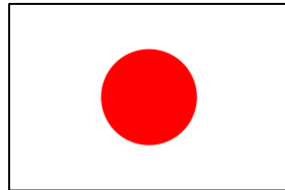


IP Statistics Profile & Green Transformation (GX) in Japan



Kazuyuki Nakai
Takao Udagawa
Masaya Tsuno

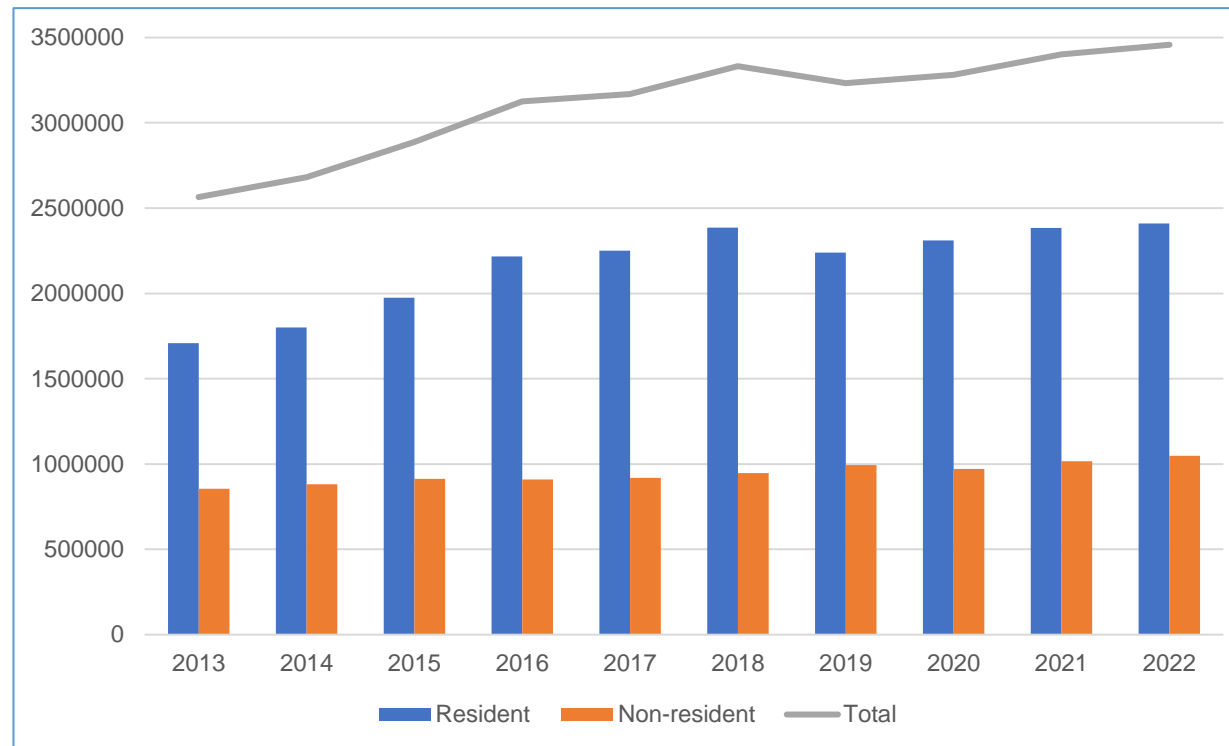


Japan Patent Attorneys Association
International Activities Center

1. IP Statistics Profile in Japan

Modest Growth in Worldwide Patent Filings

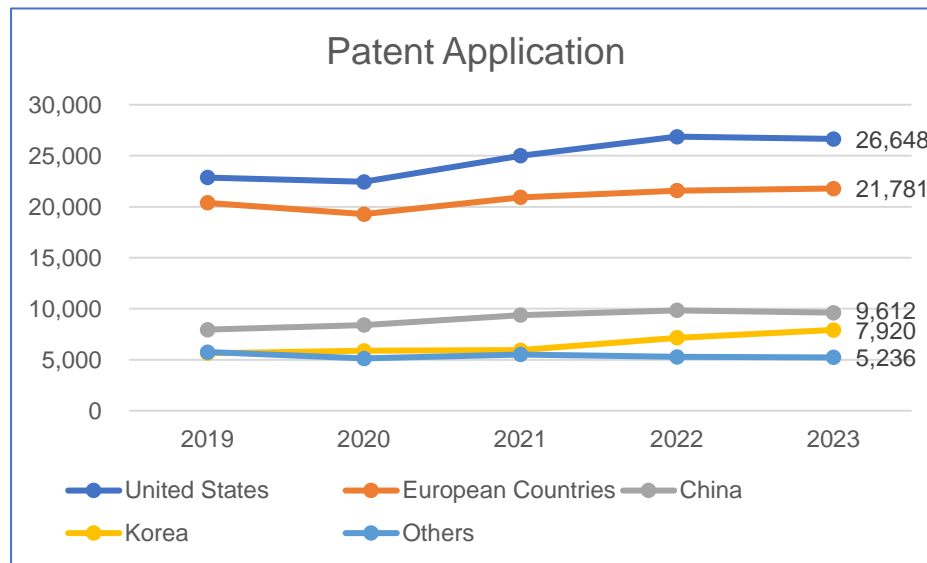
- ◇ Worldwide patent applications in 2022 reached approximately 3.46 million.
- ◇ Non-resident applications, which account for 30% of the total, exceeded 1 million, marking a 3-percentage point increase over the previous year.



Source: WIPO IP Statistics Data Center (as of 2023/7/29)

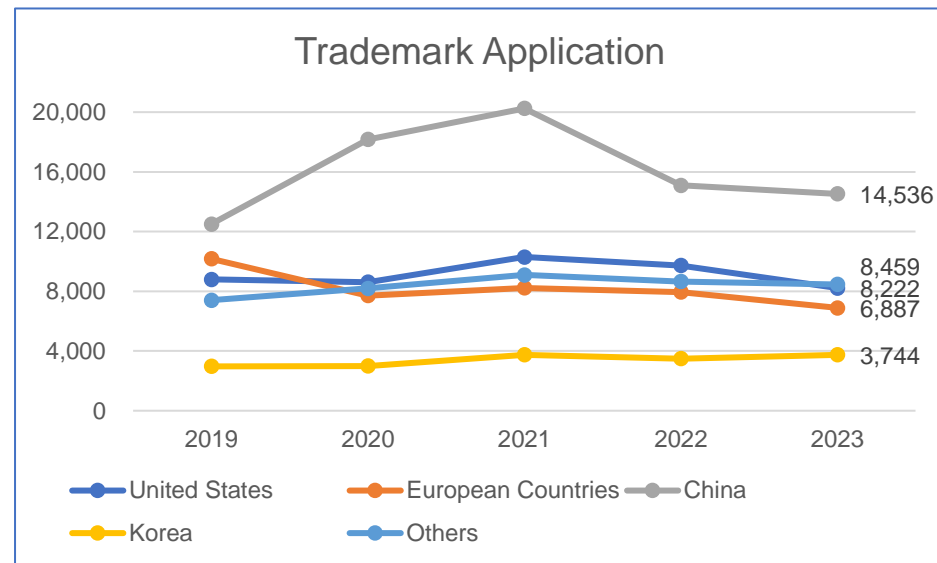
Number of Filings before JPO by Non-Residents

- ◇ Patent applications by non-residents in Japan reached approximately 72,000 in 2023 .
- ◇ Trademark applications by non-residents still exceeded 40,000 despite a slight decrease from the previous year.



