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ANALYSIS OF TARIFF MEASURES RELATING TO THE IMPORTATION OF ECO-FRIENDLY VEHICLES INTO MADAGASCAR

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ABSTRACT

As part of efforts to promote less polluting vehicles in order to reduce urban emissions, the question arises as to the related tax incentives granted by the government to importers. On the other hand, the requirements of technical and financial partners are moving in the opposite direction, i.e. towards the rationalisation of tax expenditure. This research therefore aims to understand the ins and outs of the tariff measures applied to the customs clearance of environmentally friendly vehicles in Madagascar and their potential impact on customs revenue. The results show the early stages of a public policy on energy transition. While exemptions from duties and taxes are applied to the introduction of electric vehicles since 2023, the tariff policy applied by customs administration remains generally unclear. Furthermore, the predominance of combustion engine vehicles has been noted, while tax expenditures are steadily increasing. Consequently, further research is needed to clarify the grey areas surrounding the impact of tariff measures in order to establish a clear vision for green policy.

KEYWORDS: less polluting vehicles, tariff measures, tax expenditures, tax exemption

INTRODUCTION

Reflections on the deployment of alternative fuel vehicles have emerged on the African continent, with a marked focus on electric vehicles (Amedokpo and Boutueil, 2023). Green public policy and energy transition call for differentiation in taxation between polluting and environmentally friendly vehicles. Several instruments can be applied, depending on the choice of each government, to support a given sector; this is the case with tax expenditures (Kassim and Mansour, 2018). This mechanism is an important lever for promoting the environment and sustainable development. Subsequently, certain measures have been suggested to limit emissions linked to passenger mobility (Durrmeyer et al, 2024) or to end the sale of

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

new combustion engine vehicles (Montout and Robinet, 2024). Madagascar is committed through its Nationally Determined Contribution (NDC) to reducing greenhouse gas emissions from road transport[1]. Then, as part of the Extended Credit Facility (ECF) and the Resilience and Sustainability Facility (RSF) granted to the government[2], customs reforms relating to energy and motor vehicle taxation are among the International Monetary Fund's structural benchmarks. In parallel with these commitments, the Madagascan government has ratified the Trade Facilitation Agreement (TFA) aimed at reducing trade costs, which would have a considerable impact given that a 1% reduction would lead to a 3% to 4% increase in international trade growth (Clark and Bernard, 2022).

Consequently, it seems legitimate to inquire about the practical implementation of these various commitments within the Customs Administration. Next, it is also necessary to examine the various measures, in particular the rates of duties and taxes applied to the introduction of less polluting vehicles compared to those running on fossil fuels. Finally, the question arises as to the evolution of the number of environmentally friendly vehicles imported and, possibly, the impact of duty and tax exemptions on customs revenue. This research therefore aims to understand and characterise the evolution of taxation on environmentally friendly vehicles in Madagascar and the treatment accorded to their importers. However, our analysis does not address the behavioural aspect of economic agents, which would require a separate study at a later date.

METHODOLOGY

Tariff measures, as opposed to non-tariff measures (UNCTAD, 2021), were analysed on the basis of customs provisions, in particular according to the customs tariff[3]. Changes in taxation were studied based on facts and data collected between 2015 and 2025. To this end, our study draws on research conducted by Sylvie Montout and Alice Robinet (2024) and by Isis Durrmeyer et al. (2024). The data collected therefore focuses on the number of vehicles and the amount of measures put in place. However, while these researchers were able to broaden their analyses of household and business behaviour with regard to government subsidies and bonus-malus systems, this was not yet the case for ours. Our study focused solely on the evolution of the number of environmentally friendly vehicles and motorcycles, on the one hand, and on the static loss of corresponding revenue, on the other. This time, it does not seek to explore any possible change in taxpayer behaviour.

Qualitative and quantitative analyses

[1] **Repoblikan'i Madagasikara. 2017. Madagascar's Third National Communication to the United Nations Framework Convention on Climate Change. Ministry of Environment and Forests.**

[2] **IMF Report No. 2024/205, June 2024**

[3] **Document also known as the tariff nomenclature used by customs. This is a book containing descriptions of goods based on the World Customs Organisation's Harmonised System code, and the rates of duties and taxes adopted by parliamentarians**

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

The qualitative analysis focused primarily on import taxation, which encompasses customs legislation and regulations as well as the formalities and procedures applicable to both the import and export of goods (Lux, 2002).

For the purposes of this study, the legislative and regulatory texts governing mainly the importation of vehicles were reviewed, namely:

- Agreement on the implementation of Article VII of GATT 1994 relating to customs valuation (WTO, 2005)
- Customs Code and its implementing provisions (TEXDOU, 2015)
- Customs tariff updated from 2020 to 2025
- Decree 8426/2007 of 4 June 2007 setting the fees charged by Gasynet[4] for operations subject to regulatory customs declarations at a computerised customs office.
- Note No. 306/MEFB/SG/DGD of 21 June 2006 on the implementation of identification checks on imported used vehicles (CIVIO)
- Public Notice No. 082- 2025 MEF/SG/DGD/DLV/STDA of 8 May 2025 setting out the terms and conditions for the application of the exemption from duties and taxes for new electric cars and motorcycles, hybrid cars and hybrid motorcycles, in accordance with the Initial Finance Act 2023.

The Customs Code and its implementing provisions describe the formalities and procedures, while the customs tariff is part of the World Customs Organisation (WCO) Harmonised System nomenclature, which includes the tariff classification of vehicles and the applicable rates or quotas of duties and taxes.

The quantitative data includes data collected by the Customs Administration's Statistics and Studies Monitoring Service (SSAE). It covers, in particular, the customs value, number, and amounts of customs duties (DD) and value added tax (VAT) on imports of all types of vehicles between 2020 and 2025 (end of August). In addition, there is data published on the website[5] of the Directorate General of Customs and data from Gasynet[6]. This data is supplemented by data from the National Institute of Statistics (INSTAT).

