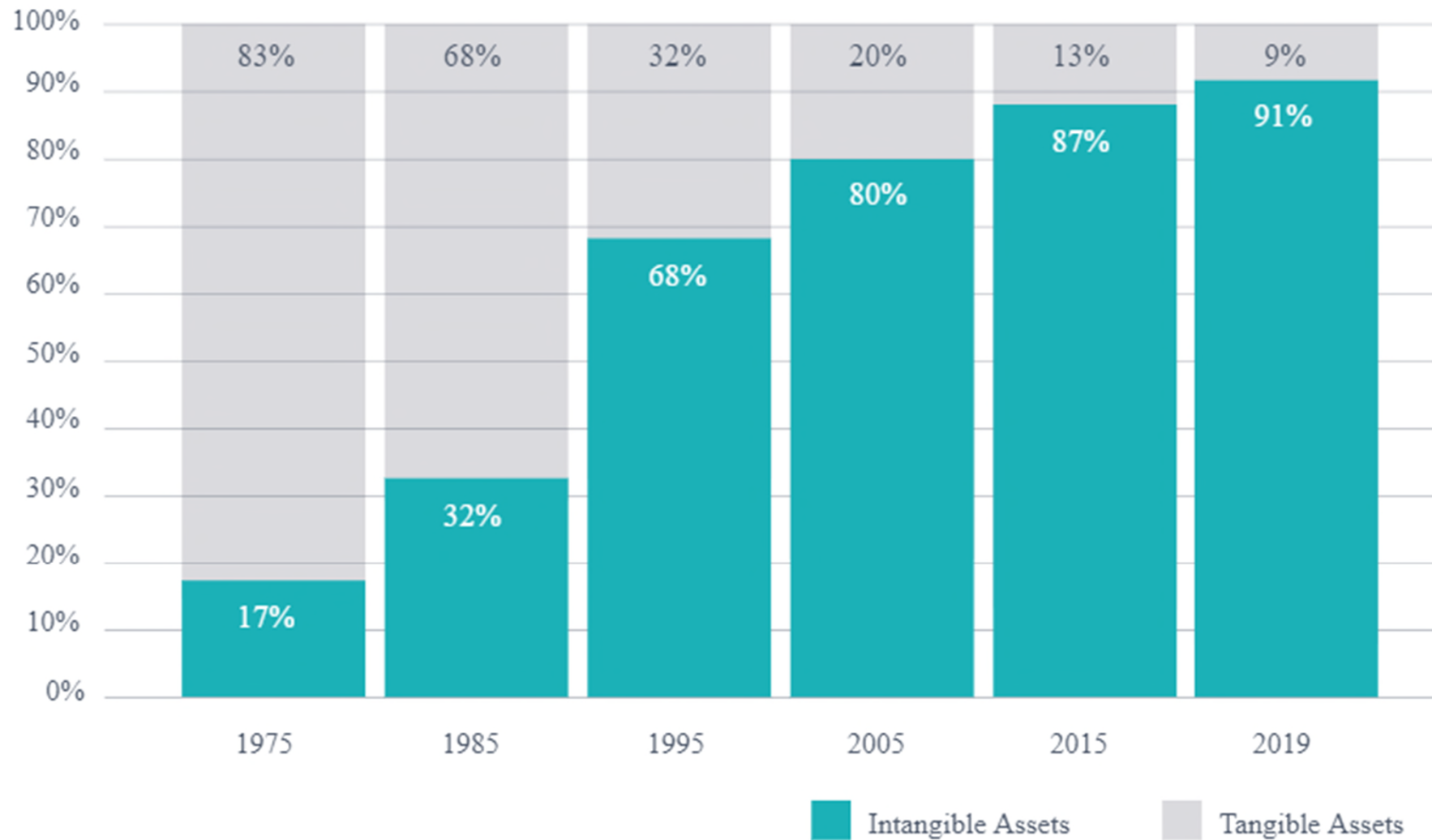


Building globally competitive Canadian cleantech firms through a coherent IP strategy

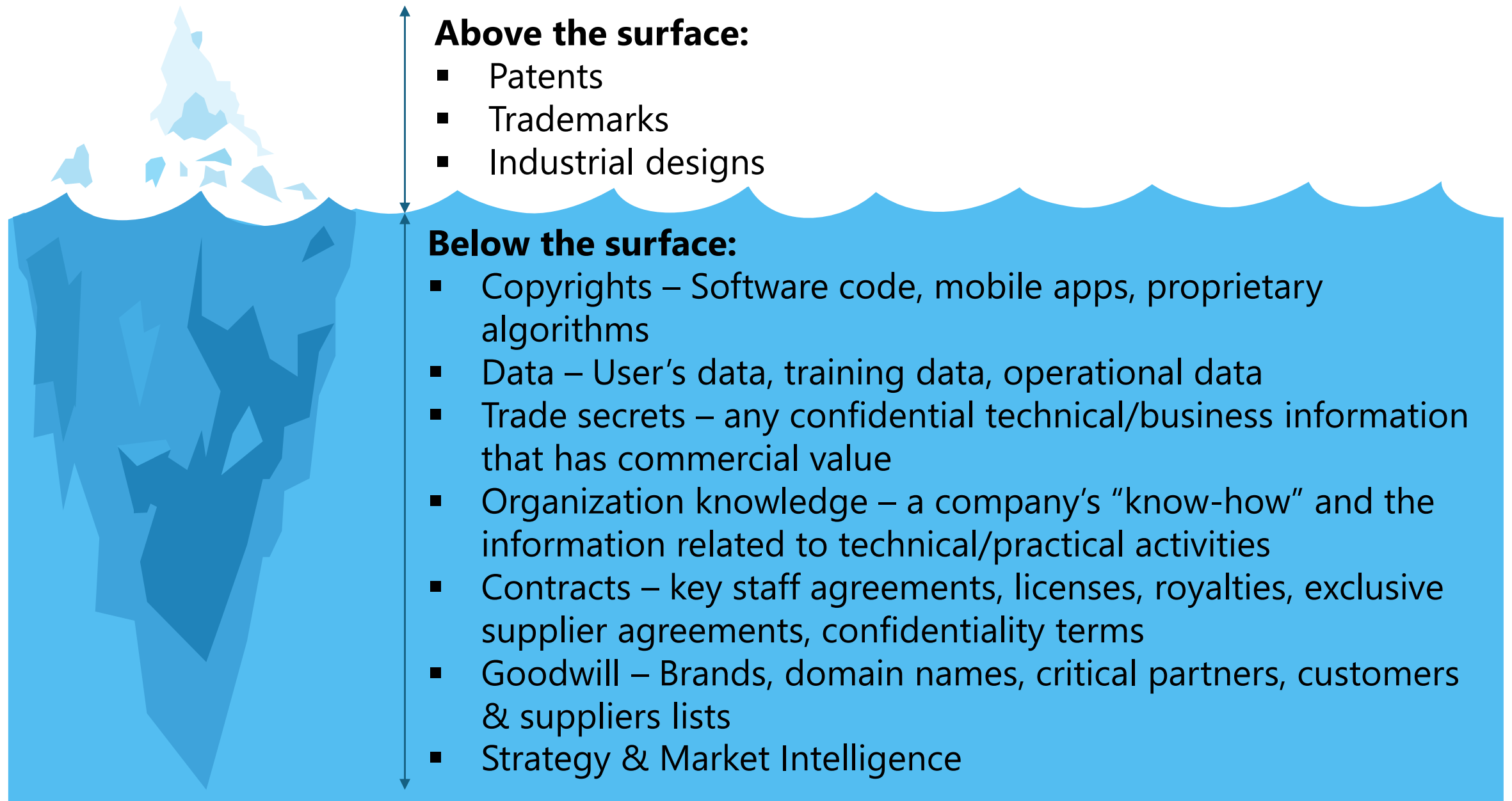
Jim Hinton



The most valuable corporate assets today are **intangible assets**



Intangible assets: **Registered IP** is just the tip of the iceberg



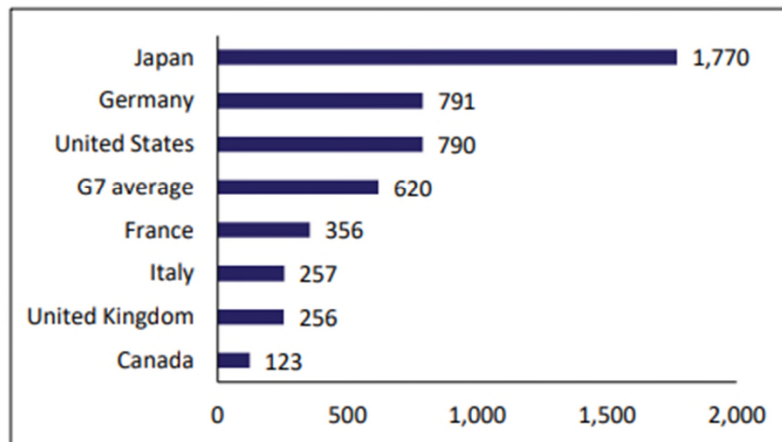
What is success in the Innovation Economy?

