PCT Yearly Review 2022

WIPO

Patent Cooperation Treaty Yearly Review 2022

The International Patent System

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Contents

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Further information

Online resources

The electronic version of the *Review*, as well as the underlying data used to compile the figures and tables, can be downloaded at *www.wipo.int/ipstats*. This webpage also provides links to the IP Statistics Data Center – offering access to WIPO's statistical data – and the IP Statistical Country Profiles.

The following other patent resources are available on WIPO's website:

PCT homepage
WIPO's gateway to PCT resources for applicants, offices and the public.

PCT Newsletter
PCT monthly publication containing information about the filing of PCT applications and news about changes relating to the PCT.

PATENTSCOPE
Enables the search and download of published PCT applications and national/regional patent collections. Also provides access to related patent and technology information programs and services.

Contact information

Department for Economics and Data Analytics
Website: *www.wipo.int/ipstats*
Email: *ipstats.mail@wipo.int*

Key numbers for 2021

664,700 (–1.7%)
PCT national phase entries

277,500 (+0.9%)
PCT applications filed

129 (+5)
Countries in which PCT applications were filed

56.9% (+0.1 percentage point)
Share of PCT national phase entries in worldwide non-resident patent application filings

16.5% (+1 percentage point)
Share of women among PCT inventors

Note: The latest available year for PCT national phase entry data is 2020.

Special theme: How the COVID-19 crisis affected PCT application filings

The COVID-19 crisis prompted sudden and profound changes in innovation practices and strategies. While many of these changes concerned homegrown activities, innovators also adjusted their international outlook. This year's Special theme focuses on this international dimension, as seen through the lens of PCT application filings. It does so, in part, by comparing the evolution of PCT filings during the course of the pandemic to what occurred in previous economic crises. The trends and patterns that emerge provide useful insights, not just into how innovators responded, but also more broadly into the very nature of the crisis itself.

During previous crises, PCT application filings decelerated and declined in some proportion to economic output (figure S1). Pressure on corporate intellectual property (IP) budgets, curtailed innovation financing and subdued startup activity were the main transmission channels.[1] The COVID-19 crisis was no different in this respect. PCT application filings were growing at an exceptionally fast rate at the outset, but decelerated quickly from March 2020 onwards, before settling at around zero growth 12 months into the crisis. That said, the overall crisis impact seems more muted in the case of the COVID-19 pandemic compared to the bursting of the dotcom bubble in the early 2000s and the Great Recession of the late 2000s.

What explains the more muted crisis response to the COVID-19 pandemic?

One key difference between the COVID-19 pandemic and previous crises is that applications from China grew during the intervening years to account for one-fifth of overall PCT applications and kept on growing at a high rate, especially throughout 2020.[2] Indeed, if we were to subtract Chinese applications from the total, a crisis path would be revealed very similar to that taken by the Great Recession (figure S1). However, the COVID-19 trend may still be considered to compare favorably with that of the Great Recession, given that overall economic output declined more steeply during the former than it did the latter.[3] The unique sectoral impact of the COVID-19 crisis – with the relatively more innovation-intensive service activities less heavily hit – may be one explanation. In addition, financing for innovation continued to be available throughout most of the pandemic, except in the initial stages of the crisis, when overall financial market uncertainty briefly soared.[4] This differs notably from both the Great Recession, when broader financial market turbulence curtailed innovation financing, and the dotcom crisis, which resulted directly from over-exuberant innovation finance.

1 See, for example, Hardy, B. and C. Sever (2020). Financial Crises and Innovation, *BIS Working Paper No. 846*. Bank for International Settlements. Available at SSRN: https://ssrn.com/abstract=3549545.

2 PCT applications from China declined from July 2021 onwards. This reflects the phasing out of patent filing subsidies announced by the Chinese government (see https://english.cnipa.gov.cn/art/2021/5/20/art_1340_159520.html).

3 According to the International Monetary Fund (IMF), real global GDP declined by 0.1% in 2009, compared to 3.1% in 2020. For advanced countries, the declines were 3.3% in 2009 and 4.5% in 2020 (see https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD).

4 See *Global Innovation Index: Tracking Innovation through the Covid-19 Crisis*, World Intellectual Property Organization, p. 16.

Did the COVID-19 crisis prompt a shift in the kinds of technologies for which innovators sought international patent protection?

The nature of the crisis response – in which technological innovation played a central role – makes this an especially relevant question. Figure S2a charts the percentage point changes in the share of selected technology fields in the quarters preceding the onset of the pandemic and those thereafter. It shows that the three health-related technology fields – biotechnology, medical technology and pharmaceuticals – saw their respective shares of PCT applications increase. To some extent, this increase came at the expense of information and communication technologies – notably, audio-visual technology and digital communication – which had been among the fastest growing fields before the pandemic, only to then see a decline in filing activity in the months following the pandemic's onset.