Descriptive analysis of tax expenditures

With a view to making better use of interventionist fiscal policy (Godbout, 2004) on the one hand, and to providing incentive schemes to encourage investment on the other, the government is resorting to means other than budgetary expenditure (Zinelaabidine, 2017). In the context of sustainable development, tax expenditures are among the instruments used by the government to support the use of clean vehicles and gradually reduce emissions. They take the form of exemptions from the standard tax system, in the form of tax deductions, reductions and exemptions (Kassim and Mansour, 2018). Next, certain measures were also suggested to limit emissions linked to passenger mobility and encourage the transition to cleaner

[4] A private company that supports Madagascar's customs authorities in their efforts to modernise and digitise procedures.

[5] www.douanes.mg

6 A private company that supports Madagascar's customs authorities in their efforts to modernise and digitise procedures

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

energy sources (Durrmeyer et al, 2024). These include standards imposing limits on pollutant and fine particle emissions, and a regulatory framework aimed at ending the sale of new combustion engine vehicles (Montout and Robinet, 2024). In addition, some countries (France, for example) are introducing subsidies or penalties for CO2 emissions, or microcredit for 'clean vehicles'.

In the 2000s, the Madagascan government granted a reduced customs duty rate of 5% or 10%, as applicable, instead of 20%, on certain materials and equipment used in the production of energy from renewable sources. From 2010 onwards, a total exemption from customs duties was granted for certain items such as solar panels and solar, wind or hydraulic energy machines. These tax advantages consist of 'tax expenditures' which result in a loss of revenue for the State. However, the Administration is gradually moving towards granting specific treatment to less polluting vehicles; this involves a reduction in duties and taxes (DTI) for rolling stock (vehicles and motorcycles using electric power sources). However, according to statistics from the Directorate-General of Customs, vehicles and motorcycles are among the ten items that generate the most customs revenue[7].

Hypothetical scenario

For this study, tax expenditure refers to the exemption from duties and taxes included in the customs tariff adopted by parliamentarians. Next, the 'revenue loss method' (IMF, 2015) was chosen to estimate the static loss of revenue to the state resulting from a tax expenditure on vehicles, without seeking to identify any change in taxpayer behaviour. This method is simple in that it is generally based of customs declaration data.

The loss was estimated solely on the assumption that the tax expenditure would be eliminated from the tariff on the basis of standard rates. This is a hypothetical scenario (IMF, 2015).

Estimated loss of import duties and taxes

When calculating the loss, import duties and taxes (DTI) were estimated in accordance with Articles 8 and 119 of the Customs Code, which stipulate that import duties listed in the customs tariff are applicable to goods entering the territory. To this end, the tariffs in force between 2020 and 2025 provided for two main types of duties and taxes: customs duties (DD) and value added tax (VAT) on imports. With regard to petroleum products, the Administration applies a tax on petroleum products (TPP) and a value added tax on petroleum products (TVAPP).

The annual rate then varies according to the tariff classification of vehicles in accordance with the World Customs Organisation's Harmonised System nomenclature. Based on the four-digit tariff heading,

7 file:///E:/T%C3%A9l%C3%A9chargements/Tableau-de-bord-de-la-Direction-Gnrale-des-Douanes-Aot-2025.pdf

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

vehicles have been classified into four categories in order to simplify calculations:

- Tariff heading 87 02: Vehicles used for public transport of persons
- Tariff heading 87 03: Private vehicles, including sport vehicles
- Tariff heading 87 04: Vehicles used for the transport of goods
- Tariff heading 87 11: Motorcycles

The VAT rate remains constant and static during the periods considered, namely 20%, while DD has three different rates, namely 5%, 10% and 20%. Where an exemption from duties and taxes applies, 'ex' is marked in the column corresponding to the number of duties and taxes.

Pursuant to Article 23(4)(e)(i) of the Customs Code, the basis of assessment is the actual price plus transport, insurance and other costs.

Taxable base = CAF, i.e. total cost + insurance + freight for vehicles (1)

Amount of DD = CAF * rate specified in the tariff (2)

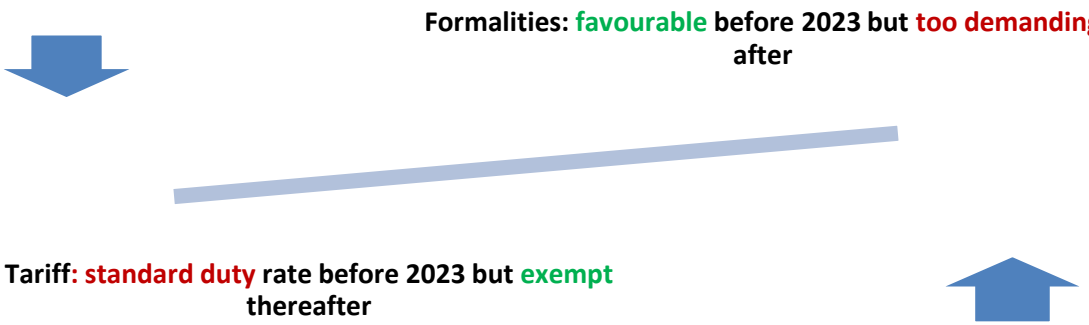
VAT amount = (CAF + DD) * 20% (3)

Total estimated lost DTIs = DD + VAT (4)

Finally, exemption (marked with the abbreviation "ex." on the tariff) means that the goods are not subject to DD or VAT, or both, in accordance with the Finance Act.

RESULTS

Unlike new combustion engine vehicles, environmentally friendly vehicles and motorcycles receive special treatment at customs clearance, while used environmentally friendly vehicles and motorcycles follow the same formalities as used combustion engine vehicles and motorcycles. Furthermore, the number of clean vehicles has increased significantly in recent years despite the application of customs duties.