- Commercializing innovation assets - IP and data - at scale globally for the benefit of the domestic economy

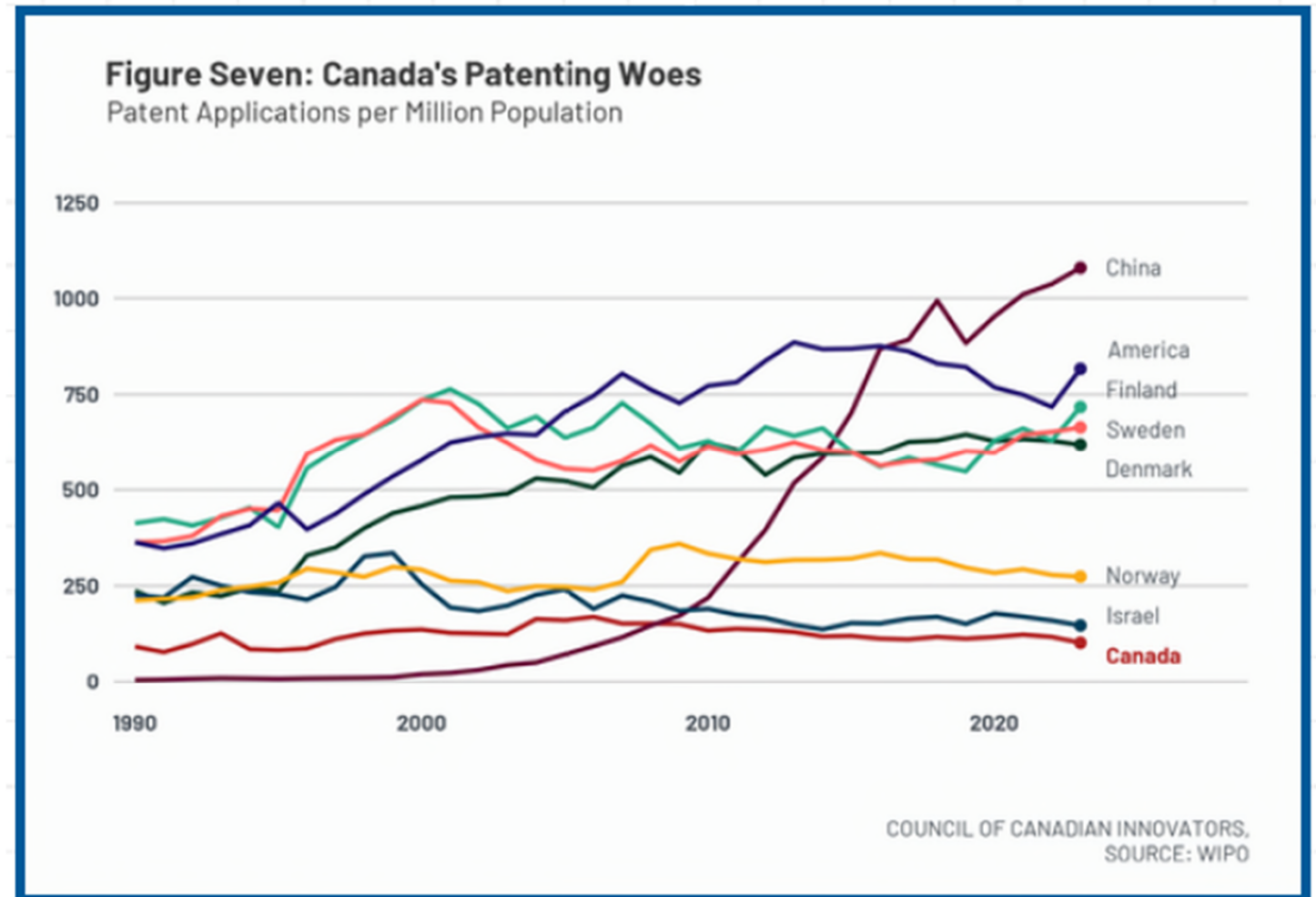
“A zero-sum global arms race is upon us — nations are amassing intellectual property and data stocks. Canada must retain and acquire these high-value innovation assets to achieve economic prosperity.”

Canada is not capturing intangible assets

Figure 1 – Resident Patent Applications per Million Inhabitants, G7 Countries, 2021

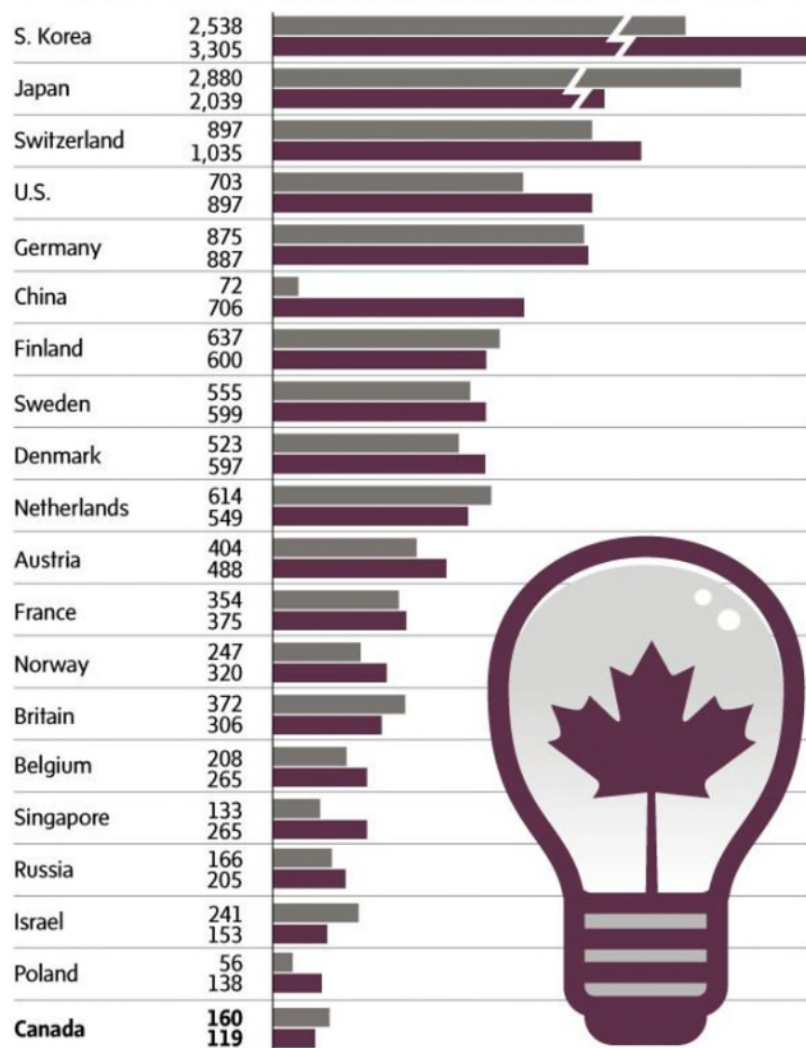


Source: Figure prepared by the Library of Parliament using data from the [World Intellectual Property Organization statistics database](#), last updated in March 2023.



