

THE GLOBAL STATE OF TOBACCO HARM REDUCTION

A SITUATION REPORT 2026



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The Global State of Tobacco Harm Reduction 2026: A Situation Report

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Lead Authors: Harry Shapiro and Giorgi Mzhavanadze

Research Analyst: Tomasz Jerzyński

Editor: Ruth Goldsmith

Report and website production coordination: Grzegorz Król

Report design and layout; charts: Urszula Biskupska

Photos: depositphotos.com, GSTHR flickr.com

Print: WEDA sc.

Project Manager: David MacKintosh

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Knowledge•Action•Change, 5 Heatherfold Way, Pinner, Middlesex, HA5 2LG

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Key concepts

Tobacco harm reduction (THR) is a potentially life-saving approach for millions of people worldwide who currently use high-risk tobacco products. It offers people the chance to switch to a range of **safer nicotine products** that pose fewer risks to health.

Most people know that smoking tobacco is harmful, and that people smoke to consume **nicotine**. It is less well known that nicotine itself does not cause the severe illnesses associated with high-risk tobacco use. Nicotine is a comparatively low-risk drug, but its effects encourage repeated use. This is one of the reasons people find it hard to stop smoking, even when they know it is bad for their health.

The most dangerous way of using nicotine is by burning a cigarette and inhaling the smoke. Burning tobacco releases tar and gases containing thousands of toxins, many of which pose a risk of severe illness, leading to premature death in half of all who smoke long-term.

Safer nicotine products (SNP) are non-combustible: none of these products burn tobacco and some do not contain any tobacco at all. They include **nicotine vapes** (sometimes referred to as e-cigarettes), tobacco-free **nicotine pouches**, Swedish-style **snus** (an oral tobacco), many US smokeless (chewing) tobaccos and **heated tobacco products**. Many of these products have only been developed since the turn of the 21st century.

In public health, **harm reduction** reduces health risks by providing people with safer alternative products and/or encouraging less risky behaviours, rather than by banning those products or behaviours. Emerging in the fight against HIV/AIDS in the 1980s, it has developed into a range of evidence-based, humane and cost-effective practices that save countless lives every year. International treaties make it clear that **health is a universal human right**, and the UN has accepted that harm reduction for people who use drugs is part of the right to health. Unfortunately, too many people who smoke are currently unable to exercise their right to health through harm reduction.

About the Global State of Tobacco Harm Reduction (GSTHR)

The Global State of Tobacco Harm Reduction (GSTHR) is a multi-component project created and delivered by Knowledge•Action•Change (K•A•C). It is funded by a grant from Global Action to End Smoking.

The GSTHR both generates and communicates information and evidence about THR for specialist and non-specialist audiences. Its website at <https://gsthr.org> provides researchers, academics, policymakers and media with a unique tool to deepen their understanding of the subject. Powered by the world's largest THR database, the free-to-access online resource supplies data on the use, availability and regulation of SNP, as well as smoking prevalence and mortality, across over 200 countries and regions.

Five major GSTHR reports (2018, 2020, 2022, 2024 and now 2026) have documented the history, development and potential future of THR. The GSTHR's short, policy-focused Briefing Papers are available in up to 13 languages, making

THR concepts accessible to a global audience. Collectively, GSTHR publications offer valuable insights into the scientific, policy and social evolution of THR. All publications can be accessed at <https://gsthr.org>

This report is the work of the GSTHR cluster, with the support of the K•A•C technical team. It draws on multiple publicly available sources of information including market data, regulatory regimes, data on the epidemiology of smoking and use of SNP, and the extensive country-based information held in the online GSTHR database. Other sources include academic journals, tobacco policy papers and research, market analyses, government websites, international tobacco control monitoring, mainstream and specialist journalism and social media commentary. We have also benefited from the expertise of an extensive global network of colleagues, peers and friends, for whose help we are grateful.

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Introduction: The long goodbye?

In this Global State of Tobacco Harm Reduction (GSTHR) report, we focus on the tobacco harm reduction (THR) landscape between January 2025 and the early months of 2026. This period has seen an acceleration of regulatory and market developments and an intensification of opposition to THR, prompting the need for a timely, authoritative synthesis in a fast-moving public health environment.

Smoking has been the primary mode of global nicotine consumption for over a century and unfortunately remains so today. There are still one billion people who currently smoke tobacco according to the World Health Organization's (WHO) latest data. Smoking is 'alive and well', with combustible cigarettes generating a little under a trillion dollars a year for the world's major tobacco companies.

Products fail if they do not attract consumer interest at scale. That is what happened to earlier attempts at non-combustible nicotine. But we are now deep into a period of transition. The first commercially viable nicotine vapes have been available for twenty years; the market has expanded to include heated tobacco products (HTP), a resurgence of snus and, more recently, oral nicotine pouches. A whole new global nicotine industry has emerged, with analysts predicting significant growth in the years ahead. And research carried out for this report has led to a revised estimation of the global number of safer nicotine product (SNP) users that suggests consumer interest is on the rise (see Section 2.1). We have every reason to believe the number of people who will choose SNP over combustibles will continue to increase, despite the range of legal and other obstacles they face in doing so.

The deeply-embedded financial, political, cultural and social investment in smoking has lasted for over a century. As we approach the 2030s, will it be a long goodbye to combustible tobacco products? Or will the momentum behind the transition to safer products only continue to accelerate?

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•
our revised estimation of the global number of SNP users suggests consumer interest is on the rise



Trends, data and evidence

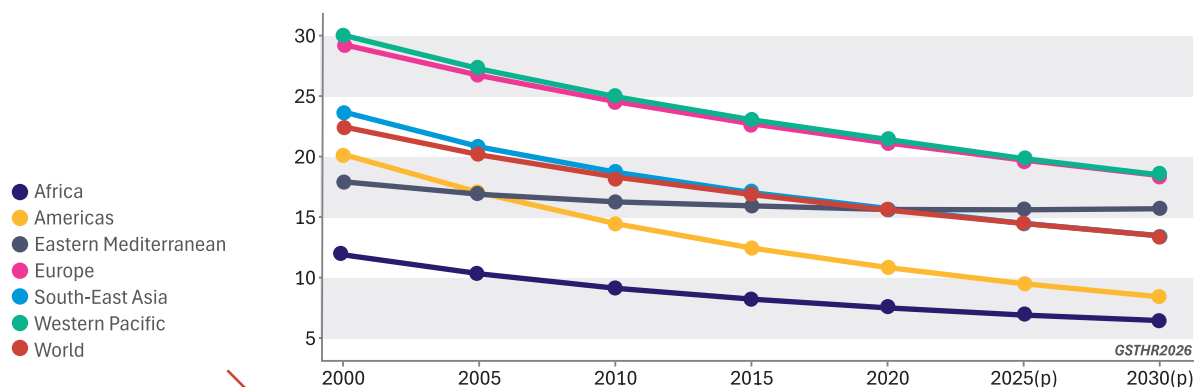
2.1 Consumers, products, and markets

Global smoking prevalence trends

To assess the current state of tobacco harm reduction, and the limitations of existing tobacco control strategies, an understanding of long-term trends in tobacco use and cigarette smoking is essential. Global prevalence data provide a useful high-level picture of progress in reducing tobacco use, but closer inspection reveals important asymmetries in both the pace and distribution of decline.

According to the latest World Health Organization (WHO) estimates,¹ 19.1% of people aged 15 years and older were using tobacco in 2024. This represents a significant reduction from 2000, when that figure stood at 29.1% [1]. Tobacco use prevalence is projected to decline further to 17.6% by 2030. In absolute terms, the number of current tobacco users fell from 1.4 billion in 2000 to 1.2 billion in 2024. The WHO predicts a further decrease to 1.1 billion by 2030 [2].

Current cigarette smoking prevalence (%)



Note: (p) = projected. Regional groupings follow the World Health Organization's regional classification. GSTHR2026. Data source: WHO, 2025 (a).

From a public health perspective, it would be preferable to distinguish tobacco products associated with substantially reduced harm, such as HTP and snus, from conventional tobacco products. Unfortunately, the WHO's headline tobacco use and tobacco smoking statistics do not allow such a breakdown. However, specific data are available for cigarette smoking, offering clearer insight into combustible tobacco use trends. Between 2000 and 2024, global cigarette smoking prevalence declined

¹ WHO Global Health Observatory data (updated January 15, 2026). The WHO defines tobacco use as the use of any tobacco-containing product, including cigarettes, pipes, cigars, cigarillos, waterpipes (hookah, shisha), bidis, kretek, HTP, and all forms of smokeless (oral and nasal) tobacco. Products that do not contain tobacco, such as Electronic Nicotine Delivery Systems (ENDS), which is how the WHO refers to nicotine vapes, are excluded from this definition. As a result, WHO tobacco use estimates include two forms of SNP, HTP and Swedish-style snus, but exclude e-cigarettes and nicotine pouches. Prevalence estimates reported here are simple averages of country-level prevalence rates and do not weight countries by population size.

from 22.4% to 14.9%, with a further reduction to 13.8% projected by 2030 [1]. Over the same period, the number of cigarette smokers decreased from 975 million to 830 million, and is projected to fall further to 794 million by 2030 [2].

While these overarching trends point to sustained global progress, a more detailed examination reveals several important caveats.

Firstly, the rate of decline in cigarette smoking has slowed over time. More than half of the total reduction occurred during 2000–2010, when prevalence fell by four percentage points, equivalent to a 17.9% relative decline. During 2010–2020, the decline moderated to 2.7 percentage points (a 14.4% relative reduction). For 2020–2030, WHO projections indicate a further decrease of only 1.9 percentage points, corresponding to a 12.3% relative decline. This means that while progress has continued, it has been at a diminishing pace.

Secondly, the decline in cigarette smoking prevalence has been very unevenly distributed across different regions and countries. In the Eastern Mediterranean region, for example, the reduction in smoking prevalence appears to have stalled. There has been little change since 2015, when prevalence stood at 15.9%; projections show stability at around 16% through to 2030. At the national level, it is shocking to note that 18 countries are expected to see increases in cigarette smoking prevalence. These include Lebanon (+18 percentage points), Palestine (+16 percentage points), Egypt (+8 percentage points), and Lesotho (+8 percentage points). Furthermore, when slow or stalled prevalence decline is combined with population growth, the result is an increase in the absolute number of cigarette smokers. This applies across several regions by 2030 compared with 2000, notably the Eastern Mediterranean (+50%), Africa (+25%), and the Western Pacific (+4%).

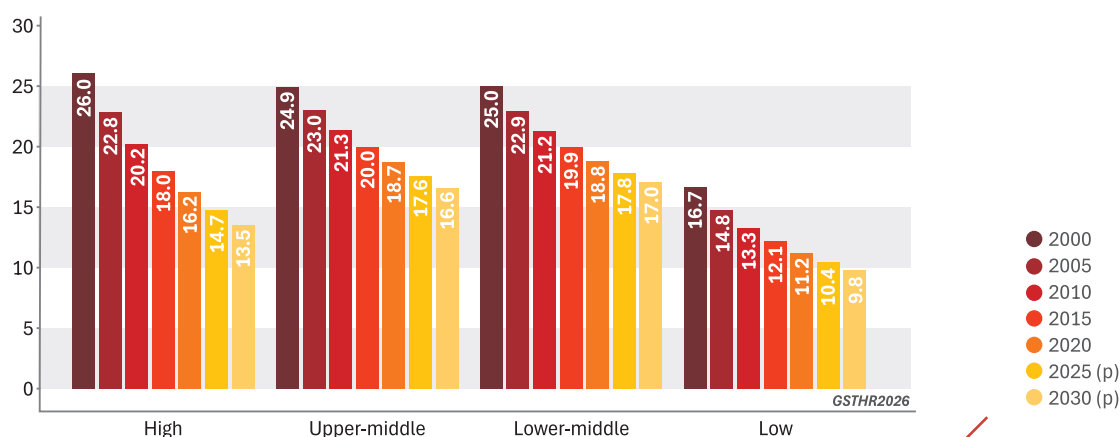
Thirdly, the income level of a country strongly shapes its smoking trajectory. High-income countries (HICs) have achieved the steepest reductions in cigarette smoking prevalence, while lower-middle-income (LMICs) and low-income countries (LICs) have experienced the slowest progress. LMICs currently record the highest smoking prevalence; this is projected to remain the case in the coming decades, followed by upper-middle-income countries (UMICs).

the decline in cigarette smoking prevalence is slowing and has been unevenly distributed

by 2030, the absolute number of cigarette smokers will rise in the Eastern Mediterranean (+50%), Africa (+25%), and the Western Pacific (+4%) in comparison to 2000, undermining the headline narrative of global progress

18 countries are projected to see cigarette smoking prevalence increase led by Lebanon (+18 pp), Palestine (+16 pp), Egypt (+8 pp), and Lesotho (+8 pp)

Current cigarette smoking prevalence (%) by country income group (World Bank 2000 classification)



declines in smoking are uneven, with rapid reductions in high-income countries but much slower progress in many low- and middle-income countries

every country identified as a THR leader – Norway, Iceland, UK, New Zealand, Sweden, Canada – ranks among the world's top performers in smoking reduction, a pattern conventional tobacco control alone cannot explain

Overall, these patterns indicate that smoking is not on a uniform or inevitable path toward elimination. In many parts of the world, declines are slowing, stalling, or reversing, and in several regions the absolute number of people who smoke continues to grow. While conventional tobacco control measures have delivered substantial gains in some settings, the global picture suggests that existing approaches alone are insufficient to sustain rapid and equitable reductions in smoking, particularly in low- and middle-income regions.

The WHO does not yet acknowledge the important role of tobacco harm reduction. But WHO data reveal that many of the countries identified by observers as tobacco harm reduction leaders are seeing the steepest declines in cigarette smoking. Norway, Iceland, the United Kingdom and New Zealand all appear in the global top tier for reductions in smoking prevalence in the 2015–2025 period. All of these countries provide strong evidence to support the positive impact of one or more SNP categories as substitutes for cigarettes. Sweden and Canada also rank among the strongest performers. For further detail and analysis, see our individual GSTHR Briefing Papers and country profiles on the GSTHR THR Database.

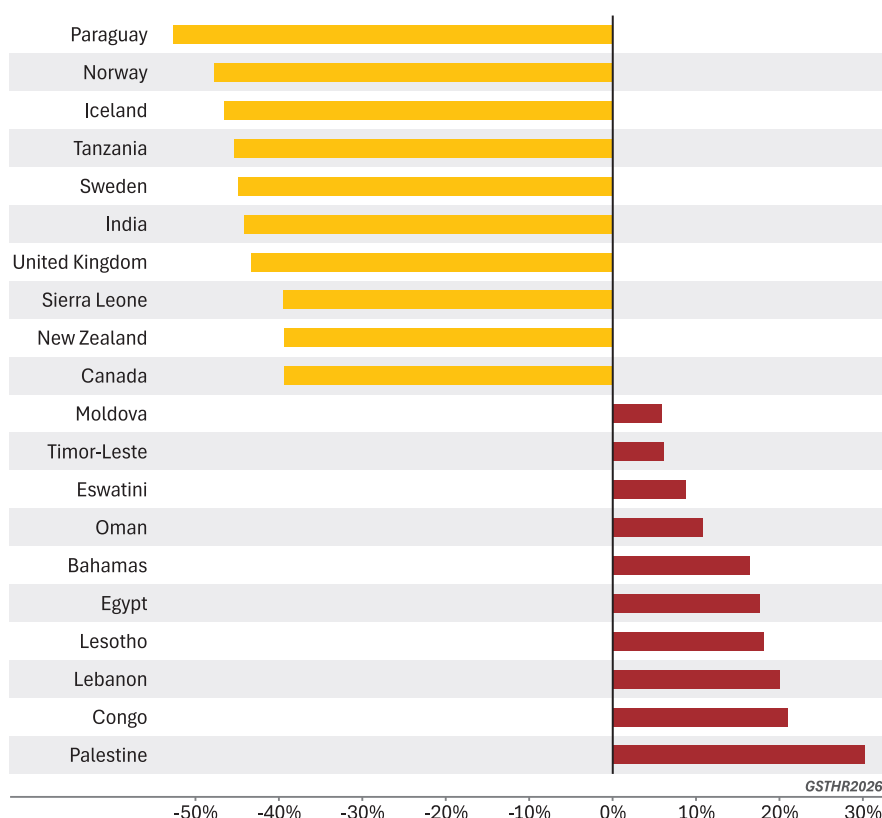
The presence of India, Paraguay, Tanzania, and Sierra Leone among countries reporting the largest declines in 2015–2025 reflects what can best be described as a statistical mirage. In these cases, even where factually accurate, reported reductions in cigarette smoking do not necessarily translate into genuine reductions in population-level harm. They reflect very different underlying dynamics. In India, Paraguay, and Tanzania, baseline cigarette smoking prevalence was already below 10% in 2015, with tobacco use primarily driven by other smoked and smokeless products. As a result, seemingly large percentage declines often correspond to only marginal changes in percentage points. In addition, discrepancies between WHO estimates and local data sources further complicate interpretation in some countries.

For example, in India, evidence on cigarette trends remains mixed across data sources. However, there is consistent evidence of declining use of bidi, a local type of smoking tobacco, alongside substantial increases in smokeless products such as gutkha and leaf tobacco [3–5]. Recent household expenditure data indicate that overall tobacco use has increased by more than 30% over the last decade, with substantial growth in the number of tobacco-consuming households. This has been driven by rising cigarette consumption in urban areas and gutkha consumption in rural areas [5].

In Tanzania and Sierra Leone, weak surveillance systems, substantial illicit trade, and growing use of informal or non-cigarette products including smokeless tobacco such as Kuber, Ugoro, and Kush, undermine cigarette prevalence as a proxy for total risk exposure [6]. Paraguay is more ambiguous. It functions as a global hub for illicit cigarette production, but evidence suggests domestic smoking prevalence has genuinely declined [7]. This decline coincides with strong smoke-free legislation and rising adult vaping prevalence (approximately 4.8% by 2022), indicating that some of the decline in cigarette use may reflect substitution toward safer products [8, 9].



Changes in current cigarette smoking prevalence 2015–2025: Top 10 countries with positive and negative change (%)



GSTHR2026. Data source: WHO, 2025 (a).

Evidence of substitution

Beyond the global decline in tobacco use described above, national time-series data increasingly reveal patterns consistent with substitution between combustible cigarettes and SNPs. In several countries where reliable prevalence data exist for both smoking and non-combustible nicotine products, declining smoking rates coincide with rising use of alternatives such as nicotine vapes, HTP, snus, or nicotine pouches. In isolation, these patterns cannot demonstrate individual switching behaviour, but they provide descriptive epidemiological evidence that the uptake of SNPs is occurring alongside reductions in cigarette smoking.

To explore these dynamics, we assembled time-series data for smoking and SNP use between 2010 and 2025 across 28 countries where the trajectory of smoking and non-combustible product use moves in opposite directions – that is, as smoking prevalence declines, use of SNPs increases.²

The national time-series for vaping used in this analysis were constructed using the same methodological framework applied in the estimation of global vaping prevalence presented later in this report (Number of SNP users, Section 2.1). For other safer nicotine products (HTP, snus and nicotine pouches), national trends were constructed using simple extrapolation based on available survey

² The dataset includes Australia, Belgium, Canada, Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Lithuania, Malaysia, New Zealand, Norway, Poland, Portugal, Slovakia, South Korea, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

time-series data from 28 countries show “scissor” substitution patterns: as smoking prevalence declines, SNP use rises

in Sweden, Norway, Iceland, New Zealand and the UK, the trend lines have already crossed, indicating that SNP use has overtaken smoking prevalence, a pattern representative of a structural shift

observations. These estimates should be interpreted as approximations of national prevalence trends rather than precise measurements.

Malaysia is the only upper-middle-income country of the 28 selected, with the remaining 27 all classified as high-income countries [10]. This is consistent with the trends observed in the WHO global smoking prevalence data discussed above, and suggests that tobacco harm reduction is currently most advanced in high-income countries. In lower-income regions, very few consumers are benefiting from THR.

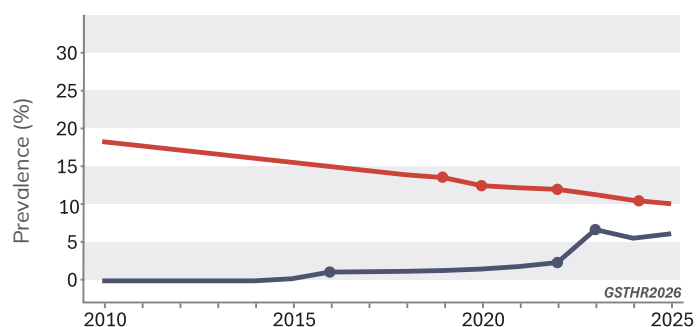
In the most advanced cases, the two trend lines – declining smoking prevalence and increasing SNP use - resemble a scissor shape. The two lines have already crossed, indicating that SNP use has overtaken smoking prevalence, and the lines are beginning to diverge again. This pattern can be observed in Sweden, Norway, Iceland, New Zealand, and the United Kingdom. In other countries, the trend lines are moving closer to each other, with a potential crossover expected in the future.

The product category most strongly associated with substitution differs by market. In some countries, nicotine vaping appears to dominate the transition away from cigarettes, in others heated tobacco products or oral nicotine products play a larger role. In several markets more than one type of SNP is expanding simultaneously, reflecting diversification of consumer choices as people move away from combustible tobacco to less harmful alternatives.

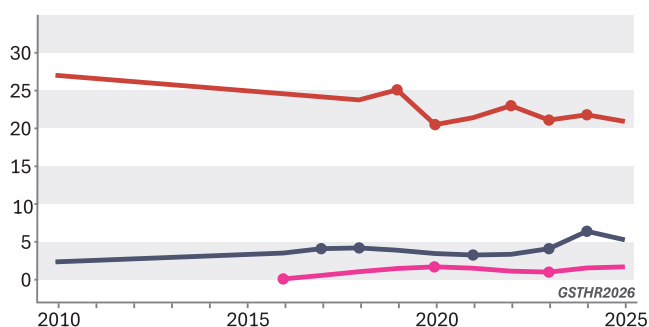
The most common pattern in the dataset is one in which nicotine vapes represent the principal non-combustible alternative associated with declining smoking prevalence. This pattern is observed in the United Kingdom, Canada, New Zealand, Ireland, France, the United States, Australia, Switzerland, Lithuania, Latvia, Estonia, Czechia, Belgium, Spain, Poland, Malaysia, and Italy. While the speed of change varies, the direction of the relationship is broadly consistent: cigarette smoking declines while vaping rises. In several of these markets, other SNP categories have also begun to expand alongside vaping. For example, HTP use has grown in Italy, Czechia, Latvia, and Lithuania.

