SINGAPORE GREEN TRADE MARKS STUDY

IPOS
INTELLECTUAL PROPERTY
OFFICE OF SINGAPORE

CONTENTS

Executive Summary

Global awareness of environmental issues has surged in recent years, prompting nations to commit to ambitious climate targets, driving investments and innovations in many related fields, including renewable energy, energy efficiency, and low-carbon technologies. Keeping abreast of such innovation trends will empower policymakers and businesses to quickly identify growth areas as well as market-ready innovative solutions to advance their green aspirations.

Trade marks, which serve to differentiate goods and services in the marketplace, have emerged as a useful indicator of innovation in recent years. The Singapore Green Trade Marks Study by the Intellectual Property Office of Singapore (IPOS) examines trends in green trade mark filings in Singapore to gain insights on how businesses in Singapore are seeking protection for 'green- or sustainability-related innovations'.

A search programme was developed to identify trade marks filed with IPOS between 2014 and 2023 that contain items related to environmental protection and sustainable development in the descriptions of their goods and services specifications. This study's analysis covers 265,780 trade mark applications.

The Singapore Green Trade Marks Study reveals that the number of green trade mark filings have increased steadily in the last decade (2014 – 2023), at a growth rate of almost three times the growth rate of total trade mark filings in Singapore. More than half of these green trade marks were for innovations related to *'Pollution control'*, *'Transportation'* and *'Energy production'.* In addition, the study highlights that green trade mark filings for innovations related to *'Transportation'*, *'Energy conservation'*, and *'Climate change'* saw the most significant increase in Singapore in the same period.

Both local and foreign businesses in Singapore were active in developing these 'green- or sustainability-related innovations' in the last decade, with Singapore ranking among the top three green trade mark applicants.

This study hopes to provide policymakers and businesses an additional perspective on Singapore's progress in advancing sustainability goals amidst the global transition towards a greener economy.

1 Introduction

Today, 92 countries representing 78% of global emissions have made net-zero commitments on a national level, as compared to 29 countries in 2019 (World Economic Forum; Boston Consulting Group, 2022), signaling a global shift in awareness in environmental issues.

While the upfront cost of transitioning to a net-zero world may be significant, the long-term environmental, health, and economic benefits far outweigh these initial investments. The transition to a net zero emissions environment by 2050 will create new markets for green products and services[1] worth US$10.3 trillion to the global economy by that same year (Arup; Oxford Economics, 2022). In Asia alone, climate mitigation has the potential to generate up to US$4.3 trillion in revenue and 232 million jobs in the region (Temasek; World Economic Forum; AlphaBeta, 2021).

In Singapore, the government has laid out comprehensive action steps and targets under the Singapore Green Plan 2030 to bolster ongoing initiatives aimed at enhancing the nation's climate resilience, resource efficiency, and economic strength. Keeping abreast of green- or sustainability-related innovation trends in Singapore will empower policymakers and businesses to quickly identify growth areas, as well as market-ready innovative solutions to advance their net-zero emissions aspirations.

While patents have traditionally been a primary measure of innovation due to their strong correlation with research and development expenditures (Griliches, 1990), their limitations as indicators of innovation have been extensively studied and documented (Kleinknecht, van Montfort, & Brouwer, 2002). The use of patents as a measure of innovation often overlooks many non-patented and non-patentable innovations (Kleinknecht, van Montfort, & Brouwer, 2002), including product and service innovations[2]. Over the past two decades, trade marks, which serve to differentiate goods and services in the marketplace, have emerged as an additional indicator of innovation (Mendonça, Pereira, & Godinho, 2004). The study by Schmoch and Gauch (2009) demonstrated a strong correlation between the number of trade mark applications and economic activity, particularly in knowledge-intensive services. Recent studies from the European Union IP Office (EUIPO) (EUIPO, 2021; EUIPO, 2023) have also highlighted trade marks as useful indicators of 'green- or sustainability-related innovation'[3].

This study examines trends in green trade mark filings in Singapore to evaluate whether businesses in Singapore are active in seeking protection for 'green- or sustainability- related innovation' in Singapore. In this study, the scope of 'green- or sustainability-related innovation' is defined as the development,

92 countries representing **78%** of global emissions have made net-zero commitments on a national level

[1] Green products and services refer to electric vehicles manufacturing, renewable power generation, clean energy equipment manufacturing, renewable fuels, green finance, as well as activities supported across global supply chains (Arup; Oxford Economics, 2022).

[2] Product and service innovations refer to the development of new or improved products and services. This can include the introduction of new products to the market, enhancements to existing products, or the creation of new and improved services to meet the evolving needs of consumers. There are instances where product and service innovations may not meet all the requirements of patentability (e.g., novelty, non-obviousness).

[3] EUIPO's Green Trade Mark Study (2021); EUIPO's Green Trade Mark Study (2023)

implementation and utilisation of new products, services, processes, technologies, or solutions that aim to create environmental awareness, reduce environmental impact and promote sustainability.

This study also aims to analyse the distribution of the green trade mark filings based on applicant profiles and product groups to identify key players in the green technology and sustainability market in Singapore and their specialised areas. By analysing these trends, this paper aims to provide an additional perspective on Singapore's progress in advancing sustainability goals amidst the global transition towards a greener economy.

Adopting the methodology in the 2021 EUIPO Green Trade Marks study, a search programme was developed to identify trade marks filed with the Intellectual Property Office of Singapore (IPOS) between 2014 and 2023 that contain items[4] related to environmental protection and sustainable development in the descriptions of their goods and services (G&S) specifications. The analysis covers 265,780 trade mark applications.

The report is structured as follows: Chapter 2 explains the data and methodology. Chapter 3 presents the main results and analysis. Chapter 4 discusses conclusions drawn from the findings and outlines potential avenues for further research.

[4] An 'item' refers to a single good or service claimed in a trade mark registration. Trade mark applicants have to list the goods and/or services in relation to the trade mark for which registration is sought. The goods and/or services claimed in a trade mark registration determine the scope of protection of the trade mark registration, and the scope of protection confers on the trade mark owner the rights to control the use of the trade mark in relation to the same or similar goods or services.

2 Data and Methodology

The main data source of this study was the Singapore Trade Mark Registry database. A total of 265,780 trade mark applications filed in Singapore between 2014 and 2023 were used. The dataset comprises all trade mark applications filed in Singapore, and contains highly detailed information such as the applicant's details, application numbers, G&S specifications and lodgement dates.

In this report, a 'trade mark' refers to a 'trade mark application'[5]. In identifying 'green trade marks' in Singapore, this study takes reference from the methodology used by the EUIPO's Green Trade Marks study. A search programme was developed by IPOS to use the list of green expressions[6] created by EUIPO to search for 'green' items in the specifications of the trade marks filed in Singapore. For this study, we define 'green' items as items related to environmental protection and sustainable development, and 'green trade mark' (GTM) as a trade mark that contains at least one 'green' item in its G&S specification. Similar to the EUIPO's study, to avoid spurious identification of green trade marks, only trade marks with less than 200 items have been considered[7].

For data comparability purposes, this study also follows EUIPO's groupings of the green expressions to categorise the different types of GTM filed in Singapore. In total, there are 35 green product categories which are further aggregated to 9 green product groups. The list of green expressions, as well as their product groups and product categories, are shown in Annex 1: *Green Expressions.*

[5] This study analysed all trade mark applications filed in Singapore between 2014 and 2023, irrespective of the statuses of the trade marks, to accurately assess the interest in protecting market-ready innovations in Singapore.

[6] According to EUIPO (2021), an algorithm combining machine learning and human intervention was used to curate a list of 375 green expressions to identify all the 'green' terms. The list of 375 green expressions can be found in Annex 1: *Green Expressions*.

[7] Trade mark with a very large number of items are excluded to reduce the margin of error in identifying green trade marks.

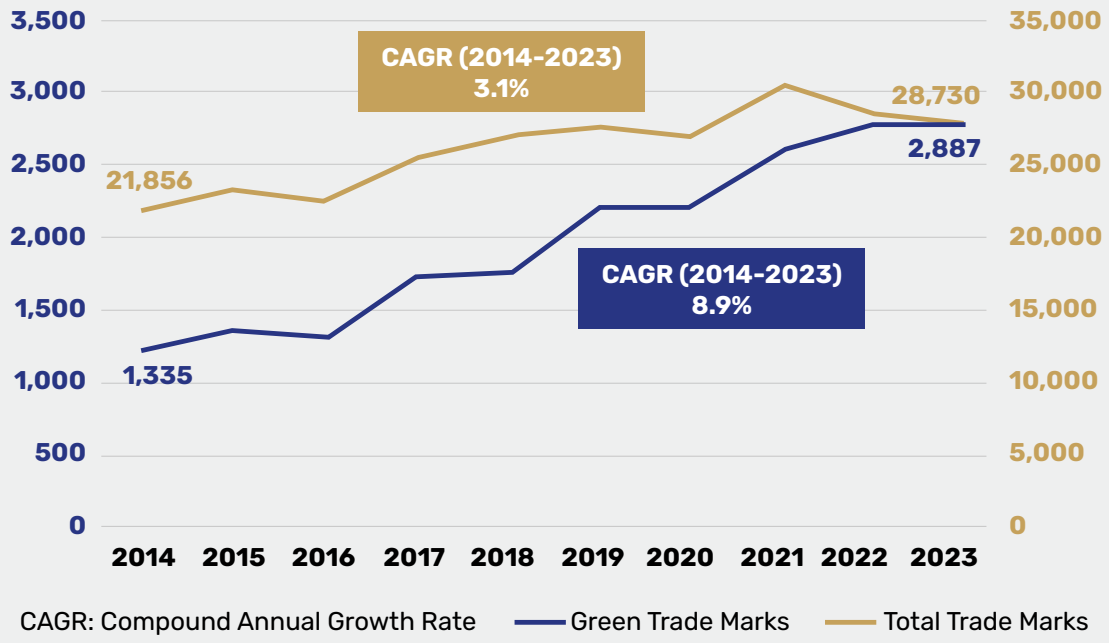
3 Main Results

3.1. Overall trends in GTM filings in Singapore

Between 2014 and 2023, GTM filings have increased steadily at a compound annual growth rate (CAGR) of 8.9%, exceeding the CAGR of the total trade mark filings (3.1%) in Singapore **(Figure 1)**. In addition, the absolute number of GTM filings has doubled over the last 10 years, from 1,335 in 2014 to 2,887 in 2023.