Source: JPO Status Report 2024

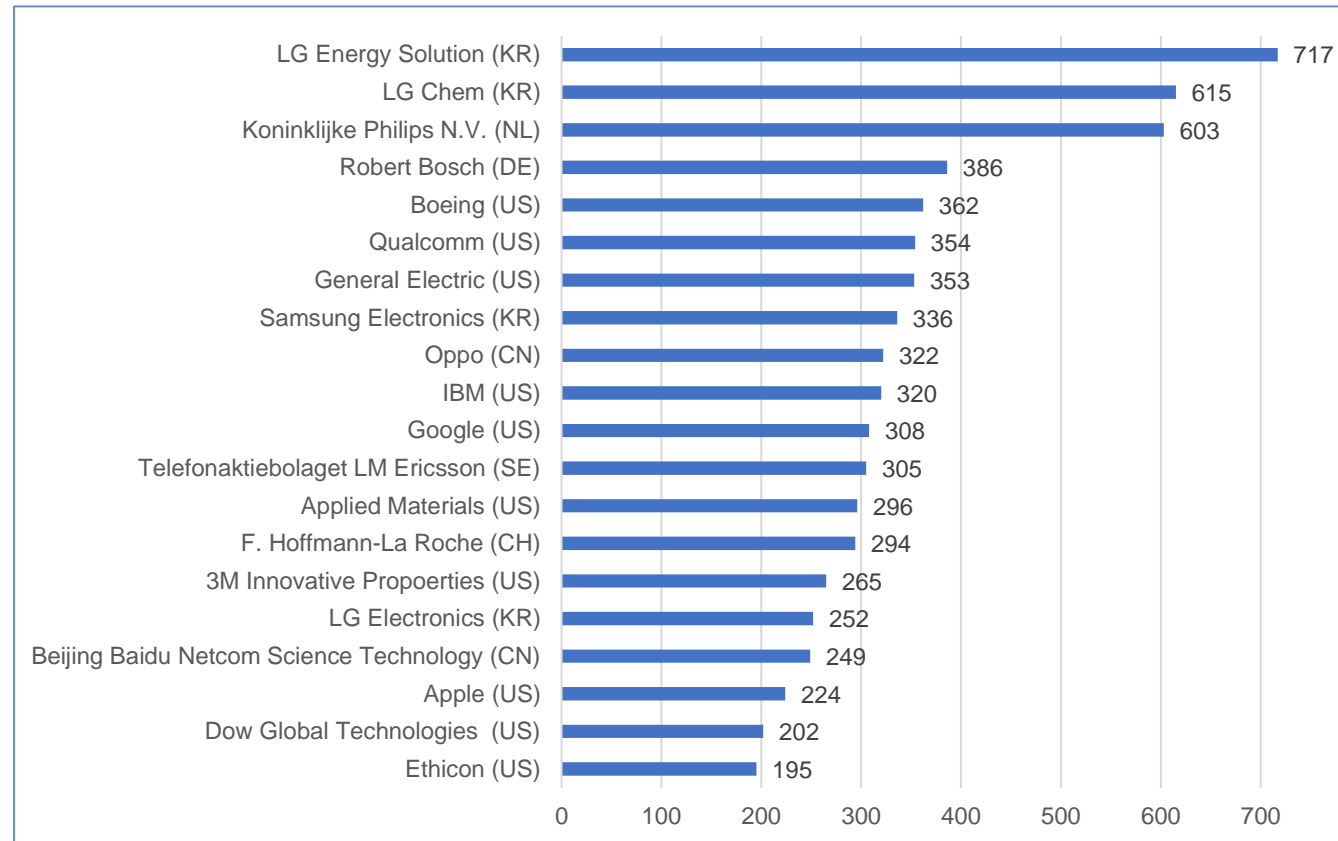
※ Including direct national applications and PCT national phase entries
 ※ Counted by the residence of the first-named inventor/applicant



Source: JPO Status Report 2024

Patent Grants to Foreign Companies

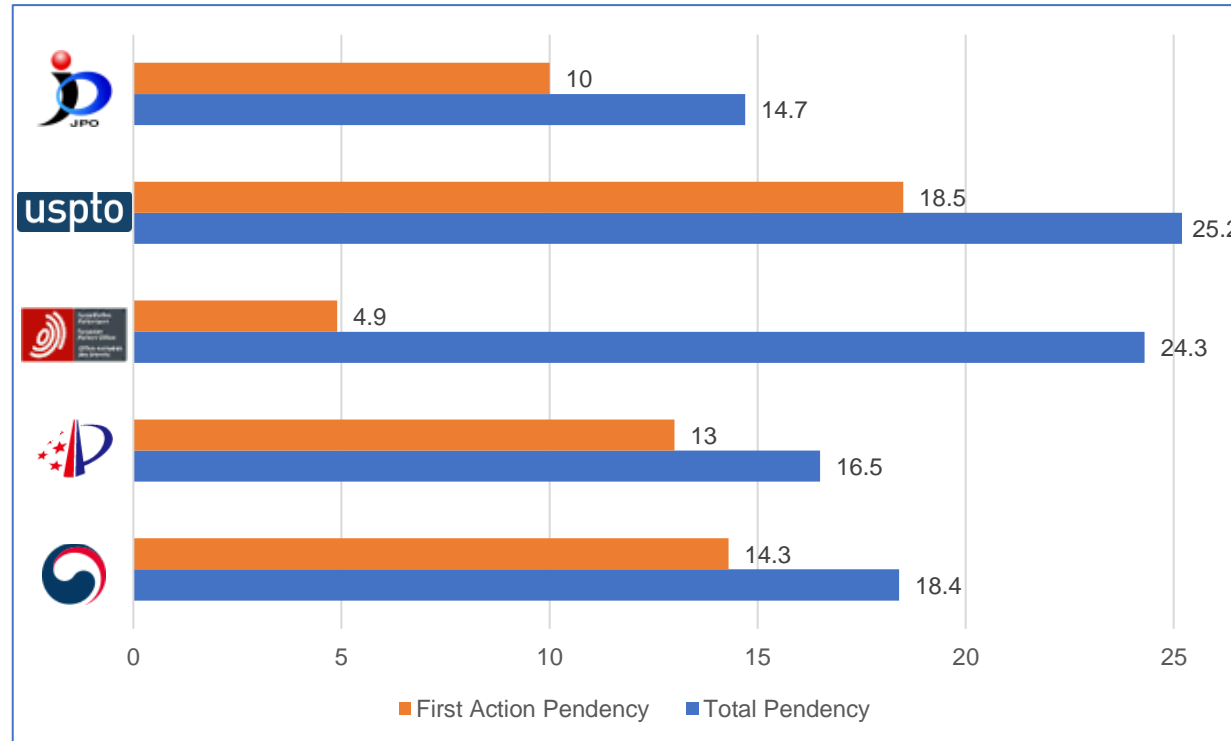
- ◇ Numerous foreign companies each received over 200 patent grants in 2023.



Source: JPO Status Report 2024

Fast Examination

- ◇ In 2023, the first action pendency at JPO averaged 10 months.
- ◇ Total pendency was the shortest among the five largest IP offices, with an average of 14.7 months.



