

Assessment of Illicit Tobacco Trade in Suriname Using Discarded Packages





Foreword

Tobacco use remains a leading preventable cause of morbidity and premature mortality in Suriname. Effective tobacco control policies, particularly excise taxation and regulatory enforcement, require reliable empirical data to guide decision-making. Illicit trade in tobacco products, by its very nature, is difficult to study. Illicit tobacco presents a particular challenge to tobacco control if it is poorly understood, because it undermines both public health objectives and fiscal policy effectiveness.

This report presents the findings of a systematic assessment of illicit tobacco trade in Suriname using a discarded cigarette pack collection methodology. By generating objective, locally derived evidence, the study contributes to a clearer understanding of the magnitude and characteristics of the illicit tobacco market in Suriname.

The results are intended to inform policy development, strengthen enforcement strategies and support the country's commitments under the World Health Organization Framework Convention on Tobacco Control.

We express our appreciation to all partners and stakeholders who contributed to this important assessment.

Prepared for: Ministry of Health, Welfare and Labour, Republic of Suriname

Prepared by: Jerry Toelsie, Robbert Bipat, Kevin Welding, Germán Rodríguez-Iglesias, and Jeff Drope

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Executive Summary

Illicit tobacco trade in Suriname is pervasive and poses a substantial threat to both public health policy and fiscal stability.

The findings of this assessment indicate that between 74.3 percent to 84 percent of collected cigarette packages did not comply with national legal requirements, indicating that excise taxes were likely not paid on most of these packs. Oris and Tradition were the most frequently collected brands, and together, they account for 73.3 percent of the total sample. These results underscore the urgent need to strengthen regulatory enforcement and improve compliance with existing tobacco control legislation.

The estimated fiscal impact is considerable, with revenue losses from illicit tobacco projected to be approximately four times greater than current tobacco tax income. These findings suggest a marked reduction in the effectiveness of tobacco taxation policies, erosion of government revenue and fiscal space for health investment, and high accessibility of low-cost cigarettes.

To address this challenge, Suriname should implement the World Health Organization (WHO) Protocol to Eliminate Illicit Trade in Tobacco Products, especially its key provisions including improved excise stamps, enhanced traceability and other strengthened monitoring, improved enforcement and periodic reassessments to measure progress and inform policy refinement.



Background

Tobacco use remains a leading preventable driver of noncommunicable diseases (NCDs) worldwide, contributing substantially to premature mortality from cardiovascular disease, chronic respiratory disease, diabetes and multiple cancers.^{1, 2} NCDs account for the majority of all deaths in Suriname, and reducing tobacco consumption is a critical public health priority.³ Evidence from multiple global analyses confirms that the most powerful single measure to reduce tobacco use is increasing excise taxes to reduce affordability, curb consumption and generate government revenue for health and development.^{4, 5}

However, the impact of tobacco taxation is frequently undermined by the presence of illicit tobacco trade (ITT), which includes activities such as smuggling and counterfeiting (production and distribution of products without approval of the trademark owner) where taxes are unpaid. Illicit products are typically sold at substantially lower prices, counteracting the intended public health effect of taxation policies.^{5, 6} In low- and middle-income countries (LMICs), where most tobacco users currently reside, illicit tobacco can represent a sizeable share of the market. A recent systematic review and meta-analysis of 39 LMICs estimated that 14.4 percent (95 percent CI: 10.5–18.9 percent) of all cigarettes consumed are illicit, meaning approximately one in every seven cigarettes is not taxed.⁷

The consequences are profound. At the individual level, affordability of illicit cigarettes increases the likelihood of smoking initiation and reduces cessation attempts, especially among youth and low-income groups.⁸ At the population level, countries can experience significant losses in tax revenue which could have been leveraged for health system strengthening. Globally, governments lose an estimated US\$ 40.5 billion annually from the illicit cigarette trade.⁹ For low- and middle-income countries, modelling studies indicate that eliminating illicit trade could generate US\$ 31.3 billion in immediate annual tax revenue, while preventing an estimated 164,000 premature deaths per year from 2030 onward.⁹