International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

Figure 1: Inconsistency in measures applied to clean vehicles

1. Gradual transition to the implementation of incentive rates

The successive texts between 2015 and 2025 theoretically demonstrate the government's willingness to promote the introduction of environmentally friendly vehicles in Madagascar.

1.1 According to the 2015 tariff law, application of common law rates

Starting with the 2015 Finance Act[8], the Directorate-General of Customs has included new subheadings for hybrid and electric vehicles in the tariff. However, in terms of tariffs, the rates are almost identical for all vehicles. No particular distinction is made between the rates for new and used vehicles, or between the rates applied to fossil fuel vehicles and those considered to be environmentally friendly.

In general, rates vary either according to the nature of the goods or according to agreements between the government and other countries. Three rates, also known as standard duty rates, are applicable depending on the nature and degree of processing of the imported goods, namely 20% for consumer goods and finished products, 10% for semi-finished products and 5% for raw materials and capital goods. Preferential rates, including reduced or zero rates, are applied to goods originating in SADC, COMESA and the European Union[9]. Finally, the exemption, marked with 'ex' in the tariff, is granted in accordance with the State's public policy. Medicines[10] are exempt from the tariff and are not subject to import duties and taxes thanks to health policy; the same applies to fertilisers[11] used to support agriculture.

1.1.1. New and used vehicles subject to the same rate

Apart from the specific formalities reserved for imported used vehicles[12], the Madagascan government and parliamentarians are unanimously in agreement on the application of identical rates at the time of vehicle importation. The customs duty rate is 20%[13]. Added to this is a value added tax (VAT) at the same rate, i.e. also 20% (see Table 1). However, the taxable base for VAT is calculated on the CIF value plus customs duties.

Table 1: Extract from the tariff for new and used vehicles

8 Act 2015-030 of 19th December 2014
9 See the last column DD APEi on the tariff, in Table 1
10 Chapter 30 in the customs tariff
11 Chapter 31 in the customs tariff
12 See CIVIO, identification checks on imported used vehicles
13 20% of the CIF value at the time of introduction of these goods into the territory of Madagascar

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

TARIFF Heading N°	PRODUCT DESIGNATION	UQ N	DD	VA T	DD APE i
	- - - Motor vehicles for the transport of ten and eleven people, including the driver:				
8702.10 11	- - - -New----------	u	20	20	ex
8702.10 12	- - - -Used----------	u	20	20	ex

1.1.2. Fossil fuel vehicles and environmentally friendly vehicles treated equally

Like vehicles powered by petroleum products, whether diesel or petrol, hybrid and electric vehicles are subject to a 20% rate in 2021 for both DD and VAT (see Table 2). The calculation methods are the same as those described in 1.1.2 above.

Table 2: Extract from the tariff for hybrid and electric vehicles

8703.50	- Other vehicles equipped for propulsion with both a compression-ignition piston engine (diesel or semi-diesel) and an electric motor, other than those that can be charged by plugging into an external power source. :		DD	TV A	
8703.50 10	- - - -New----------	u	**20**	**20**	5
8703.50 20	- - - -Used----------	u	**20**	**20**	5

1.1.3. Degressive rate based on the number of seats for vehicles intended for public transport

a) Three-tier rate for compression ignition engine vehicles

However, the tax incentive promotes large buses with more than forty seats over ten-seat minibuses. The latter were taxed at a rate of 20%, while vehicles with forty or more seats benefit from a favourable rate of only 5%. Furthermore, for diesel or semi-diesel vehicles, vehicles for twelve or more people are subject to a 10% customs duty and 20% VAT (see Table 3).

Table 3: Extract from the tariff showing the three different rates

8702.10	- Only for compression-ignition piston engines (diesel or semi-diesel)		DD	TV A	

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

	:				
	- - - Motor vehicles for the transport of ten and eleven people, including the driver :				
8702.10 11	- - - -New----------	u	**20**	20	ex
8702.10 12	- - - -Used----------	u	20	20	ex
	- - - Motor vehicles for the transport of twelve or more people but not exceeding forty people, including the driver:				
8702.10 21	- - - -New----------	u	**10**	20	ex
8702.10 22	- - - -Used----------	u	10	20	ex
	- - - Motor vehicles for the transport of forty or more people, including the driver:				
8702.10 31	- - - -New----------	u	**5**	20	ex
8702.10 32	- - - -Used----------	u	5	20	ex

b) Two-tier rates only for environmentally friendly vehicles

No special consideration was given to electric vehicles 'for the transport of twelve or more persons, not exceeding forty persons, including the driver'. They were subject to a 20% rate for both DD and VAT. However, Parliament had granted a reduced rate of up to 5% for customs duties on motor vehicles for the transport of forty or more persons. This time, vehicles with between 12 and 40 seats were subject to duties and taxes calculated at a rate of 20% for both DD and VAT (see Table 4).

Table 4: Extract from the tariff for environmentally friendly vehicles

8702.40	- Electric motor only for propulsion :				
	- - - Motor vehicles for the transport of ten and eleven people, including the driver :				
8702.40 11	- - - -New----------	u	20	20	ex

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

8702.40 12	- - - -Used----------	u	20	20	ex
	- - - Motor vehicles for the transport of twelve or more persons but not exceeding forty persons, including the driver:				
8702.40 21	- - - - New ----------	u	20	20	ex
8702.40 22	- - - - Used ----------	u	20	20	ex
	- - - Motor vehicles for the transport of forty or more people, including driver:				
8702.40 31	- - - - New ----------	u	5	20	ex
8702.40 32	- - - - Used ----------	u	5	20	ex

1.2. Application of favourable rates according to the 2023 tariff

1.2.1. Total exemption from duties and taxes for new imported eco-friendly vehicles.

A change has been made and importers of both hybrid and electric vehicles will benefit from considerable tax advantages under the 2023 Finance Act. This is a total exemption from duties and taxes (see Table 5). These benefits are specifically granted to vehicles imported in new condition and subject to a certificate of conformity certifying that the vehicle is new for customs clearance purposes.

