

# The International Tobacco Control Policy Evaluation Project

## Tobacco Price and Taxation

### ITC Cross-Country Comparison Report



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UNIVERSITY OF  
**WATERLOO**

**itc**  
International Tobacco Control  
Policy Evaluation Project



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## Acknowledgement

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“Evidence shows that a well-administered tobacco tax leads to the desired result of reducing consumption and its crippling health consequences, and not producing the terrible economic outcomes often portrayed by the tobacco industry.”

Source: World Health Organization. (2010).  
*WHO technical manual on tobacco tax administration*.  
Geneva: World Health Organization.

# INTRODUCTION AND BACKGROUND

## Introduction to this Report and the ITC Project

With the number of tobacco-related deaths expected to increase from 100 million in the 20th century to 1 billion people in the 21st century, there is great urgency to disseminate research findings that can inform the development and implementation of effective tobacco control policies.

The International Tobacco Control Policy Evaluation Project (the ITC Project) was created in 2002 as an evidence-gathering system for evaluating the effectiveness of tobacco control policies of the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC). The ITC Project is now an international collaboration involving over 100 tobacco control researchers and experts across 22 countries inhabited by over 70% of the world's tobacco users. In each country, longitudinal cohort surveys of representative samples of tobacco users (and non-users of tobacco in many countries) are being conducted, with an emphasis on measuring key indicators of policy effectiveness. ITC findings are published by researchers worldwide to support evidence-based implementation of the FCTC.

This report presents research findings and cross-country comparisons on key indicators of effectiveness of price and tax policies across countries of the ITC Project. A primary objective of the ITC Project, and of this report, is to disseminate findings on the effectiveness of tax measures to policy makers and other public health stakeholders to promote strong evidence-based policies on price and tax, as required by Article 6 of the FCTC.

## Report Overview

This report is organized into two parts. Part 1 provides a synopsis of FCTC Article 6: Price and Tax Measures to Reduce the Demand for Tobacco, and how ITC data underpins research that supports specific Article 6 recommendations. It describes tobacco tax types and provides data on tax and consumption rates, as well as government revenue increases due to tobacco taxes. Tax avoidance and evasion issues, as well as measures of affordability are also presented.

Part 2 of the report describes ITC survey methods and measurements. ITC cross-country comparison data on several price and tax measures is presented including: cigarette affordability; behavioural reflections of cigarette purchasing and quitting; estimates of cheaper tobacco use (factory vs. roll-your-own); and tax avoidance behaviours and sources.

The general conclusion is that when the appropriate tobacco tax measures are implemented governments could generate substantial economic and public health benefits.<sup>1</sup>

Increasing tobacco taxes and prices is recognized worldwide as the single most cost-effective measure of tobacco control and a critical component of a comprehensive tobacco control strategy. It: (1) **reduces** overall tobacco consumption and prevalence of tobacco use; (2) **prevents** initiation among youth; and (3) **promotes** cessation among current users.<sup>2</sup>

On average, a 10% price increase on a pack of cigarettes would be expected to reduce demand for cigarettes by about 2.5% to 5% in high-income countries and by 2% to 8% in low- and middle-income countries (LMICs), where lower incomes tend to make people more sensitive to price changes.<sup>2</sup>

It is estimated that tripling excise tax on cigarettes would, on average, double the retail price and decrease consumption by at least 30%, at the same time as it would increase tax revenue. This intervention would save 115 million lives by the year 2050.<sup>3</sup>

# PART 1: WHO FCTC ARTICLE 6-PRICE AND TAX MEASURES TO REDUCE THE DEMAND FOR TOBACCO

Guiding principles and recommendations for Article 6 were unanimously adopted by FCTC Parties at the Fifth Conference of the Parties (COP5) meeting in 2012 (see Figure 1). A full set of guidelines (including these recommendations) are expected to be adopted at COP6 in October 2014.

**Figure 1. WHO FCTC Article 6: Guiding principles and recommendations<sup>4</sup>**

## Guiding Principles of Article 6

- Determining tobacco taxation policies is a sovereign right of the Parties
- Effective tobacco taxes significantly reduce tobacco consumption and prevalence
- Effective tobacco taxes are an important source of revenue
- Tobacco taxes are economically efficient and reduce health inequalities
- Tobacco tax systems and administration should be efficient and effective
- Tobacco tax policies should be protected from vested interests

## Recommendations for Adoption and Implementation of Article 6

- When establishing or increasing their national levels of taxation Parties should take into account...both price elasticity and income elasticity of demand, as well as inflation and changes in household income, to make tobacco products less affordable...Parties should consider having regular adjustment processes...
- Parties should implement the simplest and most efficient system that meets their public health and fiscal needs...Parties should consider implementing specific or mixed excise systems with a minimum specific tax floor...
- Parties should establish coherent long-term policies on their tobacco taxation structure...to achieve their public health and fiscal objectives...tax rates should be monitored, increased or adjusted on a regular basis, potentially annually, taking into account inflation and income growth developments...
- All tobacco products should be taxed in a comparable way as appropriate...in a way that minimizes the incentive for users to shift to cheaper products or product categories...the tax burden should be regularly reviewed...and increased.

*“Parties should establish coherent long-term policies on their tobacco taxation structure...to achieve their public health and fiscal objectives...tax rates should be monitored, increased or adjusted on a regular basis...”*

- Parties should ensure that transparent licence or equivalent approval or control systems are in place.
- Parties are urged to adopt and implement measures and systems of storage and production warehouses...excise taxes should be imposed at the point of manufacture, importation or release for consumption from the storage...warehouses. Tax payments should be required by law to be remitted at fixed intervals...and should ideally include reporting of production and/or sales volumes...Tax authorities should allow for the public disclosure of the information...
- In anticipation of tax increases Parties should consider imposing effective anti-forestalling measures.
- Where appropriate, Parties should consider requiring the application of fiscal markings to increase compliance with tax laws.
- Parties should clearly designate and grant appropriate powers to tax enforcement authorities. Parties should also provide for information sharing...and an appropriate range of penalties.
- Parties should consider...dedicating revenue to tobacco control programmes...and financing of appropriate structures for tobacco control.
- Parties should consider prohibiting or restricting the sale to and/or importation by international travellers, of tax-free or duty-free tobacco products.



The FCTC is a legally binding treaty that has served as the basis for new tobacco control legislation in numerous countries around the world. The Conference of the Parties (COP) to the FCTC meets every 2 years and, among other things, adopts guidelines for the implementation of specific articles. In the case of Article 6, the COP work on guidelines started in 2010. In 2012, the guiding principles and recommendations were adopted. This was the first time governments from around the world convened to discuss tobacco tax policy, with roughly equal representation from health and finance ministries in negotiations. The recommendations were unanimously adopted by FCTC Parties. A full set of guidelines (including these recommendations) are expected to be adopted at COP6 in October 2014.



# Public Health Benefits of Tobacco Taxes

- The public benefits include the net positive health gains resulting from reduced tobacco use, deterred initiation among youth, and cessation among current users. The vast majority of smokers start when they are very young – 70% before the age of 18 and 94% before the age of 25.<sup>5</sup>
- Reducing consumption and prevalence of tobacco products will reduce mortality rates of non-communicable diseases such as cardiovascular disease, respiratory disease, and various forms of cancer.<sup>6</sup>
- Tobacco users with low socio-economic status would be affected positively by tobacco tax increases because consumption rates would decrease as tobacco products would become less affordable.<sup>5</sup>
- Higher tobacco prices would encourage low-income tobacco users to reallocate their money to essential goods, including food, shelter, education, and health-care.<sup>7</sup>
- Reinvesting tobacco tax revenues in public health promotion and social programs, increases public support for raising taxes.<sup>8</sup>
- Tobacco tax revenues can also be dedicated to comprehensive tobacco control programmes that help tobacco users to quit.<sup>6</sup>

## Tobacco Prices and Consumption Rates

Hundreds of studies have consistently found a negative relationship between price and tobacco use.<sup>7</sup> Effective taxes on tobacco products leads to higher real consumer prices (inflation-adjusted), which subsequently lowers consumption and prevalence, reduces mortality and morbidity due to tobacco-related illnesses, and improves the health of the population.<sup>7</sup> Cigarette prices reduce smoking rates by deterring initiation in low-, and lower-middle-income<sup>i</sup> countries while in high-income countries they act primarily by promoting cessation.<sup>8, 9</sup> Figures 2 to 4 present examples from Canada, France, and South Africa to illustrate the relationship between cigarette prices and consumption rates.

**Figure 2. Real prices and cigarette consumption, Canada 1949-1994<sup>10</sup>**

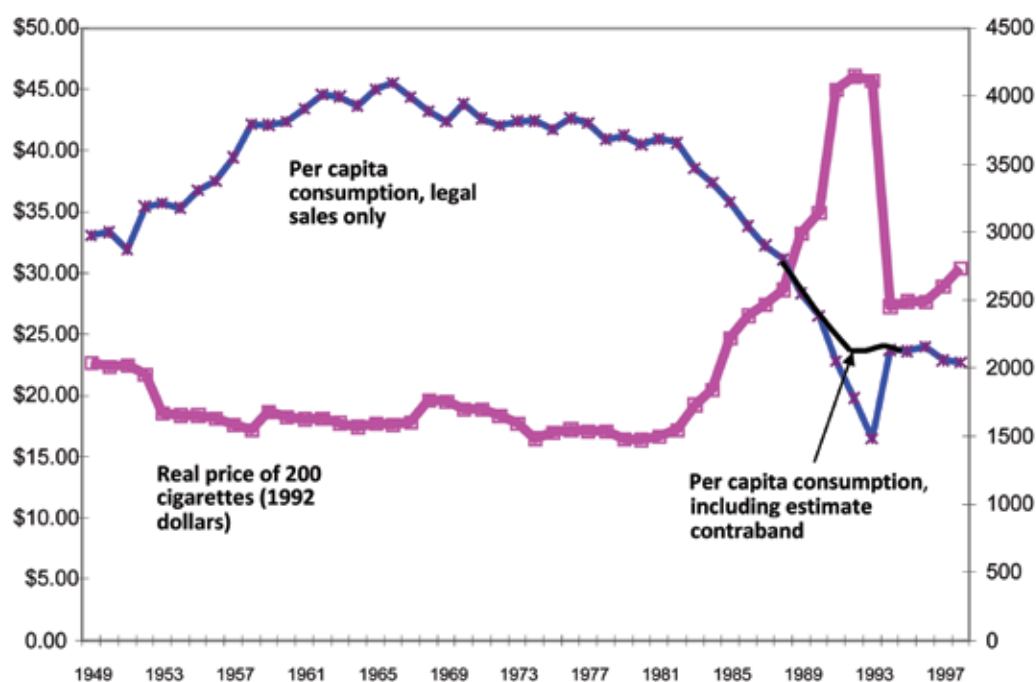


Figure 2 indicates that per capita cigarette consumption in Canada declined from 1973 onwards as real prices increased until the tobacco tax cuts in 1994 when consumption rates increased again. A 2014 study confirmed this evidence once again.<sup>37</sup>

Source: Canadian Cancer Society, Non-Smokers' Rights Association, Physicians for a Smoke-free Canada, Quebec Coalition for Tobacco Control. (1999). Surveying the Damage: Cut-rate Tobacco Products and Public Health in the 1990s. <http://nsra-adnf.ca/cms/file/pdf/oct99taxrep.pdf>. Reprinted with permission.

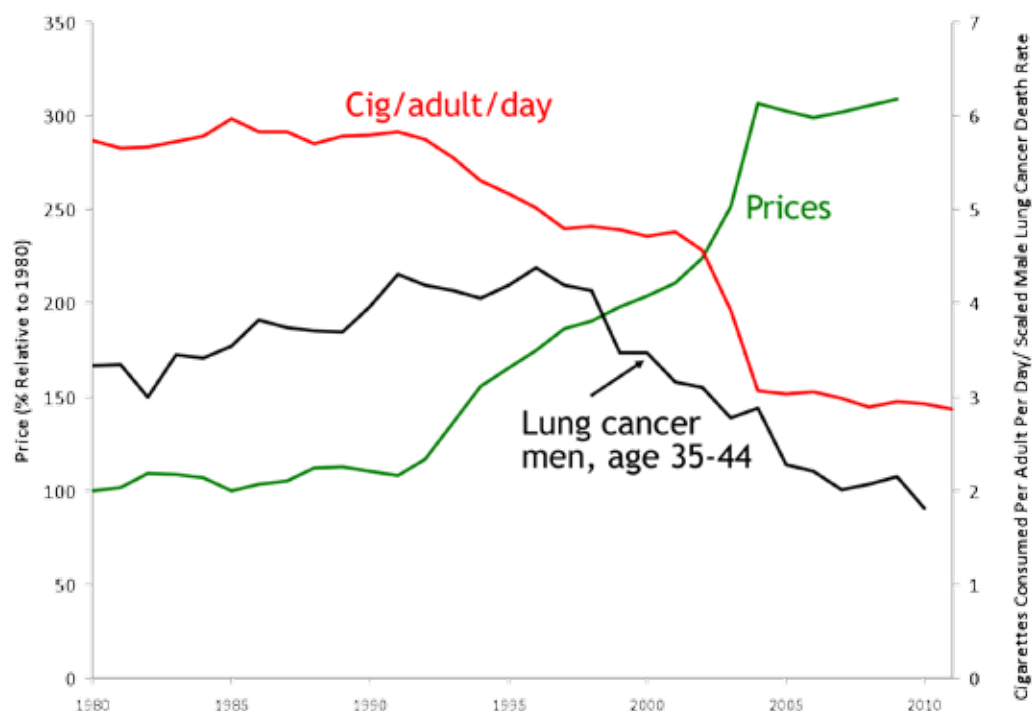
i. In 2013, the World Bank refined its categories for middle-income to upper-middle and lower-middle income.