That health-related technology fields showed the greatest dynamism during the course of the pandemic might seem logical. But it is not entirely obvious. Most PCT applications are based on priority applications filed up to 12 months before. In other words, the inventions underlying most of the PCT applications filed in 2020 and early 2021 predate the pandemic by up to a year. The shift in technology fields illustrated in figure S2a is therefore primarily a reflection of a shift in the desire of patent applicants to seek protection for their inventions beyond national borders. One interpretation of this shift is that the pandemic led innovators to re-assess the commercial potential of their inventions, with upgraded prospects for health-related technologies.

One way of assessing the invention response to the pandemic is by analyzing PCT applications according to the date of priority filing. However, the time window for doing this is currently narrow. To illustrate this point, BioNTech filed a priority patent application on its coronavirus vaccine at the European Patent Office (EPO) on April 22, 2020. The company then filed a PCT application based on this EPO priority patent application on April 16, 2021.[5] WIPO published the PCT application on October 28, 2021. This timeline is typical, as it takes about 18 months from the date of priority filing for a PCT application to be published. This means that detailed information on PCT applications for inventions that took place after March 2020 – the onset of the pandemic – only started to emerge in the final quarter of 2021.

Figure S2b shows percentage point share changes in the same technology fields as figure S2a, but in this case based on the priority filing date of PCT applications rather than the international filing date. In addition, due to its more limited time-window, figure S2b presents monthly rather than quarterly changes up to July 2020. The share changes shown similarly suggest growth occurred in the health-related technology fields. Except for pharmaceuticals, however, there is no visible structural break attributable to the onset of the pandemic. Neither is there such a break to be seen for the other technology fields, except possibly digital communication, which underwent strong growth in the months following the pandemic's onset. However, a fuller assessment of the invention response to the crisis will need to await the availability of additional data from after the pandemic's onset.

Conclusion

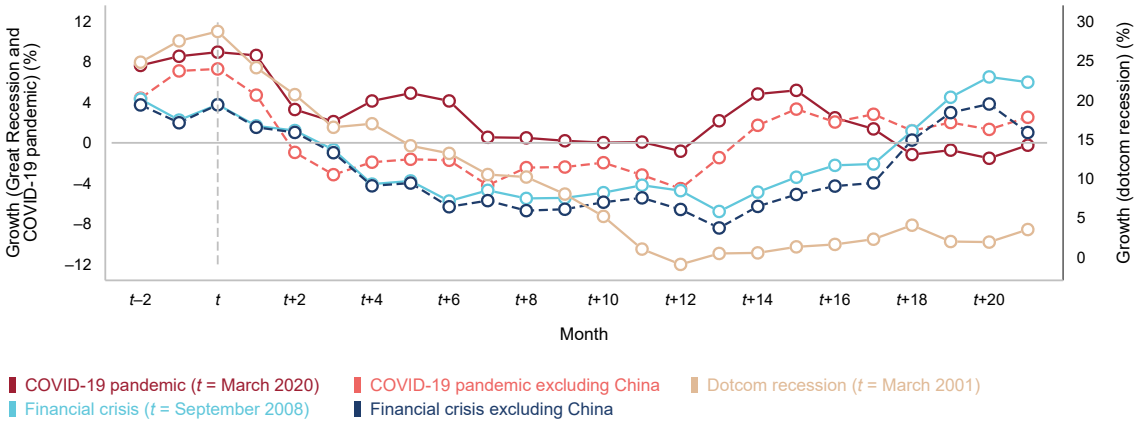
Viewed through the lens of PCT filings, the COVID-19 pandemic mirrors previous economic crises in prompting a temporary downturn in IP activity. However, this downturn appears to have been shallower compared to previous crises and relative to overall declines in output. In addition, evidence suggests that innovation responded in a way that reflects the unique nature of the pandemic. PCT application data indicate an almost immediate uptick in patenting for health-related technologies, although it remains too early to assess properly the true scale and nature of the invention response to the pandemic.

In the third quarter of 2022, the Center for European Policy Research will publish an e-book, co-edited by several IP office chief economists, that further analyzes the impact of the COVID-19 crisis on innovation and creativity. The analysis presented in this Special theme is taken from the e-book chapter on the effect of the COVID-19 crisis on international IP filings.[6]

5 See WO/2021/213924 in PATENTSCOPE. Note that the PCT application lists additional priority applications filed at the EPO after April 22, 2020.