Figure 1

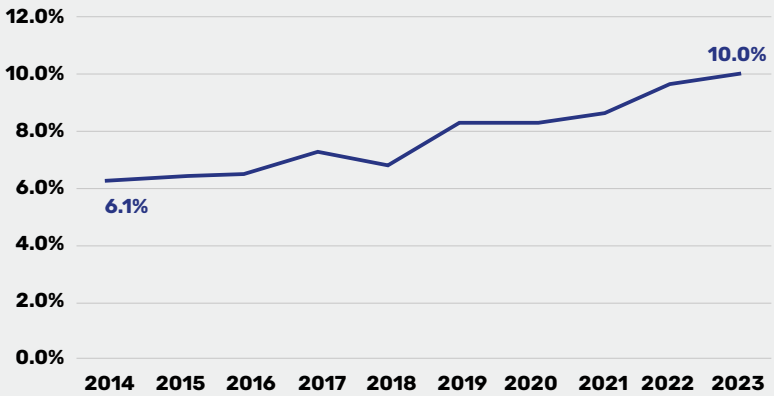
Trends in trade mark filings in Singapore (2014 – 2023)



Within the same period, the share of GTMs (of total trade mark filings in Singapore) has also increased considerably, from 6.1% in 2014 to 10.0% in 2023 **(Figure 2)**. This suggests growing interest in green- or sustainability-related innovation in Singapore in recent years. A similar observation was also found in the EUIPO's study which reported an increase in the share of GTM filings (of total trade mark filings in the EU) from less than 4% in 1996 to more than 12% in 2021.

Figure 2

GTM filings as a share of all trade mark filings in Singapore (2014-2023)



3.2 GTM filings by product groups and categories

This study adopts the same 9 product groups and 35 product categories defined by EUIPO (EUIPO, 2021) and has applied them to analyse the distribution of the GTM filings in Singapore.

Figure 3 shows the distribution of GTM filings by product groups in 2014 and 2023, ranking from the highest (left to right) according to the number of GTM filings in 2023. From the bar graphs, it appears that there is an overall increase in GTM filings across all 9 product groups over the years. The increase is particularly marked for innovation related to '*Transportation*' (e.g., electric vehicles, hybrid vehicles), '*Energy conservation*' (e.g., storage of electricity and low energy lighting) and '*Climate change*' (e.g., environmental testing, carbon monitoring). This suggests that, in recent years, businesses are becoming more active in technological areas that promote clean transportation, mitigate climate change, and reduce energy consumption. Notably, GTM filings for '*Transportation*' have quadrupled over the last decade, from 332 GTMs in 2014 to 1,383 GTMs in 2023.

Figure 3

Number of GTM filings by product groups

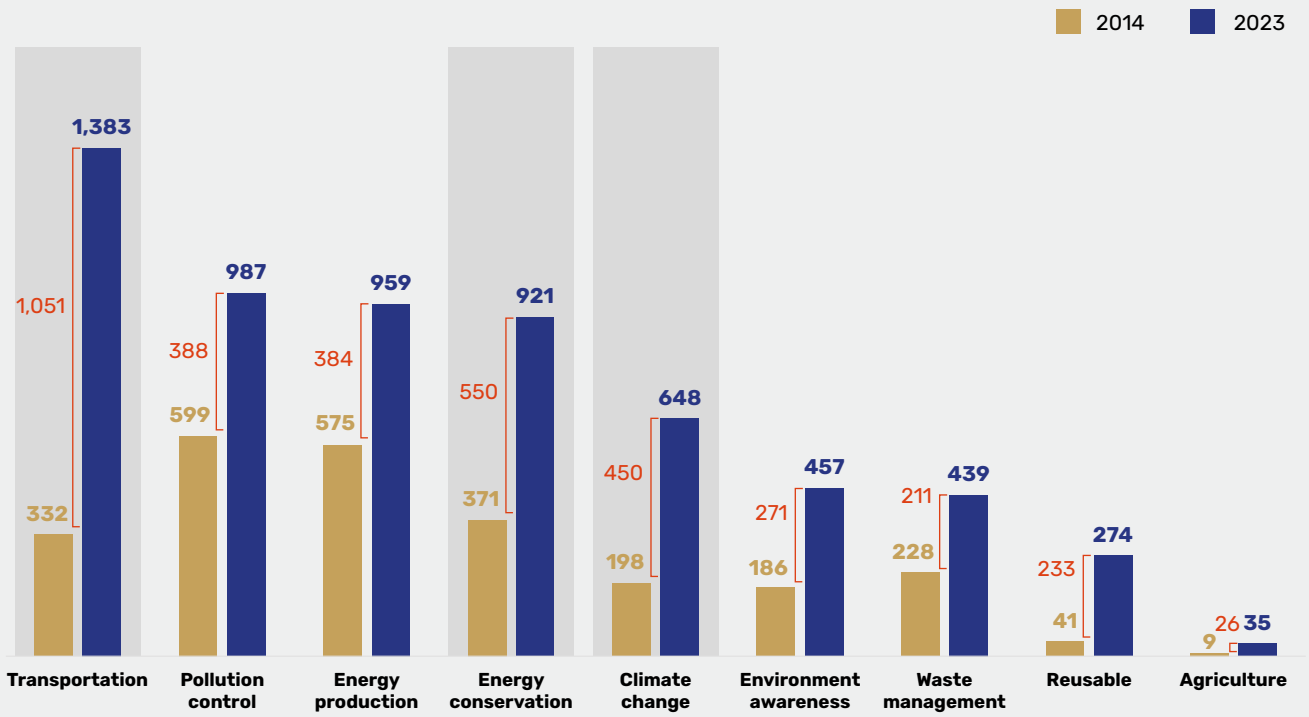


Table 1 provides a detailed breakdown of GTMs by the 9 product groups and the 35 product categories. It also indicates the top three countries of origin of applications (ranked by the number of GTM filed between 2014 and 2023) in each product category. From **Table 1**, the leading GTM applicants for most categories predominantly originate from China (CN), Japan (JP), Singapore (SG), and the United States of America (US). China is the leading GTM applicant for almost all categories under '*Pollution control*', '*Transportation*', and '*Energy production*'. This corroborates EUIPO's findings that China is the one of the main GTM applicants for 'Transportation' (EUIPO, 2023).

Table 1

Number of GTM filings by product groups and their categories (2014-2023)[8]

Product Groups/Categories	Total no. of GTM (2014-2023)	% Share of GTM (2014-2023)	Top 3 Countries
Agriculture	**181**	**0.4%**	
Fertiliser alternatives	121	0.3%	SG,CH,FR
Other agriculture (e.g regenerative agriculture services)	6	0.0%	US,CA,DE
Pesticide alternatives	54	0.1%	SG,DE,US
Climate change	**3,764**	**8.9%**	
Carbon brokerage	486	1.2%	SG,AU,DE
Carbon monitor	186	0.4%	US,SG,UK
Environmental services	3,092	7.3%	US,SG,UK
Energy conservation	**6,507**	**15.4%**	
Energy management	998	2.4%	SG,FR,US
Energy saving	1,071	2.5%	SG,JP,CN
Low energy lighting	342	0.8%	US,SG,DE
Storage of electricity	4,096	9.7%	CN,SG,US
Energy production	**7,609**	**18.0%**	
Biofuels	528	1.2%	US,SG,DE
Other energy (e.g Conducting research relating to the use of natural energy)	1,442	3.4%	SG,US,UK
Solar Energy	5,082	12.0%	CN,SG,JP
Wind Energy	557	1.3%	CN,DE,SG
Environmental awareness	**2,985**	**7.1%**	
Ecology	2,110	5.0%	SG,US,KY
Sustainability	875	2.1%	SG,US,CN
Pollution control	**8,929**	**21.1%**	
Air purification	2,223	5.3%	CN,SG,JP
Biodegradable	200	0.5%	SG,US,DE
Pollution general	3,320	7.9%	CN,SG,JP
Water purification	3,186	7.5%	CN,SG,US
Reusable	**1,297**	**3.1%**	
Other reusable (e.g regenerated fiber thread)	473	1.1%	SG,CN,JP
Recycling	248	0.6%	JP,SG,DE
Refilling cartridge	37	0.1%	SG,JP,RU
Reusable bags	403	1.0%	US,CN,JP
Reusable bottles	136	0.3%	SG,US,UK
Transportation	**7,979**	**18.9%**	
Electric bike	874	2.1%	CN,SG,JP
Electric car	541	1.3%	CN,KR,SG
Electric engines	1,452	3.4%	CN,DE,JP
Electric moto (e.g electric scooters)	369	0.9%	CN,SG,IT
General transport	3,908	9.3%	CN,SG,JP
Hybrid vehicle	286	0.7%	JP,CN,IT
Hydrogen vehicle	239	0.6%	JP,KR,SG
Other vehicles (e.g electric railway cars)	310	0.7%	CN,SG,DE
Waste management	**2,997**	**7.1%**	
Process waste	1,855	4.4%	SG,JP,DE
Waste disposal	1,142	2.7%	JP,SG,DE

[8] The corresponding country names for the country code can be found in Annex 2: *List of Country Codes.*

3.3 Composition of GTM filings by local and foreign applicants

This section examines the share of GTM filings by local and foreign applicants in Singapore. Based on **Figure 4**, the relative share of overall trade mark filings by local and foreign applicants over the last decade remained relatively constant, at around 26% and 74%, respectively. Within the same period, the relative share of GTM filings by local and foreign applicants also remained relatively constant **(Figure 5)**.