Prevalence of current nicotine product use in:

Australia



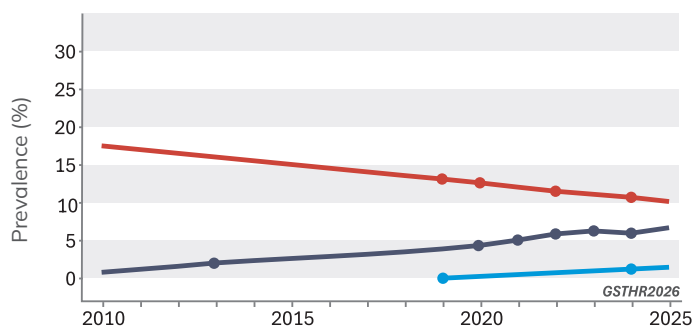
Belgium



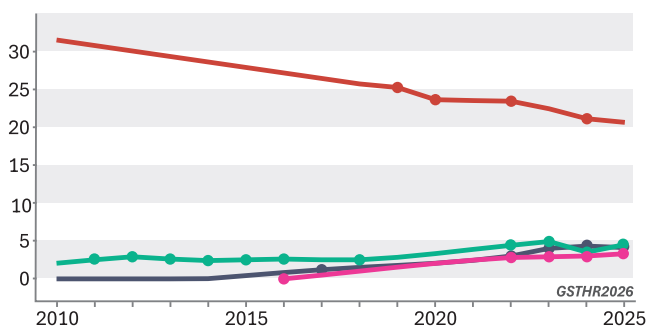
● Combustible tobacco
● Nicotine vapes
● Nicotine pouches
● Snus
● HTP
● Other smokeless



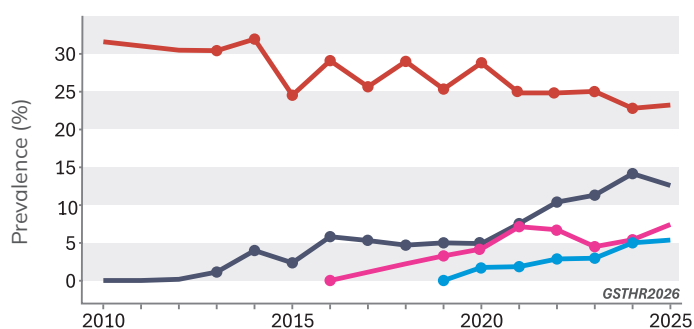
Canada



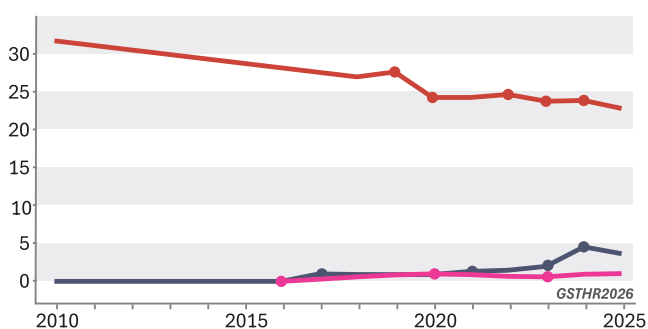
Switzerland



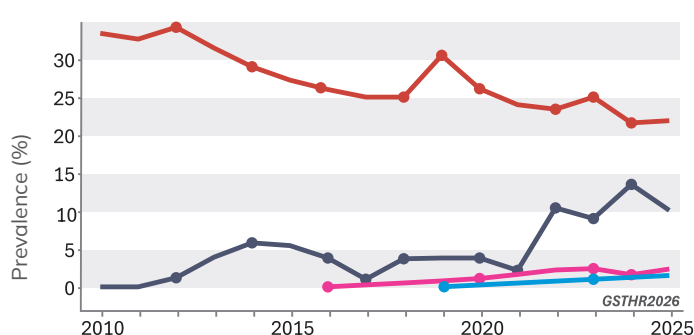
Czechia



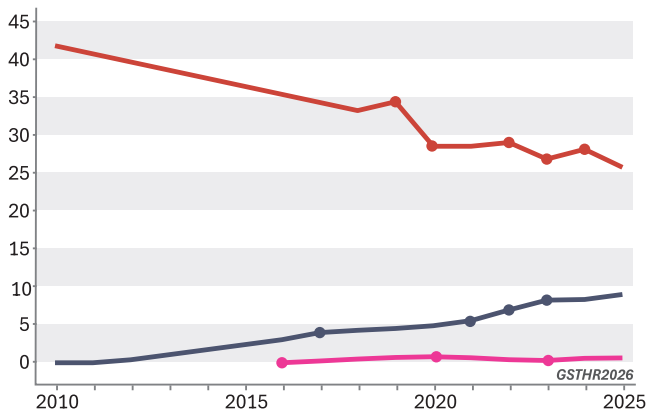
Spain



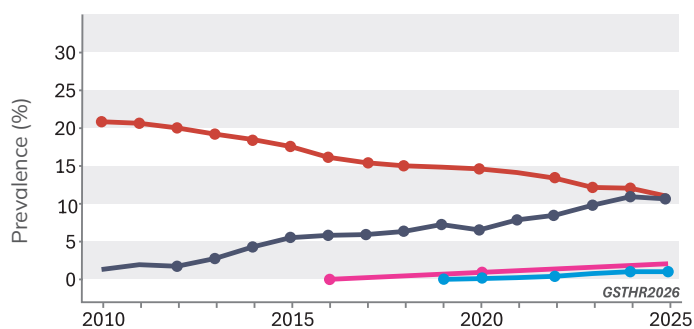
Estonia



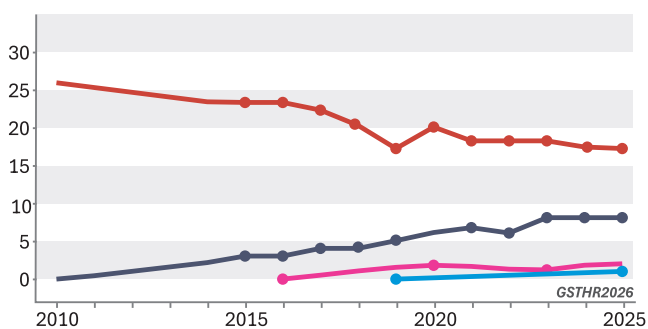
France



United Kingdom

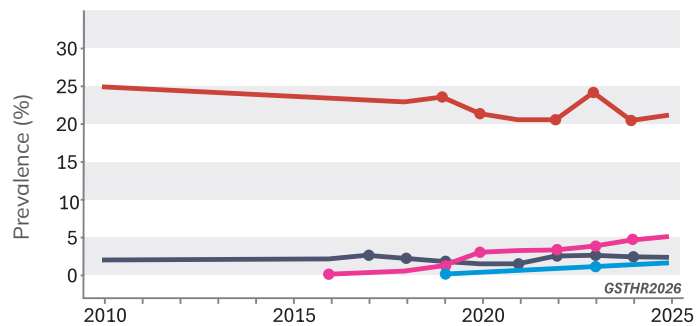


Ireland

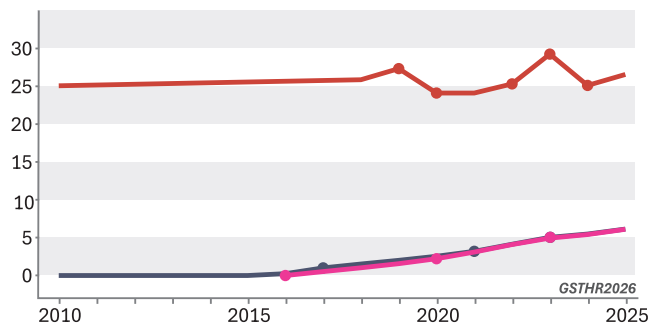


- Combustible tobacco
- Nicotine pouches
- Nicotine vapes
- Snus
- HTP
- Other smokeless

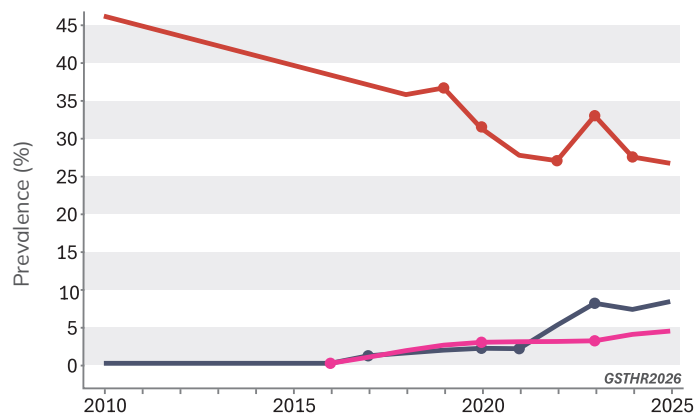
Italy



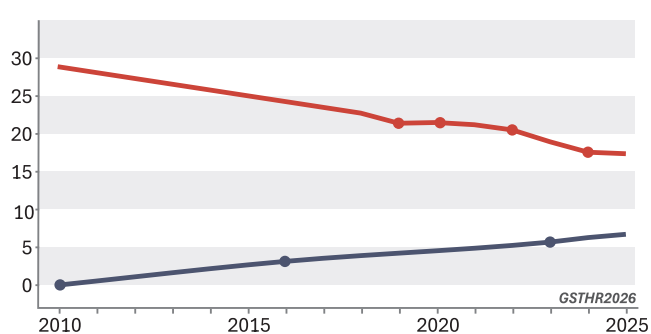
Lithuania



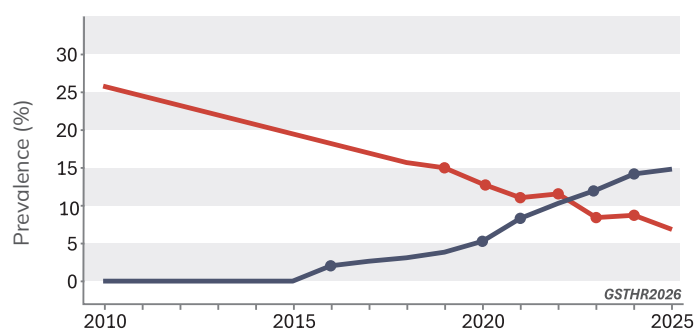
Latvia



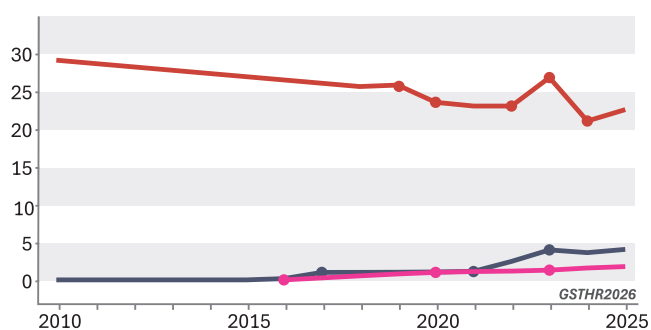
Malaysia



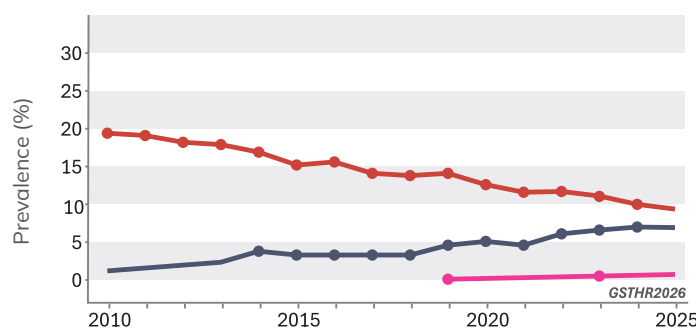
New Zealand



Poland



United States



Combustible tobacco
Nicotine vapes
HTP

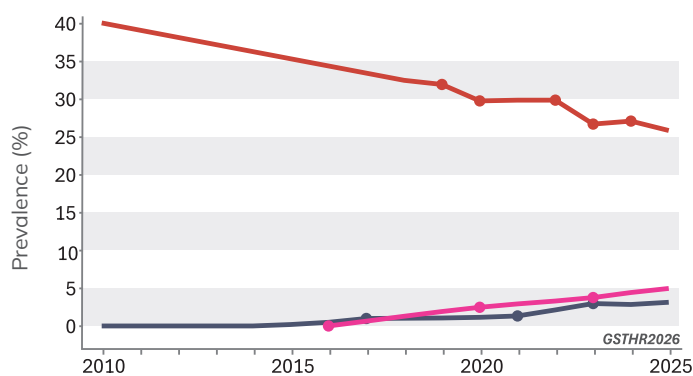
Nicotine pouches
Snus
Other smokeless

A second group of countries exhibit patterns where HTPs appear to play a more prominent role in the transition away from cigarettes. These include Japan, South Korea, Greece, Slovakia, Portugal, and Hungary, although uptake of nicotine vapes is also observed in these markets.

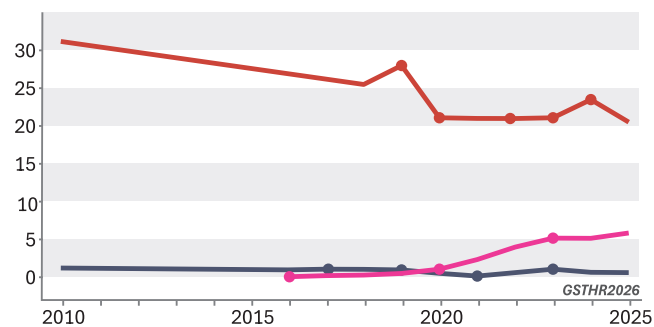


Prevalence of current nicotine product use in:

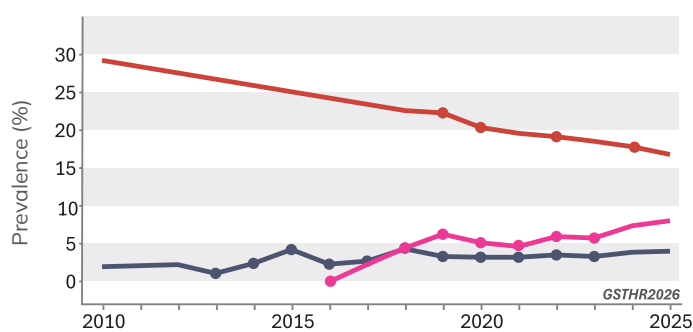
Slovakia



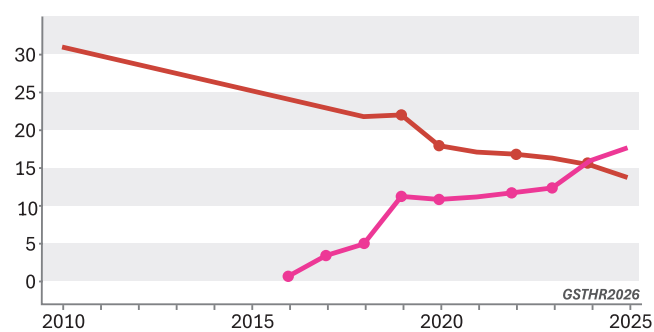
Portugal



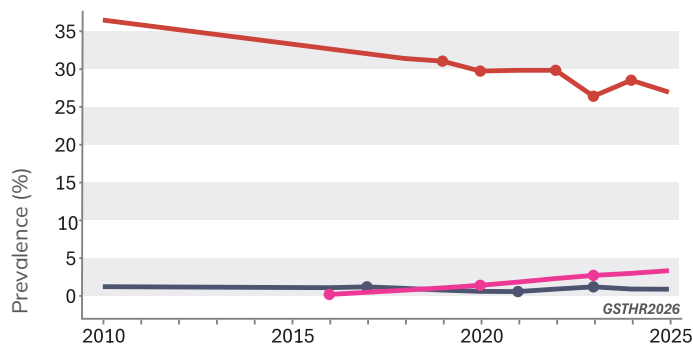
South Korea



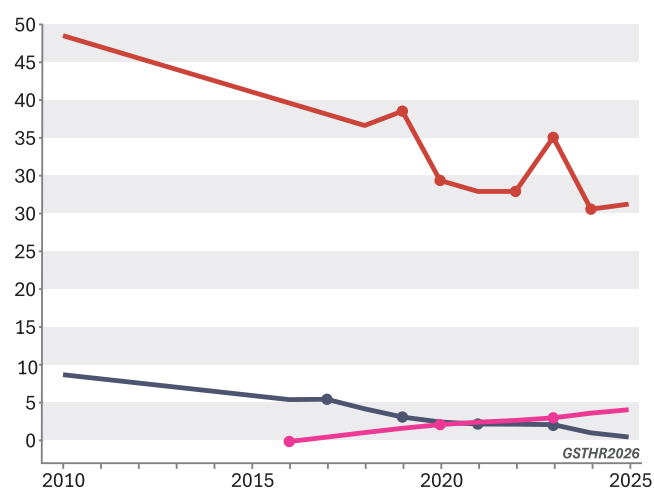
Japan



Hungary



Greece



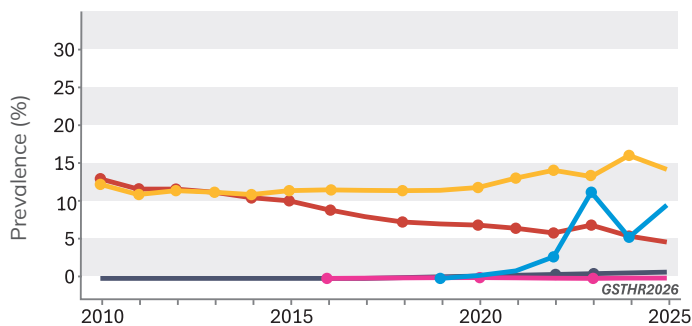
- Combustible tobacco
- Nicotine pouches
- Nicotine vapes
- Snus
- HTP
- Other smokeless

the dominant substitution product varies by market – there is no single ‘one-size-fits-all’ THR pathway

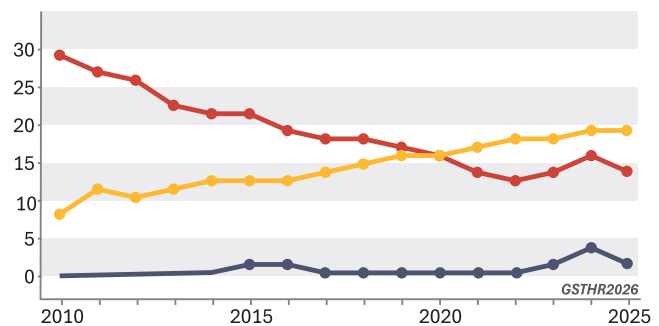
A third pattern is visible in Nordic countries, where oral nicotine products dominate the transition away from smoking. This group includes Sweden, Norway, Iceland, Denmark, and Finland. These countries have long traditions of smokeless nicotine use, particularly snus, which predate the modern expansion of vaping and heated tobacco products. Over the past two decades, cigarette smoking prevalence in these countries has declined to some of the lowest levels observed in Europe, while the use of oral nicotine products has increased.

Prevalence of current nicotine product use in:

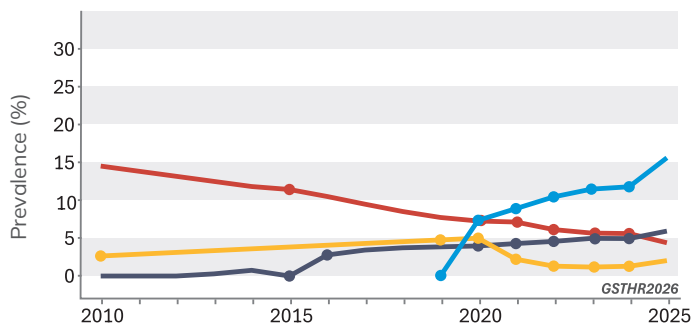
Sweden



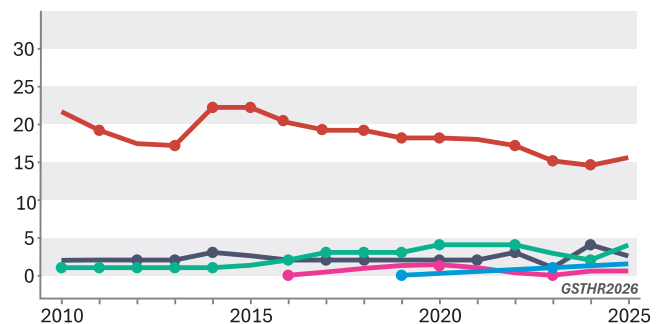
Norway



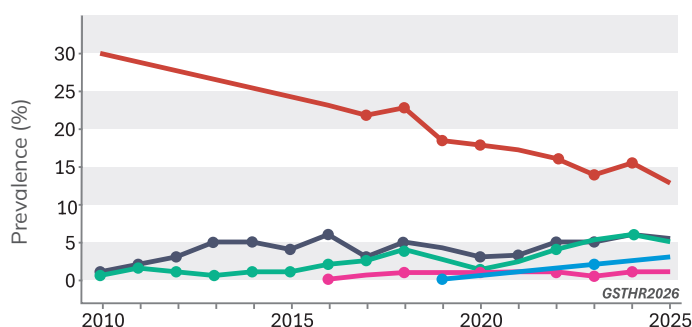
Iceland



Finland



Denmark



Combustible tobacco
Nicotine vapes
HTP
Nicotine pouches
Snus
Other smokeless

The evidence from across these 28 countries suggests that the expansion of SNP use frequently coincides with declining cigarette smoking.

However, several limitations should be noted.

Firstly, these estimates do not control for 'dual use'. This describes when people use both cigarettes and non-combustible products interchangeably. While it may represent a transitional phase as people quit smoking, it may also be a longer-lasting behaviour, as people select which products to use according to setting, location or preferences. Dual use means that the combined prevalence of SNPs cannot be interpreted as a direct measure of how many people have switched away from cigarettes. The net public health impact depends instead on the scale of reductions in cigarette consumption among these users.

Secondly, the analysis relies on aggregate national trends, which cannot directly identify individual behavioural transitions. Thirdly, survey definitions of 'current use' vary across countries, and some country-year estimates rely partly on model-based imputation where direct observations are unavailable.

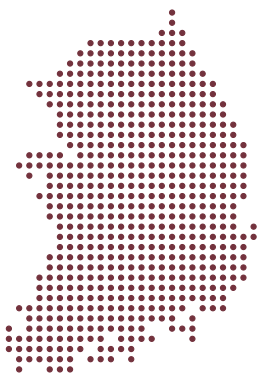
Despite these limitations, consistent patterns observed across diverse regulatory and cultural contexts suggest that the growth of SNP markets is occurring alongside, and may be contributing to, the continuing decline in cigarette smoking in many countries.

Focused case studies: South Korea, Ireland, and Estonia

In addition to the countries previously identified as THR leaders, a growing number of others are showing early but credible signs of harm reduction-relevant transitions. Several are not yet widely recognised in the literature. These cases are characterised by measurable uptake of SNP, declines in cigarette smoking, and policy environments that have – intentionally or unintentionally – allowed substitution to occur, by permitting the legal sale of one or more safer nicotine product types. Often, this has been in the absence of explicit risk-proportionate regulatory frameworks or supportive public health messaging.

While these trajectories remain incomplete and, in some cases, fragile, they provide important insights into how THR dynamics can emerge under different institutional and market conditions. This next section focuses on three countries that offer particularly clear examples of such substitution patterns: South Korea, Ireland, and Estonia.





South Korea

South Korea exemplifies an emerging THR trajectory driven primarily by consumer behaviour and market dynamics rather than explicit government endorsement. Long-run surveillance data document a substantial decline in cigarette smoking over the past two decades. Adult smoking prevalence fell from 35.1% in 1998 to 17.7% in 2022, representing an approximate 50% relative reduction. This decline has been particularly pronounced among men, among whom prevalence dropped from 66.3% in 1998 to 30.0% in 2022 [11]. This long-term trend is especially significant given South Korea's historically high male smoking rates relative to other high-income countries.

However, the reduction mostly occurred in the first few years of the twenty-first century. Although adult smoking prevalence had fallen to 25.3% by 2007, the years that followed saw a much slower decline to 22.3% in 2017.

In contrast, the post-2017 period marks a renewed acceleration in smoking decline, coinciding with the uptake of HTP following their entry to the Korean market. HTP brands were introduced nationally in 2017 and quickly gained popularity. By 2022, HTP use had reached 5.9% among adults, with marked gender differences (9.2% among men and 2.4% among women). Vapes also gained a foothold, with 3.5% current use in 2022 (5.6% among men and 1.3% among women) [11].

Over the same period, cigarette smoking prevalence declined to 17.7%, driven almost entirely by reductions among men, whose smoking rate fell from 38.1% in 2017 to 30.0% in 2022. Smoking among women declined only marginally, from 6.0% to 5.0%, underscoring the gendered nature of substitution dynamics in South Korea [11].

However, a more detailed analysis of tobacco and nicotine product use shows that, among men, cigarette smoking was practically flat from 2019 to 2023, alongside a high prevalence of poly-nicotine use – the use of two or more nicotine products by an individual.

HTP were the leading SNP used by Korean men. Their prevalence was high by international standards but remained relatively stable between 2019 and 2023, varying between 7.7% and 8.8%. Poly-nicotine use, measured here as the combined use of cigarettes with HTP or nicotine vaping products, increased substantially, from 1.8% in 2013 to 6.9% in 2023. This suggests that many Korean men are moving between, or concurrently using, cigarettes, HTP and vapes, rather than switching completely to a single alternative product. As previously noted, the net public health impact of these trends depends on the scale of reductions in individual cigarette consumption.