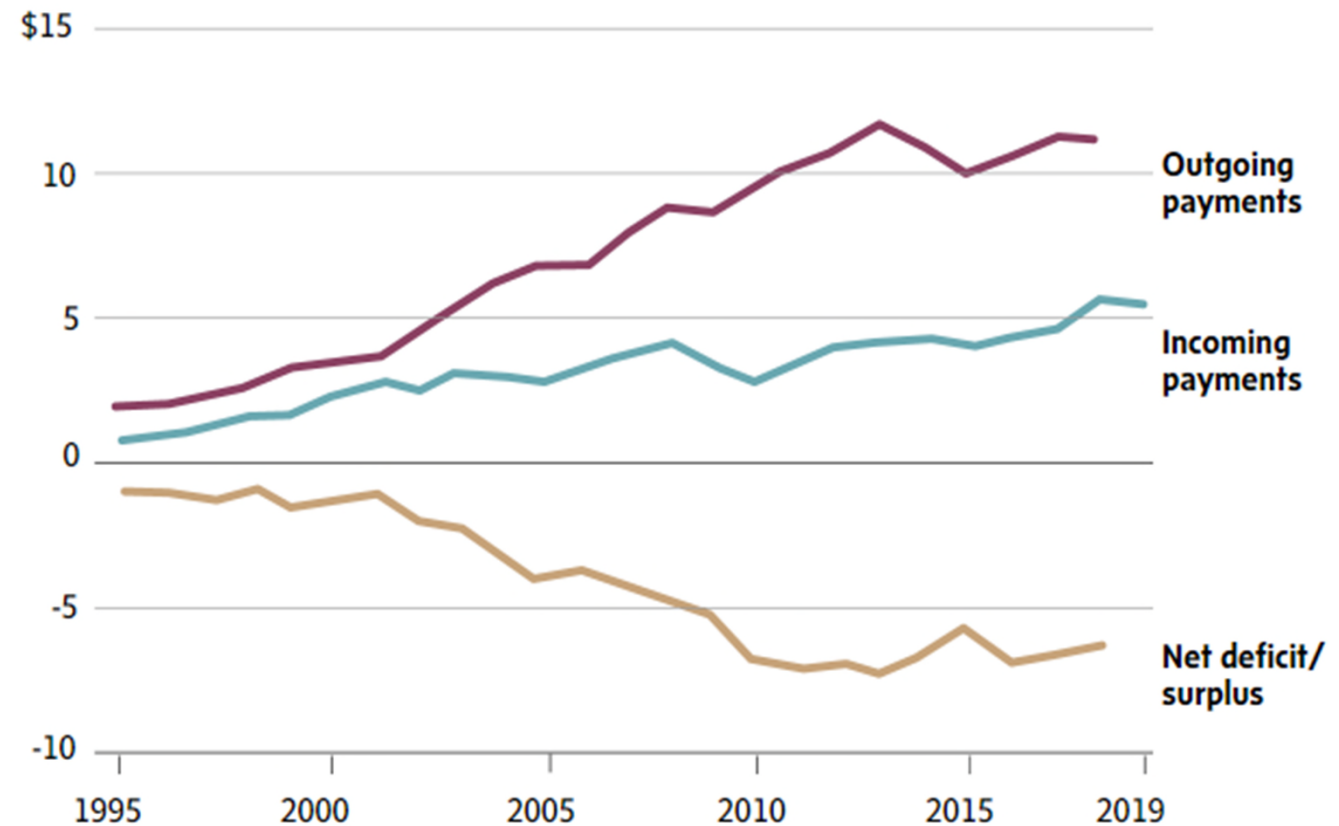
Canada owns almost no IP, and it costs us

Patent applications per million population



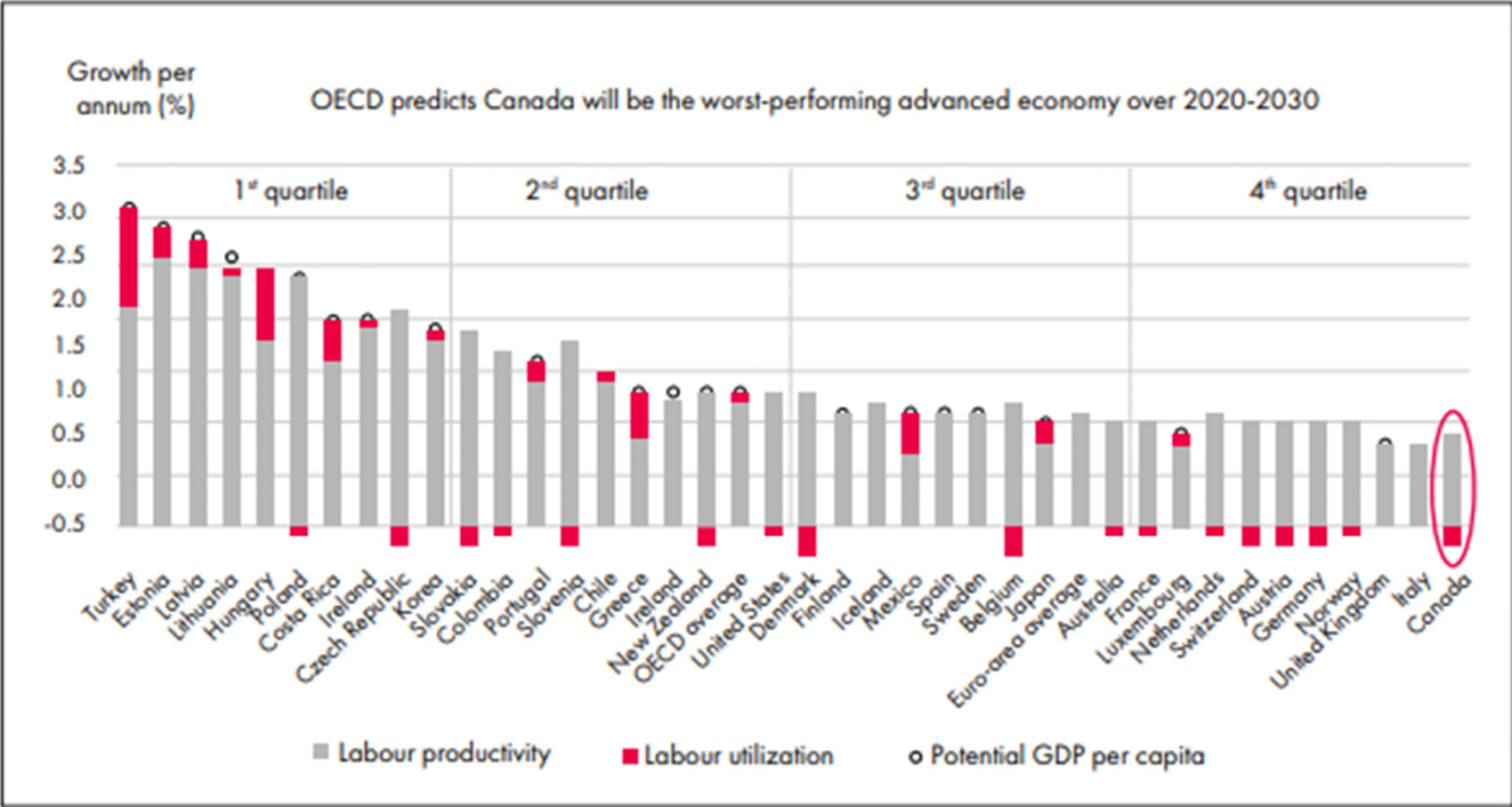
CANADA'S IP TRADE DEFICIT

In billions of dollars



Canada is projected to be the worst performing advanced economy for the next decade and 2030-2060

Figure 1: Projected Real GDP per Capita Growth among OECD Countries (2020-2030)



Source: Williams (2021).