6 Fink, C., R. Lamb, B. Le Feuvre and H. Zhou (2022). How the COVID-19 crisis affected international intellectual property filings. In Fink, C., Y. Ménière, A. Toole and R. Veugelers (eds), *Covid-19, Innovation and Creativity.* Geneva: Center for European Policy Research.

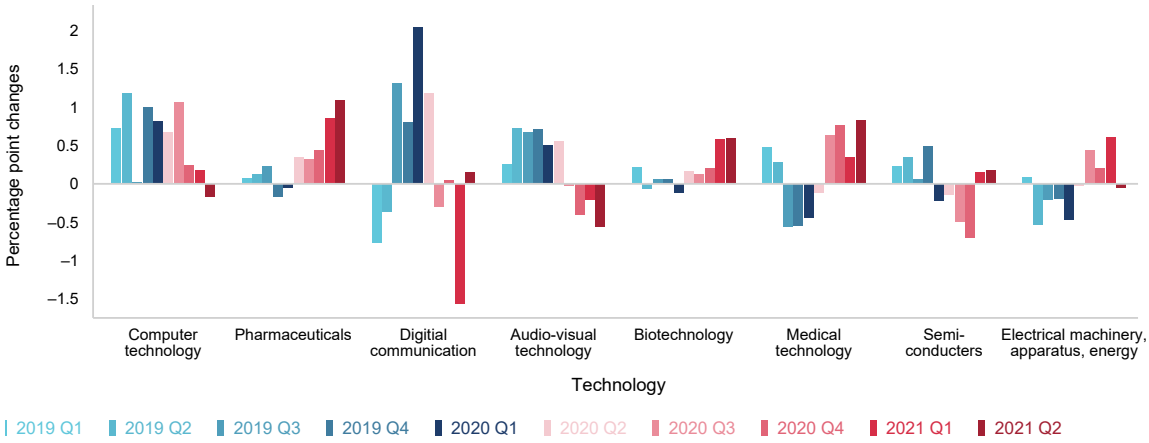
S1. PCT application filing during 21st-century crises



Note: Data are presented according to the international filing date and in monthly 3-month moving average growth.

Source: WIPO Statistics Database, March 2022.

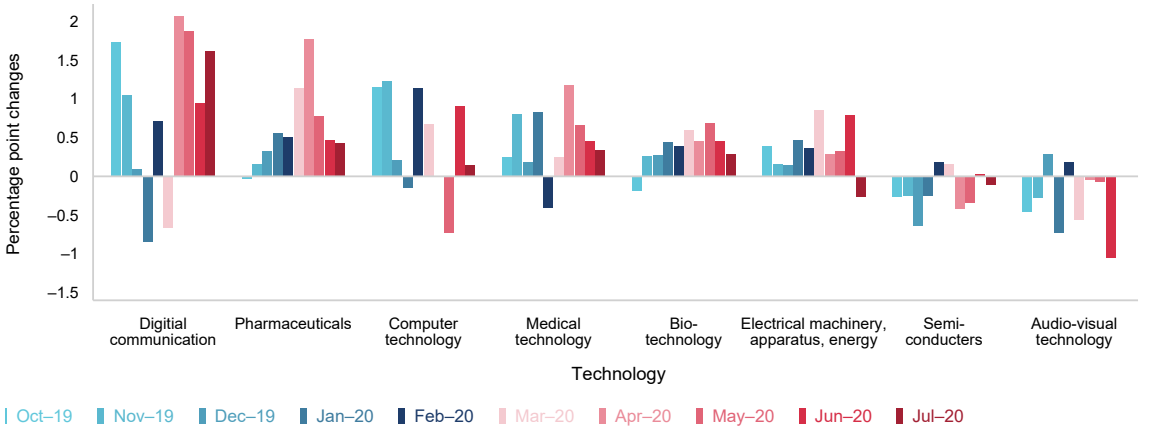
S2a. Response across technology fields (by international filing date, quarterly)



Note: Percentage point changes are relative to the share of a given technology field in total PCT applications filed in the same quarter of the previous year. Because technology fields are only available once PCT applications have been published, the shares shown are estimates that take into account historical publication delays in different technology fields. The technology fields presented are those that experienced the greatest changes among the top 20 technology fields. The incompleteness of technology fields explains why share changes do not sum to zero.

Source: WIPO Statistics Database, March 2022.

S2b. Response across technology fields (by priority filing date, monthly)



Note: Percentage point changes are relative to the share of a given technology field in total PCT applications filed in the same month of the previous year, whereby the filing date is the earliest priority date. The technology fields presented are those presented in figure S2a. The incompleteness of technology fields explains why share changes do not sum to zero.

Source: WIPO Statistics Database, March 2022.