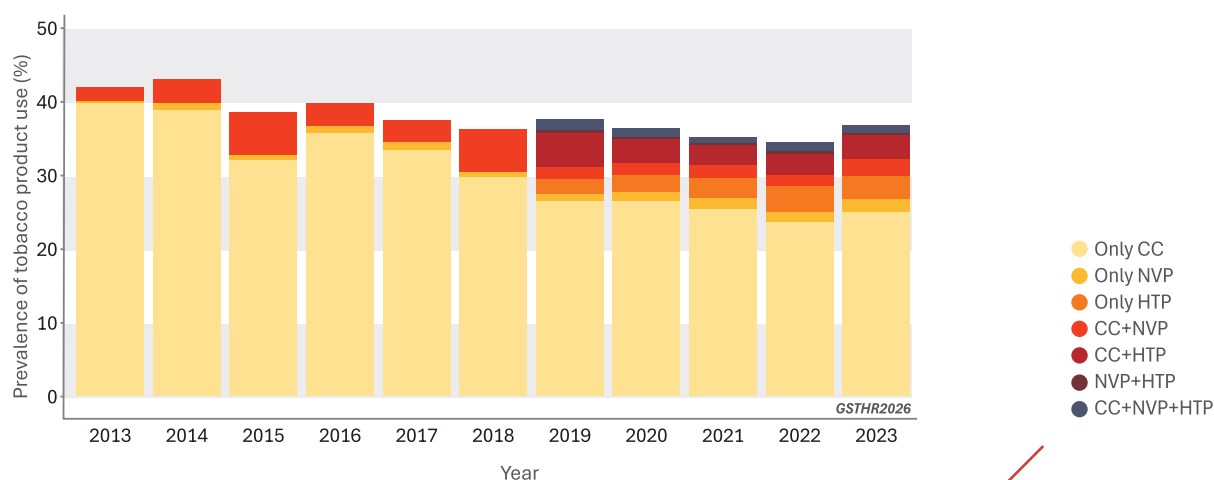
Importantly, progress in reducing cigarette smoking has not been evenly distributed across the population. Among men, smoking consistently remained concentrated among those with lower income, lower education, and those who were working in manual occupations. Declines were smaller in these groups than among more highly advantaged groups. The most concerning stagnation was observed among men living with severe mental illness, among whom cigarette smoking actually rose over the course of the decade (44.7% in 2013 vs. 47.2% in 2023) [12].

substitution in South Korea is profoundly gendered, with women largely left out of the transition

South Korea's smoking decline stalled between 2007 and 2017, but accelerated again following HTP market entry – consistent with consumer-led substitution delivering what conventional measures could not

by 2022, HTP use had reached 9.2% and vaping 5.6% among Korean men, but switching has been partial: poly-tobacco use among men rose from 1.8% (2013) to 6.9% (2023)

Prevalence of single- and poly-tobacco product use among adult men in South Korea, 2013–2023



CC: combustible cigarettes, NVP: nicotine vaping products, HTP: heated tobacco product. Poly-use refers to the use of more than two nicotine products. It should be noted that HTP use was measured only beginning in 2019, although HTPs were introduced in Korea in 2017. Data were from the Korea National Health and Nutrition Examination Survey, a nationally representative repeated cross-sectional survey, 2013–2023. All estimates were weighted using sampling weights provided by KNHANES. GSTHR2026. Data source: Adapted from Lee et al. (2026).

Market data mirror these behavioural trends. HTP captured a substantial share of the tobacco market a few years after their introduction, coinciding with a measurable decline in conventional cigarette sales volumes [13]. At the individual level, however, survey evidence consistently points to high levels of dual use. This indicates that switching has often been partial and transitional rather than immediate or exclusive [11, 13].

The policy environment reinforces the interpretation of South Korea as a market-led, rather than policy-driven, THR pathway. The government has not framed HTP as harm reduction or cessation tools. Official public health messaging has tended to focus on uncertainty and potential risks of product use, instead of communicating the comparative risks with continued smoking. HTP are regulated as tobacco products and are subject to excise taxation, pictorial health warnings, and advertising restrictions similar to those applied to cigarettes. Although tax differentials between cigarettes and HTP exist, they are relatively modest: HTP are taxed at approximately 90% of the cigarette excise burden [14]. As a result, incentives to switch appear to be driven more by product characteristics and consumer preference than by strong fiscal signals [15].

In this respect, South Korea may ultimately resemble the Japanese trajectory, where large-scale HTP adoption coincided with sustained declines in cigarette sales. Data also show that HTP uptake has not translated into widespread exclusive switching, and market transformation is occurring partly through dual and multiple product use, rather than ‘straightforward’ substitution. The stalled reduction in exclusive cigarette smoking among men in 2019–2023 is concerning. It indicates that South Korea’s market-led pathway may be delivering partial substitution, but not yet the scale of complete switching needed to maximise public health gains.

smoking reductions in South Korea were concentrated in higher-income, higher-education, and non-manual occupation groups

South Korea is a market-led THR pathway, not a policy-driven one, yet HTPs captured substantial market share within just a few years of introduction

the stalled reduction in exclusive cigarette smoking among South Korean men in 2019–2023 is concerning; the market-led pathway may not be delivering the complete switching required for maximum public health gains



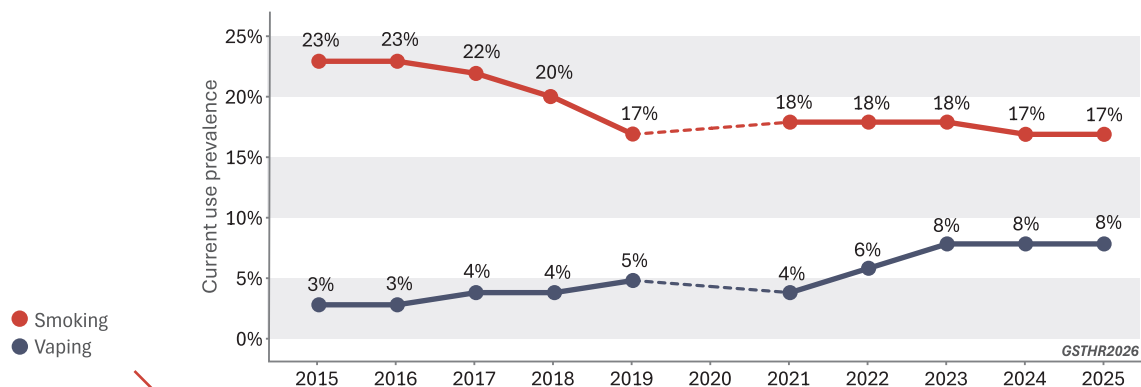
Ireland

Ireland's case is characterised by a policy-constrained pathway within a strongly precautionary public health environment. Nationally representative Healthy Ireland Survey data show that adult smoking prevalence declined sharply between 2015 and 2019, falling from approximately 23% to 17%, before stabilising at around 17–18% over the subsequent five years [16, 17]. The Healthy Ireland Survey 2025 reports 17% current smoking prevalence among adults, comprising 13% daily and 4% occasional smokers, with little net change since 2019 [17]. Smoking remains more prevalent among men (20%) than women (14%).

The same survey also revealed that, in 2025, 74% of the Irish public believed that nicotine vapes are either equally harmful (36%) or more harmful (38%) than traditional combustible cigarettes [17]. The plateau in smoking prevalence has coincided with a period of intensified political, media, and public health attention on safer nicotine products. Vaping prevalence had increased steadily between 2015 and 2023. It rose from 3% in 2015 to 5% in 2019, reaching 8% in 2023 and remaining at that level. In 2024 and 2025, 8% of adults reported current vaping (5% daily and 3% occasional) [17].

Ireland's smoking prevalence plateaued at around 17% between 2019–2025, despite one of Europe's strongest tobacco control frameworks

Current smoking and vaping prevalence in Ireland, 2015–2025



GSTHR2026. Data source: Healthy Ireland Surveys 2015–2025.

While Ireland's tobacco control framework remains among the strongest in Europe, these recent trends suggest diminishing marginal returns in reducing smoking prevalence among the remaining population of adults who smoke.

Trends among young adults require particularly careful interpretation. Some analyses link a slowing decline in tobacco use among those aged 15–24 with an increase in vaping [16]. However, major methodological changes in the Healthy Ireland Survey complicate the interpretation of these trends. Data collection shifted from address-based, in-home interviews up to 2019 to mobile phone sampling with telephone interviews from 2021 onward [16]. Such changes are known to affect disclosure, particularly among younger respondents. Responding by mobile phone may offer greater privacy than being questioned at home, potentially with family members present. It is



possible that these methodological changes may inflate post-2019 prevalence independently of real behavioural change.

Data from the European School Survey Project on Alcohol and Other Drugs (ESPAD) provide an important counterpoint. Among teens aged 15–16 in Ireland, current cigarette smoking declined from 14.4% in 2019 to 9% in 2024 (daily smoking declined from 5.2% to 2.1%), while current vaping declined from 21.5% to 18.1% (daily vaping declined from 7.9% to 7.5%). This pattern suggests continued progress in reducing youth smoking despite decreased experimentation with vaping [18].

Ireland's policy environment remains strongly precautionary. Public-facing health messaging tends to emphasise potential harms and uncertainty around SNP. The long-established risks of smoking get less attention. Recent regulatory changes affecting vapes, including the introduction of a €0.50 tax per ml of e-liquid, have further restricted consumer access to lower-risk alternatives,³ potentially weakening substitution pathways [19].

In addition, in March 2026, as this report was in its final stages, the Irish government approved a new bill. The Public Health (Tobacco Products and Nicotine Inhaling Products) (Amendment) Bill 2026 proposes further restrictions on nicotine products, prohibiting the sale of nicotine pouches to individuals under 18, banning advertising and point-of-sale displays of nicotine products in mixed retail outlets, restricting packaging colours and imagery, and limiting flavour descriptors and flavour availability for nicotine vapes [20]. In this context, there is a risk that policies intended to protect public health may produce unintended consequences, including the persistence or even rebound of cigarette smoking among consumers who might otherwise have switched.

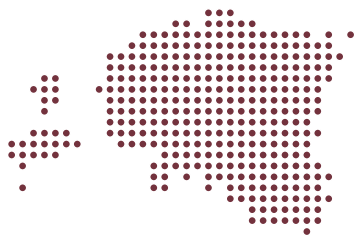
Overall, in Ireland adult vaping prevalence has reached levels capable of supporting population-level substitution in a country that has already reduced smoking substantially through conventional measures. The central uncertainty is trajectory. Ireland could consolidate further smoking declines if adult substitution is supported and communicated in a risk-proportionate manner. However, if restrictive messaging and policy continue to suppress switching and complete substitution among people who smoke, the country could remain stuck with a fairly significant residual smoking population.

adult vaping in Ireland reached 8% in 2023 and stabilised; precautionary messaging and restrictive regulations may be suppressing the switching behaviour that could break stalled reductions in smoking prevalence

among Irish teens aged 15 and 16, both cigarette smoking and vaping declined between 2019 and 2024, contradicting the narrative that rising youth vaping drives smoking initiation

Ireland's new €0.50/ml e-liquid tax is estimated to increase open-system e-liquid prices by ~200% and pod prices by ~40%; while vaping will remain cheaper than smoking, the signal sent to consumers may deter switching more than the price impact itself

³ We estimate that introducing an excise tax on e-liquid in Ireland, if fully passed through to retail prices, would increase the price of open-system e-liquid by approximately 200%, and raise the cost of pod-system consumables by around 40%. Even if this were the case, however, vaping would remain substantially more affordable than smoking – the cheapest open-system e-liquid (10 ml) would still cost only around 12–16% of the cost of using the cheapest cigarette brand, while the cheapest closed rechargeable (pod) format (1 ml) would cost around 35–40% of the corresponding smoking cost.



Estonia

While home to a significantly smaller population than the other two countries we have chosen to profile, Estonia represents the clearest example of emerging tobacco harm reduction progress. The pattern is distinguished by a steep recent decline in smoking prevalence, alongside rapid growth in adult vaping. Nationally representative data from the Tervise Arengu Instituut biannual reports show that smoking prevalence has fallen markedly over the past decade, while vaping has transitioned from marginal use to a substantial component of adult nicotine consumption [21].

In 2012, current smoking prevalence stood at 34.2%, with 26.0% of the adult population reporting they smoked daily. Smoking declined steadily through the 2010s, reaching 25.0% current smoking and 17.2% daily smoking by 2018. Over much of this period, vaping prevalence remained relatively low and volatile, with current use ranging from 3.7% to 5.8% between 2014 and 2018, and daily use holding at approximately 1.5%. In 2020, smoking levels showed a small increase relative to 2018 (26.1% current, 17.9% daily), while vaping remained modest (3.8% current, 1.6% daily).

A clearer structural shift emerges after 2020. Between 2020 and 2024, current smoking fell from 26.1% to 19.0%, while daily smoking declined from 17.9% to 13.2%. Over the same period, current vaping rose sharply from 3.8% to 13.5%, and daily vaping increased from 1.6% to 6.4% [21]. By 2024, daily vaping prevalence was approaching half the level of daily smoking, a convergence that, as yet, is uncommon in most countries. Nicotine pouches (2.8% daily, 3.5% current), and HTP (1.2% daily, 1.6% current), while much less prevalent, also appear in population-level estimates in 2024.

While causality cannot be established from prevalence trends alone, the scale and timing of these shifts are consistent with meaningful substitution away from combustible cigarettes. Although smoking prevalence fell gradually throughout the 2010s, the post-2020 acceleration in the decline of smoking coincides with a step-change in vaping uptake, particularly daily use.

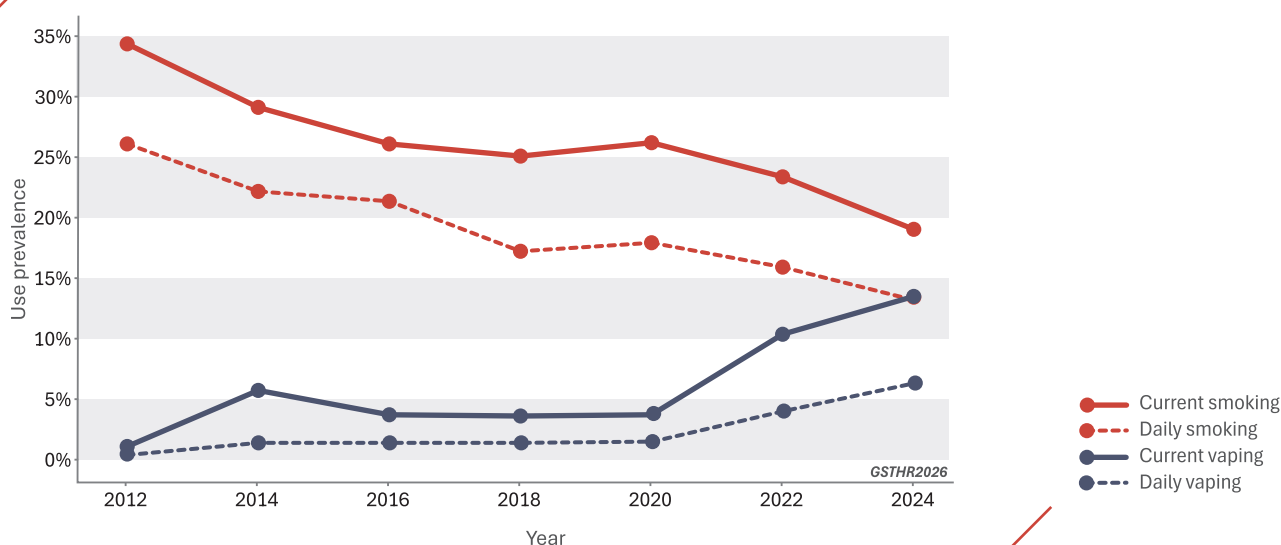
Estonia's regulatory environment remains broadly aligned with EU norms and is not explicitly harm reduction-oriented. As in many EU member states, policy discourse has been shaped by youth use concerns and precautionary messaging. Nevertheless, Estonia illustrates that consumer-led substitution can emerge under relatively constrained policy conditions, provided that alternatives remain accessible and acceptable.

analytically, Estonia is the clearest emerging THR case: between 2020 and 2024, current vaping surged from 3.8% to 13.5%, while smoking fell from 26.1% to 19.0%

Estonia's regulatory environment is not explicitly harm reduction-oriented and is shaped by precautionary EU norms, yet consumer-led substitution has emerged regardless



Smoking and vaping prevalence in Estonia, 2012–2024



GSTHR2026. Data source: Tervise Arengu Instituut 2012–2024 Reports.

How many safer nicotine product users are there globally?

The substitution patterns that can be observed at country level naturally lead to a question: how many people worldwide are now using safer nicotine products? Unfortunately, estimating this remains substantially more challenging than estimating the number of people who smoke. Unlike cigarette smoking, SNP use is not consistently captured in international surveillance systems. The national data, where available, are fragmented, heterogeneous, and often outdated. As a result, global estimates necessarily rely on a combination of survey data, market indicators, and transparent modelling assumptions.

Number of vapers

In 2021, the GSTHR published world-first estimates for the global number of vapers, which stood at 68 million in 2020; this research was repeated again in 2022 as data sources improved, which saw the estimated total increase to 82 million vapers. For the 2024 GSTHR Situation Report, new data and an improved forecasting method were employed, and our estimated total for the global number of vapers in 2023 reached 114 million [22–24].

In 2025, as part of the *WHO global report on trends in prevalence of tobacco use 2000–2030*, the WHO published its first global estimate of adult ‘e-cigarette users’ (vapers). The WHO figure was based on nationally representative surveys from 85 countries, and proposed a total of 86.1 million users [9].

Also in 2025, the GSTHR updated and extended our existing research in this area, producing a new global approximation of the number of adult users of nicotine vaping devices. This research has been carried out using a structured three-stage estimation framework that has been designed to address the

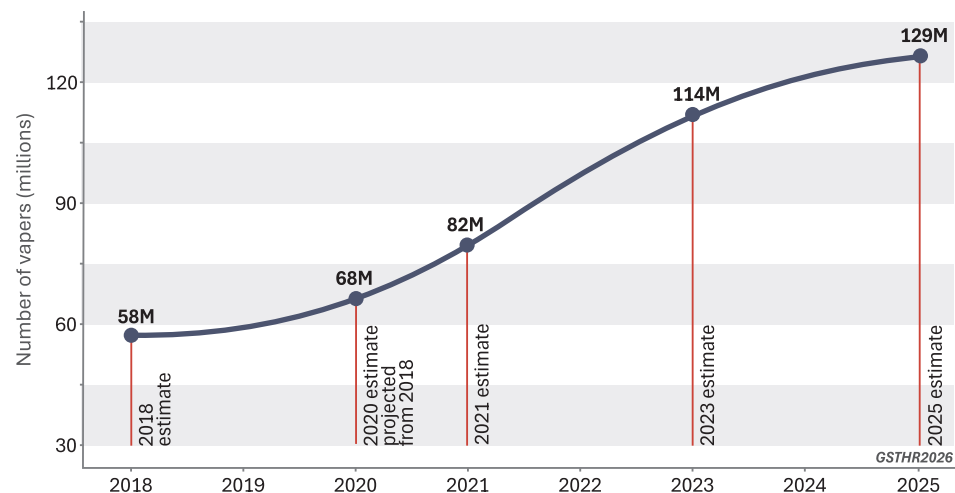
the increase in the number of vapers is concentrated in higher-income countries with less restrictive regulatory environments

substantial gaps in country-level surveillance that were challenging in our early work, and appear to be exemplified in the first WHO estimate [25].

In the first stage, missing prevalence values were imputed for countries without survey data using deterministic, stratified, group-mean estimation based on World Bank income group, UN subregion, and legal sales status. This approach generated baseline prevalence estimates for all 198 countries. In the second stage, these baseline values were projected to 2025 using inflation-adjusted national vaping market size as a proxy for growth in the number of vapers. Country-specific market growth ratios were applied where available, and regional ratios were used otherwise. In the third stage, projected prevalence was multiplied by United Nations population projections for adults aged 17 years and older to derive country-level user counts, which were then aggregated globally.

This procedure yields an estimated global total of approximately 129 million adult nicotine vapers in 2025, up from approximately 68 million in 2020, over 80 million in 2021, and around 114 million in 2023. The increase is concentrated primarily in higher-income countries and settings with relatively permissive regulatory environments [25].

The GSTHR's estimated global number of vapers



GSTHR2026. Data source: Jerzyński et al. (2026).

Number of heated tobacco product users

In parallel, we produced global estimates of the number of people who use heated tobacco products using a different approach. This reflects the absence of consistent population survey coverage.

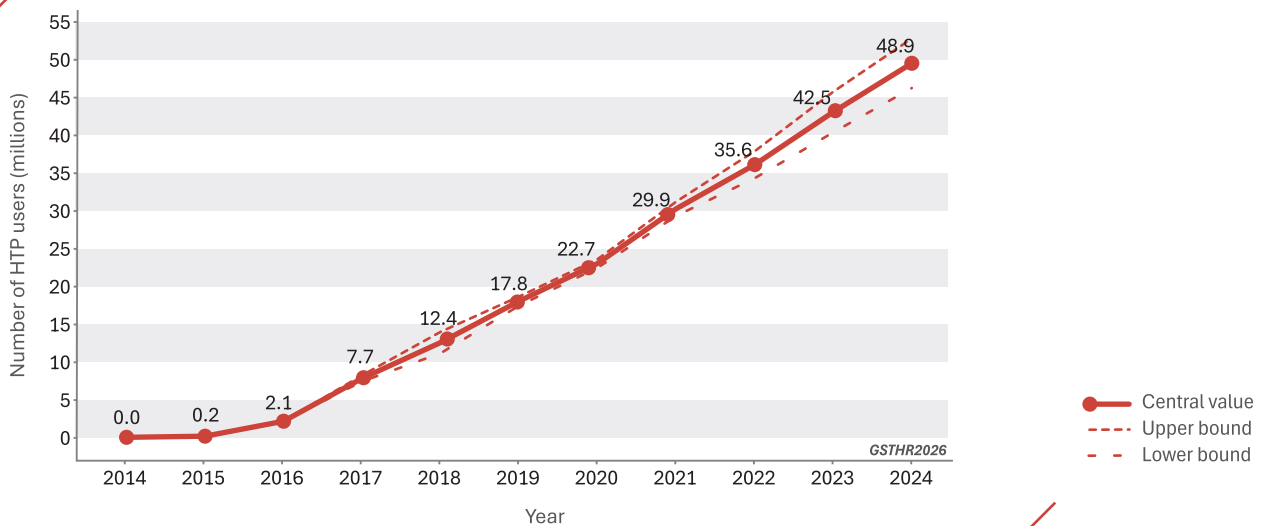
We compiled annual HTP user counts and heated-tobacco stick shipment volumes from publicly available disclosures of major transnational tobacco companies with material HTP activity between 2014 and 2024. Where user counts were not reported, shipment volumes were converted into implied user numbers using transparent consumption assumptions.



The GSTHR estimates there are **~129 million** adult vapers and **~49 million** HTP users worldwide – that's equivalent to **one-fifth** to **one-quarter** of the global cigarette-smoking population

Using this approach, our estimates suggest that the global number of HTP users increased from negligible levels in 2014 to an estimated 48.9 million in 2024 (lower bound 45.6 million, upper bound 52.1 million) [26].

The GSTHR's estimated global number of heated tobacco product users, 2014–2024



Note: Dashed lines indicate lower and upper bounds based on $\pm 50\%$ sensitivity on daily consumption assumptions. HTP: heated tobacco product. GSTHR2026. Data source: Mzhavanadze et al. (2026).

The combined number of vapers and HTP users is now large enough to matter at the population level. The combination of vapers and HTP users is plausibly equivalent to around one-fifth to one-quarter of the global cigarette-smoking population. This comparison must be interpreted cautiously. On the one hand, these estimates do not control for dual or poly-use, so simply adding category-specific user counts likely overstates the number of unique SNP users. On the other hand, nicotine vapes and HTP remain unavailable or restricted in many

SNP adoption is expanding rapidly but unevenly, with regulatory and fiscal environments as influential as prices and consumer demand



countries, while combustible cigarettes are legally sold worldwide. In countries where HTP are legally present and widely marketed, the ratio of HTP users to people who smoke cigarettes is likely to be substantially higher than the global average.

Snus and nicotine pouches

Robust global estimates for snus and nicotine pouch users are not currently available, reflecting limited survey coverage and inconsistent reporting. Nevertheless, evidence of rapid growth in Nordic and some other European countries and North America suggests that these products may reach a substantial user base in the near future, particularly in markets where regulatory conditions allow consumer access [27–31].

Overall, available evidence indicates that SNP adoption is expanding rapidly but unevenly, shaped as much by regulatory and fiscal environments as by prices and consumer demand. These constraints, and their implications for future uptake, are discussed further in the next sections.

The growing number of consumers using SNP is reflected in rapidly evolving nicotine markets. The following section examines how these changes are manifested in product categories, market shares, and industry dynamics.