Canada owns almost no Cleantech

5,481,8421

Worldwide Patent
Publications

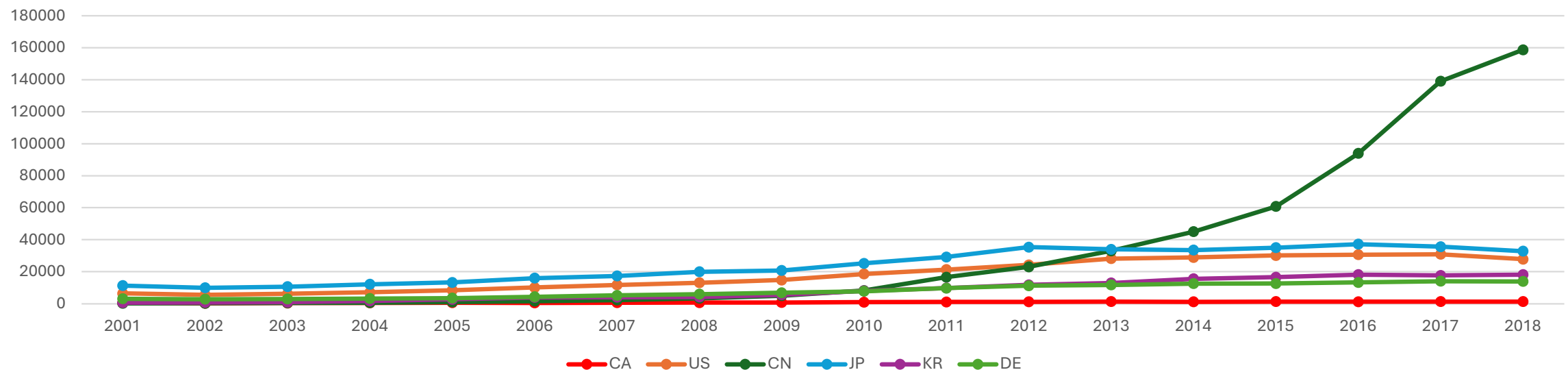
2,409,027

Active Publications (Grants
+ Applications)

17,030
(~0.7%)

Canadian-Owned Active
Publications

Worldwide Filings per Year by Country of Ownership
(CA-Owned vs Top 5 Owners)



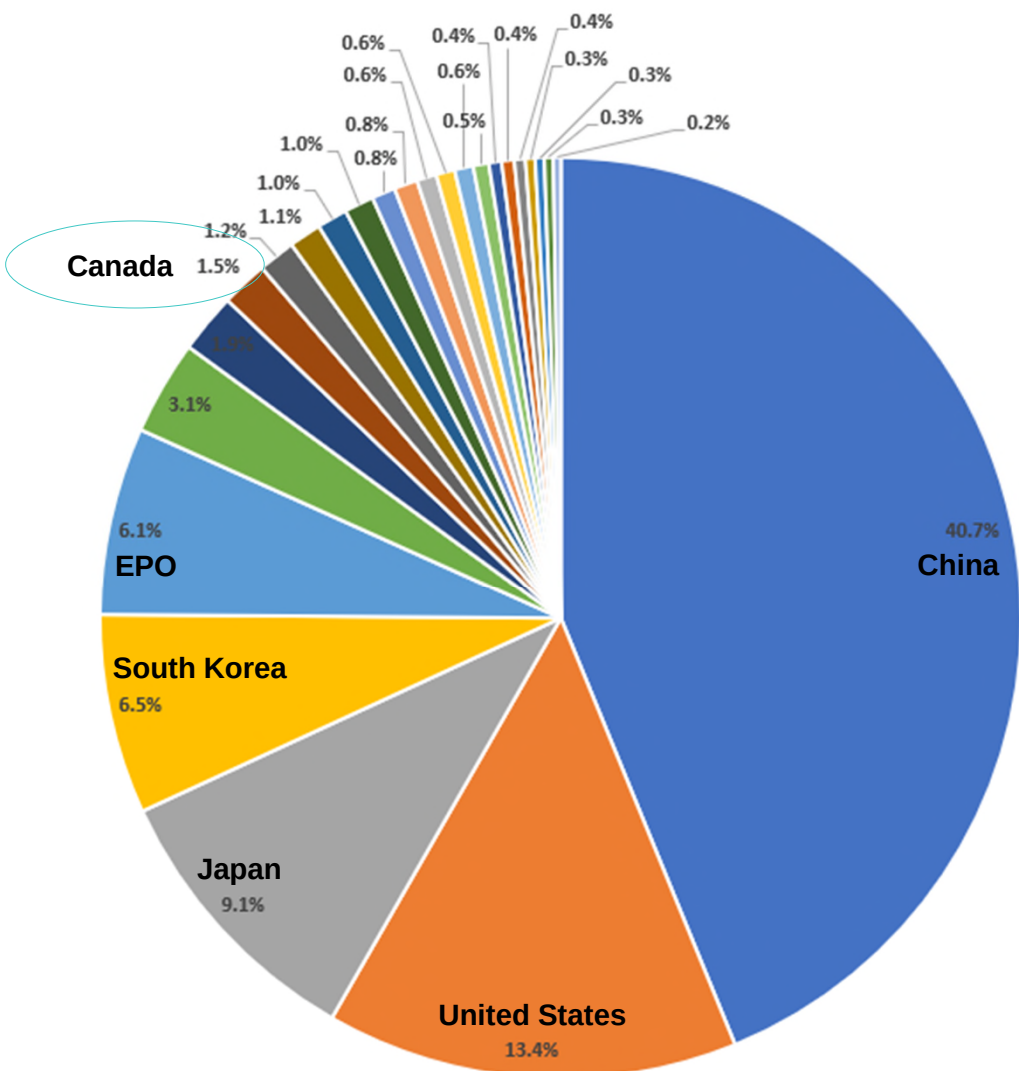
*Source: Utility patents published in the last 20 years, with CPC codes Y02 OR Y04 - Search conducted using Innography®.

Canada doesn't own the **Cleantech in Canada**

Only ~7.7%

of active assets filed in Canada are **Canadian-owned**

Canadian filings are primarily owned by
United States (37%), Japan, Germany, and France (each at ~8%)



Filings per Jurisdiction - Top 25

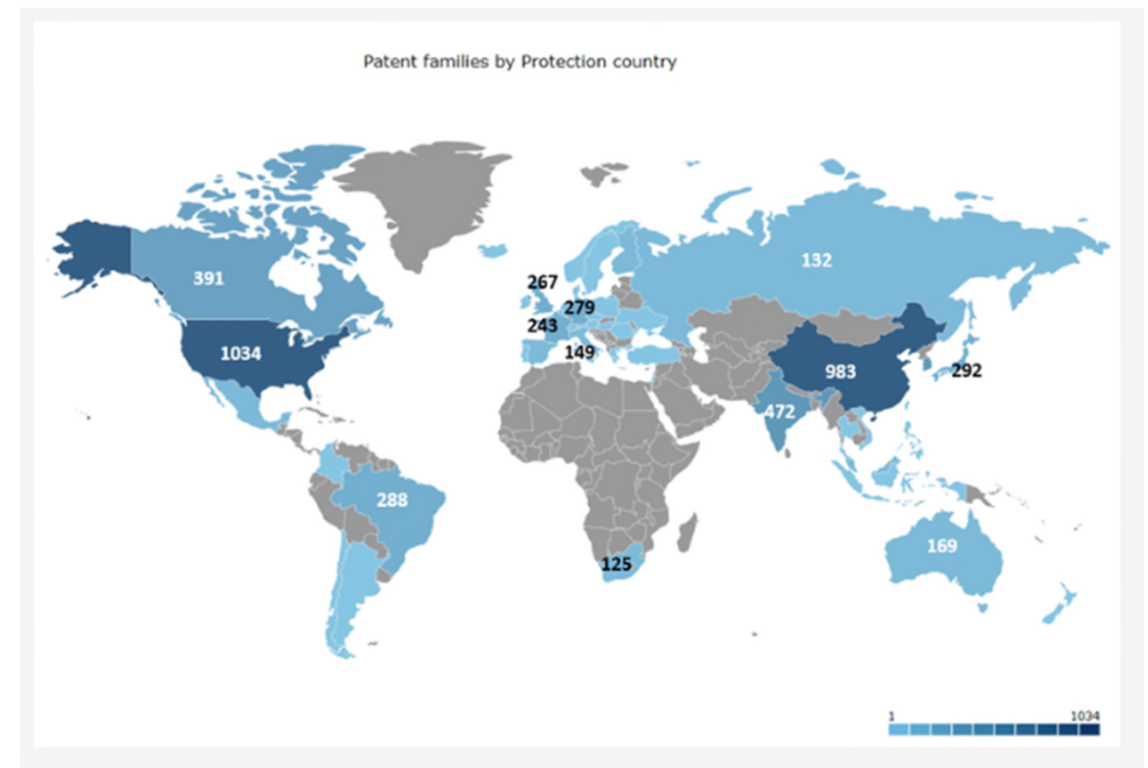
Top 25 Patent Owners

1	Toyota Motor Corporation
2	Panasonic Corporation
3	LG Chem Ltd.
4	General Electric Company
5	Renault SA
6	Hitachi, Ltd.
7	Samsung Electronics Co., Ltd.
8	Robert Bosch GmbH
9	Ford Motor Company
10	Hyundai Motor Company
11	Porsche Automobil Holding SE
12	Toshiba Corporation
13	Honda Motor Co., Ltd.

