to access brief and potentially intensive behavioural counselling. Those that use quit lines increase their absolute quit rate by 4 percentage points, which represents a doubling of success compared to those who attempt to quit without assistance *(30)*. This rate can be further increased if the quit line is "proactive" and counsellors make follow-up calls to potential tobacco quitters.

With the advent and spread of mobile phone technologies, people who want to quit can now be accessed not only through telephone calls but also via text messages. A major development in recent years has been the mobile phone-based interventions for cessation which have been shown to be very promising. Text message interventions can increase the absolute quit rate by 4% *(31)*.

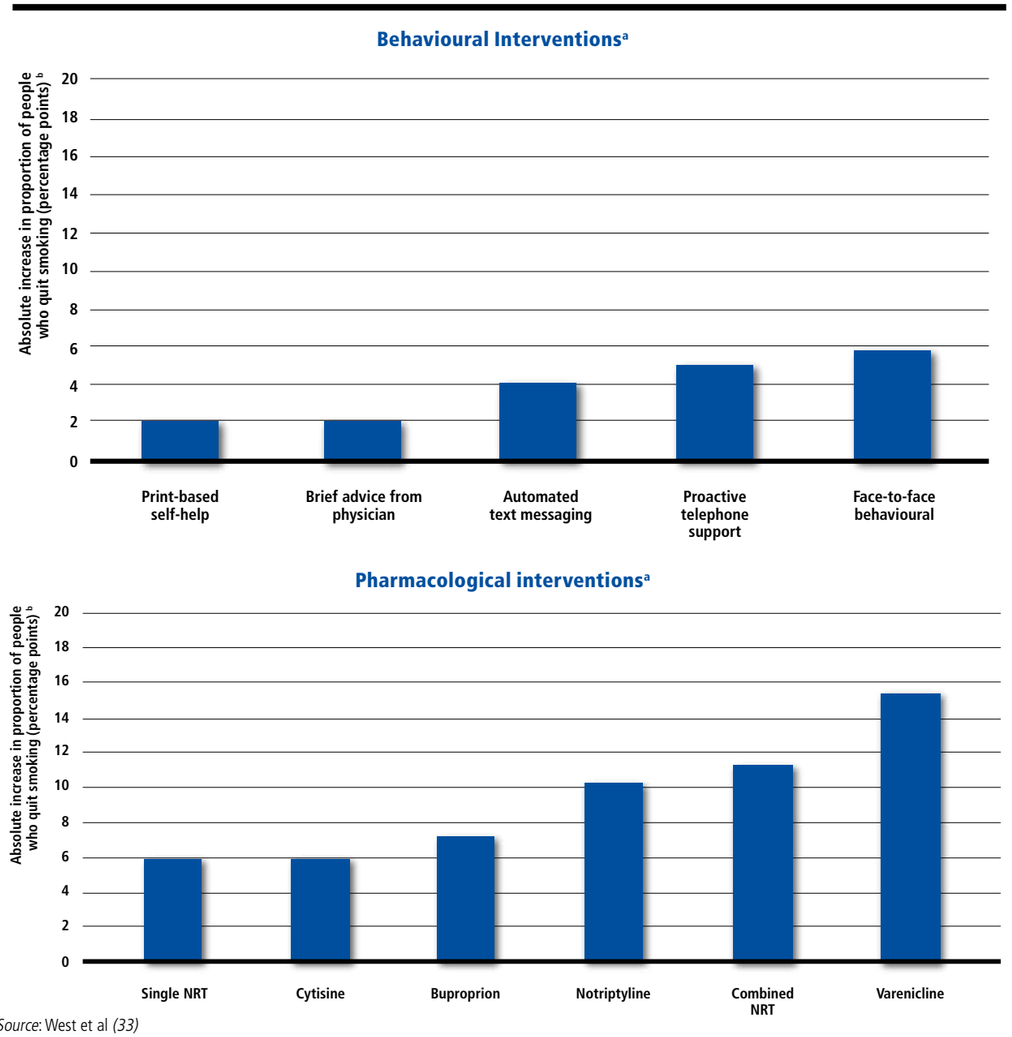
TYPES OF TOBACCO CESSATION INTERVENTIONS

BEHAVIOURAL INTERVENTIONS	**Population-level approaches**	**Brief advice**	Advice to stop using tobacco, usually taking only a few minutes, is given to all tobacco users during the course of a routine consultation and/or interaction with a physician or health care worker.
		Quit lines	A national toll-free quit line is a telephone counselling service that can provide both proactive and reactive counselling. A reactive quit line provides an immediate response to a call initiated by the tobacco user, but only responds to incoming calls. A proactive quit line involves setting up a schedule of follow-up calls to tobacco users to provide ongoing support.
		mTobacco cessation	Tobacco cessation interventions are delivered via mobile phone text messaging. Mobile technologies provide the opportunity to expand access to a wider population, and text messaging can provide personalized tobacco cessation support in an efficient and cost-effective manner.
	Individual specialist approaches	**Intensive behavioural support**	Behaviour support refers to multiple sessions of individual or group counselling aimed at helping people stop their tobacco use. It includes all cessation assistance that imparts knowledge about tobacco use and quitting, and provides support and resources to develop skills and strategies for changing behaviour.
		Cessation clinics	In many countries, clinics specializing in tobacco cessation services are available. These clinics offer intensive behavioural support, and where appropriate, medications or advice on the provision of medications, delivered by specially trained practitioners.
PHARMACOLOGICAL INTERVENTIONS	**Nicotine replacement therapies (NRTs)**		NRTs are available in several forms including gum, lozenges, patches, inhalers and nasal spray. These cessation tools reduce craving and withdrawal symptoms by providing a low, controlled dose of nicotine without the toxins found in cigarettes. The doses of NRT are gradually reduced over time to help the tobacco user wean off nicotine by getting used to less and less stimulation.
	Non-nicotine pharmacotherapies		These include medications such as bupropion, varenicline and cytisine. These pharmacotherapies reduce cravings and withdrawal symptoms and decrease the pleasurable effects of cigarettes and other tobacco products.

mCessation shows huge promise in India

In 2015, a collaboration between WHO and the International Telecommunication Union's "Be He@lthy, Be Mobile" initiative, the Indian Ministry of Health and Family Welfare, and the Ministry of Communication and Information Technology led to the development of a short text message-based "mCessation" programme called QuitNow that supports and encourages tobacco users to quit. To evaluate the initiative, a total of 12 502 QuitNow subscribers were interviewed by telephone between 4–6 months after registration. Of those participants who had ever used tobacco, 19.1% self-reported that they had abstained in the preceding 30 days. Further research is needed to provide a more conclusive understanding of the impact of mCessation in India, but preliminary results show it has great potential to reach people who need support to quit tobacco *(31)*.

INCREASED PROPORTION OF PEOPLE WHO ABSTAIN FROM SMOKING FOR 6 MONTHS OR MORE DUE TO A SPECIFIC INTERVENTION



Source: West et al *(33)*

[a] Each bar represents the findings of a meta-analysis and the strength of evidence associated with each study will vary.

[b] This represents the "projected percentage point increase in 6–12 month abstinence compared with no intervention". The authors adjusted the published percentage point increase in 6–12 month abstinence to allow for direct comparison between each intervention where the meta-analyses did not use a comparator equivalent to "no intervention". Assessments were based upon the published effectiveness of the comparison intervention through a consensus

Cessation interventions that work alongside other tobacco control measures, Brazil and USA

When implemented together, tobacco control measures can work synergistically to increase the impact of each intervention. For example, when the **United States** raised the federal cigarette tax by US$ 0.62 in early 2009, the number of calls to the quit line almost trebled – from 171 570 calls during January–May 2007 to 533 508 calls during the same period in 2009.

And when **Brazil** became the first large country to include its national quit line number in graphic health warnings on cigarette packaging, the quit line received unprecedented call volumes – reaching up to 6 million calls in the first year, and more than all other quit lines globally at that time *(35)*.

Pharmacological interventions

Pharmacotherapy cessation interventions include nicotine replacement therapies (NRTs), as well as medications that do not contain nicotine but act to alleviate tobacco withdrawal symptoms. Both forms of therapy are effective aids to help people to quit tobacco use. Efficacy of pharmacotherapies is generally high, and compared to people who do not use an intervention, absolute quit rate increases can range from 6% for a single type of NRT to almost 15% for varenicline. Combining more than one NRT (patches and a faster-acting form) can also increase the effectiveness of NRTs (see Combined NRT in graph).

Both behavioural cessation support and pharmacotherapies are effective in helping people to quit tobacco use. Combining both behavioural and pharmacotherapy interventions, however, is more effective and can double the chances of successfully quitting *(33)*.

Mechanisms for developing tobacco cessation support

Implementing tobacco cessation measures alongside other tobacco control policies maximizes their impact

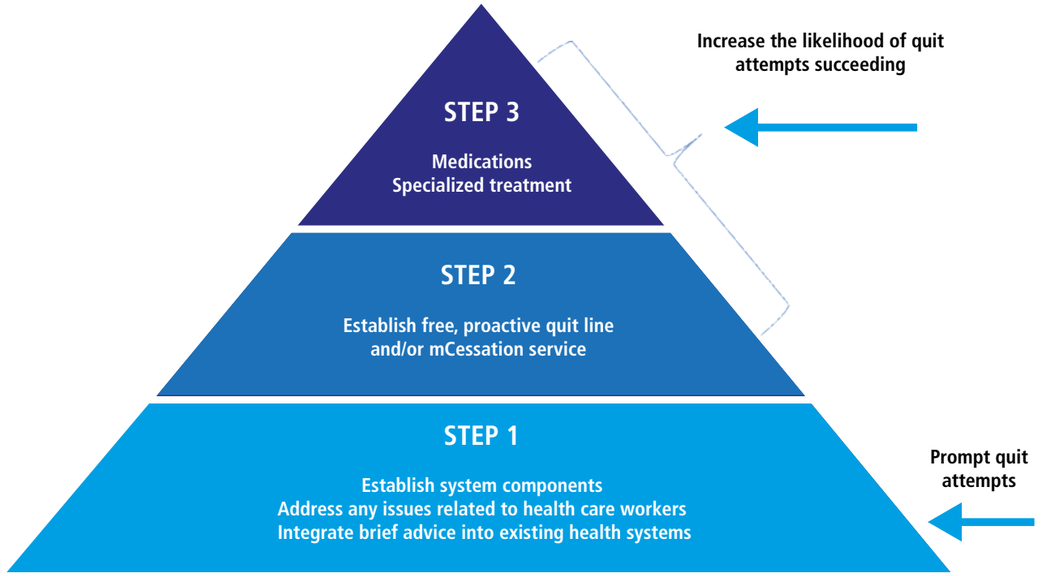
Tobacco cessation support has optimal effect when implemented in conjunction with other demand-reduction tobacco control policies, such as raising tobacco taxes, establishing smoke-free environments, banning tobacco advertising, promotion and sponsorship, printing large pictorial health warning labels on tobacco packages, and delivering anti-tobacco mass media campaigns. In turn, these tobacco control measures promote tobacco cessation by encouraging quitting and creating a supportive environment. A good example of synergising efforts is to include the local mCessation register portal/number, or quit line number, on cigarette and tobacco packs and on mass media anti-tobacco campaigns, which can significantly increase the demand for tobacco cessation services *(36)*.

Using existing infrastructure to develop cessation support is feasible and affordable

Integrating brief advice into existing primary health care systems is one of the first actions countries can take to develop tobacco cessation support. WHO FCTC Article 14 Guidelines recommend that countries adopt a stepwise approach to develop and strengthen national tobacco cessation systems as rapidly and cost-effectively as possible *(37)*. Much of the needed infrastructure for promoting tobacco cessation measures, such as a primary health care system, already exists in most countries, making such promotion not only feasible but also affordable. Every country, therefore, can use their existing systems and resources to ensure that tobacco users at least receive brief advice.

Every country can use its existing systems and resources to ensure that tobacco users at least receive brief advice, which can help motivate and support successful quit attempts.

STEPWISE APPROACH TO DEVELOPING AND STRENGTHENING NATIONAL TOBACCO CESSATION SYSTEMS



Incorporating brief advice into existing health care programmes has the potential to reach more than 80% of all tobacco users in a country each year if delivered routinely and widely across a health care system *(38)*. Tobacco cessation interventions should be integrated into any existing health programmes in primary care where feasible, as well as disease and population-specific programmes such as national tuberculosis (TB) programmes *(39)*, NCD programmes, oral health programmes *(40)*, HIV/AIDS programmes, mental health programmes, and programmes addressing the needs of women's, children's and adolescents' health. In particular, there has been a major drive globally to integrate cessation services into TB programmes and into sexual and reproductive health programmes. Both of these programmes reach populations at particular risk from the harms of tobacco and present an opportunity to address tobacco dependence when people make (potentially rare) contact with the health system.

Countries should also consider leveraging existing infrastructure to provide wide-reach intensive behavioural support for tobacco users. Many countries have existing call centres, substance abuse or other health-related hotlines that can be expanded to provide tobacco quit line services.

Provide comprehensive tobacco cessation support and treatment when resources allow

The cost and effectiveness of different cessation approaches vary, and therefore the affordability of the different approaches varies across low-, middle- and high-income countries. Overall, almost all population-level behavioural interventions are globally affordable, while intensive face-to-face therapy is affordable for middle- and high-income countries *(33)*. If resources allow, countries should provide tobacco users with the highest level of support to facilitate a successful quit attempt. Countries may follow a stepwise approach to develop their tobacco cessation support systems.

Combining behavioural and pharmacological interventions is the most effective way to quit, but uptake of interventions also relies on people's preferences, which is likely to vary across different social and cultural contexts. Tobacco users may prefer using multiple tobacco cessation interventions, including health education materials, advice from health professionals, counselling (individual, group, or telephone), pharmacological therapy and other cessation services via text messaging or online tools *(43, 44)*. Providing a diverse range of tobacco cessation support options, as often as possible, is also important to ensure maximal uptake and effectiveness.

Examples of cessation interventions linked to primary health care programmes

Tobacco and tuberculosis

Tobacco smoking increases the likelihood of acquiring, developing and dying from a TB infection. In 2013, the World Health Assembly passed a resolution to approve the End TB Strategy. The strategy is based upon three pillars, one of which calls for integrated, patient-centred care and prevention. This provides an opportune platform to align the efforts against two global epidemics simultaneously, tobacco and TB.

South-East Asia's Regional Response Plan for Integration of TB and Tobacco 2017–2021 *(41)* exists to help Member States implement cost-effective cessation services through TB programmes and screen tobacco users for TB. All 11 countries in the South-East Asia Region have a national TB programme integrated into primary health care delivery systems to which a cessation service component could be added. Pilot studies integrating brief advice for tobacco cessation in TB patients that have been implemented in Bangladesh, India and Indonesia have demonstrated this intervention can be effective. India has since developed a Joint TB-Tobacco Framework, and is implementing the same through its National TB and Tobacco Control Programmes.

Tobacco and reproductive health

Tobacco use during pregnancy increases the risk of a large number of pregnancy complications including preterm delivery and spontaneous abortion, and other long-term health risks for both the mother and the unborn child. Successful treatment of tobacco use and dependence can have a significant effect on pregnancy-related outcomes and ongoing health outcomes in general. Integration of tobacco cessation services into reproductive health programmes is strongly recommended in the WHO Recommendations for the Prevention and Management of Tobacco use and Second-hand Smoke Exposure in Pregnancy *(42)*. These guidelines state that health care providers should routinely offer advice to current tobacco users and recent tobacco quitters, as well as provide information to expectant mothers and, where possible, their partners or other household members about the harms of second-hand smoke.

EXAMPLES OF MINIMAL, EXPANDED AND ADVANCED CESSATION INTERVENTIONS[a]

MINIMAL	EXPANDED	ADVANCED
Brief advice integrated into primary care services	**Brief advice** integrated into primary care and hospital services	**Brief advice** integrated into primary care, hospital and specialized services
	Quit line: Toll-free quit line provided	**Quit line:** Toll-free quit line provided
	mCessation: Text messaging	**mCessation:** Text messaging
		Specialized tobacco dependence treatment services: behavioural counselling and/or medication

[a] All countries should implement, at a minimum, brief advice. Once well established, countries can apply expanded and advanced measures, subject to resources.

Tobacco cessation interventions: challenges and solutions

About 30% of the world's population have access to appropriate tobacco cessation services

Ensuring cessation interventions reach the people who need them is a significant challenge. Currently, about 30% of the world's population have access to appropriate tobacco cessation services *(16)*. A recent study using Global Adult Tobacco Survey (GATS) data from low- and middle-income countries shows that fewer than 50% of smokers who interacted with a health care provider in the prior 12 months were screened for tobacco use or advised to quit *(45)*. This represents a drastic missed opportunity to reach a large number of tobacco users. The impact of an intervention largely depends on both effectiveness and reach. So, finding practical ways to reach as many tobacco users as possible is key to achieving the impact that tobacco cessation support can potentially have on reducing the prevalence of tobacco use in a country.

Many countries do not cover the costs of tobacco cessation services for those using them

Asking tobacco users to pay for tobacco cessation services (such as quit lines and medications) has proven to be a major barrier to service uptake, even in high-income countries. Although most countries make NRT available without the need for medical assessment or prescription, the cost of purchase may limit access, especially for people on low incomes *(46)*. Not all cost-coverage or insurance mechanisms cover NRTs and even when they do, some barriers exist where cost-coverage is available. For example, it may be that prescriptions by certain health professionals, like dentists (who can be trained in brief advice), are not eligible for reimbursement. It is critical for countries to cover the costs of tobacco cessation support for their tobacco users. Research in New York City demonstrates that offering free NRT can increase quit rates and act as a cost-effective marketing strategy to motivate large numbers of smokers to call a telephone quit line for quitting assistance *(47, 48)*

The efficacy and cost-effectiveness of cessation programmes should be better recognized

Tobacco control policies are, in general, highly cost-effective. Policies such as raising tobacco taxes can have a large impact with relatively few associated costs. In comparison, tobacco cessation programmes carry costs such as the staff time needed to provide brief advice; funding for NRTs and medications; and the employment of quit line counsellors. However, tobacco cessation programmes are highly cost-effective relative to other health systems activities and clinical interventions. The cost-effectiveness of quit lines and brief advice programmes combined is comparable to that of breast cancer screening *(49)*.

CESSATION INTERVENTIONS ARE COST-EFFECTIVE

INTERVENTION	AVERAGE COST-EFFECTIVENESS IN LOW- AND LOWER-MIDDLE-INCOME COUNTRIES	AVERAGE COST-EFFECTIVENESS IN UPPER-MIDDLE- AND HIGH-INCOME COUNTRIES
Provision of cost-covered, effective and population-wide support (including brief advice, national toll-free quit line services) for tobacco cessation to all those who want to quit, provided at 95% coverage	Very high	High
Screening with mammography (once every 2 years for women aged 50–69 years) linked to timely diagnosis with pathology, staging, treatment with surgery +/- systemic therapy (endocrine therapy or chemotherapy) and management of treatment-related toxicities	Very high	High

Source: WHO NCD Global Action Plan *(28)*.

Tobacco cessation interventions should be responsive to vulnerable groups of people

Cessation support systems are more effective if they account for and address the different social norms driving tobacco consumption as well as the difficulties associated with quitting tobacco use. The social context of tobacco users, such as gender, age, mental health status, and language and culture can deeply influence an individual's experience with tobacco, including quitting. For example, evidence gathered from efficacy and effectiveness trials suggests that women may find it more difficult to achieve long-term abstinence than men. An understanding of the many factors that interact with gender and sex (including psychological, biological, pharmacological, social, environmental and cultural factors) and how they relate to cessation will likely help to design better cessation interventions that address these differences *(50)*.

There are also clear cases where lack of attention to particular social factors and contexts can decrease the chance of quitting. For example, in some countries females are less likely to be asked about their tobacco use status and less likely to be offered brief advice at primary care services, which may reflect health workers' expectations of women and gender stereotypes *(51)*. Ensuring that cessation initiatives are accessible and applicable to women, as well as youth, those with mental illness, minority ethnic groups speaking different languages, and other vulnerable groups can improve the reach and effectiveness of cessation policies.

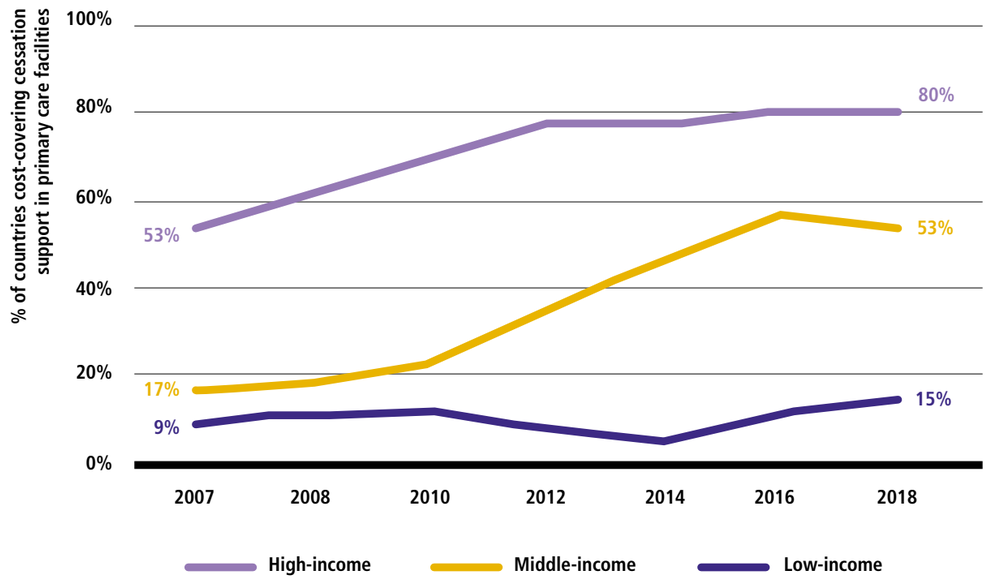
Few countries carry out regular monitoring and evaluation that helps them improve tobacco cessation services

Evidence is key to providing the rationale for decision-makers to implement tobacco control policies and improve health services. Although a great deal of evidence on the efficacy of tobacco cessation interventions is available, few countries carry out regular monitoring and evaluation that helps them understand the quality, effectiveness, reach, impact and cost of their tobacco cessation services. Lack of information showing the progress and outcome of tobacco cessation services at national level may prevent the identification of priority areas, quality improvement and further investment in tobacco cessation services.

Commitment to tobacco cessation must be strengthened in many countries

Many countries still have no national tobacco cessation strategy. Only a few countries have dedicated personnel or clearly identified budgets for cessation programmes *(52)*. Health care systems should assume primary responsibility for implementing tobacco cessation programmes,*(37)* but cessation support incorporated into primary care services that provides tobacco users with the resources to quit is still not widespread, and is especially rare in low-income countries.

PROPORTION OF COUNTRIES INCORPORATING CESSATION SUPPORT IN AT LEAST SOME PRIMARY CARE FACILITIES



E-cigarettes and other products marketed as "cessation aids"

In recent years the tobacco industry (and other non-tobacco commercial actors, such as those manufacturing e-cigarettes) has introduced a wide array of products, the majority of which simulate the act of smoking while typically delivering nicotine. There are currently three broad categories of these products:

Heated tobacco products (HTPs) are tobacco products that produce aerosols containing nicotine and toxic chemicals upon heating of the tobacco or activation of a device containing the tobacco. These aerosols are inhaled by users during a process of sucking or smoking involving a device. They contain the highly addictive substance nicotine, non-tobacco additives and are often flavoured. The tobacco may be in the form of specially designed cigarettes (e.g. "heat sticks", "Neo sticks") or pods or plugs.

Electronic nicotine delivery systems (ENDS) are devices that heat a liquid to create an aerosol that is inhaled by the user. The liquid contains nicotine (but not tobacco) and other chemicals that may be toxic to people's health.

Electronic non-nicotine delivery systems (ENNDS) are similar to ENDS but the heated solution delivered as an aerosol through the device does not generally contain nicotine.

These products are aggressively marketed or promoted as cleaner alternatives to conventional cigarettes, as smoking cessation aids, or as "reduced risk" products. They have proliferated in several markets around the globe and present a unique challenge to regulators. While some of these products have lower emissions than conventional cigarettes, they are not risk free, and the long-term impact on health and mortality is as-yet unknown. There is insufficient independent evidence to support the use of these products as a population-level tobacco cessation intervention to help people quit conventional tobacco use. HTPs contain tobacco, and the use of these products constitutes tobacco use, thereby contributing to the burden of tobacco in countries where they are sold. In addition, the available evidence does not support the tobacco industry's claim that these products are less harmful relative to conventional tobacco products *(53, 54)*.

There remains a great deal of uncertainty surrounding the potential toxicity of ENDS. Although some have been shown to help smokers quit conventional smoking under certain conditions, when used as NRTs *(55, 56)* the scientific evidence is inconclusive *(57–59)*. There have only been a limited number of randomized control trials and longitudinal studies investigating the role of ENDS as potential cessation aids offered to a population, and their conclusions are equivocal *(57, 59)*.

Two reviews, in 2016 and 2017, established that no credible conclusions could be drawn from the available studies *(57, 59)*. This is consistent with the conclusion of the National Academy of Sciences in its 2018 review of evidence on ENDS (referred to as e-cigarettes in this and the subsequent reports), in which it stated that "overall, there is limited evidence that e-cigarettes may be effective aids to promote smoking cessation" *(60)*.

By contrast, a randomized control trial of e-cigarettes versus nicotine replacement therapy concluded that "e-cigarettes were more effective for smoking cessation than nicotine replacement therapy when both products were accompanied by behavioural support" *(61)*. However, the study has several limitations and any consideration of the results must be done with caution. For example, although those who were assigned e-cigarettes were more likely to abstain from using traditional cigarettes as compared to those who were assigned NRT, 80% of the e-cigarette user group continued to use e-cigarettes one year after the study started. This is compared to a very small percentage of people in the NRT arm of the study who continued to use NRTs. In most countries where they are available, the majority of e-cigarette users continue to use e-cigarettes and cigarettes concurrently, which has little to no beneficial impact on health risk and effects *(62)*.

At the same time, some reviews have also suggested that e-cigarettes could in fact hinder smoking cessation *(63)*. Further, beyond the scope of cessation, novel and emerging tobacco and nicotine products are increasingly being taken up by never users of tobacco *(64)*. These products therefore play an important role in expanding the market of nicotine users, with a high associated risk for addiction, particularly among children and adolescents.

Misinformation by the tobacco industry about e-cigarettes is a present and real threat

The scientific evidence on e-cigarettes as cessation aids is inconclusive and there is a lack of clarity as to whether these products have any role to play in smoking cessation. There are also real concerns about the risk they pose to non-smokers who start to use them, especially young people. Unlike the tried and tested nicotine and non-nicotine pharmacotherapies that are known to help people quit tobacco use, WHO does not endorse e-cigarettes as cessation aids.

As ENDS are increasingly introduced to the market, careful monitoring of cessation rates is vital. The possibility of tobacco industry interference in tobacco cessation efforts through misinformation about the potential benefits of these products – which are presented as alternatives but in most cases are complementary to the use of conventional tobacco products – is a present and real threat.

This issue and other concerns surrounding ENDS and HTPs are discussed in further detail in the following sections of this report.

Maximizing cessation efforts

Governments should make greater political and financial commitments to promote tobacco cessation

Implementing tobacco cessation measures can help significantly reduce the prevalence of tobacco use and save lives *(65, 66)*. It is estimated that if tobacco

Given the scarcity and low quality of scientific evidence, it cannot be determined whether ENDS may help most smokers to quit or prevent them from doing so (FCTC/COP7/11).

cessation measures had been adopted at the highest level of achievement in 14 countries between 2007 and 2014, 1.5 million lives could have been saved *(19)*. If the tobacco-related global NCD and SDG targets are to be achieved, governments need to rank tobacco cessation as an important public health priority and invest in it accordingly. Article 14 of the WHO FCTC identifies a blueprint for more assertive support for cessation. Key recommendations include the following activities.

Promote tobacco cessation support as part of a comprehensive tobacco control programme

Cessation programmes are more effective when they are part of a comprehensive tobacco control programme. Countries should accelerate full implementation of the WHO FCTC, including the provisions in Article 14, which relates to tobacco cessation and treatment.

Recognize tobacco cessation support as an essential component of universal health coverage

Helping tobacco users to quit is one of the most cost-effective preventive services in primary care. WHO recommends tobacco cessation as one of the essential noncommunicable disease interventions for primary care in low-resource settings (WHO PEN: https://www.who.int/ncds/management/pen_tools/en/) because of its importance in prevention and management of NCDs such as cardiovascular diseases, cancer, chronic respiratory diseases and diabetes. Countries should include tobacco cessation support in their universal health coverage intervention package in order to provide people-centred health services in primary care. At a minimum, countries should ensure that health care workers are trained to offer brief advice as part of all existing health care programmes in primary care and make the documentation of tobacco use mandatory in patients' medical records. Training in tobacco cessation should be part of all health care professional training curricula and part of a mandatory training programme across health care professions. Training health care workers to routinely deliver brief advice can be achieved through a one-day workshop or even using an online training course. To assist countries in their efforts to integrate brief advice into primary care, WHO has developed a comprehensive training package, *Strengthening health systems for treating tobacco dependence in primary care (67)*, and an e-Learning course, *Training for primary care providers: brief tobacco interventions* (available at https://www.who.int/tobacco/quitting/training-for-primary-care-providers/en/), which are accessible to anyone free of charge.

Earmarking tobacco taxes for cessation: an innovative programme in Thailand

Funded by revenue from tobacco and alcohol excise taxes, the Thai Health Promotion Foundation (ThaiHealth) has supported several smoking cessation projects. For example, it has continuously funded the National Tobacco Quit Line since 2009, treating up to 22,000 smokers a year with a success rate of 33% *(70)*. Since 2016 it has funded the Ministry of Public Health to improve tobacco cessation services in all its hospitals.

ThaiHealth – together with the Ministry of Public Health and all other stakeholders – has also created and launched a project called "Three million smoking quitters in three years". This project, which started in June 2016 and which finished at the end of May 2019, encouraged the Ministry of Public Health's 1 million village volunteers in the health service system to help one smoker per year successfully quit smoking for at least 6 months (through asking people to give up completely at the community level and/or referring them for support from the Ministry's tobacco cessation services if needed).

If successful, this project will get 1 million people to quit each year, totaling 3 million quitters in 3 years. In November 2018 the Minister of Public Health announced that the project will be one of the indicators used to evaluate the performance of all high-level ministry administrators – an announcement that spurred the project to redouble its efforts. The Ministry announced in January 2019 that about 1.7 million smokers had started to quit tobacco with the programme.

Establish a sustainable source of funding for tobacco cessation support

The strengthening or creation of national infrastructure to promote and provide tobacco cessation support and services requires both financial and technical resources, so it is essential to identify a sustainable funding source. Countries should consider placing the cost of tobacco cessation support on the tobacco industry and other retailers through measures such as designated tobacco taxes; tobacco manufacturing and/or import licence fees; a tobacco-selling licence for distributors and retailers; and noncompliance fees levied on the tobacco industry and retailers.

Offering a level of reimbursement or financial incentive can have a significant impact on both the uptake of cessation treatment as well as the likelihood of patients adhering to the treatment *(68)*. Interventions that reduce the cost of cessation treatment to smokers not only increase the number of people who attempt to quit, but also increase the likelihood of their success in quitting *(69)*.

Promote public-private partnerships and engage different stakeholders

It is essential that governments and nongovernmental organizations work in partnership to accelerate the implementation of cessation measures and curb the harms of tobacco use. The public-private partnerships (which exclude the tobacco industry and its funded foundations) could extend the depth and breadth of funding and tobacco cessation services to be offered in countries. For example, many national or provincial quit lines are resourced by a combination of governmental and nongovernmental funding. Private insurers and employers can also offer incentives (such as reduced insurance premiums or access to employee benefits) to help motivate successful use of cessation services, given the reduction in health care costs and improvements in productivity that can be expected following cessation of tobacco use.

Prioritize population-level tobacco cessation approaches

Resources are finite. In order for tobacco cessation interventions to reach as many tobacco users as possible at the lowest achievable cost and have the most impact, governments should prioritize population-wide tobacco cessation approaches and consider adopting the three population-wide approaches as recommended by *WHO Global Noncommunicable Disease Action Plan 2013–2020*: integrating brief advice into primary care, providing national toll-free quit line services, and making mCessation support available.

Embrace innovative approaches to improve the reach of tobacco cessation interventions

An important aspect of SDG 9 on industry, innovation and infrastructure is the recognized need for people to have adequate access to information and

services. Emerging technologies must be harnessed to ensure that populations have access to information about the dangers of tobacco use through popular forums such as social media; in addition, the further development of interventions using mobile phones and other digital platforms should continue.

Research and development into innovative ways to utilize such advances as mobile technologies and artificial intelligence in cessation interventions should also be encouraged. We currently know what interventions work but they do not yet reach a sufficient number of tobacco users. Increasing the reach and access to cessation services, through mHealth and wearable technology for example, can help to bring about major impacts on reducing prevalence of tobacco use globally.

Build effective communication strategies

Public awareness campaigns should be designed to make clear the efficiency and cost-effectiveness of tobacco cessation interventions among the general public and the tobacco control community. It is also essential to build effective communication that informs people about the different forms of support available, and where to access it. Consistent messages from health care professionals carries weight. Campaigns should be carefully designed to target specific audiences in different contexts so they maximize understanding and gain the popular support needed for success.

Monitor and evaluate all tobacco cessation strategies and programmes

Monitoring and evaluation are essential to ensure that the best means are employed to formulate evidence-based and cost-effective tobacco cessation interventions that help users quit tobacco. The ability to learn from the experiences of developing and implementing tobacco cessation programmes has been hampered by the limited availability and quality of data, especially in low- and middle-income countries. Countries should continue to monitor and evaluate current tobacco cessation strategies and programmes, including process and outcome measures, to observe trends and impacts over time. Building close collaborations with academic institutions, national statistics offices, nongovernmental organizations and other stakeholders will help to develop appropriate monitoring and evaluation methods, and to design stronger and more tailored services.

Maintain caution where novel and emerging tobacco and nicotine products are concerned

Policy action and health interventions should be based upon robust scientific evidence. Where evidence is not sufficiently available on the potential harms of new products, countries must maintain caution by ensuring that legislation is up-to-date and sufficiently protective of population health.

It is essential that governments and nongovernmental organizations work in partnership to accelerate the implementation of cessation measures and curb the harms of tobacco use.

Heated tobacco products

Heated tobacco products contain tobacco

Heated tobacco products (HTPs) are tobacco products that produce aerosols containing nicotine and toxic chemicals upon heating of the tobacco or activation of a device containing the tobacco. These aerosols are inhaled by users during a process of sucking or smoking involving a device. They contain the highly addictive substance nicotine, non-tobacco additives and are often flavoured. The tobacco may be in the form of specially designed cigarettes (e.g. "heat sticks", "Neo sticks") or pods or plugs.

HTPs differ not only to conventional cigarettes, but also to electronic nicotine delivery systems (ENDS, some of which are called e-cigarettes), as ENDS do not contain tobacco, but rather a nicotine solution. These boundaries, however, are increasingly difficult to define. Today there is a growing presence of emerging "hybrid" tobacco products that contain both nicotine solution and tobacco.

Examples of HTPs include IQOS from Philip Morris International (PMI), Ploom TECH from Japan Tobacco International (JTI), Glo from British American Tobacco (BAT) and PAX from PAX Labs.

The evidence on HTPs is inconclusive

While HTP technology has been around since the 1980s, new generations of products that have become popular in the past 5 years have different features and operating mechanisms to earlier versions. This means that although research has been conducted on HTPs since their emergence, conclusions on earlier products cannot be applied to later ones. Given that the newer generations of products have not been on the market for long enough, evidence on their health impacts is sparse. Further, much of the existing science on HTPs is industry-generated, and thus potentially weakened by bias arising from a conflict of interest.

HTPs should be regulated as a tobacco product

Currently, HTPs are available in more than 40 countries. While they are banned in few countries, there is significant variation in how they are regulated in others.

QUESTION	SUMMARY OF THE EVIDENCE
Do HTPs contain harmful chemicals?	From available evidence we know that many of the harmful chemicals that are generated by HTPs are similar to those generated by conventional cigarettes, but generally at lower levels *(71, 72)*. However, there is also some evidence that there are new chemicals in HTPs that are not present in the emissions of conventional cigarettes, and which could have some degree of toxicity and associated harm *(53)*.
Are HTPs less harmful than cigarettes?	To date, the available evidence demonstrates that exposure to harmful and potentially harmful chemicals from these products may be lower relative to cigarettes *(73)* (but higher compared to electronic nicotine delivery systems (ENDS), see next section). However, the evidence does not show that these products will reduce tobacco-related diseases, or that they are exclusively used as substitutes for cigarettes. If they attract users who were not previously tobacco users, their overall impact on health would be negative.
Are HTPs useful as a cessation aid?	HTPs are tobacco products and therefore, even if a tobacco user converts from the use of conventional cigarettes to HTPs, this would not constitute cessation. Claims that smokers switch from conventional cigarettes to exclusive use of HTPs are unsubstantiated *(74)*. Further independent studies are needed to gather more information and inform policy options.

Many factors affect a country's ability to control and regulate the use of HTPs, including national regulatory powers, enforcement capacity regulatory frameworks, country capacity and tobacco industry interference.

As with other tobacco products, MPOWER measures apply to HTPs

HTPs are tobacco products. This means that Parties' obligations under the WHO FCTC apply to HTPs in the same way as they apply to conventional cigarettes. MPOWER measures help WHO Member States to implement the demand reduction articles of the WHO FCTC and are equally applicable to HTPs as they are to other tobacco products. This is well articulated in WHO's information sheet on heated tobacco products, which provides guidance on how these products should be regulated *(75)*, as well as Decision FCTC/COP8(22) for novel and emerging tobacco products.

HTP marketing must be closely monitored and regulated

The marketing of HTPs is one of the biggest challenges to tobacco control efforts. Products are widely promoted using messages that explicitly or implicitly claim they are safer and less toxic alternatives to conventional cigarettes *(53)*. Manufacturers exploit the lack of clear consensus on the specific forms of harm caused by HTPs to confuse consumers and evade existing regulation and avoid the introduction of regulations that cover these products.

For example, while HTPs are widely marketed as safer alternatives for smokers, manufacturers are generally careful to qualify their claims or include a waiver *(76)*. One claim often made by manufacturers is that the aerosol produced from HTPs contains lower quantities of harmful constituents than cigarette smoke and are therefore less harmful to health *(76)*. However, phrases such as "likely to cause less harm" or "with potential to cause less harm" do not mean this demonstrates reduced risk.

Most marketing of HTPs deliberately tries to position them as different to cigarettes. They are promoted as "smoke-free" through claims that the aerosols they produce are not smoke and that HTPs do not produce tar. This means they are often marketed as a more environmentally friendly and socially acceptable alternative to cigarettes. In addition, HTPs are extensively promoted as modern, high-tech and high-end lifestyle products, with minimalist designs, a presence in flagship stores, and high-profile product launches that portray them as attractive and harmless luxury consumer products. All of these efforts make use of social positioning techniques that were previously used to market cigarettes, and which are particularly effective in targeting young people.

Ultimately, in line with WHO guidance, all forms of tobacco use are harmful, and this includes HTPs. Tobacco is inherently toxic and contains carcinogens, regardless of whether it is consumed as a smoked or smokeless product *(75)*. Overall, given the information we have and the fact that these products contain tobacco, they must be regulated as tobacco products. They should be subject to the same policy and regulatory measures applied to all tobacco products, in line with the WHO FCTC.

Key information and recommendations for countries

- HTPs contain tobacco and should be regulated like tobacco products.
- HTPs produce toxic emissions, many of which are similar to toxicants found in cigarette smoke.
- HTP users are exposed to toxic emissions from the products, and bystanders could also be exposed to these toxic second-hand emissions.
- Although the levels of several toxicants in HTPs are lower than those found in conventional cigarettes, the levels of others are higher. A lower level of some toxicants does not necessarily mean a reduction in health risk.
- HTPs contain nicotine. Nicotine is highly addictive and linked to health harms, particularly in children, pregnant women and adolescents.
- The long-term health impacts of HTP use and exposure to their emissions remain unknown. There is currently insufficient independent evidence on the relative and absolute risk. Independent studies are needed to determine the health risk they pose to users and bystanders.

Heated tobacco products (HTPs) are tobacco products. This means that Parties' obligations under the WHO FCTC apply to HTPs in the same way as they apply to conventional cigarettes.

Electronic nicotine delivery systems

Electronic nicotine delivery systems are diverse and increasingly available

Electronic nicotine delivery systems (ENDS) are devices that heat a liquid to create an aerosol that is inhaled by the user. The liquid contains nicotine (but not tobacco) and other chemicals that may be toxic to people's health.

"ENDS" is an all-encompassing term for multiple product categories. The most common ENDS are "electronic cigarettes", also known as "e-cigarettes", "vapes", or "vape pens". Other categories of ENDS include "e-hookahs", "e-pipes" and "e-cigars". Some of the products resemble their conventional tobacco counterparts: cigarettes, cigars, cigarillos, pipes or hookahs; others are shaped more generically like pens, USB memory sticks, or basic cylinders. There are also different forms of nicotine used in these products. Recently, nicotine salts have been used to deliver high levels of nicotine. The diversity of product groups has evolved over time and according to different geographic and/or demographic markets.

There are other electronic, non-nicotine delivery systems (ENNDS,) which are essentially the same as ENDS but the liquid used generally does not contain nicotine (although upon testing many "zero-nicotine" solutions are found to contain nicotine). This report only addresses ENDS and does not cover ENNDS.

Examples of ENDS include Juul from Juul Labs, Vype from British American Tobacco, blu from Imperial Brands.

Evidence on the health risks associated with ENDS remains inconclusive

WHO has extensively reviewed and summarized the available evidence on ENDS and finds that the evidence to date is inconclusive. It is important to note that ENDS are a diverse group of products, containing a wide variety of nicotine dosages, flavours, and emissions.

As a result, the unique characteristics of a particular type of ENDS – such as chemical content, heat source or how and where it is used – will play a major role in its effects on people's health. A more robust determination of the effects of ENDS will require vigorous investigation into the health outcomes of large cohorts of well-characterized users over a longer period of time.

QUESTION	SUMMARY OF EVIDENCE
What are the consequences of taking up ENDS use at a younger age?	Recent surveys in the United States of America (USA) and some European countries have shown marked increases in ENDS use amongst youth *(77)*. Between 2011 and 2018 in the USA, youth e-cigarette use rates have risen from 1.5% to a staggering 20.8% *(78)*. Young people who use ENDS are exposed to nicotine, which can have long-term effects on the developing brain and there is a risk of nicotine addiction, given that tobacco product use is primarily established in adolescence *(79)*. Furthermore, there is a growing body of evidence in some settings that never-smoker minors who use ENDS at least double their chance of starting to smoke cigarettes later in life *(80, 81)*.
What is the harm of ENDS relative to conventional cigarettes?	ENDS' aerosols are likely to be less toxic than cigarettes but there is insufficient evidence to quantify the precise level of risk associated with them *(82)*. Also, many factors will impact on the relative risk associated with their use. For example, the amount of nicotine and other toxicants in the heated liquid.
What are the health effects associated with ENDS?	ENDS pose risks to users and non-users *(82)*. There is insufficient evidence to quantify this risk and the long-term effects of exposure to ENDS' toxic emissions are unknown *(77, 82)*. In addition to risks associated with emissions of ENDS there are also risks of physical injury brought about by fires or explosions related to ENDS devices *(83)*.
Do ENDS help smokers quit tobacco?	As discussed in the background chapter on "O" – Offer help to quit, the scientific evidence regarding the effectiveness of ENDS as a smoking cessation aid is still being debated. To date, in part due to the diversity of ENDS products and the low certainty surrounding many studies, the potential for ENDS to play a role as a population-level tobacco cessation intervention is unclear *(57–59)*.

The potential impact of ENDS on public health has been heavily debated since their introduction to consumer markets 12–15 years ago.

ENDS are not harmless and must be regulated

According to WHO, Member States that have not banned ENDS should consider regulating them as harmful products, and governments should implement the regulatory measures for ENDS that they determine are most appropriate for their domestic context. This may entail, for example, regulating ENDS as tobacco products, products imitating tobacco, or as a specifically defined category. Although the specific level of risk associated with ENDS has not yet been conclusively estimated, ENDS are undoubtedly harmful and should therefore be subject to regulation.

MPOWER measures can be applied to ENDS

Like any product that can cause harm and damage health, all ENDS products should be regulated and existing and effective policy toolkits, like MPOWER, can be applied productively to ENDS. Guidance provided by the *WHO report to the 2014 Conference of the Parties* (FCTC/COP/6/10 Rev.1) is outlined in the following box *(82)*.

ENDS regulation should:

(a) impede ENDS promotion to and uptake by non-smokers, pregnant women and youth;

(b) minimize potential health risks to ENDS users and non-users;

(c) prohibit unproven health claims from being made about ENDS; and

(d) protect existing tobacco-control efforts from commercial and other vested interests of the tobacco industry.

M	Governments are recommended to use their existing tobacco surveillance and monitoring systems to assess developments in ENDS use, disaggregated by important factors such as sex and age.
P	ENDS users should be legally banned from using ENDS indoors, especially where smoking is banned, until exhaled vapour is proven to be not harmful to bystanders and reasonable evidence exists that smoke-free policy enforcement is not undermined. This is because there is a reasonable expectation on the part of bystanders that there is not a "diminished risk" in comparison to exposure to second-hand smoke, but rather "no risk increase" from any product in the air they breathe.
O	The evidence on the use of ENDS as a potential cessation aid is still being debated. Some evidence has suggested ENDS may work as a cessation aid for some people. However, the evidence required to support the role of ENDS as an intervention at population scale is limited. ENDS should therefore not be promoted as a cessation aid until adequate evidence is compiled on specific types of ENDS products and the public health community can agree upon the effectiveness of those specific products.
W	ENDS health warnings should be commensurate with proven health risks. In this regard, the following risk warnings could be considered: potential nicotine addiction; potential respiratory, eyes, nose and throat irritant effect; potential cardiovascular risk; potential adverse effect on pregnancy (due to nicotine exposure).
E	Given that the same promotional elements that make ENDS attractive to adult smokers could make them attractive to children and non-smokers, contemplate putting in place an effective restriction on ENDS advertising, promotion and sponsorship. Any forms of ENDS advertising, promotion and sponsorship must be regulated by an appropriate governmental body. If this is not possible, an outright ban on ENDS advertising, promotion and sponsorship is preferable. Further recommendations on the regulation of advertising, promotion and sponsorship of ENDS can be found in FCTC/COP/6/10 Rev.1 *(82)*.
R	While they are generally less toxic than tobacco cigarettes, ENDS still carry health risks. The existing evidence shows that ENDS aerosol is not merely "water vapour" as is often claimed in the marketing for these products. ENDS use poses serious threats to adolescents and fetuses. In addition, it increases exposure of non-smokers and bystanders to nicotine and a number of toxicants. Taxes should therefore be applied to these products in line with national standards to prevent uptake, particularly by young people.

Key information and recommendations for countries

- ENDS should be carefully and clearly defined in the legislation in order that countries can regulate ENDS effectively.
- Countries often have the option of classifying ENDS as tobacco products. If this is possible then countries should ensure that existing tobacco control laws adequately protect people from the potential harms of ENDS.
- ENDS products may serve as a gateway to conventional smoking among young people or the renormalization of smoking in society.
- Countries should apply bans on advertising and flavouring of products to deter use by young people.
- Countries should consider introducing policies to force manufacturers to make products unattractive to young people in order to discourage uptake, such as plain packaging.

ENDS have the potential to undermine tobacco control efforts

There are a number of challenges associated with regulating ENDS, which are often cited as "reduced harm", "reduced risk", or "clean alternatives" compared to conventional tobacco products. Because of these claims there are a number of consequences to public health and tobacco control. For instance, public health officials are concerned by the possibility that these devices serve as a "gateway" to conventional smoking among young people. ENDS are heavily marketed towards youth through the use of flavouring and promotional strategies. Apart from the known harmful effects of nicotine on the developing brain, nicotine is addictive and could lead people, particularly young people, to take up more harmful forms of nicotine or tobacco consumption. Further, by using flavourings and branding strategies that appeal to young people, the industries involved in the manufacture and marketing of ENDS are employing tactics to expand their consumer base under the guise of contributing to public health work.

ENDS products also have the potential to undermine existing tobacco control measures by, for instance, exempting these products from taxation or by allowing their use in smoke-free places. There is already significant confusion about (and conflation of) product categories. It can be very difficult to differentiate, for example, an ENDS product from an HTP. This can be used to the advantage of the industry as is further discussed in the next chapter. Further, as ENDS and other novel products continue to evolve there is also the risk that they will fall through regulatory gaps and loopholes.

Since WHO's initial evaluation of the evidence on the health risks of ENDS, their effectiveness in helping people quit smoking, and their impact on tobacco control, many additional articles have been published. However, given the diverse nature of ENDS and the many advances in product development since research began, more evidence is still needed to inform a conclusive statement on their health impacts and potential as a cessation tool. Until then, there are a number of unknown factors which mean they cannot be safely recommended for consumption.

Nicotine is addictive and ENDS use could lead people, particularly young people, to take up more harmful forms of tobacco consumption.

Tobacco industry interference: the greatest obstacle to reducing tobacco use

The tobacco industry has a long history of systematic, aggressive, sustained and well-resourced opposition to tobacco control measures *(84)*, including efforts to subvert life-saving tobacco control measures. It does this by deploying a wide variety of tactics to obstruct, delay, weaken or undermine political commitments and tobacco control measures taken by countries at international, regional, national and subnational levels. While some strategies are public and others more covert (be they directed at governments, the public, or the media), all have the goal of weakening tobacco control.

Blocking tobacco industry interference is critical to successfully addressing the global tobacco epidemic and decreasing the public health consequences of tobacco use. In 2011, the United Nations General Assembly recognized "the fundamental conflict of interest between the tobacco industry and public health" *(85)*. Recognizing this clear, irreconcilable conflict of interest, and despite ongoing attempts by the industry to position itself as a legitimate partner and stakeholder in tobacco control, Parties to the Convention must comply with their obligations under Article 5.3 of the WHO FCTC, which requires that: "In setting and implementing their public health policies with respect to tobacco control, Parties shall act to protect these policies from commercial and other vested interests of the tobacco industry in accordance with national law" *(1)*.

Philip Morris International-funded Foundation for a Smoke-Free World

The Foundation for a Smoke Free World is funded solely by tobacco giant Philip Morris International (PMI) with a commitment of US$ 80 million annually over 12 years (approximately US$ 1 billion) *(86)*. It is part of an ongoing industry strategy to influence the scientific and policy agendas. The Foundation funds research programmes and studies that are supportive of products marketed by PMI and other producers as "reduced risk", and offers funding to governments, universities, UN agencies, other international bodies and the public health community to encourage smokers to use such products, presumably in place of traditional cigarettes.