<http://data.worldbank.org/about/country-classifications/country-and-lending-groups#>.

See Appendix 1 for ITC Cross-Country income categories for data after 2013 in accordance with the 2013 World Bank classifications.

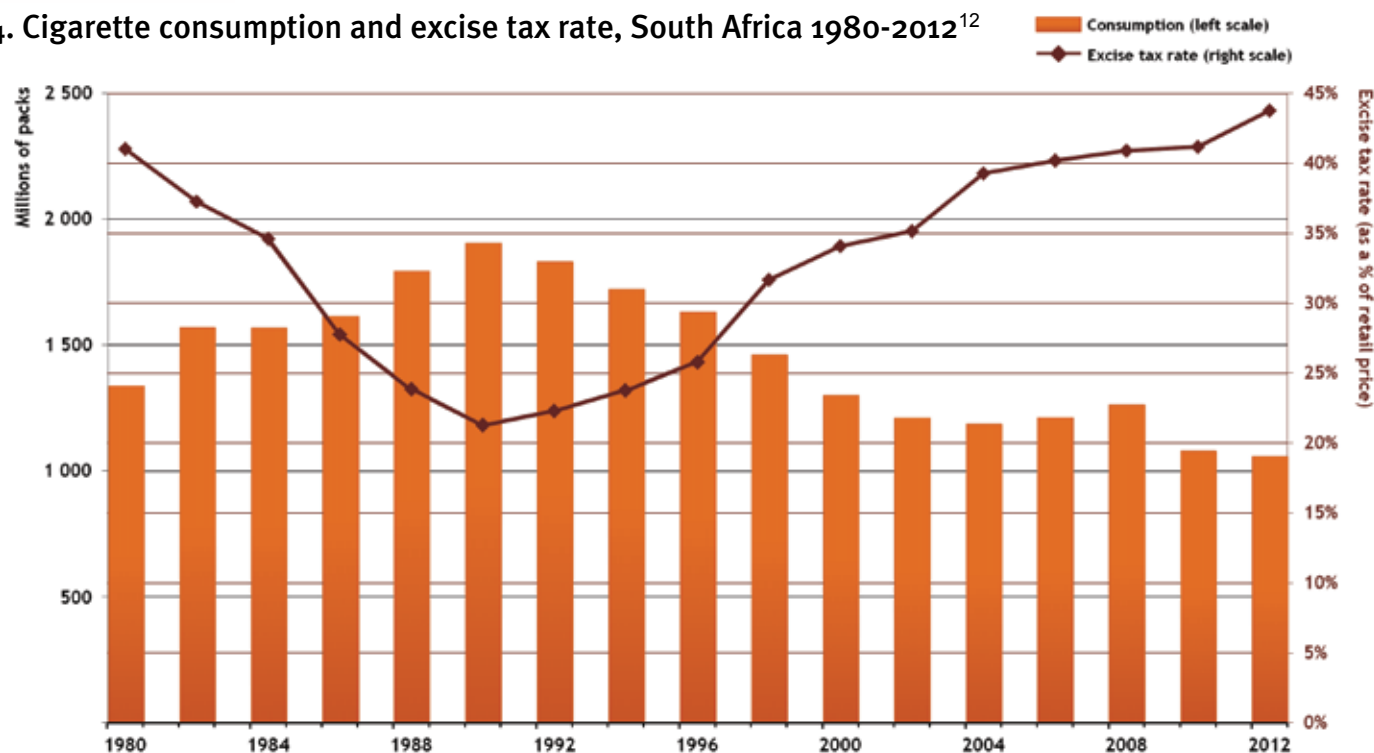
Figure 3. Cigarette prices, smoking, and male lung cancer, France 1980-2010<sup>11</sup>

Figure 3 indicates that as the price of cigarettes in France increased from 1980, both consumption rates and lung cancer rates dramatically declined among males aged 35-44 years.



Source: Jha, P., and Hill, C. (2012). Triple Tax, Double Revenue, Half-Smoking and Lung Cancer, France 1980-2012. Personal Powerpoint slide from Centre for Global Health Research Presentation. Reprinted with permission.

Figure 4. Cigarette consumption and excise tax rate, South Africa 1980-2012<sup>12</sup>



Source: Van Walbeek, C. (2003). Tobacco excise taxation in South Africa: tools for advancing tobacco control in the 21st century: success stories and lessons learned. Geneva, World Health Organization. Reproduced with permission.

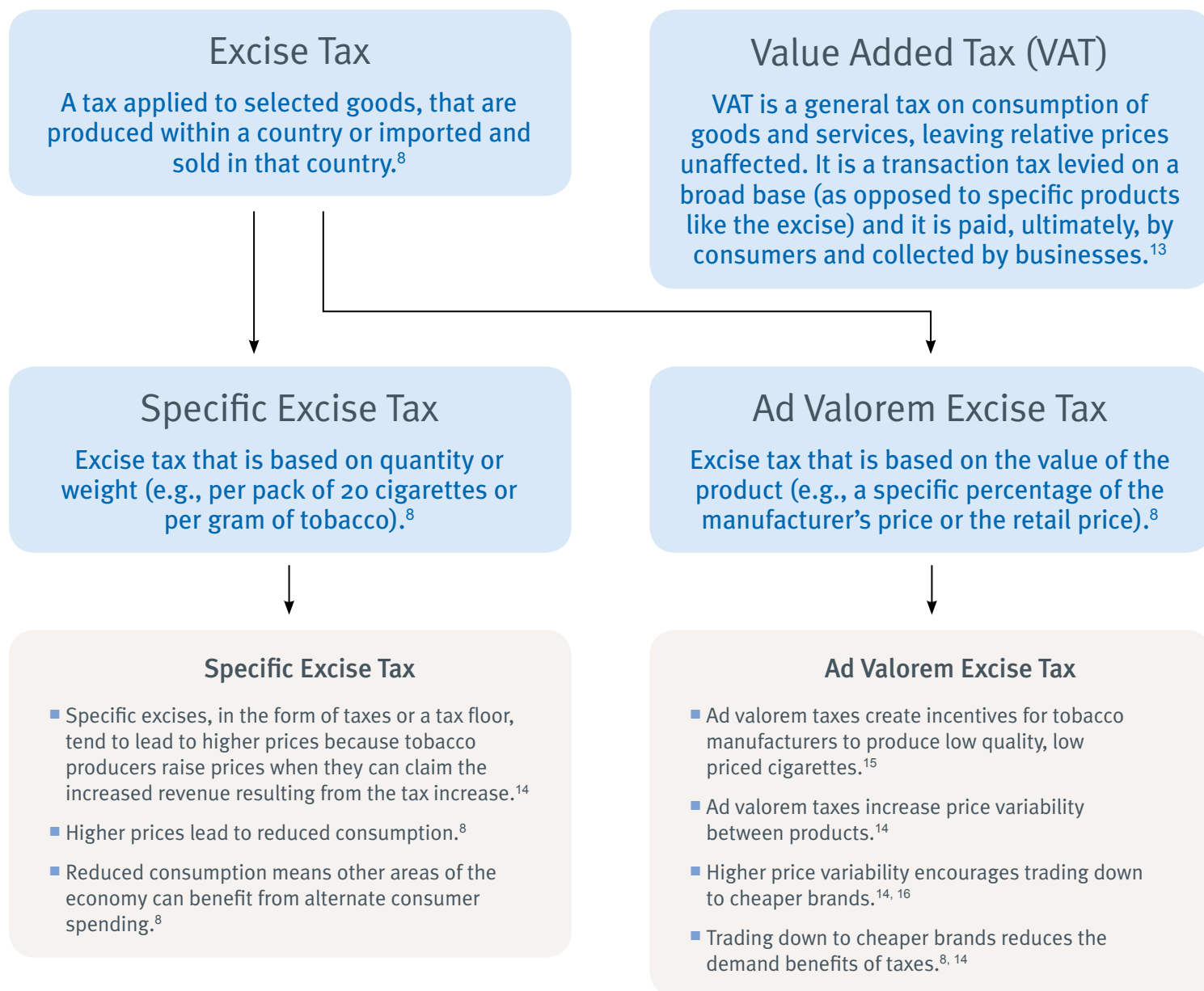
Figure 4 shows the positive relationship between cigarette consumption and excise tax rates in South Africa, with consumption clearly increasing when excise taxes decreased between 1986 and 1996.

# Tobacco Tax Types

The WHO Technical Manual on Tobacco Tax Administration<sup>8</sup> indicates that excise tax and Value Added Tax (VAT) represent the two general classifications of tobacco tax administration. Excise taxes can be further broken into specific and ad valorem types. Figure 5 provides a definition of each type as well as the resultant outcomes on price, and consumption.

When revenue generation is a goal, governments should favour excise taxes on goods with large sales volumes, few producers, inelastic demand (unchanging demand), easy definability, and a lack of close substitutes. Tobacco fits all of these criteria. Such goods provide for a relatively consistent, stable, and profitable revenue stream.<sup>8</sup>

Figure 5. Overview of tax types



*Both specific and ad valorem excises are instruments the government can use. The long-term goal should be greater reliance on specific taxation.<sup>4</sup>*

## Article 15 of the FCTC requires Parties to take measures to eliminate the illicit trade of tobacco products, including smuggling, illicit manufacturing, and counterfeiting.

In November 2012, the Protocol to Eliminate Illicit Trade in Tobacco Products was adopted by the Parties to the FCTC. The new protocol's aim is to combat illegal trade in tobacco products through control of the supply chain and international cooperation. A key measure of the protocol is the commitment of each Party to establish a global tracking and tracing system.

## SUMMARY OF BEST PRACTICES IN TOBACCO TAXATION<sup>8</sup>

- Governments should adopt relatively simple tobacco excise tax structures that rely more on specific taxes and that harmonize equivalent taxes to all tobacco products.
- This tax structure should include at least 70% excise tax share in the final retail price.
- Specific excise taxes should be levied at the manufacturer level, while ad valorem excises at the retail level.
- In order to decrease affordability of cigarettes, tax increases must correspond with rising consumer prices and income levels.
- Tobacco tax administration should be strengthened so as to reduce tax avoidance and tax evasion and maximize the public health and revenue impact of tobacco taxes.

## Tax Avoidance and Evasion

The effectiveness of taxes at reducing tobacco use provides an incentive for tobacco users and manufacturers to devise ways to avoid or evade tobacco taxes. Recent estimates indicate that illicit trade in cigarettes could burden low-income countries disproportionately, where illicit cigarettes constitute 16.8% of the market compared to 9.8% of the market in high-income countries.<sup>17</sup>

**Tax avoidance** by tobacco users involves legal purchasing behaviour with the objective to pay lower or no taxes. Examples include cross-border shopping, duty-free shopping, and internet purchases. Tobacco manufacturers can also engage in tax avoidance by changing their products or prices to counteract the impact of increased taxes.

Unlike tax avoidance that involves legal activities aimed at reducing the amount of taxes paid, **tax evasion** involves illegal methods of avoiding tobacco taxes. Such illegal activities include illicit trade, underreporting of production of genuine tobacco products, and production of counterfeit tobacco products.

- Inexpensive tobacco products undermine tobacco control policies aimed at making tobacco products less affordable.
- Tax-evaded cigarettes may be sold in packaging that does not contain required health warnings and information on toxic emissions.
- Tax avoidance and evasion decrease government revenue available for health and social programs and can result in increased criminal justice expenditures.
- Tax avoidance and evasion can provide unmonitored access to cigarettes.<sup>18, 19</sup>

## Cigarette Affordability

While tobacco taxes are an essential component of tobacco control strategies, they will not have the desired effect on tobacco use if only absolute price is taken into account rather than the affordability of tobacco products.<sup>8</sup>

Cigarette affordability is defined conceptually as the share of resources required to buy a pack of cigarettes, and is influenced by both an individual's income and the price of the cigarettes.<sup>20</sup> In high-income countries (HICs), even as income levels have risen, excise tax increases have helped to keep cigarette prices rising faster than incomes and thus, cigarettes have become less affordable. In most LMICs, income levels have risen faster than cigarette prices, and thus, cigarettes have become more affordable.<sup>20</sup> In a 14-country longitudinal behavioural analysis, Kostova et al. (2014) found that higher prices are shown to affect smoking primarily by promoting cessation in upper-middle countries and primarily by preventing initiation in low-, and lower-middle-income countries, particularly among females. In low-income, lower-middle-income, and upper-middle-income countries, the rate of smoking initiation fell as age and education increased.<sup>9</sup>

## Roll-Your-Own (RYO) Tobacco

An analysis of roll-your-own (RYO) tobacco is also an important part of understanding the affordability nuances of cigarettes. RYO tobacco is important because its use is prevalent but varies by country. It is subject to less regulations than factory-made cigarettes, and it is often less expensive than factory-made cigarettes. Due to this price differential, it often serves as a discount alternative to cigarettes.<sup>38</sup>

# Tobacco Taxation Success Stories

Effective tax and price increases should result in both a reduction in demand for tobacco, and an increase in revenue. The following countries have had success in reducing tobacco demand and in raising revenues as a result of implementing tax and price increases. All data are from [http://global.tobaccofreekids.org/en/resources/fact\\_sheets/#taxation\\_price](http://global.tobaccofreekids.org/en/resources/fact_sheets/#taxation_price).