Source: JPO Status Report 2024 Fig. 1-1-24

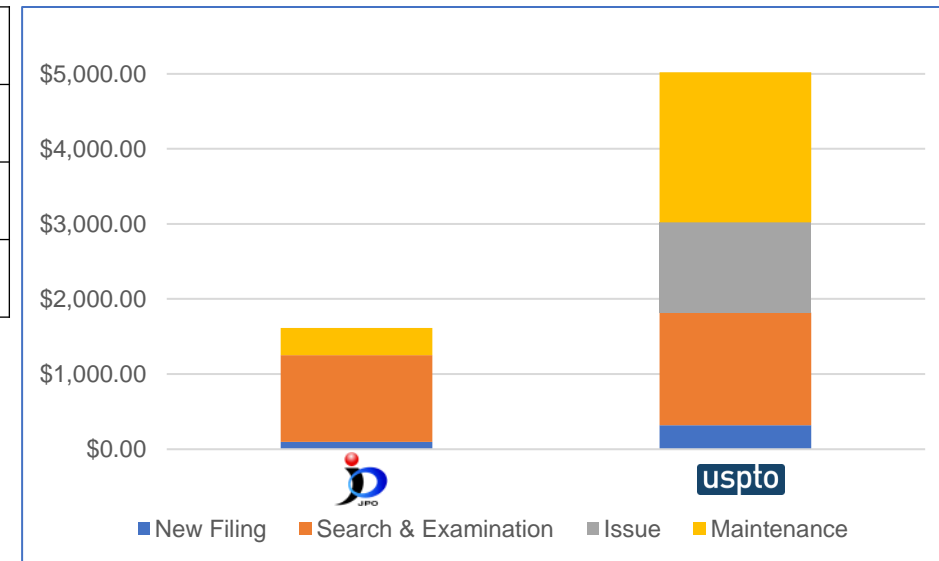
Patent Fee Schedule

- ◇ Competitive pricing designed to maximize user value

New Filing	\$95.20
Examination	\$938.40 + \$27.20 per claim
Maintenance	1-3rd year: \$29.24 + \$2.04 per claim
	4-6th year: \$70.04 + \$5.44 per claim

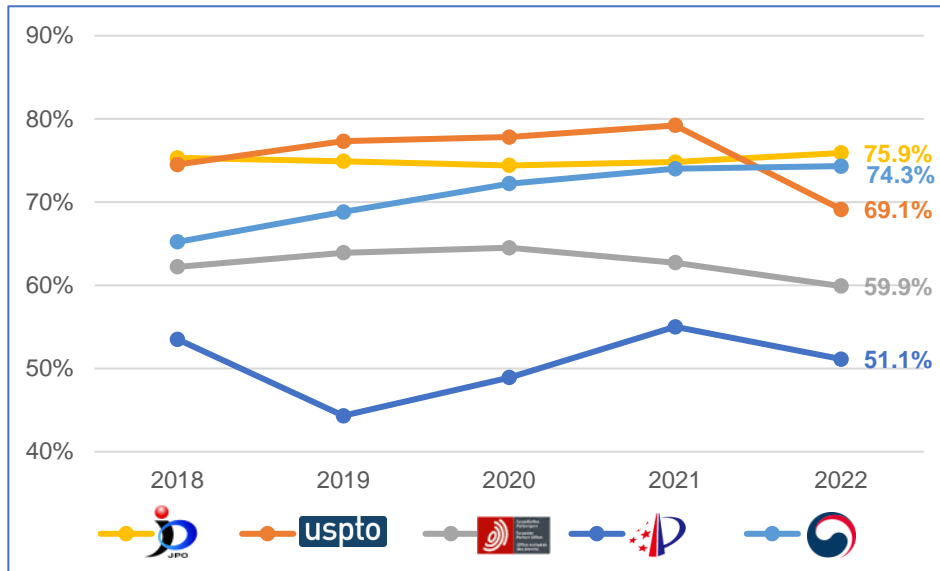
Source: JPO Fee Schedule on or after April 1, 2022

\$1=¥147

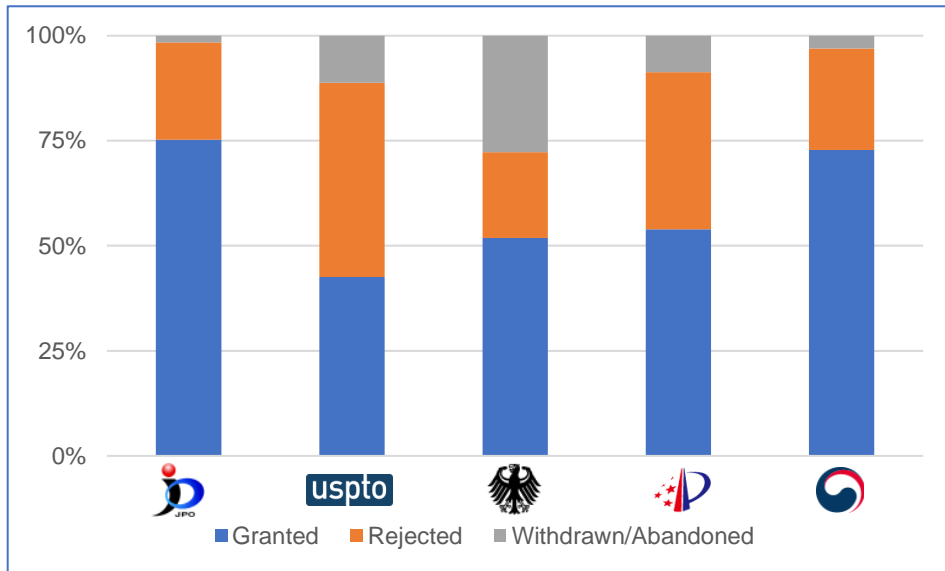


※ Basic cost of maintaining a patent with 8 claims for 6 years from registration

Trends in Patent Allowance Rate



Source: JPO Status Report 2024 Fig. 1-1-26



Source: WIPO Intellectual Property Indicators 2023

Allowance rate is defined as follows:

JPO: the number of decisions to grant a patent / the number of disposals in the reporting year (decisions to grant or to refuse and withdrawals or abandonment after first office **action**)

USPTO: the total number of issued patents / the total number of applications disposed of in the reporting year (RCEs are not included in the disposals)