Foreign applicants file a larger percentage of GTM filings (82.6% in 2014; 84.3% in 2023) as compared to overall trade mark filings (74.2% in 2014; 73.8% in 2023), suggesting that foreign applicants are relatively more active in green- or sustainability-related innovations in Singapore.

Figure 4

Local and foreign share of all trade mark filings in Singapore (2014-2023)

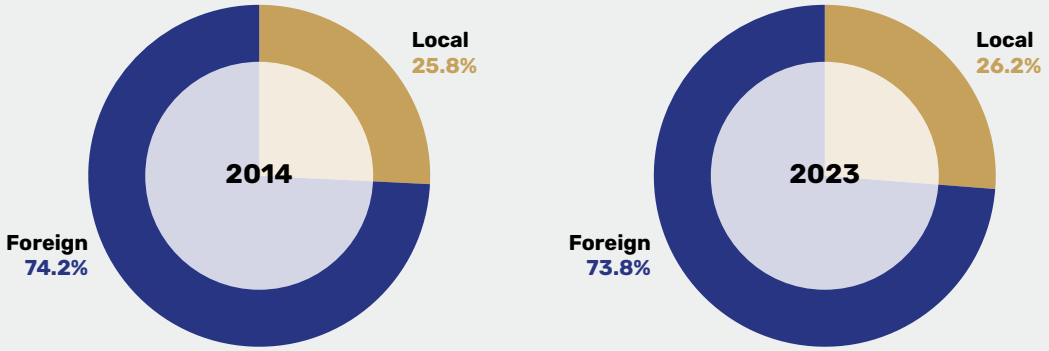
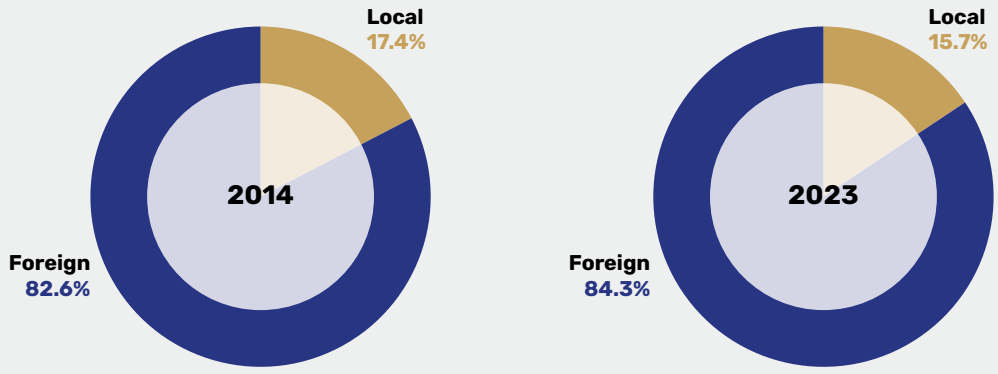


Figure 5

Local and foreign share of GTM filings in Singapore (2014-2023)



3.4 Composition of GTM filings by country of origin of GTM filers

Figure 6 shows the geographical distribution of GTM filings in Singapore. In 2014, local GTM applicants accounted for the largest share of GTM filings in Singapore, followed by applicants from the United States of America, Japan, Germany and China. Notably, over the decade, China's GTM filings in Singapore have tripled. By 2023, the top applicants of GTM applications in Singapore are from China (26%).

Figure 6

Geographical breakdown of GTM filings in Singapore (2014 and 2023)

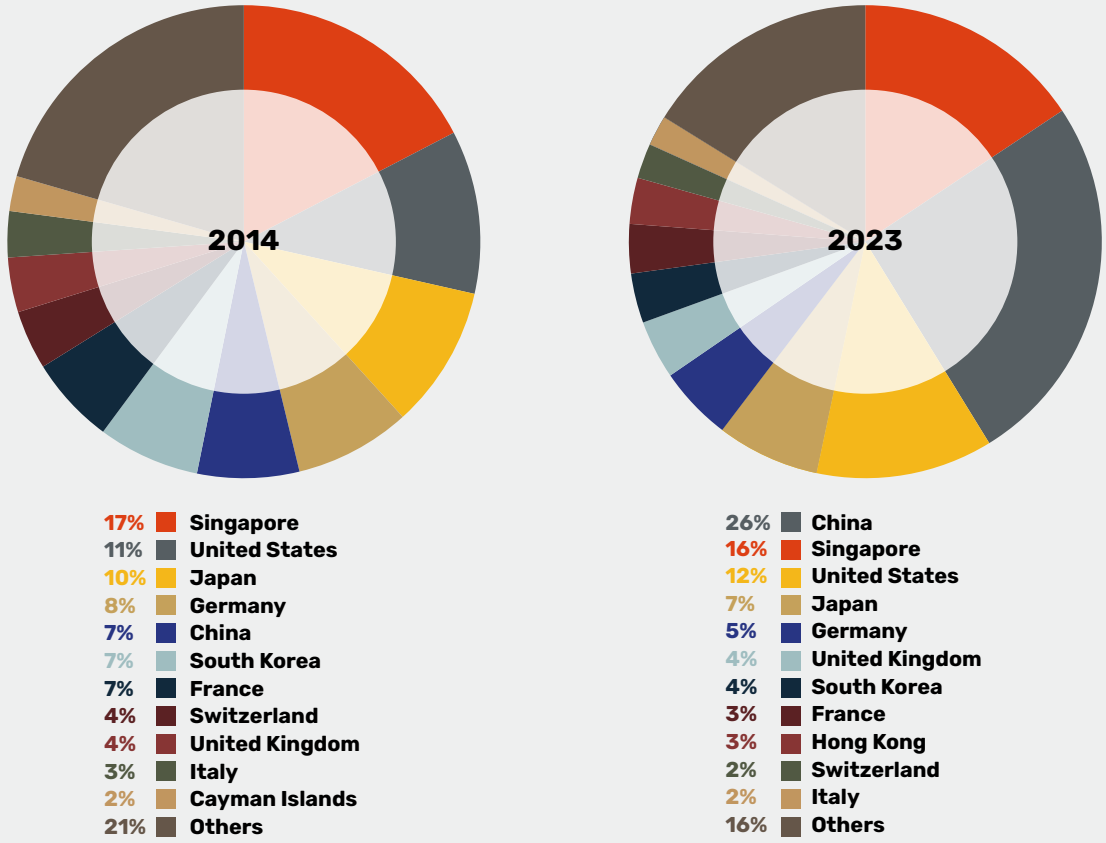


Table 2 provides the top 10 countries of origin of GTM applicants in Singapore, along with the categories in which the countries are more active in seeking trade mark protection. These countries are ranked by the total number of GTM filings between 2014 and 2023. As illustrated in **Table 2**, '*Solar energy*' (highlighted in yellow) ranks among the top categories of GTM filed by the top 10 countries. This suggests that the market for '*Solar energy*' related products or services is robust in Singapore.

In the examination of the distributions of the GTMs based on their goods and services classes[9], from **Table 2**, the classes in GTMs originating from China, South Korea and Italy are largely in the goods classes, while GTMs originating from the United Kingdom and France are mainly in the services classes. As for the remaining countries, their GTMs are in an approximately equal split between the goods classes and services classes.

[9] The International Classification of Goods and Services for the purpose of the registration of trade marks (also known as the Nice Classification) serves to determine the scope of protection of trade marks. The Nice Classification divides goods and services into 45 classes. Classes 1 to 34 relate to goods, while Classes 35 to 45 relate to services.

Table 2

Top 10 countries of origin of GTM applicants in Singapore (the list of countries, product groups and its categories are ranked by the total number of GTM filings between 2014-2023)

Rank	Country	Product Groups	Top 3 Product Categories	% of classes in GTM being goods classes	% of classes in GTM being services classes
1	China	Energy conservation	Storage of electricity	86%	14%
		Transportation	General transport		
		Energy production	Solar energy		
2	Singapore	Energy production	Solar energy	50%	50%
		Climate change	Environmental services		
		Pollution control	Pollution general		
3	United States of America	Climate change	Environmental services	52%	48%
		Energy production	Solar energy		
		Energy conservation	Storage of electricity		
4	Japan	Energy production	Solar energy	58%	42%
		Pollution control	Pollution general		
		Transportation	General transport		
5	Germany	Energy production	Solar energy	53%	47%
		Transportation	General transport		
		Pollution control	Water purification		
6	South Korea	Energy conservation	Storage of electricity	65%	35%
		Energy production	Solar energy		
		Pollution control	Water purification		
7	United Kingdom	Climate change	Environmental services	37%	63%
		Energy production	Solar energy		
		Environmental awareness	Ecology		
8	France	Energy production	Solar energy	38%	62%
		Transportation	General transport		
		Climate change	Environmental services		
9	Switzerland	Energy production	Solar energy	49%	51%
		Energy conservation	Storage of electricity		
		Environmental awareness	Ecology		
10	Italy	Transportation	General transport	67%	33%
		Energy production	Solar energy		
		Transportation	Electric engines		