Relevance for Suriname

For Suriname—a country with a substantial burden of noncommunicable diseases² (accounting for 63 percent of disability-adjusted life years, or DALYs) and persistent structural fiscal constraints—both the public health and revenue implications of ineffective tobacco taxation are of critical importance. According to a return-on-investment analysis on policies to address the NCD burden, measures to reduce tobacco use are the most cost-effective medium-term intervention in this country.² Suriname passed the National Tobacco Control Act in 2013; however, existing measures—including excise tax increases—can be strengthened to reduce accessibility for tobacco products and protect the health of the population. The total annual socioeconomic cost of tobacco use in Suriname is US\$ 64 million (1.8 percent of the gross domestic product, or GDP) and the annual cost per adult who smokes is US\$ 745.¹⁰

Generally, it is known that illicit tobacco products are untaxed, which make them cheaper and more readily available and accessible, especially to young people and those in lower socioeconomic groups.¹¹ The experience of other LMICs suggests that failing to control illicit tobacco can result in many negative outcomes, including: reduced effectiveness of tax policies due to cheaper illicit alternatives; erosion of customs and excise revenue; limitations in the fiscal space for health-sector investment; and the weakening of regulatory measures, including health warnings and youth access restrictions.^{12, 13}

Countries that simultaneously increase tobacco taxes and strengthen illicit trade control systems (such as tax stamps, track-and-trace systems and improved customs enforcement) achieve the largest reductions in smoking prevalence. The WHO Framework Convention on Tobacco Control (FCTC) Protocol to Eliminate Illicit Trade in Tobacco Products outlines effective measures, and evidence shows that countries implementing these systems do not experience substantial long-term increases in illicit trade following tax hikes.¹⁴



Purpose of this report

To strengthen the evidence base for tobacco control policies in Suriname, particularly regarding illicit trade, a study was conducted to gather data on the use of illicit tobacco in Suriname. This report describes the results of the study, which uses discarded packages to assess the illicit tobacco trade in Suriname.

Methodology

Suriname is a Dutch-speaking, upper-middle-income-level country located in the north-east of South America, with a total population of approximately 634,000 inhabitants.¹⁵ The country is administratively divided into 10 districts, and the majority of the population lives in the coastal area. In this study, we collected discarded packages in the districts of Paramaribo and Wanica, where nearly half of the population of Suriname lives.

Sample size calculation

In the absence of previous studies, data from existing literature was used to estimate the sample size for the pack collection.¹⁶ With Cochran's formula:

$$n = \frac{Z_{1-\alpha/2}^2 \times P(1-P) \times DEFF}{\gamma^2} \text{ and the values for:}$$

- critical Z score: $Z_{1-\alpha/2}^2 = 1.96$,
- expected prevalence: $P(1-P) = 0.5$,
- design effect: $DEFF = 2$ and
- margin of error: $\gamma = 2$,

the calculated sample size was 796 discarded packs.

Selection of roads

With an estimation of eight discarded packages per kilometre (based on a small pilot collection), a total of 96.1 kilometres was covered. The districts of Paramaribo and Wanica are administratively divided into 12 resorts and seven resorts, respectively. In each of the 19 resorts, clusters of 5.1 kilometres



consisting of primary and secondary roads were selected. Locations where large groups of people gathered and bags/collections of household trash on the street were omitted because of the higher probability that packages were discarded by individuals from outside that area.

Collection of packages

All discarded cigarette packages on the selected roads were collected. Trash bags/cans/containers and any other form of trash collection were avoided. Pictures from all sides of the collected packages were taken, and packages were stored in labelled and sealed plastic bags. Discarded packages were collected from May 29 to August 4, 2025.

A data collection tool using REDCap was developed to upload the pictures of the discarded packages and to extract the information from the packages. Staff members were trained to use this tool and collect discarded packages from the street.