South Africa	Ukraine	Mexico	Turkey	United States
Impact of 1993-2009 excise tax increase on:	Impact of 2008-2010 excise tax increase on:	Impact of 2009-2011 excise tax increase on:	Impact of 2005-2011 excise tax increase on:	Impact of 2008-2009 excise tax increase on:
Final retail price=211%↑	Final retail price=120%↑	Final retail price of a pack of Marlboro=35%↑	Final retail price of high/luxury cigarettes=128%↑	Final retail price=22%↑
Tobacco sales=33%↓	Tobacco sales=50%↓ among males <sup>ii</sup>	Tobacco sales=30%↓	Tobacco sales=15%↓	Tobacco sales=9.7% to 13.3%↓ among youth in grades 8, 10, and 12 <sup>iii</sup>
Government revenues=800%↑	Government revenues=400%↑	Government revenues=38%↑	Government revenues=124%↑	Government revenues=129%↑

ii. Ross, H., Kostova, D., Stoklosa, M., & Leon, M. (2014). The impact of cigarette excise taxes on smoking cessation rates from 1994 to 2010 in Poland, Russia, and Ukraine. *Nicotine & Tobacco Research*, 16 (Suppl 1), S37-S43. doi: 10.1093/ntr/nto24.

iii. Huang, J., & Chaloupka, F.J. (2012). The Impact of the 2009 Federal Tobacco Excise Tax increase on youth tobacco use. *impacTEEN*, Research paper, No. 42.

## LATEST RESEARCH EVIDENCE ON TOBACCO PRICE AND TAX

The following section summarizes evidence from the ITC Project that support the key Article 6 Recommendations.<sup>4</sup> Recent evidence from other studies outside of the ITC Project is also provided.

### Draft Guidelines Recommendation 2. Taxation and affordability

When establishing or increasing their national levels of taxation Parties should take into account – among other things – both price elasticity and income elasticity of demand, as well as inflation and changes in household income, to make tobacco products less affordable over time in order to reduce consumption and prevalence. Therefore, Parties should consider having regular adjustment processes or procedures for periodic revaluation of tobacco tax levels.

### What ITC research adds with respect to this recommendation

Using ITC data from the Bangladesh Waves 1 and 2 Surveys, Nargis et al. (2014) found that people with lower socio-economic status (SES) were the most affected by price elasticity (change in price and change in quantity demand). The higher the price change, the fewer cigarettes they could afford to buy.<sup>16</sup> Huang et al. (2014) found that in China, 72% of people surveyed said that lower prices led to their current brand choice indicating high price elasticity to demand.<sup>21</sup> In addition, ITC China data showed that smokers with lower income and/or low levels of education were more likely to choose a brand because of its low cost/price indicating income elasticity of demand. However, females and those with higher income and/or high levels of education were more likely to buy cartons of cigarettes.<sup>21</sup> Huang et al. (2014) concluded that minimum price laws set above current prices for the least expensive brands on the market, and policies that restrict discounts through buying cartons could be two effective ways to reduce consumption among low-income and heavy smokers in China.<sup>21</sup> Cornelius et al. (2014) came to the same conclusion about minimum pricing laws using ITC US data, since the industry will continue to use aggressive pricing to compete for consumers, especially since heavier smokers from LMICs reported higher use of discount brands.<sup>22</sup>

## What other research adds with respect to this recommendation

Kostova et al. (2014) found that tobacco affordability across time and across countries is affected by factors such as Gross Domestic Product (GDP), tax structure, consumption intensity, purchasing preferences, and extent of tax avoidance.<sup>23</sup> Blecher et al. (2014) further indicated that tax increases should take into consideration measures of affordability, such as income levels.<sup>24</sup> Ross et al. (2011) found that the magnitude of the price increase is a more important predictor of an intention to quit/smoke compared with the average cigarette price.<sup>25</sup>

### **Draft Guidelines Recommendation 3. Structure of tobacco taxes**

Parties should implement the simplest and most efficient system that meets their public health and fiscal needs, and taking into account their national circumstances. Parties should consider implementing specific or mixed excise systems with a minimum specific tax floor, as these systems have considerable advantages over purely ad valorem systems.

## What ITC research adds with respect to this recommendation

Shang et al. (2014) concluded that specific excises, in the form of taxes or a tax floor, tend to lead to higher prices, because producers have incentives to raise prices when they can claim all the increased revenue.<sup>14</sup> In contrast, ad valorem tax structures create incentives for manufacturers to produce low quality, low price cigarettes.<sup>14</sup> Therefore, since specific excise taxes increase prices relatively more than ad valorem taxes, they lead to relatively larger reductions in consumption.<sup>14</sup> Further, countries that rely more heavily on the ad valorem component of the total tax tend to have greater price variability than countries that rely more heavily on the specific component, and this variability has been shown to lead smokers to trade down to cheaper brands and to increase their attempts to avoid taxes.<sup>14, 26</sup> Nargis et al. (2014) demonstrated this with the highly complicated and heavily ad valorem tax system in Bangladesh, where the retail price for a package of the most sold brand of cigarettes is the third lowest in the Southeast Asia region.<sup>16</sup> Nargis et al. (2014) used economic modelling to determine that the highest price increases and decreases in the number of smokers and annual cigarette consumption occur under the uniform specific tax system, while highest revenue gain and tax share in the retail price occur under the uniform ad valorem tax system.<sup>16</sup> Some research indicates that a counter-intuitive implication of specific excise taxes is for smokers to trade up to more expensive premium/international brands, which had previously been unaffordable.<sup>26, 27</sup>

## What other research adds with respect to this recommendation

Research indicates that specific excise taxes lead to larger reductions in consumption, reductions in tax avoidance, and reductions in brand switching. Generally, in low-income countries (LICs), wide cigarette price distributions usually indicate complicated tax structures.<sup>9</sup> Ad valorem excise taxes allow industry to control tax levels by keeping prices low (e.g., companies could lower their prices in response to a tax increase, reducing the impact of the tax increase), which lowers the associated public health benefit.<sup>15</sup> The tendency for LMICs to have low or no specific excise taxes on tobacco is the main reason why cigarettes are about 70% cheaper (even after adjustment for purchasing power) in many LICs than in HICs.<sup>28</sup>

### **Draft Guidelines Recommendation 5. Comprehensiveness/similar tax burden for different tobacco products**

- All tobacco products should be taxed in a comparable way as appropriate, in particular where the risk of substitution exists.
- Parties should ensure that tax systems are designed in a way that minimises the incentive for users to shift to cheaper products in the same product category or to cheaper tobacco product categories as a response to tax or retail price increases or other related market effects.
- In particular, the tax burden on all tobacco products should be regularly reviewed and, if necessary, increased and, where appropriate, be similar.



## What ITC research adds with respect to this recommendation

The harmonization of taxes across different tobacco products to a uniform rate is also an important component of an effective taxation policy. This policy discourages downward switching, tax avoidance, and evasion.<sup>14</sup> Nargis et al. (2014) found that choosing discount brand cigarettes occurs most frequently in Canada and the US when there is a large initial retail price differential between this type and premium brands.<sup>26</sup> In an analysis of ITC China Survey data, White et al. (2014)<sup>29</sup> found that nearly 40% of Chinese smokers switched cigarette price tiers across ITC China Survey waves, indicating that consumers are relatively flexible in brand choices and do not display strong loyalty to one brand variety. White et al. (2014) concluded that this might be due to the ad valorem taxes, which encourage smokers to trade down to cheaper brands.<sup>29</sup> Yao et al. (2014) indicated that young and low-income smokers are more likely than older and high-income smokers to purchase cigarettes from cheaper sources in China.<sup>30</sup> Cornelius et al. (2014) used data from the ITC US Survey to show that those who can least afford to continue smoking because of their economic standing (i.e., low-income individuals) and health risks (i.e., older smokers and those who smoke more heavily) were also the group of smokers most prone to use and switch to discount brand cigarettes.<sup>22</sup>

## What other research adds with respect to this recommendation

Other research suggests that jurisdictions with a more internally homogenous income structure (less varying income levels) can implement tax increases and harmonization more easily because the internal income structure of a location determines initial product pricing by the tobacco industry.<sup>24</sup>

### Draft Guidelines Recommendation 9. Fiscal markings

Where appropriate, Parties should consider requiring the application of fiscal markings to increase compliance with tax laws.

## What ITC data adds with respect to this recommendation

Fix et al. (2014) reported findings from a novel approach to assessing tax avoidance/evasion in which smokers participating in the ITC US Surveys in 2009 and 2010 were invited to mail back cigarette packs. Based on the difference between the tax stamp on the packs collected and respondents' state of residence, they estimate that more than 1 in 5 packs returned had avoided or evaded state taxes.<sup>31</sup> Guindon et al. (2014) found that in Canada, France, and the UK, 10% of smokers reported purchasing from untaxed sources,<sup>32</sup> while a 2009 study conducted in Malaysia in conjunction with the ITC Malaysia Wave 4 Survey found that 19% of cigarette packs were illicit.<sup>33</sup>

### Draft Guidelines Recommendation 12. Tax-free/duty-free sales

Parties should consider prohibiting or restricting the sale to and/or importation by international travellers, of tax-free, or duty-free tobacco products.

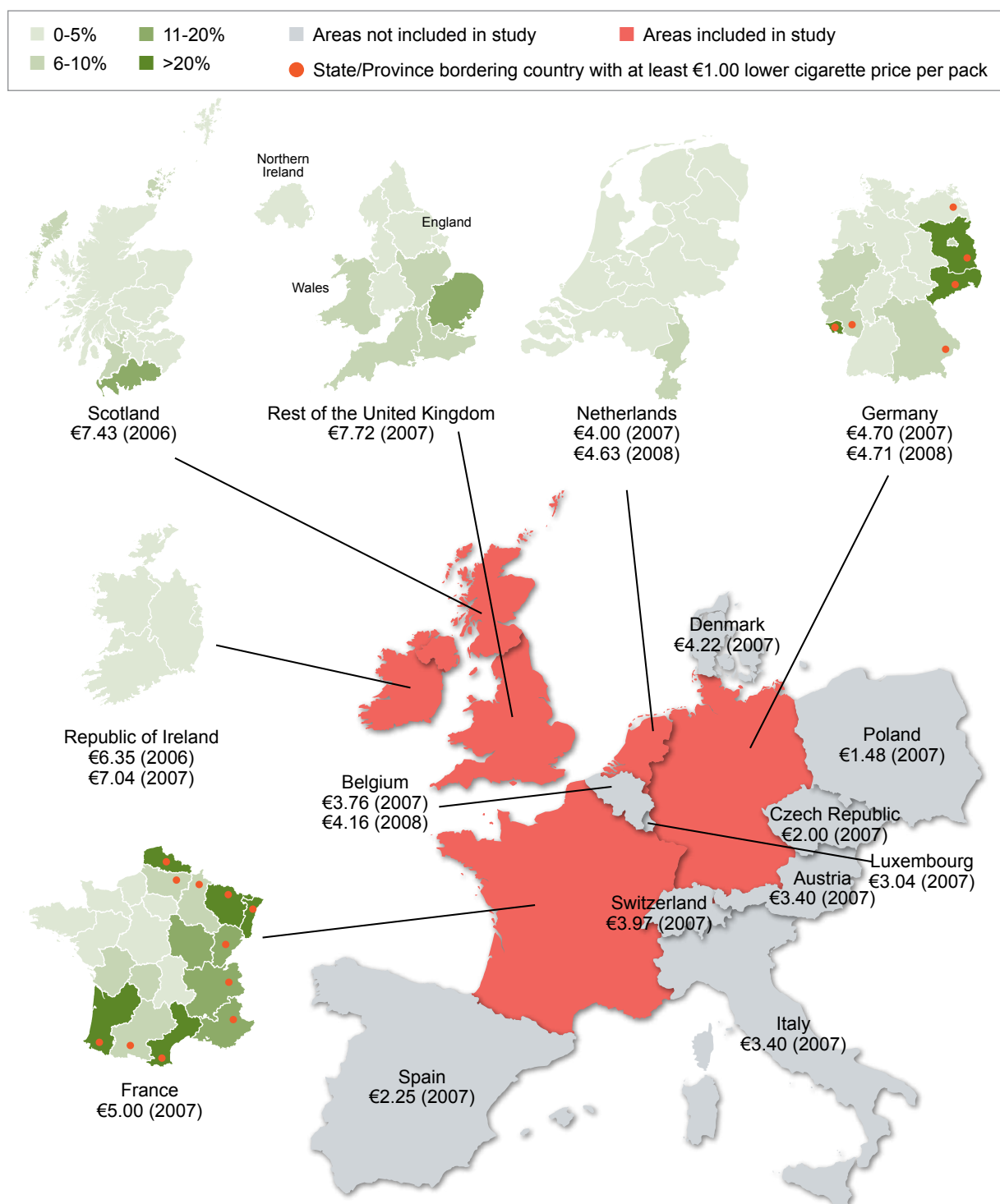
## What ITC research adds with respect to this recommendation

Guindon et al. (2014) suggested that cigarette tax avoidance and evasion varies in direction and magnitude in different countries.<sup>32</sup> Generally, heavier and more addicted smokers are more likely to engage in tax avoidance.<sup>32</sup> Nagelhout et al. (2014) found that in Europe, buying from border countries with lower taxes, as well as duty-free purchases are common. Smokers who use this type of purchasing often have higher education and income.<sup>34</sup> Guindon et al. (2014) also found that in Canada, tax avoidance is prevalent in two provinces (Quebec and Ontario) despite the fact that these two provinces have the lowest cigarette tax rates in Canada.<sup>32</sup> This may suggest that proximity to opportunities for tax avoidance/evasion may be one of the key factors in this behaviour as the majority of native reservations where discount cigarettes can be purchased are located in these two provinces.<sup>32</sup> Nagelhout et al. (2014) found similar findings with tax evasion in the border regions of France and suggested tax increases in the European Union to reduce cross-border cigarette purchasing and reduced tobacco importation allowances for personal consumption (See Figure 6).<sup>34</sup> Fix et al. (2014) suggested that excise tax harmonization across all 50 states in the US might be one method to curb tax avoidance and evasion.<sup>31</sup>

*Applying comparable tax levels to different types of tobacco products is an important component of an effective taxation policy.<sup>14</sup>*



**Figure 6: Regional variation in rates of smokers who reported having bought cigarettes frequently outside their country in the last 6 months<sup>34</sup>**



Source: Nagelhout, G.E., van den Putte, B., Allwright, S., Mons, U., McNeil, A., Guignard, R., et al. (2014). Socioeconomic and country variations in cross-border cigarette purchasing as tobacco tax avoidance strategy findings from the ITC Europe Surveys. *Tobacco Control*, 23, i30–i38. Reproduced with permission.