Table 5: Extract from the tariff: tax exemption for new clean vehicles

8702.20	- **Equipped for propulsion with both a compression-ignition piston engine (diesel or semi-diesel) and an electric motor:**

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

	- - - Motor vehicles for the transport of ten and eleven people, including the driver:		DD	TVA	
8702.20 11	- - - -New----------	u	ex	ex	e x
8702.20 12	- - - -Used----------	u	20	20	e x

1.2.2 Application of standard duty rates for imported used eco-friendly vehicles

Furthermore, policymakers do not intend to extend tax incentives to eco-friendly vehicles that are not new (see Table 6). However, incentives for large buses will remain in place. The importation of used environmentally friendly vehicles is subject to only 5% customs duty when they have forty or more seats.

Table 6: Extract from the tariff: taxation of used clean vehicles

2.	8703.80	- Other vehicles, equipped solely with an electric motor for propulsion:				
	8703.80 10	- - - -New----------	u	ex	ex	ex
	8702.80 20	- - - -Used----------	u	20	20	ex

Steady increase in the number and value of imported vehicles

The number of vehicles imported into Madagascar is constantly changing despite exchange rates that make the declared values expensive.

2.1. Fluctuating monthly numbers of imported vehicles

In 2023, the number of vehicles imported into Madagascar fluctuated monthly between 800 and 1,493, totalling 14,252 compared to 11,782 in 2022 and 16,811 in 2024 (see Table 7).

Table 7: Fluctuation in the number of vehicles imported monthly in 2023

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

	Jan	fev	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	TOTAL
New	422	327	317	233	627	465	272	481	455	287	234	486	**4606**
Others	757	797	626	692	1025	1018	880	945	633	700	566	1007	**9646**
Total	**1179**	**1124**	**943**	**925**	**1652**	**1483**	**1152**	**1426**	**1088**	**987**	**800**	**1493**	**14252**

Used vehicles are in first place, to the detriment of new vehicles imported by dealers. The proportion varies on average as follows: 67.68% used and 32.31% new (see Figure 2).

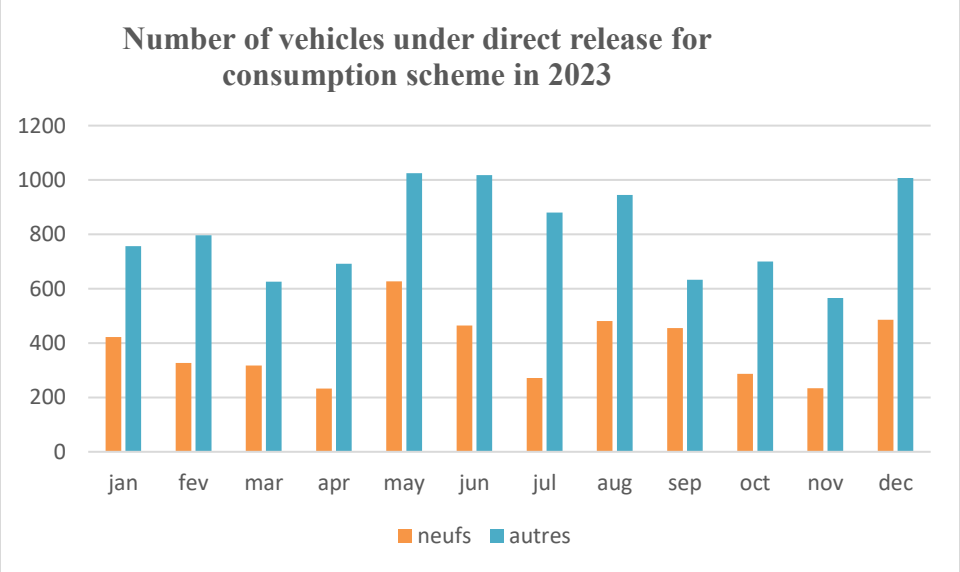


Figure 2: High percentage of combustion engine vehicles

2.2 Vehicles, among the main sources of revenue

Between 2020 and 2025, vehicle values will rise year on year, despite the COVID-19 pandemic. The value will reach 866,438 million ariary in 2024, compared to 475,600 million ariary in 2020; 608,923 in 2022 and 716,656 in 2023 (see Table 8).

Table 8: Steady increase in revenue from vehicle imports

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

Year	2020	2021	2022	2023	2024	2025
nb_veh	13388	10582	11782	14237	16811	16100
val_veh (in millions of ariary)	475660	538720	608923	716656	866438	984348
dti_veh (in millions of ariary)	140785	161448	178830	210034	243255	181325

Furthermore, ad valorem taxation[14] keeps pace with changes in value. As a result, the amount of duties and taxes collected is also rising steadily, from 161 billion 448 million ariary in 2021 to 243 billion 255 million in 2024 (see Figure 3).