Market developments

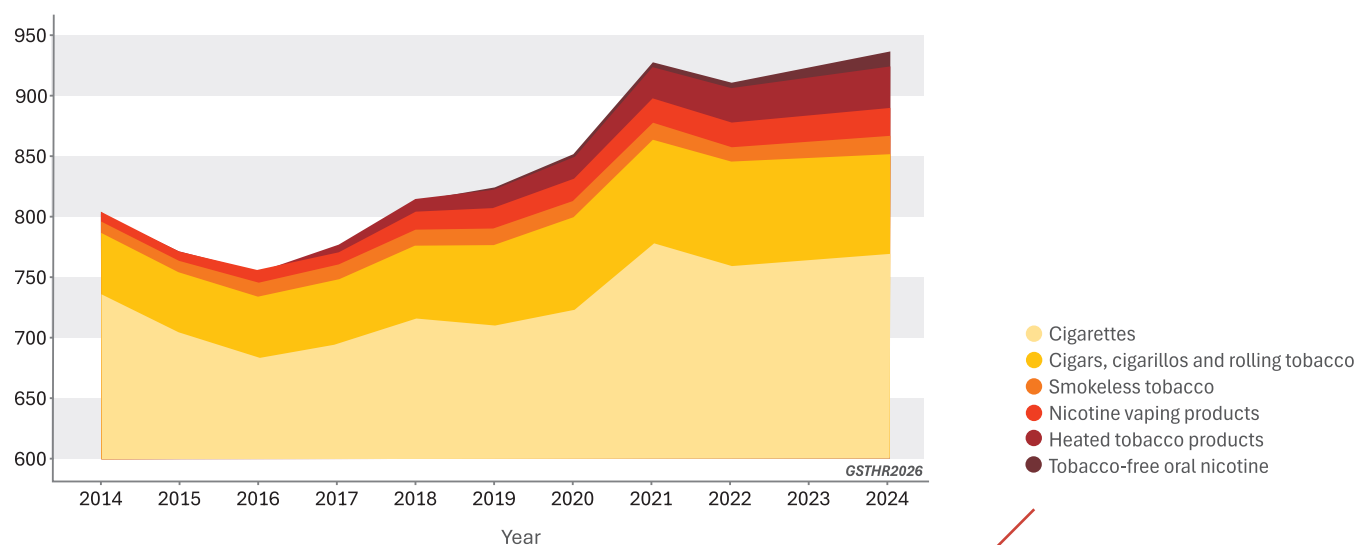
Estimating the global market value of tobacco and nicotine products is complicated by significant methodological variation across commercial research providers. Firms such as Euromonitor International, Grand View Research, Mordor Intelligence, Global Market Insights and others rely on proprietary modelling, retail sales tracking, sector-specific surveys, company disclosures and industry expert input. Yet they often arrive at substantially different valuations, especially in long-term projections [32–42].

Even with these caveats, existing market estimates broadly mirror the prevalence and user trends described in the previous sections. Although smoking prevalence is declining in many countries, the global pace of reduction has slowed, and strong pricing power (the ability to raise prices without losing demand) has kept cigarette revenues rising. However, the market is undergoing a structural transformation driven by SNP growth [32].

In 2025, the annual global tobacco and nicotine market is estimated at about \$0.92–\$0.99 trillion [33–35]. Cigarettes still account for most of the market value, indicating that combustibles remain the financial core of the sector, even as alternative products expand. Nevertheless, the contribution of SNP to the overall tobacco and nicotine market values is not insignificant. Estimates are as follows:

- » \$55.8–\$77.6 billion for HTP [36, 37],
- » \$26.1–\$45.7 billion for nicotine vapes [38, 39],
- » \$7–\$8.6 billion for nicotine pouches [40, 41],
- » \$3.2–\$3.9 billion for snus [42, 43].

Retail value of tobacco and nicotine markets (\$ billion)



GSTHR2026. Data source: Euromonitor International

These estimates suggest that safer nicotine categories already represent a market measured in many tens of billions of dollars (\$92.1–135.8 billion). This accounts for 9–15% of the total annual tobacco and nicotine market value.

Regional patterns remain highly uneven – different non-combustible products dominate in different regions, depending on regulation, product availability, pricing, and established patterns of use. Asia-Pacific dominates the HTP market, while North America dominates vaping and nicotine pouches. The popularity of nicotine pouches is increasing in Europe as well, where in some cases they are displacing snus, which remains concentrated in a smaller set of European markets [44].

Market projections for 2030 and beyond involve an even wider range of uncertainty. However, all forecast that SNP categories will grow at a much faster rate than cigarette market values [33–43].

Regions with long traditions of oral use of tobacco – much of the Middle East and North Africa, sub-Saharan Africa, South-East Asia and Central Asia – offer as-yet unexplored potential for expansion of the nicotine pouch market. In these regions, pouches may well offer much-needed alternatives to both cigarettes and harmful local oral products. However, without major change, any expansion is likely to be constrained by both policy and price. In some cases, countries prohibit modern smokeless nicotine products, while allowing traditional local oral tobacco products to remain on the market. Affordability is also a major barrier, as local smokeless products often cost only a fraction of the prices currently observed for nicotine pouches in developed markets.

Overall, the business that underpins tobacco harm reduction – the production of safer nicotine products – is growing. It has not displaced the cigarette business, which still generates the great majority of market value. But HTP, vaping products, nicotine pouches, and snus are expanding from a much smaller base. The transition away from combustibles is now large enough

SNPs make up between 9–15% of the total tobacco and nicotine market, with all market analyses predicting significant growth, yet cigarette revenues continue rising due to strong pricing power

HTP and nicotine pouches are the fastest-growing segments, representing a structural broadening of safer nicotine delivery

to matter for investment, product strategy, and consumer choice, even if its future scale remains highly uncertain.

The following sections examine how policy and regulation – including legal status, product standards, flavour rules, and taxation – are reshaping these markets and, in turn, the feasibility of substitution away from cigarettes.

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2.2 Policy and regulatory landscape

As documented in the previous section, the uptake of SNPs continues to accelerate among adults seeking less harmful alternatives to smoking. However, the global policy and regulatory landscape between January 2025 and March 2026 demonstrated a profoundly restrictive counter-momentum. Flavour bans, nicotine concentration caps, excise tax increases, and outright prohibitions substantially outnumbered reforms enabling tobacco harm reduction. Many countries amended tobacco control laws to explicitly incorporate products that were previously unregulated, with regulatory tightening concentrated primarily on vapes and nicotine pouches. Combustible cigarettes, meanwhile, remain legally available everywhere, including in countries that have banned all safer alternatives. This asymmetry continues to define the central paradox in global tobacco control policy.

Legal availability

To provide a comparable global overview, we classify legal status using three broad categories, consistent with the previous GSTHR:

1. **Legally available** (or legally available consumer products, LACP):
 - a. Countries where the sale and use of SNP as a consumer product are permitted under specific laws that regulate their sale and use, without heavy restrictions (in this case, we consider heavy restrictions to be e.g. banning nicotine in the product, only allowing purchase with prescription or from medically licensed professionals).
 - b. Countries where there is no specific legislation regulating SNP, but where they are regulated under general tobacco laws. For example, if combustible or smokeless tobacco products are not banned in a country, SNP would also be considered legally available under these general laws.
2. **Banned:** Countries where the sale and/or use of SNP are explicitly prohibited by law or so heavily restricted (e.g., prescription-only, medically licensed SNP only, bans on nicotine-containing SNP) that it effectively prohibits their sale as consumer goods.
3. **No information:**
 - a. Countries where there is no information available on their regulatory status, meaning we lack data on whether specific or general tobacco laws permit or ban their sale/use.
 - b. Countries where SNP fall outside the legal framework entirely, meaning they are neither specifically banned nor regulated.



Between early 2025 and March 2026, at least ten countries enacted new prohibitions on one or more SNP categories:

- » Bangladesh enacted the most far-reaching ban, criminalising production, import, sale, and personal use of all types of SNPs, with penalties of up to six months' imprisonment [1].

combustible cigarettes remain legally available everywhere, including in countries that have banned all safer alternatives

•

global tobacco control is paradoxical: the most harmful product is universally legal, less harmful alternatives are not

•

between early 2025 and March 2026, at least 10 countries enacted new SNP prohibitions; restrictions or bans substantially outnumber reforms enabling THR

- » Kenya banned imports of all SNP and suspended existing licenses, requiring re-application under strict new rules [2].
- » Ghana banned vapes [3].
- » Vietnam banned vapes and HTP [4].
- » Myanmar prohibited the import, export, sale, possession, and use of vapes [5].
- » Mexico became the first country to embed a vape ban in its constitution, with accompanying legislation establishing prison sentences of between one and eight years for activities involving the production, commercialisation, sale, and supply of vapes [6].
- » Uzbekistan and Kyrgyzstan banned nicotine vapes [7].
- » France published a decree banning non-medicinal oral nicotine products in September 2025. Although the Council of State suspended part of the decree, the ban on importation, possession, acquisition, sale, and use entered into force on 1 April 2026 [8].
- » Canada has restricted nicotine pouch sales to pharmacies only in August 2024, effectively removing them from LACP (legally available consumer product) status [9].

In contrast, only two countries proposed more liberal SNP policies. Nepal's Patan High Court ordered the government to lift vape import restrictions on 27 June 2025, finding insufficient legal basis for the de facto ban [10]. Iraq's Council of Ministers approved lifting its vape import ban in May 2025. However, the Ministry of Health simultaneously announced plans for new restrictions, thus creating a contradictory regulatory situation [11].

Cracking down on disposable vapes

Disposable vapes were frequently in policymakers' sights during the period covered by this report. A wave of disposable vape bans swept across Europe: Belgium, France, the United Kingdom, and Bulgaria all prohibited single-use devices, with Romania probably following soon [12–16]. By 2027, an EU-wide regulation banning products with non-replaceable built-in batteries will effectively prohibit most disposables across member states [17–19]. Beyond Europe, New Zealand also specifically banned disposable vapes [20].

In response to these tightening regulations, early evidence suggests that the vape industry has rapidly adapted, moving toward hybrid, disposable-style reusable alternatives. New devices technically comply with regulations by adding USB-C charging ports and replaceable/refillable pods [21, 22].

On paper, this shift may align with environmental goals. But reports on waste management indicate that many users still discard these inexpensive, technically rechargeable hybrid devices after a single use [22].

The global legal status of SNPs remains highly fractured, reflecting an environment where substitution pathways are shaped by uneven legislative design rather than explicit harm reduction strategies. As of March 2026, at least one category of SNP (nicotine vapes, HTPs, snus, or nicotine pouches) is legally available as a consumer product in 128 countries, encompassing 3.9 billion people, or 67% of the global population. On the contrary, 73 countries, representing 1.9 billion people (33%), maintain complete prohibitions, leaving no legally available SNP on the market.

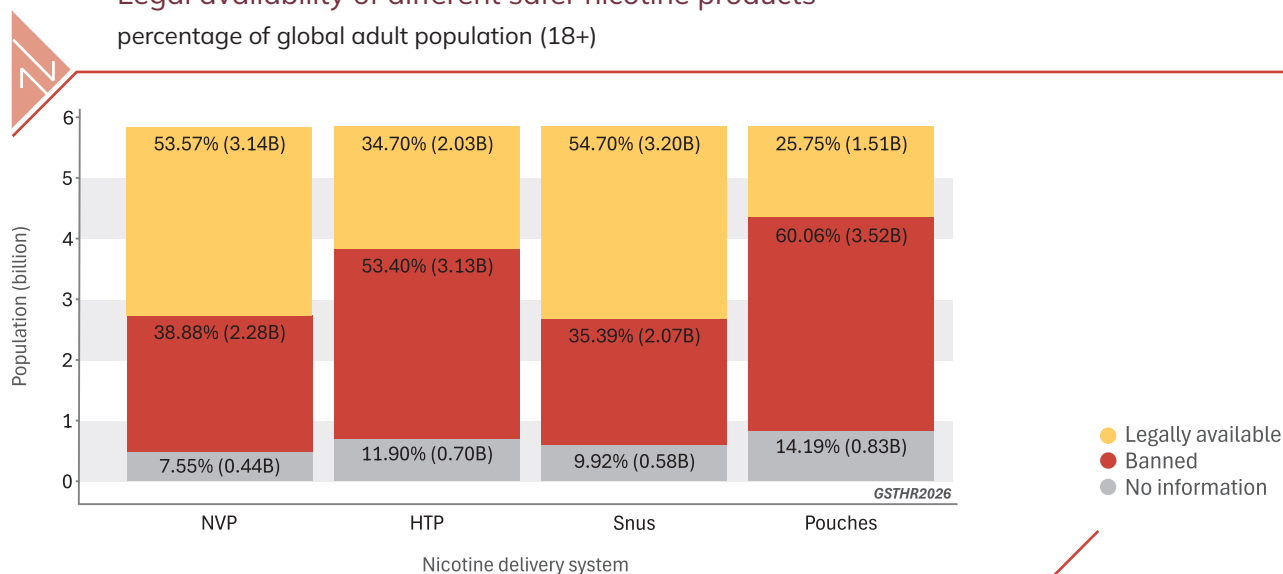
Global legal availability of safer nicotine products by number of product categories and population coverage, March 2026

Number of legally available safer nicotine products	Number of countries	Number of population covered (millions)	Percentage of population covered
At least one SNP is legally available	128	3,938	67%
One SNP is legally available	50	697	12%
Two SNPs are legally available	29	1,717	29%
Three SNPs are legally available	24	376	6%
Four SNPs are legally available	25	1,149	20%
No safer nicotine products are legally available	73	1,921	33%

GSTHR2026.

Nicotine vapes are the most widely available SNP category (83 countries), but they are also frequently subject to explicit statutory bans (46 countries). Regulatory opacity is particularly pronounced for nicotine pouches, where 114 countries lack specific legislation or publicly accessible information. This likely reflects either limited market presence or delayed regulatory classification, rather than confirmed permissibility.

Legal availability of different safer nicotine products percentage of global adult population (18+)



GSTHR2026. Data source: GSTHR.

Legal status of safer nicotine product categories by number of countries, 2026

Product category	Banned	Legally available	No information
Nicotine vapes	46	83	72
HTP	31	72	98
Snus	52	76	73
Pouches	38	49	114

GSTHR2026.

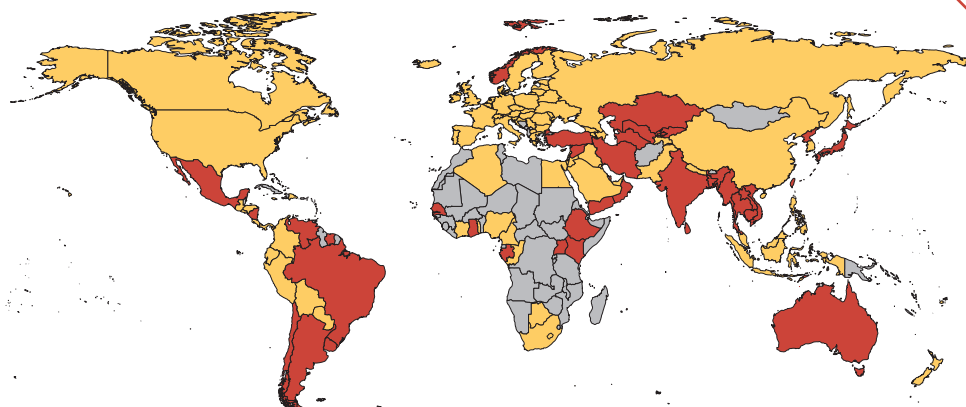
The maps below illustrate the legal availability of the various safer nicotine product categories worldwide. Countries often follow the lead of the most economically advanced or politically influential states in their region. For example, all Central Asian countries have followed Kazakhstan's 2024 ban on vapes. In South-East Asia, six member states of the Association of Southeast Asian Nations (ASEAN) – Thailand, Singapore, Myanmar, Cambodia, Laos, and Vietnam – have banned vapes, with the Philippines likely to follow [23]. More broadly, South and South-East Asia and Latin America remain the most restrictive regions, whereas the EU generally regulates rather than bans these products, albeit under increasingly stringent restrictions.

In November 2025, the Maldives was the first country in the world to enact a new type of tobacco control measure. Anyone born on or after January 1, 2007, is now prohibited from purchasing any tobacco products [24]. However, the Maldives concurrently maintains a universal, age-independent ban on the import, sale, and use of all nicotine vapes.



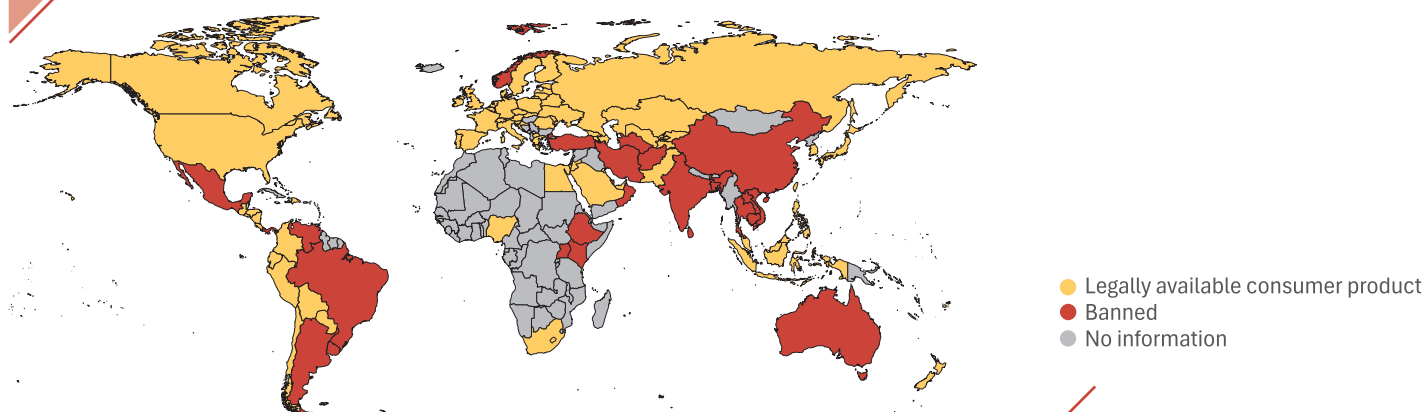
Legal availability of nicotine vaping products

● Legally available consumer product
● Banned
● No information



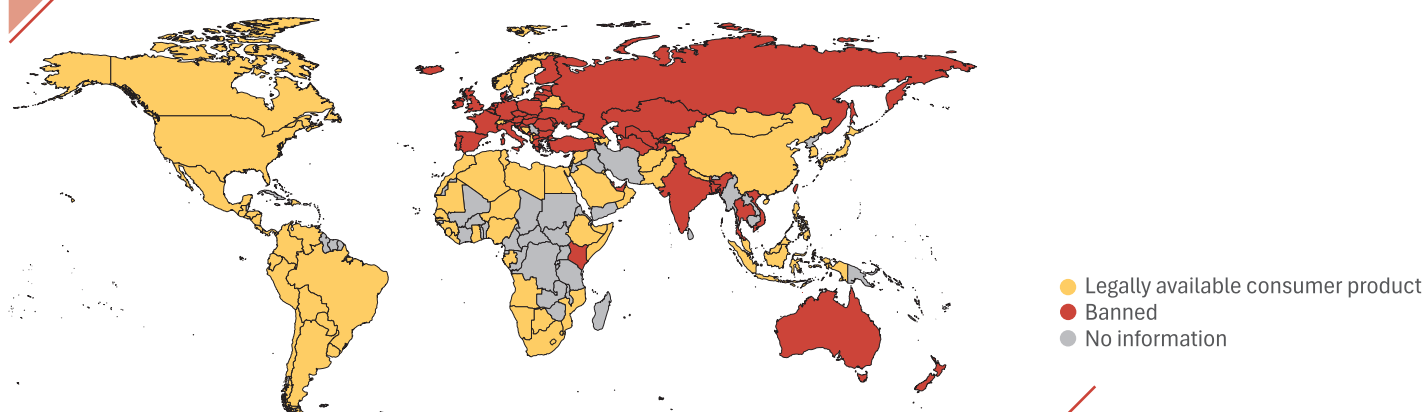
GSTHR2026.

Legal availability of heated tobacco products



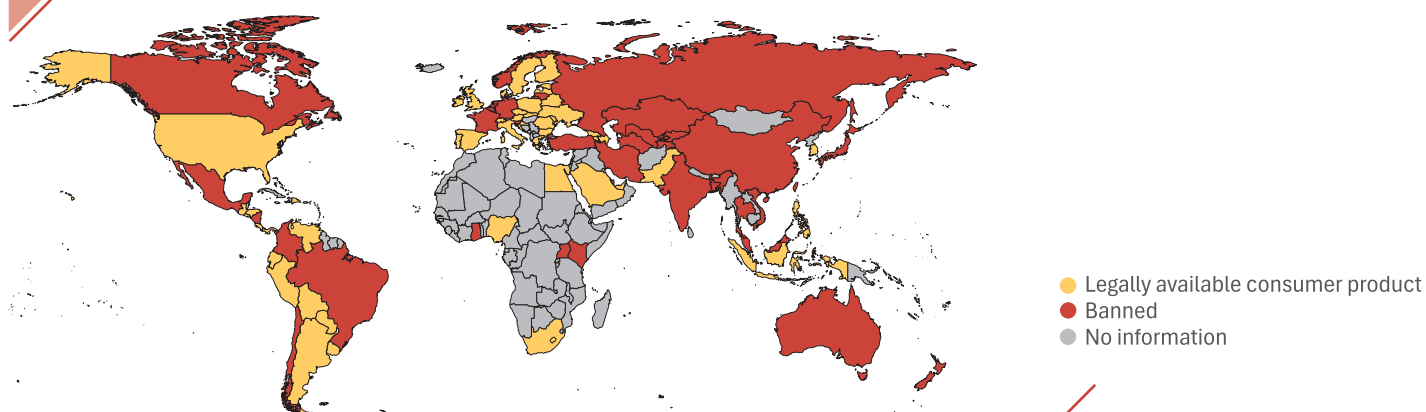
GSTHR2026.

Legal availability of snus



GSTHR2026.

Legal availability of nicotine pouches



GSTHR2026.

Nicotine concentration limits

Nicotine concentration limits tightened in several markets during the reporting period, particularly for oral nicotine pouches.

The EU Tobacco Products Directive baseline of 20 mg/ml for e-liquids remains the de facto international reference point for nicotine vapes. No equivalent harmonised EU standard exists for nicotine pouches [25].

Several European countries have introduced their own significantly lower caps. In January 2026, Luxembourg established a nicotine cap of 0.048 mg per pouch or per gram, an amount that approximates the nicotine level naturally present in two aubergines [26]. The limit derives from German food safety regulations, rather than any comparable tobacco or nicotine product standard. Keeping the nicotine level this low is effectively indistinguishable from a product ban, primarily as no nicotine pouches are marketed with levels this low, but also because any such products would be unusable as a viable substitute for people who smoke. Sweden and Greece formally protested through the EU's TRIS notification system. In effect, their argument was that the measure was disproportionate and, if adopted, "products lawfully marketed in other Member States in accordance with the respective legislations could not be sold in Luxembourg, thus creating a barrier to the free movement of goods in the EU and breaching Article 34 of the Treaty." [27, 28].

Denmark also imposed a nicotine cap, limiting products to 9 mg per pouch (with full enforcement expected by 1 April 2026). This would remove approximately 90% of pouches on the Danish market. As a result of this regulation, 35% of users are projected to turn to the black market and 13% to switch back to smoking [29]. Latvia too has set a 4 mg/g limit for nicotine pouches [30]. By contrast, Finland has adopted a 16.6 mg/g threshold [31].

By capping nicotine yields at levels insufficient to mitigate withdrawal symptoms for people who smoke, policymakers in many countries have effectively eliminated the product's utility as a smoking cessation aid and as a much safer substitute for cigarettes.

Flavour restrictions

Restrictions on characterising flavours in SNP remain one of the most widely used regulatory tools. Policymakers frequently justify flavour controls on the grounds of youth protection, arguing that non-tobacco flavours increase product appeal among adolescents. However, flavours are also supportive to tobacco harm reduction. Adult consumers consistently report that non-tobacco flavours play an important role in facilitating complete substitution away from combustible tobacco.

Flavour regulation intensified further during the period covered by this report, particularly targeting nicotine vapes and nicotine pouches. In the United Kingdom, the Tobacco and Vapes Bill passed Third Reading in the House of Commons on 26 March 2025 and entered the House of Lords report stage on 24 February 2026; it received Royal Assent on 29 April 2026. The Act grants delegated powers to regulate flavours, ingredients, packaging, and product standards for vaping and nicotine products. The precise scope of flavour restrictions will be determined through secondary legislation following enactment. The legislation also includes the smoke-free generation provision, banning tobacco sales for anyone born on or after

Denmark's 9 mg/pouch cap will remove ~90% of products from the market; modelling projects that 35% of users will turn to the black market, while 13% will return to smoking

•

the Danish nicotine cap looks set to illustrate how overly restrictive regulation can generate the exact harms it aims to prevent

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by capping nicotine yields at levels insufficient to mitigate withdrawal symptoms, policymakers effectively eliminate the product's utility as a smoking substitute



January 1 2009, a legal age of sale that will be raised by one year every year, and introduces a new vaping products duty, set to come into effect from 1 October 2026 [32].