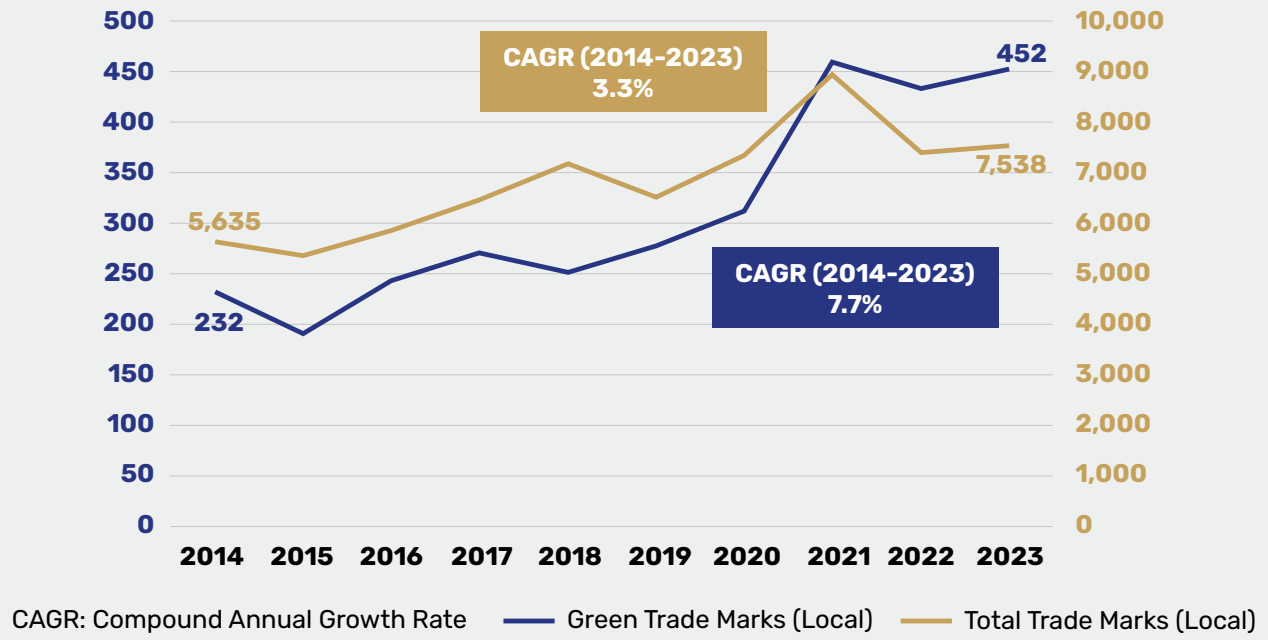
The rest of this section examines the trends of GTM filings by local and foreign applicants in Singapore.

3.5 Trends of GTM filings by Singapore applicants

Between 2014 and 2023, GTMs filed by local applicants have increased significantly at a CAGR of 7.7%, which is more than twice the CAGR of local trade mark filings in Singapore **(Figure 7)**. The graph shows a notable jump in local GTM filings between 2020 and 2021. A similar observation was also found in the EUIPO's study which reported that the total number of GTMs had reached an all-time high in 2021 (EUIPO, 2023). This surge in local GTM filings between 2020 and 2021 was largely driven by increased filings in innovations related to '*Environmental services*', '*General pollution control*' and '*Transportation*'.

Figure 7

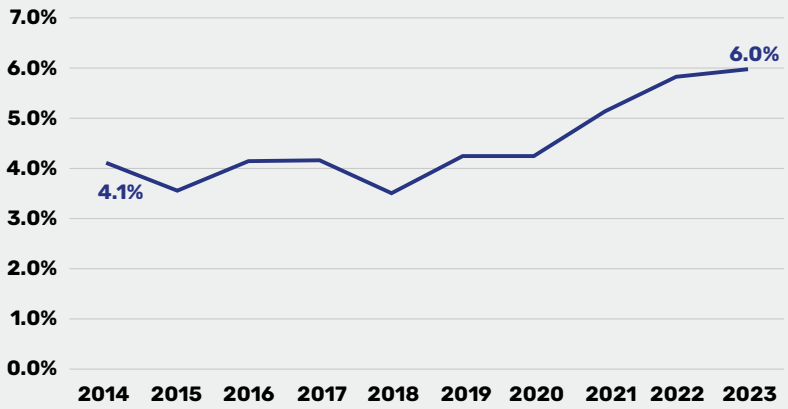
Trends in trade mark filings in Singapore by local applicants (2014 – 2023)[10]



In the same period, the share of local GTMs (of total local trade mark filings in Singapore) has also increased steadily over the years, from 4.1% in 2014 to 6.0% in 2023 **(Figure 8)**.

Figure 8

Local GTM filings as a share of all local trade mark filings in Singapore (2014-2023)

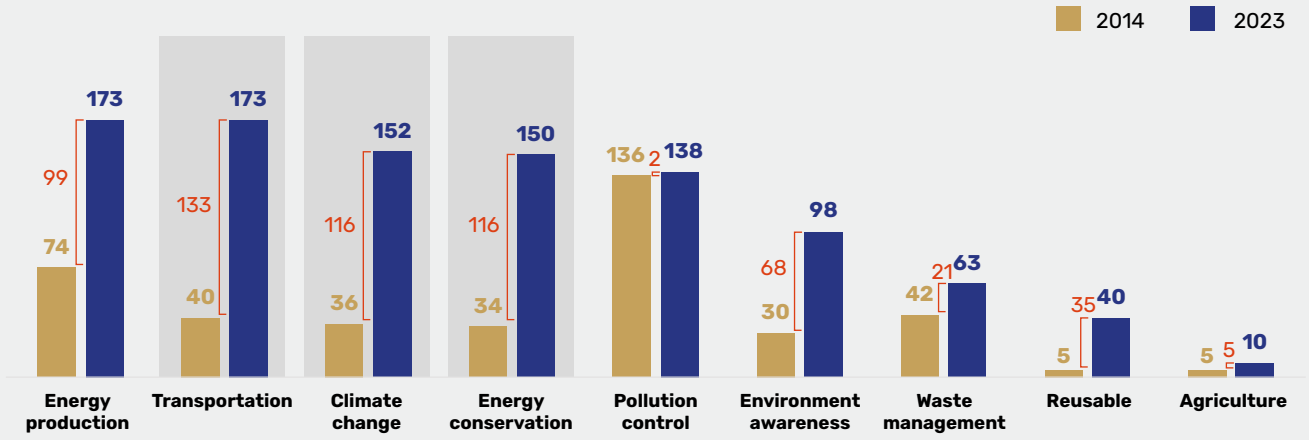


[10] The increase in the total number of trade marks filed by local applicants in 2021 was attributable to the recovery of Singapore's economy following the COVID-19 pandemic.

Figure 9 shows the distributions of local GTM filings by product groups in 2014 and 2023, ranking from the highest (left to right) according to the number of filings in 2023. The results show that local GTM filings across all product groups have increased significantly over the years, especially in the areas of '*Transportation*', '*Climate change*' and '*Energy conservation*'.

Figure 9

Number of local GTM filings by product groups (Ranked by number of GTMs filed in 2023)



A further breakdown of the distributions of local GTM filings into product categories shows that, while local GTM filings remain strong in innovations related to *'Solar energy'* and *'Water purification'* over the last decade, innovations related to *'Environmental services', 'Storage of electricity', 'Ecology'* and *'Energy management'* have shown the fastest growth in the last 10 years **(Table 3)**.

Table 3

Top 10 categories of GTM filed by local applicants in Singapore (Ranked by no. of GTM filed in 2023)

Product Group	Product Categories	% share of GTMs (2014)	% share of GTMs (2023)	Change in % share
Climate change	Environmental services	7.5%	11.2%	3.7%
Energy production	Solar energy	14.7%	9.8%	-4.9%
Energy conservation	Storage of electricity	4.7%	8.3%	3.6%
Transportation	General transport	5.5%	7.9%	2.4%
Environmental awareness	Ecology	4.5%	7.6%	3.1%
Pollution control	Water purification	14.7%	5.6%	-9.1%
Pollution control	Pollution general (e.g., oil spill treatment)	13.4%	4.8%	-8.6%
Energy production	Other energy (e.g., hydroelectric)	3.2%	4.7%	1.5%
Energy conservation	Energy management	0.7%	3.8%	3.1%
Waste management	Process waste	6.5%	3.7%	-2.8%

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Serving a community of over 800 customers globally, including industry giants like Microsoft, Starbucks, and HSBC. Univers is making its mark by aiding companies in their decarbonisation journey towards their net-zero targets. With nearly 30 trade mark filings in the last five years, Univers is one of Singapore's top green trade mark filers who recognises the crucial role that intellectual property plays in fostering sustainable business expansion. Among their clients closer to home is PSA International (formerly known as Port of Singapore Authority), whose path to decarbonisation was accelerated with Univers' decarbonisation solutions. PSA advanced towards reduced carbon emissions and enhanced energy efficiency at both the device and system level by implementing Univers' automated maintenance and energy optimisation digital tools, paving the way for continuous improvement towards net zero.

Through their flagship EnOS decarbonisation system powered by AI and IoT, Univers oversees over 280 million connected devices and manages over 680 gigawatts of renewable energy assets to provide their clients with real-time analytics, real-time monitoring, automated optimisation to reduce energy consumption and carbon emission. Headquartered in Singapore, Univers currently employs over 800 talents in 20 offices globally.

Univers oversees over

280

million

connected devices and manages over

680

gigawatts

of renewable energy assets to help their clients reduce carbon emissions.