## The importance of price in quitting

Although not explicitly part of the Article 6 Guidelines, one important consequence of reduced demand is increased quitting among current tobacco users. An analysis of ITC data from the US, the UK, Australia, and Canada by Ross et al. (2011) found that smokers living in areas with higher cigarette prices are significantly more motivated to quit and have higher likelihood of quitting. However, older smokers, those with moderate income, and those with greater nicotine dependence are significantly less likely to progress toward quitting, while smokers with greater education increase consideration for quitting over time. Gaining more health knowledge over time also significantly intensified the motivation to quit.<sup>25</sup> Access to cheaper cigarette sources does not impede cessation, although smokers would respond more aggressively (in terms of cessation) to price increases if cheaper cigarette sources were not available as they reduce the magnitude of the price effect.<sup>35</sup>

## PART 2: ITC SURVEY METHODS AND MEASUREMENTS

### ITC Survey Questions on Price and Tax

All ITC surveys are developed using the same conceptual framework and methods, and the survey questions are designed to be identical or functionally equivalent in order to allow strong comparisons across countries. Types of tobacco taxes and the way they are implemented vary considerably across countries. The use of standardized methods and measures across all ITC surveys ensures that the effectiveness of price and tax and other policies can be compared across countries in order to provide guidance on best practises in tobacco control.

The ITC survey in every country includes a broad set of questions to assess price and tax effectiveness, including cigarette brand choice and purchasing behaviour, measures of affordability and opportunity cost of tobacco, price as a motivation for quitting, and tax avoidance behaviour. These questions are designed to measure the effects of tax and price increases on consumer behaviour, such as motivating smokers to reduce consumption or think about quitting, as well as compensatory behaviour to minimize costs and avoid taxes.

The following ITC survey questions designed to measure price and tax effectiveness are asked in almost all ITC countries, and data from these measures are presented in the graphs in this report:

Question	Response Options
In the last 6 months, has there been a time when the money you spent on cigarettes resulted in not having enough money for household essentials such as food?	Yes or No
In the last month, how often, if at all, did you think about the money you spend on cigarettes?	Scale 1 to 5 (“never” to “very often”)
Do you now smoke packet/factory-made cigarettes only, roll-your-own cigarettes only, or both?	Packet/factory-made; roll-your-own; both
Even though you mentioned that you are not currently planning to quit, in the past 6 months, have each of the following things led you to think about quitting — not at all, somewhat, or very much?	The price of cigarettes?
In the past 6 months to what extent, if at all, did each of the following reasons lead to your quit attempt, or have helped you to stay quit — not at all, somewhat, or very much?	The price of cigarettes?

### Measures of Tax Avoidance and Evasion

Data from ITC surveys can be used to estimate the extent and the type of tax avoidance and evasion between countries and across time. In many countries, information about the source of a smoker’s last or usual purchase of cigarettes can provide key tax avoidance and evasion information. Self-reported packaging information, or similar information gathered by the interviewers during face-to-face interviews can also provide key insights into tax avoidance and evasion behaviours. Examples include non-standard or missing health warnings, tax stamps, or authenticity labels.

Specific measures that are presented in this report include:

#### Tax Avoidance:

Where did you last buy [cigarettes/roll-your-own tobacco] for yourself?

Response options tailored to each country (up to 15 options), including tax avoidance sources (e.g., Indian reservations/First Nations reserves, duty-free shop, outside of the country/state, and through the internet or phone from an independent seller).

#### Tax Evasion:

In some countries, we ask respondents to show a pack of the brand that they are currently smoking or to send their empty packs by mail. The interviewer records whether an official excise tax stamp is visible on the pack, and whether there is a health warning label on the pack (either a country-specific warning or an international warning). When a pack is not available, we obtain the relevant information via self-report.



## Measures of Cigarette Affordability

An **affordability index** was constructed based on a cigarette price (per dose) to daily income ratio (CPDIR). CPDIR can be interpreted as the percentage of daily income spent on an average dose of cigarettes for smokers.

**CPDIR = Price per daily cigarette dose / Daily income**

**Lower** values of CPDIR indicate **higher** affordability: the smoker's daily number of cigarettes can be purchased for a lower percentage of his or her daily income. This measure of affordability has been used by a number of researchers. We have found it useful to define **Affordability Index** as the reciprocal of CPDIR:

**Affordability Index = Daily income / Price per daily cigarette dose**

Higher values of the Affordability Index are associated with higher affordability of cigarettes.

**Daily income:** All respondents were asked for their monthly or annual household income, which is collected as a categorical variable in all ITC surveys except Malaysia and Thailand. Income was converted to a continuous measure then divided by 30.4 (for monthly income) or 365.24 (for annual income) to obtain a measure of daily income.

**Price per daily cigarette dose:** Cigarette prices were based on the price paid for the most recent purchase (carton, pack, or single/loose). All prices were computed as price per stick and then converted to a price per daily dose, based on the average number of cigarettes individuals reported smoking per day. Cigarette prices are based on prices reported for manufactured cigarettes only.

## Methods for Cross-Country Comparisons

The graphs in this report present *initial* results from cross-country comparisons of ITC surveys conducted in more than 20 countries. These results are meant to be qualitative descriptions. More formal statistical tests will be conducted for scientific publications, presentations, and reports arising from the cross-country comparison data.

The percentages presented in the graphs were estimated from regression models that control for potential differences across countries in age, smoking status, and the number of times respondents were surveyed in each of the countries. The estimates for tax avoidance and evasion were weighted using cross-sectional weights. The percentages also take into account the different sampling designs used in each of the countries. The data on cigarette affordability presents changes in affordability from the first ITC survey to the most recent wave in each country and includes only male smokers as this was the only way to provide an accurate comparison across high-, middle-, and low-income countries by using data from the sub-population with which there was proportionate representation in the samples. Kostova et al. (2014) point out that in low- and lower-middle-income countries, females are more affected by price elasticity than male counterparts due to lower income levels. This price and income elasticity affects the rates of smoking initiation.<sup>9</sup>

The results presented in this report come from the most recent wave of the ITC surveys of smokers where the question was asked. The year of the survey is given after the country name.

### Additional Notes:

- Across the ITC countries, there are considerable differences in prevalence of smoking among women. In non-Asian countries, female prevalence is often fairly close to that of males. But in Asian countries, the female prevalence rate is much lower than that of males. Although in many of these countries women smokers were oversampled, the resulting sample size of women in Asian countries are still much lower than for men and too low for meaningful estimates. Thus, the graphs present ITC results in the Asian countries for male smokers only, whereas for the non-Asian countries, results are presented for males only and also for male and female smokers combined.
- In each graph, countries are presented in order of GDP per capita, from highest to lowest. They are also colour coded according to three World Bank income classifications: High Income, Middle Income, and Low Income. In 2013, the World Bank refined its categories for middle-income to upper-middle and lower-middle-income. When 2013 ITC data is available for the middle-income countries, these categories will be refined in accordance to these new classifications. See Appendix 1 for the new ITC cross-country income categories for data after 2013 according to the 2013 World Bank classifications.

# PRICE AND TAX IN ITC COUNTRIES

Table 1 presents data on the price of the most sold brand of cigarettes and Figure 7 presents the tax structure percentages of the final retail price on the most sold brand of cigarettes in 20 ITC countries. All data are from the report, *World Health Organization. (2013). WHO report on the global tobacco epidemic, 2013. Geneva: World Health Organization* for which data was collected up to December 2012.<sup>36</sup>

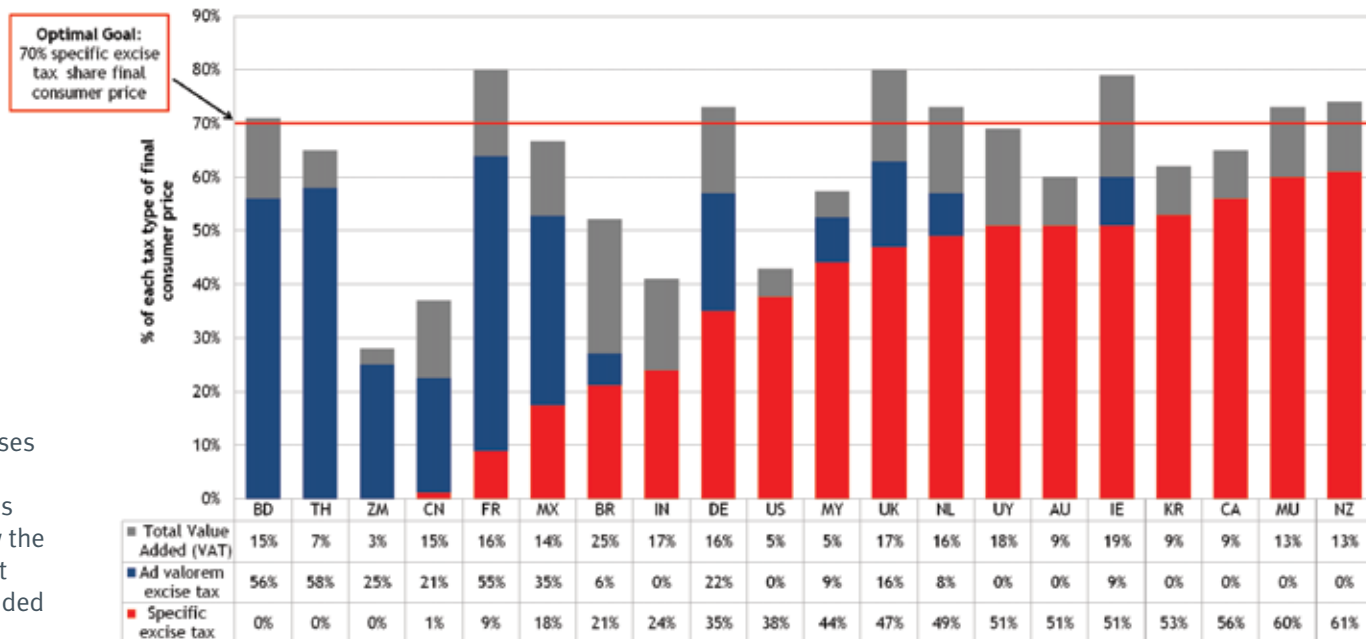
Notes: \* The price is a sales-weighted average of State/Region prices for most sold brand. Data for Scotland unavailable

*Specific excise taxes raise the average price of cigarettes and when adjusted for inflation and income growth, can decrease consumption.<sup>8</sup>*

**Table 1. Price of most sold brand of pack of 20 cigarettes in 20 ITC countries (from least expensive to most expensive)**

ITC Country	Price of Most Sold Brand, Pack of 20 cigarettes (Country's Currency)	Price of Most Sold Brand (US\$)
China (CN)	5.00 (CNY)	1.18
Bangladesh (BD)	50.00 (BDT)	1.53
Zambia (ZM)	8.00 (ZMW)	1.81
Brazil (BR)	4.25 (BRL)	2.26
South Korea (KR)	2500.00 (KRW)	3.10
Thailand (TH)	58.00 (THB)	3.26
Uruguay (UY)	75.00 (UYU)	4.00
Mexico (MX)	40.00 (MXN)	4.47
India (IN)	98.00 (INR)	4.88
Malaysia (MY)	10.00 (MYR)	5.15
Mauritius (MU)	105.00 (MUR)	6.06
United States (US) *	6.07 (USD)	6.07
Germany (DE)	5.26 (EUR)	6.28
Netherlands (NL)	5.68 (EUR)	6.61
France (FR)	6.20 (EUR)	6.78
Canada (CA) *	8.49 (CAD)	6.80
New Zealand (NZ)	14.40 (NZD)	8.35
Australia (AU)	13.63 (AUD)	8.67
United Kingdom (UK)	6.60 (GBP)	9.79
Ireland (IE)	9.10 (EUR)	10.56