Section A Statistics on the international phase: PCT applications

Highlights

PCT applications filed grew by a modest 0.9% in 2021

An estimated 277,500 international patent applications (PCT applications) were filed under WIPO's Patent Cooperation Treaty (PCT) in 2021 (figure A1). Despite the COVID-19 pandemic disruption affecting economies worldwide in 2021, there was a slight increase of 0.9% in the number of PCT applications filed compared to 2020.

Since the PCT System became operational in 1978, about 4.54 million PCT applications have been filed. Overall, PCT filings have grown every year, except for 2009, when the global financial crisis led to an economic downturn.

Applicants from 129 countries filed PCT applications in 2021

In 2021, 153 states were members of the PCT and applicants from 129 countries filed PCT applications at 83 receiving offices (ROs). Despite this broad geographical spread, most filing activity was concentrated in a small number of economies.

Combined, the top 10 ROs accounted for 94.1% of applications filed in 2021. With 73,434 filings, the China National Intellectual Property Administration (CNIPA) received the highest number of PCT applications. It was followed by the United States Patent and Trademark Office (USPTO), the Japan Patent Office (JPO), the European Patent Office (EPO), the Korean Intellectual Property Office (KIPO) and the International Bureau (IB) of WIPO (figure A4).

Applicants from China filed almost 70,000 PCT applications in 2021

With 69,540 PCT applications, applicants residing in China filed the most applications in 2021. They were followed by applicants from the United States of America (U.S.) (59,570) and Japan (50,260) (figure A7). Combined with applicants from Germany and the Republic of Korea, the top five countries accounted for 78.3% of all PCT applications filed in 2021. Driven mainly by a rapid increase in filings by applicants from China, Japan, the U.S. and the Republic of Korea, the combined share of the top five users of the PCT System has increased by 4.3 percentage points over the past decade.

The top 20 origins included 17 high-income countries – mostly European – and three middle-income economies, namely, China, India and Turkey (figure A8). Outside the top 20 origins, other large middle-income economies with notable numbers of PCT applications were Brazil, the Islamic Republic of Iran, the Russian Federation and South Africa, whose filings ranged between 200 and 1,100. Applicants from the Syrian Arab Republic and Uganda accounted for most of the 17 applications filed by applicants residing in low-income countries (table A30).

Compared to 2020, 16 of the top 20 origins filed more PCT applications in 2021. The main growth came from Singapore (+23%), Finland (+13.8%) and Turkey (+13.2%). In contrast, the countries to experience the steepest falls were Germany (–6.4%) and France (–5.2%), with the United Kingdom (U.K.) (–0.8%) and Japan (–0.6%) also declining.

Among the large middle-income economies not to feature among the top 20 origins, Morocco (+57.5%), the Islamic Republic of Iran (+36.3%) and Egypt (+20.5%) underwent a sharp growth in PCT filings (table A9). In contrast, Malaysia (–43.4%), Colombia (–20.8%) and Brazil (–10.6%) all saw a marked contraction.

North America remained the second ranked region in terms of PCT applications in 2021

Countries located in Asia accounted for 54.1% of all PCT applications filed in 2021. Asia's share grew from 38.5% in 2011 to 54.1% in 2021, primarily due to increased filings from China (figure A3).

North America (22.4%) was the second ranked region in terms of PCT applications, followed closely by Europe (22%). The combined share for Africa, Latin America and the Caribbean (LAC) and Oceania amounted to 1.4% of total PCT filings.

The business sector accounted for about 87% of all PCT applications

In 2021, the IB published 263,280 PCT applications, representing a slight drop of 0.5% in published applications compared to 2020. The business sector accounted for 87.1% of all published PCT applications, followed by the university sector (6.1%), individuals (5%) and the government and public research organization (PRO) sector (1.8%) (figure A11).

The business sector accounted for the majority of published applications received from each top 20 origin in the high-income group. This sector's share was especially high for Sweden (98%) and Japan (96%). Of the top 20 origins from the middle-income category, the business sector accounted for a majority of the published applications in six, while individual applicants filed a majority of the applications in eight. Individual applicants accounted for over 90% of applications originating from Egypt and the Islamic Republic of Iran (figure A12).

The university sector was responsible for a particularly large proportion of applications originating from Morocco (42%), Peru (28.1%) and Turkey (22.4%). It also accounted for relatively high shares among several high-income economies, such as Singapore (18.5%) and Spain (13%). Governments and PROs were responsible for a relatively large proportion of applications originating from Malaysia (30.2%) and Argentina (12.2%).[7]

Huawei maintained its top position in 2021

China-based telecoms giant Huawei Technologies topped the ranking of PCT applicants for a fifth consecutive year, with 6,952 PCT applications published in 2021 (table A15). Qualcomm Inc. of the U.S. ranked in second position, followed by Samsung Electronics of the Republic of Korea, LG Electronics Inc. of the Republic of Korea and Mitsubishi Electric Corp. of Japan.