"Moving towards a net-zero future is a multi-faceted challenge for businesses, and we are heartened that our decarbonisation system can contribute to global efforts. Our intellectual property strategy is essential to our growth as we help more entities achieve and sustain their net-zero goals.

Michael Ding,
Global Executive Director,
Univers Pte Ltd

3.6 Trends of GTM filings by foreign applicants

Figure 10 provides the overall trends in foreign GTM filings in Singapore. Over the years, the number of GTMs filed by foreign applicants has grown three times faster than the overall growth in foreign trade mark filings in Singapore **(Figure 10)**, with the share of foreign green trade mark filings of all foreign trade marks filings increasing steadily from 6.8% in 2014 to 11.5% in 2023 **(Figure 11)**.

Figure 10

Trends in trade mark filings in Singapore by foreign applicants (2014 – 2023)

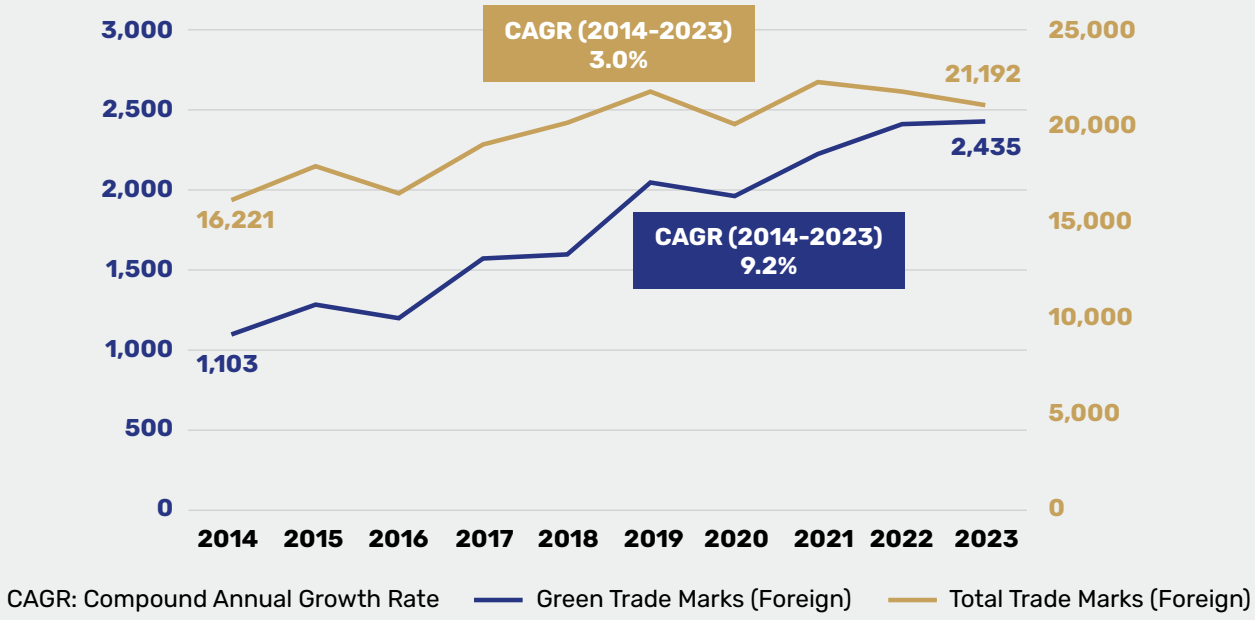


Figure 11

Foreign GTM filings as a share of all foreign trade mark filings in Singapore (2014-2023)

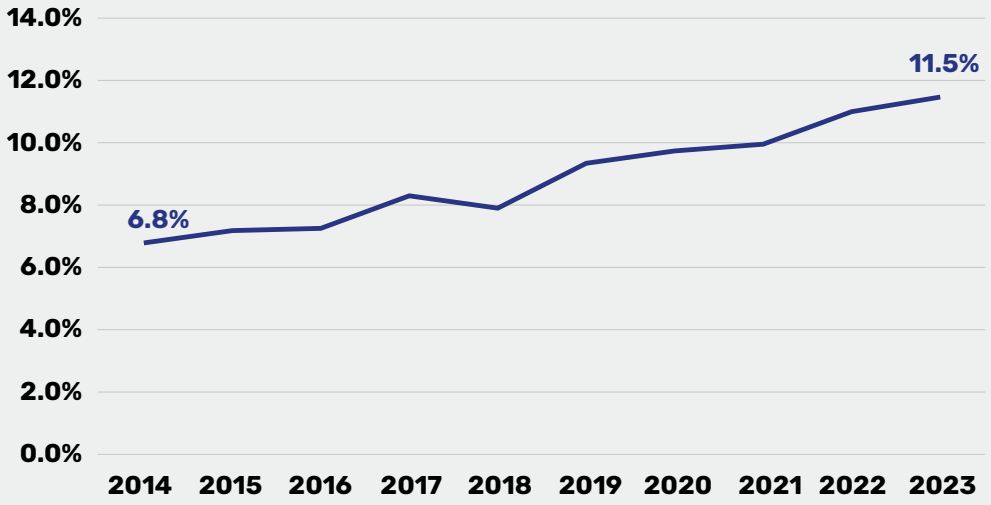
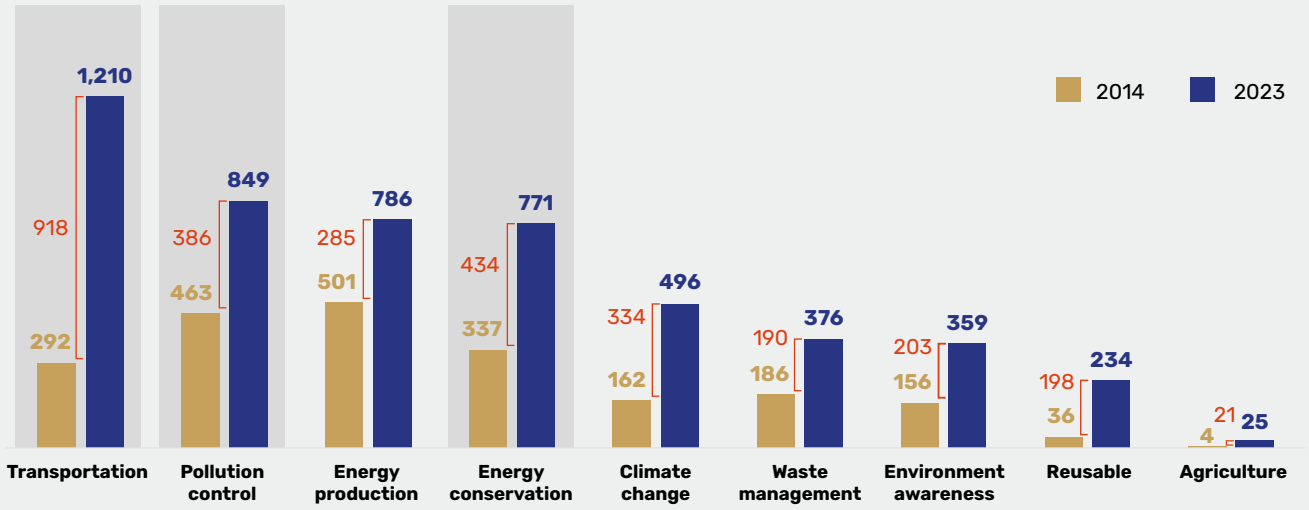


Figure 12 shows the distributions of foreign GTM filings by product groups in 2014 and 2023, ranking from the highest (left to right) according to the number of filings in 2023. It shows strong growth in foreign GTM filings across all product groups over the years, especially in the areas of '*Transportation*', '*Energy conservation*', and '*Pollution Control*'.

Figure 12

Number of foreign GTM filings by product groups (Ranked by no. of GTM filed in 2023)



Lastly, the distribution of foreign GTM filings across different product categories was analysed. The number of foreign GTM filings for innovation related to *'General transport'* has the greatest growth over the last ten years, surpassing the number of GTM filings for innovation related to 'Solar energy' to emerge as the top category of foreign GTM filings in 2023 **(Table 4)**.

Table 4

Top 10 categories of GTM filed by foreign applicants in Singapore (Ranked by no. of GTM filed in 2023)

Product Group	Product Categories	% share of GTMs (2014)	% share of GTMs (2023)	Change in % share
Transportation	General transport	7.4%	11.0%	3.6%
Energy conservation	Storage of electricity	10.0%	10.2%	0.2%
Energy production	Solar energy	16.0%	9.7%	-6.3%
Climate change	Environmental services	6.8%	8.0%	1.2%
Pollution control	Pollution general (e.g., oil spill treatment)	8.2%	6.1%	-2.1%
Pollution control	Water purification	8.6%	5.5%	-3.1%
Environmental awareness	Ecology	5.6%	4.8%	-0.8%
Waste management	Process waste	4.5%	4.6%	0.1%
Transportation	Electric engines	3.6%	4.4%	0.8%
Pollution control	Air purification	4.7%	4.3%	-0.4%

4 Conclusion and Areas for Further Research

This study shows that GTM filings in Singapore have increased steadily in the last decade (2014 – 2023), at a rate of almost three times the overall growth rate of total trade mark filings in Singapore. While there are shifts in the filing behaviour and the relative shares of GTM product categories, the product groups of '*Pollution control*', '*Transportation*' and '*Energy production*' are key areas that businesses in Singapore have been actively innovating in, and seeking trade mark protection for, in the last decade.

The study has also shown that both local and foreign businesses in Singapore are active in developing green- or sustainability-related innovation over the last decade. While the majority of GTM filings in Singapore were filed by foreign applicants, Singapore applicants continue to rank among the top three GTM applicants in Singapore. Singapore's transition towards a greener economy would present more opportunities for both local and foreign businesses, to create and commercialise green- or sustainability-related innovations.