In September 2017 WHO issued an official statement indicating that it will not partner with the Foundation, and recommending that governments and the public health community follow this lead *(87)*. The WHO FCTC Secretariat has been similarly forthright in its rejection of the Foundation, stating in its WHO Framework Convention on Tobacco Control Secretariat's statement on the launch of the Foundation for a Smoke-Free World that it is a clear attempt to breach the WHO FCTC by interfering in public policy "aimed at damaging the treaty's implementation, particularly through the foundation's contentious research programmes" *(88)*.

In 2019, the Foundation subsequently wrote to Members of the WHO Executive Board, urging WHO to amend its stance on the Foundation, and to "review and consider how best to work with the Foundation to facilitate a rapid reduction in the use of lethal cigarettes". This proposal was rejected by the Director-General, who reiterated WHO's position in its 2017 statement *(89)*.

Tobacco industry interference takes many forms

Common general tactics employed by the tobacco industry in opposing tobacco control include *(16)*:

- interfering with political and legislative processes;
- fabricating support through front groups;
- influencing the scientific and policy agendas;
- making unproven claims and discrediting proven science;
- exaggerating the economic importance of the industry;
- intimidating governments with litigation or the threat of litigation;
- manipulating public opinion to gain the appearance of respectability.

New industry players continue to subvert tobacco control

Just over a decade ago, ENDS and ENNDS entered the market, with the most common prototype being e-cigarettes. At first these products were predominantly developed and marketed by non-tobacco companies such as Pax Labs, which introduced JUUL (a popular ENDS product among young people in the USA) in 2015. Due to the success of these products, the tobacco industry has heavily invested in such markets and diversified into manufacturing them alongside new-generation tobacco products such as heated tobacco products (HTPs). In December 2018, tobacco company Altria acquired a 35% stake in JUUL for US$ 13 billion. Other tobacco companies such as British American Tobacco and Japan Tobacco International also have significant investment in such products *(90)*.

Countering tobacco industry tactics

Commitment to countering industry interference is fundamental to successful implementation of effective tobacco control measures in accordance with the WHO FCTC – Article 5.3 of which obliges Parties to act to protect public health policies from commercial and other vested interests of the tobacco industry in accordance with national law.

In 2008, the Conference of Parties (COP) to the WHO FCTC adopted guidelines for the implementation of Article 5.3. The Guidelines were developed based on both scientific evidence and the experiences of Parties *(91)*. The purpose of the Guidelines is "to ensure that efforts to protect tobacco control from commercial and other vested interests of the tobacco industry are comprehensive and effective". They state clearly that governments should limit interactions with the tobacco industry and avoid partnerships with it, and that governments should not accept financial or other contributions from the tobacco industry, or those working to further its interests. The Guidelines continue to be instrumental in combatting tobacco industry interference and should be applied to both conventional and emerging tobacco markets where, as already described, the tobacco industry attempts to present itself as a partner in tobacco control and harm reduction, while simultaneously blocking regulatory efforts. Effective government action to counter tobacco industry interference in cessation includes the following:

- Requiring disclosure of, and clearly communicating, funding sources for research institutions, academics, and scientific studies to prevent unseen biases in science on which policy may be based, as well as to clarify the motivations of nongovernmental organizations, business and trade associations, consumer groups, think tanks, professional associations and others seeking involvement or input in tobacco control policies.
- Rejecting partnerships and non-binding or non-enforceable agreements with the tobacco industry and those working in its interests, including financial support and endorsement of tobacco industry activities related to tobacco control.
- Raising awareness about the known addictive and harmful properties of tobacco and nicotine-containing products, and about tobacco industry interference with tobacco control policies.
- Denormalizing and, to the extent possible, regulating and banning publicity around activities described as "socially responsible" by the tobacco industry.
- Requiring that the tobacco industry is held accountable for misinformation presented in marketing campaigns.
- Regulating HTPs as tobacco products in accordance with the WHO FCTC and regulating ENDS in accordance with the relevant COP decisions (Decision FCTC/COP6 and Decision FCTC/COP7).
- Requiring that information provided by the tobacco industry be transparent and accurate, with regular, truthful, complete and precise information on tobacco industry activities.
- Effective conflict of interest policies in place and enforced for policy-makers and officials engaged in developing, implementing and enforcing tobacco control policy.

Blocking tobacco industry interference is critical to successfully addressing the global tobacco epidemic and decreasing the public health consequences of tobacco use.

Philip Morris' "Unsmoke" campaign: a case of smoke and mirrors

Philip Morris International (PMI) is one of the world's largest cigarette manufacturers and a persistent opponent of tobacco control. Despite this, PMI is attempting to position itself as a responsible public health partner, and to influence the tobacco control agenda. Part of this is PMI's "Unsmoke" campaign, which encourages people "who don't quit cigarettes" to "change to a better alternative", in line with PMI's goal to "replace cigarettes with the smoke-free products we're developing and selling". The campaign undermines tobacco cessation initiatives by presenting an easy alternative to breaking a nicotine addiction, and by undermining successful tobacco control initiatives (which have denormalized smoking in many countries) by portraying this form of tobacco use as socially acceptable.

PMI refers to both its HTPs and ENDS as "smoke-free products". This strategy creates confusion between the product categories and promotes the industry claim that emissions from HTPs and ENDS are not "smoke" (though emissions from HTPs contain many of the toxic chemicals found in cigarette smoke). The campaign also fails to acknowledge that the impact of short- and long-term use is largely unknown, and that current science does not support claims of reduced risk of health harms from HTPs. PMI avoids saying the products are less harmful, but instead states that it "believes" these products "while not risk free … have the potential to present less risk of harm than continued smoking".[1]

Through promotion and lobbying by PMI and its front groups such as the Foundation for a Smoke Free World, this campaign seeks to pressure governments to allow these products into domestic markets and exempt them from tobacco control regulation, in particular TAPS bans, taxes and smoke free laws, thereby undermining tobacco control initiatives and weakening WHO FCTC implementation.

Stopping Tobacco Organizations and Products (STOP)

The tobacco industry is the single greatest barrier to reducing deaths caused by tobacco use. To perpetuate sales of its products, the industry needs the weakest possible regulatory environment. In other words, it needs to make sure tobacco control policies do not come into effect or are rendered ineffective. The industry uses many strategies to accomplish this goal.

In 2018, Bloomberg Philanthropies established STOP (Stopping Tobacco Organizations and Products) – the first global tobacco industry watchdog. STOP's mission is to expose the industry's behaviour that undermines public health and to support efforts to counter industry interference in policy. STOP works around the world, with a special focus on low- and middle-income countries where the industry is aggressively targeting communities and where the biggest populations are at risk of tobacco-related disease. STOP provides a platform for advocates, policy-makers and journalists to access the latest information on the tobacco industry – including exposés on abuses and tactics, analyses on industry behaviour and new tools to fight industry interference.

STOP's work consists of:

- collecting data and investing in comprehensive research;
- responding to policy-makers' requests for help through a rapid response service;
- exposing and challenging the industry's strategies by engaging with local and international media;
- collaborating across the tobacco control network and other sectors to ensure a comprehensive approach to countering industry tactics.

In its first 6 months, STOP galvanized support for WHO from more than 279 organizations and individuals in 50 countries to publicly reject an approach for collaboration from a Philip Morris International-funded foundation. STOP also exposed dozens of organizations from more than 20 countries as industry allies that have worked to support tobacco-friendly policies. Policy-makers, advocates and journalists can search a public database for those groups in their countries and read the evidence that links them to the industry.

STOP is comprised of a partnership between The Tobacco Control Research Group at the University of Bath, The Global Center for Good Governance in Tobacco Control, The Union's Department of Tobacco Control, and Vital Strategies. To learn more, visit: exposetobacco.org.

[1] See: https://www.pmi.com/glossary-section/glossary/smoke-free-products (accessed 04/06/2019)

Industry tactics that interfere with tobacco cessation

The tobacco industry has in recent years become increasingly vocal in the promotion of products it claims can help people quit conventional smoking. These products, which include HTPs, ENDS and ENNDS are often promoted by the industry as "reduced risk" (relative to cigarettes) and/or cessation products that can help tobacco users or smokers of conventional products to quit conventional smoking. Such activities have ramifications for genuine initiatives to assist tobacco cessation, as they have the potential to misinform and mislead consumers and confuse governments. In this respect, the Guidelines for Implementation of Article 14 of the WHO FCTC define the phrase "tobacco cessation" as "the process of stopping the use of any tobacco product, with or without assistance".

Making unproven claims and influencing research

At the time of writing, the evidence is insufficient to recommend the use of ENDS as cessation devices at the population level. Existing studies have significant limitations, including selection bias, inadequate measures of exposure, and poor controls. Moreover, a substantial amount of the available literature is funded by product manufacturers including in the tobacco industry, whose commercial interests pose an unavoidable conflict of interest (60).

In the case of HTPs, because they are tobacco products, switching from conventional tobacco products such as cigarettes to HTPs is not considered tobacco cessation. In this context, there is a risk that industry marketing strategies focused around "quitting" or "switching" will lead consumers, regulators and decision-makers to conflate the two concepts.

Conflation of product categories

The tobacco industry has exploited the division in the public health community (resulting from the inconclusive evidence on the merits of these products as cessation aids) on the potential benefit of ENDS as a cessation aid. Consequently, some countries have lenient regulations for ENDS relative to conventional tobacco products, and where this is the case, the tobacco industry often leverages this by pitching HTPs as electronic products similar to ENDS to negotiate regulatory treatments similar to ENDS.

This creates confusion between these product categories, which can result in the limited evidence that may support some forms of ENDS as a cessation aid under certain conditions being falsely attributed to HTPs too. For example, the name of the Philip Morris International HTP product "iQOS" (which is an acronym for "I quit ordinary smoking" (72)) can contribute to this erroneous impression. Some countries and regions, including the UK, France and the EU have left the option open to have new and novel products licensed as pharmaceutical products by including provisions in their relevant laws or directives, pending the evidence to support this and approval by relevant bodies. However, according to the information we currently have, none of these products is available commercially as a cessation aid.

HTPs are often promoted, especially to regulators, as "conventional smoking cessation" aids. However, there is limited evidence on the impact of HTP use on conventional smoking or on the relative harm of HTP use as compared to conventional cigarette smoking.

Manipulating public opinion to gain the appearance of respectability

The recent positioning of big tobacco companies as proponents of "harm reduction" is a good example of a manipulative tobacco industry strategy. Extensive, high-profile messaging, misinformation based on unsubstantiated claims and lobbying by companies presenting themselves as part of the solution to reduce tobacco use prevalence may influence public opinion.

Such lobbying promotes a new portfolio of products claimed to be "reduced risk", "odour free" or "smoke-free", and to offer "cleaner alternatives" to conventional cigarettes. This portrays the tobacco industry as responsible partners in the fight to end adult smoking, while downplaying established facts that cigarettes still comprise 97% of the worth of the global tobacco market which is dominated by the same companies.

Strategic advertising to sustain nicotine or tobacco use

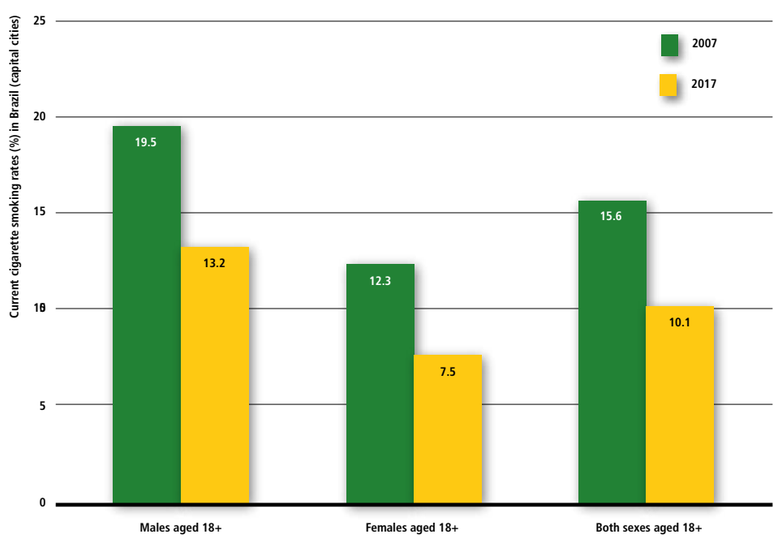
ENDS/ENNDS and HTPs are openly advertised as a way to circumvent smoking bans. Industry promotions aim to distance these products from cigarettes, claiming that they "do not involve combustion" and produce "vapour" rather than smoke, which is used as a basis for arguing that the products should be exempt from smoke-free and other laws. Representatives of flagship stores are highly trained and skilled in luring potential consumers into their stores, and quick to offer these products as more pleasurable than smoking or using traditional tobacco products, sometimes arguing that they are more socially acceptable and can be used in smoke-free places. Such interference could deter quit attempts by would-be quitters as these products are aggressively marketed to sustain nicotine or tobacco use. This may also have implications for tried and tested nicotine and non-nicotine pharmacotherapies (which are proven to help smokers to quit tobacco use), as instead of those being chosen by smokers wanting to quit, smokers may opt for ENDS/ENNDS and HTPs instead. Now that ENDS/ENNDS regulation is becoming more common, the tobacco industry is actively countering attempts to incorporate ENDS/ENNDS into existing tobacco legislation.

Brazil marks singular achievement in tobacco control

History of tobacco control in Brazil

- Brazil's efforts and commitment to tobacco control began in 1981 when the Ministry of Health created the Commission for the Study of the Consequences of Tobacco.
- In 1988, the Constitution determined that tobacco advertising would be subject to legal restrictions and would contain warnings.
- In 1999, a National Commission on Tobacco Control was created to support the country's role in negotiating the first global health treaty (under the auspices of WHO) that would later become WHO FCTC. Brazil was also elected to chair the treaty's Intergovernmental Negotiating Body during the negotiations.
- In 2003 Brazil was among the first countries to sign the treaty, and ratified it in November 2005 despite being a developing country and a major tobacco producer.
- In 2003 the country's National Commission for FCTC Implementation (CONICQ) was established, with the Minister of Health serving as the chair.
- In 2018, Brazil ratified the Protocol to Eliminate Illicit Trade in Tobacco Products which will contribute to protecting the gains and maximize the impact of these very cost-effective tobacco control tools, such as raising tobacco taxes.

Tobacco use in Brazil is declining



Tobacco use in Brazil is declining

- Adult smoking prevalence declined from 35% in 1989 to 18.5% in 2008 *(92)*. According to the National Health Survey, smoking prevalence was 14.7% in 2013. Based on the telephone survey on NCDs, adult cigarette smoking decreased in capital cities from 15.6% in 2007 to 10.1% in 2017.
- Despite declining smoking rates among adults, smoking prevalence among youth remains stable at around 5%, with 19% of boys and 17% of girls experimenting with smoking during their school years, according to PeNSE 2015.

MPOWER measures in Brazil

Protect people from tobacco smoke

- Brazil prohibited smoking in enclosed public and enclosed work places with an exception for designated smoking rooms (DSRs) in 1996. In 2011 the law was strengthened to become a complete ban on smoking in enclosed public places, workplaces and public transport, thus fully aligning with Article 8 of the WHO FCTC.
- Brazil was the first country with a population above 100 million to designate all public and work places as smoke free.

Offering help to quit tobacco

- Since the 1990s the National Cancer Institute of Brazil (INCA) has been training health professionals to carry out cessation treatment. In 2001 the Ministry of Health also began offering a national toll-free quit line, and currently the quit line number is displayed on the front of smoked tobacco packages.
- In 2002 tobacco cessation treatment was formally included as part of the Brazilian Public Health System (SUS) making Brazil fully compliant with Article 14 of the WHO FCTC in 2002. At first, tobacco cessation treatment was restricted to specialized health care services, but in 2004 the service was expanded to primary health care services.
- Between 2005 and 2014 more than 800 000 smokers had access to smoking cessation treatment through SUS.

Warning about the dangers of tobacco

- The first warnings, which stated "Health Ministry warns: Smoking is harmful to health", were printed on cigarette packages in Brazil in 1988. This warning was updated during the 1990s to eventually warn consumers that smoking causes lung cancer, heart disease and other health conditions.
- In 2001, Brazil approved the first series of graphic health warnings using images that covered 100% of the back of cigarette packs. On each side of the package the number of the quit line appeared alongside the message: "There are no safe levels for the consumption of these substances." This law also prohibited the use of wrappers or other features that could obscure the graphic health warnings.
- Brazil was fully compliant with Article 11 of the WHO FCTC in 2003, before the treaty even came into force.
- In 2004 Brazil launched the second series of graphic health warnings, with images and messages of greater impact that had to be included in the tobacco advertising at point of sale. This law included the following messages: "Sale prohibited to minors under 18 years according to Laws 8.069/1990 and 10.702/2003", and "This product contains more than 4700 toxins and nicotine that cause physical and psychological dependency. There are no safe levels for the consumption of these substances."
- By the time the first *WHO report on the global tobacco epidemic* was published in 2008, not only was Brazil compliant with Article 11 of the FCTC, it was one of only three countries in the world that mandated graphic health warning images to cover 100% of the back of cigarette packs.
- The third series of warnings was launched in 2008. The images from this series were chosen as most impactful by an INCA (National Cancer Institute) study – the findings of which have been used by several countries in the Americas to inform their policy on graphic health warnings.
- In 2011, warning labels were expanded to include 30% of the front of the package, in addition to 100% of the back of the package. A new series of graphic health warnings was launched in May 2018.

Enforcing of bans on tobacco advertising, promotion and sponsorship

- In 2000, a federal law banned tobacco advertising in mass media such as television, radio, magazines, newspapers, and billboards, while also banning some forms of indirect advertising and promotion.
- In 2011, the federal law was amended to include the complete ban on advertising at point of sale, as well as the bans on promotional discounts and brand sharing, allowing Brazil to become fully compliant with Article 13 of the WHO FCTC. The law however still permits product display at point of sale, with a requirement to display graphic health warnings on display racks.

Raising taxes on tobacco

- Brazilian cigarettes were once the sixth cheapest cigarettes in the world, but tobacco taxes have increased significantly since 2007. By 2011 a minimum price policy was established and tobacco taxes were raised, thereby increasing the tax share as a proportion of the retail price of cigarettes.
- As of 2018, tobacco taxes represent 82.97% of the retail price of the most sold brand, establishing Brazil as the country with the highest tobacco tax rate of all Member States in the Region of the Americas.
- Brazil has benefited from subregional forums designed to enable countries to exchange experiences and technical cooperation on tobacco tax. The four countries in the Region of the Americas that are implementing tobacco taxes at the highest level are all located in South America, making this subregion a leader on using tobacco taxes as a tool to reduce affordability.

Anti-tobacco Campaign by Ministry of Health, Brazil, 2019.

Effective tobacco control measures

Monitor tobacco use and prevention policies

Protect people from tobacco smoke

Offer help to quit tobacco use

Warn about the dangers of tobacco

Enforce bans on tobacco advertising, promotion and sponsorship

Raise taxes on tobacco

Monitor tobacco use and prevention policies

Article 20 of the WHO Framework Convention on Tobacco Control states: "…Parties shall establish …surveillance of the magnitude, patterns, determinants and consequences of tobacco consumption and exposure to tobacco smoke… Parties should integrate tobacco surveillance programmes into national, regional and global health surveillance programmes so that data are comparable and can be analysed at the regional and international levels…" *(1)* .

Monitoring is the foundation of understanding and measuring tobacco control efforts

Monitoring tobacco use and tobacco control programmes is critical to effectively combat the tobacco epidemic and assess the effects in each country of WHO FCTC and MPOWER measures. Monitoring systems should track tobacco use indicators, including cigarette smoking and other forms of smoked tobacco (e.g. cigar, pipe, bidis, water pipe), smokeless tobacco products (e.g. snus), and other tobacco products such as tobacco vaporizers and heated tobacco products, as well as non-tobacco forms of nicotine use (e.g. e-cigarettes).

Monitoring should also cover the impact of tobacco control policy interventions *(38)* and tobacco industry activities *(93)*, as data such as these that are accurate and up-to-date enable appropriate policy implementation, precise measurement of policy impact and adjustment of strategies as needed, all of which greatly increase the likelihood of success *(94)*.

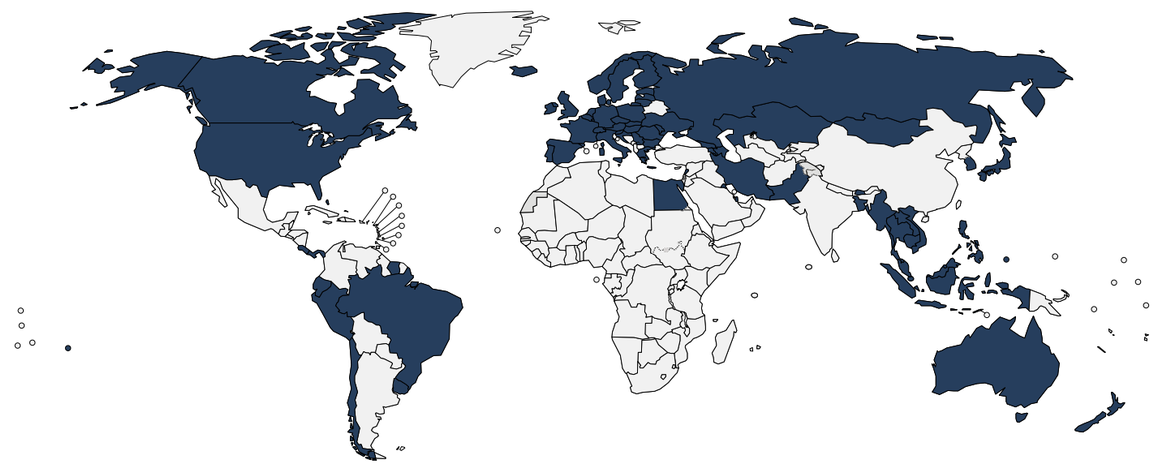
Almost 40% of the world's population is covered by strong systems that monitor tobacco use

There are 2.8 billion people in 74 countries, or 38% of the world's population, protected by strong monitoring systems that include recent, representative and periodic surveys for both adults and youth. Most of these countries (44) are high-income countries. But despite having adequate resources, 25% of high-income countries still do not complete 5-yearly monitoring of tobacco use within their populations. And while some level of monitoring is happening in all but 27 of the world's countries, there are still no low-income countries monitoring at best-practice level, even though monitoring can be made more affordable if thoughtfully integrated with health systems strengthening activities.

Sustained monitoring of tobacco use is a challenge for low- and middle-income countries

There are 35 countries (with a combined population of 2 billion) with recent and representative data on both adults and youth that only need to ensure both surveys are repeated within a 5-year time span to achieve best-practice monitoring level. Most of these countries (23) are middle-income, six are high-income and six are low-income. If all 35 closed the gap to meet best-practice level, there would be 4.8 billion people (63% of the world's population) living in countries that ensure effective monitoring of the tobacco epidemic.

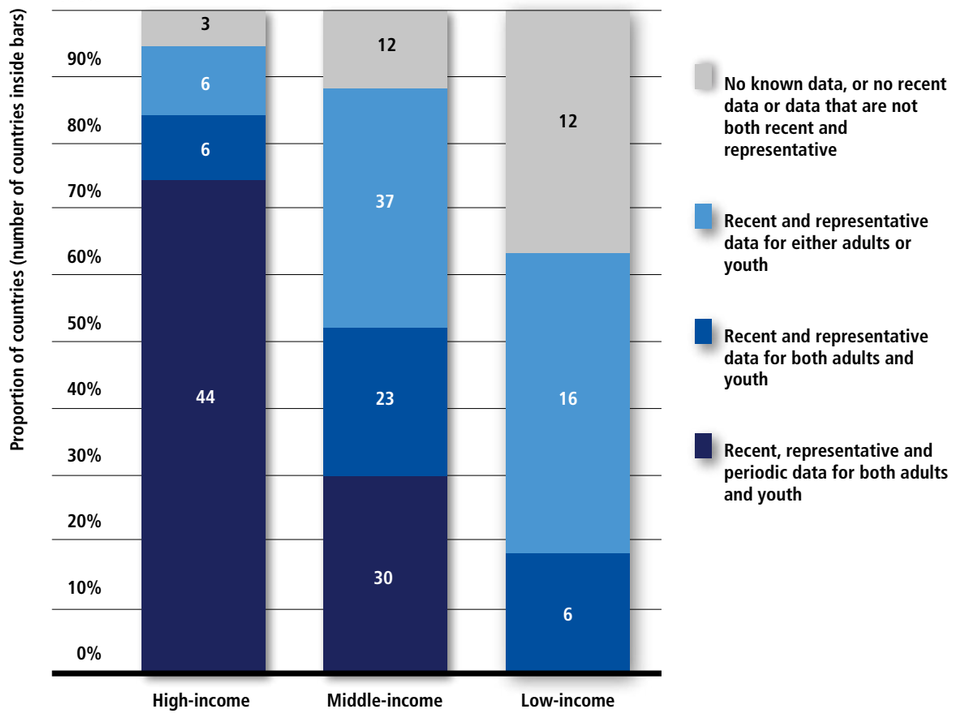
MONITORING THE PREVALENCE OF TOBACCO USE – HIGHEST ACHIEVING COUNTRIES, 2018



Countries with the highest level of achievement: Armenia, Australia, Austria, Azerbaijan, *Bahamas, Bangladesh, Belgium, Bhutan, Brazil, Brunei Darussalam, Bulgaria, Cambodia, Canada, Chile, Cook Islands, Costa Rica, Croatia, Czechia, Denmark, Ecuador, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Indonesia, Iran (Islamic Republic of), Ireland, Italy, Japan, Kazakhstan, Kuwait, Lao People's Democratic Republic, Latvia, Lebanon, Lithuania, Luxembourg, Malaysia, Malta, Mongolia, Myanmar, Netherlands, New Zealand, Norway, Pakistan, Palau, Panama, Peru, Philippines, Poland, Portugal, Qatar, Republic of Korea, Republic of Moldova, Romania, Russian Federation, Serbia, Singapore, Slovakia, Slovenia, Spain, *Suriname, Sweden, Switzerland, Thailand, Ukraine, United Kingdom, United States of America, Uruguay, and Viet Nam.

* Country newly at the highest level since 31 December 2016.

MONITORING



More countries need to monitor all forms of tobacco use as well as electronic nicotine delivery systems

Historical data show that after the WHO FCTC came into force in 2005 and monitoring began in 2007, no obvious progress was made until the countries new to monitoring the tobacco epidemic began completing their second round of surveys in 2011–2012. While progress appears to have stagnated since 2014, it is expected that as more recently completed surveys are published, coverage levels in 2016 and 2018 will be revised upwards.

Numbers of tobacco users remain stubbornly high

In total, there are 1.4 billion tobacco users aged 15 years and above worldwide – 1.07 billion smokers and 367 million smokeless tobacco users – a small number of whom use both smoked and smokeless tobacco. This number has declined slightly since 2007 when there were 1.46 billion tobacco users. There are 1.12 billion men currently using tobacco (5 million fewer than in 2007) and 279 million women (58 million fewer than in 2007).

Despite three out of four countries having banned sales to minors under the age of 18 years – and another 10 countries having set an even higher age limit for tobacco purchases – an estimated 24 million children aged 13–15 around the world smoke, and 13 million use smokeless tobacco.

Smoking rates are declining in all country income groups

Between 2007 and 2017, smoking rates decreased from a global average of 22.5% to 19.2%, showing a relative reduction of 15% over 10 years. People in low-income countries smoke at about half the rate of people in high-income countries, and this ratio has changed little over the period. The relative reduction of the smoking rate in high-income countries was 20%, and in low-income countries was 19%. In middle-income countries, the relative reduction was only 12%. Smoking rates in middle-income countries, where three quarters of the world's population live, reflect the global average. While smoking rates are declining fastest on average in high-income countries, they collectively still have the highest average smoking rate of all income groups in 2017 (21.6%).

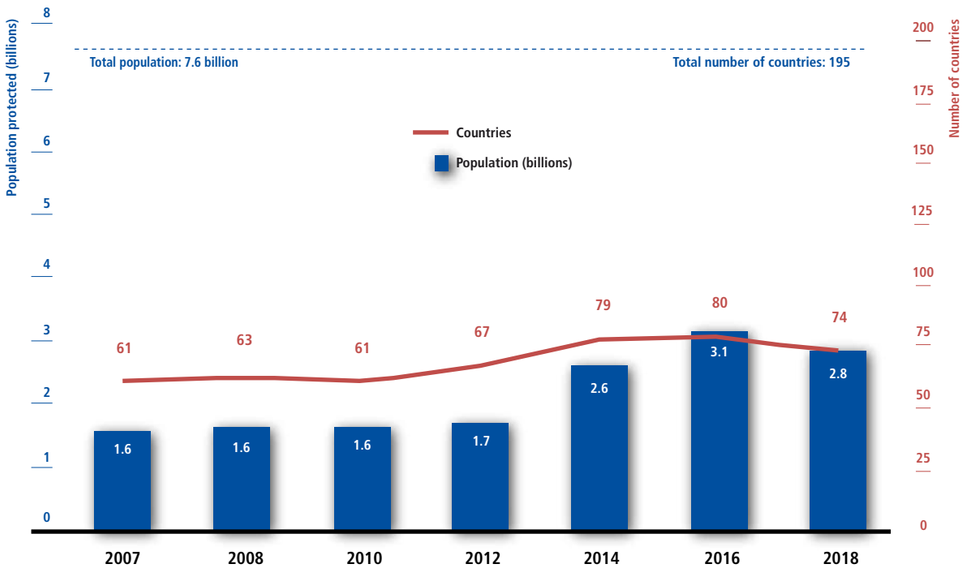
During this same decade, smoking among men decreased from 37.1% to 32.7%, and smoking among women decreased from 8.0% to 5.8%. In 2017, smoking rates among women in high-income countries are still the highest of all country income groups (16.4%) – over four times the average rate in low- and middle-income countries for women (3.5%). In contrast, the highest rates among men are seen in middle-income countries (35.3%), which is almost double the average rate in low-income countries for men (20.2%).

Tobacco control must be accelerated to avoid future growth in the number of smokers

By 2030, when the ultimate success of the Sustainable Development Goals will be measured, the global average smoking rate is expected to have declined to about 16%. In order to see smoking rates fall below 16%, countries need to accelerate their efforts. In high- and middle-income countries, smoking rates are expected to reach around 17% if they remain on their current trajectories. In low-income countries smoking rates are projected to decline to under 10% by 2030, but only if countries with low rates today are vigilant about not getting caught up in the tobacco epidemic.

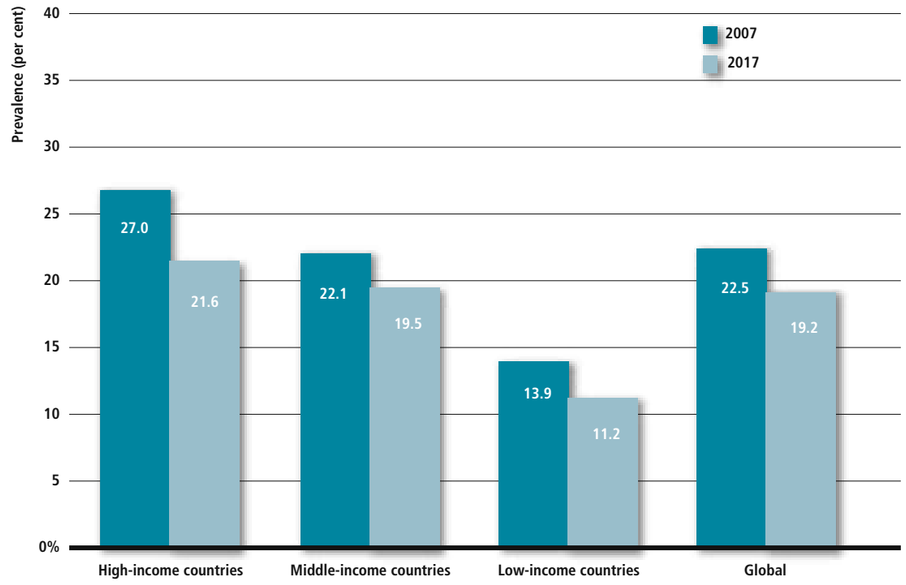
Global projections of smoking among men and women show a stark contrast, with women's rates projected to decline to around 4% by 2030 while men's rates are expected to remain high, at 28%. This scenario would mean a future rise in the number of men smoking due to population growth – up from 908 million in 2017 to 913 million in 2030. To prevent this disastrous outcome, urgent action needs to be taken, particularly among men in middle-income countries where the number of smokers could reach 750 million by 2030.

PROGRESS IN MONITORING (2007–2018)

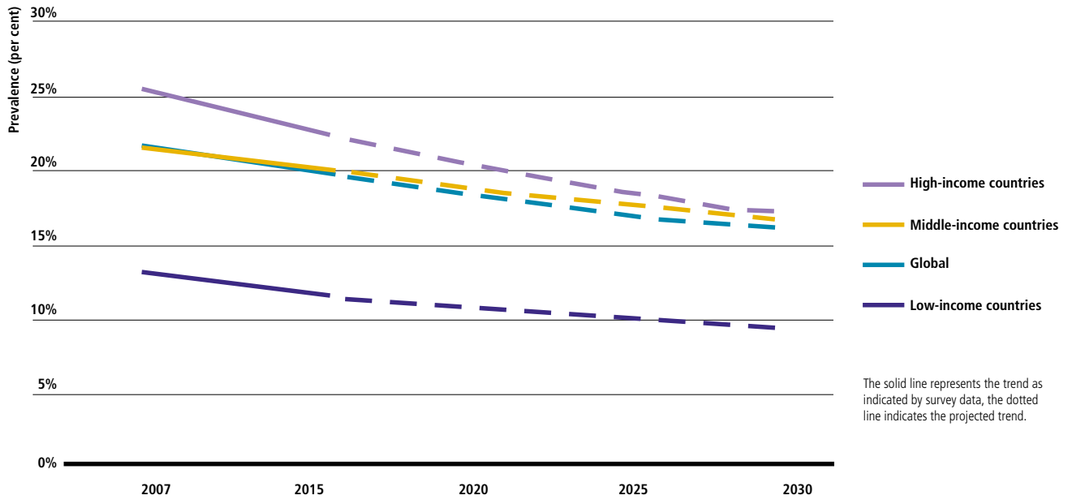


Note: While the average time between survey data collection and report release is unknown, the experience of this report is that it takes around 4 years to obtain a complete list of national surveys run in a particular year. Therefore, the data for 2016 and 2018 are incomplete.

CURRENT TOBACCO SMOKING PREVALENCE AMONG ADULTS, 2007–2017



WHO-ESTIMATED TREND IN CURRENT SMOKING PREVALENCE, AGES 15+



Overcoming challenges to conduct surveys in the Eastern Mediterranean Region

The STEPS survey team conducting an interview, Sudan, 2018.

Over the past 2 years several countries in the WHO Eastern Mediterranean Region have achieved excellent outcomes in monitoring tobacco use. Lebanon and Sudan in particular have overcome significant challenges to complete landmark surveys on the burden of tobacco use among their populations, reversing long-standing deficits in the collection of tobacco use data.

In 2017 Lebanon implemented a WHO Stepwise approach to surveillance (STEPS) survey, incorporating Tobacco Questions for Surveys (TQS) to monitor the effects of tobacco policies and the use of tobacco products such as shisha and narghile. The survey included Syrian asylum seekers – a population hard to reach given their unstable and mobile living conditions. It was the first national survey to provide comparable indicators for migrants and the local population, and the results have helped the country evaluate existing policies and recommend changes.

Meanwhile, Sudan also undertook its first-ever TQS as part of a STEPS survey, planned and conducted in collaboration with the Federal Ministry of Health, the Central Bureau of Statistics and WHO. Capturing populations such as those in remote and conflict-affected areas presented a major challenge. To overcome this, data collectors coordinated with the country's military in order to travel safely. Data derived from the TQS have helped identify specific geographical areas and at-risk populations at which more targeted interventions can be directed.

Successful noncommunicable disease risk factor surveillance, Indonesia

Tobacco use is the leading cause of preventable death and morbidity in Indonesia, whose National Institute of Health and Research and Development (NIHRD) has been monitoring tobacco use and other NCD risk factors since 2004 using the national health survey. In 2007, Riset Kesehatan Dasar (RISKESDAS, or "Basic Health Research") was created – an integrated and nationwide population-based survey which complements and is informed by global standards such as WHO's STEPwise approach and the Global Tobacco Surveillance System, including the Global Adult Tobacco Survey.

The success of RISKESDAS lies in its comprehensive coverage of all key NCD risk factors, along with its ability to provide reliable estimates at district, provincial and national levels – an important factor given the decentralized nature of health care delivery in Indonesia. Emphasis is placed on completing the survey and releasing the results within a few months, maximizing their timeliness and usefulness. Since the first RISKESDAS in 2007, NIHRD has conducted the survey every 5 years, completing the most recent round in 2018. With 100% domestic funding, its integration with other key health indicators and its value to policy-makers have sustained the initiative over time.

RISKESDAS tobacco module collects information on the age of onset tobacco use, tobacco consumption patterns, cessation attempts, exposure to second-hand smoke, and the use of e-cigarettes. The data can be sorted by key socio- and age-demographic characteristics and show that smoking prevalence among those aged 15 years and above has increased from 27% in 1995 to 33.8% in 2018. Knowing how the use of tobacco is changing within the population is essential for planning policies that will most effectively halt the tobacco epidemic. RISKESDAS results have helped central and district governments in evidence-based planning, as well as in monitoring and evaluation.

The RISKESDAS team conducting field work in Jakarta, Indonesia, 2018.

Between 2007 and 2017, smoking rates decreased from a global average of 22.5% to 19.2%, showing a relative reduction of 15% over 10 years.

Protect people from tobacco smoke

Article 8 of the WHO FCTC states: "… [S]cientific evidence has unequivocally established that exposure to tobacco smoke causes death, disease and disability … [Parties] shall adopt and implement … measures providing for protection from exposure to tobacco smoke in indoor workplaces, public transport, indoor public places and, as appropriate, other public places" *(1)*. WHO FCTC Article 8 guidelines are intended to assist Parties in meeting their obligations under Article 8 of the WHO FCTC and provide a clear timeline for Parties to adopt appropriate measures (within 5 years after entry into force of the WHO FCTC for a given Party) *(95)*.

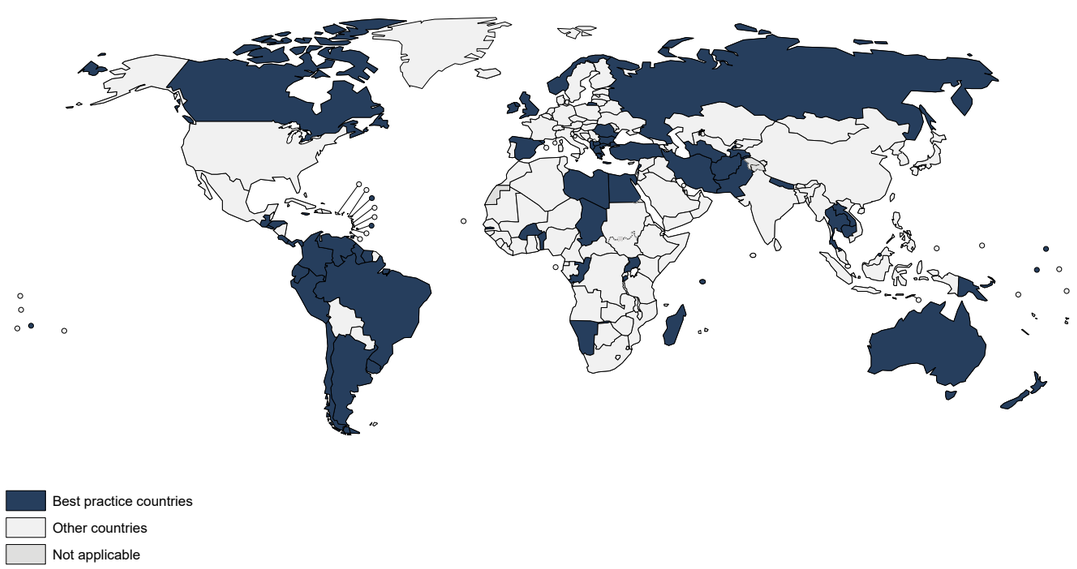
Second-hand smoke kills

Exposure to second-hand smoke can lead to severe and fatal diseases including cardiovascular disease, respiratory disease, and cancer *(96–99)*. Children and infants are particularly susceptible to second-hand smoke, and at increased risk for respiratory disease, middle ear disease, and sudden infant death syndrome *(100–105)*. Fetuses and pregnant women exposed to second-hand smoke are more at risk of stillbirth, congenital malformations, and lower birth weights *(105)*. There is no safe level of exposure to second-hand smoke and even brief exposure can cause harm *(106)*. Almost all non-smokers living with smokers are exposed and are at greater risk of premature deaths and diseases *(107)*. The only way to adequately protect both smokers and non-smokers from second-hand smoke is to fully eliminate indoor smoking *(107)*.

To work, smoke-free laws must be comprehensive

Smoke-free laws are highly effective in decreasing exposure and enhancing indoor air quality for both smokers and non-smokers *(108–110)*. However, to be sufficient, they must be comprehensive. It is a misconception that smoke-free places with designated smoking rooms protect non-smokers from second-hand smoke. The only intervention shown to fully protect from second-hand smoke is a smoke-free environment that permits no exceptions *(111–113)*. It is important to remind countries that no safe level of exposure to second-hand smoke exists. Accommodations for smoking including separate rooms, designated smoking – areas, ventilation systems, air exchanges, and filtration devices – are not protective, and cannot eliminate all second-hand smoke *(98, 110, 111)*. Exceptions dilute the impact of smoke-free laws.

SMOKE-FREE ENVIRONMENTS – HIGHEST ACHIEVING COUNTRIES, 2018



Countries, territories and areas with the highest level of achievement: Afghanistan, Albania, *Antigua and Barbuda, Argentina, Australia, Barbados, *Benin, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, *Burundi, Cambodia, Canada, Chad, Chile, Colombia, Congo, Costa Rica, Ecuador, Egypt, El Salvador, *Gambia, Greece, Guatemala, *Guyana, Honduras, Iran (Islamic Republic of), Ireland, Jamaica, Lao People's Democratic Republic, Lebanon, Libya, Madagascar, Malta, Marshall Islands, Namibia, Nauru, Nepal, New Zealand, North Macedonia, *Niue, Norway, occupied Palestinian territory, including east Jerusalem, Pakistan, Panama, Papua New Guinea, Peru, Romania, Russian Federation, Seychelles, Spain, Suriname, *Tajikistan, Thailand, Trinidad and Tobago, Turkey, Turkmenistan, Uganda, United Kingdom, Uruguay, and Venezuela (Bolivarian Republic of).

Smoke-free laws save lives

There is robust evidence that jurisdictions with legislative smoking bans enjoy reduced hospital admissions for acute coronary syndrome and reduced mortality from smoking-related illnesses *(111)*. Smoke-free laws also denormalize smoking, encouraging healthier behaviours such as maintaining smoke-free homes and automobiles *(114–116)*. Establishing smoke-free environments may also encourage smokers to reduce their tobacco use, make a quit attempt, and remain tobacco-free in the long-term *(117, 118)*.

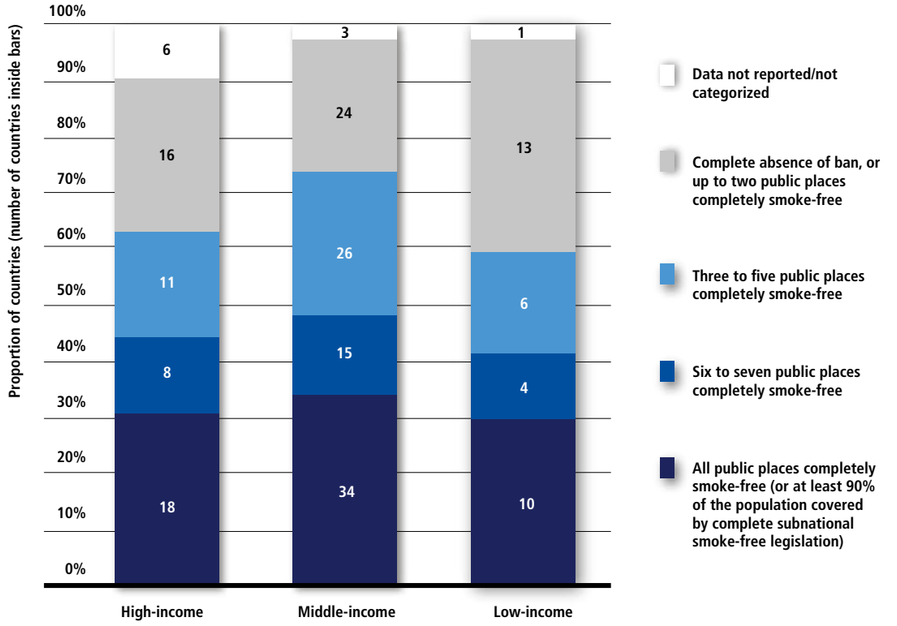
Smoke-free laws are popular and do not hurt business

Smoke-free laws are not only life-saving but relatively easy to pass and economically and politically feasible to enforce. An increasing number of countries continue to adopt comprehensive smoke-free legislation at national and subnational levels. In spite of the tobacco industry's assertions to the contrary, the best-designed studies report that smoke-free laws do not have adverse economic consequences for businesses, including the hospitality industry *(119–121)*. When applied, invariably smoke-free laws achieve overwhelming support from the public *(122, 123)*.

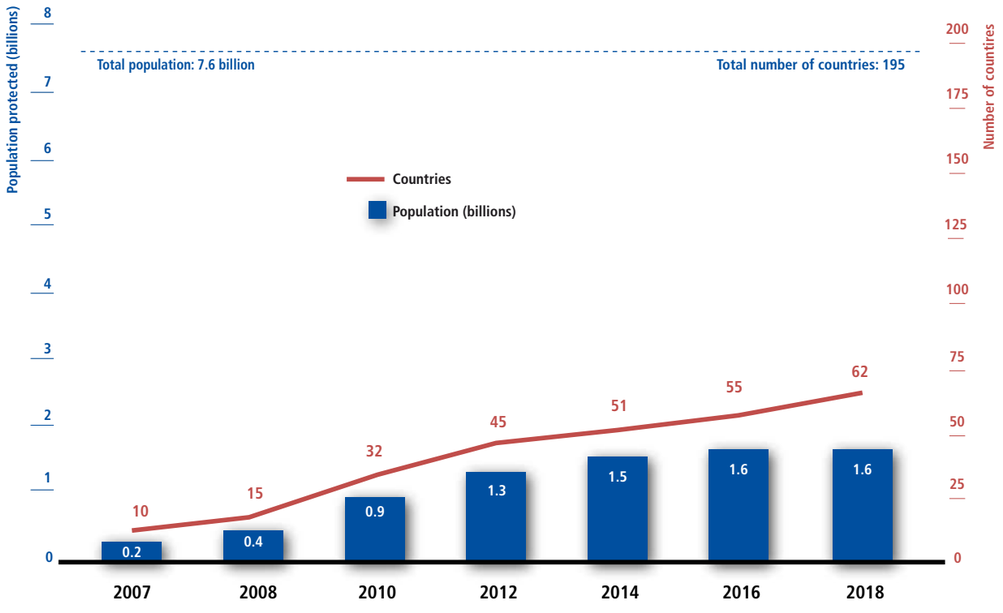
Only 22% of the world's population are protected by complete smoking bans in public places, workplaces and public transport

Comprehensive smoke-free legislation is in place for over 1.6 billion people in 62 countries (covering 22% of the world's population). There is remarkably little difference among income groups, with around one in three countries in each income group having a comprehensive ban in place. Two in three countries continue to leave their populations vulnerable to the dangers of second-hand smoke through weak or absent smoke-free laws, with 41 high-income, 68 middle-income and 24 low-income countries poorly or completely unprotected. Among them, 24 countries (with 372 million people) have no bans at all – 21 of them low- and middle-income countries. The other 109 countries have partial bans that fall short of a complete ban on smoking in public places and workplaces.

SMOKE-FREE LEGISLATION



PROGRESS IN SMOKE-FREE LEGISLATION (2007–2018)



Comprehensive smoke-free legislation is in place for over 1.6 billion people in 62 countries (covering 22% of the world's population).

It is time for completely smoke-free environments to become the social norm

In the past 2 years, seven countries have joined the group of countries providing protection at best-practice level, with all public places completely smoke-free. Five of these countries went from either no law (Burundi, Niue) or a very minimal law covering up to two public places (Antigua and Barbuda, Gambia, Tajikistan) to a complete ban covering all public places and workplaces. The other two countries (Benin and Guyana) strengthened moderate laws already in place to reach best-practice level. Four of these seven countries are low-income countries. An additional eight countries upgraded their smoke-free laws but did not reach full coverage.

While there has been sustained progress in implementation of smoke-free laws since 2007 when only 10 countries had a complete law, progress among low- and middle-income countries has been particularly dramatic. In those 11 years, 40 low- and middle-income countries (more than one in four) have adopted a complete smoke-free law, while only 12 high-income countries (one in five) have done the same. The population protected globally by smoke-free legislation at best-practice level has increased from 232 million to 1.6 billion since 2007.

Comprehensive smoke-free legislation is a popular policy measure

There are 11 countries, representing 120 million people, that only need to cover one more place with a smoking ban to join the 62 other countries with a complete smoke-free law: Tonga (universities); Democratic People's Republic of Korea (government facilities); Cook Islands, Mauritius, Ukraine and Zambia (indoor offices); Senegal (restaurants); Bhutan (cafes, pubs, bars); and Cyprus, Georgia and Hungary (public transport). Fifteen countries, with a combined 1.7 billion people, need only remove the possibility of designated smoking rooms in their laws to achieve best-practice level. Fifteen countries with 1.6 billion people only need to cover two more places with a smoke-free ban to reach best-practice adoption.

Of the 505 million people (6.6% of the world's population) who live in one of the world's 100 largest cities, only 284 million (in 47 cities) are protected by a comprehensive smoke-free law. Five of these cities (Bandung, Jakarta, Medan, Beijing and Hong Kong SAR) are covered by city-level smoke-free laws, ten are covered by state- or province-level smoke-free laws and the remaining 32 are covered by national laws. Instead of waiting for a national policy to be put in place, the remaining 53 of the world's largest cities not currently protected by a national best-practice policy could move ahead with a city, state or provincial level policy to protect their large populations sooner.