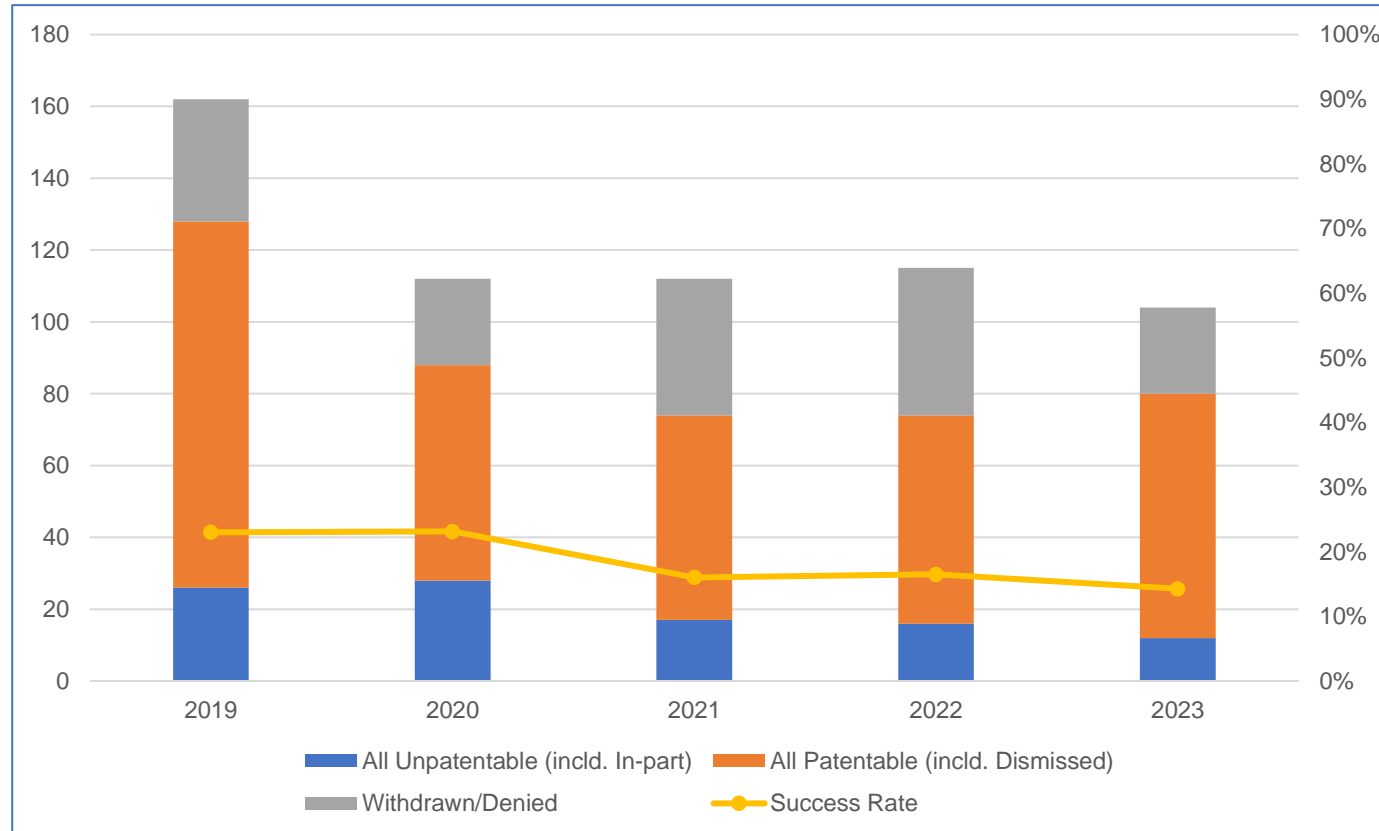
EPO: the number of applications granted / the number of disposals in the reporting period (applications granted plus those abandoned or refused)

KIPO: the number of patent approvals / the number of disposals in the reporting year (sum of the numbers of patent approvals, rejections, and withdrawals after first office action)

CINPA: The office has not published the definition.

Trials for Invalidation

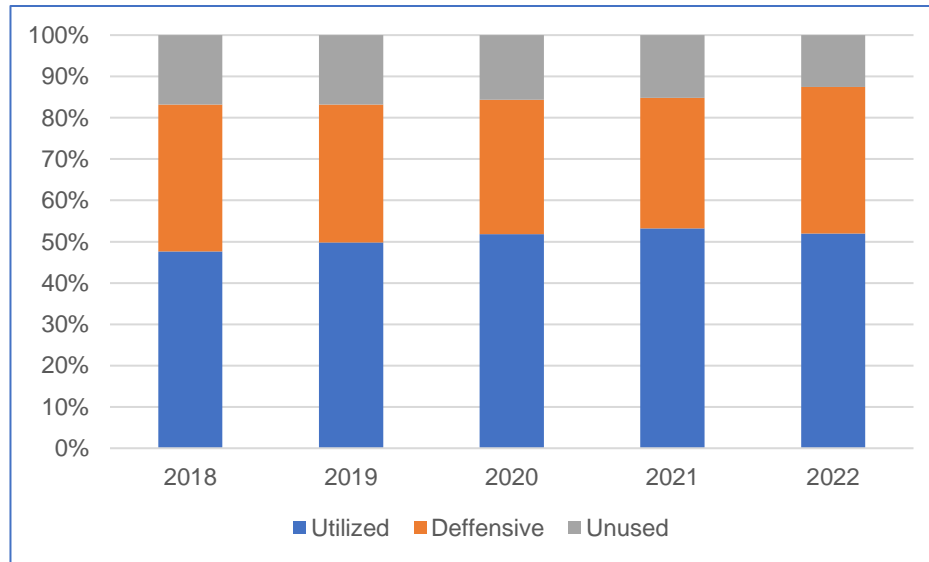
- ◇ Success rate for patent invalidation is as low as 14%.



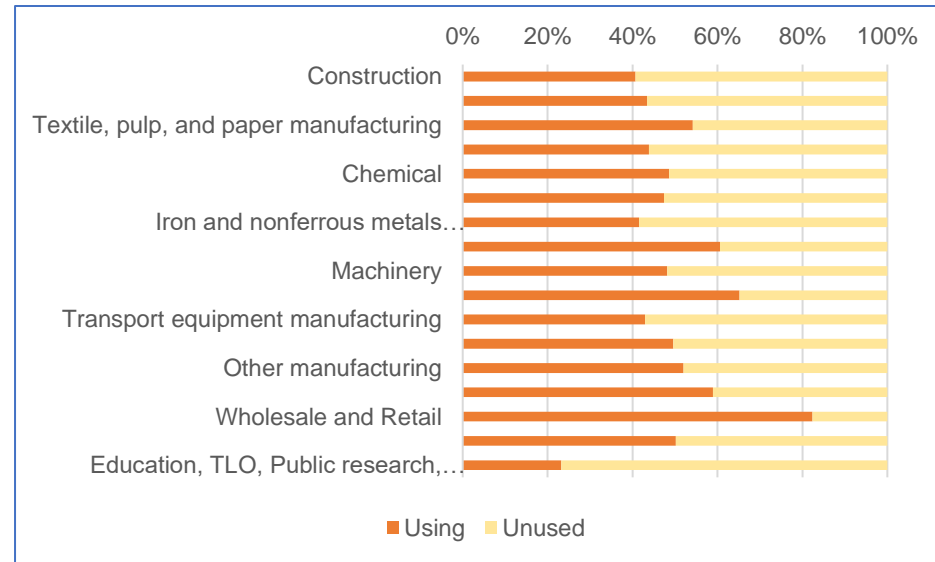
Source: JPO Status Report 2024

Patents in Use

- ◇ More than half of industries utilize patents at a rate exceeding 50%



Source: JPO Status Report 2024 Fig. 1-2-18



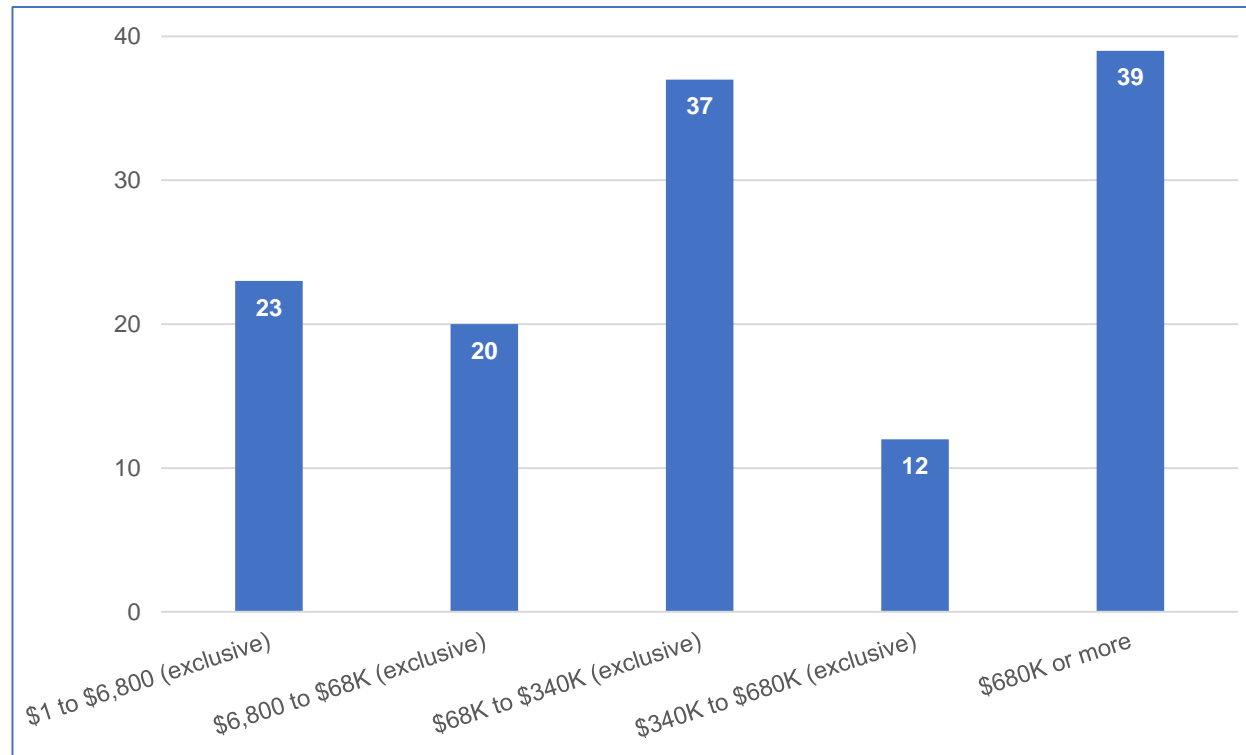
Source: JPO Status Report 2024 Fig. 1-2-19