**Figure 7. Tax structure percentages of final retail price on most sold brand of cigarettes in 20 ITC countries**

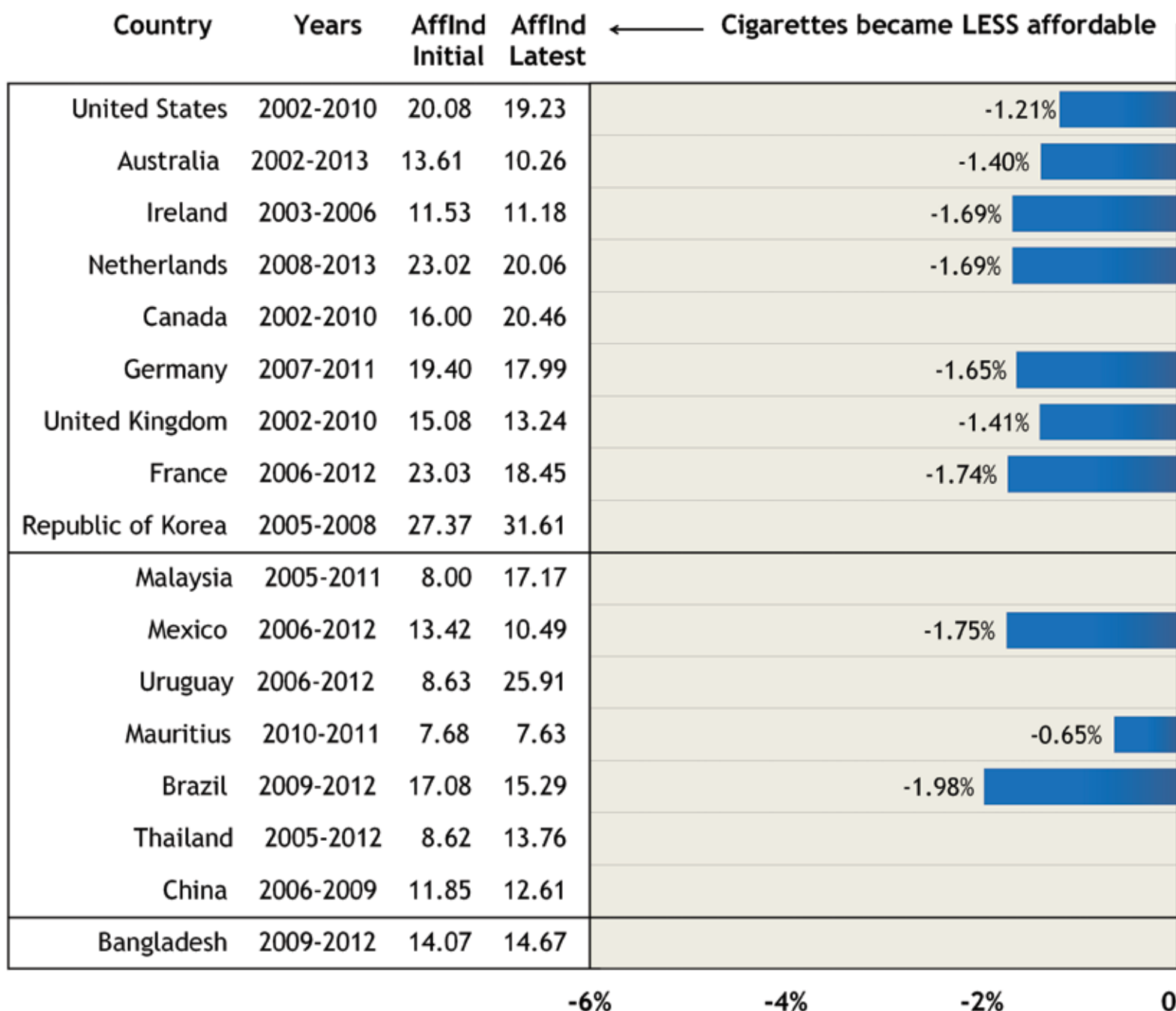


The share of price accounted for by excises in these countries is well below the 70% target recommended by WHO.

# CROSS-COUNTRY COMPARISON GRAPHS

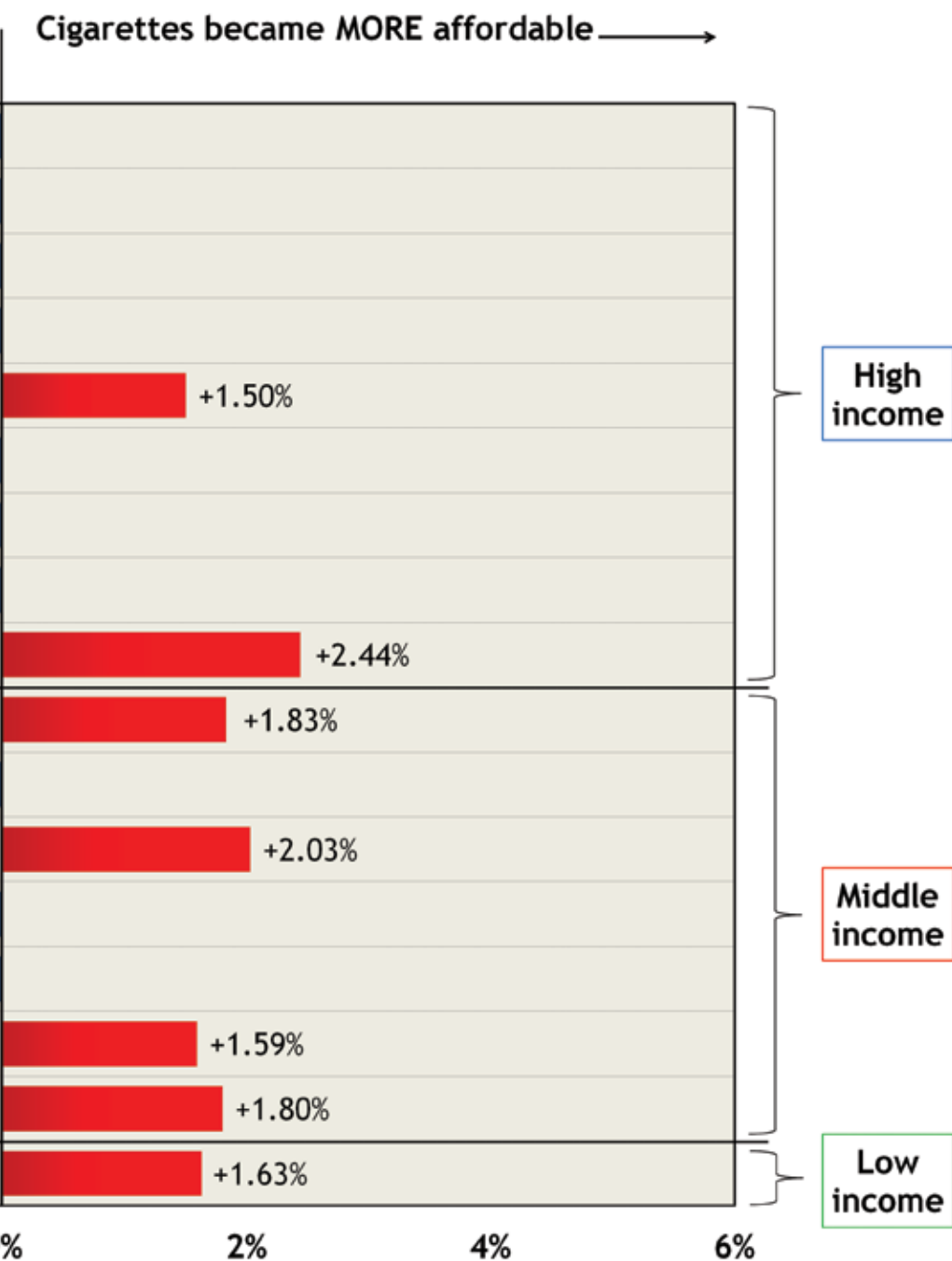
## Cigarette Affordability (Male Smokers)

Figure 8. Affordability of manufactured cigarettes and change in affordability per year in 17 countries



**Figure 8 presents data for 17 ITC countries (males only):** (a) Data presented for Mauritius is for Wave 2 (2010) and Wave 3 (2011). Data for the Republic of Korea is presented for Wave 1 (2005) and Wave 2 (2008). Data for all other countries is for the year of the first survey wave and of the most recent wave. Note that CPDIR is the cigarette price per day to daily income ratio, (b) **AffInd Initial:** the Affordability Index (the reciprocal of CPDIR) for the initial wave, (c) **AffInd Latest:** the Affordability Index (the reciprocal of CPDIR) for the most recent wave.\*





\* Change in Affordability Index per year = (% change in AffInd between the first survey wave and the most recent survey wave) / (Difference between the date at the 1/3 timepoint of the first survey wave interviewing period and the date at the 1/3 timepoint of the most recent survey wave interviewing period, in years)]. The date corresponding to 1/3 of the survey wave interviewing period was chosen because it was the approximate point at which 50% of the respondents had been interviewed for that survey wave in each country.

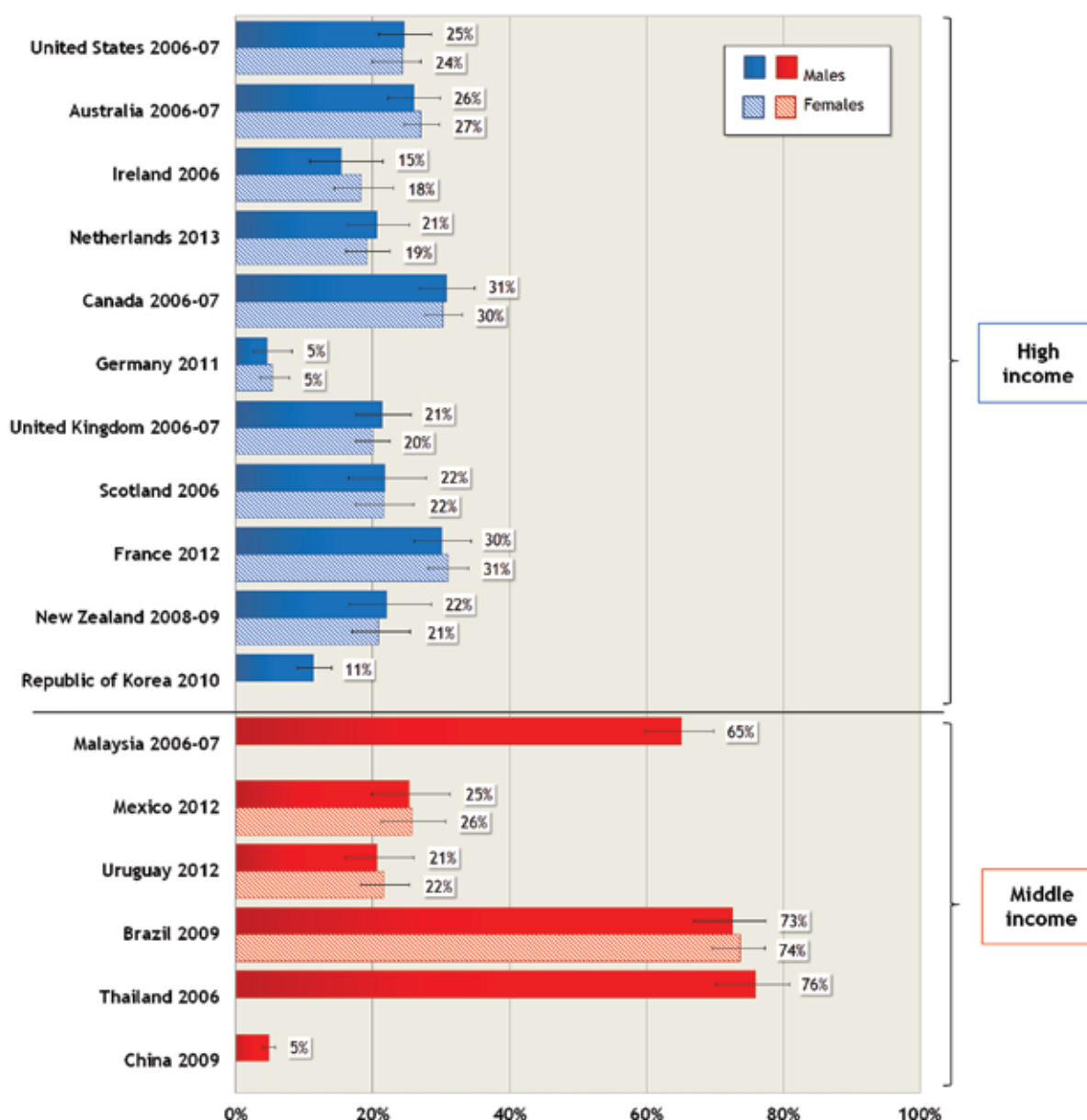
The general pattern of affordability across countries and over time is consistent with current studies of affordability which indicate factors such as Gross Domestic Product (GDP), tax structure, consumption intensity, purchasing preferences, and extent of tax avoidance influence affordability.<sup>23</sup>

Affordability is generally decreasing in high-income countries where income growth has been stagnant for years, and where governments have been more aggressive in using tax to curb tobacco use.

Affordability is generally increasing in low-income countries where income growth has been relatively rapid and most governments have not adopted significant tax increases to curb tobacco use. Increasing taxes and prices above income growth is essential for reducing the affordability of cigarettes and for curbing tobacco use especially in LMICs.