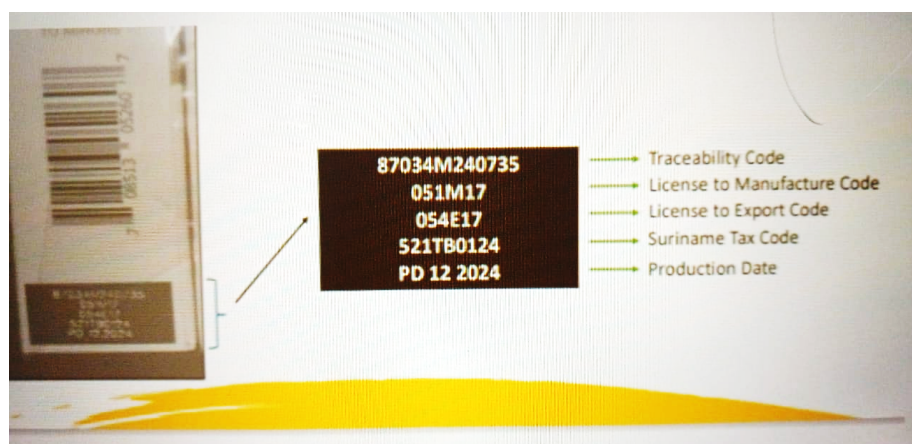
Determination of tax compliance

Information on the tobacco tax procedure was obtained from the Ministry of Finance. This information included types of tax markers and tax stamps. Suriname has a dual system for the imposition and collection of tobacco product excise duties, depending on whether companies meet certain criteria. The first system includes a marker that is printed on the cigarette packages. Companies that fulfil the criteria required by the government receive a marker that is printed on the package before importing cigarettes. Those criteria include having direct access to and control over the production process, having a share of at least 50 percent of the Surinamese market in the past year, maintaining regular accounting records, and having never submitted incorrect or incomplete declarations about productions to the State.

The excise marker consists of a black rectangular box with five lines of text printed in white (Figure 1). The first line is a traceability code, the second is the

license to manufacture code, the third is the license to export code, the fourth is the Suriname tax code and the fifth line is the production date.

Figure 1. Explanation of the tax marker on tobacco packages



The second excise system includes a tax stamp. Cigarette packages from manufacturers that do not meet the requirements of the country for an excise marker receive a stamp if the required health warning label (HWL) is printed on the package and the taxes are paid. The stamp is placed on the cellophane of the cigarette package.

Data analysis

The local regulatory framework stipulated specific product presentation and labelling requirements for commercially distributed cigarette packages. These requirements include that each cigarette package must have:

- 20 cigarettes;
- required health warning labels covering at least 50 percent of each of the front and back panels;
- the production date;
- tax code, tax stamps and batch numbers must be printed clearly;
- clear manufacturer brand, name, or address; and
- the net weight.



All parameters listed in the National Tobacco Control Act were analysed. Statistical software R and R-studio were used for analysis. Translation software (Gemini and Image-to-text converter) was used to translate text on the packages in languages other than English and Dutch.

Results

Overall

In total 2,377 packages were collected, and 10 packages were excluded from analysis (seven packages were cigarillos, two packages were too damaged to extract the information required and one package was from a prefilled pod). In the end, 2,367 packages were included for further analysis. Based on the estimated sample size of 796 discarded packs we are sufficiently powered.

Brands

In total, 31 different brands were collected. Oris and Tradition were the most frequently collected packages and dominated (73.3 percent) the total collection. Table 1 presents the share of each cigarette brand among the total collection.



Table 1. All collected brands

Brand	N	Percentage (%)
Oris	1,161	49.0
Tradition	575	24.3
Pall Mall	161	6.8
Dunhill	151	6.4
Tabacca	83	3.5
Morello	66	2.8
Elegance	58	2.5
Magnate	26	1.1
Marlboro	24	1
Other brands*	63	2.6
Total	2,367	100

*All brands with a share of less than one percent were grouped as "other brands." These brands (in order of frequency) were: Mac, Patron, Atlanta, Marshal, Capi Blue, Benson & Hedges, Jaxx, Rumba Royal Suave, Vess, Double Happiness, Fisher, Indosu, L&M, Landus, Marble Royal, Mighty, Regina, Silver Elephant, Time Random Five and Ultra Buy.