※ A utilized patent refers to a patent that is actively utilized, including both patents implemented by the company itself and those licensed to other companies.

※ A defensive patent is a patent that is neither used by the holder nor licensed to other companies, for the purpose of preventing other companies from using the technology to protect the holder's own business.

Patent Infringement Damages Awarded

- ◇ Most district court patent infringement awards over the past decade* have been “\$680K or more.*”



Source: Intellectual Property High Court Statistics

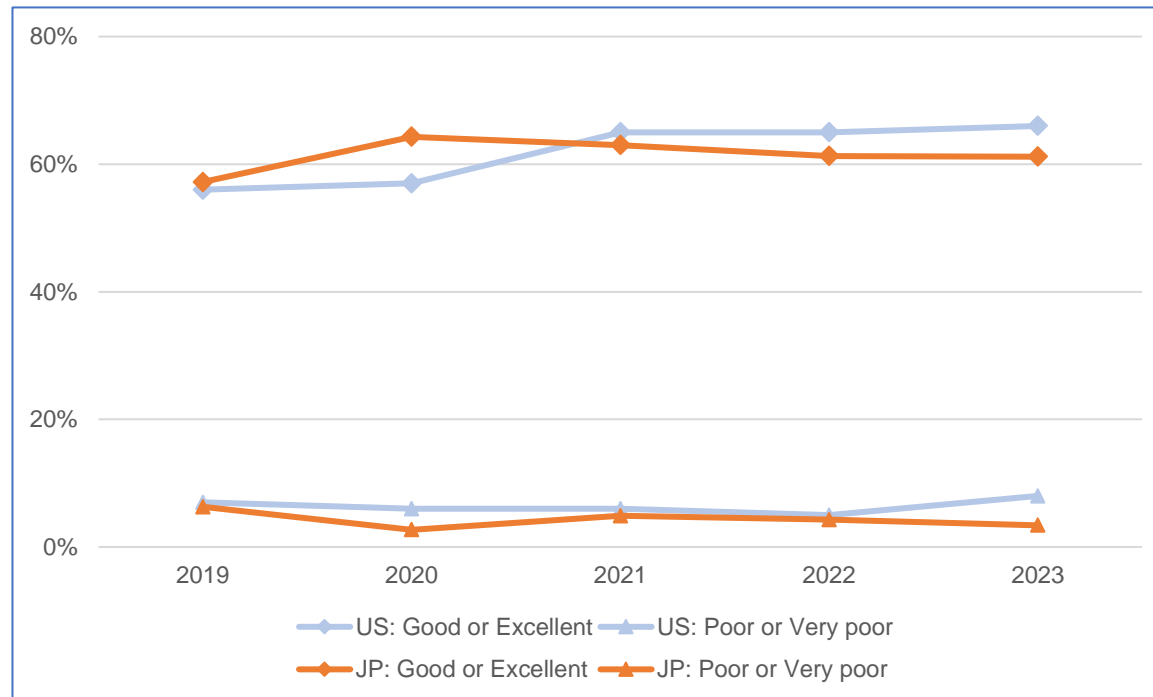
※Between 2014 and 2023

※Does not include incidental claims and litigation costs

\$1=¥147

Customer Satisfaction Ratings

- ◇ A customer satisfaction survey revealed that 61% of respondents rated JPO's services as "Excellent" or "Good"
- ◇ Only 3.4% of respondents rated the service as "Poor" or "Very Poor"



Source 1: JPO Status Report 2024 Fig. 1-5-3

Source 2: USPTO Semi-annual External Quality Survey FY23Q4

2. Green Transformation (GX) in Japan

Green Transformation & GXTI

Green Transformation (GX)?

- ◇ “An initiative to reduce carbon dioxide emissions by advancing the use of energy sources that place less burden on the natural environment, such as solar power and hydrogen, without relying on fossil fuels. Additionally, it is an initiative to transform society as a whole to make these activities an opportunity for economic growth.”(METI Journal ONLINE)

Background to “GX”

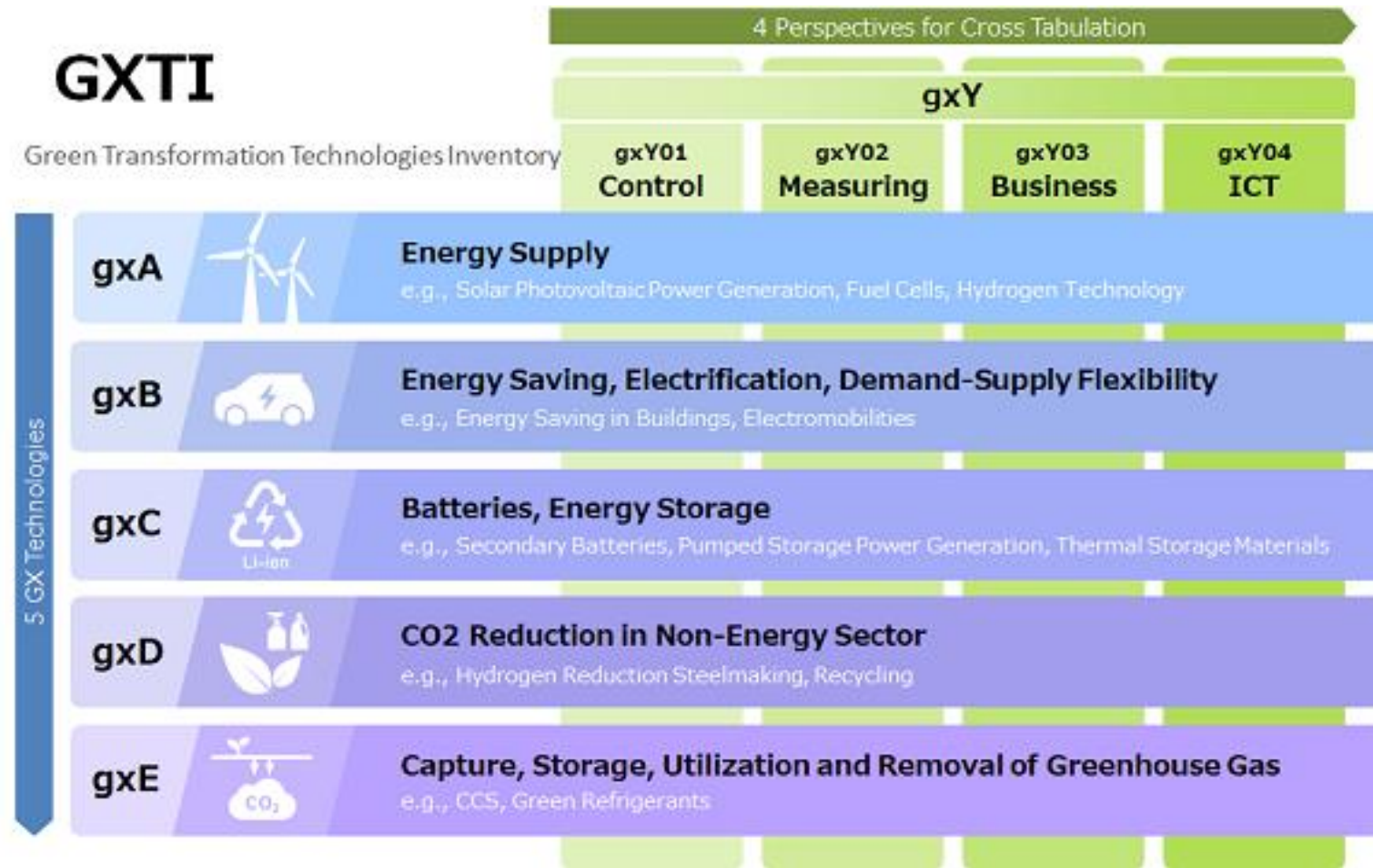
- ◇ To fulfill this commitment, it is considered necessary to transform the very structure of society. Moreover, viewing these efforts as opportunities for economic growth and enhancing industrial competitiveness will be crucial. The initiative required to achieve this is "GX," which stands for the transformation of the entire economic and social system.