Another city goes smoke free in China

Xi'an city launches its smoke-free regulations at Daming Palace, 2018.

Xi'an has long been one of the most popular tourist destinations in the world, with more than 200 million people visiting the city (population 10 million) each year. In August 2018, with leadership from the Municipal Legislative Office and strong support from the Xi'an Municipal Government, the city adopted a regulation to ban indoor smoking in all workplaces, on public transport, and in indoor public spaces. Strong support from the health commission, international community, and domestic NGOs helped pass the regulation and protect the millions of citizens and visitors to the city from the harms of second-hand smoke. Extensive public education and awareness campaigns were initiated to promote the new smoke-free regulation and strong enforcement efforts were implemented.

The municipal government started a competition among the various government agencies responsible for enforcement to encourage participation in the new regulations and asked them to submit on a monthly basis their enforcement numbers, fines, penalties, training events and communication campaigns. As of April 2019, more than 155 000 venues were inspected, and more than 240 000 yuan in fines and penalties have been collected.

For more than a 1000 years – and as the starting point of the Silk Road – Xi'an has played a critically important role in the trade and economy of the region. Now its leadership will serve to inspire other cities to focus on the health of their citizens and visitors. The world looks forward to the continued leadership of Xi'an, and a tobacco-free Silk Road in the near future.

Public places go smoke-free in Gambia

In 2015 Gambia took steps to draft a Tobacco Control Act and protect the health of its citizens. Enacted in December 2016 and officially launched in July 2017, the strong leadership of the Ministry of Health (supported by WHO) and an effective, multisectoral platform helped facilitate the country's substantial progress. While previous smoke-free legislation required people not to smoke in public indoor areas, these bans were incomplete, allowing smoking areas or designated smoking rooms in almost all venue types. The new Act took a major step forward by removing these exemptions, making the ban complete across all venues.

In 2018 a national tobacco control committee was established to facilitate the implementation of the Act, which entered into force on 18 July 2018. At the same time civil society was mobilized to increase public and community awareness about the dangers of smoking, particularly in public places. WHO provided technical support and guidance to the Ministry of Health, and involved the ministries, finance, justice, basic and secondary education, higher education, information and communication, tourism, trade, industry and employment, foreign affairs, youth and sports, as well as the medical research council and the media.

A community engagement session to inform people about the harms of tobacco and second-hand smoke using WHO visual resources in the Gambia.

With smoke-free legislation in place it is now important to monitor compliance in all venues and to ensure that the law is enforced to achieve the greatest impact on the health of Gambia's population.

Offer help to quit tobacco use

Just over 30% of the world's population are covered by comprehensive cessation services

As of 2018, comprehensive tobacco cessation services are in place for 2.4 billion people in 23 countries – 32% of the world's population. The number of countries adopting comprehensive tobacco cessation measures lags behind the other MPOWER measures, with only 16 high-income countries, six middle-income countries and one low-income country (Senegal) offering comprehensive cessation support.

Globally, almost all high-income countries make cessation services available and 90% also offer at least partial cost coverage of these services. The majority of middle-income countries (72%) do the same, while only 24% of low-income countries offer any cost-coverage for services. There are 24 countries that provide no cessation support at all. These numbers show that while great work has begun, there is still much more to be done.

Comprehensive tobacco cessation services are in place for 2.4 billion people in 23 countries – 32% of the world's population.

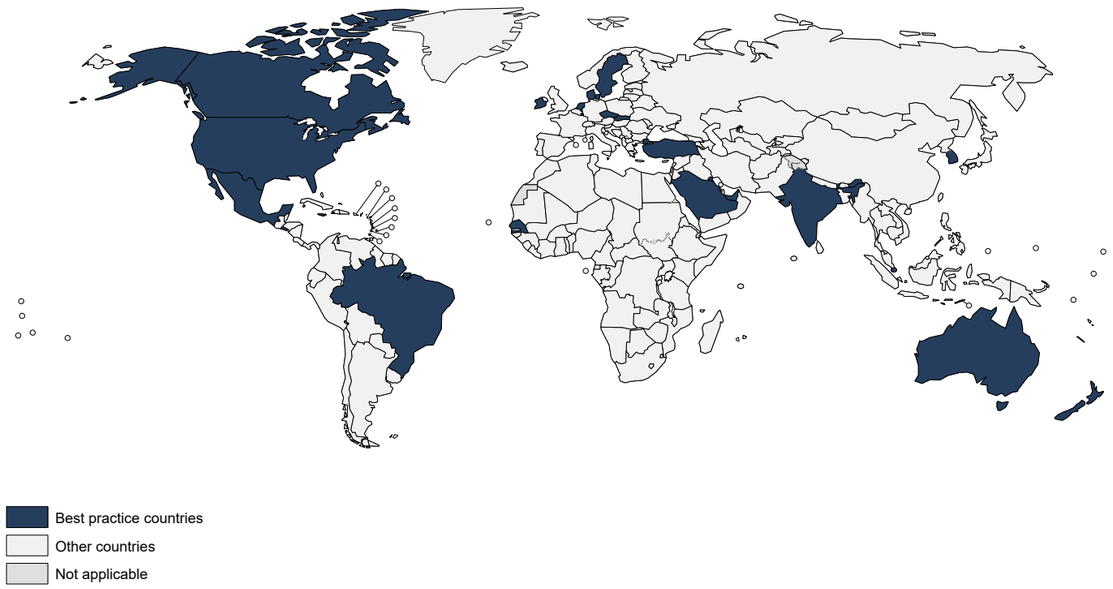
Demand is building for cessation services – it is time to deliver

The proportion of the world's population covered by comprehensive cessation services decreased by 1% between 2016 and 2018. On a positive note, four countries with a combined population of 60 million (Czechia, Saudi Arabia, Slovakia, Sweden) began offering comprehensive cessation services in the past 2 years. Disappointingly, however, the number of people protected by these countries newly adopting best practice is offset by six countries – representing 97 million people – that dropped out of the best-practice group in the same period. Of these countries that reduced services, five were high-income (Brunei Darussalam, Estonia, Israel, Malta and Panama) and one was middle-income (Islamic Republic of Iran). Three of the countries (Brunei Darussalam, Israel and Panama) discontinued their toll-free quit line, and the other three discontinued cost-coverage of nicotine replacement therapy (NRT).

While progress has been slower in "O" than other MPOWER measures since 2007, best-practice adoption of cessation services nonetheless increased from 10 countries (5% of the world's population) in 2007 to 23 countries (32% of the world's population) in 2018 – meaning 2 billion more people are now protected by this measure. The population offered best-practice cessation services in 2018 is six times what it was in 2007 (when it was only 401 million people).

There are 67 countries – home to 2.1 billion people – whose package of cessation support is missing only one element to achieve best-practice implementation: (i) a national toll-free quit line; (ii) cost-coverage of NRT; or (iii) cost-coverage of cessation services in clinical settings or in the community. Of these 67 countries, 28 need to add a national toll-free quit line in order to bring comprehensive tobacco cessation support to an additional 805 million people, while 38 need to offer cost-covered

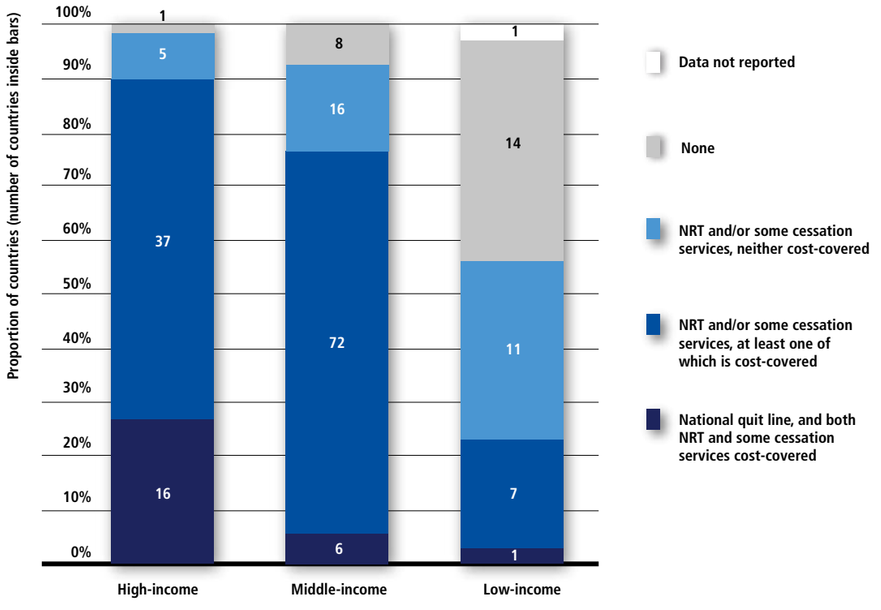
TOBACCO DEPENDENCE TREATMENT – HIGHEST ACHIEVING COUNTRIES, 2018



Countries with the highest level of achievement: Australia, Brazil, Canada, *Czechia, Denmark, El Salvador, India, Ireland, Jamaica, Kuwait, Luxembourg, Mexico, Netherlands, New Zealand, Republic of Korea, *Saudi Arabia, Senegal, Singapore, *Slovakia, *Sweden, Turkey, United Arab Emirates, and United States of America.

* Country newly at the highest level since 31 December 2016.

TOBACCO DEPENDENCE TREATMENT



NRTs to cover an additional 1.3 billion people and one (Côte d'Ivoire) needs to begin cost-covering one or more of its cessation services in clinical settings or the community so that an additional 25 million people will be covered.

Of the 505 million people (6.6% of the world's population) who live in one of the world's 100 largest cities, only half (255 million in 49 cities) have access to appropriate cessation support. Of these cities, two have city-level policies in place (Hong Kong SAR and London), and the other 47 have national-level policies. Instead of waiting for a national policy to provide cessation support, the remaining 51 could move ahead with a city, state or provincial level policy to more immediately protect their large populations.

Prioritize three key tobacco cessation interventions

At a minimum, three cessation interventions should be included in a comprehensive tobacco control programme: brief cessation advice in primary care settings, national toll-free quit lines, and pharmacological therapy that at the very least includes NRT.

Tobacco cessation support in primary care facilities

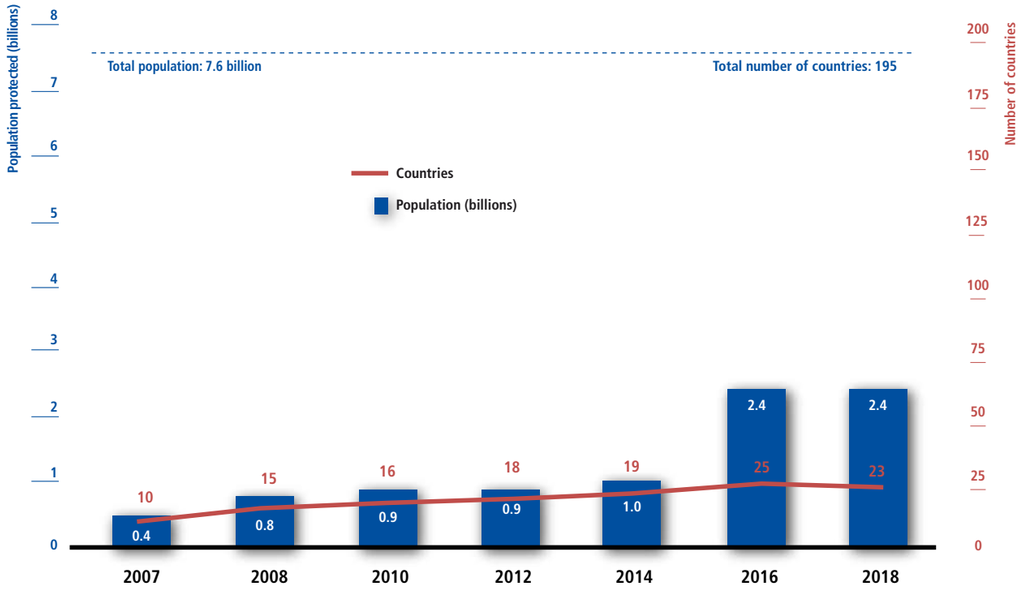
Middle-income countries have made notable progress in providing tobacco cessation support in at least some primary care settings since 2007. The population covered with cost-covered cessation support in at least some primary care facilities has increased from 23% to 75%, with most of this increase occurring in middle-income countries. There has been little to no progress in high-income countries since 2012 and very little progress in low-income countries at all since to 2007. Currently, only 18 countries are providing fully cost-covered tobacco cessation support in most of their primary care facilities.

National toll-free quit line

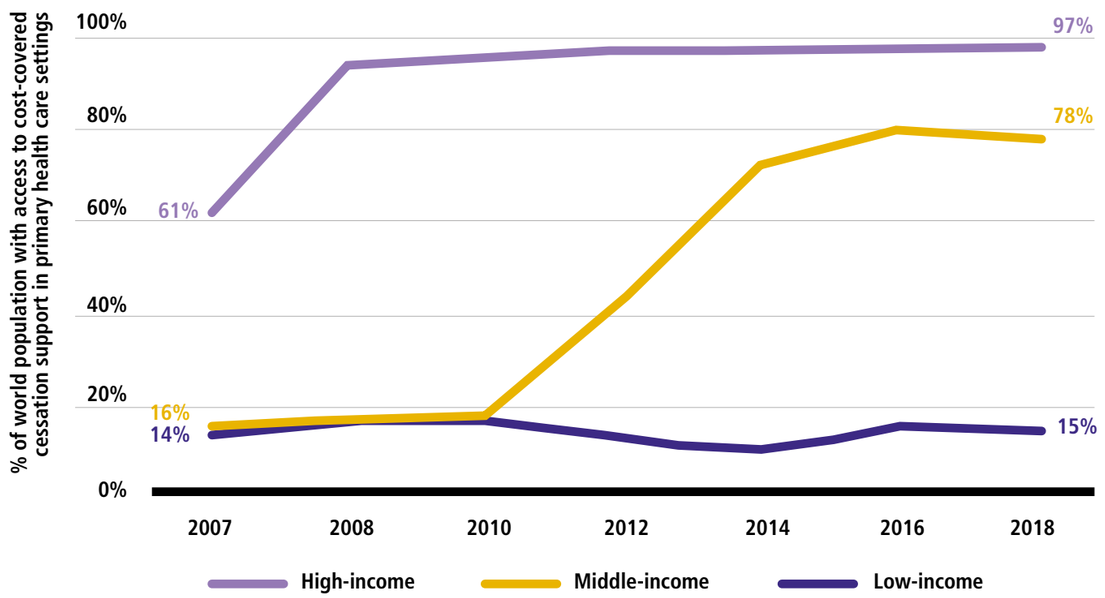
Only a third of countries have a national toll-free quit line in place – a situation that has changed very little since 2016. Middle-income countries have made the most progress in establishing national toll-free quit lines, with the proportion of middle-income countries covered rising from 10% in 2007 to 33% in 2017.

National toll-free quit lines were the only cessation intervention that saw an increase in adoption since 2016.

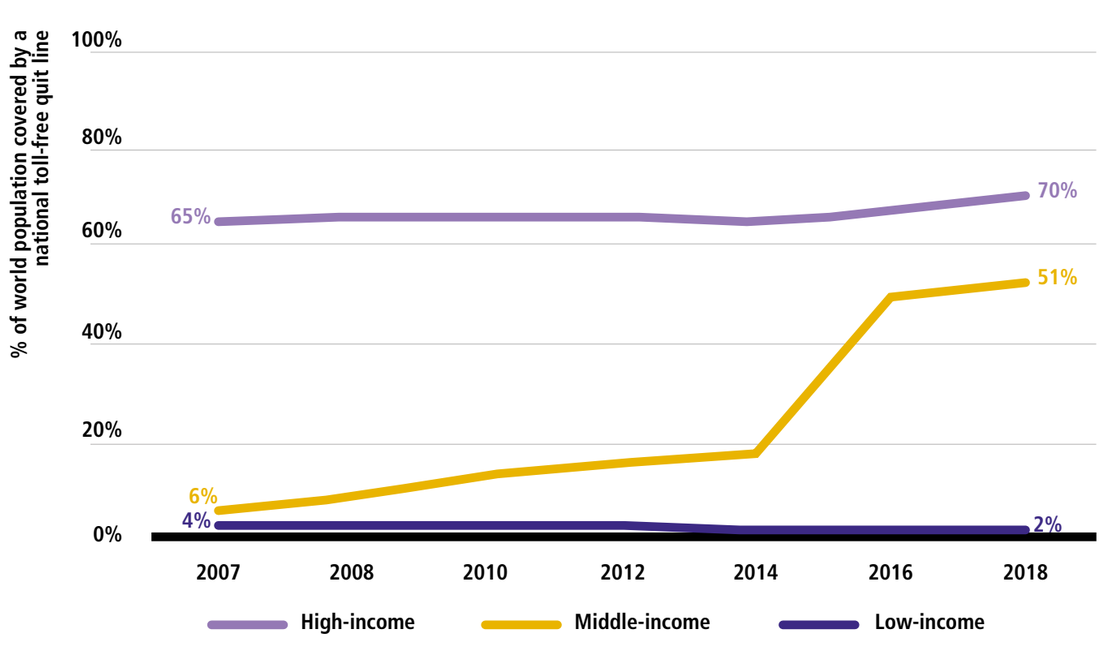
PROGRESS IN TOBACCO DEPENDENCE TREATMENT (2007–2018)



TOBACCO CESSATION SUPPORT IN AT LEAST SOME PRIMARY CARE FACILITIES (2007–2018)



NATIONAL TOLL-FREE QUIT LINE (2007–2018)



Ten countries introduced a quit line in the last 2 years: Belarus, Bulgaria, Czechia, Latvia, Republic of Moldova, Saudi Arabia, Slovakia, Timor-Leste, Turkmenistan, and Ukraine. Five countries (Brunei Darussalam, Cambodia, Israel, Norway and Panama) discontinued their quit lines after 2016, leaving a net increase of five countries.

Nicotine replacement therapy must be affordable

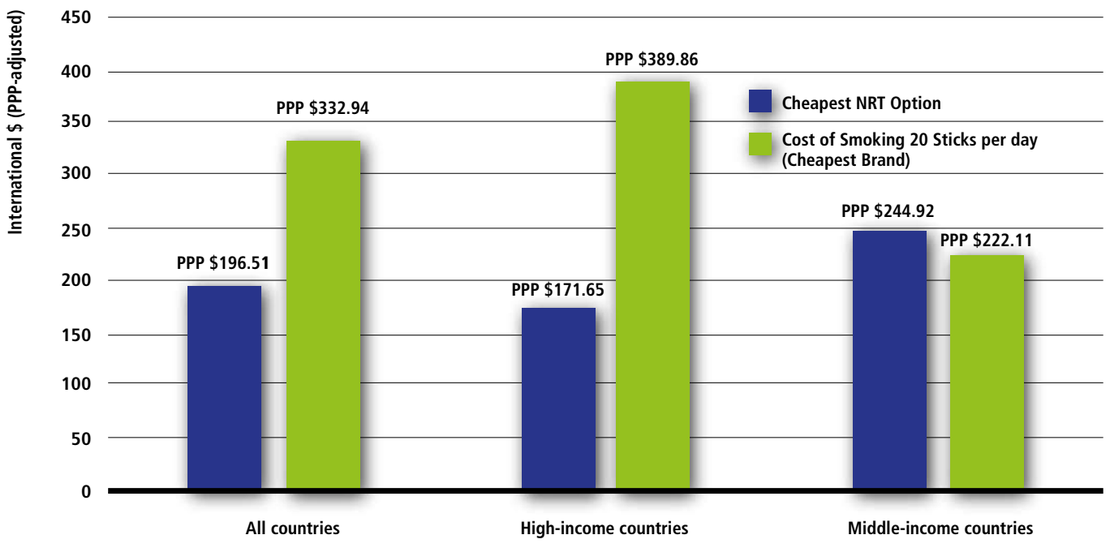
Globally, while more than two thirds of the world's countries make NRTs available, less than one third either partially or fully cover the costs. Disappointingly, the number of countries providing NRTs has decreased since 2016 and only 45 countries have placed NRT on their essential drugs list. Affordability of NRT is a key issue. Countries that do not (or only partially) cover NRT costs rely on tobacco users to finance this cessation tool out-of-pocket. An analysis of prices from 56 countries shows that (on average) the least expensive NRT option, adjusted for purchasing power parity, costs 40% less than the cost of smoking one pack a day of the cheapest cigarette brand over the same period of time. This means that, at least for heavy smokers, even paying for NRT out-of-pocket (no costs covered) while attempting to quit is likely to be less expensive than continuing to smoke.

The price difference between NRTs and the cheapest brand of cigarettes is greatest in high-income countries, where it is significantly cheaper to purchase an 8-week course of nicotine replacement therapy compared to 56 packs of the cheapest cigarettes. Even in middle-income countries included in the analysis, where the cost of NRT is significantly higher, overall cost comparisons show the prices are similar over the same period of time.

In countries that have some form of cost-coverage for NRTs, the cost of the cheapest NRT is almost 20% less, suggesting the presumably larger demand for these products helps reduce out-of-pocket costs. It should be noted this same situation may not be the case in low- and lower-middle-income countries, where NRTs are likely to be relatively more expensive and cigarettes much cheaper. While far from being universally accessible, using NRT as a cessation tool is relatively affordable compared to the cost of smoking. Cost-coverage of NRTs is an important factor for governments to consider, particularly when trying to expand access to proven and effective cessation tools.

NRT has the best balance of effectiveness, cost and safety. As a result, two forms of NRT (nicotine gum and nicotine patch) have been added to WHO Model List of Essential Medicines since 2009 (see: https://www.who.int/medicines/publications/essentialmedicines/en/). The Model list presents a list of drugs that are essential to health systems. Countries should consider adding NRT to their national essential drug lists.

AVERAGE PRICE OF THE LEAST EXPENSIVE NRT OPTION COMPARED WITH SMOKING THE CHEAPEST BRAND



Policies and capacity for tobacco cessation must improve

WHO FCTC Article 14 guidelines recommend the implementation of four specific infrastructure elements in order to promote tobacco cessation and provide effective tobacco dependence treatment:

- **A national cessation strategy:** Among the countries for which there are data, almost 40% (73 out of 187) have national cessation strategies, ranging from 60% of high-income countries to 18% of low-income countries.

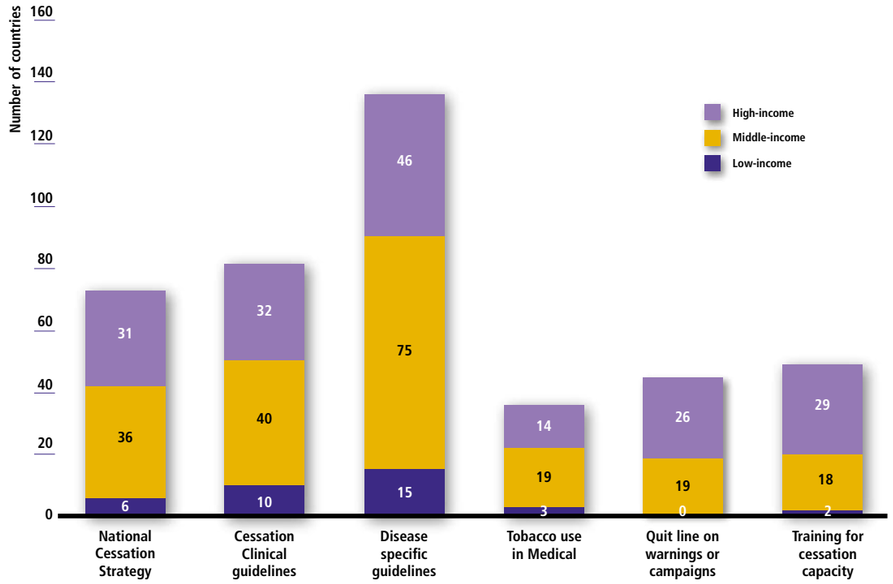
- **National tobacco cessation guidelines:** An assessment was made of countries' national tobacco cessation guidelines and clinical guidelines for treating tuberculosis, cancer, cardiovascular disease, diabetes, chronic obstructive pulmonary disease, reproductive health, mental health and oral health problems. This revealed that 82 countries (42% globally) have national tobacco cessation guidelines; and 136 countries (73% of those that submitted a questionnaire) have at least one disease-specific clinical guideline which includes cessation. Two thirds of these countries are low- and middle-income countries.

- **Training capacity:** A total of 50 countries reported regularly training primary care providers in brief advice (which should be integrated into primary care disease prevention and control programmes) and/or providing at least one form of cessation training as part of medical, nursing or dental curricula.

- **All medical notes include information about tobacco use:** Including tobacco use status in medical records helps to routinely identify tobacco users and advise them to quit. Of all the infrastructure and systems components examined, this was the least implemented. Tobacco use was reported in routine medical records in only 35 countries.

While it is recommended that tobacco cessation measures are implemented synergistically with other tobacco control initiatives, only 45 countries reported integrating quit line information into mass media campaigns or placing quit line numbers on the graphic health warnings on tobacco products. Of the countries that have a national toll-free quit line, no low-income countries had incorporated quit line numbers on graphic health warnings or in mass media campaigns.

POLICIES AND STRUCTURAL CAPACITY FOR NATIONAL TOBACCO CESSATION SUPPORT



India successfully implements mCessation

mCessation messages received in English and Hindi in India.

India is the second largest consumer of tobacco products, with more than 200 million users of smokeless forms of tobacco (SLT) and 276 million consumers of tobacco overall. In 2017 a Global Adult Tobacco Survey (GATS2) found 38.5% of adult smokers and 33.2% of adult SLT users in India had attempted to quit. The government recognized the demand for cost-effective and accessible cessation services and adopted a multi-pronged strategy to reach out to tobacco users across rural and urban India. In addition to the integration of brief advice in primary care, a toll-free quit line and a national framework for joint TB-Tobacco activities, India has leveraged technological solutions to increase access.

The National Tobacco Control Programme and the Ministry of Health and Family Welfare, with support from WHO and the International Telecommunication Union's "Be He@lthy, Be Mobile" initiative, implemented the mCessation programme. Part of the "Digital India" initiative, it uses two-way messaging between the individual seeking to quit and programme specialists, providing dynamic support for those who wish to quit. A unique feature of the programme allows users who want to quit to register by giving a missed call to a dedicated national number, or by registering at http://www.nhp.gov.in/quit-tobacco. The government has recently released Version 2 of the mTobaccoCessation platform, which is capable of delivering the content through SMS or interactive voice response in 12 languages. The programme's progress is monitored in real time through an online dashboard that details the number of registrations, disaggregated by factors such as gender, geography, and tobacco use type.

To date, the programme has over 2.1 million self-registered users. An evaluation conducted by the Ministry of Health and Family Welfare found an average quit rate of 7% for both smokers and smokeless tobacco users 6 months after enrollment. When 12 000 participants in the programme were asked about their tobacco use, more than 19% said they had abstained over the past 30 days.

India has also launched a second national mHealth programme, mDiabetes, for the prevention and management of diabetes. Both programmes have been integrated into the national NCD screening initiative under the national health protection scheme, "Ayushman Bharat."

Senegal is the first-low income country to offer comprehensive cessation support

Quit line featured on cigarette packs, Senegal.

When Senegal adopted its Tobacco Control Act in 2014, the Health Commission of the country's National Assembly affirmed that tobacco cessation was a national priority and that comprehensive smoking cessation support would be established to help smokers quit. At the time, the Chair of the Health Commission, Awa Dia Thiam, told Members of Parliament: "Measures must be taken to support smokers who want to quit smoking and help them through the very difficult preliminary phase."

Since then the Ministry of Health and Social Action has created a national toll-free quit line offering trained counselors who are able to give advice on smoking cessation and advise callers about the various treatments available in Senegal to help them quit. During the first 4 months, 4068 calls were received by the quit line.

More recently, the National Tobacco Control Program, which is responsible for coordinating tobacco control policy, has developed a National Tobacco Control Strategic Plan 2018–2022, which details the cessation services available.

The Republic of Korea offers comprehensive help to quit smoking

Since 2005, the Republic of Korea has promoted cessation services in all public health centres across the country. From June 2017 to June 2018 alone, 357 936 smokers were given brief advice to quit, and 70 833 (19.8%) of them had not smoked for 6 months after their quit date.

In 2006 a national toll-free quit line was launched to strengthen and support the national cessation programme. The quit line is available 13 hours a day on weekdays, and 9 hours a day on weekends, and provides registered users with free counseling sessions for 1 year. Of the 17 752 tobacco smokers who received at least one telephone counseling session between 2017 and 2018, 3368 (19%) had not smoked for 6 months after their quit date.

In 2015 the National Health Insurance Service started to cover the cost of tobacco cessation consultation and cessation drug fees in hospitals and clinics across the country. An outreach service, known as "Quit Bus" was introduced to help and encourage socially marginalized smokers, such as women and out-of-school youth, to quit. Regional smoking cessation centres were established to provide free intensive treatment to heavy smokers. The expansion of services led to an increase in the number of people registering with national smoking cessation services from 439 971 in 2014 to 861 086 in 2017.

Smoking cessation counselling in a mobile clinic known as the Quit Bus, Republic of Korea.

The comprehensive national smoking cessation services contributed to a significant decline in the smoking rate among adult males, from 66.3% in 1998 to an historic low of 38.1% in 2017. The earmarking of tobacco tax revenue for quit services and providing cessation services in conjunction with other tobacco control initiatives are key factors that contributed to this success.

Integrating brief tobacco interventions into primary care, Ecuador

Ecuador ratified the WHO FCTC in 2006, and despite advances in tobacco control, according to the Institute of Health Metrics and Evaluation (see https://vizhub.healthdata.org/gbd-compare/), an Ecuadorian citizen dies from tobacco every 2 hours[1]. Providing tobacco cessation support via the country's health system is still a challenge – and one that can be met by encouraging collaboration with other sectors. In this context, in 2018 Ecuador took steps to integrate brief tobacco interventions into primary care, aligning with their "Médico del Barrio" strategy (Neighborhood Doctor strategy)[2].

As part of this intervention, the Ecuadorian Ministry of Health has established a national training network, linking together training institutions responsible for on-the-job training of primary care providers and asking WHO to strengthen the capacity of their national training network on tobacco cessation. In response, WHO, PAHO and the European Respiratory Society (which provided financial support) conducted a joint train-the-trainer tobacco cessation workshop for 55 national trainers in January 2018. In March 2018, integration of brief tobacco interventions into primary care began in Pichincha, Guayas, Azuay and Cañar provinces.

About 120 primary care providers were trained on brief tobacco interventions and have since been routinely identifying tobacco users and advising them to quit.

The results of the project have been very encouraging. From mid-March to mid-November 2018, 3916 tobacco users were identified and given advice on quitting. Among the 2069 patients who completed a follow-up at 4 months, the 7-day self-reported abstinence rate was 57.2%, and of the 968 who completed a 6-month follow-up assessment, the self-reported abstinence rate was 48.9%. Based on these results, Ecuador plans to expand tobacco cessation integration to more provinces.

A man receives brief advice about quitting tobacco, Ecuador.

[1] The data result displays a mean estimate expressed in the raw number of 5372 deaths and a 95% range of uncertainty interval from 4669 to 6143 deaths.

[2] "Medico del Barrio" is an advanced primary health care strategy developed and implemented by the Government of Ecuador, whose purpose is to provide health care services to vulnerable and priority populations via patient recruitment and screening. This is done through home visits by health teams consisting of a general practitioner, a nurse, a primary health care worker, and the support of a community and family physician and/or a general comprehensive physician working at the first level of care.

Warn about the dangers of tobacco

Health warning labels

Article 11 of the WHO FCTC states: "Each Party shall … adopt and implement … effective measures to ensure that … tobacco product packaging and labelling do not promote a tobacco product by any means that are false, misleading, deceptive or likely to create an erroneous impression about its characteristics, health effects, hazards or emissions" *(1)*. WHO FCTC Article 11 guidelines are intended to assist Parties in meeting their obligations under Article 11 of the WHO FCTC, which provides a clear timeline for Parties to adopt appropriate measures (within 3 years after entry into force of the WHO FCTC for a given Party) *(95)*.

Health warnings provide critical information about the harms of tobacco use

Despite the overwhelming evidence-base on the harms of tobacco, many tobacco users still do not fully appreciate the dangers they expose themselves and others to by consuming tobacco *(124)*. Consumers have a right to be warned about the health impacts of the products they purchase and consume, and this includes sufficient and accurate information regarding the risks of tobacco use *(124–126)*. Graphic health warnings providing accurate information about the risks associated with tobacco use can help stimulate tobacco users to reduce their consumption and quit *(127, 128)*.

Effective health warnings communicate the risks of consuming tobacco as well as the risk to others of exposure to second-hand smoke *(129)*. There is significant evidence that accurate, prominent warnings prompt tobacco users to think about quitting, and can result in decreased tobacco use *(130, 131)*.

Health warnings on tobacco packaging are effective

Graphic health warnings on tobacco product packages reliably reach tobacco users each time they use the products *(132)*. At the same time, applying warning labels to packaging is at relatively low expense to governments *(132)*. Graphic health warnings are well-supported by the public – more so than most other tobacco control measures *(129, 133)*.

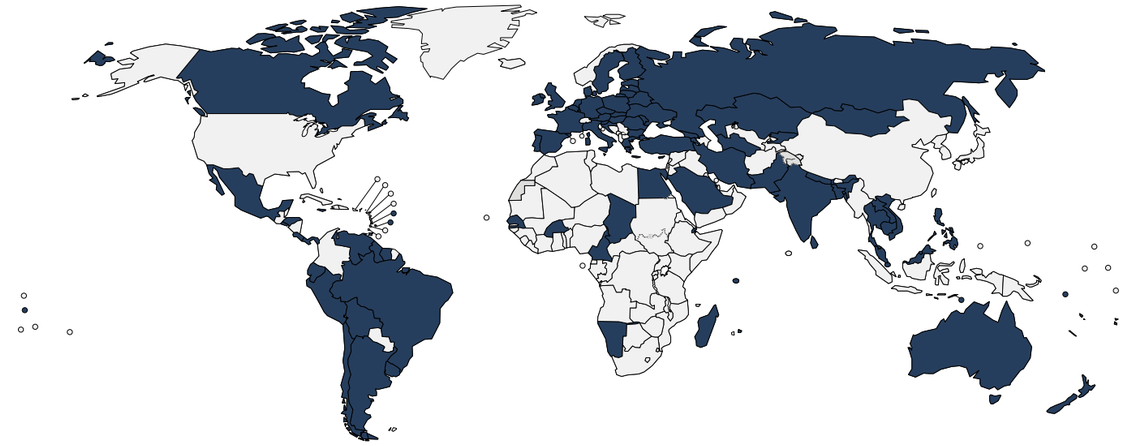
Warnings should refer to specific health effects related to tobacco use. They are most effective when they are pictorial, graphic, comprehensive, and strongly worded *(134, 135)*. It is important that the warning is large, covering at least half of a tobacco package's surface (front and back) *(132)*. To sustain their impact, labels should be rotated on a regular basis *(136)*.

Companies use packaging to manipulate users' perceptions of a tobacco product's taste, strength, and health impacts, in essence turning packaging into a product characteristic *(137)*. Terms suggesting reduced health risks including "light", "ultra-light", and "low tar" are deceptive and should be prohibited *(130)*. However, removing misleading descriptors may not be sufficient to decrease the misperceptions of reduced risk associated with these cigarette types *(138, 139)*.

Over half of the world's population are exposed to large and effective graphic health warnings

Strong graphic pack warnings are in place for almost 3.9 billion people in 91 countries – over half of the global population (52%). More people are protected by this MPOWER measure than any other, with 47% of countries implementing graphic pack warning requirements at the highest level: 65% of high-income countries, 45% of middle-income countries and 15% of low-income countries. Only 10% of countries (five high-income, nine middle-income and seven low-income) have not adopted any warning labels, and 22 others (11%) have issued warnings that cover less than 30% of the principal package display areas (below the minimum required by the WHO FCTC). One in three low-income countries has no warning, or a warning that is smaller than required.

HEALTH WARNING LABELS – HIGHEST ACHIEVING COUNTRIES, 2018



Countries with the highest level of achievement: Argentina, Armenia, Australia, Austria, Bangladesh, *Barbados, Belarus, Belgium, Bolivia (Plurinational State of), Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Cambodia, *Cameroon, Canada, Chad, Chile, Costa Rica, *Croatia, *Cyprus, Czechia, Denmark, Djibouti, Ecuador, Egypt, El Salvador, Estonia, Fiji, Finland, France, *Georgia, Germany, Greece, *Guyana, *Honduras, Hungary, India, Iran (Islamic Republic of), Ireland, Italy, Jamaica, Kazakhstan, Kyrgyzstan, Lao People's Democratic Republic, Latvia, Lithuania, *Luxembourg, Madagascar, Malaysia, Malta, Mauritius, Mexico, Mongolia, Namibia, Nepal, Netherlands, New Zealand, *Pakistan, Panama, Peru, Philippines, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, *Saint Lucia, Samoa, *Saudi Arabia, Senegal, Seychelles, Singapore, Slovakia, *Slovenia, Solomon Islands, *Spain, Sri Lanka, Suriname, Sweden, Thailand, *Timor-Leste, Trinidad and Tobago, Turkey, Turkmenistan, Ukraine, United Kingdom, Uruguay, Vanuatu, Venezuela (Bolivarian Republic of), and Viet Nam.

* Country newly at the highest level since 31 December 2016.

Four out of five low-income countries do not mandate sufficient warnings on packs

In the past 2 years, 14 additional countries, with 4% of the world's population, have joined the 77 countries that required large graphic warning labels on tobacco products. Seven were high-income countries and the other seven were middle-income. Of the 14 countries, two (Barbados and St Lucia) went from no required health warnings at all to a complete law covering at least 50% of the pack with a graphic health warning, and the other 12 strengthened existing laws to meet best-practice level. No low-income countries achieved complete adoption of graphic warning laws in the past 2 years, meaning four out of five low-income countries are still not mandating sufficient warnings on packs.

Strong graphic health warnings are in place for almost half of all countries and more than half of the global population

Compared to 2007, when only nine countries (5% of the world's population) had large graphic pack warnings on cigarettes, there are now 91 countries (52% of the world's population) with comprehensive graphic pack warning requirements. This means 82 countries have taken action to adopt laws that require strong graphic health warnings on tobacco products since 2007. The 28 Member States of the European Union (EU) are large contributors to this increase, since all of them have incorporated the requirements for large graphic health warnings required by the 2014 EU warning label directive into their national laws (23 countries had done so by 2016 and the remaining five by 2018). In addition, India reached best-practice level in 2016, adding 1.35 billion people to the total population coverage. Of all MPOWER measures, this one has seen the most progress since 2007 both in terms of countries acting and population covered by a best-practice policy.

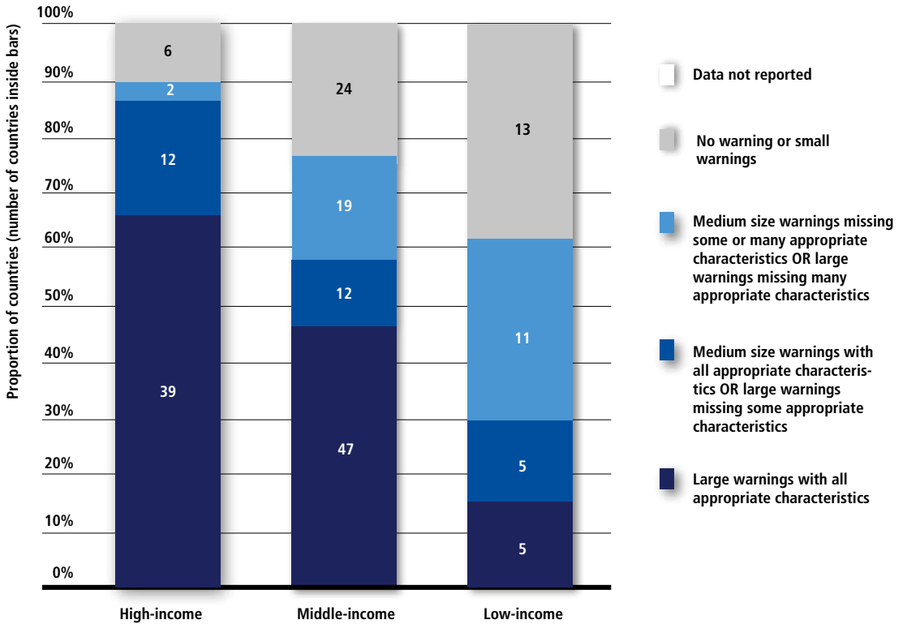
Eight countries, with 384 million people, need only raise the pack coverage by 20% or less to meet all best-practice criteria for large graphic pack warnings.

An additional 15 countries have mandated large warnings (at least 50% of the pack) and need only add one criterion to achieve best practice. Eight of these 15 countries, representing 157 million people, need only mandate that strong graphic health warnings appear on each package and any outside packaging used in the retail sale, and six countries, with 360 million people, need only add a requirement for a graphic image (instead of text only) – Albania, Cook Islands, Niger, Togo, Tonga and the United States of America. The remaining member of this group, Gabon, with 2 million people, only needs to require a specification of font style, font size and colour for pack warning requirements to reach best-practice level.

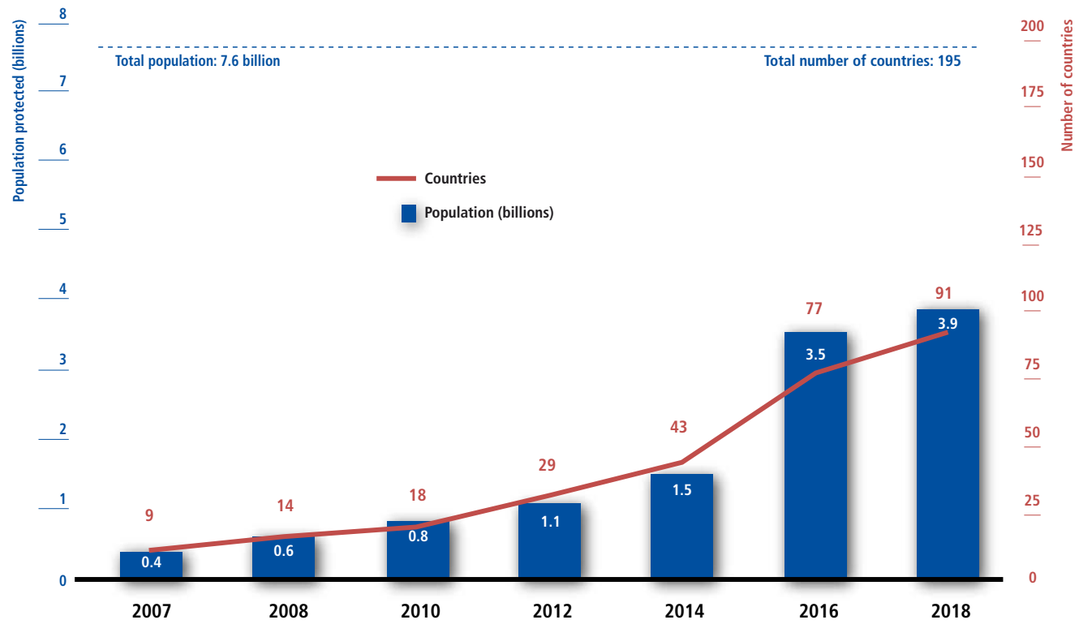
Of the 505 million people (6.6% of the world's population) who live in one of the world's 100 largest cities, two thirds (339 million) live in one of the 62 cities protected by graphic pack warnings containing all appropriate characteristics. These cities are all covered by a law passed at the national level, apart from Hong Kong SAR, which has a city-level law in place.

Strong graphic health warnings are in place for almost 3.9 billion people in 91 countries – over half of the global population (52%).

HEALTH WARNING LABELS



PROGRESS IN HEALTH WARNING LABELS (2007–2018)



Plain packaging is effective and increases the effectiveness of health warnings

Plain packaging (also called standardized packaging) is packaging which restricts or prohibits "the use of logos, colours, brand images or promotional information on packaging other than brand names and product names displayed in a standard colour and font style" *(95)*. Plain packaging simultaneously reduces the attractiveness of tobacco products, eliminates the effects of tobacco packaging as a form of advertising and promotion, minimizes misleading product descriptor language, and enhances the noticeability and effectiveness of health warnings *(140–143)*. There is evidence that plain packaging reduces misperceptions that some cigarettes are less harmful than others, and decreases both smoking prevalence and smoking behaviours *(144)*.

First implemented by Australia in 2012, plain packaging has been challenged by the tobacco industry on the basis of protection of trademarks, freedom of commercial expression, protections for trade, and protections for the free movement of goods *(145)*. These challenges have been rejected in the domestic courts of Australia, England and Wales, France, and Norway *(145)*. In addition, in June 2018, a World Trade Organization panel ruled against complaints brought by four countries regarding Australia's tobacco packaging law *(146)*.

More and more countries require plain packaging of tobacco products

In spite of tobacco industry lobbying, several countries are now moving forward with plain packaging. By the end of 2018, 10 countries had adopted legislation mandating plain packaging of tobacco products and had issued regulations with implementation dates (Australia, France, Hungary, Ireland, New Zealand, Norway, Saudi Arabia, Thailand, United Kingdom and Uruguay). In addition, Belgium, Canada, Singapore and Turkey have passed plain packaging regulations in 2019. Burkina Faso, Georgia, Israel, Romania and Slovenia have passed laws but not regulations and do not yet have implementation dates.

Georgia adopts new law on health warnings

The Georgian parliament votes for a tobacco control bill, 2017.

Georgia has one of the highest rates of tobacco use in the world. About 33% of the adult population are current smokers (including 57% of men), in addition to 12.6% of 13–15-year-olds. About 11 400 Georgians die every year as a result of tobacco use, and the country loses 2.4% of its annual GDP to tobacco-related deaths and disability. While the first tobacco control law in the country was adopted in 2003, strong interference from the tobacco industry prevented the law from being comprehensive. For more than a decade Georgia's laws have remained stagnant. However, in 2015 a plan for change began to take shape. The Tobacco Control Alliance, with support from several NGOs and funding and strong technical backing from the Campaign for Tobacco Free Kids, began an advocacy campaign, mobilizing and consolidating all local and international players working in tobacco control, health, and human rights. On 17 May 2017 the new law was adopted.

The law requires that pictorial health warnings cover at least 65% of the two biggest sides of the packaging of all smoking tobacco products (including cigarettes, cigars, water pipes, heated tobacco etc.). Georgia's government decreed that the nine most effective pictorial warnings (selected by the Ministry of Health based on focus group results) developed in Australia and Canada must be used. Packages of smokeless tobacco products must provide written health warnings on 30% of the two biggest sides. Three general graphic health warnings and three additional ones with relevant pictograms are subject to rotation during a year and should be equally distributed on each type of tobacco package.

There is no place for complacency however, as ongoing tobacco industry interference continues to undermine tobacco control efforts in Georgia, with the industry successfully delaying the implementation of plain packaging to December 2021.

Plain packaging spreads across the globe

Plain packaging guidelines, Uruguay.

As the success of plain packaging requirements becomes ever-more apparent, more countries, including middle-income countries, are starting to adopt the measure. The following three countries are the first in their respective regions to do so.

Uruguay continues to lead the Americas

In 2018 Uruguay continued its role as a leader for the Americas, becoming the first country in the region to enact plain packaging requirements for tobacco products. Uruguay's president, Tabaré Vàsquez, signed an executive decree mandating plain packaging on 6 August 2018. Only a month later, however, the decree was suspended due to a lawsuit filed by British American Tobacco (BAT). The Administrative First Instance Court ruled in favour of BAT because the plain packaging measure had been enacted by an executive decree instead of a law adopted by Parliament. The Uruguayan government appealed this decision and on 11 October 2018 the Court of Appeal ruled in the government's favour, although a law would still be necessary to establish plain packaging. A legislative effort was immediately launched that month, leading to the adoption of Law 19.723 on 12 December 2018 and a detailed decree on 29 April 2019, with the law to be implemented for all tobacco products from 22 December 2019.

Saudi Arabia introduces plain packaging

In late 2018, the Saudi Food and Drug Authority (SFDA) issued regulations requiring plain packaging on tobacco products, making Saudi Arabia the first country in the Eastern Mediterranean Region to do so. In preparation for the legislation (which will be fully implemented on 1 January 2020), the SFDA issued a model plain package to all tobacco product manufacturers and importers, specifying the required standard colour and font style, and sample graphic health warnings that must be carried, selected from both the WHO and Eastern Mediterranean Regional Office's Graphic Health Warnings database. In alignment with Saudi Arabia's 2030 vision for the promotion of public health, it is expected that this step will contribute to Saudi Arabia's overall tobacco control agenda.

Thailand is the first upper-middle-income country to introduce plain packaging

In December 2018, Thailand made history when it became the first country anywhere in Asia (and the first upper-middle-income country in the world) to require plain packaging – a law that will be fully implemented by 9 September 2019. "Plain packaging is a landmark measure for tobacco control that will help reduce the use of these deadly products in Thailand," said Dr Daniel A Kertesz, WHO Representative to Thailand. The new measure complements earlier legislation requiring 85% of the surface of tobacco packs to show graphic warnings of the adverse effects of smoking on health.

Anti-tobacco mass media campaigns

Article 12 of the WHO FCTC states: "Each Party shall promote and strengthen public awareness of tobacco control issues, using all available communication tools, as appropriate. … each Party shall … promote … broad access to effective and comprehensive educational and public awareness programmes on the health risks including the addictive characteristic of tobacco consumption and exposure to tobacco smoke; … [Each party shall promote] public awareness about the risks of tobacco consumption and exposure to tobacco smoke, and about the benefits of the cessation of tobacco use and tobacco-free lifestyles;… [each party shall promote] public awareness of and access to information regarding the adverse health, economic, and environmental consequences of tobacco production and consumption "*(1)*. WHO FCTC Article 12 guidelines are intended to assist Parties in meeting their obligations under Article 12 of the WHO FCTC *(95)*.

Well-designed anti-tobacco mass media campaigns can reduce tobacco use

Well designed, hard hitting anti-tobacco mass media campaigns can reduce tobacco use. There is strong evidence that mass media campaigns increase quit attempts, lower youth initiation rates and reduce second-hand smoke exposure *(147–152)*. Mass media anti-tobacco campaigns are commonly used in high-income countries but have been shown to be effective in low-and middle-income countries as well *(153)*.

Sustained campaigns are more likely to have a longer-term impact on tobacco use behaviour, but campaigns running for as little as 3 weeks can still have a positive impact *(148, 154, 155)*. Television campaigns using graphic imagery are known to be especially effective in motivating tobacco users to attempt to quit *(151, 156)*.

Mass media campaigns can be expensive, but they have the potential to quickly and efficiently reach very large populations *(151)*. Including information about what tobacco users can do to quit, such as providing a toll-free quit line number on the products of the mass media campaign, e.g. on the bottom of posters or at the end of television advertisements.