Latvia's comprehensive ban on all e-liquid flavours except tobacco, adopted in 2023, came fully into force on 1 January 2025 [33]. This positions Latvia among the most restrictive EU countries with respect to flavour availability in vaping products; even under the strictest systems, tobacco and menthol flavours are usually permitted. Draft regulatory proposals introduced in Germany in early 2026 would prohibit menthol and a range of synthetic cooling additives in e-liquids. The proposal cites concerns that sensory cooling effects may facilitate deeper inhalation. However, government risk assessments have acknowledged that the underlying evidence base remains limited [34].

Beyond these cases, several EU Member States (Belgium, France, Greece, Portugal, and Spain) are actively progressing national-level flavour restrictions for nicotine vapes. As of March 2026, however, most remain at proposal or legislative discussion stages rather than full enactment. At EU level, Latvia and Denmark have advocated for a harmonised bloc-wide flavour ban. France, Germany, and Spain have expressed support for considering stricter flavour controls in the forthcoming revision of the Tobacco Products Directive [35]. While no EU-wide measure has been formally adopted as of early 2026, these developments indicate growing political momentum toward standardised flavour restrictions.

Across all four major product categories (nicotine vapes, HTP, nicotine pouches, and snus), global data indicate that approximately two-thirds of countries – where products are legally available – impose some form of flavour limitation. Flavour restrictions are more common than flavour permissiveness in every product category. Furthermore, lack of regulatory clarity remains substantial: roughly one-quarter of countries lack clearly codified or publicly accessible information on flavour rules.

adult consumers consistently report that non-tobacco flavours play an essential role in facilitating complete substitution away from cigarettes

across all four SNP categories, approximately two-thirds of countries impose some form of flavour limitation

around a quarter of countries lack clearly codified flavour rules, creating regulatory ambiguity



Global distribution of flavour regulation by safer nicotine product category, March 2026

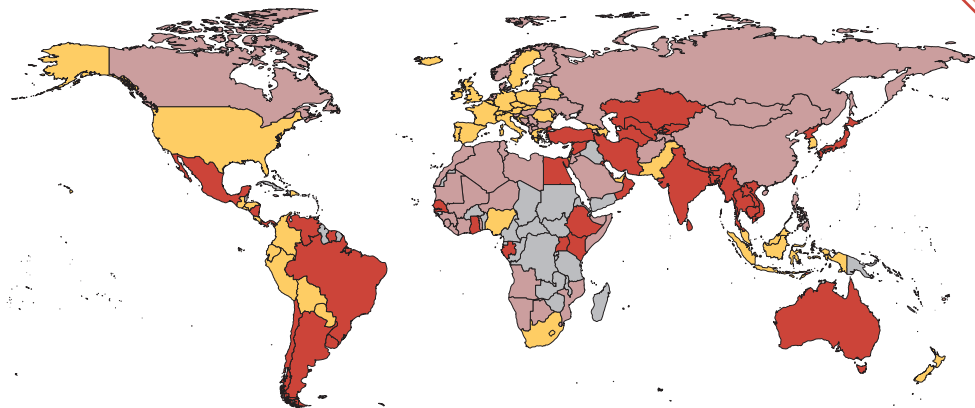
	NVP (n, %)	HTP (n, %)	Snus (n, %)	Nicotine pouches (n, %)
Most flavours are allowed	48 (23.65)	36 (17.73)	33 (16.26)	39 (19.21)
Flavours are limited	60 (29.56)	88 (43.35)	69 (33.99)	77 (37.93)
This product category is banned	45 (22.17)	28 (13.79)	50 (24.63)	36 (17.73)
No specific law/no information	50 (24.63)	51 (25.12)	51 (25.12)	51 (25.12)

GSTHR2026.

The maps below illustrate the diverse regulatory approaches to flavours in safer nicotine products around the world.

Limitations on the availability of flavours in legal sales of nicotine vaping products

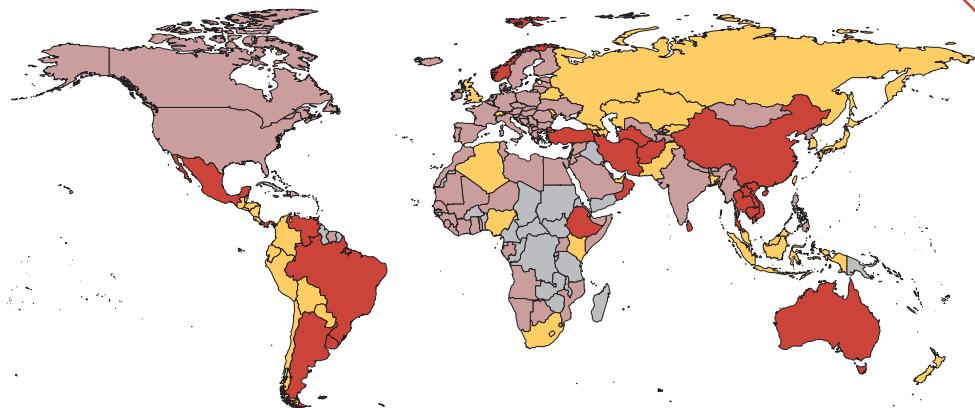
- Most flavours are allowed
- Flavours are limited
- This product category is banned
- No specific law/No information



GSTHR2026.

Limitations on the availability of flavours in legal sales of heated tobacco products

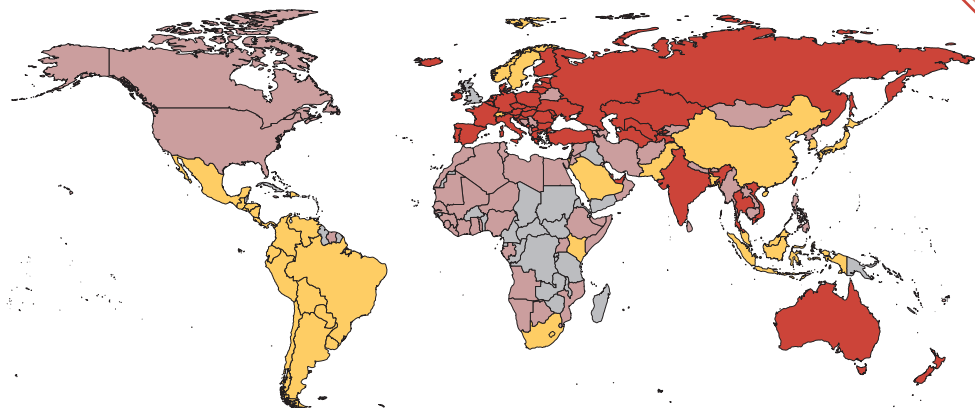
- Most flavours are allowed
- Flavours are limited
- This product category is banned
- No specific law/No information



GSTHR2026.

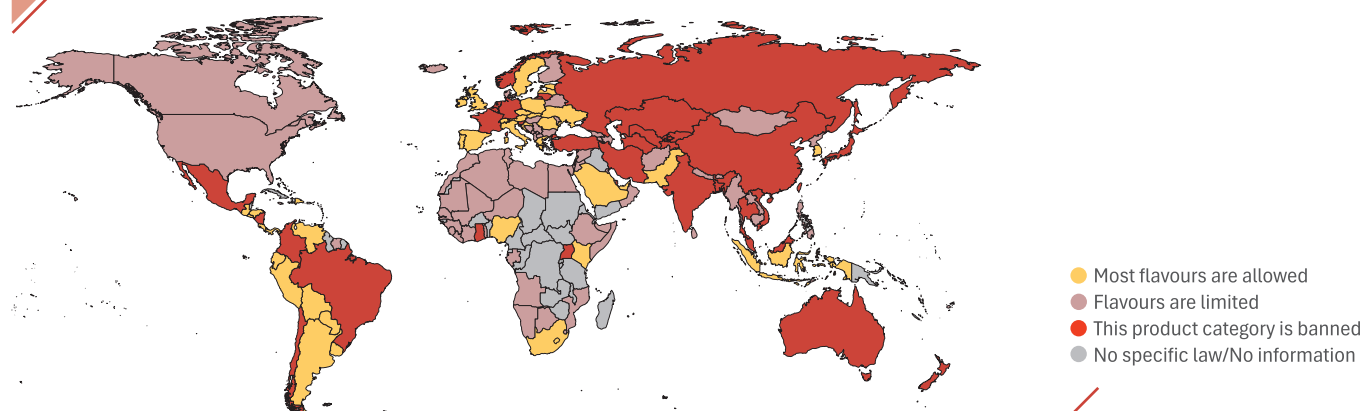
Limitations on the availability of flavours in legal sales of snus

- Most flavours are allowed
- Flavours are limited
- This product category is banned
- No specific law/No information



GSTHR2026.

Limitations on the availability of flavours in legal sales of nicotine pouches



GSTHR2026.

Taxation

Alongside an increasingly restrictive regulatory landscape, a growing number of countries have introduced excise taxes on SNP or increased existing tax rates. In 2025, at least 67 countries applied excise taxes to vapes, representing a substantial expansion compared with 56 countries in 2024 and 53 in 2023. This rapid growth reflects a clear global shift toward fiscal regulation of vaping products.

Most countries introducing new excise taxes on vapes in the reporting period were European and included Croatia, Ireland, Luxembourg, Slovakia, and Spain, alongside Bhutan, Colombia and Rwanda [36–42]. Austria and the United Kingdom have legislated vape excise taxes that are scheduled to enter into force in 2026 [36–38]. In addition to new adopters, at least 19 countries increased existing vape excise tax rates in 2025. Jordan was the only identified country to reduce the excise tax on vapes during this period [43].

By contrast, fewer changes were observed for HTP. As of 2025, 67 countries applied HTP-specific excise taxes, broadly unchanged from the previous year. The main structural change was Poland's introduction of an excise tax on HTP devices. However, rate adjustments were more common: at least 15 countries increased existing HTP excise rates, while New Zealand in 2024 and Jordan in 2025 halved their HTP excise taxes, marking the only identified reductions [38, 43, 44].

Nicotine pouches, which are experiencing rapid market growth in several regions, have increasingly attracted attention from fiscal policymakers. In 2025, nine countries (Czechia, Estonia, Iceland, Kenya, Luxembourg, Poland, Portugal, Slovakia, and Spain) introduced nicotine pouch-specific excise taxes. Austria has announced plans to introduce such a tax in 2026. In addition, Finland and Latvia increased existing excise rates on nicotine pouches, indicating a broader trend toward integrating these products into national tobacco and nicotine tax frameworks [36–38].

At the EU level, the European Commission adopted a recast Tobacco Taxation Directive proposal on 16 July 2025, potentially the most consequential

at least 67 countries applied excise taxes to vapes in 2025, up from 53 in 2023 – a rapid fiscal convergence toward treating SNPs as equivalent to cigarettes, regardless of relative risk

the EU's proposed Tobacco Taxation Directive would establish bloc-wide minimum excise duties on all SNPs for the first time

whether the Tobacco Taxation Directive advances or stalls will shape SNP fiscal environments for decades

restrictive regulatory and fiscal measures are generating unintended market consequences – unregulated illicit supply chains, reversion back to smoking – often the very outcomes these policies aim to prevent

development for SNP taxation globally during this period. If the proposal were accepted, the directive would establish EU-wide minimum excise duties on SNPs for the first time. For e-liquids, a two-tier minimum specific duty is proposed: EUR 0.12 per millilitre (or 20% of retail price) for liquids containing up to 15 mg/ml nicotine, and EUR 0.36 per millilitre (or 40% of retail price) for liquids above 15 mg/ml, with rates indexed to inflation and adjusted partly by purchasing power. For HTP, Member States would be required to apply at least 55% of the retail selling price inclusive of taxes or a minimum of EUR 108 per 1,000 items or EUR 155 per kilogram, again subject to periodic indexation. For nicotine pouches, a phased approach is proposed: from 2030, a minimum of 25% of retail price or EUR 71.5 per kilogram, rising from 2032 to 50% of retail price or EUR 143 per kilogram, with transitional arrangements through 2031 [45].

As the proposal requires unanimity to pass, it faces significant hurdles from two distinct blocs of opposition. The first group, including Romania, Bulgaria, Greece, Italy, Croatia, and the Czech Republic, opposes the directive primarily due to the sharp increases in minimum excise taxes on traditional tobacco. A second group opposes the directive strictly due to its risks to THR. Sweden and Finland have strongly objected to the blanket taxation of novel products like nicotine pouches, snus, and vapes. Sweden's Finance Minister called the proposal "completely unacceptable," arguing that failing to apply a risk-proportionate, differentiated tax approach directly threatens the country's successful harm-reduction model [46–48]. Whether this directive advances, stalls, or is substantially amended will shape the fiscal environment for SNPs across Europe for decades.

The expansion of regulatory controls and excise taxation directly influences consumers' product choices. Available evidence suggests that while the SNP-restricting regulatory and fiscal measures are enacted to protect youth and address emerging environmental concerns, they increasingly risk generating unintended market consequences – the rapid expansion of unregulated illicit supply chains and behavioural reversion back to smoking [49–51]. (See 'Economics, taxation, pricing, and substitution', Section 2.4).

Taxes affect retail prices and product affordability. As fiscal and product standards reshape legal markets, understanding relative price differentials between combustible and non-combustible products becomes critical. The next section, therefore, examines comparative affordability and price structures across SNP categories.



Taxes

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2.3 Comparative pricing of nicotine products

Regulation and taxation define market conditions, but once products are legally available, consumer behaviour is driven primarily by market prices. For people who smoke, it is most often the relative affordability of different products, rather than the intentions of regulators, that will shape their day-to-day decisions on choosing between products. Differences in prices and consumption costs between cigarettes and SNP, and across SNP, directly influence whether substitution is financially attractive or economically out of reach. In practice, whether SNPs are cheaper or more expensive than cigarettes is likely the single most important driver of switching, particularly for price-sensitive consumers [1–6].

SNP prices relative to cigarettes

WHO retail price data [7]¹ show that, in most countries, SNPs remain more expensive than combustible cigarettes. The price gap is especially pronounced in LMICs.

Relative to the cheapest cigarette brand, pod-based vape systems cost approximately 3.2 times more in LMICs, disposable vapes around 2.5 times more, and HTPs around 2.3 times more. E-liquid for open-system vapes is the only exception, approaching price parity with cigarettes at around 1.0x the cheapest brand.

This relative affordability disadvantage for non-combustible products in LMICs appears persistent. There has been no indication of structural change over the past decade [8, 9]. More broadly, this reflects a systemic problem: over the last ten years, cigarettes became less affordable (with prices rising faster than incomes) in only 45 of 179 countries with available data, while affordability remained unchanged in 92 countries and increased in a further 42 [10]. Under these conditions, substitution away from combustibles to SNP is economically unattractive, regardless of product availability or regulatory permissiveness.

The affordability picture is much better in HIC. Disposable vapes cost around 1.4x the cheapest cigarette brand, but reach parity with the most-sold brand (1.0x). Vape pods cost about 1.2x the cheapest brand and fall below the most-sold brand (0.8x). HTPs are priced at roughly 1.2x the cheapest brand and 0.9x the most-sold brand. E-liquid stands out as dramatically cheaper, at around 0.2x cigarettes across all brand tiers.

This divide between country income groups is critical. In HICs, price structures often facilitate switching away from cigarettes. In LMICs, by contrast, the price premium on most SNPs is a direct financial barrier to harm reduction.

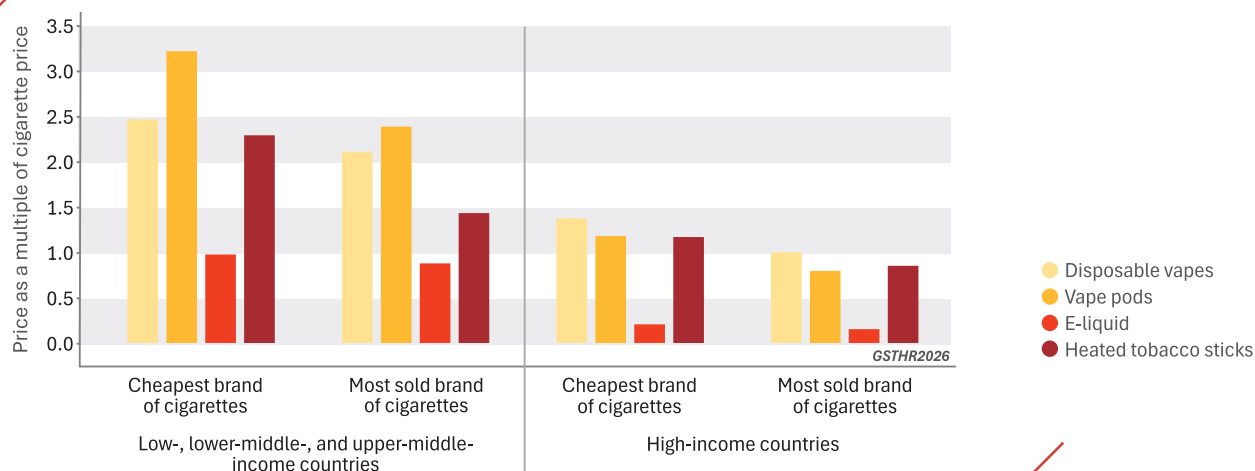
in LMICs, the cheapest disposable vape costs ~2.5x the cheapest cigarette brand

over the past decade, cigarettes became less affordable (meaning prices rose faster than incomes) in only 45 of 179 countries – while in 42 countries, cigarettes actually became more affordable

in most LMICs, cigarettes remain the cheapest nicotine option making substitution economically irrational for price-sensitive consumers regardless of product availability or health information

¹ WHO Global Health Observatory retail price data for 2024 (updated on 09.12.25). The data cover cigarettes (cheapest, most-sold and premium brand), disposable vapes, vape pods, e-liquid, and HTPs, but do not include snus or nicotine pouches. The data cover consumable products only and do not include device or hardware costs associated with vapes or HTPs. For comparative price analysis across product categories, the following consumption equivalence assumptions were applied for price normalisation: for vapes, 1 ml of e-liquid was treated as equivalent to 10 cigarettes; for HTPs, 1 heated tobacco stick was treated as equivalent to 1 cigarette.

Relative prices of safer nicotine products compared to cigarettes, 2024



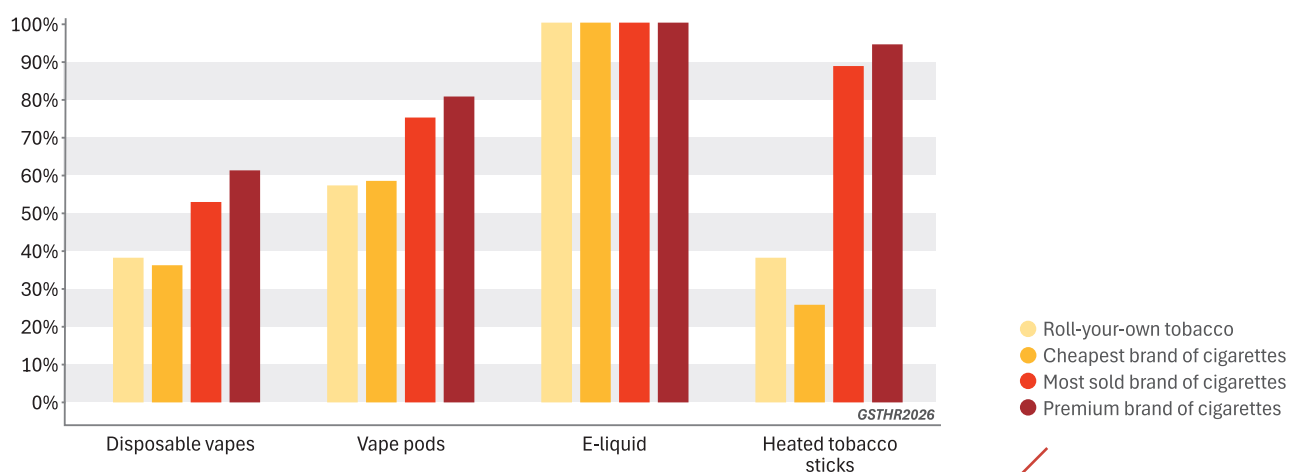
GSTHR2026. Data source: WHO, 2025 (b).

Cross-country evidence on relative affordability

Cross-country comparisons reinforce this pattern. In HICs, e-liquid is cheaper than cigarettes in 100% of countries with available data, regardless of cigarette benchmark. For disposable vapes and vape pods, around 50–60% of HICs price these products below the most-sold cigarette brand, and roughly one-third to one-half price them below the cheapest brand.



Share of high-income countries where safer nicotine products are priced below combustible cigarettes



GSTHR2026. Data source: WHO, 2025 (b).

no LMIC in the dataset shows HTP prices below the cheapest cigarette brand; the newest SNP categories remain largely inaccessible to populations in the greatest need of harm reduction

in HICs, e-liquid costs are dramatically cheaper (~0.2x) than cigarette prices

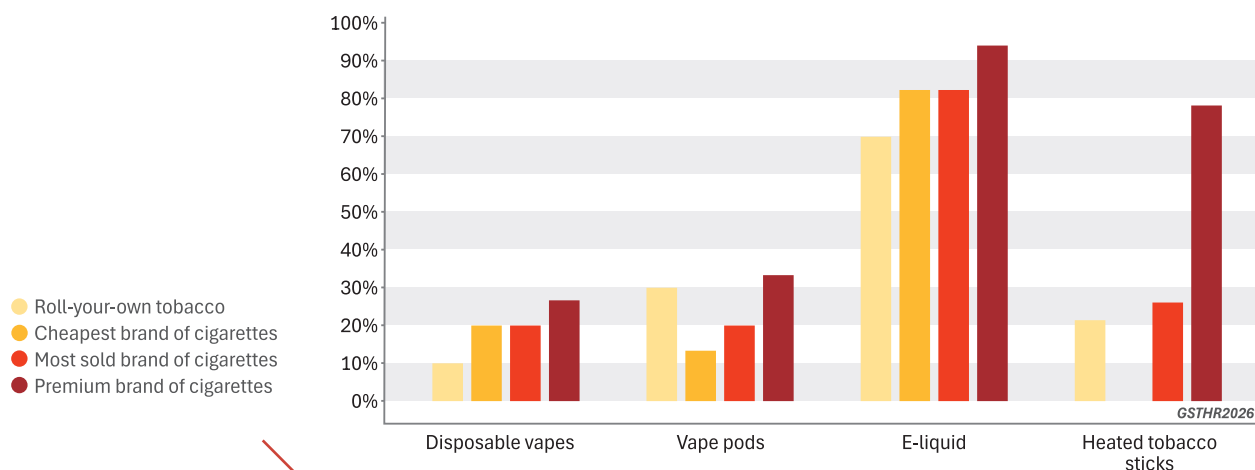
the comparative pricing divide is critical: price structures in HICs facilitate switching; in LMICs they actively block it; depending on where you live, the same product can be a harm reduction tool or an unaffordable luxury

In LMICs, the situation is far less favourable. Only around 20-30% of countries price disposable vapes or vape pods below the cheapest cigarette brand. No LMIC in the dataset shows HTP prices below the cheapest cigarette brand, and only about one-quarter price them below the most-sold brand. E-liquid again stands apart, with the majority of LMICs showing prices at or near cigarette levels. Unfortunately, this means that in most LMICs, cigarettes remain the cheapest nicotine option available to consumers.

Several transnational tobacco companies have openly stated their ambitions to transition their businesses towards less harmful alternatives to combustible cigarettes. But four in five people who smoke live in LMIC. Until they are able to afford safer nicotine products, those ambitions will remain unrealised.



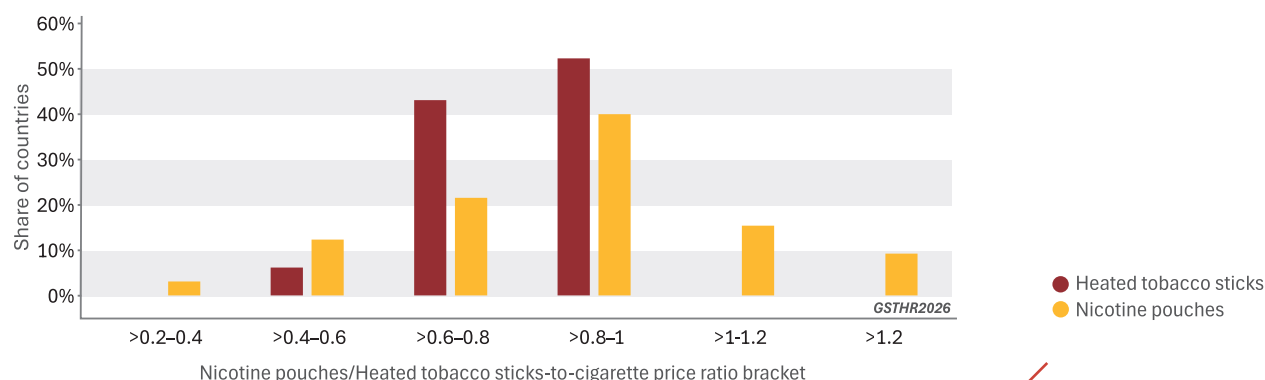
Share of low-, lower-middle-, and upper-middle-income countries where safer nicotine products are priced below combustible cigarettes



Nicotine pouches and HTPs: industry pricing evidence

Industry retail pricing data from October 2025 [11]² provide complementary evidence for nicotine pouches and HTPs in 33 markets where both products are marketed. These markets are predominantly high-income or upper-middle-income; neither product was marketed in low-income countries.