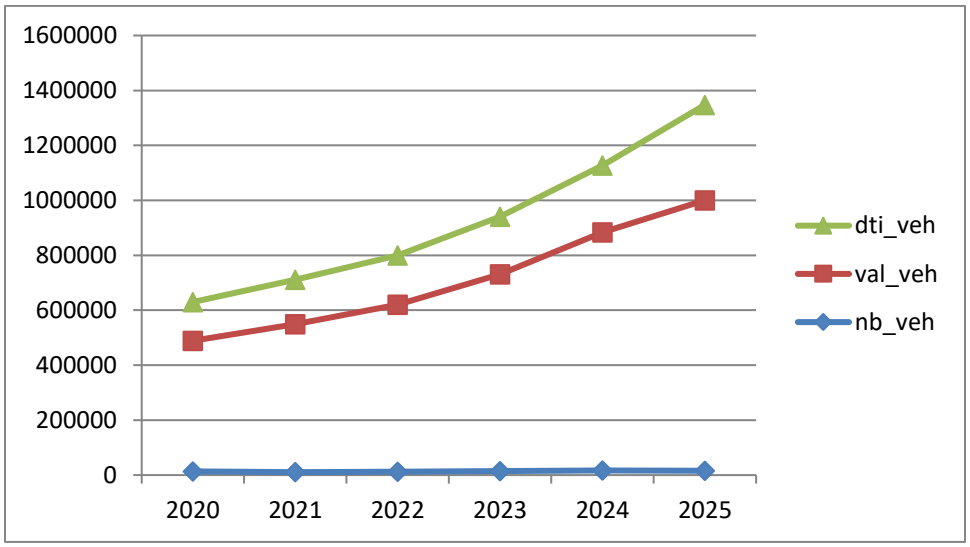


Figure 3: Relationship between taxation and the value of imported vehicles

In addition, the number of motorcycles imported into Madagascar has been around 42,000 to 43,000 per year over the last five years.

Table 9: Change in revenue collected on motorcycle imports

[14] Unlike specific taxation, which is calculated according to the type or number of products, ad valorem taxation follows the fluctuations in the value of goods and exchange rates

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

Year	2020	2021	2022	2023	2024	2025
nb_moto	42610	43960	43100	43254	58030	76590
val_moto	62364	74075	105042	84959	139826	157217
dti_moto	27051	31896	45379	35291	58721	64383

As with vehicles, ad valorem taxation applies, and the Customs Administration has been able to collect between 27 and 64 billion ariary in corresponding duties and taxes. Both the value and number of motorcycles are also showing a steady increase (see Figure 4).

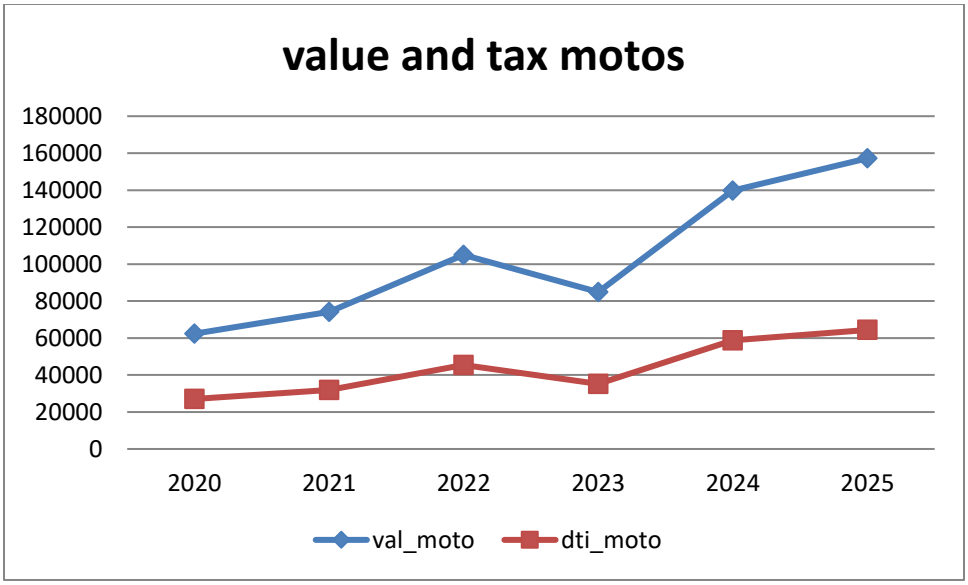


Figure 4: Relationship between taxation and the value of imported motorcycles

Generally, the importation of vehicles and two-wheelers into the Republic brings in between 167 and 301 billion ariary annually to the state coffers, representing between 6.46 and 8.67% of total customs revenue (see Table 10).

Table 10: Proportion of revenue from vehicles in total revenue (in millions of ariary)

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

Year	2020	2021	2022	2023	2024	2025
dti_veh	140785	161448	178830	210034	243255	282752
dti_moto	27051	31896	45379	35291	58721	64383
dti_moto_veh	167 836	193 344	224 209	245 325	301 976	347135
rec_tot	2 187 400	2 657 000	3 465 600	3 403 100	3 793 200	3 996 000
Ratio DTI/total revenue	7,67%	7,27%	6,46%	7,20%	7,95%	8,67%

2.3. Prevalence of combustion engine vehicles

Between 2015 and 2019, imports of clean vehicles were very low. There were only 14 hybrid and electric vehicles (out of 11519 imported vehicles) and one motorbike out of 28366 in 2015. Then, the number of electric vehicles was only 4 out of 13898 in 2016, while electric motorcycles numbered 29 for the same year. In 2017, no clean vehicles were introduced, while combustion engine vehicles reached 21391; the number of motorcycles, on the other hand, skyrocketed, with 77 out of 50274 imported. The year 2018 saw a reversal of this trend, with electric and hybrid vehicles rising to 133 out of 18581, while motorcycles fell to 8 out of 58363 imported. Finally, there was a clear increase in 2019, with 426 clean vehicles out of 20929 and 184 electric motorcycles out of 45250. In total, clean vehicles represent only 0.66% (577/86318) of all imports over five years. As for two-wheelers, 299 electric motorcycles out of 215812 were introduced in Madagascar, representing nearly 0.13%.

Over the last five years (2020 to 2025), it has also been noted that few electric vehicles and motorcycles have been imported. Their importation remains very sluggish, even discreet, and fossil fuel-powered vehicles continue to dominate imports. In percentage terms, electric vehicles account for around 1.36% of total imports of this rolling stock.

Over the last ten years (2015 to the end of August 2025), the number of clean vehicles has risen to 1677, compared with 3037 motorcycles.