Comprehensive tobacco control strategies must include mass media campaigns

Anti-tobacco mass media campaigns not only create awareness and inform people about the harms of tobacco use and second-hand smoke, they also encourage quitting. As such it is imperative that these campaigns form an important part of any comprehensive tobacco control strategy or programme *(156)*. Governments should develop and deliver messages designed to educate current and potential tobacco users about the dangers of tobacco influence attitudes and beliefs about tobacco use *(149)*.

Mass media efforts continue to fall behind

Less than a quarter of the world's population (1.7 billion people) live in a country that has aired at least one national comprehensive anti-tobacco mass media campaign in the past 2 years. Of the 39 countries that ran an anti-tobacco campaign during that time, 19 were high-income, 18 were middle-income and two were low-income countries. Almost half of the countries in the world (91) have not run any kind of sustained campaign in the past 2 years, leaving about 19% of the world's population, and an estimated 220 million tobacco users, unreached by any mass media campaign.

People in low-income countries are the least exposed to anti-tobacco mass media: over 60% of the population of low-income countries, living in 24 countries, have not been exposed to any kind of campaign in the past 2 years.

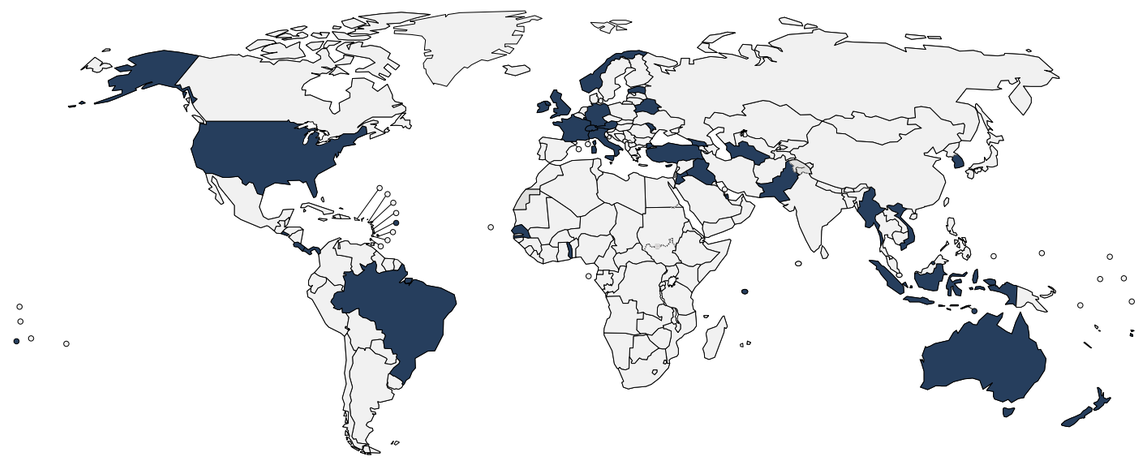
The first year for which mass media campaigns were monitored was 2010. Since then, the proportion of the world's population exposed to a best-practice mass media campaign rose until 2014, when 4.2 billion people lived in countries airing such campaigns. Regrettably, by 2018 this number had dropped by more than half, to 1.7 billion people. In 2015–2016, 42 countries ran campaigns, a higher number of countries than during any other period.

Most countries that execute campaigns do not repeat the effort every 2 years. Of the 42 countries that ran a best-practice campaign in the period 2014-2016, 33 ran another campaign in the recent period, but only 22 of these were also best-practice campaigns.

Of the 91 countries that ran no campaign at all in the last two years, 20 had previous experience running a best-practice campaign.

Of the 14 countries that consistently ran campaigns in all of the five periods assessed (2009–2010, 2011–2012, 2013–2014, 2015–2016 and 2017–2018) only four (Australia, Turkey, United Kingdom and Viet Nam) maintained best-practice implementation for each campaign.

ANTI-TOBACCO MASS MEDIA CAMPAIGNS – HIGHEST ACHIEVING COUNTRIES, 2018

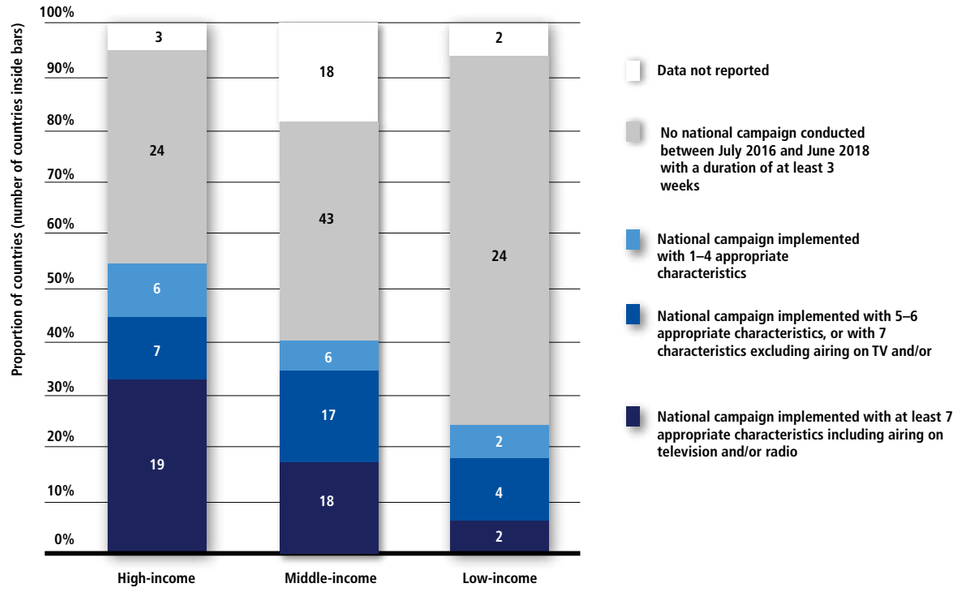


Best practice countries
Other countries
Not applicable

Countries with the highest level of achievement: Australia, Austria, *Belarus, *Brazil, *Brunei Darussalam, Costa Rica, *Cyprus, El Salvador, Estonia, Fiji, *France, *Georgia, *Germany, Indonesia, *Iraq, Ireland, Italy, Jordan, *Luxembourg, *Myanmar, New Zealand, Norway, Pakistan, *Panama, *Qatar, Republic of Korea, Republic of Moldova, *Saint Lucia, *Senegal, Seychelles, Switzerland, *Timor-Leste, *Togo, Tonga, Turkey, *Turkmenistan, United Kingdom, United States of America, and Viet Nam.

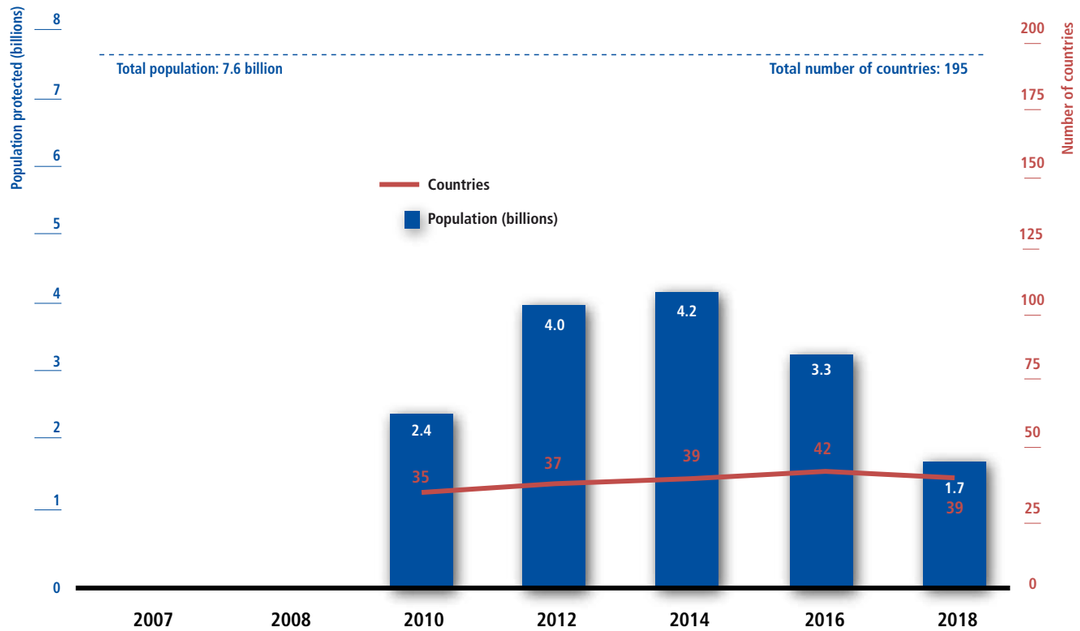
* Country newly at the highest level since 31 December 2016.

MASS MEDIA CAMPAIGNS



Less than a quarter of the world's population live in a country that has aired a national comprehensive anti-tobacco mass media campaign in the past 2 years.

PROGRESS IN ANTI-TOBACCO MASS MEDIA CAMPAIGNS (2010–2018)



Note: Data reporting for anti-tobacco mass media campaigns started in 2010.

Myanmar launches first-ever mass media anti-tobacco campaign

The #stopbetelmyanmar campaign, Myanmar.

A 2014 STEPS survey in Myanmar showed 43.2% of the population (62.2% male and 24.1% female) used smokeless tobacco, with 94% reporting the use of smokeless tobaccos containing betel quid. To combat the health risks associated with tobacco use, Myanmar implemented its first mass media campaign to increase awareness of the health harms of tobacco use (including betel quid) in September 2017. The national NGO People's Health Foundation, in collaboration with civil authorities and creative, media and research agencies across Myanmar, designed and implemented the campaign. The support of the Ministry of Health and Sports and the Ministry of Information through free and reduced-cost radio and TV air time, as well as technical and financial support from Vital Strategies (a non-governmental organization), was also instrumental. The 6-week campaign was the first to ever feature stories about actual people harmed by smokeless tobacco in Myanmar on TV, radio and posters. Development followed an evidence-based strategic communication approach that included target audience identification; refinement, pre-testing and production of Public Service Annoucements; the use of public and private media (TV, radio); and post-campaign assessment of the reach and impact. Mass media campaigns for tobacco control have been recognized as a WHO "best-buy" approach *(28)*. The significant reach of the campaign, covering 48% of the population in 2017 and over 80% during 2018, is encouraging, and an excellent example of how multistakeholder collaboration can create maximum impact at the country level.

Entertainment industry helps create a smoke-free next generation in China

China is the biggest consumer of tobacco products. Even though progress has been made in advancing tobacco control initiatives, China's addiction to tobacco remains strong. The tobacco industry continues to unleash large marketing campaigns and is still able to expand its consumer base and successfully acquire a new generation of smokers. Tobacco-related diseases kill 1 million people in China every year and 100 000 non-smokers die from exposure to second-hand smoke.

In May 2017, a campaign for a smoke-free next generation harnessed the power of the entertainment industry by teaming up with celebrities and a fashion magazine (based on their appeal to youth and women in particular) to spread the message that choosing a healthy, smoke-free lifestyle is empowering.

The campaign was launched during World No Tobacco Day 2017 and exploded on social media, earning 34 million views in just 3 days. It was ranked as the number one social-good hashtag and within its first week had reached more than 120

The Smoke-Free Next Generation campaign, China.

million social media users, 70% of them under the age of 40. More than 80 million users participated in campaign discussion threads during the week. Within the first 30 days, 184 media outlets covered the campaign in China and the video was displayed on more than 100 LED screens in landmark buildings and sites throughout China. Even Xiamen Airlines aired the video in its lounges around China, and in its aircraft.

Enforce bans on tobacco advertising, promotion and sponsorship

Article 13 of the WHO FCTC states: "... [A] comprehensive ban on advertising, promotion and sponsorship would reduce the consumption of tobacco products. Each Party shall ... undertake a comprehensive ban of all tobacco advertising, promotion and sponsorship. … [W]ithin the period of 5 years after entry into force of this Convention for that Party, each Party shall undertake appropriate legislative, executive, administrative and/or other measures and report accordingly in conformity with Article 21" *(1)*. WHO FCTC Article 13 guidelines are intended to assist Parties in meeting their obligations under Article 13 of the WHO-FCTC *(95)*.

Bans on tobacco advertising, promotion and sponsorship must be comprehensive

More than 10 years after the adoption of the Guidelines for implementation of Article 13 of the WHO FCTC, the following principle stipulated at its beginning is still relevant today: "It is well documented that tobacco advertising, promotion and sponsorship increase tobacco use and that comprehensive bans on tobacco advertising, promotion and sponsorship decrease tobacco use" *(95)*.

Every year the tobacco industry spends billions of dollars on advertising, promotion, and sponsorship (TAPS) activities to promote their tobacco products and increase tobacco sales *(157)*. Despite tobacco companies' insistence that advertising only increases their market share at the expense of competitors, there is longstanding and consistent evidence of a causal relationship between TAPS activities and increased or sustained tobacco use through both the effective recruitment of new tobacco users or by discouraging tobacco users from quitting *(148, 158, 159)*.

Tobacco companies employ a combination of marketing techniques to target different groups. TAPS activities are tailored to specific populations through new products that circumvent regulations and maintain social acceptability *(160)*. Youth and women are especially targeted in low- and middle-income countries *(161)*. Exposure to tobacco advertising and promotion increases the likelihood that adolescents will start to use tobacco which may lead to a higher prevalence of adult tobacco users in the future *(159, 162, 163)*. Promotional and sponsorship activities are also effective at influencing businesses that may benefit from the billions of dollars that the tobacco industry invests in TAPS. To counter this, comprehensive bans in all TAPS activities are needed as a key tobacco control strategy *(164)*.

Bans are effective at reducing tobacco use

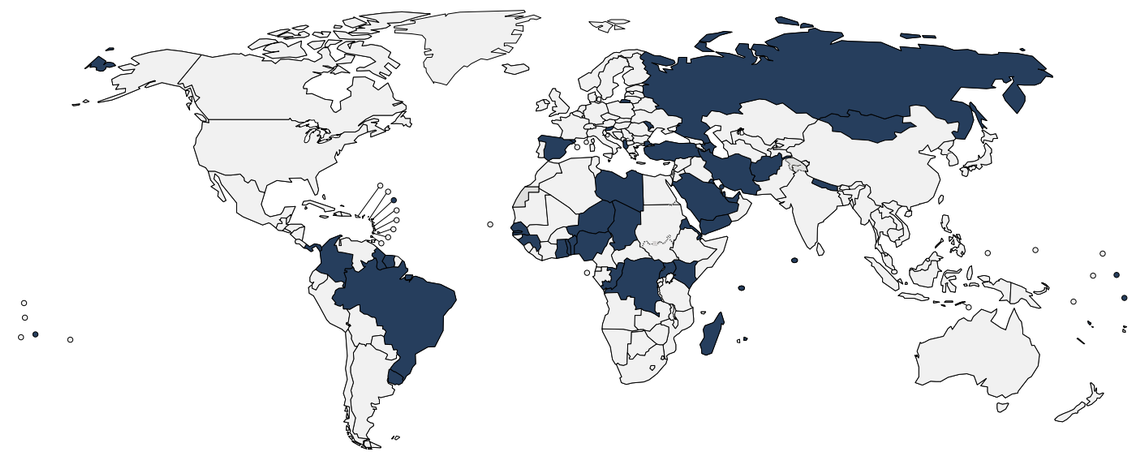
Evidence from across the world indicates that comprehensive bans are effective in reducing tobacco sales and tobacco consumption *(164–167)*. The impact of TAPS bans may be even more dramatic in low- and middle-income countries than in high-income countries *(167)*. TAPS bans are recognized as a key policy measure as they comprise one of only two provisions in the WHO FCTC that impose a mandatory timeframe for implementation (the other one being Article 11 of the Convention).

Bans must be comprehensive and well-enforced

TAPS bans should cover all TAPS activities including both direct and indirect varieties of promotion. Direct forms of advertising include among others television, radio, print publications and billboards, while indirect forms of advertising include among others brand stretching, free distribution, price discounts, point of sale product displays, and sponsorships including corporate social responsibility programmes *(168)*. Point of sale displays "normalize" the products, act as a prompt to smoke, encourage impulse purchases, interfere with quitting, and increase the susceptibility of children and young people to try the product *(169–174)*. When bans are not comprehensive, tobacco companies exploit legal loopholes or simply shift their investments to forms of promotion that are not banned *(164, 175, 176)*.

When tobacco companies make financial or in-kind contributions to any other entity for deserving or socially responsible causes such contributions fall within the definition of tobacco sponsorship under Article 1(g) of the Convention and should therefore be banned *(168)*. Corporate social responsibility activities are typically employed to convince governments to delay and refrain from implementing

ENFORCE BANS ON TOBACCO ADVERTISING, PROMOTION AND SPONSORSHIP – HIGHEST ACHIEVING COUNTRIES, 2018



Countries with the highest level of achievement: Afghanistan, Albania, *Antigua and Barbuda, *Azerbaijan, Bahrain, *Benin, Brazil, Chad, Colombia, *Congo, *Democratic Republic of the Congo, Djibouti, Eritrea, *Gambia, Ghana, Guinea, *Guyana, Iran (Islamic Republic of), Kenya, Kiribati, Kuwait, Libya, Madagascar, Maldives, Mauritius, Mongolia, Nepal, Niger, Nigeria, *Niue, Panama, Qatar, Republic of Moldova, Russian Federation, *Saudi Arabia, Senegal, Seychelles, *Slovenia, Spain, Suriname, Togo, Turkey, Tuvalu, Uganda, United Arab Emirates, Uruguay, Vanuatu, and Yemen.

* Country newly at the highest level since 31 December 2016.

More low-income countries have adopted a TAPS ban than any other MPOWER measure.

tobacco control programmes and should be included in TAPS bans *(174)*.

The tobacco industry attempts to avoid regulation by adopting weak voluntary advertising codes, discrediting the evidence base for restrictions, and using both lobbyists and litigation to avoid bans *(148, 165)*. However, limited bans have little or no effect *(148, 164, 177)*. For bans to be effective, they must be comprehensive. Legislation should use clear, uncomplicated language and unambiguous definitions, and should avoid providing lists of prohibited activities that are, or could be understood to be, exhaustive *(167)*. Moreover, legislation must be coupled with strong enforcement and monitoring, with high financial penalties for violations *(95)*.

TAPS ban should apply to new media

Tobacco companies now frequently utilize novel media platforms for TAPS activities such as social media sites and mobile phone applications *(178)*. On a wide variety of social media platforms, influencers, spokespeople, and brand-sponsored contests are used to promote tobacco products *(178, 179)*. The enormous growth in communications technology and use of Internet-based mobile phones has made it essential to keep a check on tobacco advertising and promotion on platforms such as Instagram, YouTube, Facebook etc. Children and adolescents are particularly exposed to these platforms *(180)*. Legislation banning TAPS may not necessarily include a ban on advertisements on the Internet and therefore ensuring that bans are inclusive of Internet-based media is crucial *(181, 182)*. In some cases enforcing TAPS bans on social media sites may require legislation to be implemented across borders and for this reason countries will need to cooperate and coordinate efforts *(179)*.

More countries than ever are adopting complete bans on tobacco advertising, promotion and sponsorship

Banning TAPS remains an under-adopted measure, with only 18% of the world's population, in 48 countries, covered by a comprehensive ban. At the same time, there are 44 countries (11 high-income, 21 middle-income, and 12 low-income countries) that have not adopted any TAPS bans to date.

Interestingly, more low-income countries have adopted a TAPS ban than any other MPOWER measure, with 14 low-income countries – or 40% – having comprehensive TAPS bans in place. By contrast, under 20% of high-income countries (11) have achieved this best-practice level.

More low-income countries than high-income countries completely ban TAPS

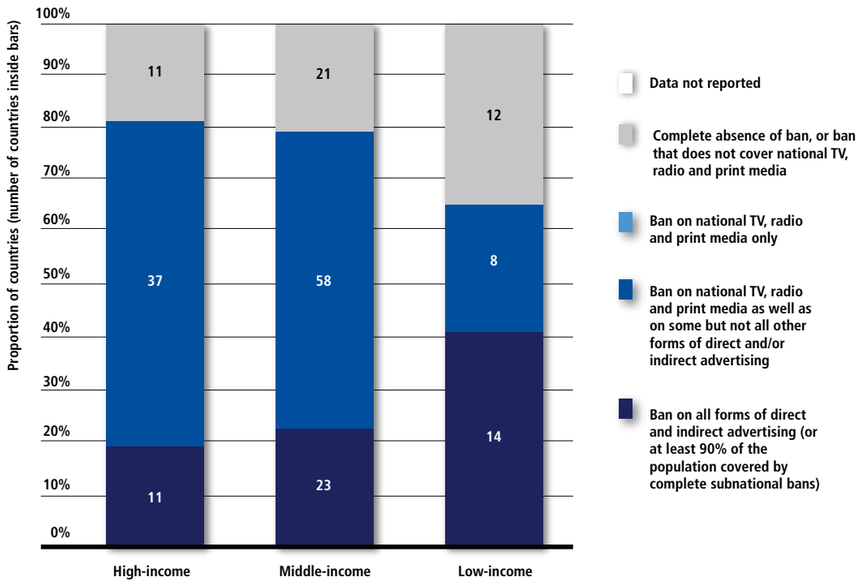
In the past 2 years, 10 more countries have banned all forms of direct and indirect advertising, raising the global population covered at best-practice level by 150 million, to 1.3 billion people. Three of these countries were low-income countries (Benin, Democratic Republic of the Congo and Gambia); four were middle-income countries (Azerbaijan, Congo, Guyana and Niue) and three were high-income countries (Antigua and Barbuda, Saudi Arabia and Slovenia). Adoption of complete TAPS bans has steadily increased over the years, from seven countries in 2007 to 48 countries (one in four) in 2018, an increase of 41 countries. Low- and middle-income countries have been leaders in adopting strong TAPS bans throughout the years. In 2007, all seven best-practice countries were low- and middle-income countries (Albania, Djibouti, Eritrea, Islamic Republic of Iran, Kenya, Madagascar and Niger). At any point in time there has always been more low-income countries than high-income countries with a complete TAPS ban.

There are only 44 countries that have not adopted any TAPS bans

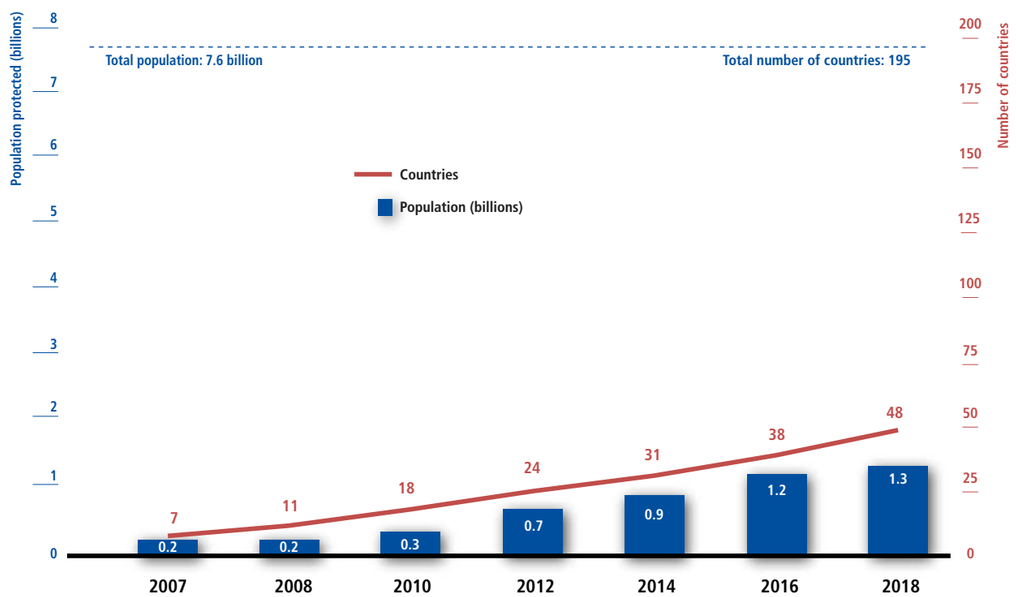
Thirty countries, with 2.1 billion people, are only one provision away from a complete advertising ban. Nine need only to ban brand-stretching (Bhutan, Croatia, Finland, France, Georgia, Lithuania, Sri Lanka, Thailand and Turkmenistan). Seven need only to ban advertising of tobacco products at point of sale (Argentina, Cook Islands, India, Mali, Montenegro, Netherlands and South Africa). Seven need only to ban industry sponsorship (Egypt, Iceland, New Zealand, Sudan, Syrian Arab Republic, United Kingdom and Viet Nam). Four need only ban promotional discounts (Cyprus, Ethiopia, Lebanon and Papua New Guinea). Norway need only ban brand-sharing, Tonga need only ban the appearance of tobacco products or brands in TV and/or films, and occupied Palestinian territory, including east Jerusalem, need only ban the free distribution of tobacco products.

Almost a quarter of the 505 million people (125 million) who live in 26 of the world's 100 largest cities are protected completely from exposure to TAPS by national legislation. In all 26 cities, bans on TAPS operate at national level. The other 74 cities are not currently protected by a national TAPS ban, but could move ahead with city, state, or provincial level laws and thereby protect a combined 380 million more people.

BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP



PROGRESS IN BANS ON TOBACCO ADVERTISING, PROMOTION AND SPONSORSHIP (2007–2018)



The Republic of the Congo tightens TAPS ban

Awareness raising campaign to introduce bans on tobacco advertising at point of sale, Congo.

The Republic of the Congo, a Central African country straddling the Equator, ratified the WHO FCTC in February 2007. It entered into force in May 2007. As part of the implementation of Article 13, the country banned some but not all forms of TAPS and its products. This initiative was reinforced on 4 July 2012 by the adoption and promulgation of the law on tobacco control, but TAPS bans were still not completed.

In June 2018, Congo adopted a decree that expanded the legislation to cover point-of-sale advertising as well as a ban on promotional discounts, brand-stretching and sponsorship, among other TAPS bans. Congo is now one of the 17 countries in the African Region that have complete TAPS bans. Compliance data collected in the country for this report show that most of the advertising bans that entered into force in 2006 are well implemented in the country, which is a good omen for the bans recently adopted.

Niue passes Tobacco Control Act introducing TAPS ban

With globalization, Niue which is an island country in the South Pacific Ocean, is now far more connected to the rest of the world than ever before, and therefore became more susceptible to tobacco industry marketing. However, Niue, although a Party to the WHO FCTC, had no effective TAPS regulation until recently. Laws to prevent TAPS, particularly at point of sale, are an essential part of protecting the health of the country's future generations. In 2016, Niue's government started to work on aligning its tobacco control legislation with the requirements of the Convention. The Ministry of Health led public consultations with members of the public sector as well as representatives from civil society organizations and community groups, and in 2018 the Tobacco Control Act was passed. The Act includes complete TAPS bans.

Since the passage of the law, stakeholders have become increasingly aware of the various forms of TAPS, and the new law even prohibits the display of tobacco products at point of sale. In addition to this, the Act also bans smoking in public places, workplaces and public transport; bans the import and manufacture of smokeless tobacco, and requires the display of health warnings on packages of smoking tobacco products. In recognition of their outstanding work in tobacco control, Niue's Ministry of Social Services is one of five institutions to receive a WHO World No Tobacco Day 2019 Award.

Government and community representatives provide input into the draft Tobacco Control Bill in Niue, 2017.

Guyana enacts comprehensive tobacco legislation

President of Guyana and the Minister of Health of Guyana receiving the World No Tobacco Day 2018 Award for efforts in tobacco control, including TAPS bans.

In 2017 Guyana became only the second country in the English-speaking Caribbean (CARICOM) and WHO Region of the Americas to enact comprehensive tobacco legislation that adopted complete TAPS bans, alongside a mandate for complete smoke-free environments and a requirement for health warnings on tobacco products. This action propelled Guyana from having zero tobacco control measures to having three "WHO best-buys" *(28)* adopted at best-practice level. TAPS bans, relative to measures for smoke free environments and graphic health warnings, have not been as widely adopted across the Americas region or globally. In the absence of TAPS bans, the tobacco industry has an avenue through which they can continue to recruit tobacco users, making this achievement particularly notable. Guyana's Tobacco Control Act was developed by the Ministry of Health, which understood the need to prevent industry influence when enacting new legislation and committed itself to push through a comprehensive initiative that complied with Article 13 (E), as well as Article 8 (P) and 11 (W). Although compliance with the ban has been moderate and compliance at point of sale has been described as low, the Ministry of Health has held meetings with stakeholders from the business community, transport services, workers' unions, and consumer associations, as well as the general public, to strengthen buy-in and compliance.

Raise taxes on tobacco

Article 6 of the WHO Framework Convention on Tobacco Control states: "… [P]rice and tax measures are an effective and important means of reducing tobacco consumption … [Parties should adopt] … measures which may include: … tax policies and … price policies on tobacco products so as to contribute to the health objectives aimed at reducing tobacco consumption" *(1)*.

Increasing taxes is a highly cost-effective measure to decrease tobacco use

Many studies have established that raising taxes to increase the price of tobacco products is the single most effective tobacco control measure *(23, 121, 183)*. On average, a 10% price increase will reduce consumption by 5% in low- and middle-income countries (up to 8% in some instances), and by about 4% in high-income countries *(121)*. Approximately half of this reduction is due to tobacco users quitting, and half due to existing users smoking less *(184)*. To put these figures into perspective, a recent study estimated that a 50% price increase in 13 selected countries would cause 67 million people to quit *(185)*.

Tobacco taxation is also inexpensive to implement, costing low- and middle-income countries as little as US$ 0.05 per capita each year to administer *(186)*. Having the potential for massive impact combined with a low implementation cost, tobacco taxation is rightly considered as a highly cost-effective "WHO best-buy" intervention, meaning that the returns and economic benefits from this measure are several times higher than its cost *(187, 188)*.

Increasing taxes increases government revenues and can help expand health sector funding

Tax increases not only reduce tobacco use and improve health, they also generate more government revenues *(121)*. This additional funding can be used for tobacco control programmes as well as other important health and social initiatives, which have now been successfully demonstrated in some countries *(189, 190)*. Using tax revenues in this manner will further increase public support for higher taxes.

Taxes should be raised significantly and periodically to reduce the affordability of tobacco products

Tobacco products have become increasingly affordable in many countries where income and purchasing power are growing rapidly *(191)*. Despite some of these countries raising tobacco tax rates, these have not been enough to offset inflation and income growth, causing an erosion of the tax's value and effectiveness in reducing consumption *(192)*. Nominal tax increases that fail to make tobacco products less affordable are unlikely to reduce consumption and encourage cessation. Governments need to monitor tobacco tax rates and prices relative to real income and significantly raise tax rates at regular intervals as required to ensure that tobacco products do not become more affordable.

Tobacco tax policies work better when tax administration is improved

Strengthening tax and customs administration as well as improving enforcement capacity amplifies the impacts of raising tobacco taxes *(193)*. Experiences from numerous countries show that illicit trade of tobacco products can be successfully addressed even when taxes and prices are increased, hence the threat of tax evasion should not be used as a reason to forgo tax increases. With the WHO FCTC Protocol to Eliminate Illicit Trade in Tobacco Products entering into force, governments now have more tools at their disposal to control the supply chain and ensure that the right amount of taxes are being paid.

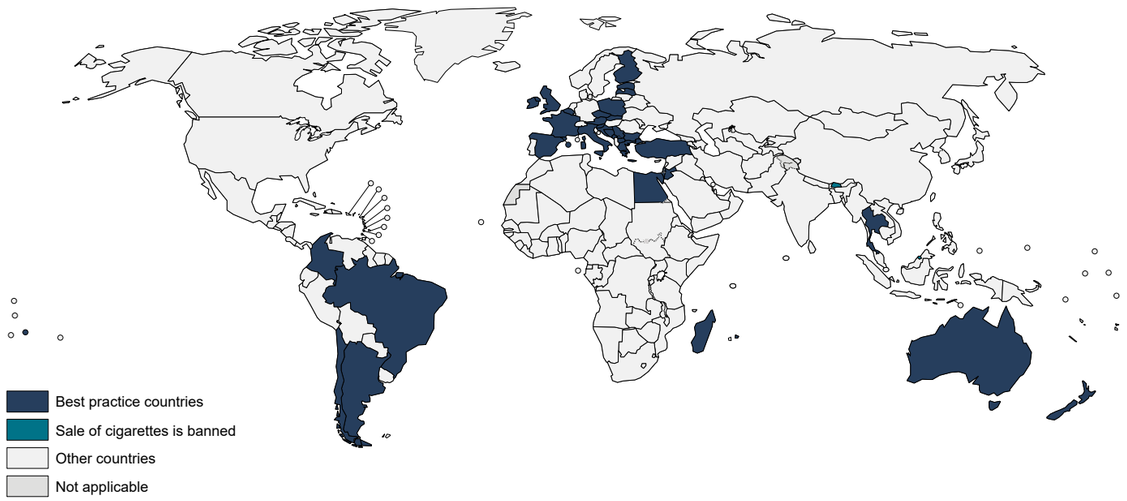
On the other hand, tax administration can become easier with the right tax policy. Among the different types of tax levied on tobacco products, excise taxes are the most effective at raising prices and triggering significant health impacts *(194)*. Simpler tax structures are likewise easier to administer – complex structures and tiered excise taxes should be avoided to diminish scenarios that can undermine the health and revenue impact of tobacco taxes *(193)*.

The world's population covered by high tobacco taxes doubled between 2016 and 2018

Raising the price of tobacco through tobacco taxes – the most effective and efficient way to reduce tobacco use – is the least-achieved MPOWER measure, with only 14% of the world's population living in the 38 countries with sufficiently high taxes in 2018.

Most of the countries that have already adopted high taxes are high-income countries. There is still only a very small number of low- and middle-income countries (15 countries, or 11%) that have adopted high taxes on tobacco.

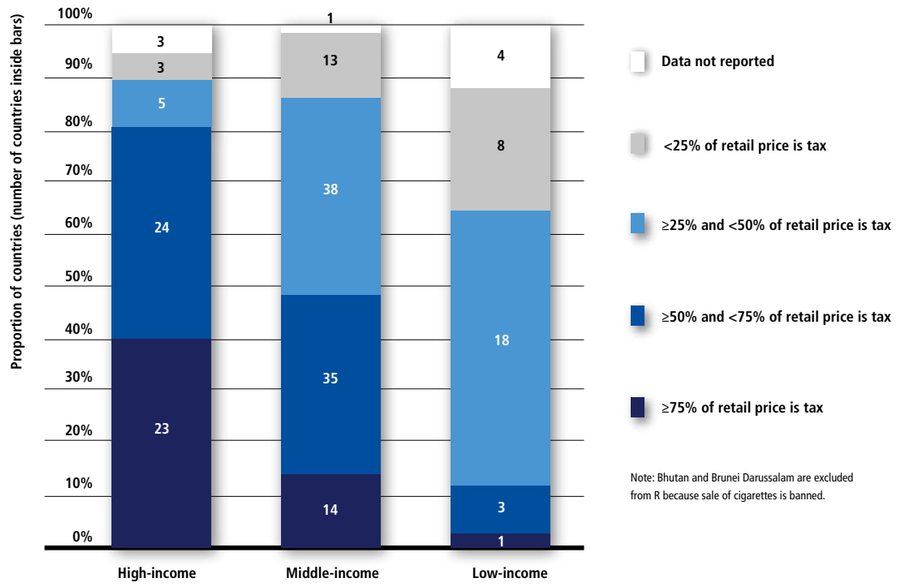
RAISE TAXES ON TOBACCO – HIGHEST ACHIEVING COUNTRIES, 2018



Countries, territories and areas with the highest level of achievement: *Andorra, Argentina, *Australia, Austria, Belgium, Bosnia and Herzegovina, *Brazil, Bulgaria, Chile, *Colombia, Croatia, Czechia, *Egypt, Estonia, Finland, France, Greece, Ireland, Israel, Italy, Jordan, Latvia, Madagascar, Malta, *Mauritius, *Montenegro, *New Zealand, Niue, *North Macedonia, occupied Palestinian territory, including east Jerusalem, Poland, Serbia, Slovakia, Slovenia, Spain, *Thailand, Turkey, and United Kingdom.

* Country newly at the highest level since 31 December 2016.

TOTAL TAX ON CIGARETTES



Note: Bhutan and Brunei Darussalam are excluded from R because sale of cigarettes is banned.

Since 2016, 10 countries have raised taxes to a level at or above 75% of the price of the most sold brand of cigarettes. The population living in these 10 countries, 462 million people, are now protected by higher taxes. Seven of the countries were middle-income countries: Brazil, Colombia, Egypt, Mauritius, Montenegro, North Macedonia and Thailand. The other three were high-income countries: Andorra, Australia, and New Zealand. The most significant tax share increase in the 10 countries was made by Colombia, whose 2016 rate of 49.5% was raised to 78.4% by 2018. No low-income countries have raised taxes to 75% or above since 2016. Indeed, only one low-income country (Liberia) increased taxes enough since 2016 to move one category closer to best practice level. And since 2016, three countries (Cyprus, Lithuania and Ukraine) dropped out of the best practice group as they were unable to keep their tax share at or above the 75% level.

In 2018 the global population protected by high taxes crossed the 1 billion mark

Since 2008, progress in raising taxes has been remarkably slow. The population protected by high tobacco taxes remained at around the half-billion mark for 8 years, and only in the past 2 years has the global population protected exceeded 1 billion. However, while in 2008 only one country in 9 imposed taxes comprising 75% or more of the retail price, in 2018 this number has almost doubled: close to one country in five is now protected.

There are nine high-income countries that have raised taxes sufficiently to reach the highest level of implementation since 2008, while three high-income countries (Germany, Portugal, and Seychelles) have dropped out of that group. Nine middle-income countries have reached the highest level of taxation since 2008, and three middle-income countries (Cuba, Kenya, and Tunisia) dropped into a lower group. One low-income country began taxing at or above 75% in 2010 (Madagascar) and currently remains the only low-income country at the highest level of implementation.

In 2008, 82% of the half-million people protected by high tobacco taxes were people living in high-income countries. Today, middle-income countries now contribute more than half of the population (54%) protected by this measure. Only 3% of protected people live in low-income countries.

More countries are adopting recommended excise tax structures on tobacco

More countries are now adopting excise tax structures on cigarettes, as recommended in previous editions of the *WHO report on the global tobacco epidemic*. Among the 181 countries tracked over seven reports, the number of countries imposing a specific excise tax structure increased from 57 to 62 between 2008 and 2018, and the number of countries imposing a mixed excise tax structure that relies more on specific excise increased from 22 to 37 during the same period. The number of countries relying on ad valorem excise decreased from 55 in 2008 to 41 in 2018.

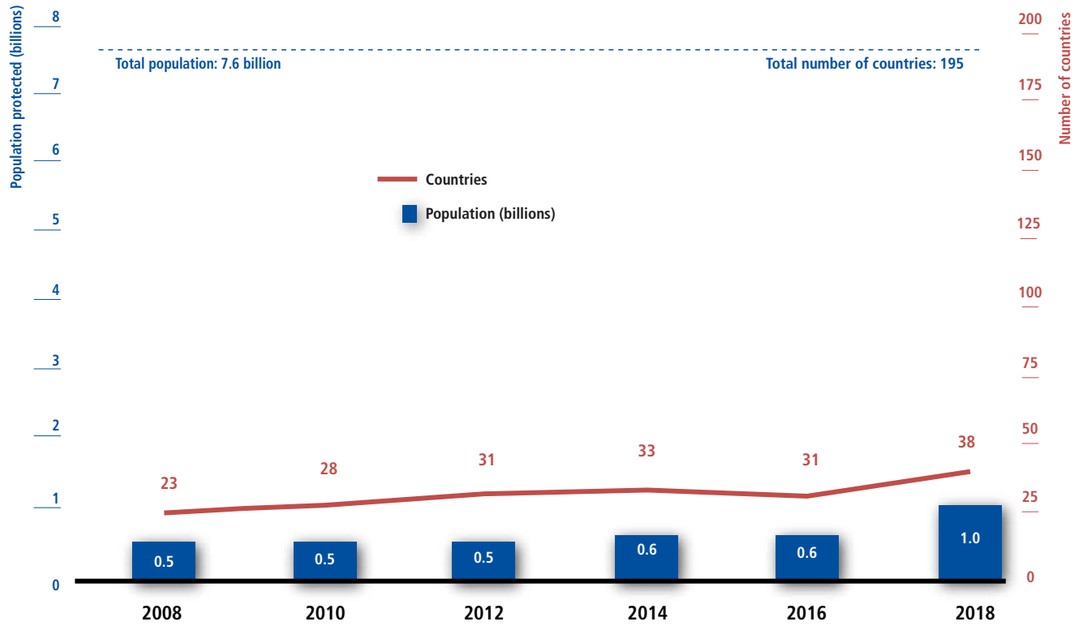
As of 2018, only 15 countries do not levy an excise tax on tobacco products. This is an important reduction from 2008 when 23 countries had no excise on tobacco products. Notably, 11 of the 15 countries without a tobacco excise tax are low- and middle-income countries.

In 2018 half a billion people lived in countries with a tax level within 5 percentage points of the highest level of implementation

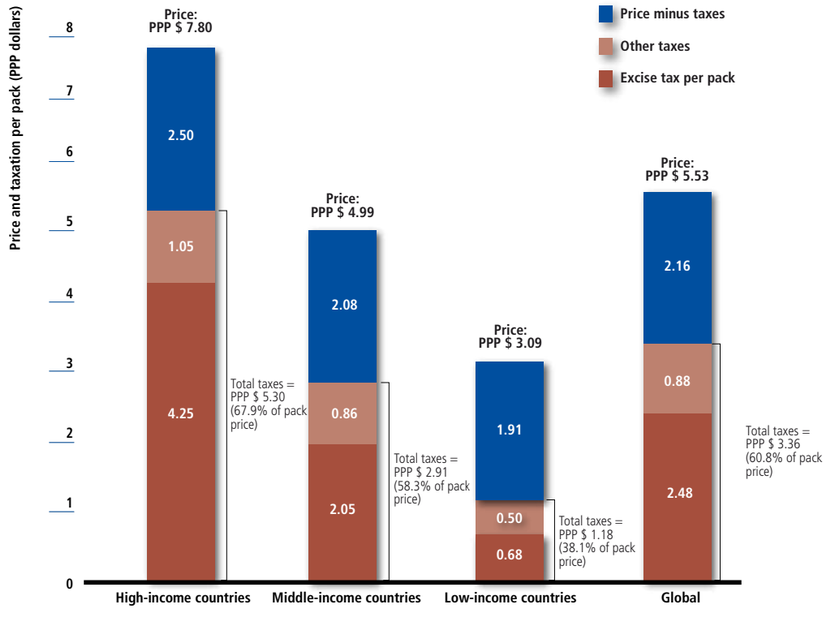
One in three countries (62) levies taxes that fall short of the 75% threshold but that are at or above 50% of the retail price. Twenty of these countries (with a combined population of half a billion people) have taxes comprising 70% or more of the price, so are within 5 percentage points of best practice. An additional 12 countries (with a combined population of 352 million) are within 10 percentage points of best practice. If all 62 countries in this category increased taxes to 75%, an additional 4.7 billion people would be protected, meaning a total of 5.7 billion people – an incredible 75% of the world's population – would be protected by high taxes.

As of today, over a quarter of the 505 million people who live in one of the world's 100 largest cities (141 million people in 29 cities) are covered sufficiently by high taxes on cigarette products. For each of the 29 protected cities, the tax rates are implemented at the national level. No city has yet independently (of national government) introduced taxes on tobacco products that have resulted in raising the share of total taxes to 75% or more of the retail price of cigarettes.

PROGRESS IN TOTAL TAX ON CIGARETTES ≥75% OF RETAIL PRICE (2008–2018)



WEIGHTED AVERAGE RETAIL PRICE AND TAXATION (EXCISE AND TOTAL) OF MOST SOLD BRAND OF CIGARETTES, 2018



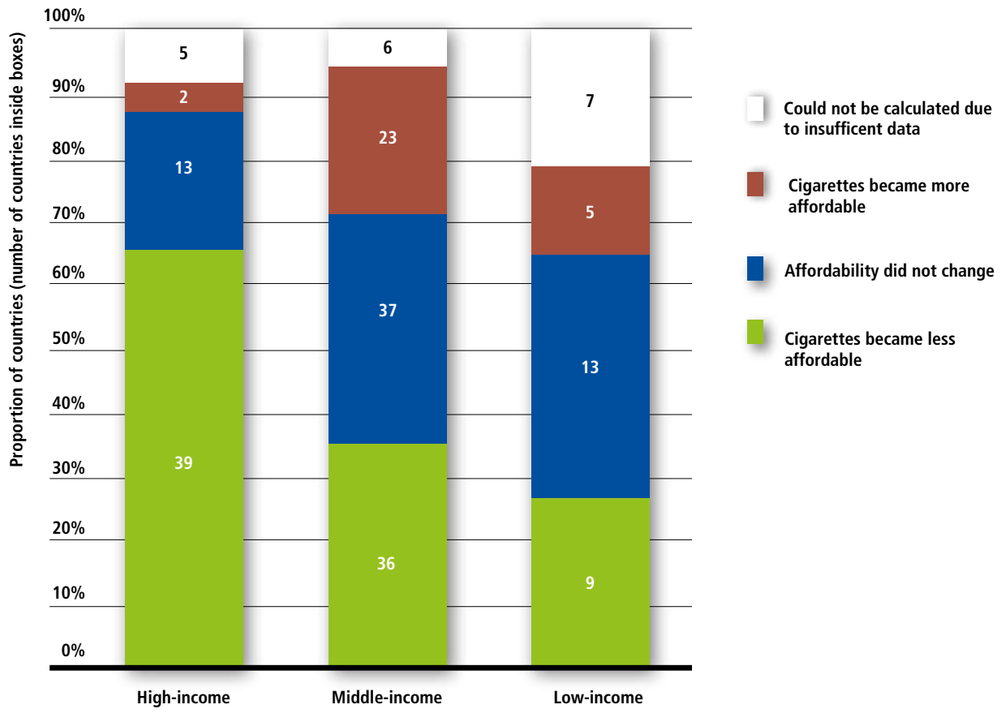
Note: Averages are weighted by WHO estimates of number of current cigarette smokers ages 15+ in each country in 2017. Prices are expressed in Purchasing Power Parity (PPP) adjusted dollars or international dollars to account for differences in the purchasing power across countries. Based on 53 high-income, 97 middle-income and 28 low-income countries with data on prices of most sold brand, excise and other taxes, and PPP conversion factors. Numbers may not add exactly due to rounding.

Cigarette prices and taxes continue to be higher in high-income countries, even after adjusting for purchasing power parity

Price and tax levels continue to be highest in high-income countries, even when adjusting for differences in purchasing power. Cigarette pack prices, total taxes and the tobacco excise component as a share of pack prices are all lower in low- and middle-income countries, with average total tax as a proportion of price varying between 38% and 58%. This proportion reaches almost 68% in high-income countries, even though the non-tax portion of cigarette prices is fairly similar throughout the world. There is a strong case for all countries, particularly low- and middle-income countries, to increase their excise taxes further, which will have the effect of making cigarettes less affordable.

Tobacco use is not effectively discouraged if products become more affordable over time. When price increases do not keep pace with increases in per capita income, tobacco products become more affordable *(117, 189)*. Seeing trends in the affordability of cigarettes over a reference period helps policy-makers understand how cigarette prices have changed relative to the population's ability to purchase them, and can guide recommended changes in tax policy to influence price levels and effectively reduce consumption. Affordability of cigarettes for each of the years 2008, 2010, 2012, 2014, 2016 and 2018 was measured by the per capita GDP required to purchase 2000 cigarettes of the most sold brand reported in that year. The average change over the period 2008–2018 was then calculated. Using this measure, cigarettes became less affordable in 83 countries and did not significantly change in 63 countries, while they became more affordable in 30 countries. Of those 30 countries, 28 were low- and middle-income countries.

CHANGE IN AFFORDABILITY OF CIGARETTES, 2008–2018

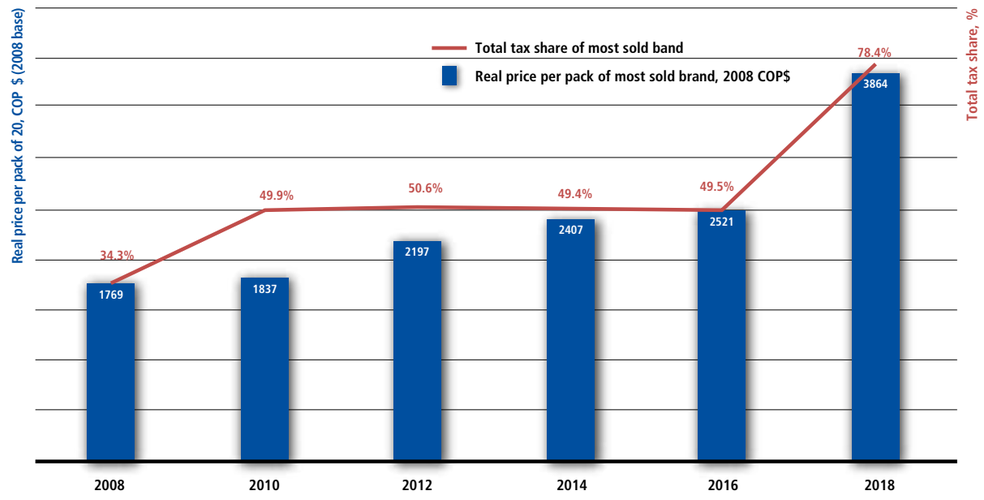


Note: Change in affordabilty computed as the least squares rate of change in the per capita GDP required to purchase 2000 cigarettes of the most sold brand in local currency in any given year. Please refer to Technical Note III for details of computation.

Colombia triples cigarette taxes in 2 years

In 2015, Colombia's Ministers of Health and Finance recommended a 200% increase in cigarette taxes during the period 2016 to 2017, followed by a 150% increase by 2020, as part of the country's ongoing effort to reform tax laws. The recommendation aimed to raise the country's historically very low level of tobacco taxation and revenue to be more in line with WHO recommendations and other countries in the region. The success of the tax hike that was ultimately approved relied on a multisectoral team of experts and health officials from national and international civil society working together to combat industry interference by using solid data and translating it into politically viable policy change. To counteract the argument on the part of the tobacco industry that tax increases would create an unmanageable surge in illicit trade, civil society groups implemented the first public study of the size of the illicit cigarette trade in Colombia and found it represented only a fraction (3.5% of all sales) in the five Colombian cities studied. In December 2016, the Colombian Congress approved a 100% excise tax increase on cigarettes and manufactured tobacco, an additional 50% increase in January 2018 and annual adjustments beginning in January 2019 – equivalent to the annual change in the consumer price index plus 4% *(195)*. This means that the specific tax on cigarettes doubled from 700 Colombian pesos (COP$) per 20-cigarette pack to COP$ 1400 in January 2017 and was subsequently increased to COP$ 2100 in January 2018. As of 2018, the tax share for the most sold brand of cigarettes in Colombia stands at 78.4%, with excise taxes comprising 62.5% (52.5% specific and 10% ad valorem). This places Colombia at the highest level of achievement under the Raise taxes on tobacco MPOWER measure. In terms of impact, in 2017 excise revenues increased by 54% while cigarettes sales declined by 23% in comparison with 2016.