Distribution of countries by nicotine pouches and heated tobacco sticks price ratio relative to premium cigarettes



GSTHR2026. Data source: PMI, 2025.

On average, nicotine pouches are priced at 0.9x and HTPs at 0.8x premium cigarette prices. HTP pricing is highly consistent, with no country showing prices above cigarettes. Nicotine pouch pricing is more variable: while most countries fall below cigarette prices, 15% price pouches at 1.0-1.2x premium cigarette levels and 9% exceed 1.2x, indicating that even in higher-income markets some SNP categories remain more expensive than smoking.

The tax policy effect

Research shows that countries with high excise taxes on cigarettes tend to show greater relative affordability of SNPs [12]. The same pattern appears in the current data, including the United Kingdom, New Zealand, the Netherlands, and Ireland [7, 11]. In the United Kingdom, for example, e-liquid costs around 6% of the cheapest cigarette brand price, while HTPs cost approximately 46% [7]. Industry data show nicotine pouches priced at about 39% of premium cigarette prices [11]. Where cigarettes are taxed heavily and SNPs have tax advantages or are not taxed at all, strong price-based incentives to switch emerge.

² Philip Morris International (PMI) Investor Information retail price data (October 2025) cover cigarettes, HTPs, and nicotine pouches and are limited to PMI-affiliated products. PMI products were marketed in at least 76 countries for HTPs and 45 countries for nicotine pouches. Comparative estimates are based on the subset of countries where both HTPs and nicotine pouches were marketed simultaneously (33 countries). For comparative price analysis across product categories, the following consumption equivalence assumptions were applied for price normalisation: for nicotine pouches, 1 pouch was treated as equivalent to 1 cigarette; for HTPs, 1 heated tobacco stick was treated as equivalent to 1 cigarette. The primary limitation of this dataset is that it reflects prices from a single manufacturer. Although PMI is a major global market participant, its pricing strategies may not be representative of overall market averages or of competing brands in individual countries. As such, findings based on PMI data should be interpreted as indicative of relative pricing patterns rather than definitive measures of national market prices.



Implications

These pricing patterns have clear implications for tobacco harm reduction:

1. The substantial price premium for SNPs in LMICs **may limit their harm reduction potential** among populations with the highest smoking prevalence and fewest cessation resources.
2. Countries that tax cigarettes heavily while maintaining lower SNP tax rates effectively **create economic incentives for product substitution**.
3. The relatively low cost of e-liquid compared to disposable vapes and vape pods suggests that **open-system vapes may offer the most accessible entry point for price-sensitive switchers**, though these systems require greater user knowledge and upfront investment (device cost).
4. The absence of nicotine pouches and HTPs from low-income country markets, combined with their premium pricing in middle-income countries, indicates that **the newest SNP categories remain largely inaccessible to populations in the greatest need of harm reduction options**.

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2.4 Scientific and public health developments

Over the period covered by this report, a number of new randomised controlled trials (RCTs), large observational analyses, biomarker studies, systematic reviews, and population-level health outcome research, have converged on several central findings.

Firstly, nicotine vapes remain the most evidence-backed SNP for smoking cessation, now supported by high certainty Cochrane evidence; this means researchers are confident their findings are both trustworthy and stable, i.e. they do not expect future research to change their conclusion [1].

Secondly, switching from combustible cigarettes to non-combustible alternatives is consistently associated with large reductions in toxicant exposure, across vapes, HTPs, and nicotine pouches [2–4].

Thirdly, population-level trends in smoking prevalence tend to track substitution dynamics: countries where SNPs are legally accessible and affordably priced show faster declines in cigarette smoking [5, 6].

And finally, the period covered by this report saw a striking expansion of evidence on how policy design, for example in taxation, flavour regulation or product bans, shapes substitution patterns and, by extension, public health outcomes.

At the same time, research continues on dual use trajectories, youth uptake patterns, and long-term health outcomes. A growing body of work also documented worsening public misperceptions of relative risk, which is linked to measurable reductions in switching behaviour [7, 8]. This section synthesises the key findings across these domains.

Smoking cessation and relapse prevention

The 2025 update from the Cochrane Living Systematic Review by Lindson et al. found high-certainty evidence that nicotine vapes improve quit rates compared with NRT and with no therapeutic aid, with no significant difference in serious adverse events between groups [1]. This update consolidated a decade of accumulating trial data on the efficacy of vaping for smoking cessation.

Pragmatic clinical trials have recently been extending this evidence to hard-to-reach populations. Courtney et al. (2025) reported that vaporised nicotine products produced higher 6-month biochemically verified cessation rates (28.4%) than NRT (9.6%) among adults experiencing social disadvantage in Australia, highlighting the potential of SNPs to narrow socioeconomic disparities in quitting success [9]. In the UK, the COSTED multicentre RCT (Pope et al., 2024) tested opportunistic provision of vape starter kits in emergency departments across six hospitals. Biochemically verified 6-month abstinence was 7.2% in the vape group versus 4.1% in controls [10]. Jackson et al. (2024) found that vapes were effective for cessation among older adults (≥ 65) in England, though only 28.4% of this age group perceived vapes as less harmful than cigarettes, suggesting misperceptions may disproportionately disadvantage older people who smoke [11].

An umbrella review by O’Leary, La Rosa, and Polosa (2025), synthesising 16 systematic reviews encompassing 24 RCTs, found that nicotine vapes were



the 2025 Cochrane review found high-certainty evidence that nicotine vapes improve quit rates compared with NRT, with no significant difference in serious adverse events

among socially disadvantaged adults in Australia, vapes produced 28.4% six-month cessation rates versus 9.6% for NRT – almost a threefold advantage

an umbrella review of 16 systematic reviews found vapes were more effective than alternatives in 8 of 11 analyses – and never less effective

more effective than alternative cessation treatments in eight of 11 analyses, and equally effective in the remaining three. No analysis found vapes less effective than any alternative [12].

Attention also shifted toward relapse prevention. In a secondary analysis of a large UK stop-smoking service trial, Hajek et al. (2026) found that continued vaping after quitting smoking was associated with significantly lower relapse risk over 12 months [13]. This challenges the assumption that post-cessation vaping should be discouraged, supporting instead a pragmatic view of sustained lower-risk product use as a relapse-prevention strategy.

Not all randomised trials favoured vapes: Wagener et al. (2026) found no significant difference in short-term (8-week) abstinence between vapes and combination NRT in a US quitline re-engagement trial, showing that effectiveness depends on programme design, product type, and outcome timeframe [14].

Cessation evidence for HTPs and oral nicotine pouches remains limited. The 2025 Cochrane review by Hartmann-Boyce et al. on oral nicotine pouches found only a few small trials, yielding low-certainty and inconclusive results [1]. A separate systematic review of nicotine pouch RCTs by Heshmati et al. (2025) likewise found no clear evidence of sustained quitting benefits [15]. To summarise, while HTPs and pouches show promise, they have not yet collected the robust cessation evidence seen for vapes.



Observational evidence, substitution, and dual use

Large observational studies continued to document real-world substitution patterns. Hardie and Green (2024) found that vaping modified the relationship between education and smoking outcomes in the UK. People who smoked and were not educated to degree-level were much less likely to quit than degree-holders. However, among regular vapers, this inequality disappeared [16]. Mendelsohn et al. (2025) compared adult smoking and vaping trends in Australia and New Zealand, finding faster declines in smoking under New Zealand's more permissive regulatory environment compared with Australia's restrictive prescription model [5].

Dual use remained a key research focus. Xue et al. (2025) measured toxicant exposure among dual users of cigarettes and vapes and found that harm was primarily driven by the intensity of continued cigarette smoking rather than by

vaping [17]. Where dual users substantially cut down cigarettes, their biomarker profiles moved closer to those of exclusive vapers. This is consistent with the relapse-prevention findings from Hajek et al. (2026), and means dual use can be viewed as an often transient stage on the path toward complete switching, rather than a stable endpoint [13, 17].

Jackson et al. (2025) analysed Smoking Toolkit Study data from England (2016–2024) and found that dual use prevalence rose from 3.5% to 5.2% of adults. Crucially, the pattern shifted over time from daily smoking plus occasional vaping toward occasional smoking plus daily vaping [18]. Authors suggest that this may be the result of increasing prevalence of dual use among younger adults, who are more likely than older dual users to smoke non-daily and vape daily. However, this also might indicate that dual use increasingly functions as a pathway toward complete switching.

In 2025, an updated systematic review and network meta-analysis by Tansawet et al. considered the effect of vaping on the risk of composite cardiovascular disease (CVD), a combined measure used in clinical trials that groups cardiovascular death, heart attack and stroke into one endpoint. The Tansawet review included studies that investigated vaping compared to cigarette use, dual use or non-use. Using adjusted odds ratios, it found a composite CVD risk of 1.31 for vaping, 1.57 for cigarette use, and 1.67 for dual use. This placed the composite CVD risk of vapes below cigarettes, but dual use at the highest point estimate [19]. However, these findings come mainly from cross-sectional evidence and are likely to be confounded by health selection: people who smoke and have worse underlying cardiovascular risk may be more likely to take up vaping in addition to smoking, rather than fully switch away from cigarettes. This could overstate the association between dual use and CVD.

Youth uptake and the gateway debate

The 'gateway hypothesis' has long been at the forefront of media and political concerns about young people's use of vapes. The hypothesis proposes that vaping acts as a 'gateway', increasing the likelihood that a young person will progress to smoking combustible cigarettes.

research in the UK found people who smoked and were not educated to degree-level were much less likely to quit than people who were – but among regular vapers, this inequality disappeared

analysis of dual use in England found patterns shifted over time from daily smoking plus occasional vaping, toward occasional smoking plus daily vaping – indicating that dual use is often a transient stage on the path toward complete switching



systematic review evidence on the “gateway” hypothesis is of very low certainty due to confounding by common risk factors

•
current US youth vaping fell to 1.63 million (5.9%), roughly one-third of the 2019 peak, while cigarette use remained at record lows (1.4%)

Research on youth vaping uptake and its relationship to subsequent smoking contradicts the hypothesis. A systematic review by Begh et al. (2025) concluded that while youth who try vapes are also more likely to try smoking subsequently, such associations were of very low certainty due to confounding by common risk factors [20]. Moreover, the review noted the overall decline in youth smoking alongside rising vaping, suggesting a possible inverse relationship at the population level. A critical evaluation by Selya (2024) argued that individual-level associations are equally or better explained by the common liability model, shared predispositions toward risk-taking, and that population-level trends are inconsistent with a net gateway effect [21].

Population surveillance data from the US support this interpretation. The 2024 US National Youth Tobacco Survey found ‘current’ youth vaping (use on one or more days during the past 30) had fallen to 1.63 million (5.9%), roughly one-third of the 2019 peak, while current cigarette use reached the lowest level ever recorded by the survey (1.4%) [22].

Biomarkers, toxicology, and exposure reduction

Biomarker and toxicology research continued to provide internally consistent evidence that toxicant exposure declines significantly when moving from cigarettes to non-combustible products. A meta-analysis by Cao et al. (2025) pooled data from 17 studies (involving 18 RCTs) and found that people who switched completely from smoking to vaping showed significantly lower exposure to eight of 14 FDA-listed carcinogenic biomarkers [2]. People who switched completely from smoking to HTP showed reductions in 12 of 14 carcinogens. Notably, 16 of the 17 studies included in the Cao meta-analysis were industry-funded.



Switching studies on HTPs consistently found reductions in toxicant exposure and biomarkers of potential harm compared with continued smoking. Ansari et al. (2024) reported that people who smoked and who switched completely to an HTP for 6 months experienced marked reductions in biomarkers of exposure and potential harm (inflammation, lipid metabolism, and respiratory markers).

These changes approximated those seen in smokers who quit entirely [3]. Akram et al. (2025) reported that one cancer biomarker (NNAL) and two cardiovascular biomarkers showed statistically significant harm reduction when switching from smoking to HTPs [23].

For vapes, Shiffman et al. (2024) compared biomarkers of exposure among 124 people who continued to smoke with 140 adults who had switched to a vape (JUUL) for ≥ 6 months. Levels of all biomarkers, including NNAL and HPM3, were significantly lower in switchers, along with most biomarkers of potential harm [24]. A follow-up study on the JUUL2 system showed non-nicotine biomarker reductions of 65–94% among switchers, with reductions leading to levels not significantly different from complete abstinence [25]. The Spicuzza et al. (2025) secondary analysis of the CEASEFIRE RCT provided rare functional outcome data: people who smoked and who switched completely to vapes or HTPs showed clinically meaningful cardiorespiratory improvements (measured by VO₂ max) at four and 12 weeks [26].

For oral nicotine products, toxicological evaluations continued to support a low-risk profile. Keyser et al. (2024) reported that modern nicotine pouch formulations showed minimal or no genotoxicity and cytotoxicity in standard in vitro assays. Multiple pouch brands were negative for mutagenic or genotoxic effects at doses far exceeding those expected during normal real-world use, while cigarette smoke was strongly positive in all assays [4]. Travis et al. (2025) conducted a scoping review of 62 studies confirming that oral nicotine pouches contain substantially lower toxicant levels than combustible tobacco [27].

Risk perceptions and the misinformation problem

A notable and concerning recent development has been the accumulation of evidence that public misperceptions of relative risk are not only worsening, but directly affecting health behaviour. Jackson, et al. (2024) surveyed 28,393 adult smokers in England and found that by 2023, 57.0% believed vapes were equally or more harmful than cigarettes (33.7% equally harmful, 23.3% more harmful). Only 35.2% held the scientifically supported view that vapes are less harmful [7]. The two sharpest deteriorations in trust could be closely associated with two issues. The first coincided with the 2019 US incidents of lung illness and fatalities that occurred as the result of contamination of illicit THC (cannabis) vapes with Vitamin E acetate. These losses were tragic for the individuals and families concerned. However, so-called 'EVALI' ('E-cigarette or Vaping product use Associated Lung Injury') was not caused by nicotine vaping. The second could be tracked to intensified youth vaping media coverage from 2021 onward.

These misperceptions have behavioural consequences. With data from the ALSPAC UK birth cohort with 6-year follow-up, East et al. (2025) found that smokers at age 24 who perceived vaping as less harmful were significantly more likely to have switched to vaping by age 30 [8]. Wang et al. (2025) documented the persistence of misconceptions relating to the Vitamin E acetate contamination among California adolescents: 55% incorrectly believed nicotine caused the lung illnesses and deaths, while only 11% correctly identified illicit cannabis products as the cause [28]. Taken collectively, these findings strongly indicate that inaccurate risk communication is a measurable barrier to harm reduction at the population level.

people who switched completely from smoking to vaping showed significantly lower exposure to 8 of 14 FDA-listed carcinogenic biomarkers; HTP switchers showed reductions in 12 of 14

people who switched completely from smoking to vaping or HTPs showed clinically meaningful cardiorespiratory improvements at four and 12 weeks

by 2023, 57% of adult smokers in England believed vapes were equally or more harmful than cigarettes, while only 35.2% held the scientifically supported view

among California adolescents, 55% incorrectly believed nicotine caused the outbreak of lung injuries referred to as EVALI; only 11% correctly identified illicit cannabis products



policy announcements can impact markets prior to implementation – and unintended consequences, like stockpiling or switching to illicit sources, need to be anticipated

Regulatory science and policy-relevant evidence

Regulatory science also evolved during the recent period. The US FDA granted premarket tobacco product marketing authorisations for ZYN nicotine pouches in January 2025 [29] and for six on! PLUS nicotine pouch products in December 2025 [30]. These were the first FDA authorisations for this product category. The decisions followed extensive review of toxicological, clinical, and behavioural evidence. By early 2026, the FDA's Tobacco Products Scientific Advisory Committee was convened to review modified-risk tobacco product applications for ZYN [31], reflecting a growing emphasis on formally evaluating the relative risk of novel products and the strength of evidence needed to support marketing them as lower-risk alternatives.

Research also examined how regulatory signalling shapes consumer behaviour. Jackson, et al. (2025) found that the announcement of an impending ban on disposable vapes in the UK triggered rapid shifts in product use patterns even before the ban took effect: many vapers moved from disposables to tank-based devices [32]. This illustrates that policy announcements can have measurable pre-implementation effects on markets, and that unintended consequences, such as stockpiling or switching to illicit sources, should be anticipated.

Economics, taxation, pricing, and substitution

A growing body of economic research in 2024–2025 tested policy levers directly relevant to THR, demonstrating that restrictions on safer products can unintentionally sustain cigarette consumption. Saffer et al. (2025) examined US vape flavour bans and found evidence of substitution: after bans, cigarette sales increased in some areas, suggesting that removing appealing lower-risk alternatives pushed some adults back to smoking [33]. Dave et al. (2025) reported that very high excise taxes on vapes deterred adults who smoked from switching without materially reducing youth vaping – a net negative for public health [34]. Meanwhile, Dauchy and Shang (2024) provided cross-country evidence that differential pricing shifts consumption in a harm-reducing direction: higher cigarette taxes and relatively lower HTP prices were associated with people migrating from smoking to HTPs [6].

Kenkel et al. (2025) analysed the demand-side effects of a menthol cigarette ban using an experimental marketplace design. The study found that a significant share of people who preferred menthol cigarettes would seek illicit products rather than quit [35]. Diaz et al. (2024) examined demand for vapes by nicotine strength using retail sales data, and found that consumers did not respond uniformly to price changes: some higher-nicotine products were more price-sensitive than others [36]. This matters for policy because uniform taxes or price controls can shift demand unevenly across products, potentially steering consumers toward products that are either less effective for substitution or more likely to be sourced illicitly.

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2.5 Population-level health impacts of THR: early signals

Detecting population-level health impacts from a shift away from combustible cigarettes is difficult and slow. Most major smoking-attributable diseases (lung cancer, COPD, cardiovascular disease) reflect decades of cumulative exposure. National trends are confounded by ageing demographics, variations in diagnostic practices, and health-system throughput. A structural lag between declining smoking prevalence and measurable reductions in disease incidence and mortality is therefore expected.

The question for THR is not whether or not this lag exists. Instead, it is whether rapid uptake of SNPs is already producing measurable divergence in health indicators, even where causality cannot be cleanly isolated, and even where the signals remain early and incomplete. Two types of outcomes are most plausible within a five to ten-year window following large-scale substitution: a) health measures that may respond relatively quickly, such as acute cardiovascular events and respiratory admissions, particularly in younger adults; and b) early signs that cancer rates may begin to separate from those seen in otherwise comparable countries with higher smoking prevalence, especially in settings with the longest non-combustible adoption histories. The recent evidence is now sufficient to describe credible early signals in several countries, though strong causal claims remain premature in most cases.

The following country examples illustrate emerging population-level patterns consistent with tobacco harm reduction dynamics. These observations should be interpreted as signals rather than definitive causal evidence linking SNP uptake to reductions in smoking-related harm. Time will tell – but the early signs appear positive.





Sweden: divergence in cancer burden

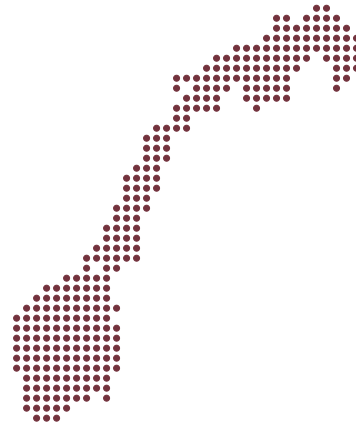
Swedish male lung cancer incidence is 39 per 100,000 compared to the EU average of 95 per 100,000; substitution of smoking for snus in Sweden is estimated to avert ~3,000 smoking-attributable deaths annually

•
matching Sweden's smoking prevalence across the EU could avert ~210,000 premature male deaths per year

•
even in the world's most mature THR market, cancer outcomes respond to combustion displacement with a multi-decade delay

Sweden remains the benchmark for population-level THR observation because it combines long-term high uptake of snus with very low daily smoking. In 2024, Sweden's Public Health Agency reported 5.4% daily smoking among adults aged 16–84 [1]. The 2025 EU Country Cancer Profile for Sweden, published by the OECD and European Commission, reports age-standardised cancer mortality of 207 per 100,000, compared with an EU average of 235 per 100,000 [2]. The report situates the cancer burden in the context of behavioural risk factors including tobacco use, and documents lung cancer incidence among Swedish men at 39 per 100,000 versus the EU average of 95 per 100,000 [2]. A counterfactual analysis by Ramström (2024) directly quantified the mortality benefit of snus-driven smoking displacement. Comparing observed Swedish mortality data with counterfactual scenarios modelled on comparable EU countries, the study estimated that approximately 3,000 lives are saved annually due to snus substitution for cigarettes [3].

However, the picture is not straightforward. Järholm et al. (2024), analysing Swedish Cancer Register data from 1970 to 2021, found that lung cancer incidence did not decline as steeply as the collapse in cigarette sales would predict [4]. Despite per-capita cigarette consumption falling from approximately 1,800 to 600 per year, adenocarcinoma in women increased sixfold, and lung cancer rates among men aged 75–79 in 2021 remained comparable to 1970 levels. The authors attributed this to long latency effects and the historical shift to filter cigarettes [4]. This finding demonstrates that even in the world's most mature THR market, cancer outcomes respond to combustion displacement with a multi-decade delay.



Norway: diffusion of non-combustible use and decrease in cardiovascular disease mortality

The Nordic countries provide a second indication of population-level harm reduction due to the regional diffusion of non-combustible products. The NORMO 2014–2024 report documents that daily use of snuff and nicotine pouches reached 13.6% across the Nordic region in 2024, with especially high prevalence in Iceland, Norway, and Sweden [5]. In Norway, far more people used smokeless nicotine products daily (19.3%) than smoked (9.1%) in 2024. The 2025 Country Health Profile reports a 23% decrease in cardiovascular disease mortality between 2014 and 2022 and a 12% decline in cancer-related deaths over the same period [6]. The report does not attribute these declines to THR or to snus specifically. Norway's improvements in cardiovascular disease mortality reflect many concurrent interventions, including hypertension management, lipid control, acute care and broader lifestyle changes. The Country Health Profile makes no attempt to isolate alterations in tobacco consumption and how these may have played a role [6]. This indication is best described as 'compatible with' reduced combustion exposure, rather than 'caused by' THR.



in Norway, far more people used smokeless nicotine daily (19.3%) than smoked (9.1%) in 2024; a 23% decrease in cardiovascular disease mortality (2014–2022) is compatible with reduced combustion exposure





Japan: a high-speed HTP transition and age-stratified cardiovascular signals

Japan is epidemiologically important because it experienced an unusually rapid market shift from cigarettes to HTPs, with limited legal availability of nicotine vaping products. This creates a natural experiment: if reduced combustion exposure produces early population-level benefits, Japan is one of the few settings where the behavioural change was fast enough to plausibly induce signals for early measurable changes in health indicators.

The strongest new epidemiological contribution is the study by Iwanaga et al. (2025) [7]. Using an interrupted time-series framework covering 2013–2022, the authors examined HTP spread and hospitalisations for acute coronary syndrome (ACS) across Japan. The headline finding is careful: the overall population trend change in ACS hospitalisations before versus after HTP introduction was not statistically significant. However, the study reported a statistically significant downward trend among younger adults aged 20–49 and steeper declines in areas with higher HTP uptake [7]. This is plausible as an early signal because ACS risk in younger adults is more sensitive to shorter-term changes in smoke exposure than late-stage atherosclerotic disease in older cohorts [8].

This finding extends earlier Japanese population-level evidence. Van der Plas et al. (2022) used Japan Medical Data Center claims data from 2010–2019 in an interrupted time-series design, reporting that HTP introduction coincided with significant decreases in COPD and ischemic heart disease hospitalisations [9]. Confounders including tobacco tax increases and behavioural changes during COVID complicate both analyses [7, 9]. Nonetheless, Japan offers a credible signal: limited or no visible change in overall population-level health indicators, with potential early divergence in demographic groups where cardiovascular risk is more reversible and exposure change occurred most sharply.

a statistically significant downward trend in acute coronary syndrome hospitalisations was observed among Japanese adults aged 20–49 following HTP introduction – with steeper declines in areas with higher HTP uptake

New Zealand: vaping substituting smoking and early movement in respiratory admissions

New Zealand has one of the clearest documented accelerations in smoking decline alongside increasing vaping prevalence. The Ministry of Health reports daily smoking prevalence of 6.8% in 2024/25, down from 16.4% in 2011/12. The prevalence of daily vaping rose from 0.9% when first measured in 2015/16 to 11.7% in 2024/25 [10].