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

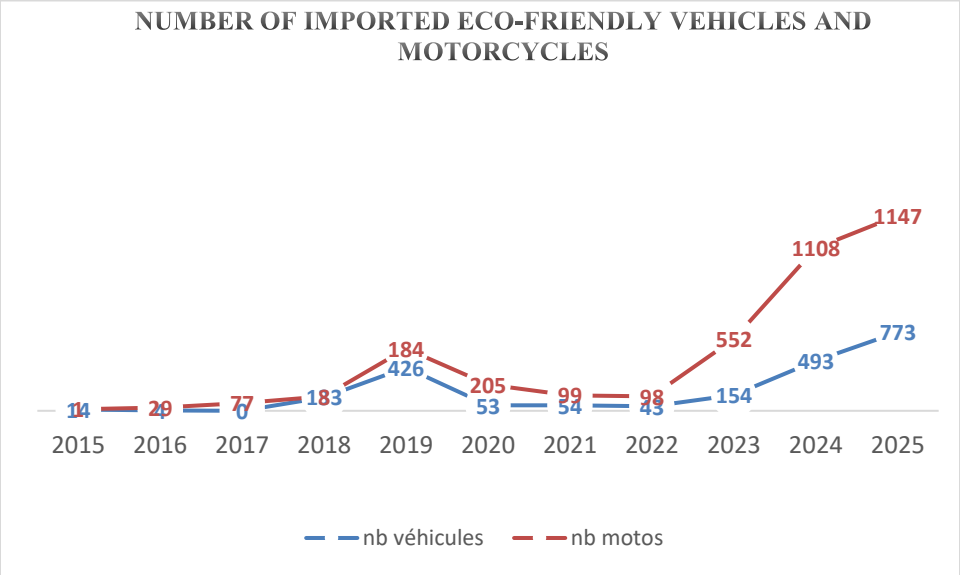


Figure 5 : Fluctuation entre les nombres des véhicules et motos écologiques

2.4. Priority of environmentally friendly private vehicles

Under the Harmonized System (HS) nomenclature, vehicles are classified into three categories according to their respective tariff headings. Tariff heading 8702 is assigned to cars for the transport of ten or more people, i.e., public transport. Heading 8703 covers private vehicles, while 8704 classifies vehicles for the transport of goods.

Therefore, the last four digits indicate the energy source and the vehicle's condition: 87035020 covers hybrid passenger vehicles (including sports cars and off-road vehicles), that is, vehicles equipped for propulsion with both a compression-ignition piston engine (diesel or semi-diesel) and a used electric motor. On the other hand, vehicles equipped with both a spark-ignition piston engine and an electric motor (gasoline + electric), in new condition, should be classified under 87036010 (see Table 11).

In this respect, private vehicles held the top spot in 2023, accounting for nearly 86.5% (142/164), while there were only 4 vehicles for public passenger transport (heading 8702) and 16 trucks (heading 8704). Conversely, electric vehicles were numerous (103 electric vehicles compared to 61 hybrids).

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

Table 11: Distribution of hybrid and electric vehicles introduced in 2023

Tariff heading	NEW	USED	ENERGY	NUMBER
87024011	X		ELECTRIC	**4**
87034010	X		HYB (Petrol + ELECTRIC)	**53**
87035020		X	HYB (diesel + ELECTRIC)	**1**
87036010	X		HYB (Petrol + ELECTRIC	**1**
87036020		X	HYB (piston + ELECTRIC)	**1**
87037010	X		HYB (diesel + ELECTRIC)	**5**
87038010	X		ELECTRIC	**80**
87038020		X	ELECTRIC	**1**
87046010	X		ELECTRIC	**16**
Total				**164**

Furthermore, the number of imported eco-friendly vehicles has seen a continuous increase, rising from 164 in 2023 to 489 in 2024; passenger vehicles remain the most common category, accounting for nearly 94% of imports (460/489). New electric vehicles are of particular interest to importers compared to the used lectric vehicles (see Table 12).

Table 12: Distribution of hybrid and electric vehicles imported in 2024

Tariff heading	NEW	USED	ENERGY	NUMBER
87024011 (10 to 11 passengers)	X		ELECTRIC	**9**
87024021 (between 12 to 40 pers)	X		ELECTRIC	**4**
87024022		X	ELECTRIC	**1**
87034010	X		HYB (Petrol + ELECTRIC)	**176**
87034020		X	HYB (piston + ELECTRIC)	**3**
87035020		X	HYB (diesel + ELECTRIC	**1**
87036010	X		HYB (Petrol + ELECTRIC)	**5**
87038010	X		ELECTRIC	**274**
87038020		X	ELECTRIC	**1**
87044110 (trucks - de 5 tons)	X		HYB (diesel +	**2**

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

			ELECTRIC)	
87045110 (trucks)	X		HYB (Petrol + ELECTRIC)	**3**
87046010	X		ELECTRIC	**10**
Total				**489**

2.5.Upward trend in new electric motorcycles

As with vehicles, the import of electric motorcycles is largely dominated by internal combustion engine motorcycles.

In 2023, 590 electric motorcycles were imported, compared to 1062 in 2024, almost double the number (see Table 13). The number reached 1222 in 2025. However, compared to the total number of motorcycles imported, this figure remains insignificant, representing only 0.94% of all imports over the past five years.

Table 13: Number of electric motorcycles imported in 2023 and 2024

YEAR	Tariff heading	NEW	USED	NUMBER
2023	87116010	X		**584**
	87116020		X	**6**
			TOTAL	**590**
2024 End of november	87116010	X		**1052**
	87116020		X	**10**
			TOTAL	**1062**

3. Progressive tax expenditures

The State was able to collect customs revenue corresponding to the importation of electric and hybrid vehicles before the entry into force of the 2023 tariff. However, following the change in the tariff, a successive shortfall was estimated from "revenue loss models".

3.1.A priori, an increase in customs revenue

Between 2015 and 2022, the introduction of hybrid and electric vehicles was subject to full payment of import duties and taxes, despite their cleanliness and lower carbon dioxide (CO2) emissions.