While the use of trade mark filing data may be suitable for measuring innovations that are in the later stages of development and close to market introduction, it can be complemented with the analysis of patents data to provide a more comprehensive assessment of Singapore's progress in advancing its sustainability goals. For instance, patent insights from analytical tools such as 'Tech Insights through Patents' (TIP) for green technologies[11] could complement the findings of this study. In addition, a possible extension of this study could be examining the trends in GTM registrations in force and the corresponding trade mark renewals and investigating the contribution of 'Green' Intellectual Property Rights (IPRs) on business performance in wages, revenue, and employment in Singapore. These studies/ tools collectively will help us better understand how protection of green- innovations can drive business growth in a greener economy.

[11] Developed by IPOS International with support from the Ministry of Sustainability and Environment of Singapore (MSE) and the Building and Construction Authority of Singapore (BCA), TIP makes patent data readily accessible to inform business decisions. Its interactive dashboards provide insights from broad global technology trends to organisational-level activity, helping businesses to identify potential industry partners and development or licensing strategies.

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Annex 1: Green Expressions (EUIPO, 2021)

S/N	Group	Category	Expression
1	Agriculture	Fertiliser alternatives	+biofertilizer –nitrogen
2	Agriculture	Fertiliser alternatives	+biostimulant
3	Agriculture	Fertiliser alternatives	+compost.fertil
4	Agriculture	Fertiliser alternatives	+natural +fertilizer –chemical
5	Agriculture	Fertiliser alternatives	+natural +manure
6	Agriculture	Fertiliser alternatives	+safety +fertilisers.used
7	Agriculture	Fertiliser alternatives	+safety +manures –horticultur
8	Agriculture	Fertiliser alternatives	+soil.erosion +control
9	Agriculture	Other agriculture	+biodynamic
10	Agriculture	Other agriculture	+biological +vegetation
11	Agriculture	Other agriculture	+regenerative +agriculture
12	Agriculture	Pesticide alternatives	+biological +fungicide
13	Agriculture	Pesticide alternatives	+biological +herbicide
14	Agriculture	Pesticide alternatives	+biopesticide
15	Agriculture	Pesticide alternatives	+integrated.pest +management
16	Climate change	Carbon brokerage	+brokerage.carbon.credit
17	Climate change	Carbon brokerage	+carbon +offsetting
18	Climate change	Carbon brokerage	+electr +carbon.sequestr
19	Climate change	Carbon monitor	+carbon +footprint
20	Climate change	Carbon monitor	+carbon +monitor –10
21	Climate change	Carbon monitor	+carbon +recorders –10
22	Climate change	Carbon monitor	+control +carbon +dioxide
23	Climate change	Carbon monitor	+control +carbon +emission
24	Climate change	Carbon monitor	+control +hydrocarbon +emission
25	Climate change	Environmental services	+environment +information
26	Climate change	Environmental services	+environment.software
27	Climate change	Environmental services	+environmental +assessment
28	Climate change	Environmental services	+environmental +control –access
29	Climate change	Environmental services	+environmental +information
30	Climate change	Environmental services	+environmental +services
31	Climate change	Environmental services	+environmental +system –9
32	Climate change	Environmental services	+environmental.building
33	Climate change	Environmental services	+environmental.condition
34	Climate change	Environmental services	+environmental.engineering
35	Climate change	Environmental services	+environmental.monitoring

S/N	Group	Category	Expression
36	Climate change	Environmental services	+environmental.planning
37	Climate change	Environmental services	+environmental.protection
38	Climate change	Environmental services	+environmental.science
39	Climate change	Environmental services	+environmental.surveys
40	Climate change	Environmental services	+environmental.technology
41	Climate change	Environmental services	+environmental.testing
42	Climate change	Environmental services	+safety +environment
43	Energy conservation	Energy management	+analyzing +electricity +consumption
44	Energy conservation	Energy management	+consultancy +generation +electrical.power
45	Energy conservation	Energy management	+energy.audit
46	Energy conservation	Energy management	+energy.consumption –others –meters
47	Energy conservation	Energy management	+energy.management
48	Energy conservation	Energy management	+measuring +electricity +consumption
49	Energy conservation	Energy management	+monitoring +electricity +consumption
50	Energy conservation	Energy saving	+car.pool
51	Energy conservation	Energy saving	+carpool
52	Energy conservation	Energy saving	+combust +promot
53	Energy conservation	Energy saving	+energy.efficient
54	Energy conservation	Energy saving	+energy.saving
55	Energy conservation	Energy saving	+energysaving
56	Energy conservation	Energy saving	+fuel +economiser
57	Energy conservation	Energy saving	+fuel +economizer
58	Energy conservation	Energy saving	+fuel.saving
59	Energy conservation	Energy saving	+fuelsaving
60	Energy conservation	Energy saving	+power.efficient
61	Energy conservation	Energy saving	+reduction +electricity
62	Energy conservation	Low energy lighting	+audiosensit.control.light
63	Energy conservation	Low energy lighting	+comput.softwar +control.light
64	Energy conservation	Low energy lighting	+computercontrol.light
65	Energy conservation	Low energy lighting	+control +light +comput –softwar
66	Energy conservation	Low energy lighting	+control +light +programm
67	Energy conservation	Low energy lighting	+screen.control.light
68	Energy conservation	Storage of electricity	+accumulator +electric
69	Energy conservation	Storage of electricity	+battery +chargeable –acidulated telephone –computer –fire.extinguisher –game –cigarette –cutters –cell.phone –mobile.phone –smartphone –wireless

S/N	Group	Category	Expression
70	Energy conservation	Storage of electricity	+battery +charging –acidulated –telephone –computer –fire.extinguisher –game –cigarette –cutters –cell.phone –mobile.phone –smartphone –wireless
71	Energy conservation	Storage of electricity	+battery +electric –acidulated –telephone –computer –fire.extinguisher –game –cigarette –cutters –cell.phone –mobile.phone –smartphone –wireless
72	Energy conservation	Storage of electricity	+charger.batteri
73	Energy conservation	Storage of electricity	+lithium +ion +batteries
74	Energy conservation	Storage of electricity	+rechargeable –acidulated –telephone –computer –fire.extinguisher –refuelling –sweepers
75	Energy conservation	Storage of electricity	+rental +batteries
76	Energy production	Biofuels	+bagasse +fuel
77	Energy production	Biofuels	+biobased
78	Energy production	Biofuels	+biodiesel –fuel
79	Energy production	Biofuels	+bioethanol
80	Energy production	Biofuels	+biofuel
81	Energy production	Biofuels	+biogas
82	Energy production	Biofuels	+biological +fuel
83	Energy production	Biofuels	+biological +reactor
84	Energy production	Biofuels	+biomass
85	Energy production	Biofuels	+colza.oils –food –lubricating
86	Energy production	Biofuels	+corn.oils +industrial –food
87	Energy production	Biofuels	+fish.oils.industrial.purpose
88	Energy production	Biofuels	+fuel +ethanol –pharmaceutical –topical –1
89	Energy production	Biofuels	+fuel +inhibit +deposition
90	Energy production	Biofuels	+hydrocarbon.fuels.derived +tar
91	Energy production	Biofuels	+linseed.oils +industrial.purpose
92	Energy production	Biofuels	+olive.oils.industrial.purpose
93	Energy production	Biofuels	+peanut.oils.industrial.purpose
94	Energy production	Biofuels	+peat.fuel –oils –block
95	Energy production	Biofuels	+perilla.oils +industrial.purpose
96	Energy production	Biofuels	+rape.oils +industrial.purpose
97	Energy production	Biofuels	+rapeseed.oil +industrial.purposes
98	Energy production	Biofuels	+sesame.oils +industrial.purpose
99	Energy production	Biofuels	+solid.oxygen.fuel
100	Energy production	Biofuels	+soybean.oils +industrial.purpose

S/N	Group	Category	Expression
101	Energy production	Biofuels	+sunflower.oils +industrial.purpose
102	Energy production	Biofuels	+vegetable.wax
103	Energy production	Other energy	+electric.energy +renewable –nonrenewable. source –non.renewable.source –uninterruptible.power.supplies
104	Energy production	Other energy	+electric.power –payments –generators –tools –windlasses –units –dryers –load.banks –poles –posts –emergency.use –soldering.irons –winches –wheelchairs –9 –11
105	Energy production	Other energy	+energy.alternative
106	Energy production	Other energy	+energy.generation –leasing –maintenance
107	Energy production	Other energy	+energy.power –others –management.systems
108	Energy production	Other energy	+generation +electrical.power +waste.heat
109	Energy production	Other energy	+geothermal +energy
110	Energy production	Other energy	+geothermal +installation
111	Energy production	Other energy	+geothermal +power
112	Energy production	Other energy	+hydroelectric
113	Energy production	Other energy	+hydrogen +pump
114	Energy production	Other energy	+hydrogen.fueled
115	Energy production	Other energy	+hydrogen.gas
116	Energy production	Other energy	+hydropower
117	Energy production	Other energy	+natural +energy
118	Energy production	Other energy	+renewable +source
119	Energy production	Other energy	+research +energy
120	Energy production	Other energy	+trash +incineration
121	Energy production	Other energy	+using.waste.heat
122	Energy production	Other energy	+waste +burning
123	Energy production	Other energy	+wave +energy
124	Energy production	Solar energy	+photovoltaic
125	Energy production	Solar energy	+solar +battery
126	Energy production	Solar energy	+solar +cell
127	Energy production	Solar energy	+solar +collector
128	Energy production	Solar energy	+solar +energy
129	Energy production	Solar energy	+solar +heating
130	Energy production	Solar energy	+solar +installation
131	Energy production	Solar energy	+solar +module
132	Energy production	Solar energy	+solar +panel