REAL PRICE AND TOTAL TAX SHARE EVOLUTION FOR A PACK OF MOST SOLD BRAND OF CIGARETTES, COLOMBIA 2008–2018

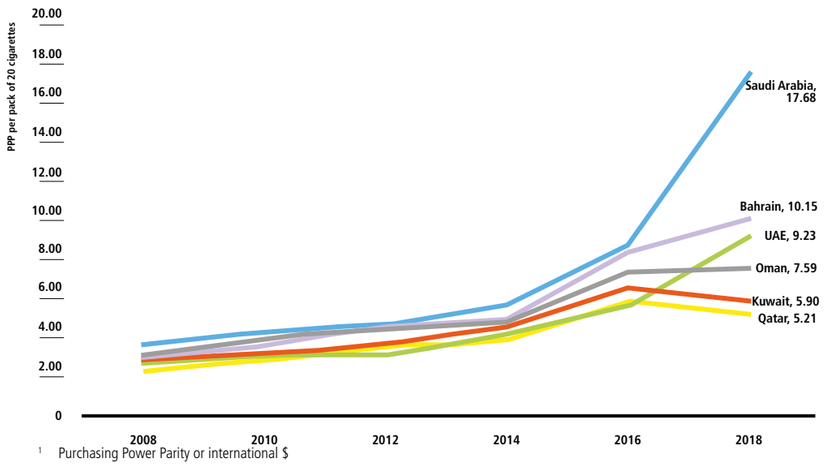


Source: (195)

Gulf Cooperation Council introduces excise tax on harmful products

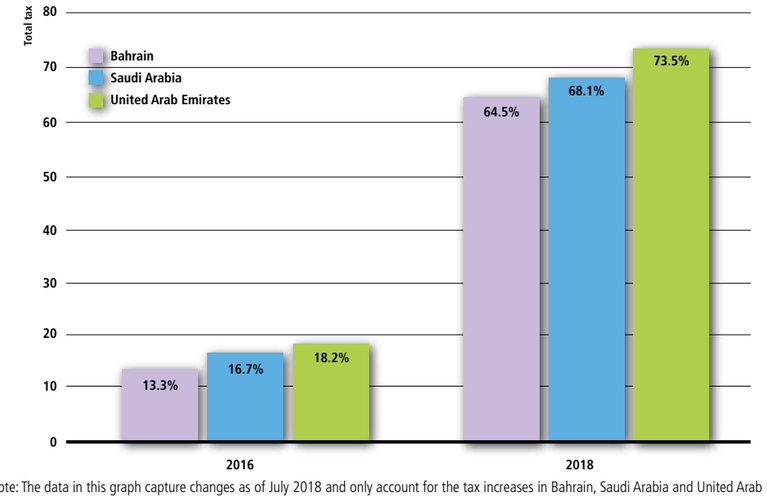
In 2016, countries in the Gulf Cooperation Council (GCC) agreed to introduce an excise tax on products harmful to humans and the environment, including tobacco. Before this agreement, GCC Member States (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates) had historically relied solely on import duties to tax tobacco, which collectively stood at around 20% of retail price. The new excise tax is an effort both to diversify sources of income and to recognize the danger of tobacco products. Saudi Arabia was the first GCC country to implement the excise tax on manufactured tobacco products in June 2017, followed by the United Arab Emirates in October 2017 and by Bahrain in December 2017. Qatar joined them in January 2019, and Oman's excise tax increase is due in June 2019. The new excise tax is harmonized in the GCC at 100% of the retail price excluding taxes, and is already making a noticeable impact on the price of tobacco products. It is expected that the tax and subsequent price increases in these countries will lead to reductions in tobacco consumption and its consequent burden of disease.

RETAIL PRICE OF MOST SOLD BRAND OF CIGARETTES, PPP[1]



[1] Purchasing Power Parity or international $

TOTAL TAX AS % OF PRICE OF MOST SOLD BRAND OF CIGARETTES



Note: The data in this graph capture changes as of July 2018 and only account for the tax increases in Bahrain, Saudi Arabia and United Arab Emirates.

Since 2008, the number of countries imposing high taxes has almost doubled: close to one country in five is now protected.

National tobacco control programmes: vital for ending the tobacco epidemic

The WHO Framework Convention on Tobacco Control strongly suggests that countries to set up a national tobacco control programme (NTCP) to lead their tobacco control efforts. To this end, WHO FCTC Article 5 states that: "Each Party shall develop, implement, periodically update and review comprehensive multisectoral national tobacco control strategies, plans and programmes … [and] establish or reinforce and finance a national coordinating mechanism or focal points for tobacco control." In addition, WHO FCTC Article 26.2 sets out that: "Each Party shall provide financial support in respect of its national activities intended to achieve the objective of the Convention" *(1)*.

Decentralizing NTCP authority is important

Adequately financed, clearly focused NTCPs or coordination mechanisms are critical for developing and maintaining the sustainable policies that can reverse the tobacco epidemic *(1)*. Ministries of health, or equivalent government agencies, should take the lead on strategic tobacco control planning and policy setting, with other ministries or agencies reporting to this centralized authority *(175)*. Tobacco control programmes should also be integrated into countries' broad health and development agendas *(196)*.

In large countries or those with federal political systems where governing powers are divided between a central national authority and constituent regional or local political units, decentralizing NTCP authority to subnational level can allow more flexibility in policy development and programme implementation, and potentially enable those policies and programmes to reach a wider population *(197)*.

As many tobacco control interventions are carried out at regional and community levels (even when planning occurs nationally), public health and government leaders at the appropriate subnational levels need adequate resources to build implementation capacity that can be sustained over time *(94)*. NTCPs should also ensure that population subgroups with disproportionately high rates of tobacco use are reached by policies and programmes tailored to their needs *(197)*.

Tobacco control requires active civil society participation

NTCPs require support not only from government partners but also from civil society; this specifically excludes the tobacco industry and its allies, which cannot be legitimate stakeholders in tobacco control efforts *(94)*. Continued involvement by appropriate nongovernmental organizations and other civil society groups is essential to maintaining continued progress on national as well as global tobacco control efforts *(197)*.

Two thirds of world's population covered by a national agency for tobacco control

One in four countries globally has a national agency with responsibility for tobacco control objectives staffed by at least five full-time equivalent people. Fortunately, because many of these countries are populous, two thirds of the world's population is protected by such an agency.

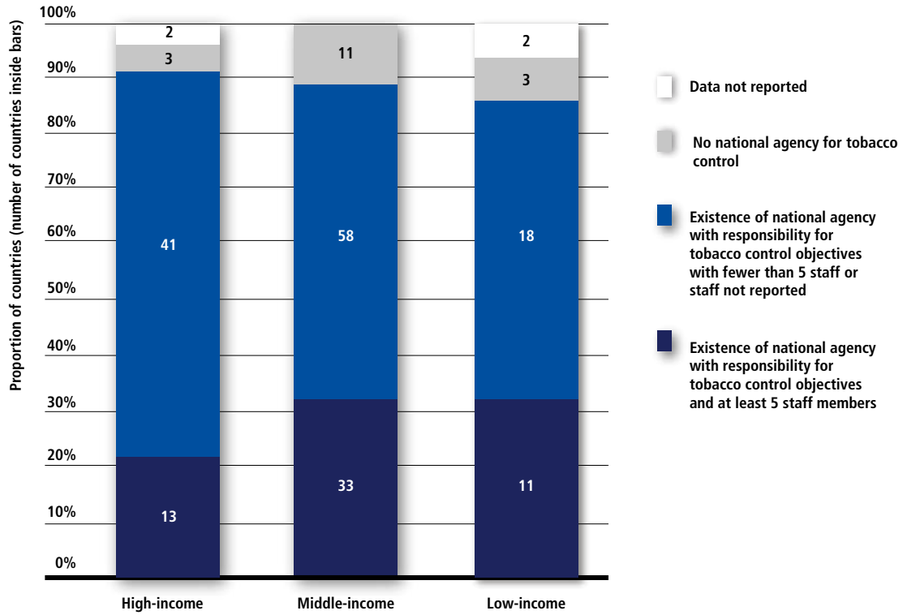
An additional 117 countries (with one third of the world's population) are working on tobacco control objectives with fewer staff (84 countries), or with an unknown number of staff (33 countries). Only 17 countries (with 145 million people) do not have a national agency for tobacco control, 14 of which are low- and middle-income countries.

In the past 2 years, only three countries enhanced their national tobacco control programmes sufficiently to reach the highest level of adoption (Botswana, Iraq and Qatar), adding 44 million people to the population covered. At the same time, two countries dropped below best-practice level: Suriname reduced the number of staff dedicated full-time to tobacco control, while Australia has not reported the number of staff in 2018.

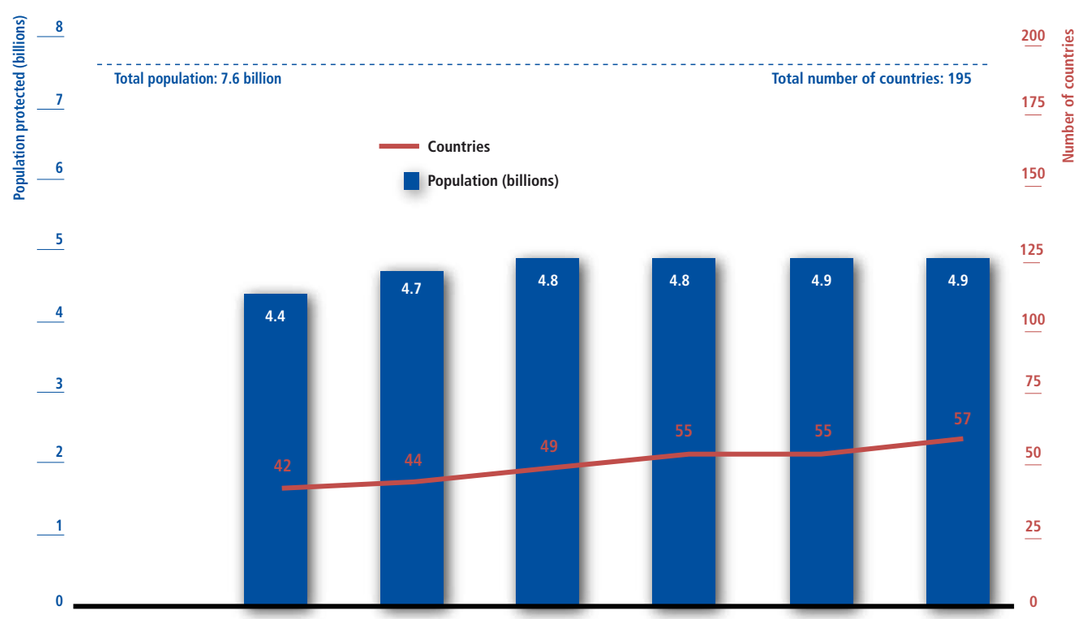
Since 2008, an additional 15 countries, with 499 million people, have established a well-staffed national team working full-time on tobacco control.

It is worth noting that this measure may underestimate the true extent of NTCPs in countries because information on tobacco control programme staffing at the national level is incomplete, with no formal mechanism for collecting this information from countries.

NATIONAL TOBACCO CONTROL PROGRAMMES



PROGRESS IN NATIONAL TOBACCO CONTROL PROGRAMMES (2008–2018)



The Tobacco Free Ireland Programme

Campaign for the Tobacco Free Ireland Programme.

In 2003 Ireland became the first country in the world to implement smoke-free environments. Tobacco consumption, however, continues to have a huge impact on Ireland, with at least 5500 people dying from tobacco-related diseases each year. Although the country has a strong tobacco control track record and use has gradually decreased over the past few decades, in 2013 Ireland decided to bring tobacco control to the "endgame", or final stages of achieving a tobacco-free Ireland.

In order to achieve this, the plan makes 60 recommendations to significantly reduce smoking to less than 5% of the adult population by 2025. It was estimated that more than 55 000 current smokers would have to quit each year for the next 10 years to reach this ambitious target.

The Tobacco Free Ireland policy was developed by Ireland's Department of Health and its Health Service Executive in 2013. This government strategy (2013–2025) works to coordinate and lead tobacco control activity across the health service and has several cross-governmental actions based on MPOWER measures, with the goal of denormalizing tobacco use in Ireland, especially for the next generation.

Ireland's 2017 status report on the progress of the Tobacco Free Ireland policy shows great progress, including legislation requiring standardized packaging of tobacco products and the development of the new QUIT campaign, which aims to enhance support for people who wish to quit smoking.

In 2018 a Health Service Executive national implementation plan (2018–2021) was published, establishing the strategic direction and priority actions required to achieve the goals set out in the plan. Over the next 4 years the objectives of the Tobacco Free Ireland policy include prioritizing the protection of children in all initiatives and encouraging the denormalization of tobacco use for future generations; supporting people to quit and treating tobacco dependence as a health care issue; and monitoring, building, and maintaining compliance through tobacco legislation.

One in four countries globally has a national agency with responsibility for tobacco control objectives staffed by at least five full-time equivalent people.

Multisectoral collaboration boosts tobacco control, Madagascar

Awareness raising during World No Tobacco Day 2018, Madagascar.

Madagascar has demonstrated huge commitment and progress towards tobacco control, and to date has adopted four of the MPOWER measures at the highest level of achievement.

In 2007, the Consultative Committee of Anti-Tobacco Control (CCoLAT) was created to support coordination of WHO FCTC implementation activities across all sectors. This multisectoral committee meets every three months, comprising members from a wide range of ministries and civil society organizations working to combat tobacco use.

The committee plays an intermediary role between the Ministry of Health and their corresponding entities and provides an opportunity for effective collaboration. For example, civil society organizations and certain ministerial departments (Sport, National Education, Population, Health) have worked together to develop and deliver public awareness-raising activities. The CCoLAT also plays a monitoring role and sounds the alarm in case of non-compliance with regulations and industry interference. In addition, and with the support of the Ministry of the Interior, the country is gradually setting up multi-sector committees in different regions of the country.

Through these coordinating mechanisms, Madagascar continues to demonstrate its dedication to the fight against tobacco epidemic to save lives and improve the well-being of the population.

Conclusion

There has been substantial progress made globally since the 2003 adoption of the WHO FCTC. The successful scaling up of MPOWER measures over the past 10 years to the best-practice level, adopted by countries of all sizes and income levels, is evidence of the successful implementation of the WHO FCTC demand reduction measures. As countries continue to work towards creating and implementing effective tobacco control strategies they can find encouragement in the examples set by other countries that have successfully adopted measures at best-practice levels.

In the years since MPOWER was launched, the challenges faced have been great. There have been, and will continue to be, setbacks, unexpected barriers, interference from the tobacco industry and difficult political obstacles to overcome. Despite these challenges, there are now 5 billion people who are protected by at least one best-practice tobacco control measure – 3.9 billion more than were covered in 2007. On the other hand, 2.6 billion people remain unprotected by evidence-based tobacco control best-practices, leaving them at risk from the health and economic harms caused by tobacco use.

Millions of lives have been saved since the introduction of MPOWER, and it has only been through the coordinated focus of a global community that tobacco control efforts have been so successful. Unfortunately, however, the tobacco epidemic is far from over. Although tobacco use has declined in most countries and regions, population growth means the total number of people using tobacco has remained stubbornly high. Tobacco control programmes are not always quick and easy to implement, and all countries can benefit from strengthened tobacco control policy development and enforcement. Since the last report, only one country – Brazil – has joined Turkey in putting all MPOWER measures in place at their most comprehensive level, and there are only a handful of other countries that have more than two measures in place at best-practice levels. Even in countries where best-practice measures exist, much can be done to strengthen compliance and ensure full impact.

The focus of this report, Offer help to quit tobacco use, is the "O" of MPOWER. Only 23 countries provide cessation services at best-practice level, even though in many countries, many tobacco users report wanting to quit. Nevertheless, progress is being made – 2 billion more people have been covered by comprehensive tobacco cessation services since 2007, and there are 67 countries that are only one step away from providing comprehensive tobacco cessation services. Middle-income countries have made most obvious progress in providing tobacco cessation support in primary care settings and operating national toll-free quit lines since 2007.

The evidence shows tobacco users' chances of quitting successfully improve dramatically if they use effective cessation interventions. This report provides guidance for countries on effective cessation services and how those services can be provided to best meet the needs of tobacco users who want to quit, in line with Article 14 of the WHO FCTC. Countries should, at the minimum, provide brief advice on quitting to all tobacco users whenever they consult a primary health care provider for any reason. Countries should also provide a national toll-free quit line and mCessation services to reach a larger population. Finally, providing cost-covered nicotine replacement therapy will help increase quit rates. Combining two or more of these approaches further increases tobacco cessation success. Even low-income countries with limited resources can start to integrate brief advice into existing primary health care systems as one of the first actions to develop their tobacco cessation support.

Brief advice in primary care should be included in universal health coverage to potentially benefit 80% of all tobacco users a year. Currently, only 18 countries are providing fully cost-covered tobacco cessation support in most of their primary care facilities and others should follow suit.

Every country has an obligation to protect the health of its people, and all Parties to the WHO FCTC have made a specific commitment to implement strong tobacco control policies, including effective cessation services, as an important means of fulfilling their obligation to protect the health of their people. There has been incredible progress in the 11 years since MPOWER monitoring began, including millions of lives saved, but it is only the beginning. It is important that we all recommit to ensuring all the people of the world are protected fully from the great harms of the tobacco epidemic.

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TECHNICAL NOTES

APPENDICES

Appendices VI to XII are available online at http://www.who.int/tobacco/global_report/en/

TECHNICAL NOTE I

Evaluation of existing policies and compliance

This report provides summary indicators of country achievements for each of the MPOWER measures, and the methodology used to calculate each indicator is described in this Technical Note. To ensure consistency and comparability, the data collection and analysis methodology used in this report are largely based on previous editions of the report. Some details of the methodology employed in earlier reports, however, have been revised and strengthened for the present report. Where revisions have been made, data from previous reports have been re-analysed so that results are comparable across years.

Data sources

Data were collected using the following sources:

- For all areas: official reports from WHO FCTC Parties to the Conference of the Parties (COP) and their accompanying documentation.[1]
- For M (monitoring): tobacco prevalence surveys not reported under the COP reporting mechanism were collected mainly through WHO Regional and WHO Country Offices. Technical Note II provides further details.
- For P (protect people from tobacco smoke), W (warn about the dangers of tobacco) and E (enforce bans on tobacco advertising, promotion and sponsorship): original tobacco control legislation (including regulations) adopted in all Member States that relate to smoke-free environments, packaging and labelling measures and tobacco advertising, promotion and sponsorship. In cases where a law had been adopted by 31 December 2018 but had not yet entered into force, the respective law was assessed and data were reported with an asterisk denoting "provision adopted but not implemented by 31 December 2018".
- For W (mass media): data on anti-tobacco mass media campaigns were obtained from Member States. In order to avoid unnecessary data collection, WHO conducted a screening for anti-tobacco mass media campaigns in all WHO Country Offices. In countries where potentially eligible mass media campaigns were identified, focal points in each country were contacted for further information on these campaigns, and data on eligible campaigns were gathered and systematically recorded.
- For O (offer help to quit tobacco use): data not reported under the COP reporting mechanism were collected mainly through WHO Regional and WHO Country Offices.
- For R (raise taxes on tobacco): the prices of the most sold brand of cigarettes, the cheapest brand and a premium brand were collected through regional data collectors. Information on the taxation of cigarettes (and when possible, most commonly used other smoked and smokeless tobacco products) and revenues from tobacco taxation was collected from ministries of finance. Technical Note III provides the detailed methodology used.

Based on these sources of information, WHO assessed each indicator as of 31 December 2018. Exceptions to this cut-off date were tobacco product prices and taxes (cut-off date 31 July 2018) and anti-tobacco mass media campaigns (cut-off date 30 June 2018).

Data validation

For each country, every data point for which legislation was the source was assessed by two expert staff from two different WHO offices, generally one from WHO headquarters and the other from the respective WHO Regional Office. Any inconsistencies were reviewed by the two WHO expert staff involved and a third expert staff member not yet involved in the appraisal of the legislation. Disagreements in the interpretation of the legislation were resolved by: (i) checking the original texts of the legislation; (ii) trying to obtain consensus from the two expert staff involved in the data collection; (iii) trying to obtain clarification from judges or lawyers in the concerned country; and (iv) the decision of the third expert in cases where differences remained. Data were also checked for completeness and logical consistency across variables.

Data sign-off

Final, validated data for each country were sent to the respective government for review and sign-off. To facilitate review by governments, a summary sheet was generated for each country and was sent for review prior to the close of the report database. In cases where national authorities requested data changes, the requests were assessed by WHO expert staff according to both the legislation/materials and the clarification shared by the national authorities, and data were updated or left unchanged. In cases where national authorities explicitly did not agree with the data assessment, this is specifically noted in the appendix tables. Further details about the data processing procedure are available from WHO.

Data analysis

It is important to note that data about laws reflect the status of legislation adopted by 31 December 2018 which has a stated date of effect and is not undergoing a legal challenge that could impact the date of implementation. Data from laws not in effect by 31 December 2018 have a footnote stating this. The summary measures developed for the *WHO report on the global tobacco epidemic, 2019* are the same as those used for the 2017 report.

The report provides analysis of progress made between 2016 and 2018, and between 2007 and 2018 using the latest assessment of the status of measures in each year so that the results are comparable across years. For R, the earliest comparable data are 2008 and for mass media, data are available only from 2010. To calculate the change in the percentage of the population covered by each policy or measure over time, population estimates for the year 2018[2] were used. Using a static year eliminates the effect of population growth when measuring change over time. Indicators from previous years have been recalculated, according to legislation/materials received after the assessment period of the respective report or according to changes in the indicator methodology. All income groups used for this report derive from the World Bank income-group classification published on 1 July 2018 by the World Bank.[3] Upper-middle and lower-middle income groups are combined into one group for this report.

When country or population totals for MPOWER measures are referred to collectively in the analysis section of this report, only the implementation of tobacco control policies (smoke-free legislation, cessation services, warning labels, advertising, promotion and sponsorship bans, and tobacco taxes) is included in these totals.

Monitoring of tobacco use and anti-tobacco mass media campaigns are reported separately.

Correction to previously published data

The 2016 data published in the last report were reviewed, and about 3% of data points were corrected. The full set of MPOWER data revised for all years back to 2007 is available in an Excel file on the report website.

Monitoring of tobacco use and prevention policies

The strength of a national tobacco surveillance system is assessed by the frequency and periodicity of nationally representative youth and adult surveys in countries. Countries are grouped in the top Monitoring category when all criteria listed below are met for both youth and adult surveys:

- whether a survey was carried out recently;
- whether the survey was representative of the country's population;
- whether a similar survey was repeated within 5 years (periodic); and
- whether the youth and adult populations were surveyed through school-based and household population-based surveys respectively.

Surveys were considered recent if conducted in the past 5 years. For this report, this means 2013 or later. Surveys were considered representative only if a scientific random sampling method was used to ensure nationally representative results. (Although they provide useful information, subnational surveys or national surveys of specific population groups provide insufficient information to enable tobacco control action for the total population.) Surveys were considered periodic if the same survey or a survey using the same or similar questions was repeated at least once every 5 years. The following definitions were applied for youth and adult surveys:

Youth surveys: school-based surveys of students aged 13–15 years. The questions asked in the surveys should provide indicators that are consistent with those specified in the Global Youth Tobacco Survey questionnaires and manuals.

Adult surveys: population-based surveys that can provide indicators for adults aged 15 years and over, consistent with those specified in the Global Adult Tobacco Survey questionnaires and manuals.

The groupings for the Monitoring indicator are listed below.

	No known data or no recent* data or data that are not both recent* and representative**
	Recent* and representative** data for either adults or youth
	Recent* and representative** data for both adults and youth
	Recent*, representative** and periodic*** data for both adults and youth

* Data from 2013 or later.
** Survey sample representative of the national population.
*** Collected at least every 5 years.

Smoke-free legislation

There is a wide range of places and institutions that can be made smoke-free by law. Smoke-free legislation can be in place at the national or subnational level. The report includes data based on national legislation, and legislation in subnational jurisdictions where available and where national laws are incomplete. The assessment of subnational smoke-free legislation includes first-level administrative subdivisions of a country, as listed in ISO3166. Subnational data reported in Appendix VI only reflect the content of the subnational laws. Provisions covered by national legislation are indicated by an informative note next to the subnational data. In cases where the status of smoke-free legislation is not reported for some or all subnational jurisdictions, we assume the existing national law applies. Legislation was assessed to determine whether smoke-free laws provided for a complete[4] indoor smoke-free environment at all times, in all the facilities of each of the following eight places:

- health care facilities;
- educational facilities other than universities;
- universities;
- governmental facilities;
- indoor offices and workplaces not considered in any other category;
- restaurants or facilities that serve mostly food;
- cafés, pubs and bars or facilities that serve mostly beverages;
- public transport.

Groupings for the smoke-free legislation indicator are based on the number of places where indoor smoking is completely prohibited. Countries with no complete smoking ban at national level but where at least 90% of the population is covered by complete subnational smoke-free laws are grouped in the top category.

The groupings for the smoke-free legislation indicator are listed below.

	Not reported/not categorized
	Complete absence of bans, or up to two public places completely smoke-free
	Three to five public places completely smoke-free
	Six to seven public places completely smoke-free
	All public places completely smoke-free (or at least 90% of the population covered by complete subnational smoke-free legislation)

In addition to the data used for the above groupings of the smoke-free legislation indicator, other related data such as information on fines and enforcement were collected and are reported in Appendix VI.

In a few countries, in order to significantly expand the creation of smoke-free places, including restaurants and bars, it was politically necessary to include exceptions to the law that allowed for the provision of designated smoking rooms (DSRs) with requirements so technically complex and strict that, for practical purposes, few or no establishments are expected to implement them. In order to meet the criteria for "very strict technical requirements", the legislation has to include at least three out of the six following characteristics (and must include at least criteria 5 or 6).

The designated smoking room must:

1. be a closed indoor environment;
2. be furnished with automatic doors, generally kept closed;
3. be non-transit premises for non-smokers;
4. be furnished with appropriate forced-ventilation mechanical devices;
5. have appropriate installations and functional openings installed, and air must be expelled from the premises;
6. be maintained, with reference to surrounding areas, in a depression not lower than 5 Pascals.

The few countries whose laws provide for DSRs with very strict technical requirements for five or more of the assessed public places have not been categorized in the analyses for this section because their smoke-free legislation substantially departs from the recommendations of WHO FCTC Article 8 guidelines, and it has been difficult to obtain evidence indicating that the law resulted in the intended very low number of DSRs in these countries. The countries whose laws provide for DSRs with very strict technical requirements for fewer than five of the assessed public places have been grouped according to the number of completely smoke-free public places.

Tobacco dependence treatment

The indicator of achievement in treatment for tobacco dependence is based on whether the country has available:

- nicotine replacement therapy (NRT);
- smoking cessation support;
- reimbursement for any of the above; and
- a national toll-free quit line.

Despite the low cost of quit lines, few low- or middle-income countries have implemented such programmes. Thus, national toll-free quit lines are included as a qualification only for the highest category. Reimbursement for tobacco dependence treatment is considered only for the top two categories to take restricted national budgets of many lower-income countries into consideration.

The top three categories reflect varying levels of government commitment to the provision of nicotine replacement therapy and cessation support.

The groupings for the tobacco dependence treatment indicator are listed below.

	Data not reported
	None
	NRT* and/or some cessation services** (neither cost-covered)
	NRT* and/or some cessation services** (at least one of which is cost-covered)
	National quit line, and both NRT* and some cessation services** (cost-covered)

* Nicotine replacement therapy.
** Smoking cessation support available in any of the following places: health clinics or other primary care facilities, hospitals, office of a health professional, the community or other settings.

In addition to data used for the grouping of the tobacco dependence treatment indicator, other related data such as information on countries' essential medicines lists, etc. were collected and are reported in Appendix VI.

For this edition of the *WHO report on the global tobacco epidemic*, countries were asked additional questions about their cessation services. The questions included focused on policies and guidelines, structural capacity and the integration of cessation into other tobacco control approaches. Data collected are presented in Appendix II.

Policies and guidelines

National tobacco strategy: to be eligible a country's national strategy had to be operational

Clinical Guidelines: countries were asked about the presence of national clinical guidelines for tobacco cessation, as well as the inclusion of tobacco cessation in clinical or treatment guidelines for:

- Tuberculosis
- Cardiovascular diseases
- Hypertension
- Respiratory diseases
- Diabetes
- Cancer
- Psychiatric disorders
- Oral diseases
- Reproductive health

Survey responses were reviewed and verified using supporting documentation that was either (a) attached by survey respondents, or (b) where applicable, found in the WHO Noncommunicable Disease Document Repository. For the sake of cross-country comparability, only national-level guidelines were deemed to be eligible.

To be considered eligible, clinical guidelines were required to meet the following two criteria:

- Be statements or recommendations regarding clinical practice that would assist clinicians and patients in optimizing patient care.
- Explicitly recommend tobacco cessation, or require clinicians to ask and record tobacco use status during the patient interview (e.g., using a standardized form or risk calculator).

PEN (package of essential noncommunicable disease interventions for primary health care in low-resource settings) protocols, regional (multi-country) guidelines, and international guidelines were accepted in place of country-specific guidelines in cases where national adoption could be demonstrated. Integrated or primary care guidelines including practitioner handbooks were also considered eligible.

Structural capacity

Countries were asked whether they routinely recorded tobacco use in medical records (supporting documentation required) and whether cessation was part of a degree curriculum for primary care providers.

Integrating cessation into other tobacco control approaches

Countries were asked if information about a toll-free quit line had been included on cigarette packages or in mass media campaigns over the last 12 months. Supporting documentation was required and verified.

Nicotine replacement therapy cost analysis

NRT price data was sourced from Euromonitor which included 56 countries – 37 high-income and 19 middle-income, as grouped by World Bank country income classification.

Total costs were calculated assuming a simplified NRT regimen lasting 8 weeks. Based on expert recommendations, the commodity requirement for this period was set at either 56 patches (once daily), or 532 pieces of gum (12 pieces daily for 4 weeks, 8 pieces daily the next 2 weeks, then 6 pieces daily the last 2 weeks). The pack size(s) available in each country was also considered when the least expensive option was calculated.

It was also assumed that those more heavily dependent on nicotine will consume the same amount of gum/patches as those who are less dependent, although using an appropriate NRT option with higher nicotine concentrations. Since prices for different nicotine concentrations of the same brand did not vary significantly (<5%), the simulated costs were uniform regardless of the level of dependence.

To have comparability across countries, the total price for each NRT option was adjusted for purchasing power and converted to International Dollars using the IMF 2018 Implied PPP Conversion Rate. This was compared to the cost of smoking the cheapest pack of cigarettes daily during the same period, using the price data submitted for this report. Lastly, simple averages were calculated for each grouping, either by country income or cost-coverage.

Warning labels on tobacco packaging

The section of the report that assesses each country's legislation on health warnings includes the following information about cigarette package warnings:

- whether specific health warnings are mandated;
- the mandated size of the warnings, as a percentage of the front and back of the cigarette package;
- whether the warnings appear on individual packages as well as on any outside packaging and labelling used in retail sale;
- whether the warnings describe specific harmful effects of tobacco use on health;
- whether the warnings are large, clear, visible and legible (e.g. specific colours and font styles and sizes are mandated);
- whether the warnings rotate;
- whether the warnings are written in (all) the principal language(s) of the country;
- whether the warnings include pictures or pictograms.

The size of the warnings on both the front and back of the cigarette pack were averaged to calculate the percentage of the total pack surface area covered by warnings. This information was combined with the warning characteristics to construct the groupings for the health warnings indicator.

The groupings for the health warnings indicator are listed below.

	Data not reported
	No warnings or small warnings[1]
	Medium size warnings[2] missing some or many[3] appropriate characteristics[4] OR large warnings[5] missing many[6] appropriate characteristics[4]
	Medium size warnings[2] with all appropriate characteristics[4] OR large warnings[5] missing some[3] appropriate characteristics[4]
	Large warnings[5] with all appropriate characteristics[4]

[1] Average of front and back of package is less than 30%.
[2] Average of front and back of package is between 30 and 49%.
[3] One to three.
[4] Appropriate characteristics:
- specific health warnings mandated;
- appearing on individual packages as well as on any outside packaging and labelling used in retail sale;
- describing specific harmful effects of tobacco use on health;
- are large, clear, visible and legible (e.g. specific colours and font style and sizes are mandated);
- rotate;
- include pictures or pictograms;
- written in (all) the principal language(s) of the country.

[5] Average of front and back of the package is at least 50%.
[6] Four or more.

In addition to the data used for the grouping of the health warnings indicator, other related data such as the appearance of the quit line number, the requirement for plain packaging, etc. were collected and are reported in Appendix VI.

Plain packaging (also called standardized packaging) is defined by WHO FCTC Article 11 guidelines as a measure "to restrict or prohibit the use of logos, colours, brand images or promotional information on packaging other than brand names and product names displayed in a standard colour and font style".

In order for a country to appear in this report as having introduced plain packaging, the following criteria (established by WHO FCTC Article 13 guidelines) are requested:

- black and white or two other contrasting colours, as prescribed by national authorities;
- nothing other than a brand name, a product name and/or manufacturer's name, contact details and the quantity of product in the packaging, without any logos or other features apart from health warnings, tax stamps and other government-mandated information or markings;
- prescribed font style and size;
- standardized shape, size and materials:
- there should be no advertising or promotion inside or attached to the package or on individual cigarettes or other tobacco products.

Anti-tobacco mass media campaigns

Countries undertake communication activities for many reasons, including improving public relations, creating attention for an issue, building support for public policies, and prompting behaviour change. Anti-tobacco communication campaigns, which are a core tobacco control intervention, must have specified features in order to be minimally effective: they must be of sufficient duration and must be designed to effectively support tobacco control priorities, including increasing knowledge, changing social norms, promoting cessation, preventing tobacco uptake, and increasing support for good tobacco control policies.

With this in mind, and consistent with the definition of "anti-tobacco mass media campaigns" in the last report, only mass media campaigns that were: (i) designed to support tobacco control; (ii) at least 3 weeks in duration and (iii) implemented between 1 July 2016 and 30 June 2018 were considered eligible for analysis. For the sake of logistical feasibility and cross-country comparability, only national-level campaigns were considered eligible. Consistent with the last report and to enable greater accuracy, materials from campaigns had to be submitted and verified based on the eligibility criteria for all countries.

Eligible campaigns were assessed according to the following characteristics, which signify the use of a comprehensive communication approach:

1. The campaign was part of a comprehensive tobacco control programme.
2. Before the campaign, research was undertaken or reviewed to gain a thorough understanding of the target audience.
3. Campaign communication materials were pre-tested with the target audience and refined in line with campaign objectives.
4. Air time (radio, television) and/or placement (billboards, print advertising, etc.) were obtained by purchasing or securing it using either the organization's own internal resources or an external media planner or agency (this information indicates whether the campaign adopted a thorough media planning and buying process to effectively and efficiently reach its target audience).
5. The implementing agency worked with journalists to gain publicity or news coverage for the campaign.
6. Process evaluation was undertaken to assess how effectively the campaign had been implemented.
7. An outcome evaluation process was implemented to assess campaign impact.
8. The campaign was aired on television and/or radio.

The groupings for the mass media campaigns indicator are listed below.

	Data not reported
	No national campaign conducted between July 2016 and June 2018 with a duration of at least 3 weeks
	National campaign conducted with one to four appropriate characteristics
	National campaign conducted with five to six appropriate characteristics, or with seven characteristics excluding airing on television and/or radio
	National campaign conducted with at least seven appropriate characteristics including airing on television and/or radio

Bans on advertising, promotion and sponsorship

The report includes data on legislation in national as well as subnational jurisdictions. The assessment of subnational legislation on advertising, promotion and sponsorship bans includes first-level administrative subdivisions as listed in ISO3166. Subnational data reported in Appendix VI only reflect the content of subnational laws. Provisions covered by national legislation are indicated by an informative note next to the subnational data. In cases where the status of advertising, promotion and sponsorship legislation is not reported for some or all subnational jurisdictions, we assume the existing national law applies.

Country-level achievements in banning tobacco advertising, promotion and sponsorship were assessed based on whether the bans covered the following types of advertising:

- national television and radio;
- local magazines and newspapers;
- billboards and outdoor advertising;
- point of sale (indoor);
- free distribution of tobacco products in the mail or through other means;
- promotional discounts;
- non-tobacco products identified with tobacco brand names (brand stretching);[5]
- brand names of non-tobacco products used for tobacco products (brand sharing);[6]
- appearance of tobacco brands (product placement) or tobacco products in television and/or films;
- sponsorship (contributions and/or publicity of contributions).

The first four types of advertising listed are termed "direct" advertising, and the remaining six are termed "indirect" advertising. Complete bans on tobacco advertising, promotion and sponsorship usually start with bans on direct advertising in national media and progress to bans on indirect advertising as well as promotion and sponsorship.

The basic distinction for the two lowest groups is whether bans cover national television, radio and print media or not, and the remaining groups were constructed based on how comprehensively the law covers bans of other forms of direct and indirect advertising included in the questionnaire. In cases where the law did not explicitly address cross-border advertising, it was interpreted that advertising at both domestic and international levels was covered by the ban only if advertising was totally banned at national level.

The groupings for the bans on advertising, promotion and sponsorship indicator are listed below. Countries where at least 90% of the population were covered by subnational legislation completely banning tobacco advertising, promotion and sponsorship are grouped in the top category.

	Data not reported
	Complete absence of ban, or ban that does not cover national television (TV), radio and print media
	Ban on national TV, radio and print media only
	Ban on national TV, radio and print media as well as on some (but not all) other forms of direct* and/or indirect** advertising
	Ban on all forms of direct* and indirect**advertising (or at least 90% of the population covered by subnational legislation completely banning tobacco advertising, promotion and sponsorship)

* Direct advertising bans:
- national television and radio;
- local magazines and newspapers;
- billboards and outdoor advertising;
- point of sale (indoor).

** Indirect advertising bans:
- free distribution of tobacco products in the mail or through other means;
- promotional discounts;
- non-tobacco goods and services identified with tobacco brand names (brand stretching);
- brand names of non-tobacco products used for tobacco products (brand sharing);
- appearance of tobacco brands (product placement) or tobacco products in television and/or films;
- sponsorship, (contributions and/or publicity of contributions).

In addition to the data used for the grouping of the bans on advertising, promotion and sponsorship indicator, other related data, such as bans on internet sales or on display of tobacco products at points of sale were collected and are reported in Appendix VI.

Tobacco taxes

Countries are grouped according to the percentage contribution of all tobacco taxes to the retail price of a pack of 20 of the most popular brand of cigarettes. Taxes assessed include excise tax, value added tax (sometimes called "VAT"), import duty (when the cigarettes were imported) and any other taxes levied. In the case of countries where different levels of taxes applied to cigarettes are based on length, quantity produced, or type (e.g. filter vs. non-filter), only the rate that applied to the most popular brand is used in the calculation.

Given the lack of information on country and brand-specific profit margins of retailers and wholesalers, their profits were assumed to be zero (unless provided by the national data collector).

The groupings for the tobacco tax indicator are listed below. Please refer to Technical Note III for more details.

	Data not reported
	< 25% of retail price is tax
	≥ 25% and < 50% of retail price is tax
	≥ 50% and < 75% of retail price is tax
	≥ 75% of retail price is tax

Trend in affordability of the most sold brand of cigarettes

The affordability of cigarettes was computed as the percentage of per capita GDP required to purchase 2000 cigarettes of the most popular brand in each year of this report from 2008 to present. The least-squares annual growth rate of affordability was computed by fitting a linear regression trend line to the logarithmic values of the affordability measure.

The groupings for the affordability indicator are listed at the top of the next column. Please refer to Technical Note III for more details.

YES	Cigarettes less affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand increased on average between 2008 and 2018
NO	Cigarettes more affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand declined on average between 2008 and 2018
⟷	No trend change in affordability of cigarettes since 2008
…	Insufficient data to conduct a trend analysis

National tobacco control programmes

Classification of countries' national tobacco control programmes is based on the existence of a national agency with responsibility for tobacco control objectives. Countries with at least five full-time equivalent staff members working at the national agency with responsibility for tobacco control meet the criteria for the highest group.

The groupings for the national tobacco control programme indicator are listed below.

	Data not reported
	No national agency for tobacco control
	Existence of national agency with responsibility for tobacco control objectives with no or fewer than five full-time equivalent staff members
	Existence of national agency with responsibility for tobacco control objectives and at least five full-time equivalent staff members

Compliance assessment

Compliance with national and comprehensive subnational smoke-free legislation as well as with advertising, promotion and sponsorship bans was assessed by up to five national experts, who scored the compliance in these two areas as "minimal", "moderate" or "high". These five experts were selected according to the following criteria:

- person in charge of tobacco prevention in the country's ministry of health, or the most senior government official in charge of tobacco control or tobacco-related conditions;
- the head of a prominent nongovernmental organization dedicated to tobacco control;
- a health professional (e.g. physician, nurse, pharmacist or dentist) specializing in tobacco-related conditions;
- a staff member of a public health university department;
- the tobacco control focal point of the WHO Country Office.

The experts performed their assessments independently. Average scores were calculated by WHO from the five individual assessments by assigning two points for highly enforced policies, one point for moderately enforced policies and no points for minimally enforced policies, with a potential minimum of 0 and maximum of 10 points in total from these five experts.

The compliance assessment was obtained for legislation adopted by 1 April 2018. For countries with more recent legislation, compliance data are reported as "not applicable". Compliance with smoke-free legislation was not assessed in cases where the law provides for DSRs with very strict technical requirements.

The compliance assessments are listed in Appendix VI. Appendix I summarizes this information. Compliance scores are represented separately from the grouping (i.e. compliance is not included in the calculation of the grouping categories).

1. Parties report on the implementation of the WHO Framework Convention on Tobacco Control according to Article 21. The objective of reporting is to enable Parties to learn from each other's experience in implementing the WHO FCTC. Parties' reports are also the basis for review by the COP of the implementation of the WHO FCTC. Parties submit their initial report 2 years after entry into force of the WHO FCTC for that Party, and then every subsequent 3 years, through the reporting instrument adopted by COP. Since 2012, all Parties report at the same time, once every 2 years. For more information please refer to https://www.who.int/fctc/reporting/en/.
2. United Nations Department of Economic and Social Affairs, Population Division in World population prospects: the 2017 revision (median fertility projection for the year 2018). For more information please refer to https://population.un.org/wpp/Download/Standard/Population/.
3. The World Bank: World development indicators published July 1, 2018. For more information please refer to https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.
4. "Complete" is used in this report to mean that smoking is not permitted, with no exemptions allowed, except in residences and indoor places that serve as equivalents to long-term residential facilities, such as prisons and long-term health and social care facilities such as psychiatric units and nursing homes. Ventilation and any form of designated smoking rooms and/or areas do not protect from the harms of second-hand tobacco smoke, and the only laws that provide protection are those that result in the complete absence of smoking in all public places.
5. When legislation did not explicitly ban the identification of non-tobacco products with tobacco brand names (brand stretching) and did not provide a definition of tobacco advertising and promotion, it was interpreted that brand stretching was covered by the existing ban of all forms of advertising and promotion when the country was a Party to the WHO FCTC, assuming that the WHO FCTC definitions apply.
6. When legislation did not explicitly ban the use of brand names of non-tobacco products for tobacco products (brand sharing) and did not provide a definition of tobacco advertising and promotion, it was interpreted that brand sharing was covered by the existing ban of all forms of advertising and promotion when the country was a Party to the WHO FCTC, assuming that the WHO FCTC definitions apply.

TECHNICAL NOTE II

Tobacco use prevalence in WHO Member States

Monitoring the prevalence of tobacco use is central to efforts to control the global tobacco epidemic. Reliable prevalence data on the magnitude of the tobacco epidemic and its influencing factors provide the information needed to plan, adopt and evaluate the impact of tobacco control interventions. This report contains survey data for both smoking[1] and smokeless tobacco use among young people and adults (Appendix XI). It also presents WHO-modelled, age-standardized prevalence estimates for tobacco use for people aged 15 years and over (Appendix X). This technical note provides information on the method used to generate the WHO prevalence estimates.

Sources of information

For the analysis, the following sources of information were explored (where official survey reports explaining the sampling, methodology and detailed results were not publicly available, Member States were asked to provide them):

- information on surveys provided by Parties to the WHO FCTC Secretariat;
- information collected through WHO tobacco-focused surveys conducted under the aegis of the Global Tobacco Surveillance System – in particular, the Global Adult Tobacco Survey (GATS);
- tobacco information collected through other WHO surveys including WHO STEPwise surveys and World Health Surveys;
- other systems-based surveys undertaken by other organizations, including surveys such as the Demographic and Health Surveys (DHS) and the Multiple Indicator Cluster Survey (MICS); and
- an extensive search through WHO regional offices and WHO country offices to identify country-specific surveys not part of international surveillance systems – such as the National Survey of Risk Factors in Argentina, or the Mauritius Non Communicable Diseases Survey.

For the analysis, information from surveys conducted since 1990 was used if it:

- was officially recognized by the national health authority;
- included randomly selected participants who were representative of the general population;
- provided data for one or more of six tobacco use definitions: daily tobacco user, current tobacco user, daily tobacco smoker, current tobacco smoker, daily cigarette smoker or current cigarette smoker; and
- presented prevalence values by age and sex.

The above indicators provide for the most complete representation of tobacco use across countries and at the same time help minimize attrition of countries from further analysis because of lack of adequate data. Although differences exist in the types of tobacco products used in different countries and grown or manufactured in different regions of the world, data on these six indicators are available in most countries, thereby permitting robust statistical analyses.[2]

The information identified above is stored in the WHO Tobacco Control Global DataBank and, along with the source code used for generating the WHO smoking prevalence estimates, is published alongside this report at http://www.who.int/tobacco/.

Analysis and presentation of tobacco use prevalence indicators

Estimation method

A statistical model based on a Bayesian negative binomial meta-regression was used to model crude adjusted and age-standardized estimates for countries for each indicator (current and daily tobacco use, current and daily tobacco smoking, and current and daily cigarette smoking) separately for men and women. A trend was considered to be statistically significant if the posterior probability of the increase or decrease was greater than 0.75. A full description of the method is available as a peer-reviewed article in the *Lancet*, volume 385, No. 9972, p966–976 (2015).

Once the prevalence rates from national surveys were compiled into a dataset, the model was fit to calculate trend estimates for the six indicators specified above.

The model has two main components:

(a) adjusting for missing indicators and age groups, and (b) running the regression to generate an estimate of trends over time as well as the credible interval around the estimate.

Depending on the completeness of survey data from a particular country, the model at times makes use of data from other countries to fill information gaps. Countries with data gaps "borrow information" from "priors" calculated from their data pooled with data from countries in the same UN subregion[3].

Differences in age groups covered by each survey

Survey results for any one country were sometimes reported for a variety of different age groups. Where data were missing for any age group in the range of 15 years and above, the model uses available data from a country's other surveys to estimate the age pattern of tobacco use. For ages that the country has never surveyed, the average age pattern seen in countries in the same UN subregion is applied to the country's data.

Differences in the indicators of tobacco use measured

Similarly, countries may report different indicators across surveys (e.g. current smoking in one survey and daily smoking in another, or tobacco smoking in one and cigarette smoking in another). Where data were missing for any indicator, the model uses available data from a country's other surveys to estimate the missing information. For indicators on which the country has never reported, the average relationships seen in countries in the same UN subregion are applied to the country's data.

Modelled results

The model was run for all countries with surveys that met the inclusion criteria. Results for countries with insufficient survey data (e.g. only one survey with a detailed age breakdown for prevalence for either sex) were not reported.

The output of the model is a set of trend lines for each country that summarize its prevalence history from 2000 to the most recent survey, and project trends to 2030. Countries with few surveys will have more borrowed information blended into their trend line than countries with many surveys.

For this report, country-level trends have been summarized into average trends for high-income countries, middle-income countries, low-income countries and a global average. Trends from 2007 to 2017 are presented, with projections of the same lines to 2030. The projection assumes that the pace and level of adoption of new policies during the period covered by the country's surveys will continue unchanged. In future, when countries adopt stronger tobacco control policies and complete new surveys, recalculated trend lines will reflect the changes.

In this report, comparable estimates of current tobacco smoking among people aged 15 years and over are presented for all countries in one year (2017). These rates are taken from the trend line for each country for the year 2017. The rates are comparable because the model has standardized the survey results as described above, and then age-standardized as described below.

When calculating global and World Bank income group average prevalence rates, countries without estimates were included in the averages by assuming their prevalence rates are the average rates seen in the UN subregion to which they belong.[3]

Age-standardized prevalence rates

Comparison of crude rates between two or more countries at one point in time, or of one country at different points in time, can be misleading if the two populations being compared have significantly different age distributions or differences in tobacco use by sex. The method of age-standardization is commonly used to overcome this problem and allows for meaningful comparison of prevalence between countries, once all other comparison issues described have been addressed. The method involves applying the age-specific rates by sex in each population to one standard population (this report uses the WHO Standard Population, a fictitious population whose age distribution is largely reflective of the population age structure of low- and middle-income countries). The resulting age-standardized rates refer to the number of smokers per 100 WHO Standard Population. As a result, the rates generated using this process are only hypothetical numbers with no inherent meaning. They are only meaningful when comparing rates obtained from one country with those obtained in another country.

Comparison with smoking estimates in earlier editions of this report

The estimates in this report are consistent with each other but not with estimates produced for earlier editions of this report. While the method of estimation is the same, the updated data set for the period 1990–2018 is much more complete.

For example, since the *WHO report on the global tobacco epidemic, 2017*, 242 national surveys from 89 countries have been added to the data set, and 46 existing surveys have been updated with additional data points. Each round of WHO estimates is calculated using all available survey data back to 1990. The more data points available, the more robust the trend estimates are. Each estimation round therefore improves upon earlier published estimates, and only the latest round should be used. While country-level estimates in this report pertain only to 2017, the entire trend series from 2000 to 2025 is published in the biennial *WHO global report on trends in tobacco smoking 2000–2025*.