Among the top 10 PCT applicants, three companies registered particularly sharp growth. Qualcomm Inc. reported an increase of 80.9% in the number of published applications in 2021 and, as a result, moving up three positions to occupy second spot. Huawei Technologies (+27.2%) and Oppo Mobile Telecommunications (+22.6%) also experienced double-digit growth, which allowed the latter to move up to sixth position.

7 Argentina is not a PCT Contracting State but, in accordance with PCT Rule 18.3, the right to file a PCT application exists if one of the multiple applicants named in the application has the right to file due to nationality or residence in a PCT Contracting State.

Outside of the top 10 applicants, the Saudi Arabian Oil Company (Saudi Aramco) and AAC Acoustic Technologies of China moved up 37 and 58 positions, respectively. Finally, LG Energy Solution of the Republic of Korea, which ranked top 40, had its first PCT applications published in 2021.

The top 50 applicants list for 2021 is composed of companies from only nine origins. Japan had 15 of the top applicants, followed by China (13), the U.S. (10), Germany (4) and the Republic of Korea (4). Finland, the Netherlands, Saudi Arabia and Sweden each had one listed applicant.

Companies active in digital communication headed the list of top 50 PCT filers in 2021. Of the top 10 applicants, six filed mainly in digital communication, namely, Ericsson, Huawei Technologies, Oppo Mobile Telecommunications, LG Electronics, Qualcomm Inc. and Samsung Electronics (table A16).

China is the country with the most applicants to feature in the top 50 university list

Among educational institutions, with 551 published applications, the University of California remained the biggest user of the PCT System in 2021 (table A17). Zhejiang University ranked second, followed by the Massachusetts Institute of Technology, Tsinghua University and Stanford University.

Four of the five top 50 universities that more than doubled their published applications in 2021 were from China. These were Shanghai Jiaotong University (+383.3%), Suzhou University (+232.6%), Huazhong University of Science (+117.5%) and the Technology and Qingdao Technological University (+101.4%). The fifth university was Tokai National Higher Education and Research System (+153.3%) of Japan.

With 19 universities, China became the country with the most institutions within the top 50 PCT universities in 2021. Eighteen were located in the U.S., six in the Republic of Korea, four in Japan, and one each in Saudi Arabia, Singapore and the U.K. In 2011, by taking 43rd position, Tsinghua University became the first Chinese university to rank among the top 50 PCT applicants list in the educational institutions sector.

The Shenzhen Institute of Advanced Technology became the top PCT applicant in the government and PRO sector

With 396 published applications, the Shenzhen Institute of Advanced Technology of China became the top government and PRO applicant in 2021. The German-based Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung dropped down to second spot, with 343 applications. It was followed by the Commissariat à l'Énergie Atomique et aux Énergies Alternatives (CEA), the Institut National de la Santé et de la Recherche Médicale (INSERM) and the Centre National de la Recherche Scientifique (CNRS), all three based in France (table A18).

The 31 applicants – two applicants share 30th position – to feature in the top 30 list for 2021 are drawn from 13 countries. The U.S. (7) had the highest number of top applicants, closely followed by the Republic of Korea (6). China, France and Germany each had three applicants listed.

Computer technology remained the main technology field in PCT applications

For a ninth consecutive year, the field of computer technology had the most PCT applications, with 26,092 published in 2021. It was followed by digital communication, medical technology, electrical machinery, and measurement (table A20). These top five fields of technology, combined, accounted for 37.5% of all PCT applications published in 2021.

Six of the top 10 technology fields grew in 2021, with pharmaceuticals (+12.8%) reporting the fastest rate of growth, followed by biotechnology (+9.5%), computer technology (+7.2%) and digital communication (+6.9%). As seen in the Special theme, the growth recorded in these fields attests to the dynamism exhibited by health-related technologies as the COVID-19 pandemic unfolded.

Only 16.5% of inventors were listed as women in 2021

In 2021, women accounted for 16.5% of all inventors listed in PCT applications and men the remaining 83.5% (figure A22). The share of women inventors increased by one percentage point in 2021, as compared to 2020. Since 2007, this share has increased almost continuously; only 2011 saw a very slight dip.

The share of women inventors has grown in each of the world's geographical regions over the past 10 years. In 2021, the LAC region (22.9%) had the largest proportion of women among PCT inventors, followed by Asia (17.3%), North America (16.4%), Europe (14.8%), Oceania (14.1%) and Africa (12.3%) (figure A24).