S/N	Group	Category	Expression
133	Energy production	Solar energy	+solar +power
134	Energy production	Solar energy	+solar +wafer
135	Energy production	Solar energy	+solar +water
136	Energy production	Solar energy	+solarpow
137	Energy production	Solar energy	+storag.cell.electr
138	Energy production	Solar energy	+thermal +collector
139	Energy production	Solar energy	+water +heat
140	Energy production	Wind energy	+power.generation +turbine +blade
141	Energy production	Wind energy	+wind +power
142	Energy production	Wind energy	+wind +turbine
143	Energy production	Wind energy	+wind.energi
144	Energy production	Wind energy	+windpowered
145	Environmental awareness	Ecology	+climate +change
146	Environmental awareness	Ecology	+ecobiology
147	Environmental awareness	Ecology	+ecochoice
148	Environmental awareness	Ecology	+ecofriendly
149	Environmental awareness	Ecology	+ecology
150	Environmental awareness	Ecology	+ecosystem
151	Environmental awareness	Ecology	+ecotourism
152	Environmental awareness	Ecology	+emission.reduction
153	Environmental awareness	Ecology	+environment +protection
154	Environmental awareness	Ecology	+environmental.conscious
155	Environmental awareness	Ecology	+environmental.conservation
156	Environmental awareness	Ecology	+environmental.exploration
157	Environmental awareness	Ecology	+environmental.friendly
158	Environmental awareness	Ecology	+environmental.issues
159	Environmental awareness	Ecology	+environmental.matters
160	Environmental awareness	Ecology	+environmental.responsible
161	Environmental awareness	Ecology	+global.warming
162	Environmental awareness	Ecology	+green +initiative
163	Environmental awareness	Ecology	+green +innovation
164	Environmental awareness	Ecology	+green +technology
165	Environmental awareness	Ecology	+greener +choices
166	Environmental awareness	Ecology	+greenhouse +gas
167	Environmental awareness	Ecology	+mineralbased

S/N	Group	Category	Expression
168	Environmental awareness	Ecology	+natural +alternative
169	Environmental awareness	Ecology	+planet +friendly
170	Environmental awareness	Ecology	+reduction +carbon +emissions
171	Environmental awareness	Ecology	+research +natural.disasters
172	Environmental awareness	Ecology	+toxin.free
173	Environmental awareness	Ecology	+wildlife +conservation
174	Environmental awareness	Ecology	+wildlife +reserve
175	Environmental awareness	Sustainability	+biological +detergent
176	Environmental awareness	Sustainability	+durable
177	Environmental awareness	Sustainability	+low.impact
178	Environmental awareness	Sustainability	+rebuilding +destroyed
179	Environmental awareness	Sustainability	+rebuilding +worn
180	Environmental awareness	Sustainability	+recondit.machin +destroy –engin
181	Environmental awareness	Sustainability	+recovering +machine
182	Environmental awareness	Sustainability	+renovation +clothing
183	Environmental awareness	Sustainability	+sustainable
184	Environmental awareness	Sustainability	+waste +prevention
185	Environmental awareness	Sustainability	+waste +reducing
186	Environmental awareness	Sustainability	+zero.waste
187	Pollution control	Air purification	+air.pollut
188	Pollution control	Air purification	+air.purifi +commerci.use
189	Pollution control	Air purification	+air.purifi.prepar –deodoris
190	Pollution control	Air purification	+airpurifying –wearable –stroller –cyclone –electric –vehiclemounted –automobile –deodorising –household
191	Pollution control	Air purification	+atmospheric.oxygen +monitors –11
192	Pollution control	Air purification	+chemic.prepar +petroleum
193	Pollution control	Air purification	+cleansing +gases
194	Pollution control	Air purification	+combust.enhanc
195	Pollution control	Air purification	+exhaust.extractors –fans
196	Pollution control	Air purification	+exhaust.gas +analysis
197	Pollution control	Air purification	+exhaust.gas.treatment
198	Pollution control	Air purification	+filter +gases +industrial –part
199	Pollution control	Air purification	+filter.air.purifi
200	Pollution control	Air purification	+filter.engin –air –oil
201	Pollution control	Air purification	+filter.motor –oil –air
202	Pollution control	Air purification	+industri.air.purifi

S/N	Group	Category	Expression
203	Pollution control	Air purification	+mufflers +engine
204	Pollution control	Air purification	+mufflers +machine
205	Pollution control	Air purification	+mufflers +motor
206	Pollution control	Air purification	+oil.emission +testers
207	Pollution control	Air purification	+purif.gase –1 –11
208	Pollution control	Air purification	+purif.machin –gas –air
209	Pollution control	Air purification	+purifi +potabl.water
210	Pollution control	Air purification	+smokeless –cigarette –tobacco
211	Pollution control	Air purification	+toxic.gas
212	Pollution control	Air purification	+treatment +effluent –industrial
213	Pollution control	Air purification	+treatment +gases –thermal.treatment –object
214	Pollution control	Air purification	+waterpurifying –dispenser –swimming –spas –tanks –aquarium –alum –household
215	Pollution control	Biodegradable	+biodegradable –implants –prostheses
216	Pollution control	Pollution general	+advice +pollution.damage
217	Pollution control	Pollution general	+anti.pollution –9
218	Pollution control	Pollution general	+antipollution –9
219	Pollution control	Pollution general	+chemical.free
220	Pollution control	Pollution general	+clearance +chemical +pollution
221	Pollution control	Pollution general	+clearance +oil +pollution
222	Pollution control	Pollution general	+containment +pollutants
223	Pollution control	Pollution general	+control +spillage
224	Pollution control	Pollution general	+decontamination –showers –metal –portable –chambers –sterilization –11
225	Pollution control	Pollution general	+detoxification +hazardous.materials
226	Pollution control	Pollution general	+dissolve.poison
227	Pollution control	Pollution general	+environmental.pollution
228	Pollution control	Pollution general	+nontoxic –enamels
229	Pollution control	Pollution general	+oil.spill +treatment
230	Pollution control	Pollution general	+oilspill +treatment
231	Pollution control	Pollution general	+pollution +alarm
232	Pollution control	Pollution general	+pollution +control
233	Pollution control	Pollution general	+pollution +detection
234	Pollution control	Pollution general	+pollution +sensor
235	Pollution control	Pollution general	+pollution +treatment
236	Pollution control	Pollution general	+prevention +environmental +damage
237	Pollution control	Pollution general	+purifi +plant

S/N	Group	Category	Expression
238	Pollution control	Pollution general	+purification –swimming.pools –clean.air –proteins –minerals –refrigerant.fluids –alum –synthesis.gas –olefin –membrane –carbonaceous –osmosis –boxes –solvent –planning –substances –tanks –units –desalination –gas –portable –ambient –salt –chemical –gases –agent –preparation –machin
239	Pollution control	Pollution general	+purifying +apparatus –tapwater –aquarium –bathwater –cyclone –membrane –vehiclemounted –industrial.purposes –household
240	Pollution control	Pollution general	+remove +organic.contaminant
241	Pollution control	Pollution general	+safety +chemicals.used
242	Pollution control	Pollution general	+sampling +contamination
243	Pollution control	Pollution general	+sealing +stopping +leakage +oil
244	Pollution control	Pollution general	+silencer –firearm –rifle –gun –shotgun –pistol
245	Pollution control	Pollution general	+testing +hazardous.material
246	Pollution control	Pollution general	+treat +poison
247	Pollution control	Pollution general	+treatment +contamination
248	Pollution control	Pollution general	+treatment +radioactive
249	Pollution control	Pollution general	+treatment +toxic
250	Pollution control	Water purification	+bacteria +water.treatment
251	Pollution control	Water purification	+biolog +water.treatment
252	Pollution control	Water purification	+chemic +purif.water –swim
253	Pollution control	Water purification	+electr.water.purifi
254	Pollution control	Water purification	+filter +waste.gas
255	Pollution control	Water purification	+instal.purifi.water
256	Pollution control	Water purification	+purifi +chemic +water –swim
257	Pollution control	Water purification	+rainwat +nonmetal –dispers –trap
258	Pollution control	Water purification	+rainwat –dispers –plastic –nonmetal –drainag
259	Pollution control	Water purification	+regeneration +water
260	Pollution control	Water purification	+substanc.purifi.water
261	Pollution control	Water purification	+treatment.water –apparatus
262	Pollution control	Water purification	+waste +water –tanks –guttering –planning
263	Pollution control	Water purification	+wastewater +filter
264	Pollution control	Water purification	+wastewater +treatment –tanks
265	Pollution control	Water purification	+water +clarification
266	Pollution control	Water purification	+water +clarification –chemical.compounds
267	Pollution control	Water purification	+water +education.service –safety
268	Pollution control	Water purification	+water +filter +apparatus +industri