1 Tobacco smoking includes cigarette, cigar, pipe, hookah, shisha, water-pipe, heated tobacco products and any other form of smoked tobacco.

2 For countries where prevalence of smokeless tobacco use is reported, we have published these data.

3 For a complete list of countries by UN subregion, please refer to pages ix to xiii of *World population prospects: the 2017 revision*, published by the UN Department of Economic and Social Affairs at https://population.un.org/wpp/Publications/Files/WPP2017_Volume-I_Comprehensive-Tables.pdf (accessed April 17, 2019). Please note that, for the purposes of tobacco use analysis, the following adjustments were made: (i) Eastern Africa subregion was divided into two regions: Eastern African Islands and Remainder of Eastern Africa; (ii) Armenia, Azerbaijan, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Tajikistan, Uzbekistan and Turkmenistan were classified with Eastern Europe; (iii) Cyprus, Israel and Turkey were classified with Southern Europe; (iv) Central Africa and Southern Africa were combined into one subregion; (v) Melanesia, Micronesia and Polynesia subregions were combined into one subregion; and (vi) Ireland and the United Kingdom were classified with Northern America.

TECHNICAL NOTE III

Tobacco taxes in WHO Member States

This report includes appendices containing information on the share of total and excise taxes in the price of the most widely sold brand of cigarettes, based on tax policy information collected from each country. This note contains information on the methodology used by WHO to estimate the share of total and tobacco excise taxes in the price of a pack of 20 cigarettes using country-reported data. It also provides information on additional data collected for this report in relation to tobacco taxation.

1. Data collection

All data were collected between June 2018 and January 2019 by WHO regional data collectors. The two main inputs into calculating the share of total and excise taxes were (1) prices and (2) tax rates and structure. Prices were collected for the most widely sold brand of cigarettes, the least-expensive brand and a premium brand for July 2018.

Data on tax structure were collected through contacts with ministries of finance. The validity of this information was checked against other sources. For many countries, this was done through the wealth of work and knowledge accumulated by WHO working directly with ministries of finance on tobacco taxation since 2009. Other sources, including tax law documents, decrees and official schedules of tax rates and structures and trade information, when available, were either provided by data collectors or were downloaded from ministerial websites or from other databases such as the IMF or the World Bank.

The tax data collected focus on indirect taxes levied on tobacco products (e.g. excise taxes of various types, import duties, value added taxes), which usually have the most significant impact on the price of tobacco products. Within indirect taxes, excise taxes are the most important because they are applied exclusively to tobacco and contribute the most to increasing the price of tobacco products and subsequently reducing consumption. Thus, rates, amounts and point of application of excise taxes are central components of the data collected.

Certain other taxes, in particular direct taxes such as corporate taxes, can potentially impact tobacco prices to the extent that producers pass them on to consumers. However, because of the practical difficulty of obtaining information on these taxes and the complexity in estimating their potential impact on price in a consistent manner across countries, they are not considered.

The table below describes the types of tax information collected.

2. Data analysis

The price of the most sold brand of cigarettes was considered in the calculation of the tax as a share of the retail price reported in Appendix I and Appendix Table 9.1. In the case of countries where different levels of taxes are applied on cigarettes based on length of cigarette, quantity produced, or type (e.g. filter vs. non-filter), only the relevant rate that applied to the most sold brand was used in the calculation.

In the case of Canada and the United States of America, national average estimates calculated for prices and taxes reflect the fact that different rates are applied by state/province over and above the applicable federal tax. In the case of Brazil, where state VATs vary, the highest rate, which is applied in most states, was applied. In the Federated States of Micronesia, which also has varying VAT rates across states, the VAT rate applicable to the state where price data was collected (Pohnpei) was used. A weighted average of retail price and tax was calculated for China given the very large array of brands sold in the market: the most sold brand changing almost every year and representing a very small share of the market was not representative.

The import duty was only used in the calculation of tax shares if the most sold brand of cigarettes was imported into the country. Import duty was not applied in the total tax calculation for countries reporting that the most sold brand, even if an international brand, was produced locally. In cases where the imported cigarettes originated from a country with which a bilateral or multilateral trade agreement waived the duty, care was taken to ensure that the import duty was not taken into account in calculating taxes levied.

"Other taxes" are all other indirect taxes not reported as excise taxes, import duties or VAT. These taxes were, however, treated as excises if they had a special rate applied to tobacco products. For example, Thailand reported the tax earmarked from tobacco and alcohol for the ThaiHealth Promotion Foundation as "other tax". However, since this tax is applied only on tobacco and alcohol products, it acts like an excise tax and so was considered an excise in the calculations.

1. Specific excise taxes	A specific excise tax is a tax on a selected good produced for sale within a country or imported and sold in that country. In general, the tax is collected from the manufacturer or at the point of entry into the country by the importer, in addition to import duties. These taxes come in the form of an amount per stick, pack, per 1000 sticks, or per kilogram. Example: US$1.50 per pack of 20 cigarettes.
2. Ad valorem excise taxes	An ad valorem excise tax is a tax on a selected good produced for sale within a country or imported and sold in that country. In general, the tax is collected from the manufacturer or at the point of entry into the country by the importer, in addition to import duties. These taxes come in the form of a percentage of the value of a transaction between two independent entities at some point of the production/distribution chain; ad valorem taxes are generally applied to the value of the transactions between the manufacturer and the retailer/wholesaler. Example: 60% of the manufacturer's price.
3. Import duties	An import duty is a tax *on a selected good* imported into a country to be consumed in that country (i.e. the goods are not in transit to another country). In general, import duties are collected from the importer at the point of entry into the country. These taxes can be either amount-specific or ad valorem. Amount-specific import duties are applied in the same way as amount-specific excise taxes. Ad valorem import duties are generally applied to the CIF (cost, insurance, freight) value, (i.e. the value of the unloaded consignment that includes the cost of the product itself, insurance and transport and unloading). Example: 50% import duty levied on CIF.
4. Value added taxes and sales taxes	The value added tax (VAT) is a "multi-stage" tax *on all consumer goods and services* applied proportionally to the price the consumer pays for a product. Although manufacturers and wholesalers also participate in the administration and payment of the tax all along the manufacturing/distribution chain, they are all reimbursed through a tax credit system, so that the only entity who pays in the end is the final consumer. Most countries that impose a VAT do so on a base that includes any excise tax and customs duty. Example: VAT representing 10% of the retail price. Some countries, however, impose sales taxes instead. Unlike VAT, sales taxes are levied at the point of retail on the total value of goods and services purchased. For the purposes of the report, care was taken to ensure the VAT and/or sales tax shares were computed in accordance with country-specific rules.
5. Other taxes	Information was also collected on any other tax that is not called an excise tax, import duty, VAT or sales tax, but that applies to either the quantity of tobacco or to the value of a transaction of a tobacco product, with as much detail as possible regarding what is taxed and how the base is defined.

		COUNTRY A (US$)	COUNTRY B (US$)
[A]	Manufacturer's price (same in both countries)	2.00	2.00
[B]	Country A: ad valorem tax on manufacturer's price (20%) = 20% x [A]	0.40	-
[C]	Wholesalers' and retailers' profit margin (same in both countries)	0.20	0.20
[D]	Country B: ad valorem tax on retailer's price (20%) = 20% x [E]	-	0.55
[E]	Final price = P = [A]+[B]+[C] or [A]+[C]+[D]	2.60	2.75
	Total tax share (as % of P)	0.40/2.60 = **15.4%**	0.55/2.75 =**20%**

The next step of the exercise was to convert all taxes to the same base – in our case, the tax-inclusive retail sale price (hereafter referred to as P). Standardizing bases is important in calculating tax share correctly, as the example in the table above shows. Country B apparently applies the same ad valorem tax rate (20%) as Country A, but in fact ends up with a higher tax rate and a higher final price because the tax is applied later in the distribution chain. Comparing reported statutory ad valorem tax rates without taking into account the stage at which the tax is applied could therefore lead to biased results.

A similar methodology was used to calculate the price and tax share of the most common type of smoked (other than cigarettes) and smokeless tobacco products, as reported by each country. The calculation was made for the price of a product for 20 grams for any smoked or smokeless tobacco product except for cigars and cigarillos, for which the price and tax was reported per piece. Price and tax for smoked tobacco products (including bidis, cheroots, cigarillos, cigars, pipe tobacco, roll-your-own or waterpipe tobacco) was calculated for 70 countries, while the calculation for smokeless tobacco products (chewing tobacco, dry snuff, moist snuff nose tobacco or snus) was made for 27 countries (see Table 9.5 in online Appendix IX). Price and tax for heated tobacco products (per 20 sticks) was also calculated but only for a very small number of countries that reported them (nine countries).

3. Calculation

Denote S_{ts} as the share of taxes on the price of a widely consumed brand of cigarettes (20-cigarette pack or equivalent). Then

$$S_{ts} = S_{as} + S_{av} + S_{id} + S_{VAT} \quad ①$$

Where:

S_{ts} = Total share of taxes in the price of a pack of cigarettes;

S_{as} = Share of amount-specific excise taxes (or equivalent) in the price of a pack of cigarettes;

S_{av} = Share of ad valorem excise taxes (or equivalent) in the price of a pack of cigarettes;

S_{id} = Share of import duties in the price of a pack of cigarettes (if the most popular brand is imported);

S_{VAT} = Share of the value added tax in the price of a pack of cigarettes.

Calculating S_{as} is fairly straightforward and involves dividing the specific tax amount for a 20-cigarette pack by the total price. Unlike S_{as}, the share of ad valorem taxes, S_{av} is much more difficult to calculate and involves making some assumptions described below. Import duties are sometimes amount-specific, sometimes value-based. S_{id} is therefore calculated the same way as S_{as} if it is amount-specific and the same way as S_{av} if it is value-based. VAT rates reported for countries are usually applied on the VAT-exclusive retail sale price but are also sometimes reported on VAT-inclusive prices. S_{VAT} is calculated to consistently reflect the share of the VAT in VAT-inclusive retail sale price.

The price of a pack of cigarettes can be expressed as the following:

$$P = [(M + M \times ID) + (M + M \times ID) \times T_{av}\% + T_{as} + \pi] \times (1 + VAT\%)$$

or

$$P = [M \times (1 \times ID) \times (1 + T_{av}\%) + T_{as} + \pi] \times (1 + \text{VAT}\%) \quad ②$$

Where:

P = Price per pack of 20 cigarettes of the most popular brand consumed locally;

M = Manufacturer's/distributor's price, or import price if the brand is imported;

ID = Import duty rate (where applicable) on a pack of 20 cigarettes;[1]

T_{av} = Statutory rate of ad valorem tax;

T_{as} = Amount-specific excise tax on a pack of 20 cigarettes;

π = Retailers', wholesalers' and importers' profits per pack of 20 cigarettes (sometimes expressed as a mark-up);

VAT = Statutory rate of value added tax on VAT-exclusive price.

Changes to this formula were made based on country-specific considerations such as the base for the ad valorem tax and excise tax, the existence – or not – of ad valorem and specific excise taxes, and whether the most popular brand was locally produced or imported. In many cases (particularly in low- and middle-income countries) the base for ad valorem excise tax was the manufacturer's price or CIF value. But in fact, the base of the ad valorem varies a lot around the world and can include other bases, such as retail price, retail price net of some taxes (and/or some predefined margins), retail price net of all taxes, etc.

Given knowledge of price (P) and amount-specific excise tax (T_{as}), the share S_{as} is easy to recover ($=T_{as}/P$). The case of ad valorem taxes (and, where applicable, S_{id}) is fairly straightforward when, by law, the base is retail price (as is the case in several European Union countries). The calculation is more complicated when retail price is not the base, because the base (M) needs to be recovered to calculate the amount of ad valorem tax. In most of the cases, M was not known (unless specifically reported by the country), and therefore had to be estimated.

Using equation (2), it is possible to recover M:

$$M = \frac{\frac{P}{1 + VAT\%} - \pi - T_{as}}{(1 + T_{av}\%) \times (1 + ID)} \quad ③$$

π, or wholesalers' and retailers' profit margins, are rarely publicly disclosed and will vary from country to country. For domestically produced most popular brands, we considered π to be nil (i.e. = 0) in the calculation of M because the retailers' and wholesalers' profit margins are assumed to be small. Setting the margin to 0, however, would result in an overestimation of M and therefore of the base for the ad valorem tax. This will in turn result in an overestimation of the amount of ad valorem tax. Since the goal of this exercise is to measure how high the share of tobacco taxes is in the price of a typical pack of cigarettes, assuming that the retailer's/wholesaler's profit (π) is nil, therefore, does not penalize countries by underestimating their ad valorem taxes. Considering this, it was decided that unless country-specific information was made available to WHO, the retailer's or wholesaler's margin would be assumed to be nil for domestically produced brands.

For countries where the most popular brand is imported, the import duty is applied on CIF values, and the consequent excise taxes are typically applied on a base that includes the CIF value and the import duty, but not the importer's profit. For domestically produced cigarettes, the producer's price includes its own profit, so it is automatically included in M. In practice, however, the importer's profit can be relatively significant and setting it to zero (as in the case of domestically manufactured cigarettes) would substantially overestimate M, and thereby substantially overestimate the share of ad valorem tax in final price. For this reason, M had to be estimated differently for imported products: M^* (or the CIF value) was calculated either based on information reported by countries or using secondary sources (data from the United Nations Comtrade database[2]). M^* was normally calculated as the import price of cigarettes in a country (value of cigarette imports divided by the quantity of cigarette imports for the importing country). However, in exceptional cases where no such data were available (Democratic Republic of the Congo, Equatorial Guinea, and Libya), the export price was considered instead (where the export price was considered too low – i.e. below US$ 0.2 per pack – the value was approximated as the export price plus US 10 cents). The ad valorem and other taxes were then calculated in the same way as for local cigarettes, using M^* rather than M as the base, where applicable.

In the case of VAT, in most of the cases the base was P excluding the VAT (or, similarly, the manufacturer's/distributor's price plus all excise taxes). In other words:

S_{VAT} = VAT% × (1 - S_{VAT}), equivalent to ④
S_{VAT} = VAT% ÷ (1+ VAT%)

In some cases, however, we were informed that the VAT was not effectively collected at all levels of the supply chain and was mainly levied at the import or manufacturing point. In this case, the VAT was calculated on the basis of M (or M^*) and the different taxes collected at this stage, mainly import duties and excise taxes (Angola, Benin, Cabo Verde, Cameroon, Cook Islands, Côte d'Ivoire, Equatorial Guinea, Ethiopia, Gabon, Gambia, Guinea-Bissau, Iran, Kiribati, Mali, Mauritania, Suriname, Tonga, Tuvalu, Uganda, Vanuatu and Viet Nam).

In sum, the tax rates are calculated this way:

$S_{ts} = S_{id} + S_{as} + S_{av} + S_{VAT}$ ⑤

$S_{as} = T_{as} \div P$

$S_{av} = (T_{av}\% \times M) \div P$
or
$(T_{av}\% \times M^* \times (1 + S_{id})) \div P$[3]
if the most popular brand was imported

$S_{id} = (T_{ID}\% \times M^*) \div P$
(if the import duty is value-based)
or
$ID \div P$
(if import duty is a specific amount per pack)

S_{VAT} = VAT% ÷ (1+ VAT%)

4. Prices

Primary collection of price data in this and previous reports involved surveying retail outlets. Price data were collected in the following manner:

- In addition to the most sold brand reported in previous years, there was a space provided for data collectors to report a new most sold brand in case the one collected in past years was not the most sold brand anymore.
- For each brand, prices were required from two different types of retail outlets.

Questionnaires sent to data collectors were pre-populated with the names of the highest selling brand in each country. The popular brand was identified using data collected from the 2016 questionnaires, from secondary data (Euromonitor[4]) and through WHO's close collaboration with ministries of finance. For the countries where such data were not available, data collectors were asked to indicate the names of the popular brands and provide their prices.

The two types of retail outlets were defined as follows:

1. Supermarket/hypermarket: chain or independent retail outlets with a selling space of over 2500 square metres and a primary focus on selling food/beverages/tobacco and other groceries. Hypermarkets also sell a range of non-grocery merchandise.

2. Kiosk/newsagent/tobacconist/independent food store: small convenience stores, retail outlets selling predominantly food, beverages and tobacco or a combination of these (e.g. kiosk, newsagent or tobacconist) or a wide range of predominantly grocery products (independent food stores or independent small grocers).

Most sold brands have been used consistently over time to gain a better reflection of the change in prices. However, in some cases where the market share of the brand initially used was considered to have changed substantially, a change was made to the new, more prevalent brand. In 2018, changes in the brand were made for Antigua and Barbuda, Australia, Benin, Cuba, Cyprus, Gabon, Gambia, Kazakhstan, Niger, Saint Vincent and the Grenadines, Serbia, Viet Nam (different brand but same price category), Azerbaijan, Barbados, Belize, Brazil, Grenada, Nicaragua, Pakistan, Papua New Guinea, Peru, Thailand (cheaper brand), El Salvador, Bosnia and Herzegovina, Mozambique (more expensive brand) and Turkmenistan (not possible to determine how the new brand compared to the previous one).

In 11 other countries (Austria, Bolivia (Plurinational State of),, Denmark, Hungary, Nauru, Panama, Poland, Romania, Slovakia, Spain and Sweden) the brand reported in 2018 was a variant of the brand reported in 2016, and these were treated as identical in both years for purposes of price comparisons.

As in 2012, 2014 and 2016, the price used for each of the 28 countries of the European Union (EU)[5] was the most sold brand collected by WHO. Prior to 2012, price and tax information were taken entirely from the EU's Taxation and Customs union website. The price used by the EU in the past to calculate tax rates was the most popular price category (MPPC), which was assumed to be similar to the most sold brand price category collected in this report. However, since 2011, the EU calculates and reports tax rates based on the Weighted Average Price (WAP) and therefore information on the MPPC is no longer readily available for EU countries. Consequently, in order to be consistent with past years' estimates and to ensure comparability with other countries, WHO decided in 2012 to collect first-hand prices of the most sold brand (the brand was determined based on brand market shares reported from secondary sources) to calculate tax rates. Excise and VAT rates are still collected from the EU published tables. This means, however, that tax shares as computed and reported in this report will not necessarily be similar to the rates published by the EU. This is mainly due to the calculation of the specific excise tax rates as a percentage of the retail price, which will vary depending on the price used. See details of the difference in price and tax share for the EU countries in the table (left).

Comparisons of prices and total tax shares are computed from WHO's most sold brand (MSB) survey and EU weighted average price (WAP).

	Total tax share (% of retail price)		Retail price (20 cigarettes)		
Country	WHO estimates	EU reported rates	WHO reported MSB	EU reported WAP	Currency
Austria	75.3%	78.53%	5.50	4.76	EUR
Belgium	77.0%	79.37%	6.60	5.88	EUR
Bulgaria	83.6%	85.09%	5.20	5.02	BGN
Croatia	78.8%	79.91%	25.00	23.93	HRK
Cyprus	74.4%	75.67%	4.50	4.28	EUR
Czechia	75.4%	78.31%	94.00	86.00	CZK
Denmark	74.1%	79.89%	44.50	40.16	DKK
Estonia	79.4%	85.82%	4.25	3.55	EUR
Finland	87.4%	88.67%	7.22	6.70	EUR
France	82.4%	85.07%	8.00	6.81	EUR
Germany	68.3%	72.49%	6.40	5.64	EUR
Greece	81.2%	85.64%	4.60	4.10	EUR
Hungary	72.3%	75.22%	1,245.00	1,118.72	HUF
Ireland	78.4%	89.12%	12.20	10.07	EUR
Italy	76.0%	77.13%	5.50	4.76	EUR
Latvia	80.0%	83.99%	3.50	3.20	EUR
Lithuania	73.8%	79.46%	3.75	3.18	EUR
Luxembourg	68.3%	69.40%	5.30	4.60	EUR
Malta	77.6%	79.40%	5.50	5.25	EUR
Netherlands	71.8%	78.29%	7.00	6.19	EUR
Poland	76.8%	80.04%	15.50	13.82	PLN
Portugal	71.7%	76.16%	5.00	4.47	EUR
Romania	68.6%	72.56%	17.50	15.86	RON
Slovakia	77.1%	77.88%	3.30	3.23	EUR
Slovenia	79.2%	81.28%	3.70	3.51	EUR
Spain	78.2%	79.28%	5.00	4.52	EUR
Sweden	68.4%	74.16%	65.00	57.94	SEK
United Kingdom of Great Britain and Northern Ireland	79.4%	88.80%	9.40	7.81	GBP

Note: WHO estimates pertain to most sold brand prices collected in July 2018. EU reported rates and weighted average prices pertain to data collected by the EU and are also reported for July 2018. As indicated earlier, the most sold brand was used for all EU countries except for Finland, which reported directly to WHO its weighted average price (WAP) for 2008, 2010, 2012, 2014, 2016 and 2018. The 2018 data shows a different WAP for WHO compared to the EU reported WAP for Finland. This is because the price reported to WHO was an estimate updated in 2019, while the EU reported WAP was collected in 2018.

5. Considerations in interpreting tax share changes

Changes in tax as a share of price are not only dependent on tax changes but also on price changes. Therefore, despite an increase in tax, the tax share could remain the same or go down; similarly, sometimes a tax share can increase even if there is no change/increase in the tax.

In the current database, there are cases where taxes increased between 2016 and 2018 but the share of tax as a percentage of the price went down. This is mainly due to the fact that, in absolute terms, the price increase was larger than the tax increase (particularly in the case of specific excise tax increases). For example, in Mongolia, the specific excise tax increased from 3480 MNT per 100 cigarettes in 2016 to 3830 MNT per 100 cigarettes in 2016 (a 10% increase) while the price of the most sold brand increased from 1700 to 2000 MNT per pack (an 18% increase). In terms of tax share, the excise represented 52.9% of the price in 2016 and went down to 47.4% of the price in 2018. This is because prices rose more than taxes.

In the same way there are cases where increases (decreases) in tax as a share of price were mitigated by factors not directly related to tax rates. In the current database, this was attributable to one or more of the following reasons:

- In some instances, the price increased without a tax change, leading to a decrease in the tax share for a specific or mixed excise structure (e.g. China, Cyprus, Denmark, Dominica, Ecuador, Germany, Israel, Mexico, Palau, Poland, Saint Vincent and the Grenadines, Switzerland, Timor-Leste, Tunisia, and Yemen).
- In other cases, prices increased above tax increases, leading to a decrease in tax share for a specific or mixed excise structure (e.g. Algeria, Austria, Canada, Chile, Cook Islands, Costa Rica, Czechia, Dominican Republic, Gambia, Grenada, Honduras, Hungary, Iceland, Iran (Islamic Republic of), Jamaica, Jordan, Lithuania, Luxembourg, Malta, Mongolia, Norway, Portugal, Republic of Moldova, Romania, Samoa, Serbia, Seychelles, Slovakia, Spain, Suriname, Sweden, Tonga, Trinidad and Tobago, Turkey, Uganda, Ukraine, United Kingdom of Great Britain and Northern Ireland, United Republic of Tanzania, United States of America).
- In the case of imported products, the CIF value is an external variable that also influences the calculation of tax share. This has implications in countries where ad valorem is based on the CIF value, when import duties are applicable on the CIF value or when the VAT is calculated on the base of CIF value and excise rather than VAT-exclusive retail price. For example, if the CIF value increases, the base for the application of the tax is higher, leading to a higher tax percentage if nothing else changes. Countries that have seen changes in their tax share mainly due to changes in CIF value include Togo, Libya and Micronesia (Federated States of).
- Care should also be taken in relation to countries where the most sold brand changed between 2016 and 2018. This also has had an impact on the tax proportion of the affected countries that had a specific or mixed excise structure. In some cases, because the new brand reported was more expensive and despite tax increases, the total tax share decreased (Bosnia and Herzegovina, Mozambique and Peru). In the case of El Salvador, the tax proportion decreased despite no tax change, because of the apparent increase in prices due to the new, more expensive brand reported as the most sold brand. In one other case (Belize), the new brand reported was cheaper, so the tax share increased despite no tax increase.

Finally, when new and improved information was provided in terms of taxation and prices for some countries, corrections were made in the calculations of tax rates for 2008, 2010, 2012, 2014 and 2016 estimates, as needed.

6. Supplementary tax information (see Table 9.3, online Appendix IX)

An important consideration highlighted in this report is that many aspects of tobacco taxation need to be taken into account in order to assess if a tax policy is well designed. Tax as a proportion of price does not tell the whole story about the effectiveness of a tax policy. To explore other dimensions of tax policy, the report has been collecting since 2015 additional information in relation to tobacco taxation and presents it as data that can inform researchers and policy-makers further on tax policy in different countries.

The information is compiled and classified in this report according to two main themes: tax structure/level and tax administration. Information was also collected in relation to countries that earmark tobacco taxes to fund health programmes and/or tobacco control activities. The different sets of data/indicators reported under each of the themes were developed and are justified based on evidence provided in past reports.

I. Tax structure/level

a. **Excise tax proportion of price**: higher tax rates and greater reliance on excise is better.

b. **Type of excise applied**: if excise tax is specific, ad valorem, a mix of the two, or if no excise is applied.

c. **Uniform vs. tiered excise tax system**: a uniform excise is easier to administer than a tiered system where variable rates apply based on selected criteria within one tobacco product (not applicable in countries where no excise tax is implemented).

d. Whether a country applies a specific excise or a mixed system **relying more on the specific tax component** (> 50% of total excise is specific): specific excises typically lead to higher prices and a smaller price gap between different brands, and so are more effective (not applicable in countries where only ad valorem excise is applicable or where no excise tax is implemented).

e. If the excise applied is ad valorem or if it is mixed, and whether there is **a minimum specific tax**. A minimum tax provides protection against products being undervalued. It also forces prices up since the price will not be lower than the tax paid (this category does not apply to countries where only specific excise tax is applicable or where no excise tax is implemented).

f. Base of the ad valorem tax in countries that apply an ad valorem or a mixed excise system. **Ad valorem taxes applied to the retail price** or the retail price excluding VAT are administratively simpler. The retail price is easier to determine than producer price or CIF value, and therefore there is less risk of undervaluation (not applicable in countries where only specific excise is applicable, or where no excise tax is implemented).

g. If the excise tax applied is specific or if it is mixed, and whether the **specific tax component is automatically adjusted** for inflation (or other). If the specific tax is not adjusted for inflation (or another indicator such as income) over time, its impact will be eroded. It is good to have it adjusted automatically (this category does not apply to countries where only ad valorem excise tax is applicable or where no excise tax is implemented).

h. Minimum price policy: while this is not reported as a best practice, it was considered important to report the countries that did impose minimum prices as part of their excise tax policy.

i. **Price dispersion**: share of cheapest brand price in premium brand price (cheapest brand price ÷ premium brand price × 100). The higher the proportion, the smaller the gap and the fewer the opportunities for substitution to cheaper brands.

II. Tax administration

a. Requirement of tax stamps (or fiscal marks) on tobacco products: tax stamps help administrators ensure that producers and importers comply with tax payment requirements and help detect illicit tobacco products. A note was made of countries requiring tax stamps to bear special features beyond those found on traditional paper stamps. Specifically, these are encrypted tax stamps that include unique identifiers used to detect the presence of illicit products. Data was collected to identify which countries had an additional feature on those marks which was used for tracking and tracing purposes.

b. Sales of duty free cigarettes: In most countries tobacco products are found to be sold without excise (and other indirect taxes such as VAT and import duties) in duty-free shops in airports, on international transport vehicles and/or other tax-free shops. Duty-free tobacco products are usually made available to travellers going out of the country, but they are now also made available for travellers entering a country. Banning the sale of duty-free cigarettes for personal consumption reduces the chance that these products end up in the illicit market. Additionally, there is no justification for selling a deadly product duty-free; those foregone taxes are a revenue loss for the government. Some countries have already acted and have banned the sale of duty-free tobacco products. Those products may still be found in airport and other tax-free shops, but they are sold with (excise) taxes included.

III. Earmarking (portion of taxes or revenues from taxes dedicated to health and/or tobacco control). Taxes can generate substantial revenues. One way of correcting the negative externality of tobacco use would be to increase taxes to reduce consumption and fund health care, which is often underfunded and put under strain because of tobacco use (see Table 9.4 in online Appendix IX).

7. Estimates of the affordability of cigarettes (see Table 9.5, online Appendix IX)

The affordability of cigarettes for each of the years 2008, 2010, 2012, 2014, 2016 and 2018 was measured by the per capita GDP required to purchase 2000 cigarettes of the most sold brand reported in that year. Analysis of affordability in this report informs the following:

- Affordability index (% of GDP per capita to buy 2000 cigarettes): across countries, a higher value indicates cigarettes are relatively more expensive in relation to income.
- Whether cigarettes have become relatively more affordable between 2008 and 2018 (change in the affordability index as measured above): as affordability decreases, consumption is discouraged.

Estimates of GDP per capita in local currency units were sourced from the IMF's World Economic Outlook (WEO) database which provides a complete series of estimates for most of the 195 countries reported on. Where GDP per capita data were not available in the WEO database, (Andorra, Cuba, occupied Palestinian territory, including east Jerusalem, and Somalia), the World Bank's GDP per capita data series was used. In the case of the Cook Islands, government data was used. For each country–year pair, the currency reported for the most sold brand was tallied with the corresponding currency for the GDP series, and exchange rate conversions and adjustments were performed as needed (Belarus, Cambodia, Estonia, Latvia, Liberia Lithuania, Turkmenistan, Zambia) to align the two data series.

To assess whether affordability changed on average since 2008, the average annual percentage change in affordability was calculated as the least squares growth rate for all countries with four or more years of data, including data for 2018. This criterion automatically excluded countries where World Bank GDP per capita estimates were used, given that the series ended with the year 2017 at the time the analysis was performed.

The affordability of cigarettes was judged to have been unchanged if the least squares trend in the per capita GDP required to purchase 2000 cigarettes (that is, 100 packs of 20 cigarettes) was not significant at the 5% level. Cigarettes were judged to have become less (more) affordable on average if the least squares trend in the per capita GDP required to purchase 2000 cigarettes was positive (negative) and significantly different from zero at the 5% level.

[1] Import duties may vary depending on the country of origin in cases of preferential trade agreements. WHO tried to determine the origin of the pack and relevance of using such rates where possible.

[2] https://comtrade.un.org/

[3] Or S_{av} = (Tav % × M*) ÷ P, if the ad valorem tax was applied only on the CIF value, not the CIF value + the import duty.

[4] Euromonitor International's Passport, 2018.

[5] Except for Finland where the weighted average price of cigarettes was used for years 2008, 2010, 2012, 2014, 2016 and 2018.

APPENDIX I: REGIONAL SUMMARY OF MPOWER MEASURES

Appendix I provides an overview of selected tobacco control policies. For each WHO region an overview table is presented that includes information on monitoring and prevalence, smoke-free environments, treatment of tobacco dependence, health warnings and packaging, anti-tobacco mass media campaigns, advertising, promotion and sponsorship bans, taxation levels, and affordability of tobacco products, based on the methodology outlined in Technical Note I.

Country-level data were generally but not always provided with supporting documents such as laws, regulations, policy documents, etc. Available documents were assessed by WHO and this appendix provides summary measures or indicators of country achievements for each of the MPOWER measures. Detailed information, including detailed footnotes on each of the indicators, is available in Appendix II for tobacco dependence treatment, in Appendix VI for smoke-free environments, health warnings and packaging, anti-tobacco mass media campaigns, advertising, promotion and sponsorship bans, and in Appendix IX for tobacco taxation and affordability. It is important to note that data about laws reflect the status of legislation adopted by 31 December 2018 which has a stated date of effect and is not undergoing a legal challenge that could impact the date of implementation.

The summary measures developed for the *WHO report on the global tobacco epidemic, 2019* are the same as those used for the 2017 report.

The methodology used to calculate each indicator is described in Technical Note I. This review, however, does not constitute a thorough and complete legal analysis of each country's legislation. Except for smoke-free environments and bans on tobacco advertising, promotion and sponsorship, data were collected at the national/federal level only and therefore provide incomplete policy coverage for Member States where subnational governments play an active role in tobacco control.

Daily smoking prevalence for the population aged 15 years and over in 2017 is an indicator modelled by WHO from tobacco use surveys published by Member States. Tobacco smoking is one of the most widely reported indicators in country surveys. The calculation of WHO estimates to allow international comparison is described in Technical Note II.

Table 1.1
Summary of MPOWER measures

. . . Data not reported/not available.
— Data not required/not applicable.

2018 INDICATOR AND COMPLIANCE

CHANGE SINCE 2016

COUNTRY	ADULT DAILY SMOKING PREVALENCE (2017)	M MONITORING	P SMOKE-FREE POLICIES	O CESSATION	W WARNINGS		E ADVERTISING BANS	R	
			LINES REPRESENT LEVEL OF COMPLIANCE		HEALTH WARNINGS	MASS MEDIA	LINES REPRESENT LEVEL OF COMPLIANCE	TAXATION	CIGARETTES LESS AFFORDABLE SINCE 2008
Algeria	12%		IIIII				IIIII	34.2%	YES
Angola	. . .		. . .				—	23.7%	YES
Benin	5%		IIIII				IIIIIIII	4.9%	NO
Botswana	15%		—				. . .	49.9%	↔
Burkina Faso	11%		IIII				IIIIII	41.6%	↔
Burundi	7%		—				—	42.8%	↔
Cabo Verde	. . .		IIIII				IIIIIII	11.2%	NO
Cameroon	6%		. . .		⊙		. . .	21.3%	NO
Central African Republic	. . .		—				—	41.5%	↔
Chad	7%		III				IIIIIII	34.1%	YES
Comoros	11%		III				IIIIII	37.3%	↔
Congo	9%		I				IIIIIIII	37.1%	↔
Côte d'Ivoire	9%		—				—	33.3%	NO
Democratic Republic of the Congo	. . .				⊙		— ⊙	38.7%	NO
Equatorial Guinea	. . .		—				—	25.3%	↔
Eritrea	5%		—				. . .	55.4%	↔
Eswatini	6%		—				IIIIIIIII	52.7%	NO
Ethiopia	2%		IIIII ☆				IIIII	18.8%	NO
Gabon	. . .		IIIII				IIIIIII	23.1%	↔
Gambia	10%		–				IIIIIII	46.3%	YES
Ghana	3%		— ☆				IIIIIIII	31.3%	NO
Guinea	. . .		. . .				. . .	. . .	. . .
Guinea-Bissau	. . .		—				—	6.8%	↔
Kenya	8%		—				IIIIIIIII	52.3%	NO
Lesotho	21%		. . .				—	50.9%	NO
Liberia	6%		—				—	34.8%	↔
Madagascar	16%		IIII				IIIIIIII	80.4%	YES
Malawi	8%		—				—	. . .	. . .
Mali	10%		—				IIIIIII	27.7%	NO
Mauritania	. . .		I		⊙		—	9.6%	NO
Mauritius	16%		IIIIII				IIIIIIII	83.5%	YES
Mozambique	11%						IIIIIIIII	28.5%	YES
Namibia	13%		IIIIII				IIIIIIIII	44.1%	↔
Niger	5%		III				IIIIIIII	31.3%	↔
Nigeria	3%		—				III	29.7%	NO
Rwanda	9%		—				IIIIIIII	55.9%	NO
Sao Tome and Principe	4%		_ ☆				IIIIIIII	40.4%	NO
Senegal	6%		IIII ☆				IIIIII	38.2%	YES
Seychelles	16%		IIIIIIIII				IIIIIIIII	70.1%	↔
Sierra Leone	19%		—				—	18.6%	↔
South Africa	17%		—				. . .	54.6%	↔
South Sudan	. . .		—				—	. . .	. . .
Togo	6%		IIIIIIIII ☆				IIIIIIIII	22.0%	↔
Uganda	5%		III				IIIIIII	39.9%	YES
United Republic of Tanzania	8%		— ☆				. . .	32.1%	↔
Zambia	10%		III				—	41.2%	↔
Zimbabwe	11%		IIII				—	35.9%	YES

P SMOKE-FREE POLICIES	O CESSATION PROGRAMMES	W HEALTH WARNINGS	E ADVERTISING BANS	R TAXATION
CHANGE IN POWER INDICATOR GROUP, UP OR DOWN, SINCE 2016				
	▲			
▲	▼		▲	
	▲			
▲		▲	▲	
		▲		
	▼			
	▲			
			▲	
		▲	▲	
				▲
				▼
▲			▲	▼
	▼			
	▼			
				▲
		▲	▲	
				▲
	▲			
				▲
	▼			
	▼			
				▲
	▼			
	▼			
	▲			

ADULT DAILY SMOKING PREVALENCE: AGE-STANDARDIZED* PREVALENCE RATES FOR ADULT DAILY SMOKERS OF TOBACCO (BOTH SEXES COMBINED), 2017

. . .	Estimates not available
	30% or more
	From 20% to 29.9%
	From 15% to 19.9%
	Less than 15%

* The figures should be used strictly for the purpose of drawing comparisons across countries and must not be used to estimate absolute number of daily tobacco smokers in a country.

MONITORING: PREVALENCE DATA

	No known data or no recent data or data that are not both recent and representative
	Recent and representative data for either adults or youth
	Recent and representative data for both adults and youth
	Recent, representative and periodic data for both adults and youth

SMOKE-FREE ENVIRONMENTS: SMOKING BANS

	Data not reported/not categorized
	Complete absence of ban, or up to two public places completely smoke-free
	Three to five public places completely smoke-free
	Six to seven public places completely smoke-free
	All public places completely smoke-free (or at least 90% of the population covered by complete subnational smoke-free legislation)

CESSATION PROGRAMMES: TREATMENT OF TOBACCO DEPENDENCE

	Data not reported
	None
	NRT and/or some cessation services (neither cost-covered)
	NRT and/or some cessation services (at least one of which is cost-covered)
	National quit line, and both NRT and some cessation services cost-covered

HEALTH WARNINGS: HEALTH WARNINGS ON CIGARETTE PACKAGES

	Data not reported
	No warnings or small warnings
	Medium size warnings missing some or many appropriate characteristics OR large warnings missing many appropriate characteristics
	Medium size warnings with all appropriate characteristics OR large warnings missing some appropriate characteristics
	Large warnings with all appropriate characteristics

MASS MEDIA: ANTI-TOBACCO CAMPAIGNS

	Data not reported
	No national campaign conducted between July 2016 and June 2018 with duration of at least three weeks
	National campaign conducted with one to four appropriate characteristics
	National campaign conducted with five to six appropriate characteristics, or with seven characteristics excluding airing on television and/or radio
	National campaign conducted with at least seven appropriate characteristics including airing on television and/or radio

ADVERTISING BANS: BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP

	Data not reported
	Complete absence of ban, or ban that does not cover national television, radio and print media
	Ban on national television, radio and print media only
	Ban on national television, radio and print media as well as on some but not all other forms of direct and/or indirect advertising
	Ban on all forms of direct and indirect advertising (or at least 90% of the population covered by subnational legislation completely banning tobacco advertising, promotion and sponsorship)

TAXATION: SHARE OF TOTAL TAXES IN THE RETAIL PRICE OF THE MOST WIDELY SOLD BRAND OF CIGARETTES

	Data not reported
	< 25% of retail price is tax
	≥25% and <50% of retail price is tax
	≥50% and <75% of retail price is tax
	≥75% of retail price is tax

AFFORDABILITY OF CIGARETTES

YES	Cigarettes less affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand increased on average between 2008 and 2018
NO	Cigarettes more affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand declined on average between 2008 and 2018
↔	No trend change in affordability of cigarettes since 2008
. . .	Insufficient data to conduct a trend analysis

COMPLIANCE: COMPLIANCE WITH BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP, AND ADHERENCE TO SMOKE-FREE LAWS

IIIIIIII IIIIIIII IIIIIII	High compliance (8/10 to 10/10)
IIIIIII IIIIII IIIII IIII III	Moderate compliance (3/10 to 7/10)
II I	Minimal compliance (0/10 to 2/10)

SYMBOLS LEGEND

☆	Country has one or more public places where designated smoking rooms (DSRs) are allowed. Separate, completely enclosed smoking rooms are allowed if they are separately ventilated to the outside and/or kept under negative air pressure in relation to the surrounding areas. Given the difficulty of meeting the very strict requirements delineated for such rooms, they appear to be a practical impossibility but no reliable empirical evidence is presently available to ascertain whether they have been constructed.
⊙	Policy adopted but not implemented by 31 December 2018.
▲▼	Change in POWER indicator group, up or down, between 2016 and 2018. Some 2016 data were revised in 2018. 2018 grouping rules were applied to both years.

PLEASE REFER TO TECHNICAL NOTE I FOR DEFINITIONS OF CATEGORIES

mpower

The Americas

Table 1.2
Summary of MPOWER measures

. . . Data not reported/not available.

— Data not required/not applicable.

[1] The Government of Canada has not implemented a nationwide mass media campaign during the reporting period. However, mass media campaigns have been implemented in three of Canada's provinces.

2018 INDICATOR AND COMPLIANCE

COUNTRY	ADULT DAILY SMOKING PREVALENCE (2017)	M MONITORING	P SMOKE-FREE POLICIES (LINES REPRESENT LEVEL OF COMPLIANCE)	O CESSATION	W WARNINGS: HEALTH WARNINGS	W WARNINGS: MASS MEDIA	E ADVERTISING BANS (LINES REPRESENT LEVEL OF COMPLIANCE)	R TAXATION	R CIGARETTES LESS AFFORDABLE SINCE 2008
Antigua and Barbuda	. . .		I				—	13.3%	↔
Argentina	16%		IIIIIIII				IIIIIIII	76.2%	YES
Bahamas	8%		—				. . .	. . .	. . .
Barbados	5%		IIIIIIIII				—	47.1%	YES
Belize	. . .		—				—	43.6%	NO
Bolivia (Plurinational State of)	. . .		II				II	36.8%	↔
Brazil	11%		IIIIIIIII				IIIIIIIII	83.0%	↔
Canada[1]	10%		IIIIIIII				IIIIIIIII	64.3%	YES
Chile	32%		IIIIIIII				IIIIIIIII	82.4%	YES
Colombia	5%		IIIIIII				IIIIIII	78.4%	↔
Costa Rica	6%		IIIII				IIIIII	55.1%	YES
Cuba	19%		IIII				—	70.2%	. . .
Dominica	. . .		—				—	23.6%	↔
Dominican Republic	7%		III				—	51.1%	NO
Ecuador	. . .		IIIIIIII				IIIIIII	70.0%	YES
El Salvador	6%		III				IIIIIII	47.5%	↔
Grenada	. . .		—				—	44.0%	↔
Guatemala	. . .		IIIII				III	49.0%	↔
Guyana	11%		IIIIIII		⊙		IIIIII	27.5%	NO
Haiti	6%		—				—	. . .	. . .
Honduras	. . .		IIIIIIIII				IIIIII	33.4%	YES
Jamaica	8%		IIIIIIII				IIIIIIII	43.6%	YES
Mexico	8%		IIII ☆				IIIII	67.0%	↔
Nicaragua	. . .		IIIII				IIIIIII	40.2%	↔
Panama	3%		IIIIIII				IIIIIII	56.5%	↔
Paraguay	9%		IIIII				IIIII	17.4%	↔
Peru	7%		IIIIIII				IIIIII	49.0%	YES
Saint Kitts and Nevis	. . .		—				—	19.8%	↔
Saint Lucia	. . .		. . .				—	51.2%	↔
Saint Vincent and the Grenadines	. . .		—				—	16.9%	↔
Suriname	. . .		IIIII				IIIIIIII	47.6%	YES
Trinidad and Tobago	. . .		IIIIIIIII		⊙		IIIIIIII	25.7%	YES
United States of America	14%		. . .				. . .	43.0%	↔
Uruguay	18%		IIIIIIIII				IIIIIIII	66.1%	↔
Venezuela (Bolivian Republic of)	. . .		IIIIIIII				IIIIIIIII	73.0%	. . .

CHANGE SINCE 2016

P SMOKE-FREE POLICIES	O CESSATION PROGRAMMES	W HEALTH WARNINGS	E ADVERTISING BANS	R TAXATION
CHANGE IN POWER INDICATOR GROUP, UP OR DOWN, SINCE 2016				
▲		▲	▲	
		▲		
	▼			
				▲
				▲
	▼			
				▼
▲		▲	▲	▲
		▲		
	▼			
▲				
		▲		
				▼

ADULT DAILY SMOKING PREVALENCE: AGE-STANDARDIZED* PREVALENCE RATES FOR ADULT DAILY SMOKERS OF TOBACCO (BOTH SEXES COMBINED), 2017

. . .	Estimates not available
	30% or more
	From 20% to 29.9%
	From 15% to 19.9%
	Less than 15%

* The figures should be used strictly for the purpose of drawing comparisons across countries and must not be used to estimate absolute number of daily tobacco smokers in a country.

MONITORING: PREVALENCE DATA

	No known data or no recent data or data that are not both recent and representative
	Recent and representative data for either adults or youth
	Recent and representative data for both adults and youth
	Recent, representative and periodic data for both adults and youth

SMOKE-FREE ENVIRONMENTS: SMOKING BANS

	Data not reported/not categorized
	Complete absence of ban, or up to two public places completely smoke-free
	Three to five public places completely smoke-free
	Six to seven public places completely smoke-free
	All public places completely smoke-free (or at least 90% of the population covered by complete subnational smoke-free legislation)

CESSATION PROGRAMMES: TREATMENT OF TOBACCO DEPENDENCE

	Data not reported
	None
	NRT and/or some cessation services (neither cost-covered)
	NRT and/or some cessation services (at least one of which is cost-covered)
	National quit line, and both NRT and some cessation services cost-covered

HEALTH WARNINGS: HEALTH WARNINGS ON CIGARETTE PACKAGES

	Data not reported
	No warnings or small warnings
	Medium size warnings missing some or many appropriate characteristics OR large warnings missing many appropriate characteristics
	Medium size warnings with all appropriate characteristics OR large warnings missing some appropriate characteristics
	Large warnings with all appropriate characteristics

MASS MEDIA: ANTI-TOBACCO CAMPAIGNS

	Data not reported
	No national campaign conducted between July 2016 and June 2018 with duration of at least three weeks
	National campaign conducted with one to four appropriate characteristics
	National campaign conducted with five to six appropriate characteristics, or with seven characteristics excluding airing on television and/or radio
	National campaign conducted with at least seven appropriate characteristics including airing on television and/or radio

ADVERTISING BANS: BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP

	Data not reported
	Complete absence of ban, or ban that does not cover national television, radio and print media
	Ban on national television, radio and print media only
	Ban on national television, radio and print media as well as on some but not all other forms of direct and/or indirect advertising
	Ban on all forms of direct and indirect advertising (or at least 90% of the population covered by subnational legislation completely banning tobacco advertising, promotion and sponsorship)

TAXATION: SHARE OF TOTAL TAXES IN THE RETAIL PRICE OF THE MOST WIDELY SOLD BRAND OF CIGARETTES

	Data not reported
	< 25% of retail price is tax
	≥25% and <50% of retail price is tax
	≥50% and <75% of retail price is tax
	≥75% of retail price is tax

AFFORDABILITY OF CIGARETTES

YES	Cigarettes less affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand increased on average between 2008 and 2018
NO	Cigarettes more affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand declined on average between 2008 and 2018
↔	No trend change in affordability of cigarettes since 2008
. . .	Insufficient data to conduct a trend analysis

COMPLIANCE: COMPLIANCE WITH BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP, AND ADHERENCE TO SMOKE-FREE LAWS

IIIIIIIII IIIIIIII IIIIIII	High compliance (8/10 to 10/10)
IIIIIII IIIIII IIIII III II	Moderate compliance (3/10 to 7/10)
II I	Minimal compliance (0/10 to 2/10)

SYMBOLS LEGEND

☆	Country has one or more public places where designated smoking rooms (DSRs) are allowed. Separate, completely enclosed smoking rooms are allowed if they are separately ventilated to the outside and/or kept under negative air pressure in relation to the surrounding areas. Given the difficulty of meeting the very strict requirements delineated for such rooms, they appear to be a practical impossibility but no reliable empirical evidence is presently available to ascertain whether they have been constructed.
⊙	Policy adopted but not implemented by 31 December 2018.
▲▼	Change in POWER indicator group, up or down, between 2016 and 2018. Some 2016 data were revised in 2018. 2018 grouping rules were applied to both years.

PLEASE REFER TO TECHNICAL NOTE I FOR DEFINITIONS OF CATEGORIES

South-East Asia

Table 1.3
Summary of MPOWER measures

. . . Data not reported/not available.
— Data not required/not applicable.
[1] The manufacture and sale of tobacco products are banned. However all tobacco products imported for personal consumption shall show the country of origin and health warnings.

2018 INDICATOR AND COMPLIANCE

COUNTRY	ADULT DAILY SMOKING PREVALENCE (2017)	M MONITORING	P SMOKE-FREE POLICIES	O CESSATION	W WARNINGS		E ADVERTISING BANS	R	
			LINES REPRESENT LEVEL OF COMPLIANCE		HEALTH WARNINGS	MASS MEDIA	LINES REPRESENT LEVEL OF COMPLIANCE	TAXATION	CIGARETTES LESS AFFORDABLE SINCE 2008
Bangladesh	19%		IIIIII				IIIIII	71.0%	YES
Bhutan[1]	. . .		IIIIIIIII				IIIIIIIII	—	—
Democratic People's Republic of Korea	13%		IIIII				—	0.0%	. . .
India	10%		IIIIIII ☆				IIIIIII	54.0%	YES
Indonesia	28%		IIII					58.5%	↔
Maldives	. . .		I				IIII	68.7%	YES
Myanmar	16%		IIIII				IIIIII	32.5%	NO
Nepal	15%		IIIII				IIIIIII	30.0%	↔
Sri Lanka	10%		IIIIIIII				IIIIIIII	66.2%	YES
Thailand	17%		IIIII				IIIIII	78.6%	↔
Timor-Leste	28%		IIIIII				IIIIIII	21.8%	YES

CHANGE SINCE 2016

P SMOKE-FREE POLICIES	O CESSATION PROGRAMMES	W HEALTH WARNINGS	E ADVERTISING BANS	R TAXATION
CHANGE IN POWER INDICATOR GROUP, UP OR DOWN, SINCE 2016				
				▲
	▲	▲		▼

ADULT DAILY SMOKING PREVALENCE: AGE-STANDARDIZED* PREVALENCE RATES FOR ADULT DAILY SMOKERS OF TOBACCO (BOTH SEXES COMBINED), 2017

. . .	Estimates not available
	30% or more
	From 20% to 29.9%
	From 15% to 19.9%
	Less than 15%

* The figures should be used strictly for the purpose of drawing comparisons across countries and must not be used to estimate absolute number of daily tobacco smokers in a country.