Green Transformation & GXTI

GXTI?

- ◇ GXTI (Green Transformation Technologies Inventory) is a technology classification table created by the Japan Patent Office (“JPO”) in June 2022 to provide an overview of technologies related to 'GX.' This classification table also includes patent search formulas for retrieving patent documents categorized under each technology section.

Green Transformation & GXTI

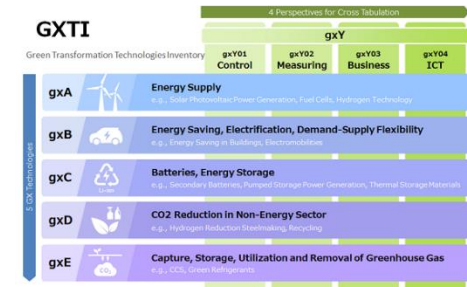


Green Transformation & GXTI

Large Category:

Five perspectives:

- (1) Energy Supply (gxA),
- (2) Energy Saving, Electrification, Demand-Supply Flexibility (gxB),
- (3) Batteries, Energy Storage (gxC),
- (4) CO2 Reduction in Non-Energy Sector(gxD)
- (5) Capture, Storage, Utilization and Removal of Greenhouse Gas (gxE).
- (6) (gxY) is set of four transversal perspectives, including “control-related technology,” “measurement-related technology,” “business-related technology,” and “ICT-related technology.” GxY is the cross tabulation of these four perspectives and five GX technology categories, gxA to gxE. In other words, the number of patent documents in gxY is an inner number of the number of patent documents in gxA-gxE. GxY can be used to identify trends in GX technologies, including each of the transversal perspectives. ("Energy Supply X Control and Coordination," for example)



Medium Category and Small Category:

In the medium category and the small category, important individual technologies in each large category are listed.

Analysis of Specific Technologies in DXTI

- HEVs/EVs and Secondary Batteries

Analysis of Specific Technologies in DXTI

- HEVs/EVs and Secondary Batteries

Transitions in the number of applications for specific technologies in DXTI

Secondary batteries

EVs/HEVs

Table 6-1 Annual trends in the numbers of IPF

(Application to the country/region to be surveyed, the filing years (priority years): 2010 to 2021)

Level 1	Level 2	Level 3	Year of Priority Claim													Total
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
Energy Supply	Biomass	gxA07b Liquid Biofuels	489	498	432	374	259	238	180	152	142	141	145	21	3,071	
Energy Saving, Electrification, Demand-Supply Flexibility	Energy Saving in Buildings (ZEB, ZEH, etc.)	gxB01d High-Efficiency Lighting (LEDs, OLEDs)	5,303	6,157	6,224	6,141	5,460	5,291	5,554	5,404	5,019	4,304	3,533	856	59,246	
	Electromobilities	gxB05a Electric Vehicles, Hybrid Vehicles	1,969	2,428	2,375	2,349	2,318	2,363	3,026	3,494	4,058	3,891	3,322	899	32,492	
	Electrification of Industrial Heat	gxB06b Induction Heating	353	337	323	370	368	358	425	514	524	549	463	98	4,682	
Batteries, Energy Storage	Secondary Batteries	gxC01a Secondary Batteries	4,371	5,060	5,112	4,904	4,882	4,996	5,599	6,416	6,935	7,325	7,451	1,986	65,037	
CO2 Reduction in Non-Energy Sector	Chemical Production from Biomass	gxD01b Cellulose Nanofibers	24	22	46	48	37	50	58	49	73	51	47	8	513	
	Recycling	gxD03a Plastic Recycling	253	287	260	277	236	219	267	242	279	488	577	127	3,512	
Capture, Storage, Utilization and Removal of Greenhouse Gas	CCS, CCUS, Negative Emission	gxE01c CO2 Separation by Membranes	106	125	129	119	129	118	132	139	151	117	115	20	1,400	
		gxE01i CO2 Conversion into Hydrocarbons and Derivatives by Reduction (Methanation, Electrosynthesis, Carboxylation, Artificial Photosynthesis, etc.)	56	54	72	76	65	75	87	98	101	83	98	30	895	
	Measures Against Non-CO2	gxE02b Green Refrigerants (Low GWP Refrigerant)	105	71	110	101	122	117	113	139	121	139	86	12	1,236	

Source: Patent information analysis based on GXTI (summary), Japan Patent Office

Database: Derwent™ Innovation

The number of applications for technologies relating to “EVs/HEVs” and “secondary batteries” is increasing.