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

In this regard, the Malagasy government collected duties and taxes amounting to 493.3 million ariary in 2020; 212.3 million ariary in 2021, and 510.5 million ariary in 2022 (see Table 14).

Table 14: Evolution of duties and taxes generated by electric vehicles between 2020 and 2022 (in millions of ariary)

Year	2020	2021	2022
dti_veh	401,4	93,1 (+)	337,5
dti_moto	96,9	119,2	173
	498,3 (+)	212,3 (+)	510,5 (+)
Total			1003,9 (+)

3.2.Then, any potential successive losses of revenue

However, given the change in the tariff in 2023, on the one hand, and the gradual increase in the number of vehicles considered environmentally friendly, on the other, the amount of tax expenditures is skyrocketing.

Nearly 6.083 billion ariary should have been collected by the State in 2023; 27.952 billion in 2024; and 13.417 billion in 2025 (figures as of the end of August 2025). Ultimately, the government lost 46.498 billion ariary on the 1050 vehicles and 2663 motorcycles considered environmentally friendly (see Table 15). This represents nearly 3.91% of all duties and taxes collected on vehicles and motorcycles.

Table 15: Evolution of tax expenditures between 2020 and 2025 (in millions of ariary)

Année	2020	2021	2022	2023	2024	2025
dti_veh	401,4	93,1 (+)	337,5	5169,1 (-)	25930,8 (-)	13045,1 (-)
dti_moto	96,9	119,2	173	914,5 (-)	2021,7 (-)	372,8 (-)
	498,3 (+)	212,3 (+)	510,5 (+)	6083,6 (-)	27952,6 (-)	13417,9 (-)
Subtotal			1003,9 (+)			47501,9 (-)
Total of tax expenditures =			=	1003,9 (+) et 47501,9 (-)		46 498 (-)

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

DISCUSSION

The Customs Administration finds itself between a rock and a hard place. Despite initiatives to review tax expenditures in order to increase budget revenues, on the one hand, and to shift towards a green policy, on the other, practical difficulties have been identified. Furthermore, although vehicles fall into the category of goods that generate the most customs revenue (see Table 10), it is worth questioning whether the related tax expenditures (see Table 15) could be offset by implementing the administrative measures[15] advocated in the Finance Law.

The discussion therefore hinges either on the direct elimination of certain tax measures, as proposed by Gagné-Dubé and *al*. (2020), or on the need to implement a review of tax expenditures to better understand the impact of tax incentive mechanisms, in line with the studies by Godbout and *al*. (2024). In any case, the results of this research clearly show that, given the various measures applied to vehicle imports, the link between the evolution of the number of environmentally friendly vehicles imported into Madagascar and the revenue losses studied remains unclear.

While this research does reveal a certain preference among importers for new electric vehicles and motorcycles (see Tables 11 and 12) over used ones, the importation of used internal combustion engine vehicles predominates despite the green tariff policy.

Special attention should be paid to the overlapping of applied measures.

From the outset, the dichotomy between tariff and non-tariff measures (see Figure 1) seems difficult to explain for the periods considered. A somewhat tentative announcement of green public policy was also noted, as the various tax rates implemented do not allow for a clear understanding of the Administration's vision for promoting less polluting vehicles. Indeed, the Administration subjects new and used vehicles to the same tax rate (see Table 1), on the one hand, and applies a standard rate to used eco-friendly vehicles (see Table 6), on the other.

Certainly, a significant increase in the introduction of new electric vehicles and motorcycles compared to used ones has been observed (see Tables 11, 12, and 13). This could explain the impact of the exemption from duties and taxes on new equipment and the taxation of used electric vehicles (see Table 6). The increase in the number of imported eco-friendly vehicles from 2023 onward (see Tables 11-13) confirms the positive impact of the measures taken by the government. However, the results of this study (see Figures 3-5) indicate that it is still too early to conclude that tariff measures explain the increase in clean vehicle imports.

[15] Strengthening risk analysis and combating fraud

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

However, prior to 2023, customs duties were high (see Tables 2 and 3) while formalities were minimal, but there was an increase in the number of imported eco-friendly vehicles (see Figure 5). Indeed, the significant rise in their importation in 2018 and then in 2019 (see Figure 5) was a unique phenomenon (559 vehicles and 192 motorcycles) at a time when duties and taxes were still in effect. The government was able to collect customs revenue even though eco-friendly vehicles were subject to duties and taxes (see Table 14). In this regard, the assertion that consumers' primary concern is the purchase price of new vehicles relative to each household's budget (Birhanu and *al*., 2024) is not justified when considering the number of eco-friendly vehicles.

Finally, while tax expenditures over the last three years (2023-2025) are close to around 46 billion (see Table 15), we are still missing the amounts of duties and taxes lost due to the incorrect application of the provisions of the Finance Law, namely the taxes that should have been collected on the importation of light hybrid vehicles. It is therefore useful to thoroughly examine the potential relationship between evaded duties and tax performance to verify the effectiveness of these new requirements.

Lack of long-term vision and inadequate infrastructure

It is difficult to conduct a comparative study on the incentives offered by each country for environmentally friendly vehicles given the scarcity of studies on the subject.

Indeed, a recent study highlights that private vehicles in France are still largely internal combustion and primarily use fossil fuels (Durrmeyer and *al*., 2024). This is also the case for Madagascar, which shows a low percentage of approximately 0.66% for cars and 0.13% for motorcycles. Furthermore, South Africa had only about 1,000 electric vehicles in circulation in 2022, out of a total fleet of 12 million vehicles. Kenya, on the other hand, had approximately 350 electric vehicles, with around 2.2 million vehicles registered in total. In Madagascar, nearly 1,677 clean cars (see Figure 5) were introduced over a period of 5 years, out of a total of approximately 14000 to 16000 vehicles per year (see Table 8).