MONITORING: PREVALENCE DATA

	No known data or no recent data or data that are not both recent and representative
	Recent and representative data for either adults or youth
	Recent and representative data for both adults and youth
	Recent, representative and periodic data for both adults and youth

SMOKE-FREE ENVIRONMENTS: SMOKING BANS

	Data not reported/not categorized
	Complete absence of ban, or up to two public places completely smoke-free
	Three to five public places completely smoke-free
	Six to seven public places completely smoke-free
	All public places completely smoke-free (or at least 90% of the population covered by complete subnational smoke-free legislation)

CESSATION PROGRAMMES: TREATMENT OF TOBACCO DEPENDENCE

	Data not reported
	None
	NRT and/or some cessation services (neither cost-covered)
	NRT and/or some cessation services (at least one of which is cost-covered)
	National quit line, and both NRT and some cessation services cost-covered

HEALTH WARNINGS: HEALTH WARNINGS ON CIGARETTE PACKAGES

	Data not reported
	No warnings or small warnings
	Medium size warnings missing some or many appropriate characteristics OR large warnings missing many appropriate characteristics
	Medium size warnings with all appropriate characteristics OR large warnings missing some appropriate characteristics
	Large warnings with all appropriate characteristics

MASS MEDIA: ANTI-TOBACCO CAMPAIGNS

	Data not reported
	No national campaign conducted between July 2016 and June 2018 with duration of at least three weeks
	National campaign conducted with one to four appropriate characteristics
	National campaign conducted with five to six appropriate characteristics, or with seven characteristics excluding airing on television and/or radio
	National campaign conducted with at least seven appropriate characteristics including airing on television and/or radio

ADVERTISING BANS: BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP

	Data not reported
	Complete absence of ban, or ban that does not cover national television, radio and print media
	Ban on national television, radio and print media only
	Ban on national television, radio and print media as well as on some but not all other forms of direct and/or indirect advertising
	Ban on all forms of direct and indirect advertising (or at least 90% of the population covered by subnational legislation completely banning tobacco advertising, promotion and sponsorship)

TAXATION: SHARE OF TOTAL TAXES IN THE RETAIL PRICE OF THE MOST WIDELY SOLD BRAND OF CIGARETTES

	Data not reported
	< 25% of retail price is tax
	≥25% and <50% of retail price is tax
	≥50% and <75% of retail price is tax
	≥75% of retail price is tax

AFFORDABILITY OF CIGARETTES

YES	Cigarettes less affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand increased on average between 2008 and 2018
NO	Cigarettes more affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand declined on average between 2008 and 2018
↔	No trend change in affordability of cigarettes since 2008
. . .	Insufficient data to conduct a trend analysis

COMPLIANCE: COMPLIANCE WITH BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP, AND ADHERENCE TO SMOKE-FREE LAWS

IIIIIIIII IIIIIIIII IIIIIIII	High compliance (8/10 to 10/10)
IIIIIII IIIIII IIIII IIII III	Moderate compliance (3/10 to 7/10)
II I	Minimal compliance (0/10 to 2/10)

SYMBOLS LEGEND

☆	Country has one or more public places where designated smoking rooms (DSRs) are allowed. Separate, completely enclosed smoking rooms are allowed if they are separately ventilated to the outside and/or kept under negative air pressure in relation to the surrounding areas. Given the difficulty of meeting the very strict requirements delineated for such rooms, they appear to be a practical impossibility but no reliable empirical evidence is presently available to ascertain whether they have been constructed.
⊙	Policy adopted but not implemented by 31 December 2018.
▲▼	Change in POWER indicator group, up or down, between 2016 and 2018. Some 2016 data were revised in 2018. 2018 grouping rules were applied to both years.

PLEASE REFER TO TECHNICAL NOTE I FOR DEFINITIONS OF CATEGORIES

Table 1.4
Summary of MPOWER measures

. . . Data not reported/not available.
— Data not required/not applicable.
[1] The reported compliance is a calculated average of the assessment from two experts from the Federation of Bosnia and Herzegovina, and one expert from Republika Srpska.

2018 INDICATOR AND COMPLIANCE

COUNTRY	ADULT DAILY SMOKING PREVALENCE (2017)	M MONITORING	P SMOKE-FREE POLICIES	O CESSATION	W WARNINGS		E ADVERTISING BANS	R	
			LINES REPRESENT LEVEL OF COMPLIANCE		HEALTH WARNINGS	MASS MEDIA	LINES REPRESENT LEVEL OF COMPLIANCE	TAXATION	CIGARETTES LESS AFFORDABLE SINCE 2008
Albania	23%		IIIII				IIIIIIIII	67.2%	YES
Andorra	28%		IIIIIII ☆				—	79.3%	. . .
Armenia	25%		III				IIII	38.1%	NO
Austria	23%		IIIII				IIIIIIIII	75.3%	YES
Azerbaijan	17%		III ☆				IIIIIIIII	35.3%	↔
Belarus	24%		—				IIIIII	50.9%	YES
Belgium	21%		IIIIIIII ☆				IIIIIIIII	77.0%	YES
Bosnia and Herzegovina[1]	32%		—				IIIIIII	83.8%	YES
Bulgaria	31%		IIIIIII				IIIIIIII	83.6%	↔
Croatia	30%		IIIIIIII ☆				IIIIIIIII	78.8%	YES
Cyprus	30%		. . .				. . .	74.4%	YES
Czechia	24%		IIIIIIII				IIIIIIIII	75.4%	YES
Denmark	15%		IIIIIIII				IIIIIII	74.1%	↔
Estonia	24%		IIIIII				IIIIIII	79.4%	YES
Finland	15%		IIIIIIIII				IIIIIIIII	87.4%	YES
France	28%		IIII ☆				IIIIIIIII	82.4%	YES
Georgia	25%		—				IIIIIII	71.2%	↔
Germany	22%		—				IIIIIII	68.3%	YES
Greece	31%		IIIIIIIII				IIIIIII	81.2%	YES
Hungary	26%		IIIIIIIII				IIIIIIIII	72.3%	YES
Iceland	11%		IIIIIIIII				IIIIIIIII	55.5%	↔
Ireland	20%		IIIIIIIII				IIIIIIIII	78.4%	↔
Israel	21%		. . .				. . .	75.9%	YES
Italy	19%		_ ☆				IIIIIII	76.0%	YES
Kazakhstan	17%		IIIIIII				IIIIIII	52.4%	YES
Kyrgyzstan	21%		II				IIII	48.6%	↔
Latvia	31%		IIIIIIII				IIIIIIIII	80.0%	↔
Lithuania	22%		IIIIIIII				IIIIIIIII	73.8%	↔
Luxembourg	17%		IIIIIIII ☆				IIIIIIIII	68.3%	YES
Malta	20%		IIIIIIII				IIIIIIIII	77.6%	NO
Monaco	. . .		. . . ☆				—	. . .	. . .
Montenegro	. . .		II				IIIIII	81.4%	YES
Netherlands	18%		—				IIIIIIIII	71.8%	YES
North Macedonia	. . .		IIIIIII				IIIIIIII	81.3%	↔
Norway	13%		IIIIIIIII				IIIIIIIII	64.0%	YES
Poland	23%		...				. . .	76.8%	YES
Portugal	22%		IIIIIII ☆				IIIIII	71.7%	YES
Republic of Moldova	21%		IIIIIII				IIIIIII	58.0%	YES
Romania	23%		IIIIIIII				IIIIIIIII	68.6%	↔
Russian Federation	27%		IIIIII				IIIIIII	57.7%	YES
San Marino	. . .		. . . ☆				. . .	. . .	. . .
Serbia	33%		IIII				IIIIII	77.3%	YES
Slovakia	24%		IIIIIIII				IIIIIIIII	77.1%	YES
Slovenia	20%		IIIIIIII ☆				IIIIIIIII	79.2%	YES
Spain	24%		IIIIIIIII				IIIIIIII	78.2%	YES
Sweden	10%		—				. . .	68.4%	YES
Switzerland	20%		—				IIIIIII	60.3%	YES
Tajikistan	. . .		IIII				IIIIIII	42.3%	↔
Turkey	25%		IIIIIII				IIIIII	81.4%	YES
Turkmenistan	. . .		IIIIIIII				IIIIIIIII	32.4%	YES
Ukraine	23%		IIIIIIII				IIIIIIII	74.7%	YES
United Kingdom of Great Britain and Northern Ireland	17%		IIIIIIIII				. . .	79.4%	YES
Uzbekistan	10%		IIII				IIIIIIII	44.7%	↔

CHANGE SINCE 2016

P SMOKE-FREE POLICIES	O CESSATION PROGRAMMES	W HEALTH WARNINGS	E ADVERTISING BANS	R TAXATION
CHANGE IN POWER INDICATOR GROUP, UP OR DOWN, SINCE 2016				
				▲
			▲	▲
				▲
▲		▲		
		▲		▼
	▲			
	▼			
▲		▲	▲	
	▼			
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				▼
	▼			
	▲			
		▲	▲	
		▲		
	▲			
▲	▼	▲		
				▼

ADULT DAILY SMOKING PREVALENCE: AGE-STANDARDIZED* PREVALENCE RATES FOR ADULT DAILY SMOKERS OF TOBACCO (BOTH SEXES COMBINED), 2017

. . .	Estimates not available
	30% or more
	From 20% to 29.9%
	From 15% to 19.9%
	Less than 15%

* The figures should be used strictly for the purpose of drawing comparisons across countries and must not be used to estimate absolute number of daily tobacco smokers in a country.

MONITORING: PREVALENCE DATA

	No known data or no recent data or data that are not both recent and representative
	Recent and representative data for either adults or youth
	Recent and representative data for both adults and youth
	Recent, representative and periodic data for both adults and youth

SMOKE-FREE ENVIRONMENTS: SMOKING BANS

	Data not reported/not categorized
	Complete absence of ban, or up to two public places completely smoke-free
	Three to five public places completely smoke-free
	Six to seven public places completely smoke-free
	All public places completely smoke-free (or at least 90% of the population covered by complete subnational smoke-free legislation)

CESSATION PROGRAMMES: TREATMENT OF TOBACCO DEPENDENCE

	Data not reported
	None
	NRT and/or some cessation services (neither cost-covered)
	NRT and/or some cessation services (at least one of which is cost-covered)
	National quit line, and both NRT and some cessation services cost-covered

HEALTH WARNINGS: HEALTH WARNINGS ON CIGARETTE PACKAGES

	Data not reported
	No warnings or small warnings
	Medium size warnings missing some or many appropriate characteristics OR large warnings missing many appropriate characteristics
	Medium size warnings with all appropriate characteristics OR large warnings missing some appropriate characteristics
	Large warnings with all appropriate characteristics

MASS MEDIA: ANTI-TOBACCO CAMPAIGNS

	Data not reported
	No national campaign conducted between July 2016 and June 2018 with duration of at least three weeks
	National campaign conducted with one to four appropriate characteristics
	National campaign conducted with five to six appropriate characteristics, or with seven characteristics excluding airing on television and/or radio
	National campaign conducted with at least seven appropriate characteristics including airing on television and/or radio

ADVERTISING BANS: BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP

	Data not reported
	Complete absence of ban, or ban that does not cover national television, radio and print media
	Ban on national television, radio and print media only
	Ban on national television, radio and print media as well as on some but not all other forms of direct and/or indirect advertising
	Ban on all forms of direct and indirect advertising (or at least 90% of the population covered by subnational legislation completely banning tobacco advertising, promotion and sponsorship)

TAXATION: SHARE OF TOTAL TAXES IN THE RETAIL PRICE OF THE MOST WIDELY SOLD BRAND OF CIGARETTES

	Data not reported
	< 25% of retail price is tax
	≥25% and <50% of retail price is tax
	≥50% and <75% of retail price is tax
	≥75% of retail price is tax

AFFORDABILITY OF CIGARETTES

YES	Cigarettes less affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand increased on average between 2008 and 2018
NO	Cigarettes more affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand declined on average between 2008 and 2018
↔	No trend change in affordability of cigarettes since 2008
. . .	Insufficient data to conduct a trend analysis

COMPLIANCE: COMPLIANCE WITH BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP, AND ADHERENCE TO SMOKE-FREE LAWS

IIIIIIIII IIIIIIIII IIIIIIII	High compliance (8/10 to 10/10)
IIIIIII IIIIII IIIII III I	Moderate compliance (3/10 to 7/10)
II I	Minimal compliance (0/10 to 2/10)

SYMBOLS LEGEND

☆	Country has one or more public places where designated smoking rooms (DSRs) are allowed. Separate, completely enclosed smoking rooms are allowed if they are separately ventilated to the outside and/or kept under negative air pressure in relation to the surrounding areas. Given the difficulty of meeting the very strict requirements delineated for such rooms, they appear to be a practical impossibility but no reliable empirical evidence is presently available to ascertain whether they have been constructed.
⊙	Policy adopted but not implemented by 31 December 2018.
▲▼	Change in POWER indicator group, up or down, between 2016 and 2018. Some 2016 data were revised in 2018. 2018 grouping rules were applied to both years.

PLEASE REFER TO TECHNICAL NOTE I FOR DEFINITIONS OF CATEGORIES

Eastern Mediterranean

Table 1.5
Summary of MPOWER measures

. . . Data not reported/not available.
— Data not required/not applicable.
< The term West Bank and Gaza Strip is used as a synonym to refer to the occupied Palestinian territory, including east Jerusalem.
[1] The reported compliance is a calculated average of the assessment from experts from the West Bank.

2018 INDICATOR AND COMPLIANCE

COUNTRY	ADULT DAILY SMOKING PREVALENCE (2017)	M MONITORING	P SMOKE-FREE POLICIES (LINES REPRESENT LEVEL OF COMPLIANCE)	O CESSATION	W WARNINGS: HEALTH WARNINGS	W WARNINGS: MASS MEDIA	E ADVERTISING BANS (LINES REPRESENT LEVEL OF COMPLIANCE)	R TAXATION	R CIGARETTES LESS AFFORDABLE SINCE 2008
Afghanistan	. . .						IIIIII	4.1%	YES
Bahrain	15%		_ ☆				IIIIIIIII	64.5%	YES
Djibouti	. . .		. . .				. . .	. . .	. . .
Egypt	19%		III				IIIIIII	77.2%	YES
Iran (Islamic Republic of)	9%		IIIIIIII				IIIIIIIII	21.7%	YES
Iraq	16%		III				IIII	7.6%	↔
Jordan	. . .		III				IIIII	79.9%	YES
Kuwait	16%		. . .				. . .	21.2%	YES
Lebanon	24%		III				IIIIII	45.6%	↔
Libya	. . .		III				IIIIIIII	12.6%	YES
Morocco	12%		III				IIIIII	71.2%	NO
Oman	6%		—				IIIIIIII	25.0%	YES
Pakistan	13%		III		⊙		IIIII	56.4%	↔
Qatar	11%		—				IIIIIIIII	40.0%	YES
Saudi Arabia	11%		IIIIIII ☆		⊙		IIIIIII	68.1%	YES
Somalia	. . .		—				—	4.5%	. . .
Sudan	. . .		—				IIIIIIIII	69.8%	↔
Syrian Arab Republic	. . .		III				IIIIIIIII	41.8%	. . .
Tunisia	20%		—				IIIIIII	72.0%	↔
United Arab Emirates	12%		IIIIIIIII ☆				IIIIIIII	73.5%	YES
West Bank and Gaza Strip <[1]	. . .		III				IIIIIII	83.5%	. . .
Yemen	13%		IIIII				IIIIII	50.6%	YES

CHANGE SINCE 2016

P SMOKE-FREE POLICIES	O CESSATION PROGRAMMES	W HEALTH WARNINGS	E ADVERTISING BANS	R TAXATION
CHANGE IN POWER INDICATOR GROUP, UP OR DOWN, SINCE 2016				
		▼		
				▲
	▼			
				▲
	▼			▼
	▼			▲
		▲		
				▲
	▲	▲	▲	▲
	▲			
				▲

ADULT DAILY SMOKING PREVALENCE: AGE-STANDARDIZED* PREVALENCE RATES FOR ADULT DAILY SMOKERS OF TOBACCO (BOTH SEXES COMBINED), 2017

. . .	Estimates not available
	30% or more
	From 20% to 29.9%
	From 15% to 19.9%
	Less than 15%

* The figures should be used strictly for the purpose of drawing comparisons across countries and must not be used to estimate absolute number of daily tobacco smokers in a country.

MONITORING: PREVALENCE DATA

	No known data or no recent data or data that are not both recent and representative
	Recent and representative data for either adults or youth
	Recent and representative data for both adults and youth
	Recent, representative and periodic data for both adults and youth

SMOKE-FREE ENVIRONMENTS: SMOKING BANS

	Data not reported/not categorized
	Complete absence of ban, or up to two public places completely smoke-free
	Three to five public places completely smoke-free
	Six to seven public places completely smoke-free
	All public places completely smoke-free (or at least 90% of the population covered by complete subnational smoke-free legislation)

CESSATION PROGRAMMES: TREATMENT OF TOBACCO DEPENDENCE

	Data not reported
	None
	NRT and/or some cessation services (neither cost-covered)
	NRT and/or some cessation services (at least one of which is cost-covered)
	National quit line, and both NRT and some cessation services cost-covered

HEALTH WARNINGS: HEALTH WARNINGS ON CIGARETTE PACKAGES

	Data not reported
	No warnings or small warnings
	Medium size warnings missing some or many appropriate characteristics OR large warnings missing many appropriate characteristics
	Medium size warnings with all appropriate characteristics OR large warnings missing some appropriate characteristics
	Large warnings with all appropriate characteristics

MASS MEDIA: ANTI-TOBACCO CAMPAIGNS

	Data not reported
	No national campaign conducted between July 2016 and June 2018 with duration of at least three weeks
	National campaign conducted with one to four appropriate characteristics
	National campaign conducted with five to six appropriate characteristics, or with seven characteristics excluding airing on television and/or radio
	National campaign conducted with at least seven appropriate characteristics including airing on television and/or radio

ADVERTISING BANS: BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP

	Data not reported
	Complete absence of ban, or ban that does not cover national television, radio and print media
	Ban on national television, radio and print media only
	Ban on national television, radio and print media as well as on some but not all other forms of direct and/or indirect advertising
	Ban on all forms of direct and indirect advertising (or at least 90% of the population covered by subnational legislation completely banning tobacco advertising, promotion and sponsorship)

TAXATION: SHARE OF TOTAL TAXES IN THE RETAIL PRICE OF THE MOST WIDELY SOLD BRAND OF CIGARETTES

	Data not reported
	< 25% of retail price is tax
	≥25% and <50% of retail price is tax
	≥50% and <75% of retail price is tax
	≥75% of retail price is tax

AFFORDABILITY OF CIGARETTES

YES	Cigarettes less affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand increased on average between 2008 and 2018
NO	Cigarettes more affordable – per capita GDP needed to buy 2000 cigarettes of the most sold brand declined on average between 2008 and 2018
↔	No trend change in affordability of cigarettes since 2008
. . .	Insufficient data to conduct a trend analysis

COMPLIANCE: COMPLIANCE WITH BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP, AND ADHERENCE TO SMOKE-FREE LAWS

IIIIIIIII IIIIIIIII IIIIIIII	High compliance (8/10 to 10/10)
IIIIIII IIIIII IIIII IIII III	Moderate compliance (3/10 to 7/10)
II I	Minimal compliance (0/10 to 2/10)

SYMBOLS LEGEND

☆	Country has one or more public places where designated smoking rooms (DSRs) are allowed. Separate, completely enclosed smoking rooms are allowed if they are separately ventilated to the outside and/or kept under negative air pressure in relation to the surrounding areas. Given the difficulty of meeting the very strict requirements delineated for such rooms, they appear to be a practical impossibility but no reliable empirical evidence is presently available to ascertain whether they have been constructed.
⊙	Policy adopted but not implemented by 31 December 2018.
▲▼	Change in POWER indicator group, up or down, between 2016 and 2018. Some 2016 data were revised in 2018. 2018 grouping rules were applied to both years.

PLEASE REFER TO TECHNICAL NOTE I FOR DEFINITIONS OF CATEGORIES

mpower

Western Pacific

Table 1.6
Summary of MPOWER measures

. . . Data not reported/not available.
— Data not required/not applicable.

2018 INDICATOR AND COMPLIANCE

COUNTRY	ADULT DAILY SMOKING PREVALENCE (2017)	M MONITORING	P SMOKE-FREE POLICIES (LINES REPRESENT LEVEL OF COMPLIANCE)	O CESSATION	W WARNINGS: HEALTH WARNINGS	W WARNINGS: MASS MEDIA	E ADVERTISING BANS (LINES REPRESENT LEVEL OF COMPLIANCE)	R TAXATION	R CIGARETTES LESS AFFORDABLE SINCE 2008
Australia	13%		. . .				||||	77.5%	YES
Brunei Darussalam	12%		||||||	||||||	—	—
Cambodia	16%		|||			||||||	25.1%	NO
China	22%		|||||				|||||||	55.7%	NO
Cook Islands	19%		||||||||||				||||||||	70.3%	YES
Fiji	17%		||||||||				||||||||	42.1%	YES
Japan	19%		— ⊙				—	63.1%	YES
Kiribati	45%		|||||				||||||||	41.7%	NO
Lao People's Democratic Republic	24%		|||||					||||||||	18.8%	NO
Malaysia	18%		—				|||||	58.6%	YES
Marshall Islands	. . .		||||||||				||||||||	54.1%	NO
Micronesia (Federated States of)	. . .		||||||||			—	48.6%	YES
Mongolia	22%		|||||				|||||||	47.4%	↔
Nauru	38%		. . .				. . .	48.3%	YES
New Zealand	14%		||||||||||				||||||||	82.2%	YES
Niue	. . .		— ⊙		⊙		— ⊙	87.7%	. . .
Palau	15%		||||||||				||||||||	73.0%	↔
Papua New Guinea	. . .		. . .				. . .	54.2%	↔
Philippines	19%		|||||				|||||	71.3%	YES
Republic of Korea	21%		||||||||				. . .	73.8%	↔
Samoa	23%		|||			||||||||	49.5%	YES
Singapore	13%		|||||||| ☆				||||||||	67.1%	NO
Solomon Islands	30%						||||||||	34.1%	↔
Tonga	26%		||||||||				||||||||	62.4%	YES
Tuvalu	30%		||||||||				|||||||	29.5%	↔
Vanuatu	13%		—				||||||||	58.6%	NO
Viet Nam	. . .		|||			|||||||	36.7%	NO

CHANGE SINCE 2016

P SMOKE-FREE POLICIES	O CESSATION PROGRAMMES	W HEALTH WARNINGS	E ADVERTISING BANS	R TAXATION
CHANGE IN POWER INDICATOR GROUP, UP OR DOWN, SINCE 2016				
				▲
	▼			
▲				
				▼
				▼
				▼
				▲
▲		▲	▲	
	▲	▲		▲
				▼
	▼			▼
	▲			

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	Recent, representative and periodic data for both adults and youth

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	Complete absence of ban, or up to two public places completely smoke-free
	Three to five public places completely smoke-free
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CESSATION PROGRAMMES: TREATMENT OF TOBACCO DEPENDENCE

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	None
	NRT and/or some cessation services (neither cost-covered)
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	Ban on national television, radio and print media only
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	Ban on all forms of direct and indirect advertising (or at least 90% of the population covered by subnational legislation completely banning tobacco advertising, promotion and sponsorship)

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	< 25% of retail price is tax
	≥25% and <50% of retail price is tax
	≥50% and <75% of retail price is tax
	≥75% of retail price is tax

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↔	No trend change in affordability of cigarettes since 2008
. . .	Insufficient data to conduct a trend analysis

COMPLIANCE: COMPLIANCE WITH BANS ON ADVERTISING, PROMOTION AND SPONSORSHIP, AND ADHERENCE TO SMOKE-FREE LAWS

||||||||| ||||||| |||||||	High compliance (8/10 to 10/10)
||||||| ||||| ||||| |||| |||	Moderate compliance (3/10 to 7/10)
||		Minimal compliance (0/10 to 2/10)

SYMBOLS LEGEND

☆	Country has one or more public places where designated smoking rooms (DSRs) are allowed. Separate, completely enclosed smoking rooms are allowed if they are separately ventilated to the outside and/or kept under negative air pressure in relation to the surrounding areas. Given the difficulty of meeting the very strict requirements delineated for such rooms, they appear to be a practical impossibility but no reliable empirical evidence is presently available to ascertain whether they have been constructed.
⊙	Policy adopted but not implemented by 31 December 2018.
▲▼	Change in POWER indicator group, up or down, between 2016 and 2018. Some 2016 data were revised in 2018. 2018 grouping rules were applied to both years.

PLEASE REFER TO TECHNICAL NOTE I FOR DEFINITIONS OF CATEGORIES

APPENDIX II: **TOBACCO DEPENDENCE TREATMENT**

Appendix II provides detailed information on tobacco dependence treatment availability in WHO Member States for each WHO region. Data in the appendix were provided by Member States and were reviewed by WHO. The following data are reported in this appendix:

The available support for the treatment of tobacco dependence:

- The existence of a national toll-free quit line
- The existence of smoking cessation support in health facilities and other settings, and whether it is provided as a cost-covered service
- The availability of nicotine replacement therapy and whether it is cost-covered

Policies and guidelines: The availability of national policies and clinical guidelines on tobacco cessation

Integrating cessation into other tobacco control approaches: The integration of national toll-free quit lines into mass media campaigns and tobacco-related health warnings

Structural capacity: The existence of regular training programmes in tobacco cessation for primary care providers and the routine recording of tobacco use status in medical records

Africa

Table 2.1.1
Support for treatment of tobacco dependence in Africa

§ "Pharmacy with Rx" means that a prescription is required.

* "Most" means in more than half. "Some" means in less than half. "No" means in none at all.

. . . Data not reported/not available.

— Data not required/not applicable.

COUNTRY	NATIONAL TOLL-FREE QUIT LINE	NICOTINE REPLACEMENT THERAPY			SMOKING CESSATION SUPPORT									
		PLACE AVAILABLE§	COST-COVERED	INCLUDED IN ESSENTIAL MEDICINES LIST	PRIMARY CARE FACILITIES		HOSPITALS		OFFICES OF HEALTH PROFESSIONALS		THE COMMUNITY		OTHER SETTINGS	
					AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED
Algeria	No	Pharmacy	No	Yes	Yes in some	No	Yes in some	No	Yes in some	No	No	—	No	—
Angola	No	Not available	—	—	Yes in some	Fully	Yes in some	Fully	Yes in some	Fully	No	—	No	—
Benin	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Botswana	No	Pharmacy with Rx	No	. . .	Yes in some	Fully	No	—	No	—	Yes in some	No	Yes in some	No
Burkina Faso	No	Not available	—	No	No	—	No	—	No	—	Yes in some	. . .	No	—
Burundi	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Cabo Verde	No	Not available	—	No	No	—	No	—	No	—	Yes in some	. . .	Yes in some	Partially
Cameroon	Yes	. . .	No	No	No	—	No	—	Yes in some	Partially	No	—	Yes in some	Partially
Central African Republic	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Chad	No	. . .	No	No	No	—	No	—	No	—	Yes in some	No	No	—
Comoros	No	Not available	—	No	No	—	No	—	Yes in some	No	. . .	. . .	Yes in some	No
Congo	No	Pharmacy	Partially	No	No	—	Yes in some	No	Yes in some	No	Yes in some	No	Yes in some	No
Côte d'Ivoire	Yes	Pharmacy	Partially	No	Yes in some	No	Yes in some	No	No	—	Yes in some	No	Yes in some	No
Democratic Republic of the Congo	No	Pharmacy	No	No	No	—	No	—	Yes in some	No	No	—	No	—
Equatorial Guinea	No	Not available	—	. . .	No	—	No	—	No	—	No	—	No	—
Eritrea	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Eswatini	No	Pharmacy with Rx	Fully	No	No	—	No	—	No	—	No	—	No	—
Ethiopia	No	. . .	Partially	Yes	No	—	No	—	No	—	No	—	Yes in some	Partially
Gabon	No	Pharmacy	No	No	No	—	No	—	No	—	No	—	No	—
Gambia	No	Not available	—	No	No	—	No	—	No	—	No	—	. . .	. . .
Ghana	No	Not available	—	No	No	—	Yes in some	Partially	Yes in some	No	No	—	No	—
Guinea	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Guinea-Bissau	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Kenya	Yes	Pharmacy	No	No	No	—	Yes in some	Partially	No	—	Yes in some	. . .	Yes in some	Partially
Lesotho	No	Pharmacy with Rx	No	No	No	—	No	—	Yes in most	Fully	Yes in some	No	Yes in most	Partially
Liberia	No	Not available	—	No	Yes in some	No	No	—	Yes in some	No	No	—	No	—
Madagascar	No	Pharmacy	No	No	Yes in some	No	Yes in some	No	Yes in some	No	Yes in some	No	Yes in some	No
Malawi	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Mali	No	Not available	—	No	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	No	—	No	—
Mauritania	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Mauritius	No	Pharmacy	Fully	No	No	—	No	—	Yes in most	No	No	—	Yes in some	Fully
Mozambique	No	Not available	—	. . .	Yes in some	Partially	Yes in some	Partially	No	—	Yes in some	. . .	No	—
Namibia	No	Pharmacy	No	. . .	Yes in some	Partially	Yes in some	No	Yes in some	No	No	—	Yes in some	Partially
Niger	No	Pharmacy	No	No	No	—	No	—	No	—	No	—	No	—
Nigeria	No	Pharmacy	Partially	No	No	—	Yes in some	Partially	Yes in some	Partially	No	—	Yes in some	Partially
Rwanda	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Sao Tome and Principe	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Senegal	Yes	Pharmacy with Rx	Partially	No	Yes in some	Partially	No	—	Yes in some	Partially	Yes in some	No	No	—
Seychelles	No	Pharmacy	Fully	No	No	—	No	—	No	—	No	—	Yes in some	Fully
Sierra Leone	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
South Africa	No	Pharmacy	No	Yes	No	—	No	—	No	—	Yes in most	No	Yes in some	Fully
South Sudan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Togo	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Uganda	No	Pharmacy	No	No	No	—	No	—	No	—	No	—	Yes in most	No
United Republic of Tanzania	No	Not available	—	No	No	—	No	—	No	—	Yes in some	No	No	—
Zambia	No	Pharmacy with Rx	Partially	No	Yes in some	Fully	Yes in some	Fully	Yes in some	Fully	Yes in some	No	No	—
Zimbabwe	No	Pharmacy with Rx	No	No	No	—	No	—	Yes in some	Partially	No	—	Yes in some	. . .

The Americas

Table 2.1.2
Support for treatment of tobacco dependence in the Americas

§ "Pharmacy with Rx" means that a prescription is required.

* "Most" means in more than half. "Some" means in less than half. "No" means in none at all.

. . . Data not reported/not available.

— Data not required/not applicable.

COUNTRY	NATIONAL TOLL-FREE QUIT LINE	NICOTINE REPLACEMENT THERAPY			SMOKING CESSATION SUPPORT									
		PLACE AVAILABLE§	COST-COVERED	INCLUDED IN ESSENTIAL MEDICINES LIST	PRIMARY CARE FACILITIES		HOSPITALS		OFFICES OF HEALTH PROFESSIONALS		THE COMMUNITY		OTHER SETTINGS	
					AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED
Antigua and Barbuda	No	Pharmacy	No	No	No	—	No	—	Yes in some	No	No	—	No	—
Argentina	Yes	Pharmacy	No	No	Yes in most	Fully	Yes in most	Fully	Yes in some	Partially	Yes in some	Partially	No	—
Bahamas	No	Pharmacy	No	No	Yes in some	Fully	Yes in some	Fully	No	—	No	—	Yes in some	Fully
Barbados	No	Pharmacy	No	Yes	No	—	No	—	Yes in some	No	Yes in some	No	Yes in some	Fully
Belize	No	Not available	—	No	Yes in some	Partially	Yes in some	No	No	—	No	—	Yes in some	Partially
Bolivia (Plurinational State of)	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Brazil	Yes	Pharmacy	Fully	Yes	Yes in some	Fully	Yes in some	Fully	No	—	Yes in some	No	No	—
Canada	Yes	Pharmacy	Partially	No	Yes in most	Partially	Yes in most	Partially	Yes in most	Partially	Yes in some	No	Yes in some	Partially
Chile	Yes	Pharmacy	No	No	No	—	No	—	No	—	No	—	Yes in some	No
Colombia	No	Pharmacy	Partially	No	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	No	—	Yes in some	No
Costa Rica	No	Pharmacy	Fully	No	Yes in some	Fully	Yes in most	Fully	Yes in some	Fully	Yes in some	Fully	Yes in some	Partially
Cuba	Yes	Not available	—	No	Yes in most	Fully	Yes in most	Fully	Yes in most	Fully	Yes in most	Fully	Yes in some	Fully
Dominica	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Dominican Republic	No	Pharmacy	No	No	No	—	No	—	Yes in most	No	No	—	Yes in some	No
Ecuador	Yes	Not available	—	No	Yes in some	Fully	Yes in some	Fully	Yes in some	Fully	No	—	No	—
El Salvador	Yes	Pharmacy with Rx	Fully	No	No	—	No	—	No	—	No	—	Yes in some	Fully
Grenada	No	Not available	—	No	Yes in some	Partially	No	—	Yes in some	No	No	—	No	—
Guatemala	No	Pharmacy	No	No	No	—	Yes in some	Partially	Yes in some	No	No	—	Yes in some	No
Guyana	No	. . .	No	Yes	Yes in some	Fully	Yes in some	Fully	No	—	No	—	Yes in some	Fully
Haiti	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Honduras	Yes	Not available	—	No	Yes in some	Fully	Yes in some	Partially	Yes in some	Partially	No	—	Yes in some	Partially
Jamaica	Yes	Pharmacy with Rx	Fully	Yes	Yes in most	Fully	Yes in most	Fully	Yes in some	Partially	Yes in some	No	Yes in some	Partially
Mexico	Yes	Pharmacy	Partially	Yes	Yes in most	Fully	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	Yes in some	No
Nicaragua	No	Pharmacy	No	Yes	No	—	No	—	No	—	No	—	No	—
Panama	No	Pharmacy	Fully	Yes	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	No	—	Yes in some	Partially
Paraguay	No	Not available	—	Yes	No	—	Yes in some	Fully	Yes in some	Fully	No	—	Yes in some	Partially
Peru	Yes	Pharmacy with Rx	No	No	No	—	Yes in some	Fully	No	—	No	—	No	—
Saint Kitts and Nevis	No	Pharmacy	No	No	No	—	No	—	No	—	No	—	No	—
Saint Lucia	No	. . .	No	No	No	—	No	—	No	—	No	—	Yes in some	Partially
Saint Vincent and the Grenadines	No	Not available	—	No	No	—	No	—	No	—	Yes in some	. . .	No	—
Suriname	No	Pharmacy	No	Yes	Yes in most	Fully	No	—	No	—	Yes in some	No	Yes in some	No
Trinidad and Tobago	No	Pharmacy	Fully	Yes	Yes in some	Fully	Yes in some	Partially	Yes in some	No	No	—	No	—
United States of America	Yes	General store	Partially	No	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	No	—
Uruguay	No	Pharmacy	Fully	Yes	Yes in most	Fully	Yes in most	Fully	Yes in some	Fully	Yes in some	No	Yes in some	Fully
Venezuela (Bolivarian Republic of)	No	Pharmacy	Fully	No	Yes in some	Fully	Yes in some	Fully	Yes in some	Fully	No	—	Yes in some	Partially

South-East Asia

Table 2.1.3
Support for treatment of tobacco dependence in South-East Asia

§ "Pharmacy with Rx" means that a prescription is required.

* "Most" means in more than half. "Some" means in less than half. "No" means in none at all.

. . . Data not reported/not available.

— Data not required/not applicable.

COUNTRY	NATIONAL TOLL-FREE QUIT LINE	NICOTINE REPLACEMENT THERAPY			SMOKING CESSATION SUPPORT									
		PLACE AVAILABLE§	COST-COVERED	INCLUDED IN ESSENTIAL MEDICINES LIST	PRIMARY CARE FACILITIES		HOSPITALS		OFFICES OF HEALTH PROFESSIONALS		THE COMMUNITY		OTHER SETTINGS	
					AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED
Bangladesh	No	Not available	—	No	Yes in some	No	Yes in some	No	No	—	Yes in some	No	No	—
Bhutan	Yes	Not available	—	. . .	Yes in most	Partially	Yes in some	Partially	No	—	No	—	Yes in some	No
Democratic People's Republic of Korea	No	. . .	Partially	. . .	Yes in most	Fully	Yes in most	Fully	Yes in most	Fully	Yes in most	Partially	Yes in most	Fully
India	Yes	General store	Fully	No	Yes in some	Fully	Yes in some	Fully	Yes in some	. . .	Yes in some	. . .	Yes in some	Fully
Indonesia	Yes	Pharmacy	No	No	Yes in some	Fully	Yes in some	Fully	Yes in some	No	Yes in some	No	No	—
Maldives	No	Pharmacy with Rx	Fully	Yes	Yes in most	Fully	Yes in most	Fully	Yes in some	Partially	No	—	Yes in some	Fully
Myanmar	No	Not available	—	No	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	Yes in some	No	No	—
Nepal	No	Not available	—	No	Yes in some	No	Yes in some	Fully	No	—	No	—	No	—
Sri Lanka	Yes	Not available	—	No	No	—	No	—	Yes in most	Fully	Yes in some	Partially	Yes in some	Partially
Thailand	Yes	Pharmacy	No	No	Yes in most	Fully	Yes in most	Fully	Yes in some	Fully	Yes in most	Partially	Yes in some	Fully
Timor-Leste	Yes	Not available	—	Yes	Yes in some	Partially	Yes in some	Partially	Yes in some	Fully	No	—	No	—

Table 2.1.4
Support for treatment of tobacco dependence in Europe

§ "Pharmacy with Rx" means that a prescription is required.

* "Most" means in more than half. "Some" means in less than half. "No" means in none at all.

. . . Data not reported/not available.

— Data not required/not applicable.

COUNTRY	NATIONAL TOLL-FREE QUIT LINE	NICOTINE REPLACEMENT THERAPY			SMOKING CESSATION SUPPORT									
		PLACE AVAILABLE§	COST-COVERED	INCLUDED IN ESSENTIAL MEDICINES LIST	PRIMARY CARE FACILITIES		HOSPITALS		OFFICES OF HEALTH PROFESSIONALS		THE COMMUNITY		OTHER SETTINGS	
					AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED
Albania	No	Not available	—	No	Yes in some	Fully	No	—	No	—	No	—	No	—
Andorra	No	Pharmacy	No	No	No	—	Yes in some	Partially	Yes in some	Partially	. . .	. . .	. . .	. . .
Armenia	No	Pharmacy	No	No	Yes in some	Fully	No	—	No	—	. . .	. . .	No	—
Austria	Yes	Pharmacy	No	No	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	Yes in some	. . .	Yes in some	Partially
Azerbaijan	Yes	Not available	—	No	No	—	No	—	No	—	No	—	Yes in some	No
Belarus	Yes	Pharmacy	No	No	Yes in most	Partially	Yes in most	Partially	Yes in some	Partially	No	—	No	—
Belgium	Yes	Pharmacy	No	No	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	No	—	Yes in some	Partially
Bosnia and Herzegovina	No	Pharmacy	No	No	Yes in most	Fully	No	—	No	—	No	—	Yes in some	No
Bulgaria	Yes	Pharmacy	No	Yes	Yes in some	Partially	No	—	Yes in some	No	Yes in some	Partially	Yes in some	Fully
Croatia	Yes	Pharmacy	No	No	Yes in some	Fully	Yes in some	Fully	No	—	Yes in some	No	Yes in some	Partially
Cyprus	No	Pharmacy	Fully	Yes	Yes in some	Fully	Yes in some	Fully	No	—	No	—	Yes in some	Fully
Czechia	Yes	Pharmacy	Partially	—	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	No	—	Yes in some	Partially
Denmark	Yes	Pharmacy	Partially	. . .	Yes in some	No	No	—	No	—	Yes in most	Fully	Yes in some	Fully
Estonia	Yes	Pharmacy	No	No	Yes in some	Fully	Yes in some	Fully	No	—	No	—	Yes in some	Fully
Finland	Yes	General store	No	No	Yes in most	Partially	Yes in most	Partially	Yes in some	Partially	Yes in some	. . .	Yes in some	Partially
France	No	Pharmacy	Partially	No	Yes in some	Partially	Yes in most	Partially	Yes in some	Partially	. . .	. . .	Yes in some	Partially
Georgia	Yes	Pharmacy	No	—	Yes in some	Partially	No	—	No	—	No	—	No	—
Germany	Yes	Pharmacy	No	No	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially
Greece	No	Pharmacy	No	No	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	No	—	Yes in some	Partially
Hungary	Yes	Pharmacy	No	No	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	Yes in some	. . .	Yes in some	Partially
Iceland	Yes	General store	No	Yes	No	—	No	—	No	—	Yes in some	. . .	No	—
Ireland	Yes	General store	Partially	Yes	Yes in some	Fully	Yes in some	Fully	Yes in some	Fully	Yes in some	Partially	Yes in some	Partially
Israel	No	Pharmacy	No	No	Yes in some	Fully	Yes in some	Fully	No	—	Yes in some	Partially	Yes in some	Fully
Italy	Yes	Pharmacy	No	No	Yes in some	Fully	Yes in some	Partially	Yes in some	Partially	Yes in some	No	Yes in some	Partially
Kazakhstan	No	Pharmacy	No	No	Yes in some	Fully	No	—	Yes in some	No	Yes in some	No	Yes in some	No
Kyrgyzstan	Yes	Not available	—	No	Yes in most	Partially	No	—	Yes in most	Partially	Yes in some	No	Yes in some	Partially
Latvia	Yes	Pharmacy	No	Yes	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	Yes in some	No	Yes in some	Partially
Lithuania	No	Pharmacy	No	Yes	Yes in some	Fully	No	—	No	—	. . .	. . .	Yes in some	No
Luxembourg	Yes	Pharmacy	Partially	Yes	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	. . .	. . .	Yes in some	Partially
Malta	Yes	Pharmacy	No	No	Yes in some	Fully	Yes in some	Fully	No	—	Yes in some	Fully	No	—
Monaco	No	Pharmacy	Fully	. . .	. . .	. . .	Yes in most	Partially	Yes in most	Partially	. . .	. . .	. . .	. . .
Montenegro	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Netherlands	Yes	Pharmacy	Fully	Yes	Yes in most	Fully	Yes in most	Fully	Yes in most	Fully	Yes in some	Partially	Yes in some	Partially
North Macedonia	No	Pharmacy	No	No	No	—	Yes in some	Fully	Yes in some	Fully	No	—	Yes in some	Fully
Norway	No	General store	No	No	Yes in some	Partially	Yes in some	Fully	Yes in some	Fully	Yes in some	No	Yes in some	Partially
Poland	Yes	Pharmacy	No	No	Yes in some	Partially	No	—	Yes in some	Partially	Yes in some	No	Yes in some	Partially
Portugal	No	Not available	—	No	Yes in some	Fully	Yes in some	Fully	No	—	Yes in some	Partially	Yes in some	Partially
Republic of Moldova	Yes	Not available	—	No	Yes in some	Fully	No	—	No	—	. . .	. . .	Yes in some	Partially
Romania	Yes	Pharmacy	No	No	Yes in some	No	Yes in some	No	Yes in some	Partially	Yes in some	No	Yes in some	Partially
Russian Federation	Yes	Not available	—	Yes	Yes in some	Fully	No	—	No	—	No	—	No	—
San Marino	No	Not available	—	No	No	—	No	—	No	—	. . .	. . .	No	—
Serbia	No	Pharmacy	No	No	Yes in some	Fully	Yes in some	Fully	Yes in some	Fully	No	—	Yes in some	Partially
Slovakia	Yes	Pharmacy	Partially	No	No	—	No	—	Yes in some	Partially	No	—	Yes in some	Fully
Slovenia	Yes	Pharmacy	No	Yes	Yes in some	Fully	No	—	No	—	Yes in some	Partially	Yes in some	Fully
Spain	No	Pharmacy	No	No	Yes in some	Fully	Yes in some	Fully	Yes in some	Fully	Yes in some	Partially	Yes in some	Partially
Sweden	Yes	General store	Partially	Yes	Yes in most	Partially	Yes in most	Partially	Yes in some	Partially	No	—	Yes in some	Partially
Switzerland	Yes	Pharmacy	No	No	Yes in some	Partially	Yes in some	No	Yes in most	Partially	Yes in some	No	. . .	. . .
Tajikistan	No	Not available	—	Yes	No	—	No	—	No	—	. . .	. . .	No	—
Turkey	Yes	Pharmacy	Fully	Yes	Yes in some	Fully	Yes in some	Fully	No	—	Yes in some	Partially	Yes in some	Partially
Turkmenistan	Yes	Pharmacy	No	Yes	Yes in most	Fully	Yes in some	Fully	Yes in most	Fully	No	—	Yes in some	Fully
Ukraine	Yes	Pharmacy	No	No	Yes in some	No	No	—	No	—	No	—	No	—
United Kingdom of Great Britain and Northern Ireland	No	General store	Partially	. . .	Yes in most	Fully	Yes in most	Fully	Yes in most	Fully	Yes in most	Fully	Yes in some	Fully
Uzbekistan	No	Pharmacy	No	No	Yes in some	Partially	Yes in some	Partially	No	—	No	—	No	—

Eastern Mediterranean

Table 2.1.5
Support for treatment of tobacco dependence in the Eastern Mediterranean

§ "Pharmacy with Rx" means that a prescription is required.

* "Most" means in more than half. "Some" means in less than half. "No" means in none at all.

. . . Data not reported/not available.

— Data not required/not applicable.

< The term West Bank and Gaza Strip is used as a synonym to refer to the occupied Palestinian territory, including east Jerusalem.

COUNTRY	NATIONAL TOLL-FREE QUIT LINE	NICOTINE REPLACEMENT THERAPY			SMOKING CESSATION SUPPORT									
		PLACE AVAILABLE§	COST-COVERED	INCLUDED IN ESSENTIAL MEDICINES LIST	PRIMARY CARE FACILITIES		HOSPITALS		OFFICES OF HEALTH PROFESSIONALS		THE COMMUNITY		OTHER SETTINGS	
					AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED
Afghanistan	No	Pharmacy	No	No	Yes in some	No	No	—	No	—	No	—	No	—
Bahrain	No	Pharmacy	Fully	Yes	Yes in some	Fully	Yes in some	Fully	No	—	No	—	No	—
Djibouti	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Egypt	Yes	Not available	—	No	No	—	No	—	No	—	No	—	Yes in some	Partially
Iran (Islamic Republic of)	Yes	Pharmacy	No	Yes	Yes in some	Partially	Yes in some	Partially	Yes in some	No	Yes in some	No	Yes in some	No
Iraq	No	Pharmacy	Partially	Yes	Yes in some	Partially	No	—	No	—	No	—	No	—
Jordan	No	Pharmacy	Fully	No	Yes in some	Fully	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially
Kuwait	Yes	Pharmacy	Fully	Yes	Yes in some	Fully	No	—	No	—	Yes in most	Partially	Yes in some	Fully
Lebanon	No	Not available	—	No	Yes in some	Partially	No	—	No	—	Yes in some	Partially	No	—
Libya	No	Not available	—	No	Yes in some	Partially	No	—	No	—	No	—	Yes in some	Partially
Morocco	No	Pharmacy with Rx	No	No	Yes in most	No	Yes in some	No	Yes in some	No	No	—	No	—
Oman	No	Pharmacy	No	No	No	—	No	—	No	—	No	—	No	—
Pakistan	No	. . .	No	No	No	—	No	—	No	—	Yes in some	Partially	Yes in some	Partially
Qatar	No	Pharmacy with Rx	Fully	Yes	Yes in some	Fully	Yes in some	Fully	Yes in some	. . .	No	—	Yes in some	Partially
Saudi Arabia	Yes	Pharmacy	Fully	Yes	Yes in most	Fully	Yes in some	Fully	No	—	Yes in most	No	Yes in some	Fully
Somalia	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Sudan	No	Not available	—	No	Yes in some	No	No	—	No	—	No	—	No	—
Syrian Arab Republic	No	Not available	—	No	Yes in most	Partially	Yes in most	Partially	Yes in most	Partially	No	—	No	—
Tunisia	No	Pharmacy with Rx	Fully	No	Yes in most	Partially	Yes in most	Partially	Yes in some	Partially	No	—	Yes in some	Partially
United Arab Emirates	Yes	Pharmacy	Partially	. . .	Yes in some	Partially	No	—	Yes in some	. . .	Yes in some	Partially	Yes in some	Fully
West Bank and Gaza Strip <	No	Pharmacy	No	No	Yes in some	No	Yes in some	No	Yes in some	No	Yes in some	No	Yes in some	No
Yemen	No	Not available	—	No	No	—	No	—	No	—	Yes in some	No	No	—

Western Pacific

Table 2.1.6
Support for treatment of tobacco dependence in the Western Pacific

§ "Pharmacy with Rx" means that a prescription is required.

* "Most" means in more than half. "Some" means in less than half. "No" means in none at all.

. . . Data not reported/not available.

— Data not required/not applicable.