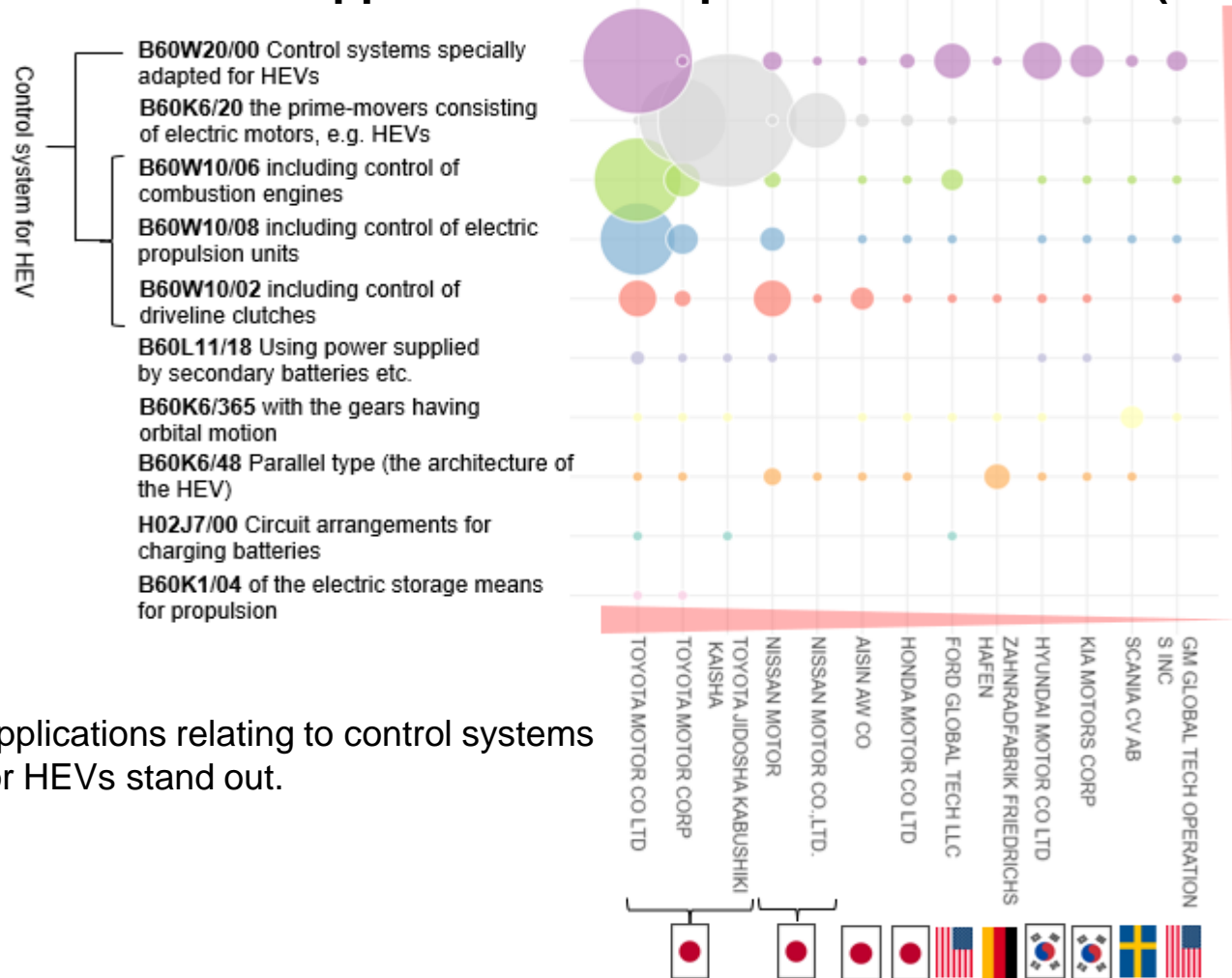
→We analyzed these technologies in more detail.

※Each analysis was performed on 1,000 patent applications that the AI determined to be particularly relevant to the above technologies

Analysis of Specific Technologies in DXTI

- HEVs/EVs and Secondary Batteries

Relation between Applicants and Top IPC about EV/HEV (In 2014)

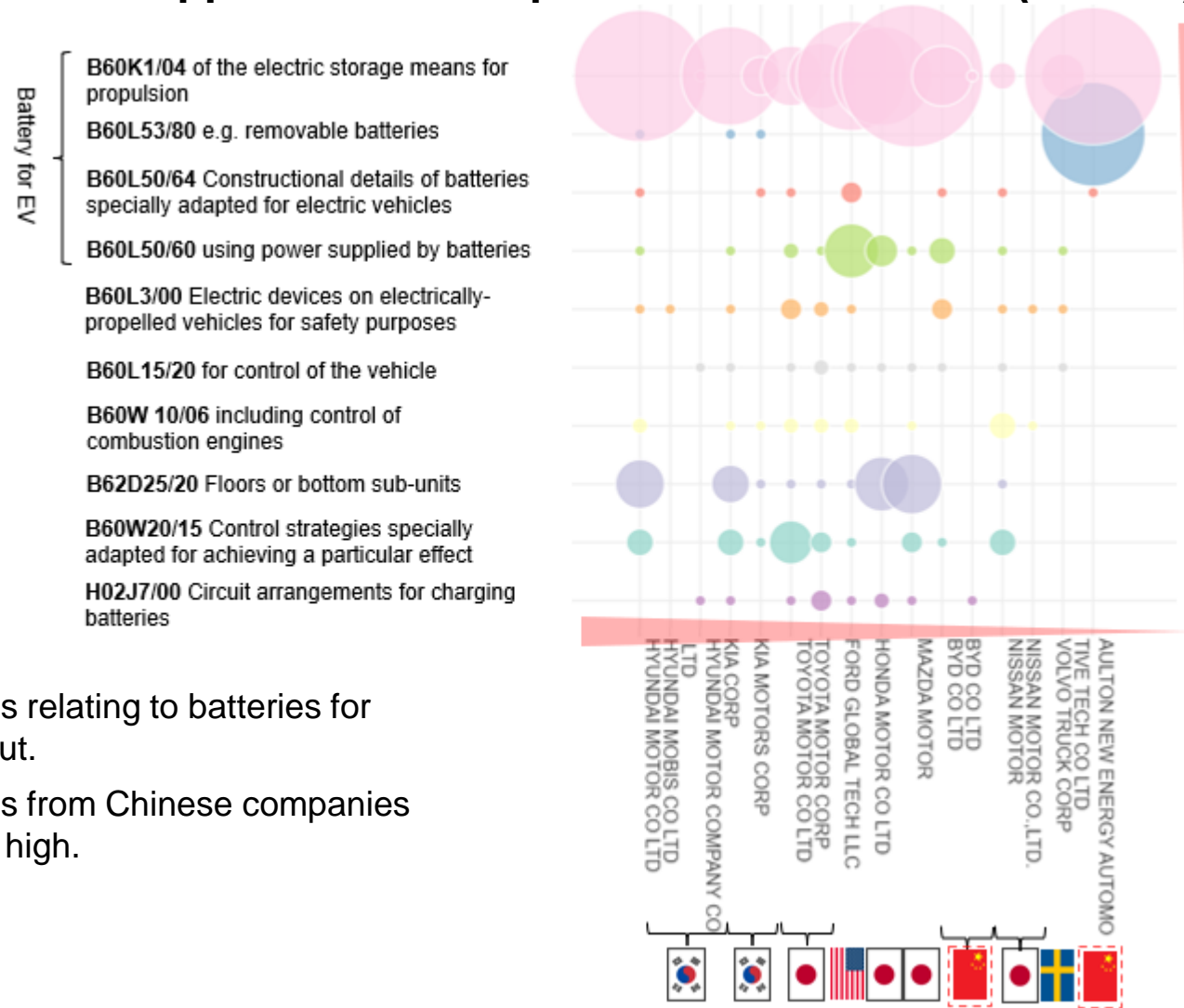


- Applications relating to control systems for HEVs stand out.