About 96% of PCT applications named at least one man as inventor in 2021, and 33.3% named at least one woman as inventor (figure A23). The share of PCT applications with at least one woman as inventor has risen from one-fifth in 2007 to one-third in 2021, while the share of PCT applications with at least one man as inventor has decreased slightly within the same period, from 97.7% to 95.9%.

The gender gap among PCT inventors varies considerably between countries. Of the top 20 origins, China, Spain and Turkey had the largest proportion of inventors who were women in 2021 (figure A25). They were the only three origins among the top 20 where at least one-fifth of inventors were women. In contrast, for Austria and Japan slightly less than one-tenth of inventors in applications published in 2021 were women.

Technology fields relating to the life sciences had comparatively higher shares of women among inventors listed in PCT applications published between 2019 and 2021 (table A26). Overall, women represented more than one-quarter of inventors in the fields of analysis of biological materials, biotechnology, food chemistry, organic fine chemistry, and pharmaceuticals. Biotechnology was the technical field with the largest proportion of women listed as inventors in Europe and North America. Pharmaceuticals had a slightly larger proportion of women as inventors in Asia. Women listed in PCT applications filed by applicants residing in the LAC region reached gender parity in the fields of organic fine chemistry (50.9%), biotechnology (48.9%) and pharmaceuticals (48.4%).

The top 50 PCT geographical clusters accounted for nearly 60% of total PCT filings

Combined, the top 50 PCT clusters represented 59.7% of PCT applications published between 2016 and 2020 (table A28). Over this period, Tokyo–Yokohama was by far the largest PCT cluster, with its 122,526 PCT applications accounting for 10.7% of all applications worldwide. Tokyo–Yokohama was followed by Shenzhen–Hong Kong–Guangzhou and Seoul. San Jose–San Francisco (fourth position) and Paris (11th position) were the highest ranked clusters in North America and Europe, respectively.

Compared to 2015–2019, 41 of the top 50 PCT clusters grew during 2016–2020, of which 13 saw double-digit increases. The five clusters with the sharpest growth were Wuhan (+60.1%), Nanjing (+59.3%), Shanghai–Suzhou (+55.6%), Qingdao (+31.7%) and Hangzhou (+31.6%), all located in China.

Within the top 50, the highest number of clusters were in the U.S. (15), China (8), Germany (7) and Japan (5). China, India and Turkey were the only three middle-income countries to have had clusters among the top 50 in the 2016–2020 period.

Digital communication accounted for over one-tenth of published applications in nine of the top 20 PCT clusters, notably in San Diego (35.5%), Shenzhen–Hong Kong–Guangzhou (27.1%) and Beijing (21.7%) (table A29). Computer technology also represented over 10% of applications in nine of the top 20 clusters and was by far the main technology field for Seattle (41.2%) and Hangzhou (29.4%).

Global trends in PCT applications

PCT applications by receiving office

PCT applications by origin

PCT applications by applicant type

Top PCT applicants

PCT applications by field of technology

Participation of women inventors in PCT applications

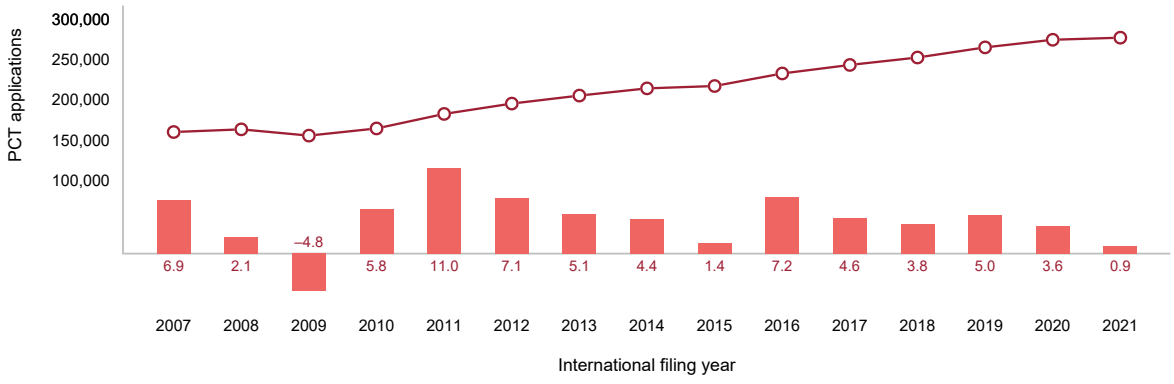
Top clusters of inventors in PCT applications

Statistical table

Global trends in PCT applications

PCT applications grew by 0.9% to reach 277,500 in 2021.