S/N	Group	Category	Expression
269	Pollution control	Water purification	+water +filter –electrostatic –sanitary –supply –boxes –chemical.compounds –aquarium –spas –pump –media –devices –units –agricultural –paper –rental –industrial –household –treatment –domestic
270	Pollution control	Water purification	+water +filtration –electrostatic –sanitary –supply –boxes –chemical.compounds –aquarium –spas –pump –media –devices –units –agricultural –paper –rental
271	Pollution control	Water purification	+water +process –transportable
272	Pollution control	Water purification	+water +save
273	Pollution control	Water purification	+water +treating –ion –cooling
274	Pollution control	Water purification	+water +treatment –hot –chlorinating –gravimetric –ion –ionization –carbonate –phosphate –ultraviolet –swimming –spas –demineralising –softening –bilge –sterilization –tanks –medical –preparation –substance –agent –filter
275	Pollution control	Water purification	+water.purifi +industri –mainten
276	Pollution control	Water purification	+water.purifi.agent
277	Pollution control	Water purification	+water.purifi.instal
278	Pollution control	Water purification	+watersav
279	Reusable	Other reusable	+reclaim +cellulos –wrap
280	Reusable	Other reusable	+reclaim.rubber
281	Reusable	Other reusable	+recovering +aerosol
282	Reusable	Other reusable	+recovering +agents
283	Reusable	Other reusable	+recovering +catalytic
284	Reusable	Other reusable	+recovering +chemical
285	Reusable	Other reusable	+recovering +chlorofluorocarbon
286	Reusable	Other reusable	+recovering +clothing
287	Reusable	Other reusable	+recovering +crushing
288	Reusable	Other reusable	+recovering +fluid
289	Reusable	Other reusable	+recovering +gases
290	Reusable	Other reusable	+recovering +material
291	Reusable	Other reusable	+recovering +metal
292	Reusable	Other reusable	+recovering +organic
293	Reusable	Other reusable	+recovering +packaging
294	Reusable	Other reusable	+recovering +paper
295	Reusable	Other reusable	+recovering +plastic
296	Reusable	Other reusable	+recovering +rubber
297	Reusable	Other reusable	+recovering +scrap

S/N	Group	Category	Expression
298	Reusable	Other reusable	+recovering +solvent
299	Reusable	Other reusable	+recovering +waste
300	Reusable	Other reusable	+regenerated +cellulose
301	Reusable	Other reusable	+regenerated +fiber
302	Reusable	Other reusable	+reusable +ice.cube
303	Reusable	Other reusable	+reusable +plastic
304	Reusable	Other reusable	+reusable +silicone
305	Reusable	Other reusable	+trash +separator
306	Reusable	Other reusable	+upcycling
307	Reusable	Recycling	+downcycle
308	Reusable	Recycling	+recycle –cost.price –tyres –tires –animal –wrappin
309	Reusable	Refilling cartridge	+recovering +toner
310	Reusable	Refilling cartridge	+refilling +cartridges –cigarette –ink.pen –ballpoint
311	Reusable	Reusable bags	+reusable +bags
312	Reusable	Reusable bottles	+recovering +bottles
313	Reusable	Reusable bottles	+reusable +bottle
314	Transportation	Electric bike	+electric.bicycle –lock –washers
315	Transportation	Electric car	+electric.car –washers
316	Transportation	Electric car	+electriccar –washers
317	Transportation	Electric engines	+electric +motor –gear –wheelchairs –alternator –checking –washers –7 –11 –37
318	Transportation	Electric moto	+electric +scooters –washers –self.balancing –selfbalancing
319	Transportation	General transport	+electric +vehicle –cigarette –door –horn –lock –sunroof –alternator –alarm –temperature –theft –antitheft –washers –7 –37
320	Transportation	General transport	+electricallypowered –payments –generators –tools –windlasses –units –dryers –load.banks –poles –posts –emergency.use –soldering.irons –winches –wheelchairs –9 –11
321	Transportation	Hybrid vehicle	+hybrid +car
322	Transportation	Hybrid vehicle	+hybrid +vehicle
323	Transportation	Hydrogen vehicle	+fuel.cell.cars
324	Transportation	Hydrogen vehicle	+hydrogen +car
325	Transportation	Hydrogen vehicle	+hydrogen +vehicle
326	Transportation	Other vehicles	+electric +buses –washers
327	Transportation	Other vehicles	+electric +truck –washers –reach

S/N	Group	Category	Expression
328	Transportation	Other vehicles	+electric.railway –washers
329	Transportation	Other vehicles	+electric.tractor –washers
330	Transportation	Other vehicles	+electric.train –washers
331	Transportation	Other vehicles	+electric.unicycle –washers
332	Transportation	Other vehicles	+self.balanc +unicycl
333	Transportation	Other vehicles	+selfbalanc +onewheel +scooter
334	Waste management	Process waste	+burning +refuse
335	Waste management	Process waste	+enzyme +waste –deodorising
336	Waste management	Process waste	+food.waste
337	Waste management	Process waste	+garbage +incinerator +purpose
338	Waste management	Process waste	+incineration +gases
339	Waste management	Process waste	+process +waste
340	Waste management	Process waste	+sewage +treatment –plants
341	Waste management	Process waste	+trash +destruction
342	Waste management	Process waste	+treatment +hazardous
343	Waste management	Process waste	+treatment +liquids –hydrocarbons –objects
344	Waste management	Process waste	+waste +converter
345	Waste management	Process waste	+waste +destruction
346	Waste management	Process waste	+waste +extraction
347	Waste management	Process waste	+waste +incineration –disposal
348	Waste management	Process waste	+waste +installation –sanitary
349	Waste management	Process waste	+waste +management
350	Waste management	Process waste	+waste +material –collection
351	Waste management	Process waste	+waste +reprocessing
352	Waste management	Process waste	+waste +services –chute –transport –cleaning
353	Waste management	Process waste	+waste +treatment –tanks –repair.animal.waste
354	Waste management	Waste disposal	+compress.garbag
355	Waste management	Waste disposal	+disposal +residues
356	Waste management	Waste disposal	+electr +garbag.dispos
357	Waste management	Waste disposal	+garbage +compacting
358	Waste management	Waste disposal	+garbage +compactor
359	Waste management	Waste disposal	+junk +clearance
360	Waste management	Waste disposal	+organic +waste
361	Waste management	Waste disposal	+refuse +compacting +machines
362	Waste management	Waste disposal	+refuse +crushing +machines

S/N	Group	Category	Expression
363	Waste management	Waste disposal	+rubbish +compactor
364	Waste management	Waste disposal	+rubbish +track
365	Waste management	Waste disposal	+trash +compacting –industrial
366	Waste management	Waste disposal	+trash +compactor
367	Waste management	Waste disposal	+trash +storage –transport
368	Waste management	Waste disposal	+waste +binding
369	Waste management	Waste disposal	+waste +compacting
370	Waste management	Waste disposal	+waste +crushing
371	Waste management	Waste disposal	+waste +disposal +toxic –plastic.bags –vessels
372	Waste management	Waste disposal	+waste +machine –shredding –gas –shredder –disposal
373	Waste management	Waste disposal	+waste +residues
374	Waste management	Waste disposal	+waste +settler
375	Waste management	Waste disposal	+waste +trash

Annex 2: List of Country Codes

Country	Country Code
Australia	AU
Canada	CA
Switzerland	CH
China	CN
Germany	DE
France	FR
Italy	IT
Japan	JP
South Korea	KR
Cayman Islands	KY
Russia	RU
Singapore	SG
United Kingdom	UK
United States of America	US

Annex 3: List of Classes of the Nice Classification

Class	Goods and Services
1	Chemicals used in industry, etc.
2	Paints, varnishes, lacquers, etc.
3	Cleaning preparations, perfumery, essential oils, cosmetics, etc.
4	Industrial oils and greases, lubricants, etc.
5	Pharmaceutical, medical and veterinary preparations, etc.
6	Common metals and their alloys, etc.
7	Machines and machine tools, etc.
8	Hand tools and implements, hand-operated; cutlery; side arms; razors
9	Scientific, nautical, surveying, photographic, cinematographic apparatus, etc.
10	Surgical, medical, dental and veterinary apparatus and instruments, artificial limbs, etc.
11	Apparatus and installations for lighting, heating, cooling, steam generating, cooking, etc.
12	Vehicles; apparatus for locomotion by land, air or water
13	Firearms; ammunition and projectiles; explosives; fireworks
14	Precious metals and their alloys, etc.
15	Musical instruments
16	Paper and cardboard, printed matter, etc.
17	Unprocessed and semi-processed rubber, gutta-percha, gum, asbestos, mica, etc.
18	Leather and imitations of leather, etc.
19	Materials, not of metal, for building and construction; rigid pipes, not of metal, for building, etc.
20	Furniture, mirrors, picture frames, etc.
21	Household or kitchen utensils and containers, etc.
22	Ropes and string; nets; tents and tarpaulins, etc.
23	Yarns and threads for textile use
24	Textiles and substitutes for textiles; household linen; curtains of textile or plastic
25	Clothing, footwear, headwear
26	Lace, braid and embroidery, and haberdashery ribbons and bows, etc.
27	Carpets, rugs, mats and matting, linoleum, etc.
28	Games, toys, playthings, gymnastic and sporting articles, etc.
29	Meat, fish, poultry and game, etc.
30	Coffee, tea, cocoa and substitutes therefor; rice, pasta and noodles, etc.
31	Raw and unprocessed agricultural, aquacultural, horticultural and forestry products, etc.
32	Beers; non-alcoholic beverages; mineral and aerated waters, etc.
33	Alcoholic beverages, except beers, etc.
34	Tobacco and tobacco substitutes; smokers' articles, matches, etc.
35	Advertising; business management, organisation and administration; office functions
36	Financial, monetary and banking services; insurance services; real estate affairs
37	Construction services; installation and repair services; mining extraction, oil and gas drilling
38	Telecommunications services
39	Transport; packaging and storage of goods; travel arrangement
40	Treatment of materials; recycling of waste and trash, etc.
41	Education; providing of training; entertainment; sporting and cultural activities
42	Scientific and technological services and research and design relating thereto, etc.
43	Services for providing food and drink; temporary accommodation
44	Medical services; veterinary services; hygienic and beauty care, etc.
45	Legal services; personal and social services rendered by others to meet the needs of individuals, etc.

Published August 2024