Brands with tax code or stamp

Only three brands (Pall Mall, Dunhill, Morello) had a legible Suriname tax code (Table 2). Only three packages, all Marlboro brand, had a tax stamp.

Table 2. Brands with Suriname tax code or stamp

Brand	Tax code	Tax stamp	Total (%)
Pall Mall	104	0	104 (41.1)
Dunhill	97	0	97 (38.3)
Morello	49	0	49 (19.3)
Marlboro	0	3	3 (1.2)
Total	250	3	253 (100)

Health warning labels

Several types of health warning labels (HWLs) were present on the packages, ranging from text in different languages to warning images. The languages of the HWLs were in Arabic, Chinese, Dutch English, and Spanish. The number of packages with HWLs is presented in Table 3.

Table 3. Health warning label on the package

Label	N	Percentage (%)
Required HWL	379	16.0
Other HWL	1,749	73.9
No HWL	9	0.4
Too damaged to assess	230	9.7
Total	2,367	100

Brands with (non-)compliant health warning labels

All examined packages of Pall Mall, Dunhill and Morello that were sufficiently intact for assessment displayed compliant HWLs (Figure 2). Except for three packages, all Marlboro packages displayed compliant HWLs (Figure 3). These brands accounted for 17 percent of the packages ($n = 402$).

Figure 2. Marlboro with compliant health warning label



Figure 3. Marlboro with non-compliant health warning label





In total, 74.3 percent (n = 1,758) of all collected packages clearly had no HWL or one other than the required HWL. Oris and Tradition dominated this group of packages, accounting for 98.7 percent.

Manufacturers

Table 4. List of manufacturers

Manufacturer	Brands	N	Percentage (%)
Trademark owner*	Atlanta, Elegance, Fisher, Jaxx, Mac, Magnate, Oris, Patron, Rumba Royal, Suave, Tabacca	1,318	55.7
Johannes Wilhelm von Eicken GmbH	Tradition	569	24
West Indian Tobacco Company Ltd	Dunhill, Morello, Pall Mall, Tabacca	373	15.7
Philip Morris International	L&M, Marlboro	23	1
China Tobacco Hunan Industrial Co Ltd	Double Happiness, Marshal, Silver Elephant,	6	0.3
Dunhill Tobacco Of London Ltd	Dunhill	2	0.1
Global Tobac Co	Regina	1	0
Japan Tobacco International	Winston	1	0
KT&G Corporation	Landus	1	0
Nanyang Brothers Tobacco Co	Double Happiness	1	0
NET Co United SA	Atlanta	1	0
US Flue-Cured Tobacco Growers Inc	Ultra Buy	1	0
Damaged / Not available		70	3.0
Total		2,367	100

*Trademark owner: Many packages had printed "...under authority of the trademark owner..." without mentioning the manufacturer.

Country of origin

Since the address of the manufacturer was present on only a limited number of packages, the country of origin was recorded. Most of the packages (76.6 percent) are from Germany or the United Arab Emirates.

**Table 5.** Country of origin

Country	N	Percentage (%)
Germany	1,226	51.8
United Arab Emirates	588	24.8
Trinidad & Tobago	360	15.2
England	46	1.9
Switzerland	45	1.9
Dominican Republic	20	0.8
China	8	0.3
United States of America	8	0.3
European Union	1	0
South Korea	1	0
Turkey	1	0
Vietnam	1	0
Damaged	42	1.8
Not on package	20	0.8
Total	2,367	100

Discussion

In this study, the illicit tobacco trade in Suriname was assessed using discarded packages. Because Suriname has two parallel systems on tobacco tax consisting of markers and stamps, this makes such assessment relatively complex.