## Spent Money on Cigarettes Instead of Essentials

Figure 9. Percentage of smokers who spent money on cigarettes instead of household essentials, such as food, in the last 6 months, by country



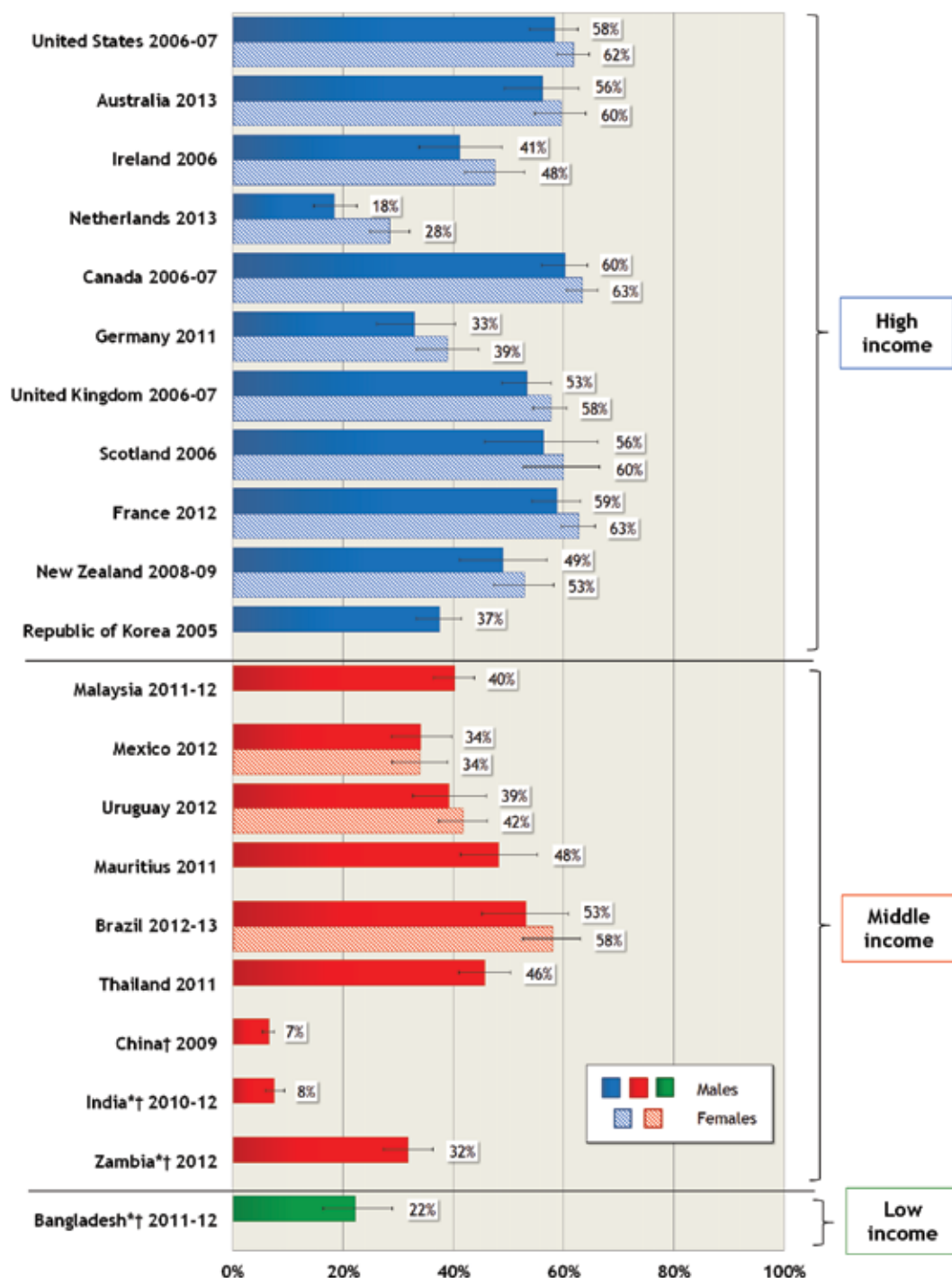
The percentage of smokers who reported spending money on cigarettes instead of household essentials like food in the last 6 months was highest in Thailand (76% of males) and Brazil (73% of males; 74% of females) and lowest in Germany (5% of males and of females) and China (5% of males).

In 3 of the 6 middle-income countries (Malaysia, Brazil, and Thailand), the majority of smokers reported spending money on cigarettes instead of household essentials like food.



## Think About Money Spent on Cigarettes

Figure 10. Percentage of smokers who thought “often” or “very often” about the money they spent on smoking in the last month, by country



\* For Bangladesh, India, and Zambia, dual tobacco users (those tobacco users who reported smoking both cigarettes and bidis) and mixed tobacco users (those tobacco users who reported smoking both smoked tobacco and smokeless tobacco) who reported smoking cigarettes were also included in the analysis.

† The response options for Bangladesh, China, India, and Zambia did not include “very often.”

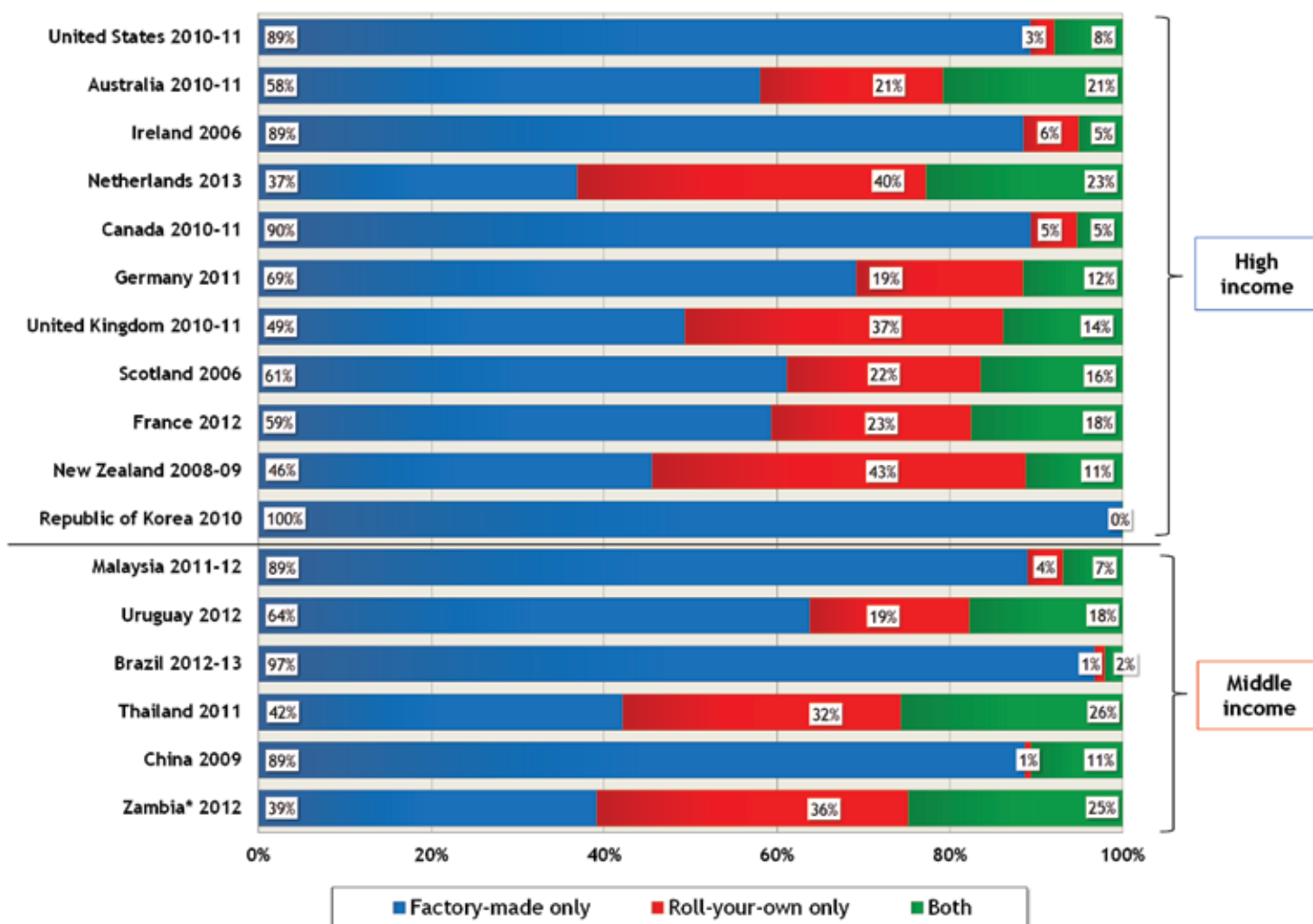
The percentage of smokers who thought often about the money spent on cigarettes was the highest in Canada (60% of males; 63% of females), France (59% of males; 63% of females), US (58% of males; 62% of females), Australia (56% of males; 60% of females), and Scotland (56% of males; 60% of females).

Of the 11 high-income countries surveyed, the Netherlands (18% of males; 28% of females) had the lowest percentage of smokers who thought often about the money they spent on cigarettes.

Of the 10 LMICs surveyed, only Brazil (53% of males; 58% of females) had over half of smokers think about the money spent on cigarettes. China (7% of males) and India (8% of males) had the lowest percentage of smokers thinking about the money they spent on cigarettes.

## Factory-made vs. Roll-your-own Cigarettes (Male smokers)

Figure 11. Percentage of male smokers who only smoke factory-made, roll-your-own, or both types of cigarettes, by country



\* For Zambia, mixed tobacco users (those tobacco users who reported smoking both smoked tobacco and smokeless tobacco) who reported smoking cigarettes were also included in the analysis.

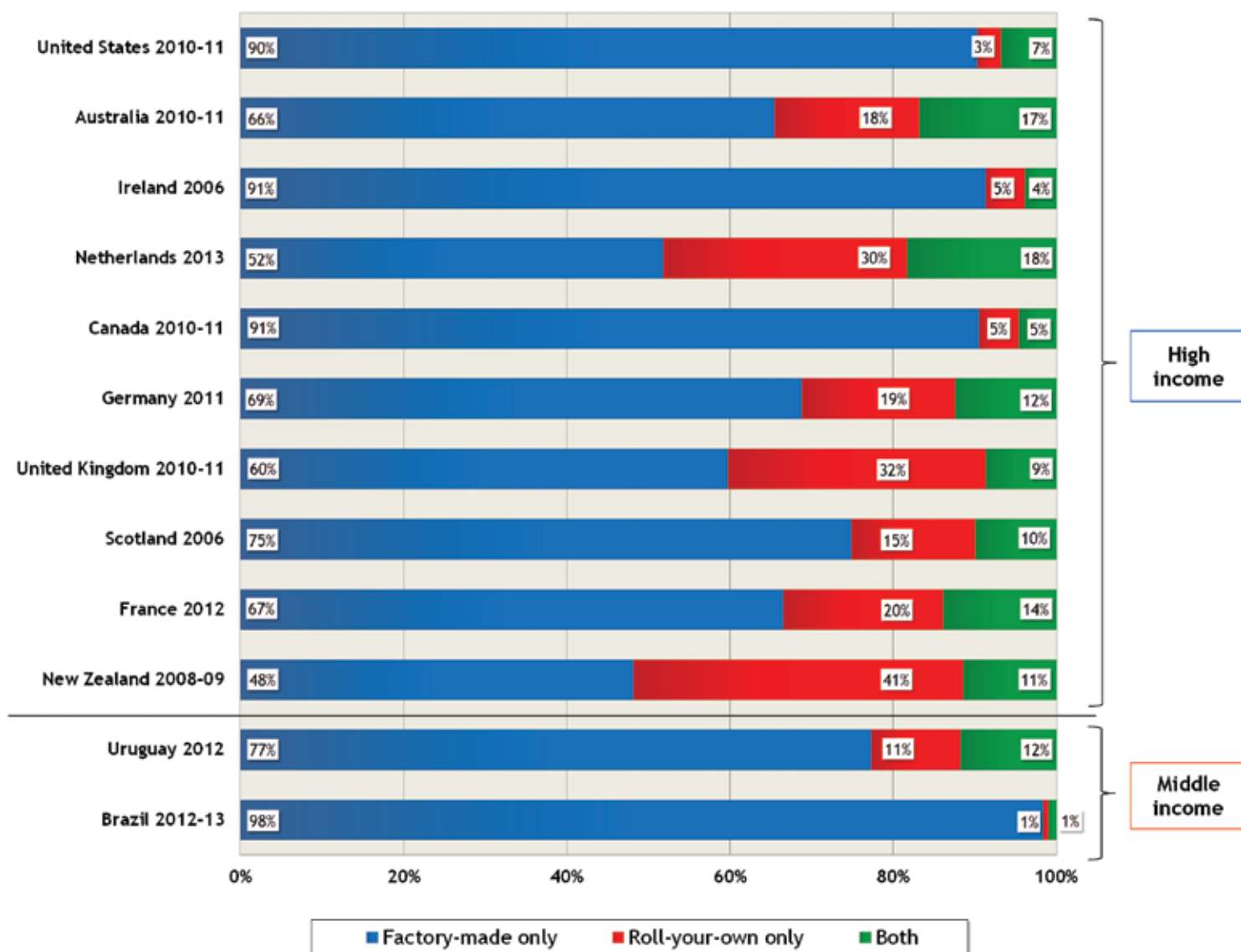
The ITC countries with the highest percentage of male smokers using only roll-your-own cigarettes were New Zealand (43%), the Netherlands (40%), the United Kingdom (37%), and Zambia (36%).

The ITC countries with the highest percentage of male smokers using only factory-made cigarettes were Republic of Korea (100%) and Brazil (97%).

Roll-your-own tobacco is cheaper and often taxed at a lower rate.<sup>38</sup>

## Factory-made vs. Roll-your-own Cigarettes (Female smokers)

Figure 12. Percentage of female smokers who smoke only factory-made, roll-your-own, or both types of cigarettes, by country



The high- and middle-income ITC countries with the highest percentage of female smokers using only roll-your-own cigarettes were New Zealand (41%), the United Kingdom (32%), and the Netherlands (30%).