One of the clearest early measurable health signals in New Zealand concerns COPD admissions. The Health Quality and Safety Commission's Atlas of Healthcare Variation reports that among people aged 45 and over who are enrolled with a Primary Health Organisation (PHO), the COPD admission rate declined from 3.9 per 1,000 in 2018 to 3.5 per 1,000 in 2023. This was accompanied by a decline in the proportion of COPD patients admitted at least once, from 16.3% in 2018 to 11.1% in 2023 [11]. These trends cannot be causally attributed to vaping or THR, as COPD admissions are influenced by clinical management, vaccination, viral circulation, and access to primary care. But they are directionally consistent with reduced smoke exposure at the population level, and appear within a timeframe during which respiratory admissions are more likely to respond than cancer mortality.

To summarise, measurable divergence in population-level health indicators is beginning to appear in a small number of high-uptake settings, primarily in cardiovascular and respiratory indicators, and in EU comparisons of cancer burden in the country with the longest history of THR adoption. The evidence does not yet permit strong causal claims that THR 'reduced national mortality by X%' in most countries. However, it is now strong enough to justify systematic monitoring of age-specific health indicators (ACS, COPD admissions, early-onset cancers) in the countries where combustion displacement is fastest. And crucially, it shows us that the population health gains depend on the rate of substitution.

COPD admission rates declined and the proportion of COPD patients admitted at least once fell from 16.3% to 11.1% (2018–2023) – directionally consistent with reduced smoke exposure at the population level

in a small number of high SNP-uptake settings, a measurable divergence in population-level health indicators is emerging, justifying ongoing systematic monitoring of age-stratified health indicators where combustion displacement is fastest



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Barriers and challenges to THR

Despite accelerating scientific evidence, country-level successes and a global consumer base approaching 200 million, tobacco harm reduction continues to face formidable headwinds in policy, institutional culture, flawed science and public communication.

3.1 Institutional opposition

In a previous section, we discussed the current global regulatory landscape governing the distribution, sale, price through taxation and use of SNP. But public policy is not created in a vacuum; it is determined by an array of internal economic, political, moral, social and cultural considerations. In addition to the ‘mood music’ around a particular issue, politicians and legislators must consider any international or bilateral treaty obligations. Despite tobacco control being a matter of domestic legislation, many countries, especially LMICs, take their policy lead from the WHO and the provisions of the Framework Convention on Tobacco Control (FCTC).

The WHO and the Framework Convention on Tobacco Control (FCTC)

Despite its stated imperative to pursue all options to reduce death and disease from smoking, the WHO continues to resist evidence of the public health benefits brought by substitution of combustibles by SNP. Instead, at the biennial Conference of the Parties (COP) to the FCTC, the WHO has repeatedly urged Parties to ban all SNP and/or flavours (a de facto ban, as noted), or to treat safer products on a par with tobacco products, whether or not they actually contain tobacco.

In the conference centre halls that host the COP meetings, countries that either advocate for THR, or are perceived to have a weak stance on SNP, risk accusations or insinuations that they are doing so under the influence of the tobacco industry. People who are directly affected by tobacco control policies – including those who use safer nicotine products – are excluded from proceedings, many of which take place behind closed doors. The only NGOs permitted to attend COP meetings are those belonging to the Global Alliance for Tobacco Control (GATC). Membership appears to be contingent on alignment with the WHO tobacco control agenda.

At the 2025 COP11 meeting in Geneva, instead of being praised for rapidly reducing smoking with pragmatic THR policies, New Zealand was handed the ‘Dirty Ashtray Award’ by the GATC as part of a regular and somewhat juvenile ritual. The ‘Orchid Award’, meanwhile, went to Mexico, for delivering what observers described as one of the strongest and most uncompromising statements against the tobacco industry during the conference’s opening plenary session. This, from a country with an adult male smoking rate of 26.2%, barely changed in over a decade, coupled with a vaping ban that has been enshrined in the constitution.



that the 'Dirty Ashtray Award' went to New Zealand and the 'Orchid Award' to Mexico at COP11 demonstrates that the institutional structures are rewarding prohibition, not outcomes

a growing coalition of countries pushed back on the WHO's anti-THR stance at COP 11; for countries to openly break ranks is unprecedented, and may signal a structural shift

For some years now, the FCTC Secretariat which holds responsibility for the COP agenda has done its utmost to stifle any voices not adhering to the 'party line' on THR. As decision-making at the COP is governed by consensus, all nations must agree before a proposal is passed. The Secretariat has generally relied on silence to signify consent. But doing things by consensus means that the voice of the smallest nation carries the same weight as the most powerful.

At COP10 in Panama in 2023, the small Caribbean nation of St Kitts and Nevis had broken ranks when a member of the delegation, former Prime Minister Denzil Douglas, cited Article 1 [d] of the Preamble to the FCTC. The Article explicitly names harm reduction as the third pillar of tobacco control, alongside supply and demand reduction. On behalf of St Kitts and Nevis, Douglas put forward a proposal to create a working group on tobacco harm reduction, in order to review the evidence. The proposal was shut down and, although a few countries made positive statements about SNP and THR, nothing came of it. In 2025, however, at COP11 in Geneva, more countries came forward.

The delegation from New Zealand directly attributed the significant declines in their smoking rate to regulated vaping, emphasising regulation was based on science, and explicitly framing harm reduction as part of FCTC implementation. North Macedonia called harm reduction a "cornerstone" of its national policy, and requested formal COP structures to undertake scientific evaluations of harm reduction. The Solomon Islands announced it was actively developing a national harm reduction strategy. The Gambia expressed its openness to evaluating emerging products through scientific assessment. Serbia supported innovation and reduced harm product research, and insisted on credible scientific evidence, while Albania supported innovation and harm reduction research, noting that all measures must be supported by credible scientific evidence. Other countries, including several from Africa, while not openly pro-THR, did assert the importance of considering the evidence and impact assessments.

Given the long-standing reluctance among Parties to raise harm reduction in the forum of the COP, all of these interventions are significant. Yet to many frustrated advocates for tobacco harm reduction, it still felt like another opportunity missed. Most disappointing of all was the resounding silence from three countries, Sweden, the United Kingdom and Japan, often thought of as 'poster countries' for THR. Nevertheless, due to a lack of consensus, the worst possible outcomes were avoided in Geneva in 2025. As has become customary, full discussion of this contentious issue was delayed to the next COP, set to take place in Armenia in 2027.

Continued questioning of harm reduction's legitimacy

Tobacco Tactics, part of Bath University's Tobacco Control Research Group (TCRG), published an editorial on the outcomes of COP11 in the journal Tobacco Control in November 2025. The summary was partial and misleading, and continuously referred to harm reduction in scare quotes:

"COP11 included a specific agenda item on nicotine addiction in light of the tobacco industry's narrative on 'harm reduction', during which Parties discussed proposed decisions. This year's discussion demonstrated the strong interest among Parties in identifying the best approaches to



protect future generations from both tobacco and nicotine addiction. In preparation for this discussion, the Convention Secretariat prepared a report, making it clear that there is no legitimate ‘tobacco harm reduction’ based on advancing the commercial and vested interests of the tobacco industry. In the context of the WHO FCTC, ‘harm reduction’ is ‘harm elimination’, the intended outcome from the full implementation of the treaty’s existing, evidence-based measures.” [1]

Presenting a consensus approach to harm reduction among Parties, this summary fails to acknowledge any of the views expressed at COP11 that ran counter to the WHO stance. The reality is that at COP11, most countries simply maintained their silence on the matter.

Even if a country’s delegation stayed silent, this does not necessarily mean that every individual on that delegation agreed with the policy line taken. On social media, COP delegate, Jindřich Vobořil, former National Drug Policy Coordinator for the Czech Republic and a supporter of harm reduction policies, expressed disgust at the tone of the proceedings in Geneva. This is an extract:

“I was at that meeting in Geneva, and it was a shocking experience. After many years in international negotiations, where I even used to head delegations, I encountered a whole new level of bizarreness[...] At that moment, I was genuinely in a radical mood, thinking we need to immediately withdraw from the WHO! I’d always held this organization in respect and often collaborated with them. But this really got to me. Because over the entire week, not a single scientific figure was mentioned. Just ideology and repetition of long-debunked narratives, like the gateway drug theory, for example” [2].



Philanthropy and its influence on tobacco control

In June 2025, just a few months before the COP11 meeting in Geneva, the World Conference on Tobacco Control (WCTC) took place in Dublin. Organised by The Union and supported by Bloomberg Philanthropies, the WCTC is a major event in international tobacco control. After attending the meeting, Professor Caitlin Notley from the University of East Anglia wrote in an editorial for *Tobacco and Nicotine Research* about – among other topics – conflicts of interest (COI) within the tobacco and nicotine field.

Within the tobacco research community, the notion of COI usually refers to industry-linked research, either carried out by industry scientists, or by those who have or had some connection to the tobacco or nicotine industries.

Professor Notley stated that it is essential for any researcher receiving industry funding to make the necessary COI declarations. But she also raised a question that has not yet been fully debated within the field; the issue and influence of philanthropic donations:

“what about philanthropic funding; if your research department receives money in donations, legacies from a private investor, these too should be deemed conflict of interest. Some presenters [at the WCTC] acknowledged such funding, but not all. This must be addressed. Receiving funding from a public health-interested funding source cannot

be neutral but must explicitly or implicitly have influence on the research undertaken. This is very clearly a conflict of interest. Being sceptical and questioning all potential sources of conflict should be the norm.” [3]

As noted in previous GSTHR reports, it is estimated that Bloomberg Philanthropies has distributed around \$1.5bn in support of global tobacco control since 2005. Among many long-standing recipients are the Tobacco Tactics team and broader TCRG at the University of Bath, authors of the editorial about COP11 in *Tobacco Control* cited above, which questioned the legitimacy of tobacco harm reduction. Numerous NGOs, academic institutions, and media organisations have received funds from Bloomberg Philanthropies or linked entities. Many appear to be actively working to undermine the progress of THR.

An investigation by risk analyst and science communicator David Zaruk found that, of 29 civil society organisations admitted to COP11, “at least 15 [...] were either created by Michael Bloomberg’s foundations, Bloomberg Philanthropies or the Bloomberg Family Foundation, or receive significant funding from his foundations.” [4]

Crucially, however, Bloomberg funding also underpins the tobacco control activities of the World Health Organization itself, mostly through the Bloomberg Family Foundation rather than Bloomberg Philanthropies. Information about specified voluntary contributions in the WHO’s two-year funding cycle ending in December 2025 shows that the WHO received a total of \$33.3m from the Bloomberg Family Foundation [5]. Of that total, 42.5% went to activities WHO describes as fostering ‘supportive and empowering societies through addressing health risk factors’ [6], and 31.9% to activities that support ‘safe and equitable societies through addressing health determinants’ [7]. Both categories are likely to include tobacco control workstreams.

Under the second Trump presidency, the WHO’s perennial funding gaps have worsened yet further. It leaves the organisation even more reliant on Bloomberg funding. To what degree is global public health policy on tobacco control influenced by the personal agenda of one funder? If the WHO’s strategy was focused on control of combustible products while backing THR as a complementary approach, such concerns could be mitigated. But Michael Bloomberg has long been publicly opposed to THR – and this view appears to have become baked into the WHO narrative.

it is estimated that Bloomberg Philanthropies has distributed around \$1.5bn in support of global tobacco control since 2005; the degree to which a global public health policy is shaped by one funder’s agenda is a structural governance concern



The European Union

There remains opposition to THR at the European Union (EU) Commission, the executive branch of the EU. The EU bloc's stated position for COP 11 was that:

"Taking into account the significant and rapid increase in the sales and consumption of novel and emerging tobacco and nicotine products, particularly among young people, and their role as a gateway to nicotine addiction and ultimately traditional tobacco consumption, emphasise the strategic importance of addressing at COP11 agenda item 4.5 on the implementation of measures to prevent and reduce tobacco consumption, nicotine addiction, and exposure to tobacco smoke, and the protection of such measures from commercial and other vested interests of the tobacco industry in light of the tobacco industry's narrative on "harm reduction"." [8]

In September 2025, the Hungarian Commissioner responsible for health and animal welfare wrote on X that "Nicotine...causes cancer." The post was later edited to soften the language, so that it read instead "Nicotine... contributes to cancer development." The correction still misrepresented science [9].

But as at the COP, pushback has started. Six member states – Sweden, Romania, the Czech Republic, Croatia, Greece and Italy – formally opposed Spain's proposed ban on nicotine pouches which set out a nicotine cap of just 0.99 mg per pouch – effectively banning the product – alongside a sweeping ban on non-tobacco flavours in vapes, nicotine pouches and heated tobacco products. The objections, known as Detailed Opinions, cited serious concerns over legality, proportionality and public health impact. Several warned that the proposals could worsen smoking-related health outcomes – particularly if these measures are adopted as a blueprint in upcoming revisions to the EU Tobacco Products Directive (TPD) [10].

six EU member states formally opposed Spain's proposed de facto nicotine pouch ban, citing concerns over legality, proportionality, and the risk of worsening smoking-related health outcomes – signs of an emerging pro-proportionality bloc within the EU?



The US Food and Drug Administration

The FDA has been sending out mixed messages on THR. In May 2025, testifying before the Senate Appropriations Committee, FDA Commissioner Dr Martin Makary exaggerated the level of youth vaping, claiming all the metrics were on the rise. In fact, the opposite is true, according to the government's own figures [11]. Makary took no account of the potential benefit vaping offered as an off-ramp for adults who smoke, despite the FDA's own strategic plan (2023–2024) noting the importance of educating adults who smoke on the 'continuum of risk' across nicotine and tobacco products.

Yet despite the confusion, and the byzantine process of obtaining FDA authorisation to bring a SNP to market, around 60 products have obtained a Market Granted Order in the US. Some products (mainly oral) have obtained a Modified Risk Tobacco Product order, allowing the manufacturer to promote the product as lower risk, albeit under tight advertising parameters.

the FDA has been sending out mixed messages on tobacco harm reduction

many prominent institutions have taken an anti-THR position, and continue to ignore independent clinical evidence that supports it

Other high profile organisations

Numerous prominent academic and medical institutions, public health organisations and NGOs around the world, and especially in the US, have taken an anti-THR position. Many of their objections are long-standing, a steadfast refusal to acknowledge the benefits of THR as an off-ramp from smoking. And again, during the period covered by this report, independent clinical evidence has been ignored in favour of claims that tobacco harm reduction as a concept was formulated by the tobacco industry to increase its profits.

In its 2025 'State of Tobacco Control' report, the American Lung Association confirmed its opposition to policies that promote or normalise vapes as harm reduction tools, arguing that they undermine proven tobacco control measures and risk renormalising nicotine use, especially among young people. The organisation called for robust FDA enforcement against all illegal tobacco products, including flavoured vapes [12].

In October 2025, the International Pediatric Association published a position paper on vapes calling for bans or strict regulation on their manufacture, marketing, sale, and use:

"Pediatricians and medical associations play a vital role in advocating, educating, and providing clinical support to combat industry-driven misinformation and safeguard the youth. IPA urges its member societies to adopt unified, evidence-based policies to restrict access and exposure and to ensure governments are guided by robust scientific evidence not industry interests. E-cigarettes threaten to reverse decades of progress in tobacco control – an urgent, coordinated action is required to safeguard the health of future generations." [13]

The list of authors includes Stanton Glantz, a retired University of California professor whose opposition towards THR is well known [13]. His research into vaping has previously faced high-profile retraction [14].



3.2 SNP, THR and the media

It has always been the case that bad news sells – or in the digital age, bad news means clicks. And in the contested world of THR, there appears to be a lot of bad news for the media to draw on.

The focus is most frequently on the uptake and perceived risks of SNP; these are rarely placed in a harm reduction context, and are considered in isolation from the toll and scale of ongoing adult smoking. Key flashpoints for more lurid or sensational media coverage about SNP use have changed over time. Over the period covered by this report, significant media attention has turned to the use of nicotine pouches among young people.

Unfortunately, researchers and academic institutions can also be responsible for some of the more sensational headlines about SNP. The media are often quick to publish apparently dramatic study results. Sometimes this may result from the way academic press offices frame or even distort originally cautious findings to attract media attention.

In one extraordinary case from 2025, however, a researcher at Manchester Metropolitan University (MMU) made extensive comments to media about the results of his study and their interpretation – before the study had either passed peer review or been published.



In a *Daily Mirror* exclusive, titled ‘Vaping horror as first ever study reveals deadly side effects – heart disease, organ failure, dementia’ (23 February 2025), Dr Maxime Boidin, a Senior Lecturer at MMU’s Institute of Sport, was quoted as saying:

“What we have found is the dangers for someone who keeps vaping are no different from smokers. At the beginning (of the study) I also believed that vaping was more beneficial than smoking. You see a lot more people vaping these days because they don’t think it’s too bad. Many will be horrified to know the truth.” [15]

The study went on to receive more coverage in the *Mirror* and other newspapers. In an open letter to Dr Boidin, Clive Bates, THR advocate and former Director of ASH, drew attention to numerous issues with the decision to promote the study prior to the peer review and publication process, asserting that “it is unethical and unacceptable to conduct science in this way.” [16]



a sports science researcher at Manchester Metropolitan University spoke to media about the results and interpretation of his study on vaping before it had either passed peer review or been published – and received widespread coverage

3.3 Impact on public understanding and policy

misconceptions about vaping harms have increased in the UK; that it has happened in a country seen by many as a 'THR leader' is particularly demonstrative of the challenges around misinformation

Reports that broadly equate vaping with smoking have caused confusion among the public in many countries. Surveys increasingly show many smokers now incorrectly believe vaping is as harmful or more harmful than cigarettes, as noted earlier in data drawn from the Irish population (see Section 2.1).

In its 2025 survey of vaping among British adults, UK Action on Smoking and Health (ASH) revealed that misconceptions about vaping harms have increased: 53% of people who smoke believe vaping is as harmful or more harmful than smoking [17]. Equally concerning is that the same misperceptions are increasing among young people: according to data from ASH, 63% now believe vaping is as or more harmful than smoking [18].

That this is happening in the UK is especially demonstrative of the challenges facing THR. The UK is one of the countries in which the uptake of vaping has coincided with a significant acceleration of the decline in smoking rates. More people now vape in the UK than smoke (see Section 2.1). In comparison to many countries around the world, the policy environment in the UK has been broadly supportive of this shift for some time. The UK Government has adopted some limited but important tobacco harm reduction policies, through long-standing official support for vaping as a smoking cessation tool. The 'Swap to Stop' initiative, being rolled out by English councils in 2026, is a government-funded scheme to provide one million free vape starter kits to adults who smoke [19–21].

Recently, however, these pro-THR measures have existed alongside a ban on disposable vapes (2025), and the likely implementation of restrictions on flavours and a new excise duty on e-liquids through the impending Tobacco and Vapes Bill (see Section 2.1).

Regular reporting issues:

Unbalanced framing: News often opts for definitive or emotional framing over uncertainty, equating rare or preliminary findings with mass risk.

Press releases as amplifiers: Sensational language in PR materials often triggers distorted media reporting, which lacks critical context or methodological caveats.

Youth concern dominates: Mainstream coverage disproportionately emphasises youth use of SNP, even when data show steady or declining trends.

Harm reduction overlooked: Media seldom presents safer nicotine products as offering off ramps from smoking for adults, but instead as risks facing young people, skewing public perception and potentially deterring beneficial behaviour.



In October 2025, the *British Medical Journal* published a joint letter from Professor Sarah Jackson of the Department of Behavioural Science and Health at University College London (UCL), Hazel Cheeseman, the CEO of ASH UK, Dr Katherine East of Brighton and Sussex Medical School and Professor Jamie Brown, also of UCL. The group expressed their concern that “public understanding of the relative harms of e-cigarettes is currently worse than it has ever been”, and noted that “addressing this is an urgent public health priority [as] correcting these beliefs could help a substantial number of people transition entirely away from smoking.” [22, 23]

In the next section, we look at the real-world harms caused by misinformation and disinformation about safer nicotine products and tobacco harm reduction.

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4 The human cost of anti-THR policies

4.1 Missed public health opportunities

While conventional tobacco control measures have driven significant reductions in smoking, recent prevalence data from WHO indicate that these measures have reached a point of diminishing marginal returns in many countries. The persistence of smoking, particularly in LMICs, suggests that the status quo policy environment is insufficient to eradicate the burden of combustible tobacco.

At the same time, the emergence of SNPs offers a mechanism to radically accelerate the displacement of combustible cigarettes. The global tobacco epidemic is defined not only by the rate of decline in smoking, but by the divergence between what is being achieved and what is empirically achievable. In public health economics, this divergence represents an opportunity cost – avoidable mortality, preventable disease, and foregone economic value, arising not from the absence of solutions, but from policy decisions to restrict, prohibit, or marginalise SNPs. This section analyses these opportunity costs, framing the failure to adopt THR as an active generator of preventable mortality and economic loss.

The scale of what is at stake

The public health gains from reducing smoking are now quantified with increasing precision. Islami et al. (2025), analysing five decades of US national mortality data, estimated that 3.9 million lung cancer deaths were averted and 76.3 million person-years of life gained between 1970 and 2022 as a direct result of reductions in cigarette smoking [1]. These averted deaths accounted for 51.4% of total cancer mortality declines in the United States.





While the authors attribute these gains to tobacco control broadly, the recent acceleration of smoking decline in the US, where adult prevalence has fallen from 20.6% in 2009 to 11.6% in 2022, has coincided with the emergence of vapes as a widely adopted substitute, with multiple population-level studies documenting that increased vape use is associated with decreased smoking prevalence [2–4].

Looking forward, Rey Brandariz et al. (2024) modelled the impact of eliminating tobacco smoking in a single birth cohort (2006–2010) across 185 countries, estimating that 1.2 million lung cancer deaths (40.2% of all lung cancer deaths in that cohort) could be prevented by 2095 [5]. The largest share of these averted deaths would occur in LMICs. While the study models a complete tobacco-free generation scenario, it does not address by which mechanism smoking would be eliminated. The THR argument is that SNPs represent the most plausible real-world pathway to achieving such radical reductions in smoking initiation, complementing regulatory and fiscal measures that have shown diminishing returns in isolation.

Modelling the population-level impact of SNPs

A growing body of dynamic simulation models has directly estimated the counterfactual health gains from SNP adoption. In the United States, Mendez and Warner (2021) employed 360 scenarios with varying assumptions about vaping's effects on initiation, cessation, and relative risk. Net gains in life-years were produced in 99% of these scenarios, with the population gaining from 143,000 to 65 million life-years by 2100. Vaping-induced quitters gained on average an extra 1.2–2.0 years of life compared to smokers who quit without vaping [6]. Country-specific models by Levy and colleagues show that the availability of vapes significantly accelerated declines in smoking beyond what conventional tobacco control measures alone would have achieved, in England, the United States, Canada, and Australia, preventing hundreds of thousands of deaths over several decades [7–10].

These models have since been extended to high smoking-prevalence LMICs where the opportunity cost of inaction is largest. Mzhavanadze and Yanin (2023) applied the Mendez-Warner framework to the Russian Federation, while Mzhavanadze (2024) and Mzhavanadze and Dubrovskiy (2025) replicated and expanded this approach for Georgia and Ukraine, evaluating 210 distinct vape uptake and risk scenarios. Across these analyses, more than 85% of modelled scenarios yielded net positive population health outcomes [11–13]. Under the most plausible (status-quo) scenarios, vaping was estimated to avert approximately 5–8% of smoking-attributable deaths over an 80-year horizon. In the best case scenarios, realisation of which would require supportive THR policies, mortality reductions reached 19–30% of smoking-attributable deaths [11–13].

In Sweden, observed data confirm what models project. Ramström (2024) estimated snus has averted approximately 3,000 smoking-attributable deaths annually [14], while Sundén (2024) extrapolated that matching Sweden's smoking prevalence across the EU could avert approximately 210,000 premature male deaths annually (the cumulative annual cost of the EU's snus prohibition) [15].

Mahlich and Kamae (2024) estimated how switching from cigarettes to HTPs could affect smoking-attributable disease and direct healthcare spending for COPD,

99% of modelled US vaping scenarios produced net gains in life-years (between 143,000 to 65 million by 2100) and modelling in England, the US, Canada, and Australia shows vapes significantly accelerate smoking declines beyond conventional measures alone

ischemic heart disease, stroke, and lung cancer in Japan [16]. In their baseline scenario, assuming 50% of people who smoked switched and a 70% reduction in excess risk versus continued smoking, the model projected more than 12 million fewer smoking-attributable patient cases and about ¥454 billion in annual healthcare cost savings (roughly a 26% reduction in modelled costs for these conditions), with larger gains in high-prevalence prefectures [16].