A1. Trend in filings of PCT applications, 2007–2021

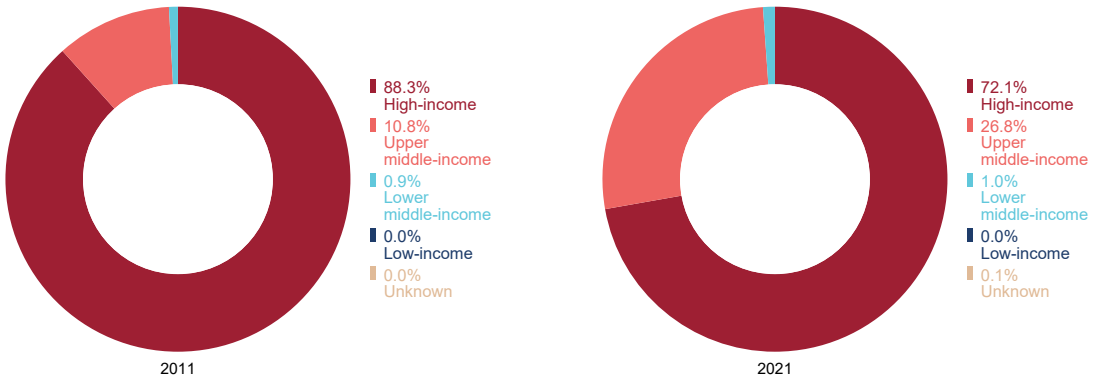


Note: Data for 2021 are WIPO estimates.

Source: WIPO Statistics Database, March 2022.

PCT applications from upper middle-income countries have risen sharply over the past decade.

A2. Distribution of PCT applications by income group, 2011 and 2021

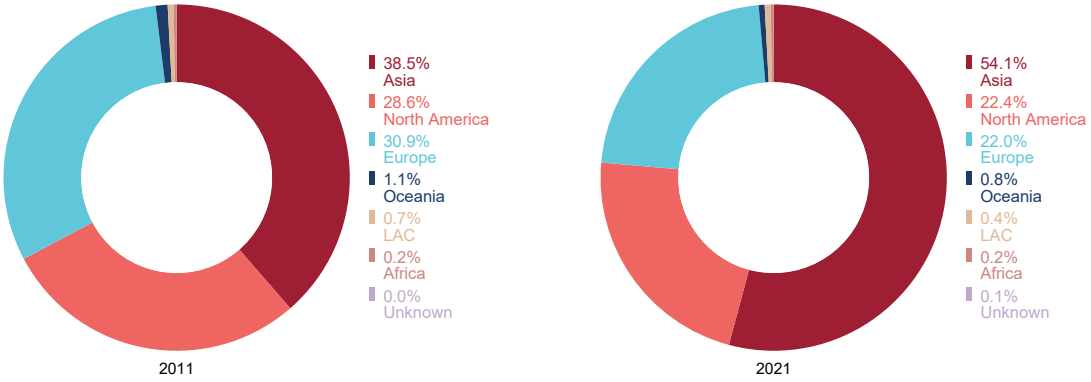


Note: Data for 2021 are WIPO estimates. Each income group includes the following number of origins: high-income (57), upper middle-income (38), lower middle-income (27) and low-income (7). For information on income group classification, see annex, Data description.

Source: WIPO Statistics Database, March 2022.

Asia was the origin of a majority of the PCT applications filed in 2021.

A3. Distribution of PCT applications by region, 2011 and 2021



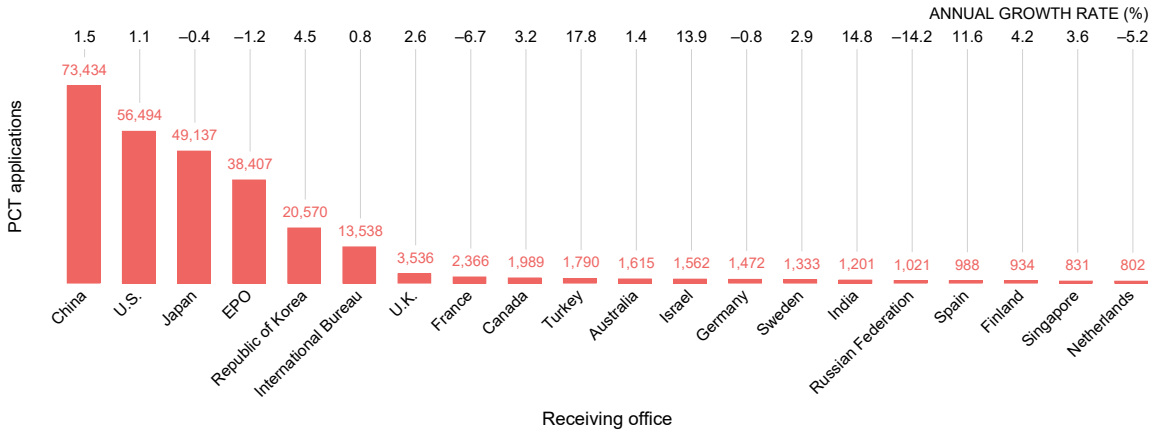
Note: Data for 2021 are WIPO estimates. Each region includes the following number of origins: Africa (24), Asia (34), Europe (43), Latin America and the Caribbean (LAC) (22), North America (3) and Oceania (3).