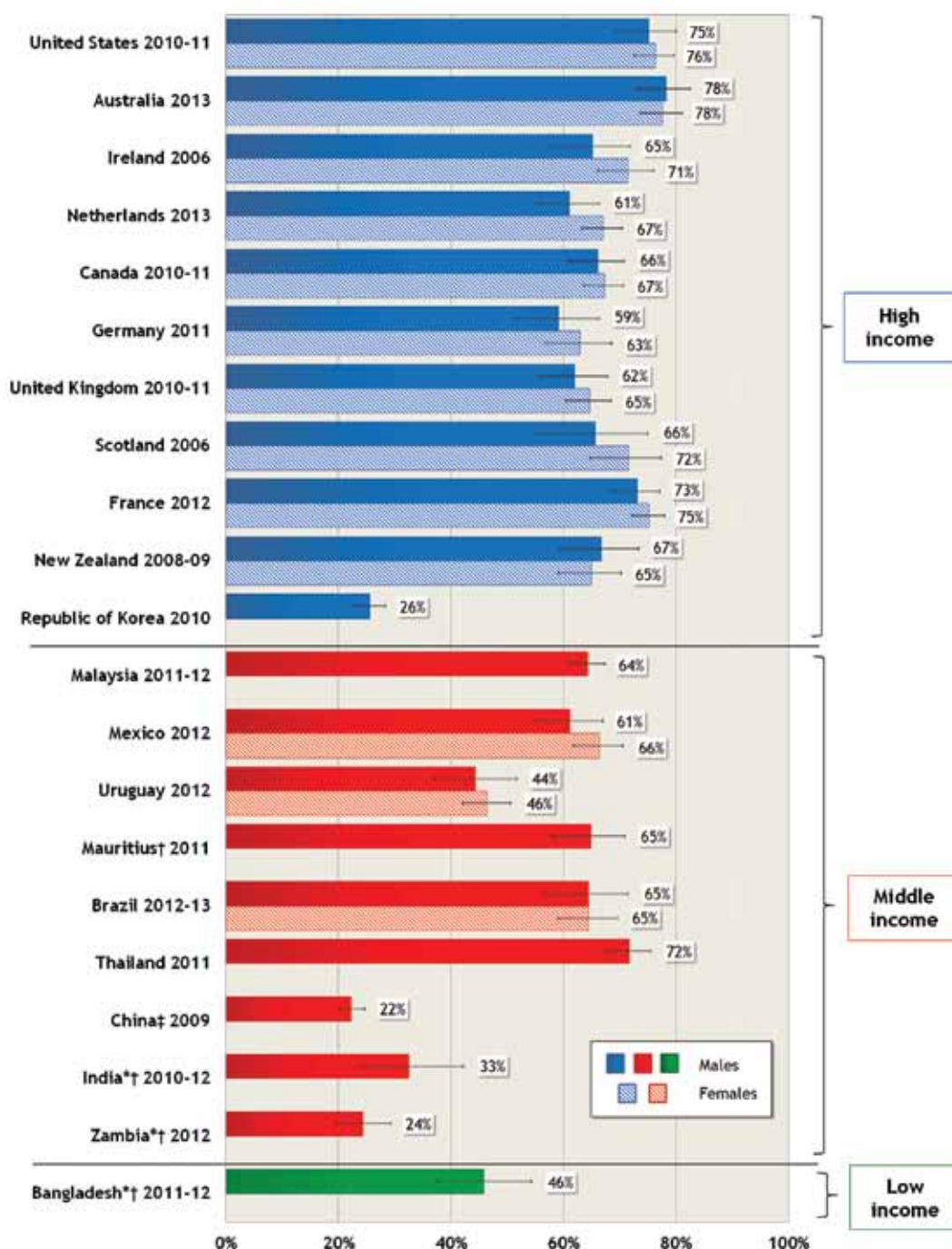
The middle-income ITC country with the highest percentage of female smokers using only roll-your-own cigarettes was Uruguay (11%).

## Cigarette Pricing as a Reason for Quitting Smoking

Figure 13. Percentage of smokers who reported that the price of cigarettes led them to think about quitting “somewhat” or “very much” in the last 6 months, by country

The percentage of smokers who recently thought about quitting smoking because of cigarette prices in the high-income countries was highest in Australia (78% of males and of females), the US (75% of males; 76% of females), and France (73% of males; 75% of females).

In 5 out of the 10 low- and middle-income countries the majority of smokers thought recently about quitting because of cigarette prices.



\* For Bangladesh, India, and Zambia, dual tobacco users (those tobacco users who reported smoking both cigarettes and bidis) and mixed tobacco users (those tobacco users who reported smoking both smoked tobacco and smokeless tobacco) who reported smoking cigarettes were also included in the analysis.

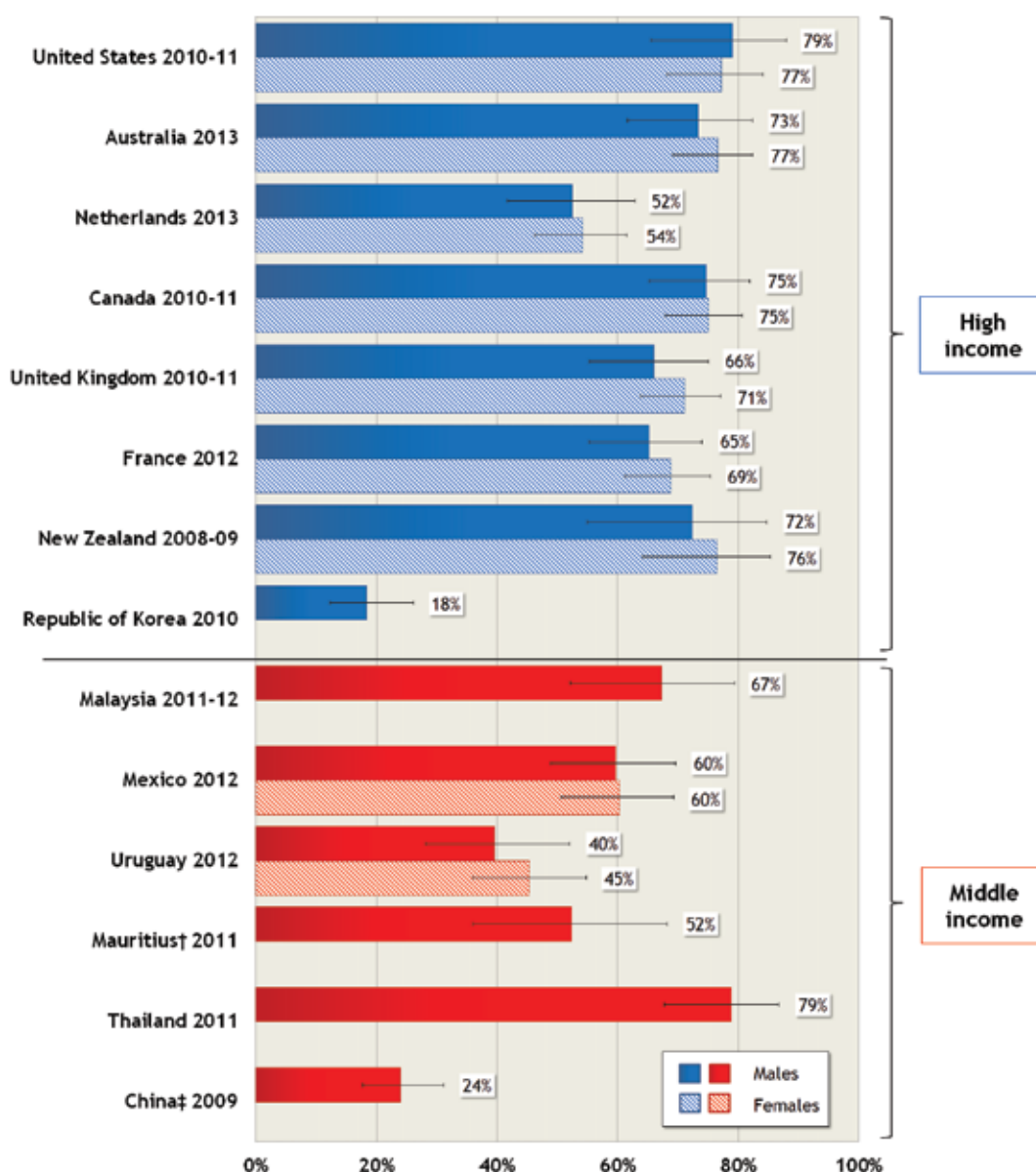
† The response options for Bangladesh, India, Mauritius, and Zambia were “yes”/“no” versus “yes”/“somewhat”/“not at all.” The percentage of respondents who answered “yes” is shown.

‡ In China, instead of “somewhat” the response option was “a little.”



## Cigarette Pricing as a Reason for Attempting to Quit or to Stay Quit

Figure 14. Percentage of quitters who reported that the price of cigarettes “somewhat” or “very much” led to their quit attempt or have helped them to stay quit, by country



† In Mauritius, the response options were “yes”/“no” versus “very much”/“somewhat”/“not at all.” The percentage of respondents who answered “yes” is shown.

‡ In China, instead of “somewhat” the response option was “a little.”

Note: not all countries ask quitters this question; many only ask smokers.

In 7 out of 8 high-income countries, the majority of respondents reported that their quit attempt or their desire to quite was led by cigarette pricing.

In Korea, only 18% of respondents reported that price led their attempt or their desire to quit.

In the middle-income countries surveyed, Thailand (79%) and Malaysia (67%) had the highest percentage of respondents who reported that their quit attempt or desire to stay quit was led by cigarette pricing.

In China, only 24% of respondents reported that price led their attempt or their desire to quit.

4% of smokers in the US and 10% of smokers in Canada reported purchasing cigarettes from Indian reservations/First Nations reserves.

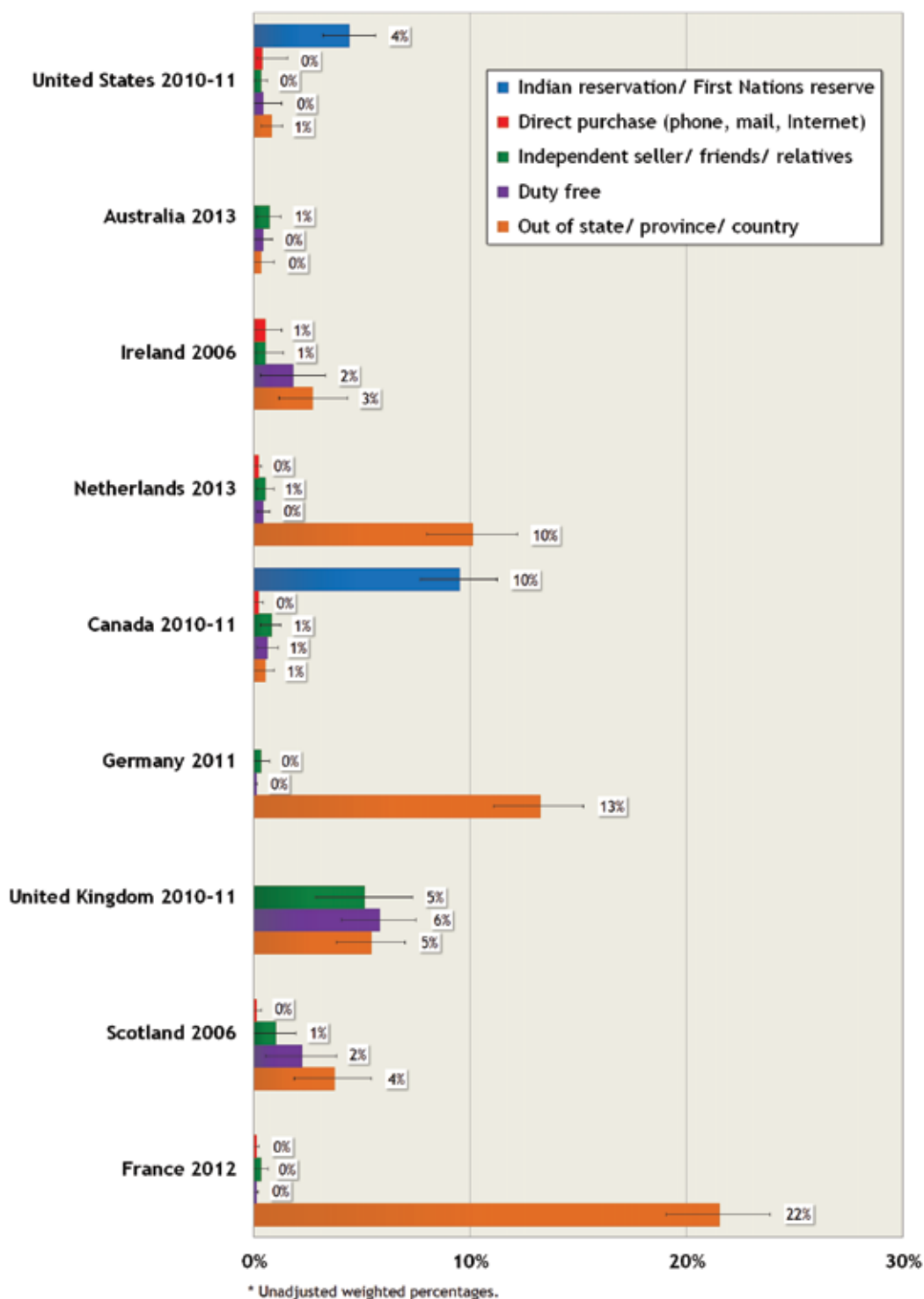
France (22%), Germany (13%), and the Netherlands (10%) were the top three countries where smokers reported using out of state/province/country sources for their cigarette purchases.

The UK was the only country where over 5% of smokers purchased from sources of independent sellers, duty free, and out of state/province/country.