Top 25 Patent Owners

14	Siemens AG
15	General Motors Company
16	Samsung SDI Co., Ltd.
17	Raytheon Technologies Corporation
18	QUALCOMM, Inc.
19	Chinese Academy Of Sciences
20	Mitsubishi Electric Corporation
21	Mitsubishi Heavy Industries, Ltd.
22	Safran SA
23	Denso Corporation
24	Intel Corporation
25	State Grid Corporation Of China

Biofuel patent landscape



Total number of patent family / geographical Area

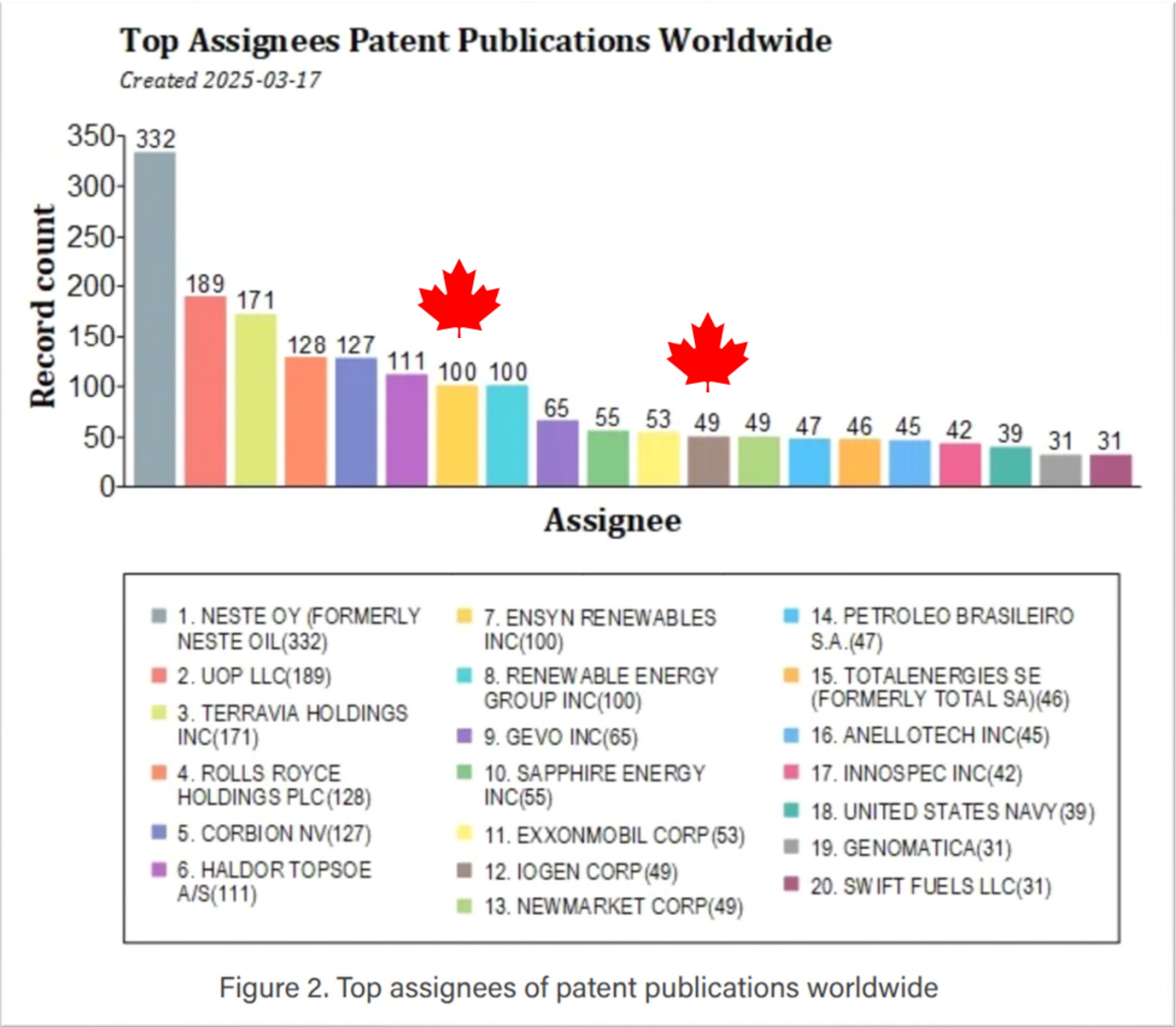
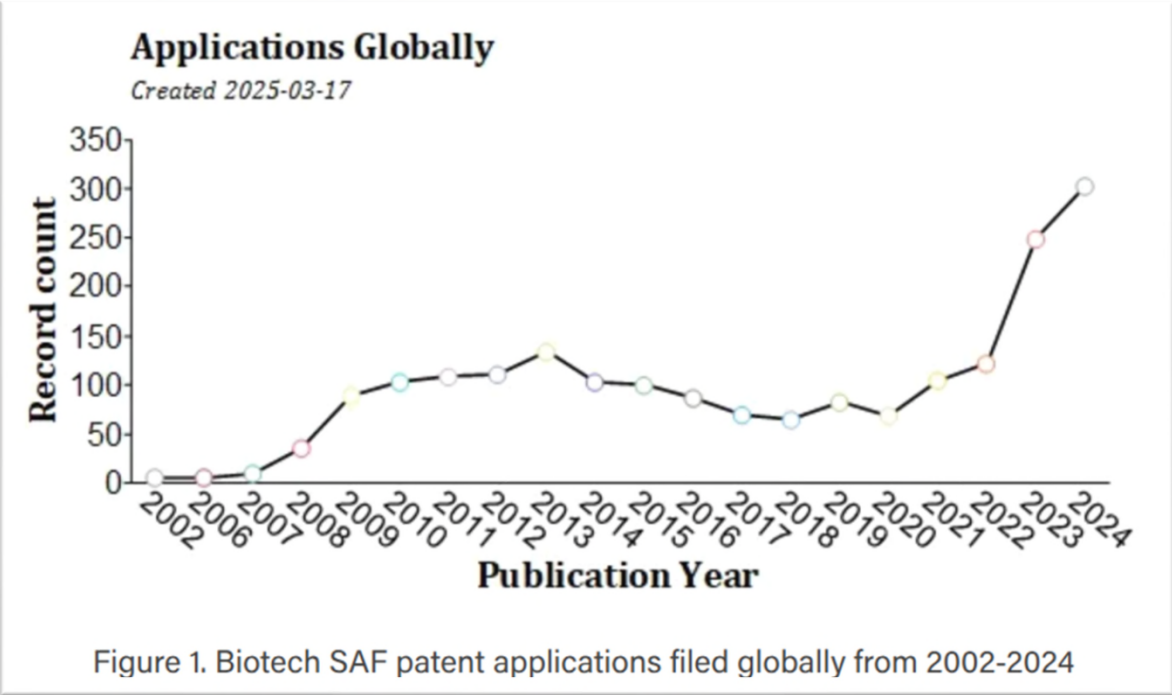
Total number of priority filings in each geographical area