Economic burden of regulatory inertia

Action on Smoking and Health (ASH) estimates smoking costs £43.7 billion annually in England alone [17]; in the US, Nargis et al. (2022) estimated \$436.7 billion in annual economic losses [18]. A recent modelling study by Bate and Bardosh (2026) estimates that authorising smoke-free nicotine products in the US could prevent productivity losses of approximately \$210 billion over 20 years [19]. WHO FCTC investment cases document losses of 1.1–2.9% of GDP across LMICs [20], yet none have so far evaluated harm reduction as a complementary strategy.

The evidence is clear: the absence of THR support is not a neutral policy stance. It is measurable in the millions of deaths that could be avoided each year through reductions in smoking. The widening policy divergence between countries embracing THR and those opposing it represents perhaps the most consequential regulatory fault line in global health.

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4.2 Inequality and vulnerable populations

The distribution of the benefits of tobacco harm reduction remains starkly unequal. While SNPs have helped millions of people who smoke in HICs switch away from combustible tobacco, low-income communities, men in high prevalence countries, people with mental illness, people who use drugs and other marginalised populations face the greatest barriers to accessing these alternatives.

Moreover, the majority of the global smoking population live in LMICs, where SNP access is limited, prohibited, or unaffordable, and where smoking cessation infrastructure is weakest. The result is a widening harm reduction gap: THR is not reaching those who need it most.

The socioeconomic gradient

Smoking has become a reliable marker of disadvantage. In Scotland, 26% of adults in the poorest communities smoke, compared with 6% in the wealthiest, and smoking-attributable hospital admissions are four times higher in the most deprived areas, a disparity that has widened since 2008 when it was 3.3 times higher [1, 2]. Across 48 LMICs surveyed by the World Health Survey, the poorest men were 2.5 times more likely to smoke than the richest, with prevalence exceeding 70% among the poorest quintile in several countries [3]. In the EU, smoking is systematically concentrated in the lowest income groups, both at individual and country level, regardless of average national income, and income-related smoking inequalities have increased over time [4]. A substantial share of the social and health costs of smoking is paid by the less well-off, reinforcing smoking as a driver and amplifier of socioeconomic inequality rather than a correlated behaviour [4].

Evidence from England offers cautious optimism on whether SNPs can disrupt this gradient. The Office for Health Improvement and Disparities (OHID) concluded in its 2022 evidence review that vaping is more common among disadvantaged adults. While this pattern mirrors smoking prevalence, it suggests that vaping is a direct substitute for smoking [5]. A UK Household Longitudinal Survey analysis found weaker socioeconomic inequalities in smoking cessation among vapers than non-vapers, indicating that vapes could help narrow inequalities [6]. More recent analysis came to similar conclusions: as previously noted, vapes could be especially helpful as a cessation tool for people who smoke and who are not educated to degree-level, which therefore may help reduce inequalities in smoking rates [7].

Yet these signals come overwhelmingly from HICs with supportive regulatory environments. As documented in Section 2.3, SNPs remain substantially more expensive than cigarettes across most LMICs. Close to one-third of the world's population cannot legally purchase any SNP, while combustible cigarettes remain available everywhere.

The significant inequalities within THR extend to the generation of evidence. A bibliometric analysis published in 2025 found THR research output per million adults who smoke stood at 1,128 in New Zealand, 634 in the UK, and 466 in the United States but ranged from just 1.8 to 53.5 across Asia, Africa, and South America. This leaves vast populations, in regions with high smoking prevalence, lacking relevant geographically and culturally-specific evidence [8].

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policy decisions in regions with high smoking prevalence are being made without relevant geographically and culturally-specific evidence, compounding THR's inequalities further

China's male population alone accounts for over 40% of global cigarette consumption



people with psychiatric conditions have a prevalence of tobacco use approximately two to four times greater than that of the general population, and also consume a vastly disproportionate share of cigarettes

a landmark U.S. study of people discharged from inpatient addiction treatment found that tobacco use accounted for 50.9% of all deaths, compared with 13.9% from alcohol or other drugs

Gender inequality: high male prevalence

In Western Pacific, South-East Asia, Eastern Mediterranean, Central Asia and Eastern Europe, male smoking prevalence remains catastrophically high, while female rates are low. This disparity is driven by cultural and social norms. WHO projections for 2025 show male cigarette smoking prevalence in Timor-Leste at 65.7%, Indonesia at 59.7%, Palestine at 50.5%, Armenia at 48.2%, Lebanon at 47.2%, and an additional 10 countries with male prevalence of 40% or higher. China's male population alone accounts for over 40% of global cigarette consumption [9].

These countries represent some of the largest concentrations of smoking-attributable mortality worldwide, yet SNP adoption in all of them is minimal. Across Eastern Europe and Central Asia, vaping and HTP use hover between 2% and 4%. Recognition of THR as a policy concept is virtually non-existent [10]. Several countries in the region have recently adopted restrictive frameworks – mostly bans on the sale of vapes, snus and nicotine pouches. This creates a barrier for the kind of consumer-led switching that transformed Sweden, New Zealand and Japan, where nicotine pouches, vapes and HTPs, respectively, have helped drive overall smoking prevalence down.

Vulnerable populations: highest burden, fewest exits

People with psychiatric conditions have a prevalence of tobacco use approximately two to four times greater than that of the general population. They also consume a vastly disproportionate share of cigarettes [11–14]. Tobacco-related diseases account for roughly half of all premature deaths among those with serious mental illness. Yet tobacco dependence is often untreated within mental health services, and access to harm reduction alternatives is rarely integrated into routine psychiatric care. People with mental illness are frequently shielded from harm reduction strategies due to institutional risk aversion, outdated assumptions about nicotine use, and overly restrictive regulatory environments [15]. The result is a paradox in which the populations at highest risk from smoking are the least likely to benefit from innovations in nicotine delivery that have reduced smoking elsewhere.

Similar patterns are observed among other marginalised groups. Among people experiencing homelessness, smoking prevalence reaches 68–80% [16, 17]. The SCeTCH cluster randomized trial across British homelessness support centres (2024–25) found that vape starter kits produced short-term smoking reductions but not sustained abstinence, underscoring the need for layered support [18]. In prisons, the smoking prevalence rate is on average two to four times higher than in general populations, with prevalence typically reaching 60–90% [19].

Among people who use drugs and those engaged with addiction treatment or harm reduction services, smoking prevalence ranges between 70%–80% [20–22]. Tobacco-related mortality in this population over the long term frequently exceeds deaths attributable to the primary drug of dependence. A landmark U.S. community cohort study of individuals discharged from inpatient addiction treatment found that tobacco use accounted for 50.9% of all deaths, compared with 13.9% from alcohol or other drugs [23]. In a Canadian population-based



cohort, smoking-related diseases were responsible for between 36.3% and 48.5% of all deaths among individuals with alcohol or drug use disorders [24]. And a recent analysis of mortality rate data for 106,789 people who used heroin in England found that 63% died before the age of 70, compared to just 16% of the general population. A similar number of the premature deaths among heroin users were caused by tobacco smoking (24%) as illegal drugs (28%) [25].

Yet drug harm reduction programmes rarely integrate tobacco cessation or THR [22, 26]. Barriers may include staff smoking, limited training in tobacco dependence treatment, and enduring concerns that addressing tobacco use could destabilise recovery from other substances, despite limited empirical support for this assumption [27–29]. The GSTHR Policy To Practice paper (2026), 'Integrating tobacco harm reduction into drug treatment and harm reduction services' offers practical ideas for practitioners on how to support clients to reduce or quit smoking, including by switching to safer forms of nicotine consumption [30].

Policy choices that widen the gap

Several policies are worsening inequality in THR access. Firstly, the numerous blanket bans on SNP in high-burden LMICs, e.g. India, Brazil, Thailand and others. These countries are home to hundreds of millions of people who smoke. Blanket bans prevent access to safer nicotine products while leaving cigarettes freely available. Any consumers who choose to seek out SNP must do so at the mercy of the black or grey market.

Secondly, extending excise taxes to SNPs erodes the price advantage that makes switching financially rational for people on low-incomes who smoke. Thirdly, the amplification of misperceptions or misinformation about SNPs by public health authorities. Misperceptions about relative risk are socioeconomically patterned: people who smoke and who are of lower socioeconomic status and lower educational attainment are significantly more likely to believe, for example, that vapes are as harmful as smoking. When those in authority amplify these misperceptions, the informational barrier falls heaviest on those with the fewest alternative sources of guidance.



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the regulatory, informational, and structural barriers that keep the world's most vulnerable consumers locked into the most dangerous form of nicotine use must be dismantled

The populations who are most harmed by combustible tobacco are systematically the least likely to access safer nicotine products. Closing this gap requires action on a number of fronts. Manufacturers must step up and make their products affordable compared to combustibles, not just in HIC, but everywhere. And the regulatory, informational, and structural barriers that keep the world's most vulnerable consumers locked into the most dangerous form of nicotine use must be dismantled.

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4.3 Illegal and unsafe markets

The consequences of prohibition are often not those intended by the policymakers who enforce it. Restrictive regimes can redirect demand into supply chains with weaker consumer protection, while enforcement-heavy responses can impose external costs, including impacts on community safety, increased risk of corruption, and criminalisation. Recent evidence indicates that illicit SNP markets are large where products are prohibited or where legal supply is tightly bottlenecked, but net welfare and population health effects are context-dependent and often not directly measurable [1–4]. Illicit SNPs do not comprise a single category; we need to consider:

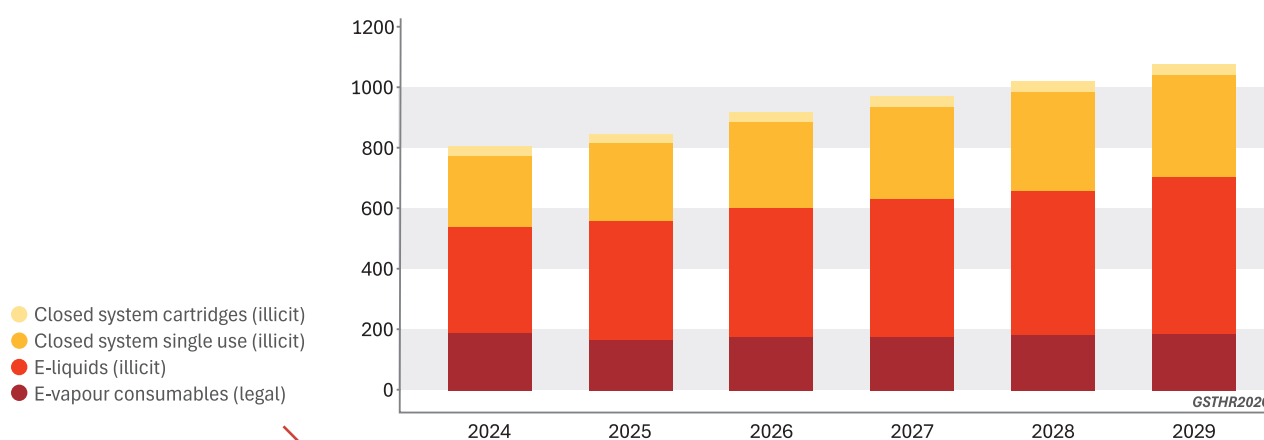
1. Illegal manufacture/smuggling and tax evasion;
2. Unauthorised but potentially compliant products, which are legal in origin but unlawful in the destination because of prohibitions or missing marketing authorisation;
3. Counterfeit/falsified products (fraudulent branding);
4. Substandard/unsafe products (mislabelled nicotine content, prohibited additives/contaminants, or device defects).

‘Illicit’ is therefore regime-relative, meaning that the same product may be legal in one jurisdiction and illicit elsewhere. Legal status is defined by the local regulatory pathway (ban vs authorisation vs product-standard setting) [2, 5].

Illicit market size

Market size by category 2024–2029

Billion sticks equivalent



Note: Volumes are expressed in cigarette stick equivalents; a secondary source reporting Euromonitor International research states that 1 stick equivalent equals 0.08 ml of e-liquid, although Euromonitor’s underlying derivation of this conversion is not publicly described [6].

Note: “E-vapour consumables (legal)” refers to legally sold consumable e-vapour products, including closed-system single-use products, closed-system cartridges/pods, and e-liquids. It excludes reusable devices and starter kits.

GSTHR2026. Data source: Adapted from Euromonitor International (2025) [1]

Global estimates of illicit SNP markets are limited and dominated by commercial modelling. Euromonitor International estimates illicit vaping products exceed 75% of total global volume (47 million litres) and values the illicit vaping product market at around \$47 billion. The share of illicit products is highest (89%) among disposables [1].

Country estimates vary sharply with method and channel coverage:

- » In the US, some estimates show that products that did not have US Food and Drug Administration marketing authorisation made up 86.3% of tracked retail vape sales [3]. Reuters reported sales of around \$2.4 billion in 2024 of unauthorised, flavoured disposable vapes from mainstream retail channels, making up 35% of vapes sold [4].
- » In Australia, a government report estimated 95.7% of the vape market operates outside regulatory safeguards, and valued that market at AU\$1.6 billion [5].
- » In the EU, 48% of vaping products were supplied through 'irregular' channels, comprising a 13% 'grey' market (private personal consumption of non-compliant products) and a 35% commercial 'black' market (commercial illegal trade), with an estimated value of €6.6 billion. However, national variation was substantial: the 'irregular' share ranged from 26% in Belgium, 30% in Portugal and 32% in the Netherlands to 58% in France and Poland, 63% in Hungary and Slovakia, 66% in Czechia and 67% in Finland [7].



Regulatory drivers

The evidence on regulation of SNP aligns with standard incentive mechanisms: prohibitions and de facto bans raise the risk premium for suppliers, and displace retail into informal and online channels. Authorisation bottlenecks and restrictive product standards such as nicotine caps, flavour bans, and device capacity limits create 'legal scarcity', and can encourage non-compliance when the legal offer diverges from consumer demand [1, 2, 4]. European evidence indicates that differences in national taxation levels and product regulations (online sales, authorisation procedures, and product standards) facilitate both grey-market cross-border purchasing and commercial black-market supply chains, particularly where domestic legal access is constrained or less competitive relative to neighbouring markets [7]. In Latin America, Euromonitor describes bans in Brazil and Mexico as drivers of illicit trade. Colombia's 2024 regulation is presented as being associated with lower levels of illicit sales, but with informal channels continuing to persist [8].

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Product safety and health risks

Direct comparisons of illicit versus regulated SNP safety are limited, but Australia provides rare laboratory evidence from confiscated products. In seized contraband devices/pods, nicotine labelling was frequently absent despite the presence of nicotine; 63.5% showed discrepancies between labelled and measured nicotine, 89% exceeded 30 mg/mL and 4.2% contained at least one compound prohibited under Australia's Standard for Nicotine Vaping Products [9]. This points to

mislabelling and non-compliance risks, as well as potential intrinsic toxicant risks where prohibited compounds are present.



Impact on public health

From a public health perspective, illicit supply can expand access to lower-risk substitutes for adults who smoke in restrictive regimes. This is potentially beneficial relative to a no-access baseline, but any benefit is conditional on product quality, user information, and the absence of criminal distribution. Harms are more clearly documented where illegality concentrates supply within organised crime, thus weakening consumer protections and age controls. In Mexico, reporting describes cartel involvement, coercion, and extortion dynamics in the post-ban vape market [10]. In Australia, reporting characterises enforcement as a ‘whack-a-mole’ dynamic and links illicit nicotine markets to significant violence and retailer adaptation [11]. Overall, high-quality causal evidence on whether illicit SNP markets produce net public health gains (via smoking displacement) versus net harms (via unsafe products and enforcement externalities) remains limited. This is a major uncertainty rather than an evidentiary finding.

Policy implications

Evidence supports prioritising regulated access and consumer protection over reliance on prohibition alone. Risk-proportionate legal access pathways with enforceable standards can reduce the gap between consumer demand and legal supply, narrowing the space for counterfeit/unsafe products.

Targeted enforcement is most defensible when focused on unsafe and falsified supply and high-risk supply chains rather than end users, and should be paired with surveillance systems that triangulate retail-scanner data, systematic online marketplace monitoring, and laboratory testing of seized products.

Where taxation or price differentials are material, policymakers should consider how to reduce incentives to buy products in lower-tax or less regulated markets and resell them in higher-price markets, alongside enforcement costs. Robust, comparable evidence on this issue remains much weaker for SNP than for cigarettes.

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5 Conclusion: Tobacco harm reduction – not if, but when

even if combustible tobacco products vanished overnight, the health impacts from decades of people inhaling their smoke would project far into the future

inequality is one of the greatest challenges in public health; the current response to tobacco is no exception, and tobacco harm reduction is not exempt from stark inequalities either

With the licit and illicit trade in cigarettes so profitable, and smoking so deeply rooted in many societies, the end of the road for smoking is, sadly, still a long way off. Between 2000 and 2030, the absolute number of cigarette smokers will have increased in the Eastern Mediterranean, Africa and the Western Pacific. This fact – drawn from the WHO's own projections – runs counter to the regular reports touting global progress regularly published by the organisation [1]. On close inspection, these assessments frequently refer to the rate of adoption of tobacco control measures. This is not the same as measurable decreases in the actual number of people who smoke.

Smoking remains the leading cause of premature, preventable death around the world in 2026. If smoking were a deadly communicable disease, it would be treated as a global emergency. But eight million people have been dying every year for years. And even if all combustible tobacco products vanished overnight, the individual and population health impacts from decades of people inhaling their smoke would project far into the future.

The figures are damning. It is becoming ever clearer that the existing tobacco control response is insufficient to sustain rapid and – crucially – equitable reductions in smoking-related deaths. Inequality is one of the greatest challenges in public health; the current approach to tobacco is no exception. These inequalities are played out at global level, with both smoking rates and absolute numbers of people who smoke so much higher in low- and middle-income countries compared to higher income countries.

These inequalities are also seen within populations. Older people everywhere are being left to smoke until they die. Much higher rates of smoking are common among people facing poverty, marginalisation or stigmatisation, whether that is because they live with mental ill health, drug or alcohol use, are affected by HIV/AIDS or tuberculosis, or other vulnerabilities. For these people, smoking tends to be entrenched. People who have been smoking more cigarettes, over a longer period of time, find it much more challenging to quit and leave nicotine behind completely. For these people, tobacco harm reduction could be the first exit strategy that genuinely makes sense and that actually sticks.

To date, tobacco harm reduction is not exempt from stark inequalities either. The switch away from smoking to the use of safer nicotine products is only happening at scale in higher income countries, and often among people from higher socioeconomic backgrounds. On average, disposable vapes cost around two and a half times the cheapest cigarette brand in LMICs. Cigarettes remain the cheapest nicotine product in most of these markets. This makes switching irrational for price-sensitive consumers, regardless of product availability or health information. For those in LMICs who might want to switch away from smoking, few opportunities exist to do so.





Access to regulated products is also very unequal between populations. In many countries, prohibition is increasing, instead of smart, risk-proportionate regulation that would enable harm reduction to develop. Rising prohibition has already led to inevitable but unintended consequences in many countries, such as the rapid expansion of unregulated, illicit supply chains and associated criminal activity, and a behavioural return to smoking.

Unfortunately, many countries will remain set on the prohibitory route as long as the WHO persists in its irrational but deeply-ingrained refusal of harm reduction for tobacco. In public messaging and within its formal structures, the WHO continues to urge signatories to the FCTC to press forward with the toughest of prohibitions or restrictions on safer nicotine products. The WHO also alleges – falsely – that tobacco harm reduction is only a “tobacco industry narrative” [2]. This is in spite of the FCTC’s commitment to “promote measures of tobacco control based on **current and relevant** scientific, technical and economic considerations” [emphasis added] [3].

Opposition to or suspicion of tobacco harm reduction cascades down into the academic and scientific community. Transparency about funding is essential throughout science; by disclosing funding sources, scientists open their work and conclusions to necessary scrutiny. But in the tobacco and nicotine policy space, many journals have blanket refusals in place for work funded by the tobacco or nicotine industry, regardless of disclosures, and regardless of the quality or conclusions of the research, on the basis that this represents a conflict of interest. Yet there are major philanthropic funding sources that have a publicly-stated opposition to tobacco harm reduction. These are rarely considered to represent a conflict of interest when research is submitted for publication. The asymmetry in how these conflicts are defined systematically biases the published literature.

Overwhelmingly negative messages about tobacco harm reduction and safer nicotine products from many organisations and politicians are amplified by media outlets hungry for bad news. Monitoring of public perceptions shows growing mistrust in safer nicotine products among many national populations. Even in the UK, a country that has done more than many to embrace the opportunity of vaping as a smoking cessation tool, 53% of adults who smoke now believe vaping



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use of safer nicotine products is reaching levels roughly equivalent to a fifth to a quarter of the global smoking population

•

countries leading in tobacco harm reduction rank among the world's top performers in smoking reduction

•

global institutions, national governments and regulators may influence how fast or how slow the transition away from combustible tobacco happens but out there, people are already doing it

is as harmful or more harmful than smoking, and 63% of young people believe the same.

The challenges are many. But as we assess the situation for tobacco harm reduction in 2026, there are also many reasons to be optimistic about its ability to impact favourably on global health, both now and in the near future. The potential is still there for a rapid acceleration towards an end to smoking. Our evidence shows that when people have the choice, millions leave smoking behind.

Between the early 2000s and today, the scale of SNP use has now grown significantly in many countries. Our estimates suggest the global number of vapers is approximately 129 million and the number of HTP users approximately 49 million. There are no accurate data on consumers of snus and nicotine pouches, but given the dramatic recent rises in the pouch market, it is reasonable to assume the total number of safer nicotine product users stands at over 200 million. Globally, use of these products is reaching levels roughly equivalent to a fifth to a quarter of the global smoking population. Non-combustible products are no longer marginal. They are now a significant part of the global nicotine market. They have real potential to affect smoking-related harm.

It is no coincidence that those countries leading in tobacco harm reduction rank among the world's top performers in smoking reduction. Substitution is now being seen at scale and not only in isolated instances. In this report, data from 28 countries clearly demonstrate that as the use of safer products rises, smoking prevalence declines. In some of the clearest cases, Sweden, Norway, Iceland, New Zealand and the UK, the prevalence lines have already crossed in a visible 'scissor' pattern. There are also early signals that reduced exposure to combustion is beginning to register in population-level health indicators in Sweden, Norway, Japan and New Zealand. This is good news.

As the market grows, safer nicotine product categories are also diversifying and expanding. This matters because people appear to move away from cigarettes through a range of products – so far, we have seen vapes become more popular in some countries, HTP in others, while in Nordic countries the uptake of oral products is more significant. Within populations, it is important that regulators and policymakers understand that different people find different products suit them, or may switch between categories in different settings. Decisionmakers at national and international level need to listen to people who have quit smoking by switching, and treat them as stakeholders with expertise to share.

Because the consumers are out there. There is now an ever-widening gulf between the demand for safer nicotine products from people who want to improve their health and the response of international policymakers at the WHO. Policy is out of step with reality. And while nascent, there are signs that some Parties to the FCTC may be developing the necessary confidence to challenge the WHO's position, by bringing evidence of the positive impact of tobacco harm reduction in their countries to the table at COP meetings.

Hope can also be found if we consider the drug harm reduction movement and how it got to where it is today. Harm reduction began in the 1980s in response to the advent of AIDS, as a peer-led, pragmatic and compassionate approach that prioritised saving lives. Those remain the values of people working in drug harm reduction. They are shared by those working in tobacco harm reduction.

Despite widespread opposition and distrust from authorities including the WHO for many years, in the countries where it was accessible, harm reduction improved the health of people who used drugs and reduced the wider spread of HIV/AIDS. Over time, the evidence base in favour of the approach grew, until it was not only clear but unignorable. And the evidence base for drug harm reduction was only able to develop because people just did it – whether that was in services or on street corners, with official approval or, often, against the law. After decades of research, advocacy and testimony from people with lived experience, drug harm reduction is now embedded in the WHO's response to substance use and blood-borne viruses. There are still battles to be fought for acceptance, but it is irrefutable: harm reduction works.

Our estimates suggest there are already around 200 million people using SNPs in 2026, from a standing start at the turn of the 21st century. At around a billion people, the number who could substitute deadly smoked tobacco for cleaner, safer nicotine products is vast, as are the potential population-level health benefits. While global institutions, national governments and regulators may influence how fast or how slow the transition away from combustible tobacco happens, out there, people are already doing it. Ultimately, it is not a matter of if, but when.



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