Guindon et al. (2014) finds that the prevalence of tax avoidance and evasion differs from country to country, as well as the characteristics of the populations that engage in the behaviour.<sup>32</sup>

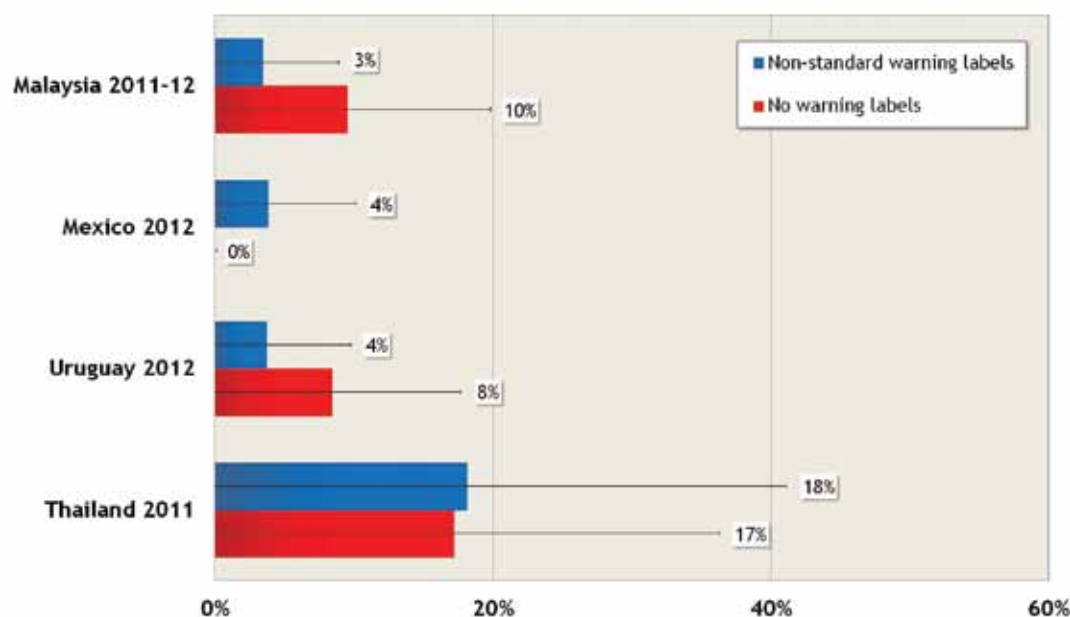
## Specific Tax Avoiding Sources for Last Purchase

Figure 15. Percentage of smokers who reported purchasing cigarettes from specific tax avoiding sources at last purchase among ITC high-income countries, by country\*



## Possible Tax Avoidance and Tax Evasion

Figure 16. Percentage of male smokers' cigarette packs showing evidence of possible illicit trade in ITC middle-income countries, by country



In certain ITC countries where smokers are asked to show a pack of cigarettes that they are currently smoking (or provide information about the pack by self-report), there is some evidence of tax avoidance and evasion.

Among the four ITC middle-income countries where smokers provide information about the pack of cigarettes, Thailand had the highest levels of non-standard (18%) or no warning labels (17%).

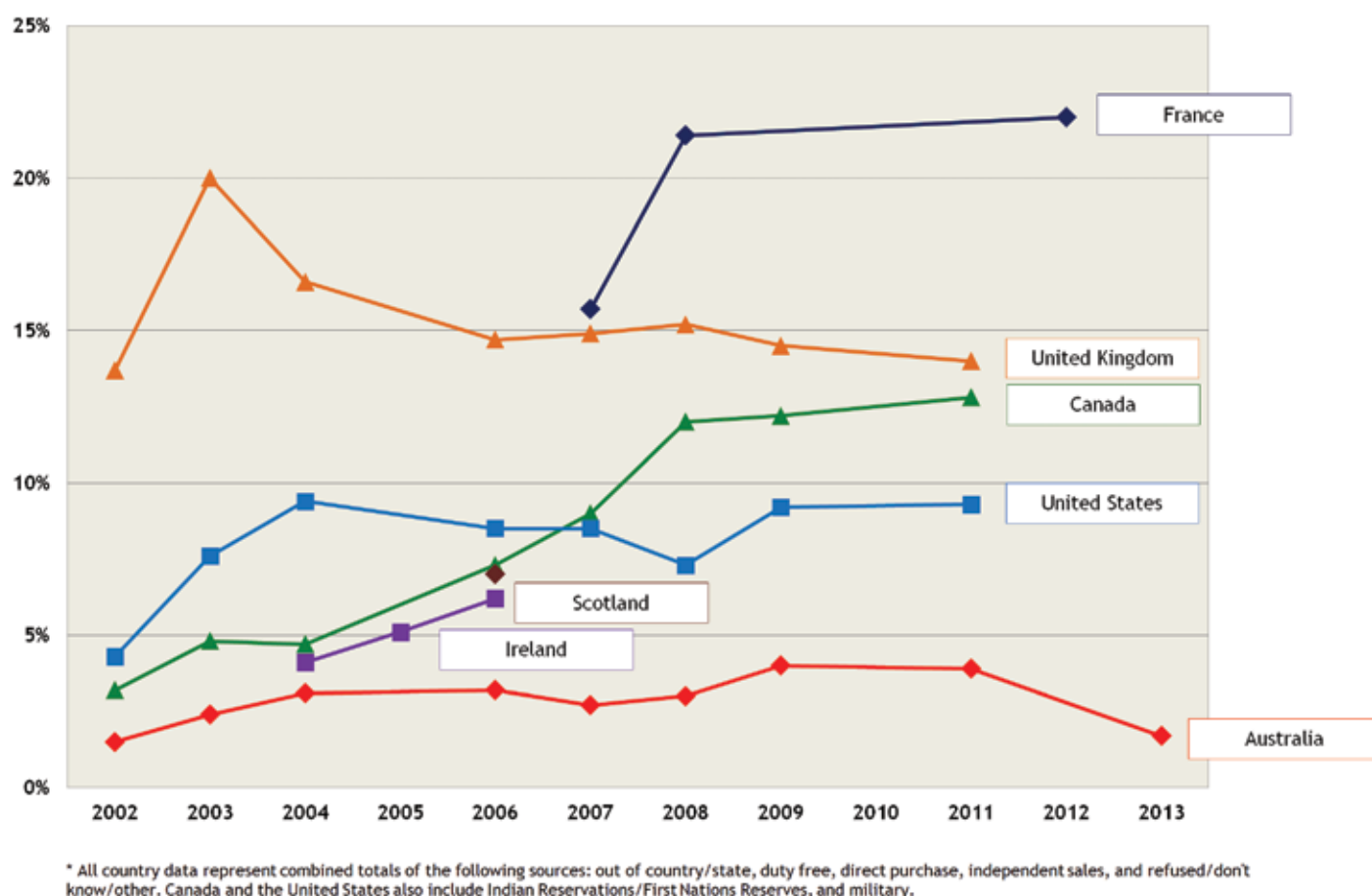


*Malaysian contraband cigarette packages without the required pictorial health warnings collected in the Wave 5 Survey*



## Purchased Cigarettes from Tax Avoidance and Evading Sources over Time

Figure 17. Percentage of ITC smokers reporting purchasing cigarettes from tax avoidance/evading sources at last purchase, 2002-2013



Tax avoidance and evasion behaviour was highest in France and the United Kingdom, and lowest in Australia.

In Canada, the percentage of smokers reporting buying cigarettes from tax avoidance sources increased more than four-fold between 2002 and 2009. This was due almost entirely to an increase in purchasing on First Nations reserves, and most of it was driven by purchases within the Province of Ontario.

Note that on December 1, 2012, Australia introduced plain packaging on tobacco products. Wave 9 Survey fieldwork was conducted from February to May 2013 and the results indicate a decrease in the incidence of tax avoidance. This is contrary to the argument proposed by the industry, that tax avoidance increases with tobacco control.<sup>39</sup>

# Summary

- The ITC Project findings support the recommendations for implementation of Article 6 which call for: tax adjustment procedures that reflect price and income elasticity, inflation, and income changes; simplified specific excise tax systems; minimum and comparable product pricing; and effective tax evasion policies.
- Effective taxes on tobacco products lead to higher real consumer prices (inflation-adjusted), which lower consumption and prevalence, and thereby in turn reduce mortality and morbidity and improve the health of the population.
- Increases in the price of cigarettes, through taxes, provide an incentive for current smokers to quit, and a disincentive for new smokers to start.
- Tobacco price and tax increases encourage consumers to reduce spending on tobacco products and either invest the money in savings, or consume other goods and services considered more productive to the economy.
- Affordability of tobacco products is generally higher in LMICs where lower tobacco taxes, greater reliance on ad valorem taxes, more complicated tax structures, and cheaper alternatives to taxed cigarettes are available, and where incomes are rising at a faster rate than in high-income countries.
- Specific excise taxes on cigarettes diminish the opportunity for trading down to cheaper brand cigarettes by reducing price variability between domestic and international and discount and premium brands; decrease consumption; and generate a steady stream of higher, and more stable government revenues.
- Harmonization of taxes across different tobacco products is especially important in LMICs where cheaper forms of tobacco products (e.g., bidis and smokeless tobacco in Bangladesh and India) can be purchased.
- Harmonization of different excise tax rates across geographies with close proximity (i.e., the different states in the US and members of the European Union) is important for curbing tax avoidance and evasion and lowering the affordability of cigarettes.

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**Table 2. Income categories for ITC countries for data after 2013 in accordance with World Bank 2013 classifications**

World Bank Country Classification*	ITC Countries
Low-income (\$1, 035 or less)	Bangladesh
Lower-middle-income (\$1, 036 to \$4, 085)	India Zambia
Upper-middle-income (\$4, 086 to \$12, 615)	Brazil China Malaysia Mauritius Mexico Thailand
High-income (\$12, 616 or more)	Australia Canada France Germany Ireland Netherlands New Zealand Scotland South Korea United Kingdom United States Uruguay

\* Income cut-offs are based on the per capita gross national income (GNI) that is converted to international dollars using purchasing power rates (PPP).

“...the Lancet Commission on Investing in Health recently identified a substantial increase in specific excise taxes on tobacco as the single most important intervention against noncommunicable diseases, as did the 2013 World Health Assembly.”

Source: Jha, P., & Peto, R. (2014). Global Effects of Smoking, of Quitting, and of Taxing Tobacco. *The New England Journal of Medicine*, 370, 60-68.

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National Health and Medical Research Council (Australia)

Robert Wood Johnson Foundation

Cancer Research U.K.

## FUTURE DIRECTIONS

The ITC Project continues to explore opportunities for collaborating with low-, and middle-income countries to help policy makers design, implement, and evaluate FCTC policies.

## THE ITC RESEARCH TEAM

**The ITC International Research team includes over 100 tobacco control researchers in 22 countries worldwide. Its Principal Investigators are:**

Geoffrey T. Fong – University of Waterloo, Canada

Mary E. Thompson – University of Waterloo, Canada

K. Michael Cummings – Medical University of South Carolina, United States

Ron Borland – The Cancer Council Victoria, Australia

Andrew Hyland – Roswell Park Cancer Institute, United States

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David Hammond – University of Waterloo, Canada

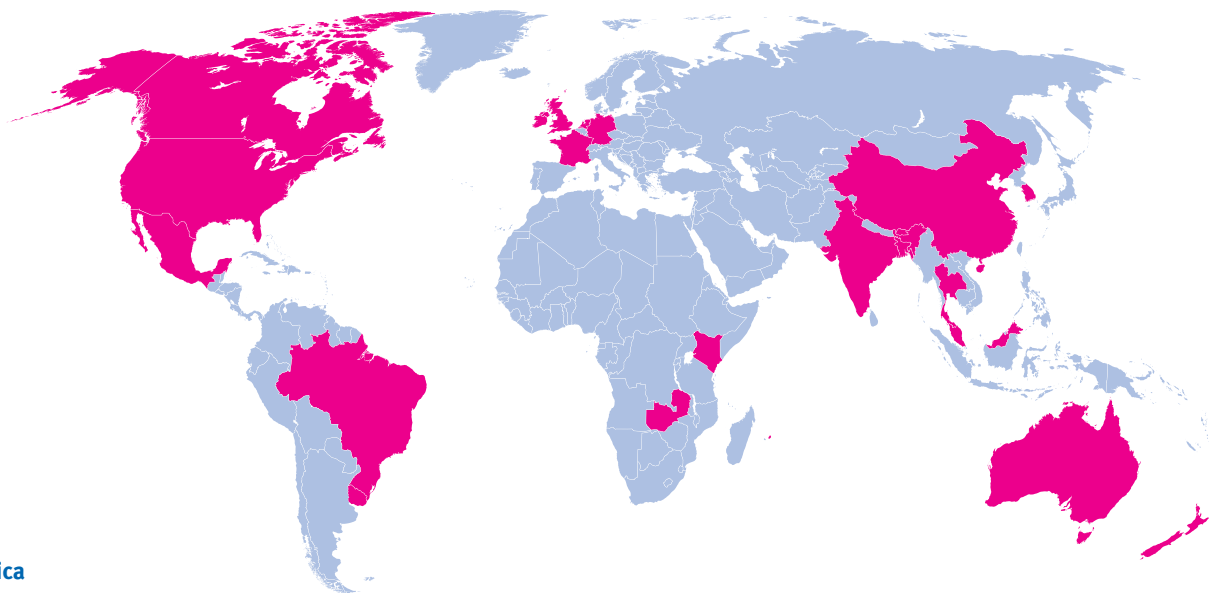
Gerard Hastings – University of Stirling and the Open University, United Kingdom

Ann McNeill – King's College London, United Kingdom

## THE ITC PROJECT: EVALUATING THE IMPACT OF FCTC POLICIES IN...

20+ countries • 50% of the world's population • 60% of the world's smokers • 70% of the world's tobacco users

Australia  
Bangladesh  
Bhutan  
Brazil  
Canada  
China (Mainland)  
France  
Germany  
India  
Ireland  
Kenya  
Malaysia  
Mauritius  
Mexico  
Netherlands  
New Zealand  
Republic of Korea  
Thailand  
United Kingdom  
Uruguay  
United States of America  
Zambia



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