Tax stamps are placed on the cellophane, which is usually damaged and/or discarded upon opening. Therefore, the presence of a stamp alone is not a reliable parameter for this study. The tax code, which is printed on the package, is more sustainable. However, the size is relatively small and therefore it can be easily damaged on discarded packages, especially when packages are collected



during rainy seasons. The readability of the fourth line, the Suriname tax code, was a frequent challenge.

The required HWLs are printed on the package and cover 50 percent of the front and back panels. These labels are larger than the tax marker and are, therefore, less often completely damaged. The HWL is also verified by Customs before placing a stamp. Therefore, the HWL is a more reliable parameter for assessing illicit cigarettes. In this study, the packages with the required HWLs also have most other requirements on their packages. We found that 16 percent of packages featured the required HWL, while 74.3 percent did not feature a compliant HWL, and 9.7 percent were too damaged to assess. Therefore, the illicit sample is at least 74.3 percent and at most 84 percent.

Compliant HWLs were found on the packages of four brands: Pall Mall, Dunhill, Morello and Marlboro. However, three packages of Marlboro had a non-compliant HWL. The cellophane was missing so it was not possible to assess whether these packages originally received a tax stamp. This illustrates that brand alone is not a reliable parameter to assess illicit packages; in other words, there is the possibility that registered brands did not pay taxes.

On the other hand, brands not known to be in the tax system consistently fail to display evidence of a tax payment. Oris and Tradition dominated the packages with non-compliant HWLs. This likely indicates a limited number of importers, which hopefully makes future compliance enforcement easier for the appropriate authorities.

Limitations

This study method does not distinguish cigarette packages brought into the country by tourists which may lack a tax stamp/code or a compliant HWL. Considering that most packs identified in this study are just two brands though, it is practically impossible that these were somehow introduced to the market by individuals bringing foreign packs legally.



The study method assumes similar littering behaviour among individuals purchasing licit and illicit cigarettes. This may not hold as consumers of the more expensive licit products could exhibit different disposal patterns, although previous studies have not found clear evidence of large differences.

Additionally, data collection occurred during the rainy season, and exposure to excessive moisture may have damaged packages, particularly the small tax markers which potentially affect accurate classification.

Conclusion

This assessment demonstrates that illicit tobacco trade in Suriname is extensive and poses a serious challenge to both public health and fiscal discipline. With strong evidence that around four out of five cigarette packages are failing to meet legal requirements, the findings highlight the urgent need for stronger enforcement and regulatory oversight. This level of illicit trade suggests that the estimated loss of tax revenue due to illicit tobacco is approximately four times higher than the current tobacco tax income. The current dual excise system (markers and stamps) has limited durability and traceability and could be readily improved with the implementation of international best practices on securing the cigarette supply chain.

Based on these findings it can be concluded that the illicit tobacco trade is enormous, and measures must be considered to maximize the efficiency and effectiveness of tobacco tax increases.

Recommendations

Based on the findings of this study, several policy and research recommendations emerge.



Policy Recommendations

- Suriname's government needs to aggressively implement the provisions of the Protocol to Eliminate Illicit Trade in Tobacco Products which will help to strengthen oversight of the tobacco supply chain and reduce illicit tobacco in the market.
- As a temporary but effective measure, affixing tobacco tax stamps with better adhesive to more durable locations on the cardboard package, rather than on the cellophane wrapper, could quickly reduce ambiguity and improve traceability.
- As other similar countries have successfully implemented, requiring a high-quality unique identifier printed on each package—imported or domestically produced— would provide authorities with requisite information about all packs in the country at every stage of the supply chain (including importer, wholesaler, and retailer).
- Appropriate authorities need the tools (e.g., surveillance and monitoring) and legal authority to find and effectively sanction illicit operators.
- Licensing entities at each stage of the supply chain would help officials to monitor and appropriately sanction violators.

Recommendations for Future Studies

- Repeating this study periodically would allow for monitoring the impact of taxation and regulatory measures, thereby supporting evidence-based policy adjustments over time. The littered pack collection could be complemented or substituted with a survey of smokers, which potentially also provides information about consumers of illicit products.



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