Analysis of Specific Technologies in DXTI

- HEVs/EVs and Secondary Batteries

Relation between Applicants and Top IPC about EVs/HEVs (In 2023)

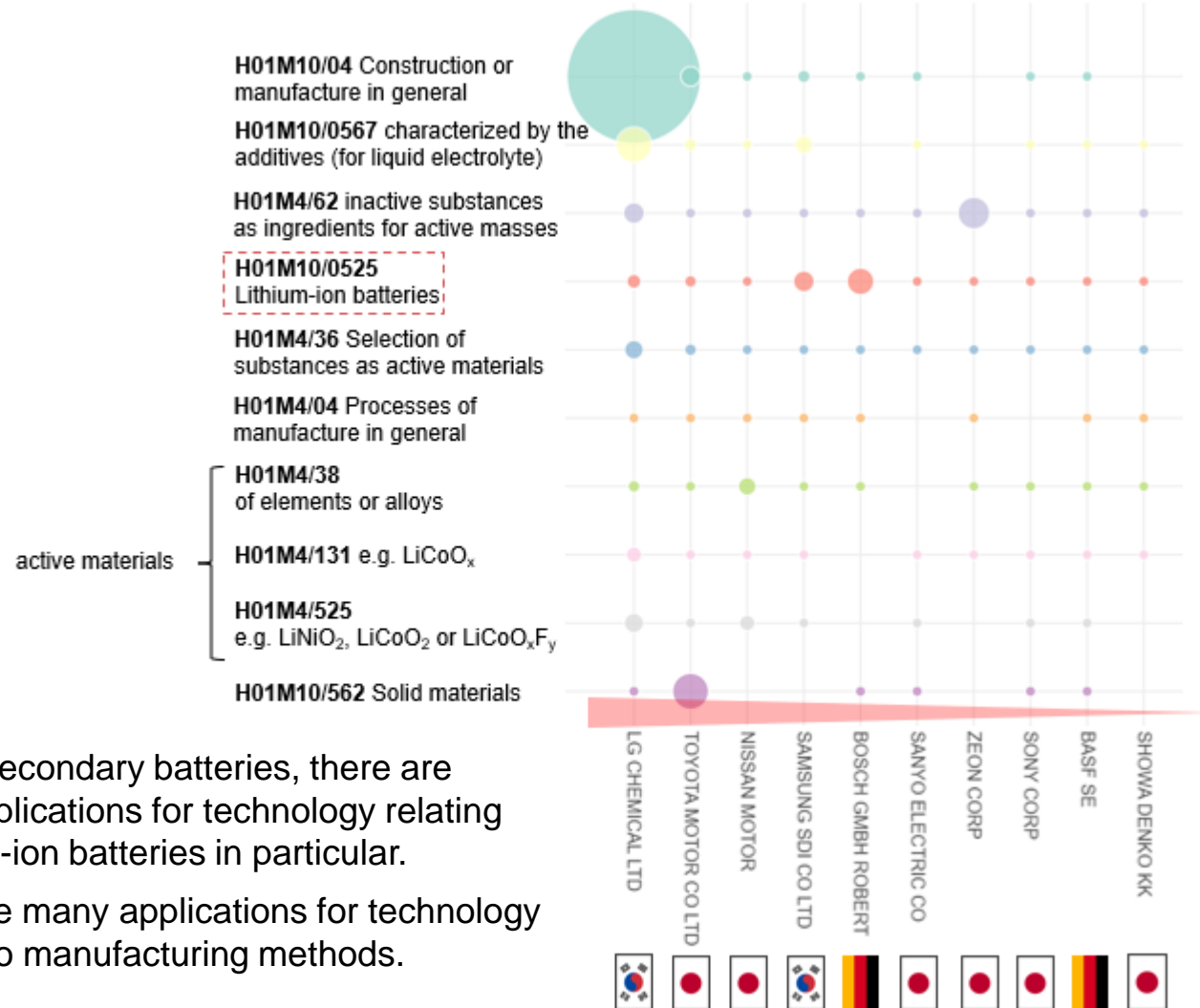


- Applications relating to batteries for EVs stand out.
- Applications from Chinese companies are ranked high.

Analysis of Specific Technologies in DXTI

- HEVs/EVs and Secondary Batteries

Relation between Applicants and Top IPC about Secondary Batteries (In 2014)



- Among secondary batteries, there are many applications for technology relating to lithium-ion batteries in particular.
- There are many applications for technology relating to manufacturing methods.

Analysis of Specific Technologies in DXTI

- HEVs/EVs and Secondary Batteries

Relation between Applicants and Top IPC about Secondary Batteries (In 2023)

H01M4/36 Selection of substances as active materials

H01M4/62 inactive substances as ingredients for active masses

H01M10/562 Solid materials

H01M10/0525 Lithium-ion batteries

H01M4/525 e.g. LiNiO_2 , LiCoO_2 or LiCoO_xF_y

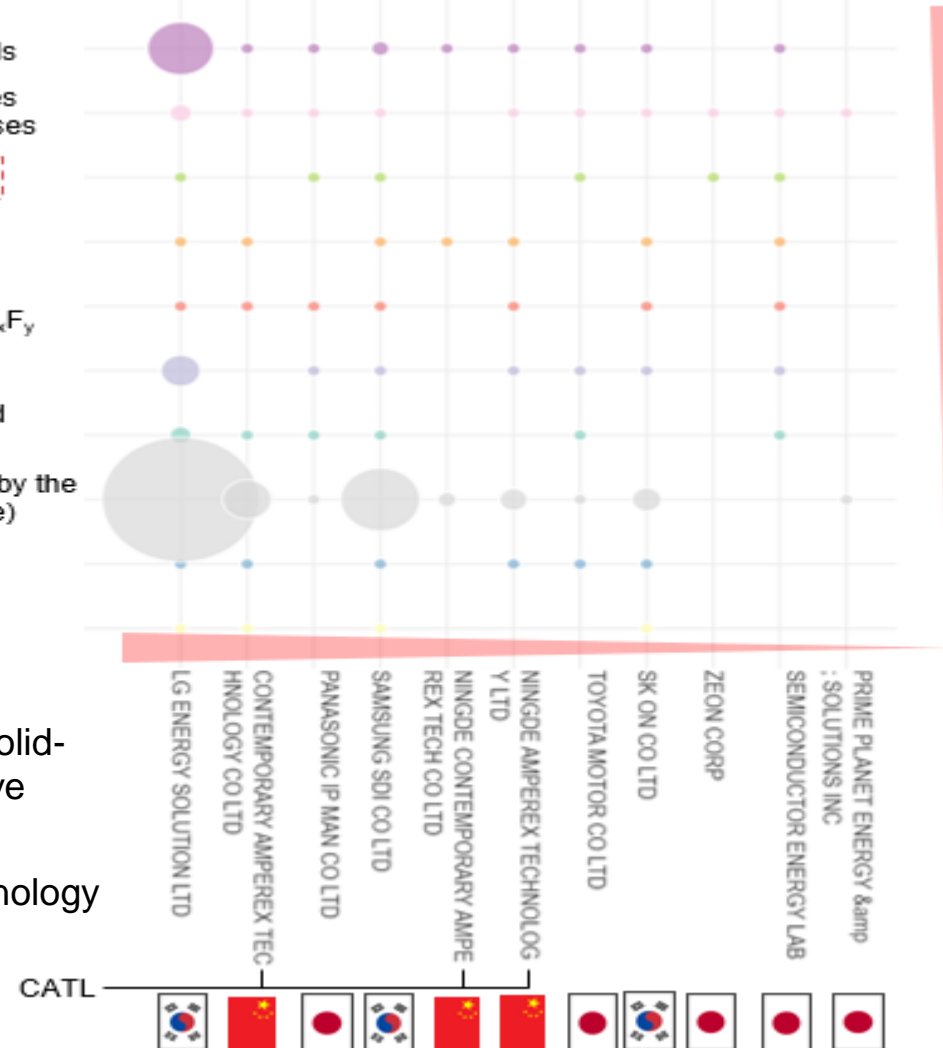
H01M4/131 e.g. LiCoO_x

H01M4/134 Electrodes based on metals, Si or alloys

H01M10/0567 characterized by the additives (for liquid electrolyte)

H01M4/04 Processes of manufacture in general

H01M10/04 Construction or manufacture in general



- Compared to 2014, applications for solid-state battery-related technologies have risen in rank.
- There are many applications for technology related to battery materials.

END

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