COUNTRY	NATIONAL TOLL-FREE QUIT LINE	NICOTINE REPLACEMENT THERAPY			SMOKING CESSATION SUPPORT									
		PLACE AVAILABLE§	COST-COVERED	INCLUDED IN ESSENTIAL MEDICINES LIST	PRIMARY CARE FACILITIES		HOSPITALS		OFFICES OF HEALTH PROFESSIONALS		THE COMMUNITY		OTHER SETTINGS	
					AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED	AVAILABLE*	COST-COVERED
Australia	Yes	General store	Partially	Yes	Yes in most	Partially	Yes in most	Partially	Yes in most	Partially	Yes in some	. . .	Yes in some	Partially
Brunei Darussalam	No	Pharmacy	Fully	Yes	Yes in some	Fully	Yes in some	Fully	No	—	Yes in some	Fully	No	—
Cambodia	No	Not available	—	No	No	—	No	—	No	—	Yes in some	No	No	—
China	No	Not available	—	No	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially	Yes in some	No	Yes in some	Partially
Cook Islands	No	Pharmacy	Fully	No	Yes in most	Fully	Yes in most	Fully	No	—	Yes in most	Partially	No	—
Fiji	No	Pharmacy	No	No	Yes in some	Fully	Yes in some	Fully	No	—	No	—	No	—
Japan	No	Pharmacy	Partially	Yes	Yes in some	Partially	Yes in some	Partially	No	—	Yes in some	Partially	No	—
Kiribati	No	Not available	—	No	Yes in most	Fully	Yes in some	Fully	No	—	No	—	No	—
Lao People's Democratic Republic	No	Not available	—	No	No	—	No	—	No	—	No	—	No	—
Malaysia	No	Pharmacy	Fully	Yes	Yes in some	Fully	Yes in some	Fully	Yes in some	Fully	Yes in some	No	No	—
Marshall Islands	No	Pharmacy	Partially	Yes	No	—	No	—	No	—	No	—	No	—
Micronesia (Federated States of)	Yes	. . .	No	No	Yes in most	Fully	No	—	Yes in some	Fully	Yes in some	No	Yes in some	No
Mongolia	No	Pharmacy	Partially	Yes	Yes in some	Partially	Yes in some	No	No	—	No	—	No	—
Nauru	No	Not available	—	No	No	—	Yes in some	No	No	—	No	—	No	—
New Zealand	Yes	General store	Fully	Yes	Yes in most	Partially	Yes in most	Fully	Yes in most	Partially	Yes in most	Partially	Yes in some	Fully
Niue	No	Pharmacy	Fully	No	No	—	No	—	No	—	No	—	No	—
Palau	No	General store	Partially	No	Yes in some	Fully	Yes in some	Fully	No	—	No	—	No	—
Papua New Guinea	No	Pharmacy	No	No	No	—	No	—	No	—	No	—	No	—
Philippines	No	Pharmacy with Rx	No	Yes	Yes in some	Partially	Yes in some	Partially	Yes in some	No	No	—	Yes in some	Fully
Republic of Korea	Yes	Pharmacy	Partially	No	Yes in some	Fully	Yes in some	Fully	Yes in some	Fully	. . .	. . .	Yes in most	Fully
Samoa	No	Pharmacy	No	No	No	—	No	—	No	—	Yes in some	Fully	No	—
Singapore	Yes	Pharmacy	Partially	No	Yes in most	Partially	Yes in most	Partially	Yes in some	Partially	Yes in some	Partially	Yes in some	Partially
Solomon Islands	No	. . .	No	No	Yes in some	Fully	No	—	No	—	No	—	No	—
Tonga	Yes	Pharmacy	No	No	Yes in most	Fully	Yes in some	Fully	No	—	No	—	No	—
Tuvalu	No	Not available	—	No	No	—	No	—	No	—	Yes in some	No	No	—
Vanuatu	No	Pharmacy	No	Yes	No	—	No	—	No	—	No	—	No	—
Viet Nam	Yes	Pharmacy	No	No	Yes in some	Partially	Yes in some	Partially	No	—	No	—	No	—

mpower

Africa

Table 2.2.1
Tobacco cessation support, supplementary information in Africa

. . . Data not reported/not available.

COUNTRY	THE COUNTRY HAS A NATIONAL TOBACCO CESSATION STRATEGY	THE COUNTRY HAS NATIONAL TOBACCO CESSATION CLINICAL GUIDELINES	TOBACCO CESSATION IS INCLUDED IN AT LEAST ONE NATIONAL DISEASE SPECIFIC TREATMENT GUIDELINE	TOBACCO USE STATUS OF PATIENTS IS ROUTINELY RECORDED ON MEDICAL RECORDS	NATIONAL TOLL-FREE QUIT LINES ARE INCLUDED ON HEALTH WARNINGS OR MASS MEDIA CAMPAIGNS	TRAINING IN TOBACCO CESSATION IS INCLUDED IN HEALTH CARE DEGREE CURRICULA OR PRIMARY CARE PROVIDERS ARE REGULARLY TRAINED IN BRIEF TOBACCO INTERVENTIONS
Algeria	Yes	Yes	Yes	No	No	No
Angola	. . .	. . .	. . .	. . .	. . .	. . .
Benin	No	Yes	Yes	No	No	No
Botswana	No	No	Yes	No	No	No
Burkina Faso	No	No	No	No	No	No
Burundi	No	No	Yes	No	No	No
Cabo Verde	No	No	Yes	No	No	No
Cameroon	No	No	No	No	No	No
Central African Republic	No	No	No	No	No	Yes
Chad	No	No	No	No	No	No
Comoros	No	No	No	No	No	No
Congo	No	No	Yes	No	No	No
Côte d'Ivoire	Yes	Yes	No	No	No	No
Democratic Republic of the Congo	No	No	No	No	No	No
Equatorial Guinea	. . .	. . .	. . .	. . .	. . .	. . .
Eritrea	No	No	Yes	No	No	No
Eswatini	No	No	No	No	No	No
Ethiopia	Yes	Yes	Yes	No	No	No
Gabon	No	No	No	No	No	No
Gambia	No	Yes	Yes	No	No	No
Ghana	Yes	Yes	Yes	No	No	No
Guinea	No	Yes	Yes	No	No	No
Guinea-Bissau	No	No	No	No	No	No
Kenya	Yes	Yes	No	Yes	No	No
Lesotho	No	No	No	No	No	No
Liberia	No	No	No	No	No	No
Madagascar	No	Yes	Yes	No	No	No
Malawi	No	No	No	No	No	No
Mali	No	No	Yes	No	No	No
Mauritania	No	No	No	No	No	No
Mauritius	Yes	No	Yes	No	No	No
Mozambique	No	No	No	No	No	No
Namibia	Yes	No	Yes	No	No	No
Niger	No	No	No	No	No	No
Nigeria	No	No	No	Yes	No	No
Rwanda	No	No	Yes	No	No	No
Sao Tome and Principe	No	No	No	No	No	No
Senegal	No	No	Yes	No	No	No
Seychelles	No	No	Yes	Yes	No	No
Sierra Leone	No	No	No	No	No	No
South Africa	. . .	. . .	. . .	. . .	. . .	. . .
South Sudan	No	No	No	No	No	No
Togo	Yes	Yes	Yes	No	No	No
Uganda	No	Yes	Yes	No	No	No
United Republic of Tanzania	No	No	No	No	No	No
Zambia	No	No	No	No	No	No
Zimbabwe	No	No	Yes	No	No	No

Table 2.2.2
Tobacco cessation support, supplementary information in the Americas

. . . Data not reported/not available.

COUNTRY	THE COUNTRY HAS A NATIONAL TOBACCO CESSATION STRATEGY	THE COUNTRY HAS NATIONAL TOBACCO CESSATION CLINICAL GUIDELINES	TOBACCO CESSATION IS INCLUDED IN AT LEAST ONE NATIONAL DISEASE SPECIFIC TREATMENT GUIDELINE	TOBACCO USE STATUS OF PATIENTS IS ROUTINELY RECORDED ON MEDICAL RECORDS	NATIONAL TOLL-FREE QUIT LINES ARE INCLUDED ON HEALTH WARNINGS OR MASS MEDIA CAMPAIGNS	TRAINING IN TOBACCO CESSATION IS INCLUDED IN HEALTH CARE DEGREE CURRICULA OR PRIMARY CARE PROVIDERS ARE REGULARLY TRAINED IN BRIEF TOBACCO INTERVENTIONS
Antigua and Barbuda	No	No	Yes	No	No	No
Argentina	No	Yes	Yes	No	Yes	Yes
Bahamas	. . .	. . .	. . .	. . .	. . .	. . .
Barbados	No	No	Yes	No	No	No
Belize	No	No	Yes	No	No	No
Bolivia (Plurinational State of)	No	No	No	No	No	No
Brazil	Yes	Yes	Yes	No	Yes	No
Canada	No	Yes	Yes	No	Yes	Yes
Chile	No	Yes	Yes	No	No	Yes
Colombia	Yes	No	Yes	No	No	Yes
Costa Rica	No	Yes	Yes	Yes	No	Yes
Cuba	Yes	Yes	Yes	Yes	No	Yes
Dominica	No	No	Yes	No	No	No
Dominican Republic	No	No	Yes	No	No	No
Ecuador	No	Yes	Yes	No	Yes	Yes
El Salvador	No	No	Yes	No	No	No
Grenada	No	No	Yes	No	No	No
Guatemala	No	Yes	Yes	No	No	No
Guyana	No	Yes	Yes	No	No	No
Haiti	No	No	No	No	No	No
Honduras	Yes	Yes	Yes	Yes	No	No
Jamaica	No	Yes	Yes	No	No	No
Mexico	Yes	Yes	Yes	Yes	Yes	No
Nicaragua	No	No	Yes	No	No	No
Panama	Yes	Yes	Yes	Yes	No	No
Paraguay	No	No	Yes	No	No	No
Peru	No	No	Yes	No	No	No
Saint Kitts and Nevis	No	No	Yes	No	No	No
Saint Lucia	No	No	Yes	No	No	No
Saint Vincent and the Grenadines	No	No	No	No	No	No
Suriname	No	No	Yes	No	No	No
Trinidad and Tobago	Yes	No	Yes	No	No	No
United States of America	Yes	Yes	Yes	No	Yes	Yes
Uruguay	Yes	Yes	Yes	Yes	No	Yes
Venezuela (Bolivarian Republic of)	Yes	No	No	No	No	No

South-East Asia

Table 2.2.3
Tobacco cessation support, supplementary information in South-East Asia

COUNTRY	THE COUNTRY HAS A NATIONAL TOBACCO CESSATION STRATEGY	THE COUNTRY HAS NATIONAL TOBACCO CESSATION CLINICAL GUIDELINES	TOBACCO CESSATION IS INCLUDED IN AT LEAST ONE NATIONAL DISEASE SPECIFIC TREATMENT GUIDELINE	TOBACCO USE STATUS OF PATIENTS IS ROUTINELY RECORDED ON MEDICAL RECORDS	NATIONAL TOLL-FREE QUIT LINES ARE INCLUDED ON HEALTH WARNINGS OR MASS MEDIA CAMPAIGNS	TRAINING IN TOBACCO CESSATION IS INCLUDED IN HEALTH CARE DEGREE CURRICULA OR PRIMARY CARE PROVIDERS ARE REGULARLY TRAINED IN BRIEF TOBACCO INTERVENTIONS
Bangladesh	No	No	Yes	No	No	No
Bhutan	No	Yes	Yes	Yes	No	No
Democratic People's Republic of Korea	No	Yes	Yes	No	No	No
India	Yes	Yes	Yes	No	Yes	Yes
Indonesia	Yes	Yes	Yes	No	Yes	Yes
Maldives	No	Yes	No	No	No	No
Myanmar	Yes	No	No	Yes	No	Yes
Nepal	No	No	No	No	No	No
Sri Lanka	Yes	No	Yes	No	Yes	No
Thailand	Yes	Yes	Yes	Yes	Yes	Yes
Timor-Leste	No	No	No	No	No	No

Table 2.2.4
Tobacco cessation support, supplementary information in Europe

. . . Data not reported/not available.

COUNTRY	THE COUNTRY HAS A NATIONAL TOBACCO CESSATION STRATEGY	THE COUNTRY HAS NATIONAL TOBACCO CESSATION CLINICAL GUIDELINES	TOBACCO CESSATION IS INCLUDED IN AT LEAST ONE NATIONAL DISEASE SPECIFIC TREATMENT GUIDELINE	TOBACCO USE STATUS OF PATIENTS IS ROUTINELY RECORDED ON MEDICAL RECORDS	NATIONAL TOLL-FREE QUIT LINES ARE INCLUDED ON HEALTH WARNINGS OR MASS MEDIA CAMPAIGNS	TRAINING IN TOBACCO CESSATION IS INCLUDED IN HEALTH CARE DEGREE CURRICULA OR PRIMARY CARE PROVIDERS ARE REGULARLY TRAINED IN BRIEF TOBACCO INTERVENTIONS
Albania	No	No	Yes	No	No	No
Andorra	No	No	Yes	No	No	No
Armenia	Yes	Yes	Yes	No	No	No
Austria	No	No	Yes	No	Yes	Yes
Azerbaijan	No	Yes	Yes	Yes	No	No
Belarus	No	Yes	Yes	No	Yes	No
Belgium	Yes	Yes	Yes	No	No	Yes
Bosnia and Herzegovina	. . .	. . .	. . .	. . .	. . .	. . .
Bulgaria	Yes	Yes	Yes	Yes	No	Yes
Croatia	No	Yes	Yes	Yes	Yes	No
Cyprus	Yes	Yes	Yes	No	No	Yes
Czechia	No	Yes	Yes	Yes	Yes	No
Denmark	No	Yes	Yes	No	Yes	No
Estonia	Yes	Yes	Yes	Yes	No	No
Finland	No	Yes	Yes	No	No	No
France	Yes	Yes	Yes	Yes	No	Yes
Georgia	Yes	Yes	Yes	Yes	Yes	Yes
Germany	No	Yes	Yes	No	Yes	Yes
Greece	Yes	No	Yes	No	No	Yes
Hungary	No	Yes	No	Yes	Yes	Yes
Iceland	No	No	No	No	Yes	Yes
Ireland	Yes	No	Yes	No	Yes	Yes
Israel	. . .	. . .	. . .	. . .	. . .	. . .
Italy	Yes	Yes	Yes	No	Yes	No
Kazakhstan	Yes	Yes	Yes	Yes	No	No
Kyrgyzstan	No	Yes	Yes	No	Yes	No
Latvia	Yes	No	Yes	Yes	Yes	No
Lithuania	No	No	Yes	No	No	Yes
Luxembourg	Yes	Yes	Yes	No	Yes	No
Malta	No	No	No	No	Yes	Yes
Monaco	No	No	No	No	No	No
Montenegro	No	No	Yes	No	No	No
Netherlands	Yes	Yes	Yes	No	Yes	Yes
North Macedonia	No	No	Yes	Yes	No	No
Norway	Yes	Yes	Yes	No	No	No
Poland	Yes	No	Yes	No	Yes	Yes
Portugal	Yes	Yes	Yes	No	No	No
Republic of Moldova	Yes	No	Yes	Yes	Yes	No
Romania	No	No	Yes	No	Yes	Yes
Russian Federation	No	Yes	Yes	Yes	Yes	Yes
San Marino	Yes	No	Yes	No	Yes	No
Serbia	No	No	Yes	No	No	No
Slovakia	Yes	Yes	No	No	Yes	No
Slovenia	Yes	No	No	Yes	Yes	Yes
Spain	Yes	Yes	Yes	No	No	Yes
Sweden	Yes	Yes	Yes	No	Yes	Yes
Switzerland	Yes	Yes	Yes	No	Yes	Yes
Tajikistan	No	Yes	Yes	Yes	No	No
Turkey	Yes	Yes	Yes	No	Yes	No
Turkmenistan	No	Yes	Yes	No	Yes	No
Ukraine	No	Yes	Yes	No	No	No
United Kingdom of Great Britain and Northern Ireland	Yes	Yes	Yes	Yes	No	Yes
Uzbekistan	No	No	Yes	No	No	Yes

Eastern Mediterranean

Table 2.2.5
Tobacco cessation support, supplementary information in the Eastern Mediterranean

. . . Data not reported/not available.

< The term West Bank and Gaza Strip is used as a synonym to refer to the occupied Palestinian territory, including east Jerusalem.

COUNTRY	THE COUNTRY HAS A NATIONAL TOBACCO CESSATION STRATEGY	THE COUNTRY HAS NATIONAL TOBACCO CESSATION CLINICAL GUIDELINES	TOBACCO CESSATION IS INCLUDED IN AT LEAST ONE NATIONAL DISEASE SPECIFIC TREATMENT GUIDELINE	TOBACCO USE STATUS OF PATIENTS IS ROUTINELY RECORDED ON MEDICAL RECORDS	NATIONAL TOLL-FREE QUIT LINES ARE INCLUDED ON HEALTH WARNINGS OR MASS MEDIA CAMPAIGNS	TRAINING IN TOBACCO CESSATION IS INCLUDED IN HEALTH CARE DEGREE CURRICULA OR PRIMARY CARE PROVIDERS ARE REGULARLY TRAINED IN BRIEF TOBACCO INTERVENTIONS
Afghanistan	Yes	No	No	No	No	No
Bahrain	Yes	Yes	Yes	No	No	Yes
Djibouti	. . .	. . .	. . .	. . .	. . .	. . .
Egypt	No	Yes	Yes	No	Yes	No
Iran (Islamic Republic of)	Yes	Yes	No	Yes	No	Yes
Iraq	Yes	Yes	Yes	Yes	No	No
Jordan	Yes	No	No	No	No	No
Kuwait	Yes	Yes	Yes	Yes	No	No
Lebanon	Yes	No	Yes	No	No	No
Libya	No	No	No	No	No	No
Morocco	Yes	Yes	Yes	No	No	No
Oman	Yes	No	Yes	No	No	No
Pakistan	No	No	No	No	No	No
Qatar	No	Yes	Yes	No	No	Yes
Saudi Arabia	Yes	Yes	Yes	Yes	No	No
Somalia	. . .	. . .	. . .	. . .	. . .	. . .
Sudan	No	No	No	No	No	No
Syrian Arab Republic	No	No	No	No	No	Yes
Tunisia	Yes	Yes	No	No	No	Yes
United Arab Emirates	Yes	No	Yes	Yes	Yes	Yes
West Bank and Gaza Strip <	Yes	No	Yes	No	No	No
Yemen	Yes	No	No	No	No	No

Western Pacific

Table 2.2.6
Tobacco cessation support, supplementary information in the Western Pacific

COUNTRY	THE COUNTRY HAS A NATIONAL TOBACCO CESSATION STRATEGY	THE COUNTRY HAS NATIONAL TOBACCO CESSATION CLINICAL GUIDELINES	TOBACCO CESSATION IS INCLUDED IN AT LEAST ONE NATIONAL DISEASE SPECIFIC TREATMENT GUIDELINE	TOBACCO USE STATUS OF PATIENTS IS ROUTINELY RECORDED ON MEDICAL RECORDS	NATIONAL TOLL-FREE QUIT LINES ARE INCLUDED ON HEALTH WARNINGS OR MASS MEDIA CAMPAIGNS	TRAINING IN TOBACCO CESSATION IS INCLUDED IN HEALTH CARE DEGREE CURRICULA OR PRIMARY CARE PROVIDERS ARE REGULARLY TRAINED IN BRIEF TOBACCO INTERVENTIONS
Australia	Yes	Yes	Yes	Yes	Yes	Yes
Brunei Darussalam	No	Yes	Yes	No	No	No
Cambodia	Yes	No	No	No	No	No
China	Yes	Yes	Yes	No	No	Yes
Cook Islands	Yes	Yes	Yes	No	No	No
Fiji	No	No	Yes	No	No	No
Japan	No	No	No	No	No	Yes
Kiribati	No	No	Yes	No	No	No
Lao People's Democratic Republic	No	No	Yes	No	No	No
Malaysia	Yes	Yes	Yes	No	No	No
Marshall Islands	No	No	Yes	No	No	No
Micronesia (Federated States of)	No	No	Yes	No	No	No
Mongolia	No	No	Yes	No	No	No
Nauru	No	No	No	No	No	No
New Zealand	No	Yes	Yes	Yes	Yes	Yes
Niue	No	No	No	No	No	No
Palau	No	No	Yes	No	No	No
Papua New Guinea	Yes	No	Yes	No	No	No
Philippines	Yes	Yes	Yes	No	No	No
Republic of Korea	Yes	No	Yes	No	Yes	Yes
Samoa	No	No	No	No	No	No
Singapore	Yes	Yes	Yes	No	Yes	No
Solomon Islands	No	No	Yes	No	No	No
Tonga	No	No	Yes	No	Yes	Yes
Tuvalu	No	No	Yes	No	No	No
Vanuatu	Yes	No	Yes	No	No	No
Viet Nam	No	Yes	Yes	Yes	Yes	No

APPENDIX III: YEAR OF HIGHEST LEVEL OF ACHIEVEMENT IN SELECTED TOBACCO CONTROL MEASURES

Appendix III provides information on the year in which respective countries attained the highest level of achievement for five of the MPOWER measures. Data are shown separately for each WHO region.

For Monitoring tobacco use the earliest year assessed is 2007. However, it is possible that while 2007 is reported as the year of highest achievement for some countries, they actually may have reached this level earlier.

Years of highest level achievement of the MPOWER measure Raise taxes on tobacco are not included in this appendix. The share of taxes in product price depends both on tax policy and on demand and supply factors that affect manufacturing and retail prices. Countries with tax increases might have seen the share of tax remain unchanged or even decline if the non-tax share of price rose at the same, or a higher rate, complicating the interpretation of the year of highest level of achievement.

See Technical Note III for details on the calculation of tax shares.

Africa

Table 3.1
Year of highest level of achievement in selected tobacco control measures in Africa

Note: an empty cell indicates that the population is not covered by the measure at the highest level of achievement.

⊙ Policy adopted but not implemented by 31 December 2018.

COUNTRY	YEAR THE HIGHEST LEVEL OF ACHIEVEMENT WAS ATTAINED				
	MONITOR TOBACCO USE	PROTECT PEOPLE FROM TOBACCO SMOKE	OFFER HELP TO QUIT TOBACCO USE	WARN ABOUT THE DANGERS OF TOBACCO	ENFORCE BANS ON TOBACCO ADVERTISING, PROMOTION AND SPONSORSHIP
Algeria					
Angola					
Benin		2017			2017
Botswana					
Burkina Faso		2010		2015	
Burundi		2018			
Cabo Verde					
Cameroon				2018 ⊙	
Central African Republic					
Chad		2010		2015	2010
Comoros					
Congo		2012			2018
Côte d'Ivoire					
Democratic Republic of the Congo					2018 ⊙
Equatorial Guinea					
Eritrea					2004
Eswatini					
Ethiopia					
Gabon					
Gambia		2018			2018
Ghana					2012
Guinea					2012
Guinea-Bissau					
Kenya					2007
Lesotho					
Liberia					
Madagascar		2013		2012	2003
Malawi					
Mali					
Mauritania					
Mauritius				2008	2008
Mozambique					
Namibia		2010		2013	
Niger					2006
Nigeria					2015
Rwanda					
Sao Tome and Principe					
Senegal			2016	2016	2016
Seychelles		2009		2012	2009
Sierra Leone					
South Africa					
South Sudan					
Togo					2012
Uganda		2015			2015
United Republic of Tanzania					
Zambia					
Zimbabwe					

The Americas

Table 3.2
Year of highest level of achievement in selected tobacco control measures in the Americas

Note: an empty cell indicates that the population is not covered by the measure at the highest level of achievement.

* Or earlier year.

⊙ Policy adopted but not implemented by 31 December 2018.

COUNTRY	YEAR THE HIGHEST LEVEL OF ACHIEVEMENT WAS ATTAINED				
	MONITOR TOBACCO USE	PROTECT PEOPLE FROM TOBACCO SMOKE	OFFER HELP TO QUIT TOBACCO USE	WARN ABOUT THE DANGERS OF TOBACCO	ENFORCE BANS ON TOBACCO ADVERTISING, PROMOTION AND SPONSORSHIP
Antigua and Barbuda		2018			2018
Argentina		2011		2012	
Bahamas	2018				
Barbados		2010		2017	
Belize					
Bolivia (Plurinational State of)				2009	
Brazil	2015	2011	2002	2003	2011
Canada	2007*	2007	2008	2011	
Chile	2007*	2013		2006	
Colombia		2008			2009
Costa Rica	2007*	2012		2013	
Cuba					
Dominica					
Dominican Republic					
Ecuador	2016	2011		2012	
El Salvador		2015	2016	2011	
Grenada					
Guatemala		2008			
Guyana		2017		2018 ⊙	2017
Haiti					
Honduras		2010		2017	
Jamaica		2013	2016	2013	
Mexico			2013	2009	
Nicaragua					
Panama	2012	2008		2005	2008
Paraguay					
Peru	2007*	2010		2011	
Saint Kitts and Nevis					
Saint Lucia				2017	
Saint Vincent and the Grenadines					
Suriname	2018	2013		2016	2013
Trinidad and Tobago		2009		2013 ⊙	
United States of America	2007*		2008		
Uruguay	2007*	2005		2005	2014
Venezuela (Bolivarian Republic of)		2011		2004	

South-East Asia

Table 3.3
Year of highest level of achievement in selected tobacco control measures in South-East Asia

Note: an empty cell indicates that the population is not covered by the measure at the highest level of achievement.

* Or earlier year.

COUNTRY	YEAR THE HIGHEST LEVEL OF ACHIEVEMENT WAS ATTAINED				
	MONITOR TOBACCO USE	PROTECT PEOPLE FROM TOBACCO SMOKE	OFFER HELP TO QUIT TOBACCO USE	WARN ABOUT THE DANGERS OF TOBACCO	ENFORCE BANS ON TOBACCO ADVERTISING, PROMOTION AND SPONSORSHIP
Bangladesh	2014			2015	
Bhutan	2014				
Democratic People's Republic of Korea					
India			2016	2016	
Indonesia	2015				
Maldives					2010
Myanmar	2015				
Nepal		2011		2011	2014
Sri Lanka				2012	
Thailand	2007*	2010		2005	
Timor-Leste				2018	

Europe

Table 3.4
Year of highest level of achievement in selected tobacco control measures in Europe

Note: an empty cell indicates that the population is not covered by the measure at the highest level of achievement.

* Or earlier year.

COUNTRY	YEAR THE HIGHEST LEVEL OF ACHIEVEMENT WAS ATTAINED				
	MONITOR TOBACCO USE	PROTECT PEOPLE FROM TOBACCO SMOKE	OFFER HELP TO QUIT TOBACCO USE	WARN ABOUT THE DANGERS OF TOBACCO	ENFORCE BANS ON TOBACCO ADVERTISING, PROMOTION AND SPONSORSHIP
Albania		2006			2006
Andorra					
Armenia	2007*			2016	
Austria	2007*			2016	
Azerbaijan	2016				2017
Belarus				2016	
Belgium	2007*			2016	
Bosnia and Herzegovina					
Bulgaria	2007*	2012		2016	
Croatia	2007*			2017	
Cyprus				2017	
Czechia	2007*		2018	2016	
Denmark	2007*		2011	2016	
Estonia	2007*			2016	
Finland	2007*			2016	
France	2007*			2016	
Georgia	2007*			2018	
Germany	2007*			2016	
Greece	2007*	2010		2016	
Hungary	2007*			2016	
Iceland	2007*				
Ireland	2007*	2004	2003	2016	
Israel					
Italy	2007*			2016	
Kazakhstan	2007*			2014	
Kyrgyzstan				2014	
Latvia	2007*			2016	
Lithuania	2007*			2016	
Luxembourg	2007*		2016	2017	
Malta	2007*	2010		2016	
Monaco					
Montenegro					
Netherlands	2007*		2014	2016	
North Macedonia		2008			
Norway	2007*	2013			
Poland	2007*			2016	
Portugal	2007*			2015	
Republic of Moldova	2013			2016	2016
Romania	2007*	2015		2016	
Russian Federation	2007*	2013		2014	2013
San Marino					
Serbia	2007*				
Slovakia	2007*		2018	2016	
Slovenia	2007*			2017	2017
Spain	2007*	2010		2017	2010
Sweden	2007*		2018	2016	
Switzerland	2007*				
Tajikistan		2018			
Turkey		2008	2010	2012	2012
Turkmenistan		2000		2014	
Ukraine	2007*			2009	
United Kingdom of Great Britain and Northern Ireland	2007*	2006		2016	
Uzbekistan					

Eastern Mediterranean

Table 3.5
Year of highest level of achievement in selected tobacco control measures in the Eastern Mediterranean

Note: an empty cell indicates that the population is not covered by the measure at the highest level of achievement.

* Or earlier year.

⊙ Policy adopted but not implemented by 31 December 2018.

< The term West Bank and Gaza Strip is used as a synonym to refer to the occupied Palestinian territory, including east Jerusalem.

COUNTRY	YEAR THE HIGHEST LEVEL OF ACHIEVEMENT WAS ATTAINED				
	MONITOR TOBACCO USE	PROTECT PEOPLE FROM TOBACCO SMOKE	OFFER HELP TO QUIT TOBACCO USE	WARN ABOUT THE DANGERS OF TOBACCO	ENFORCE BANS ON TOBACCO ADVERTISING, PROMOTION AND SPONSORSHIP
Afghanistan		2015			2015
Bahrain					2011
Djibouti				2008	2007
Egypt	2007*	2010		2008	
Iran (Islamic Republic of)	2007*	2007		2008	2007
Iraq					
Jordan					
Kuwait	2007*		2012		2016
Lebanon	2013	2011			
Libya		2009			2009
Morocco					
Oman					
Pakistan	2014	2009		2017 ⊙	
Qatar	2014				2016
Saudi Arabia			2018	2017 ⊙	2017
Somalia					
Sudan					
Syrian Arab Republic					
Tunisia					
United Arab Emirates			2008		2013
West Bank and Gaza Strip <		2011			
Yemen					2013

Western Pacific

Table 3.6
Year of highest level of achievement in selected tobacco control measures in the Western Pacific

Note: an empty cell indicates that the population is not covered by the measure at the highest level of achievement.

* Or earlier year.

⊙ Policy adopted but not implemented by 31 December 2018.

COUNTRY	YEAR THE HIGHEST LEVEL OF ACHIEVEMENT WAS ATTAINED				
	MONITOR TOBACCO USE	PROTECT PEOPLE FROM TOBACCO SMOKE	OFFER HELP TO QUIT TOBACCO USE	WARN ABOUT THE DANGERS OF TOBACCO	ENFORCE BANS ON TOBACCO ADVERTISING, PROMOTION AND SPONSORSHIP
Australia	2007*	2005	2011	2004	
Brunei Darussalam	2014	2012		2007	
Cambodia	2014	2016		2016	
China					
Cook Islands	2007*				
Fiji				2013	
Japan	2007*				
Kiribati					2013
Lao People's Democratic Republic	2015	2016		2016	
Malaysia	2012			2008	
Marshall Islands		2006			
Micronesia (Federated States of)					
Mongolia	2007*			2012	2012
Nauru		2009			
New Zealand	2007*	2003	2000	2007	
Niue		2018 ⊙			2018 ⊙
Palau	2010				
Papua New Guinea		2012			
Philippines	2007*			2014	
Republic of Korea	2007*		2006		
Samoa				2013	
Singapore	2007*		1999	2012	
Solomon Islands				2013	
Tonga					
Tuvalu					2008
Vanuatu				2013	2008
Viet Nam	2014			2013	

APPENDIX IV: HIGHEST LEVEL OF ACHIEVEMENT IN SELECTED TOBACCO CONTROL MEASURES IN THE 100 BIGGEST CITIES IN THE WORLD

Appendix IV provides information on whether the populations of the world's 100 biggest cities are covered by selected tobacco control measures at the highest level of achievement.

Cities are listed alphabetically. There are many ways to define geographically and measure the size of "a city". For the purposes of this report, we focused on the jurisdictional boundaries of cities, since subnational laws will apply to populations within jurisdictions. Where a large "city" includes several jurisdictions or parts of jurisdictions, it is possible that not everyone in the entire "city" is covered by the same laws. We therefore use the list of cities and their populations published in the *United Nations Statistics Division Demographic Yearbook*, since these are defined jurisdictionally. Please refer to Table 8 at https://unstats.un.org/unsd/demographic-social/products/dyb/dyb_2016/ for the source data.

A number of countries do not appear in Table 8 of the *Demographic Yearbook* because they did not report data.

Countries missing from the list because they did not report data, but large enough to potentially qualify for the 100 biggest cities list are: Angola, Chad, Democratic Republic of the Congo, Nigeria, Sudan and Viet Nam.

Refer to Technical Note I for definitions of highest level of achievement.

Table 4.1

Highest level of achievement in selected tobacco control measures in the 100 biggest cities in the world

N	City's population covered by national legislation or policy at the highest level of achievement
S	City's population covered by state-level legislation or policy at the highest level of achievement
C	City's population covered by city-level legislation or policy at the highest level of achievement

Notes: An empty cell indicates that the population in the respective city is not covered by the measure at the highest level of achievement.

Refer to Technical Note I for definitions of highest level of achievement of the respective measure.

* Only cities which appear among the top 100 cities sorted by population size, according to the United Nations Statistics Division Demographic Yearbook 2016 (available at: https://unstats.un.org/unsd/demographic-social/products/dyb/documents/dyb2016/table08.xls).

CITY *	POPULATION (2016)	COVERAGE AT THE HIGHEST LEVEL OF ACHIEVEMENT					COUNTRY
		PROTECT PEOPLE FROM TOBACCO SMOKE	OFFER HELP TO QUIT TOBACCO USE	WARN ABOUT THE DANGERS OF TOBACCO	ENFORCE BANS ON TOBACCO ADVERTISING, PROMOTION AND SPONSORSHIP	RAISE TAXES ON TOBACCO	
Abidjan	4 395 243						Côte d'Ivoire
Adana	2 183 167	N	N	N	N	N	Turkey
Addis Ababa	2 979 086	N					Ethiopia
Ahmedabad	5 633 927		N	N			India
Aleppo	4 450 000						Syrian Arab Republic
Alexandria	4 358 439	N		N		N	Egypt
Algiers	2 712 944						Algeria
Amman	3 752 644		N			N	Jordan
Ankara	5 270 575	N	N	N	N	N	Turkey
Antalya	2 288 456	N	N	N	N	N	Turkey
Baku	2 215 034	N			N		Azerbaijan
Bandung	2 497 938	C					Indonesia
Bangalore	8 495 492		N	N			India
Bangkok	8 305 218	N		N			Thailand
Beijing	19 610 000	N					China
Belo Horizonte	2 513 451	N	N	N	N	N	Brazil
Berlin	3 520 031			N			Germany
Bogotá	7 980 001	N			N	N	Colombia
Brasília	2 977 216	N	N	N	N	N	Brazil
Brisbane	2 209 453	S	N	N		N	Australia
Buenos Aires	13 879 707	N		N		N	Argentina
Bursa	2 842 547	N	N	N	N	N	Turkey
Busan	3 388 631		N				Republic of Korea
Cairo	7 248 671	N		N		N	Egypt
Cali	2 394 925	N			N	N	Colombia
Casablanca	3 352 399						Morocco
Chennai	4 646 732		N	N			India
Chicago	2 704 958		N				United States of America
Chittagong	2 591 681			N			Bangladesh
Daegu	2 449 667		N				Republic of Korea
Damasus Rural	2 529 000						Syrian Arab Republic
Dar es Salaam	4 364 541						United Republic of Tanzania
Delhi	11 034 555		N	N			India
Dhaka	8 906 035			N			Bangladesh
Douala	2 948 464			N			Cameroon
Fortaleza	2 609 716	N	N	N	N	N	Brazil
Giza	3 122 041	N		N		N	Egypt
Guadalajara	4 853 425		N	N			Mexico
Guayaquil	2 531 371	N		N			Ecuador
Hong Kong SAR	7 336 600	C	C	C			China, Hong Kong SAR
Houston	2 303 482		N				United States of America
Hyderabad	6 993 262	S	N	N			India
Incheon	2 914 455		N				Republic of Korea
Istanbul	14 657 434	N	N	N	N	N	Turkey
Izmir	4 168 415	N	N	N	N	N	Turkey
Jaipur	3 046 163		N	N			India
Jakarta	10 374 235	N					Indonesia
Jiddah	3 430 697		N		N		Saudi Arabia
Kabul	3 817 241	N			N		Afghanistan
Kanpur	2 768 057		N	N			India
Karachi	9 339 023	N		N			Pakistan
Kiev	2 803 716			N			Ukraine
Kolkata	4 496 694		N	N			India
Konya	2 130 544	N	N	N	N	N	Turkey

Table 4.1

Highest level of achievement in selected tobacco control measures in the 100 biggest cities in the world (continued)

N	City's population covered by national legislation or policy at the highest level of achievement
S	City's population covered by state-level legislation or policy at the highest level of achievement
C	City's population covered by city-level legislation or policy at the highest level of achievement

Notes: An empty cell indicates that the population in the respective city is not covered by the measure at the highest level of achievement.

Refer to Technical Note I for definitions of highest level of achievement of the respective measure.

* Only cities which appear among the top 100 cities sorted by population size, according to the United Nations Statistics Division Demographic Yearbook 2016 (available at: https://unstats.un.org/unsd/demographic-social/products/dyb/documents/dyb2016/table08.xls).

⊙ Policy adopted but not implemented by 31 December 2018.

CITY *	POPULATION (2016)	COVERAGE AT THE HIGHEST LEVEL OF ACHIEVEMENT					COUNTRY
		PROTECT PEOPLE FROM TOBACCO SMOKE	OFFER HELP TO QUIT TOBACCO USE	WARN ABOUT THE DANGERS OF TOBACCO	ENFORCE BANS ON TOBACCO ADVERTISING, PROMOTION AND SPONSORSHIP	RAISE TAXES ON TOBACCO	
Lahore	5 143 495	N		N ⊙			Pakistan
Lima	10 039 455	N		N			Peru
London	8 135 667	N	C	N		N	United Kingdom of Great Britain and Northern Ireland
Los Angeles	3 976 322	S	N				United States of America
Lucknow	2 817 105		N	N			India
Madrid	3 186 241	N		N	N	N	Spain
Mashhad	2 766 258	N		N	N		Iran (Islamic Republic of)
Medan	2 247 425	C					Indonesia
Medellín	2 486 723	N			N	N	Colombia
Melbourne	4 353 514	S	N	N		N	Australia
Mexico City	21 497 029	S	N	N			Mexico
Monterrey	4 540 429	S	N	N			Mexico
Moscow	11 918 057	N		N	N		Russian Federation
Mumbai	12 442 373		N	N			India
Mwanza	2 772 509						United Republic of Tanzania
Nagoya	2 295 638						Japan
Nagpur	2 405 665		N	N			India
Nairobi	3 133 518				N		Kenya
New York	8 537 673		N				United States of America
Osaka	2 691 185						Japan
Paris	2 243 833	N		N		N	France
Puebla-Tlaxcala	2 986 825		N	N			Mexico
Pune	3 124 458		N	N			India
Pyongyang	2 581 076						Democratic People's Republic of Korea
Quezon City	2 936 116			N			Philippines
Rio De Janeiro	6 498 837	N	N	N	N	N	Brazil
Riyadh	5 188 286		N		N		Saudi Arabia
Rome	2 867 672	N		N		N	Italy
Saint Petersburg	4 990 602	N		N	N		Russian Federation
Salvador	2 938 092	N	N	N	N	N	Brazil
Santiago	5 561 252	N		N		N	Chile
São Paulo	12 038 175	N	N	N	N	N	Brazil
Seoul	9 834 687		N				Republic of Korea
Singapore	5 607 283		N	N			Singapore
Surabaya	2 874 699						Indonesia
Surat	4 501 610		N	N			India
Sydney	4 526 479	N	N	N		N	Australia
Tangerang	2 139 891						Indonesia
Tashkent	2 393 176						Uzbekistan
Tehran	8 154 051	N		N	N		Iran (Islamic Republic of)
Tokyo	9 272 740						Japan
Toluca	2 225 286	S	N	N			Mexico
Toronto	2 876 095	N	N	N			Canada
Yangon	5 209 541						Myanmar
Yaounde	2 873 567			N ⊙			Cameroon
Yokohama	3 724 844						Japan

APPENDIX V: STATUS OF THE WHO FRAMEWORK CONVENTION ON TOBACCO CONTROL

Appendix V shows the status of the WHO Framework Convention on Tobacco Control (WHO FCTC).

Ratification is the international act by which countries that have already signed a convention formally state their consent to be bound by it. Accession is the international act by which countries that have not signed a treaty/convention formally state their consent to be bound by it. Acceptance and approval are the legal equivalent to ratification. Signature of a convention indicates that a country is not legally bound by the treaty but is committed not to undermine its provisions.

The WHO FCTC entered into force on 27 February 2005. The treaty remains open for ratification, acceptance, approval, formal confirmation and accession indefinitely for States and eligible regional economic integration organizations wishing to become Parties to it.

Table 5.1

Status of the WHO Framework Convention on Tobacco Control, as of 8 May 2019

* Ratification is the international act by which countries that have already signed a treaty or convention formally state their consent to be bound by it.

[a] Accession is the international act by which countries that have not signed a treaty/convention formally state their consent to be bound by it.

[A] Acceptance is the international act, similar to ratification, by which countries that have already signed a treaty/convention formally state their consent to be bound by it.

[AA] Approval is the international act, similar to ratification, by which countries that have already signed a treaty/convention formally state their consent to be bound by it.

[c] Formal confirmation is the international act corresponding to ratification by a State, whereby an international organization (in the case of the WHO FCTC, competent regional economic integration organizations) formally state their consent to be bound by a treaty/convention.

[d] Succession is the international act, however phrased or named, by which successor States formally state their consent to be bound by treaties/conventions originally entered into by their predecessor State.

COUNTRY	DATE OF SIGNATURE	DATE OF RATIFICATION* (OR LEGAL EQUIVALENT)
Afghanistan	29 June 2004	13 August 2010
Albania	29 June 2004	26 April 2006
Algeria	20 June 2003	30 June 2006
Andorra		
Angola	29 June 2004	20 September 2007
Antigua and Barbuda	28 June 2004	5 June 2006
Argentina	25 September 2003	
Armenia		29 November 2004 [a]
Australia	5 December 2003	27 October 2004
Austria	28 August 2003	15 September 2005
Azerbaijan		1 November 2005 [a]
Bahamas	29 June 2004	3 November 2009
Bahrain		20 March 2007 [a]
Bangladesh	16 June 2003	14 June 2004
Barbados	28 June 2004	3 November 2005
Belarus	17 June 2004	8 September 2005
Belgium	22 January 2004	1 November 2005
Belize	26 September 2003	15 December 2005
Benin	18 June 2004	3 November 2005
Bhutan	9 December 2003	23 August 2004
Bolivia (Plurinational State of)	27 February 2004	15 September 2005
Bosnia and Herzegovina		10 July 2009 [a]
Botswana	16 June 2003	31 January 2005
Brazil	16 June 2003	3 November 2005
Brunei Darussalam	3 June 2004	3 June 2004
Bulgaria	22 December 2003	7 November 2005
Burkina Faso	22 December 2003	31 July 2006
Burundi	16 June 2003	22 November 2005
Cabo Verde	17 February 2004	4 October 2005
Cambodia	25 May 2004	15 November 2005
Cameroon	13 May 2004	3 February 2006
Canada	15 July 2003	26 November 2004
Central African Republic	29 December 2003	7 November 2005
Chad	22 June 2004	30 January 2006
Chile	25 September 2003	13 June 2005
China	10 November 2003	11 October 2005
Colombia		10 April 2008 [a]
Comoros	27 February 2004	24 January 2006
Congo	23 March 2004	6 February 2007
Cook Islands	14 May 2004	14 May 2004
Costa Rica	3 July 2003	21 August 2008
Côte d'Ivoire	24 July 2003	13 August 2010
Croatia	2 June 2004	14 July 2008
Cuba	29 June 2004	
Cyprus	24 May 2004	26 October 2005
Czechia	16 June 2003	1 June 2012
Democratic People's Republic of Korea	17 June 2003	27 April 2005
Democratic Republic of the Congo	28 June 2004	28 October 2005
Denmark	16 June 2003	16 December 2004
Djibouti	13 May 2004	31 July 2005
Dominica	29 June 2004	24 July 2006
Dominican Republic		
Ecuador	22 March 2004	25 July 2006
Egypt	17 June 2003	25 February 2005
El Salvador	18 March 2004	21 July 2014
Equatorial Guinea		17 September 2005 [a]
Eritrea		
Estonia	8 June 2004	27 July 2005
Eswatini	29 June 2004	13 January 2006
Ethiopia	25 February 2004	25 March 2014
European Union	16 June 2003	30 June 2005 [c]
Fiji	3 October 2003	3 October 2003
Finland	16 June 2003	24 January 2005
France	16 June 2003	19 October 2004 [AA]
Gabon	22 August 2003	20 February 2009
Gambia	16 June 2003	18 September 2007
Georgia	20 February 2004	14 February 2006
Germany	24 October 2003	16 December 2004
Ghana	20 June 2003	29 November 2004
Greece	16 June 2003	27 January 2006
Grenada	29 June 2004	14 August 2007
Guatemala	25 September 2003	16 November 2005
Guinea	1 April 2004	7 November 2007
Guinea-Bissau		7 November 2008 [a]
Guyana		15 September 2005 [a]
Haiti	23 July 2003	
Honduras	18 June 2004	16 February 2005
Hungary	16 June 2003	7 April 2004
Iceland	16 June 2003	14 June 2004
India	10 September 2003	5 February 2004
Indonesia		
Iran (Islamic Republic of)	16 June 2003	6 November 2005
Iraq	29 June 2004	17 March 2008
Ireland	16 September 2003	7 November 2005
Israel	20 June 2003	24 August 2005
Italy	16 June 2003	2 July 2008
Jamaica	24 September 2003	7 July 2005
Japan	9 March 2004	8 June 2004 [A]
Jordan	28 May 2004	19 August 2004
Kazakhstan	21 June 2004	22 January 2007
Kenya	25 June 2004	25 June 2004
Kiribati	27 April 2004	15 September 2005
Kuwait	16 June 2003	12 May 2006
Kyrgyzstan	18 February 2004	25 May 2006
Lao People's Democratic Republic	29 June 2004	6 September 2006
Latvia	10 May 2004	10 February 2005
Lebanon	4 March 2004	7 December 2005
Lesotho	23 June 2004	14 January 2005
Liberia	25 June 2004	15 September 2009
Libya	18 June 2004	7 June 2005
Lithuania	22 September 2003	16 December 2004
Luxembourg	16 June 2003	30 June 2005

Table 5.1

Status of the WHO Framework Convention on Tobacco Control, as of 8 May 2019 (continued)

* Ratification is the international act by which countries that have already signed a treaty or convention formally state their consent to be bound by it.

[a] Accession is the international act by which countries that have not signed a treaty/convention formally state their consent to be bound by it.

[A] Acceptance is the international act, similar to ratification, by which countries that have already signed a treaty/convention formally state their consent to be bound by it.

[AA] Approval is the international act, similar to ratification, by which countries that have already signed a treaty/convention formally state their consent to be bound by it.

[c] Formal confirmation is the international act corresponding to ratification by a State, whereby an international organization (in the case of the WHO FCTC, competent regional economic integration organizations) formally state their consent to be bound by a treaty/convention.

[d] Succession is the international act, however phrased or named, by which successor States formally state their consent to be bound by treaties/conventions originally entered into by their predecessor State.

COUNTRY	DATE OF SIGNATURE	DATE OF RATIFICATION* (OR LEGAL EQUIVALENT)
Madagascar	24 September 2003	22 September 2004
Malawi		
Malaysia	23 September 2003	16 September 2005
Maldives	17 May 2004	20 May 2004
Mali	23 September 2003	19 October 2005
Malta	16 June 2003	24 September 2003
Marshall Islands	16 June 2003	8 December 2004
Mauritania	24 June 2004	28 October 2005
Mauritius	17 June 2003	17 May 2004
Mexico	12 August 2003	28 May 2004
Micronesia (Federated States of)	28 June 2004	18 March 2005
Monaco		
Mongolia	16 June 2003	27 January 2004
Montenegro		23 October 2006 [d]
Morocco	16 April 2004	
Mozambique	18 June 2003	14 July 2017
Myanmar	23 October 2003	21 April 2004
Namibia	29 January 2004	7 November 2005
Nauru		29 June 2004 [a]
Nepal	3 December 2003	7 November 2006
Netherlands	16 June 2003	27 January 2005 [A]
New Zealand	16 June 2003	27 January 2004
Nicaragua	7 June 2004	9 April 2008
Niger	28 June 2004	25 August 2005
Nigeria	28 June 2004	20 October 2005
Niue	18 June 2004	3 June 2005
North Macedonia		30 June 2006 [a]
Norway	16 June 2003	16 June 2003 [AA]
Oman		9 March 2005 [a]
Pakistan	18 May 2004	3 November 2004
Palau	16 June 2003	12 February 2004
Panama	26 September 2003	16 August 2004
Papua New Guinea	22 June 2004	25 May 2006
Paraguay	16 June 2003	26 September 2006
Peru	21 April 2004	30 November 2004
Philippines	23 September 2003	6 June 2005
Poland	14 June 2004	15 September 2006
Portugal	9 January 2004	8 November 2005 [AA]
Qatar	17 June 2003	23 July 2004
Republic of Korea	21 July 2003	16 May 2005
Republic of Moldova	29 June 2004	3 February 2009
Romania	25 June 2004	27 January 2006
Russian Federation		3 June 2008 [a]
Rwanda	2 June 2004	19 October 2005
Saint Kitts and Nevis	29 June 2004	21 June 2011
Saint Lucia	29 June 2004	7 November 2005
Saint Vincent and the Grenadines	14 June 2004	29 October 2010
Samoa	25 September 2003	3 November 2005
San Marino	26 September 2003	7 July 2004
Sao Tome and Principe	18 June 2004	12 April 2006
Saudi Arabia	24 June 2004	9 May 2005
Senegal	19 June 2003	27 January 2005
Serbia	28 June 2004	8 February 2006
Seychelles	11 September 2003	12 November 2003
Sierra Leone		22 May 2009 [a]
Singapore	29 December 2003	14 May 2004
Slovakia	19 December 2003	4 May 2004
Slovenia	25 September 2003	15 March 2005
Solomon Islands	18 June 2004	10 August 2004
Somalia		
South Africa	16 June 2003	19 April 2005
South Sudan		
Spain	16 June 2003	11 January 2005
Sri Lanka	23 September 2003	11 November 2003
Sudan	10 June 2004	31 October 2005
Suriname	24 June 2004	16 December 2008
Sweden	16 June 2003	7 July 2005
Switzerland	25 June 2004	
Syrian Arab Republic	11 July 2003	22 November 2004
Tajikistan		21 June 2013 [a]
Thailand	20 June 2003	8 November 2004
Timor-Leste	25 May 2004	22 December 2004
Togo	12 May 2004	15 November 2005
Tonga	25 September 2003	8 April 2005
Trinidad and Tobago	27 August 2003	19 August 2004
Tunisia	22 August 2003	7 June 2010
Turkey	28 April 2004	31 December 2004
Turkmenistan		13 May 2011 [a]
Tuvalu	10 June 2004	26 September 2005
Uganda	5 March 2004	20 June 2007
Ukraine	25 June 2004	6 June 2006
United Arab Emirates	24 June 2004	7 November 2005
United Kingdom of Great Britain and Northern Ireland	16 June 2003	16 December 2004
United Republic of Tanzania	27 January 2004	30 April 2007
United States of America	10 May 2004	
Uruguay	19 June 2003	9 September 2004
Uzbekistan		15 May 2012 [a]
Vanuatu	22 April 2004	16 September 2005
Venezuela (Bolivarian Republic of)	22 September 2003	27 June 2006
Viet Nam	3 September 2003	17 December 2004
Yemen	20 June 2003	22 February 2007
Zambia		23 May 2008 [a]
Zimbabwe		4 December 2014 [a]

Source: United Nations Treaty Collection web site https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IX-4&chapter=9&lang=en, accessed 8 May 2019).

Though not a Member State of WHO, as a Member State of the United Nations, Liechtenstein is also eligible to become Party to the WHO FCTC, though it has taken no action to do so.

On submitting instruments to become Party to the WHO FCTC, some Parties have included notes and/or declarations. All notes can be viewed at https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IX-4&chapter=9&lang=en

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