Moreover, it was observed that some countries are adopting clear public policies on the transition to green mobility (Birhanu and *al*., 2024). Cape Verde has set a target of 100% electric vehicle sales for new passenger cars by 2035 and for urban buses by 2040. Rwanda plans to reduce electricity charges for electric vehicles, exempt electric vehicle supplies from value-added tax, exempt import and excise duties, and provide free land for charging stations.

For France, the transition to electric vehicles is one of the key levers for decarbonizing the transport sector by 2050 (Montout and Robinet, 2024). The market share of new electric vehicles already reached 17% in France in 2023 (15% in the European Union), compared to 2% in 2019 (Montout and Robinet, 2024). The

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

European Union has already voted to ban the purchase of internal combustion engine vehicles from 2035 in order to achieve carbon neutrality by 2050. In short, each country has implemented different measures to achieve this goal.

However, Madagascar's situation remains unclear; it is not unlike that of its counterparts in sub-Saharan Africa, where the transition to electric vehicles still faces challenges such as the lack of clear policies and regulations, the high purchase price of electric vehicles, unreliable electricity grids, and the scarcity of public charging stations (Birhanu and *al*., 2024).

Finally, the poor quality of road infrastructure in Madagascar (Rakotovao and Ranjatoelina, 2022) significantly impacts energy consumption. There is still a reliance on the electricity grid, which is primarily powered by thermal energy.

Increase in the number of clean vehicles: financial dividend versus environmental dividend

While a trend towards the rise of electric vehicles has been observed in each country (Amedokpo and Boutueil, 2023), it seems wise to question the environmental dividend because in most cases, it is rather the financial gain that pushes consumers to use electric vehicles[16].This aligns with studies conducted by Sardou Gilchrist Agbangla (2025), whose results showed that economic perception significantly influences the purchase decision for electric two-wheelers in Cotonou, unlike environmental perception, whose effect on the purchase decision is not significant at the 5% level. It should be noted that polluting emissions come from various sources, although cars are responsible for most urban pollution (Valenchon and Carolline, 2017). Ritchie (2020) suggested that one-fifth of CO2 emissions are attributed to the transport sector, and three-quarters of these emissions come from road transport. Would it be likely to reap an environmental dividend proportional to the loss of revenue collected (see Table 15).

First, in addition to exemptions from duties and taxes, the advantages for consumers lie in the balance between the thermal consumption and battery efficiency of electric vehicles (Abdelmounaim, 2024). Indeed, for a 5-seater passenger car, which normally requires 6.5 liters of thermal energy per 100 km, such a vehicle needs 9 kilowatts per 100 km, equivalent to 1.3 liters of thermal energy. Similarly, for a minibus that can carry 11 people and normally consumes 12 liters of thermal energy per 100 km, this type of vehicle operates on 17 kilowatts per 100 km, equivalent to 2.5 liters of thermal energy. The same applies to minivans used for transporting goods.

Battery range varies between 240 and 300 kilometers, with a maximum speed of 80 to 120 kilometers per

[16] Explanation received from car dealers during the car fair in September 2025

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

hour. Charging time ranges from 6 to 7 hours and 40 minutes for passenger vehicles and from 8 to 12 hours for minibuses and containers. Battery quality is gradually improving to gain market share.
These improvements result in tangible financial benefits for consumers. An importer[17] and the auto show (October 2024)) estimated fuel savings from switching to electric vehicles at between 5640000 (1 274,41 USD[18]) and 10656000 ariary (2407,83 USD). The 5-seater Nanobox type private vehicle could generate savings of up to 9342000 ariary (2110,91USD).

Furthermore, electric vehicle maintenance is not very expensive compared to internal combustion engine vehicles, given the absence of maintenance costs related to the gearbox, clutch, air filter, or timing belt, for example. A study by the American organization Consumer Reports[19] estimates that, on average, an electric car driver can expect to save almost €4,000 in maintenance and repair costs over the vehicle's lifetime.

In short, in terms of financial gains, importers benefit from considerable financial dividends because the tariff measures bring on average 33.56 million ariary (7583,2 USD) per vehicle in 2023 and 52.59 million ariary (11883,22 USD) in 2024. For motorcycles, importers were able to save on average 1.55 million ariary (350,24 USD) per motorcycle in 2023 compared to 1.90 million (429,32 USD) in 2024.

However, some authors emphasize the difference between clean and less polluting vehicles (Philippe and Pillot, 2017). Contrary to studies conducted by Amedokpo and Boutueil (2023), which highlighted the environmental and performance gains associated with two-wheeled vehicles, Philippe and Pillot (2017) insisted that these vehicles are polluting and not at all clean. This also raises concerns because they are so numerous in Madagascar (see Tables 9 and 13) and have become the most widely used means of transport in both urban and rural areas, given that they are fast, maneuverable, relatively affordable, and especially well-suited to serving hard-to-reach neighborhoods (Amedokpo and Boutueil, 2023), despite the negative externalities they generate. Based on the above, assessing the environmental impact of these various measures warrants further, more in-depth study.

CONCLUSION

Madagascar is often presented as a model student, being among the first countries to ratify international agreements. However, difficulties have arisen in their implementation. Indeed, the Customs

[17] The VISEO group publishes data on their website in 2025 and during trade fairs (September 2025

[18] Exchange rates as of 09th february 2026, one USD = 4425,97 ariary

[19] https://www.zeplug.com/news/combien-coute-reellement-une-voiture-electrique

ISSN: 2582-6271

Vol. 7, Issue.1, Jan-Feb 2026, page no. 20-43

Administration's initiatives are commendable, given the tariff adjustments in 2023 and 2025 for the clearance of clean vehicles, as well as the improvements observed in the implementation of the Trade Facilitation Agreement. Nevertheless, questions remain for both importers and academics, as the measures applied remain unclear and the statistics on tax expenditures are shrouded in uncertainty. These shortcomings hinder the achievement of the objectives set and the commitments stipulated in the agreements relating to the green transition and sustainable development.

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