*Years incomplete due to the 18 months delay of publication

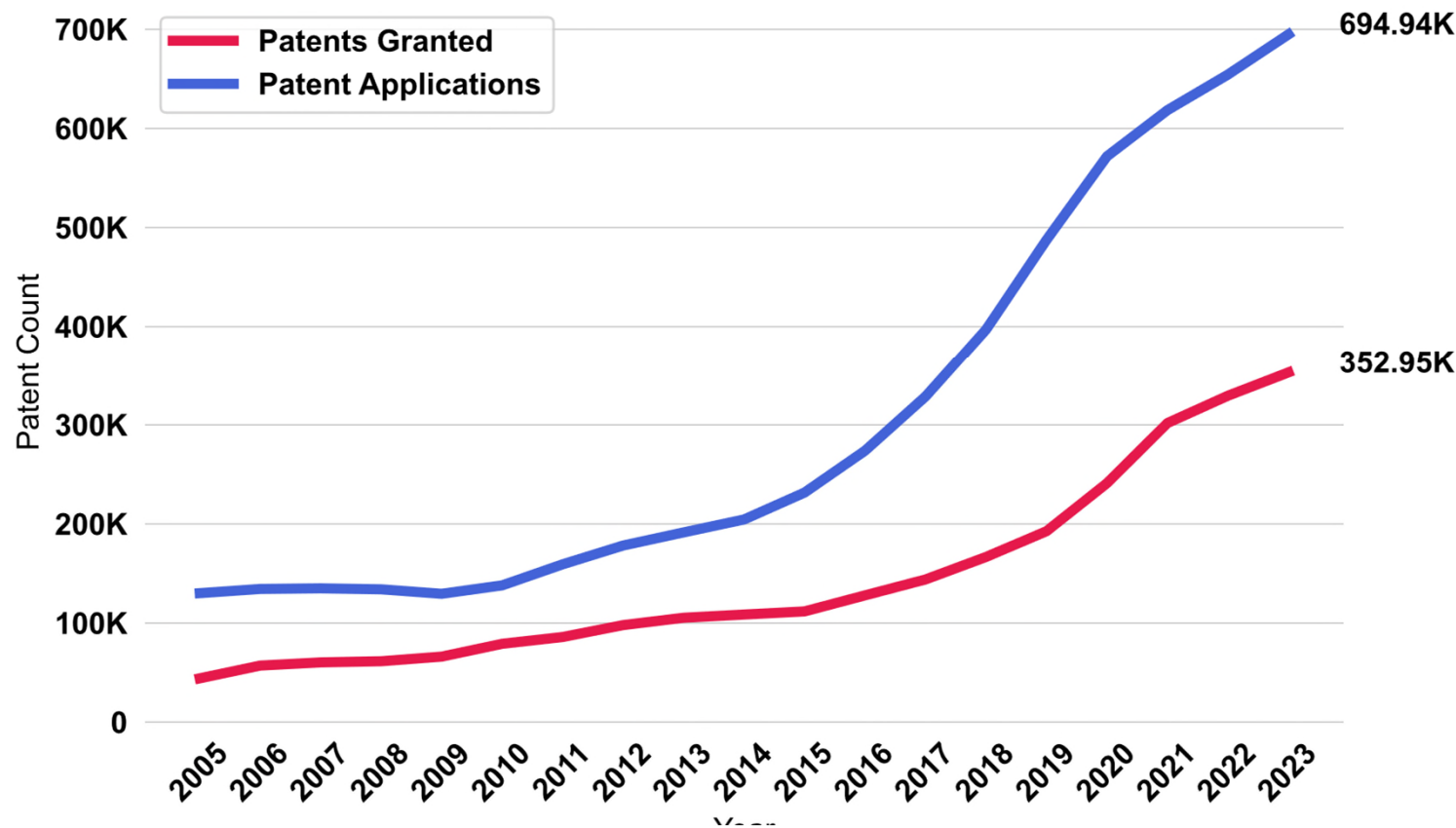
Major 1st filling office

Top priority countries for each geographical area

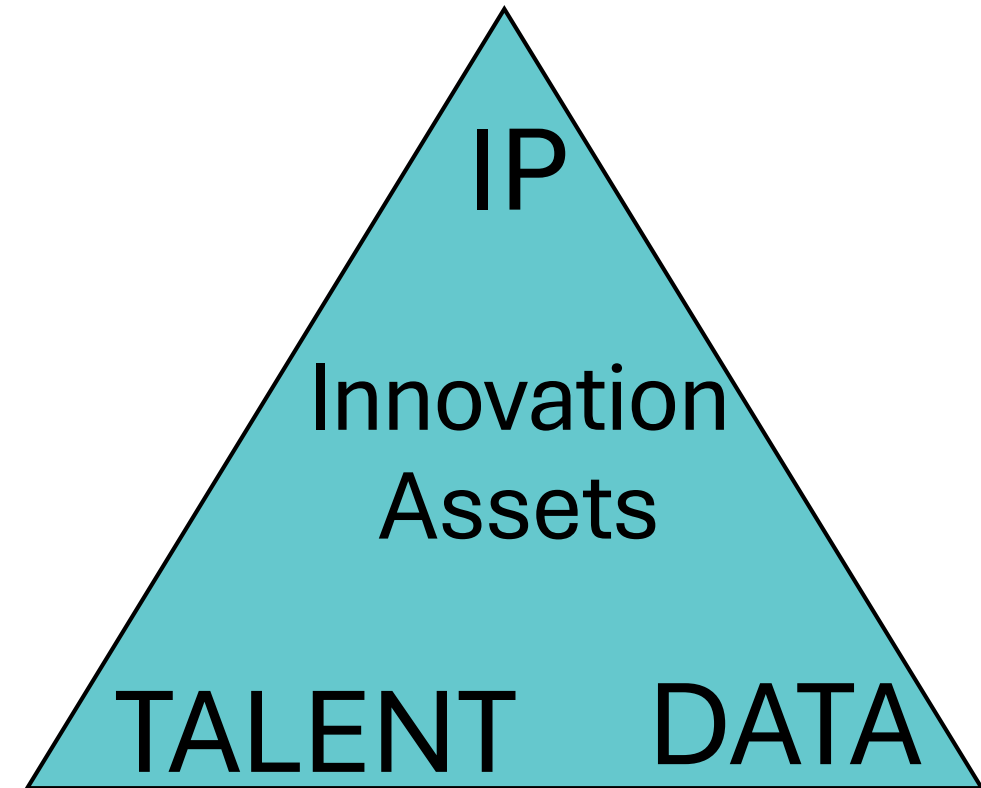
Sustainable Aviation Fuel Patent Landscape



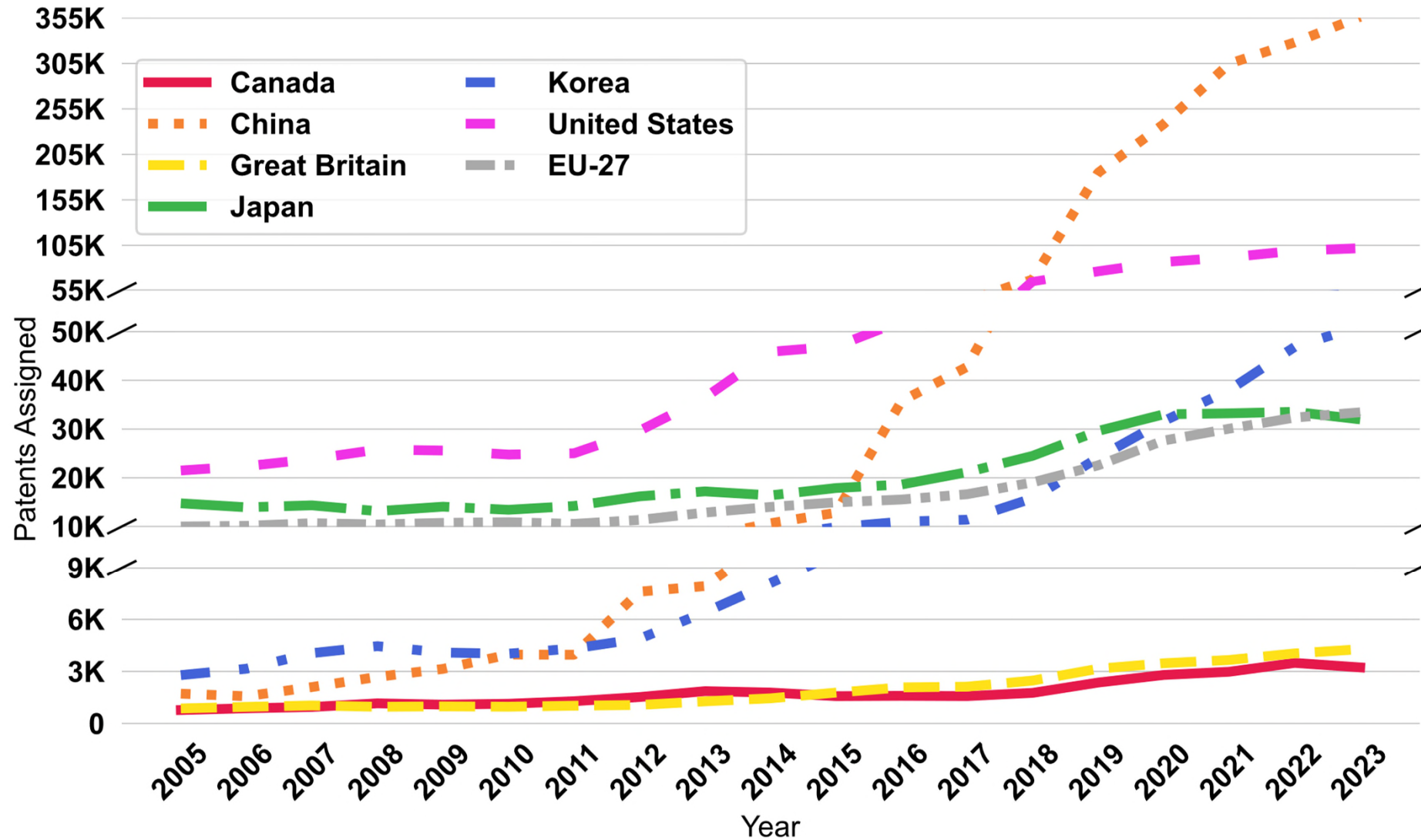
Every business is a data business: The rise of AI Ownership



Number of AI patent grants and applications by year 2005-2023

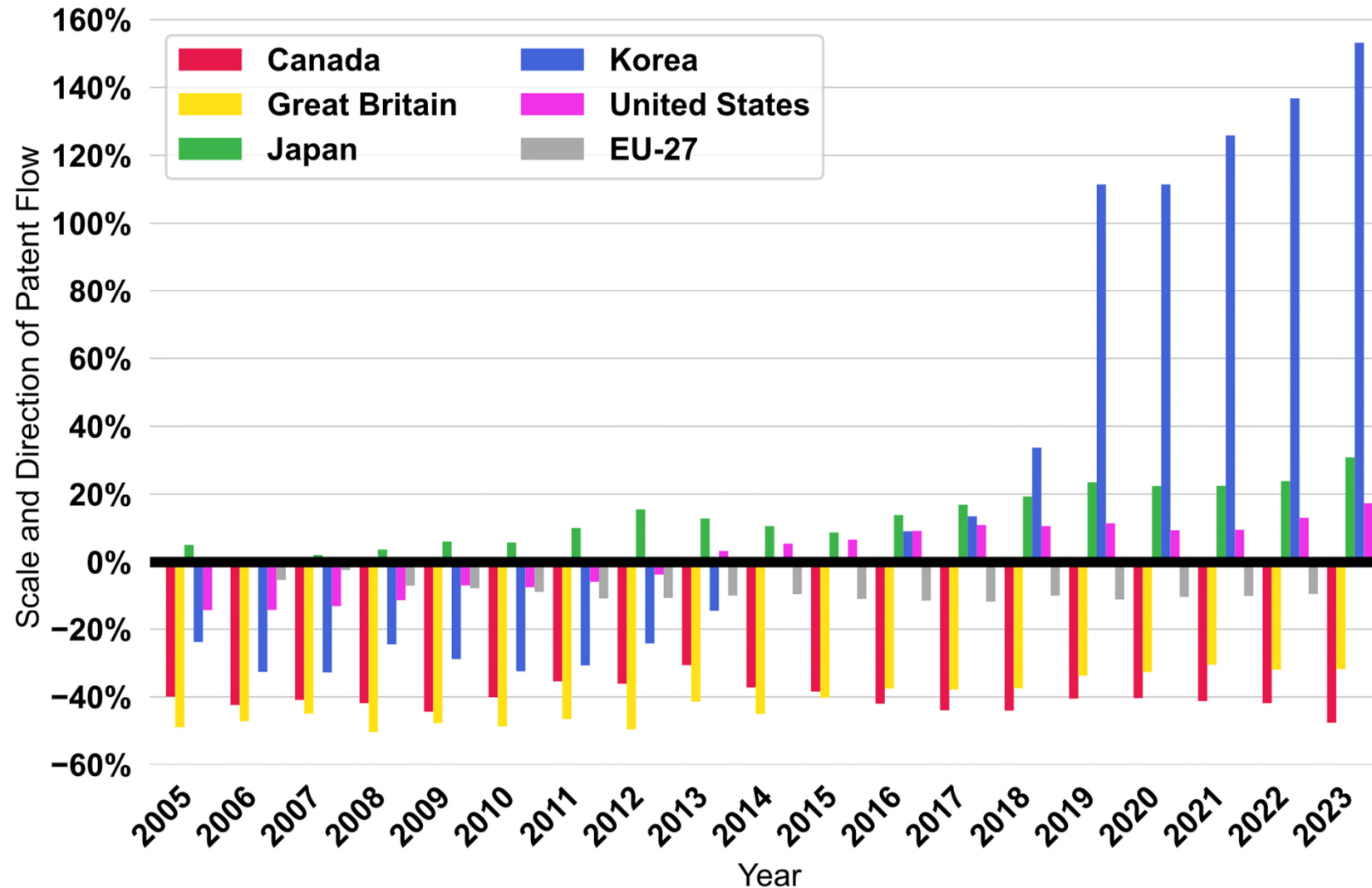


Canada doesn't own AI



Number of Assigned AI Patents, by Country, from 2005 to 2023

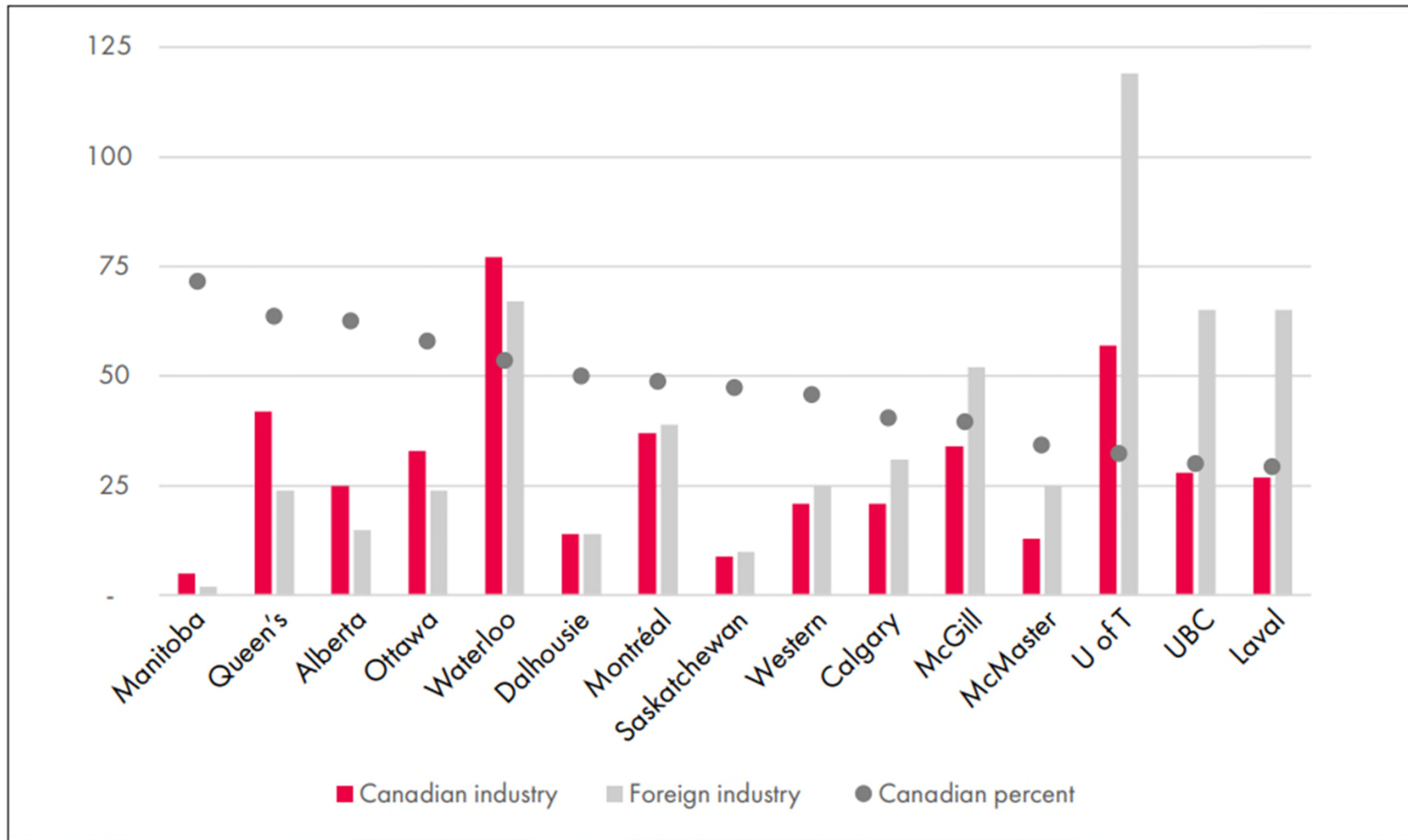
Canada creates AI but others own AI



AI Patent Ownership Retention & Attraction, from 2005 - 2023

Canada's Universities: negative flow

Figure 9: Industry Ownership Type by University



Source: Ibid.

Note: The descending line of grey bullets captures the percent of Canadian IP ownership of each of the U15 universities

Canadian Universities get a failing grade

Class average: 47 percent

Honours (Grade A): These universities excel by providing significant FTO for Canadian innovators through a high percentage of Canadian-owned IP.

→ No universities scored this grade.

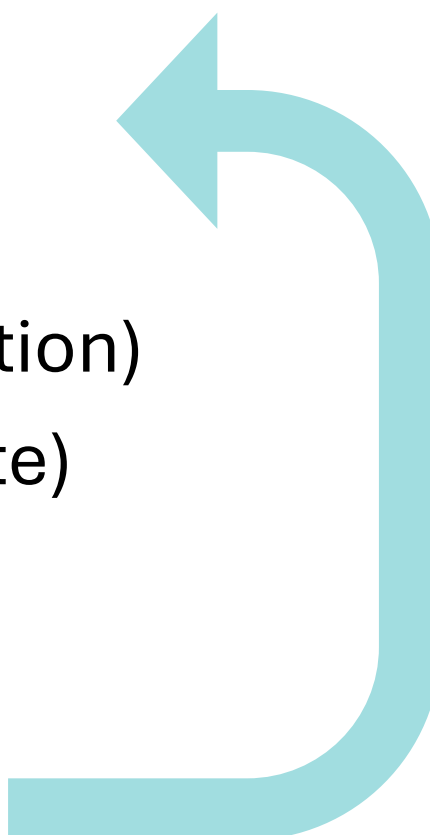
Pass (Grade B, C, D): These universities provide some or little FTO for Canadian innovators through a moderate percentage of Canadian-owned IP.

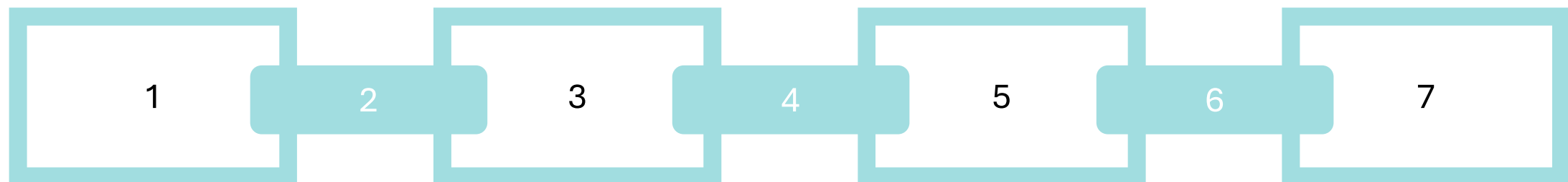
1. University of Manitoba: B (71%)
2. Queen's University: C (64%)
3. University of Alberta: C (63%)
4. University of Ottawa: C (58%)
5. University of Waterloo: D (53%)
6. Dalhousie University: D (50%)

Fail (Grade F): These universities provide a net negative impact on Canadian innovators' FTO because they generate more IP that is or becomes foreign owned.

7. Université de Montréal: F (49%)
8. University of Saskatchewan: F (47%)
9. Western University: F (46%)
10. University of Calgary: F (40%)
11. McGill University: F (40%)
12. McMaster University: F (34%)
13. University of Toronto: F (32%)
14. University of British Columbia: F (30%)
15. Université Laval: F (29%)

How to **extract value** from today's economy

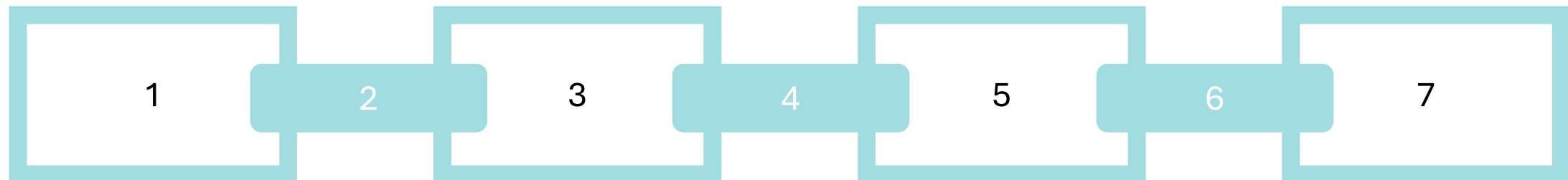
- 
1. Create technology (invention)
 2. Own the technology (IP)
 3. Manufacture the technology (physical production)
 4. Commercialize (get \$, need freedom to operate)
 5. Use technology (benefit)
 6. Collect data (control data)
 7. Monetize data (get \$ for data, AI, compute)
- 



How to **extract value** from today's economy

1. Create technology (invention)
2. Own the technology (IP)
3. Manufacture the technology (physical production)
4. Commercialize (get \$, need FTO)
5. Use technology (benefit)
6. Collect data (control data)
7. Monetize data (get \$ for data, AI, compute)

Canada doesn't do any of these things well, so while Canada pays for the work, Canada doesn't get the value.



Elements of a successful innovation economy

Increase productivity and drive economic prosperity:

1. **IP Education:** companies need to know the rules of the game
2. **IP Generation:** companies must capture what they create
3. **IP Retention:** because wealth accrues to the IP owner, ensure that Canadian companies are the ones commercializing/making money from the IP
4. Collective efforts to increase **freedom to operate** including patent collectives, data collectives; every sector is an IP sector. Without this Canada will not improve its position.
5. **Whole of government approach** to increasing freedom to operate (FTO) for Canadian companies, across all innovation and government programs: procurement, competition policy, digital policies, tax policy, standards, cyber, international trade, regulatory...

IP Resources for Innovative Firms



[Canada.ca](#) > [National Research Council Canada](#) > [Support for technology innovation](#)

NRC IRAP support for intellectual property



IP Innovation Clinic
15th Anniversary Est. 2010

Western Intellectual Property & Innovation Legal Clinic

- **Innovation Asset Collective:** \$67M program, patent pool, IP insurance, IP funding – data driven clean tech firms
 - <https://www.ipcollective.ca>
- **IP Ontario:** up to \$300k in funding for IP work
 - <https://www.ip-ontario.ca>
- **Elevate IP:** \$100k+ in funding for IP work
 - <https://elevate-ip.ca>
- **IRAP IP Assist:** \$30k+ for IP strategy work
 - <https://nrc.canada.ca/en/support-technology-innovation/nrc-irap-support-intellectual-property>
- **IP law clinics:** pro bono support
 - <https://www.yorku.ca/osgoode/ip-innovation-clinic>
 - https://law.uwo.ca/legal_clinics/wipilc/index.html

Contact: Jim@owninnovation.ca