Source: WIPO Statistics Database, March 2022.

PCT applications by receiving office

The office of China received by far the most PCT applications of any country in 2021.

A4. PCT applications for the top 20 receiving offices, 2021

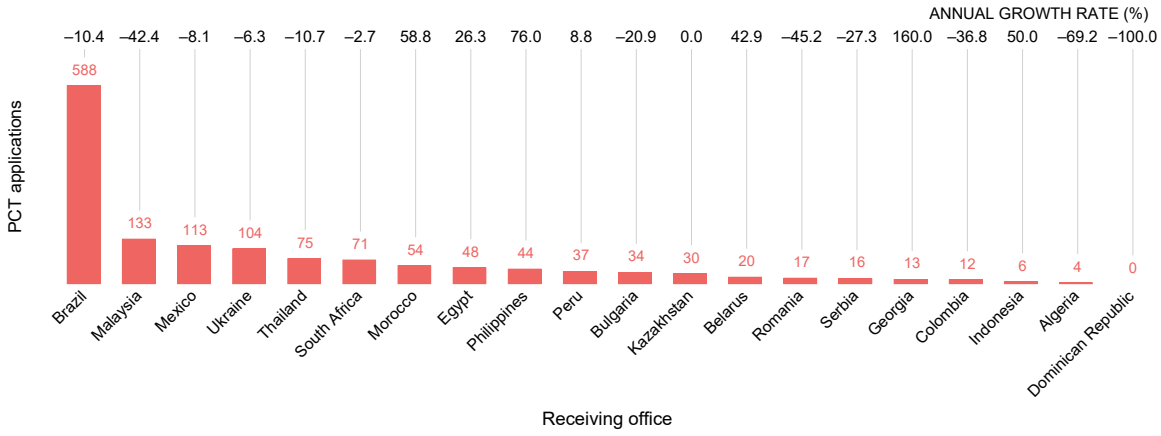


Note: Data for 2021 are WIPO estimates. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

The office of Brazil received 588 PCT applications in 2021.

A5. PCT applications for selected receiving offices of low- and middle-income countries, 2021



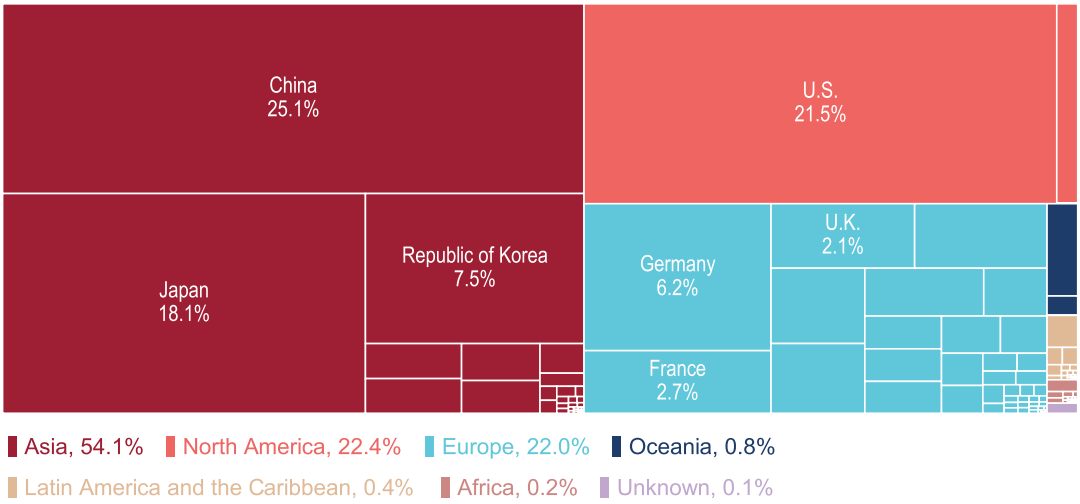
Note: Data for 2021 are WIPO estimates. The selected offices are the top receiving offices of low- and middle-income countries not to feature among the top 20 offices. Where available, data for all offices are presented in statistical table A30.

Source: WIPO Statistics Database, March 2022.

PCT applications by origin

PCT applications are highly concentrated in just a few origins.

A6. Distribution of PCT applications by region and origin, 2021

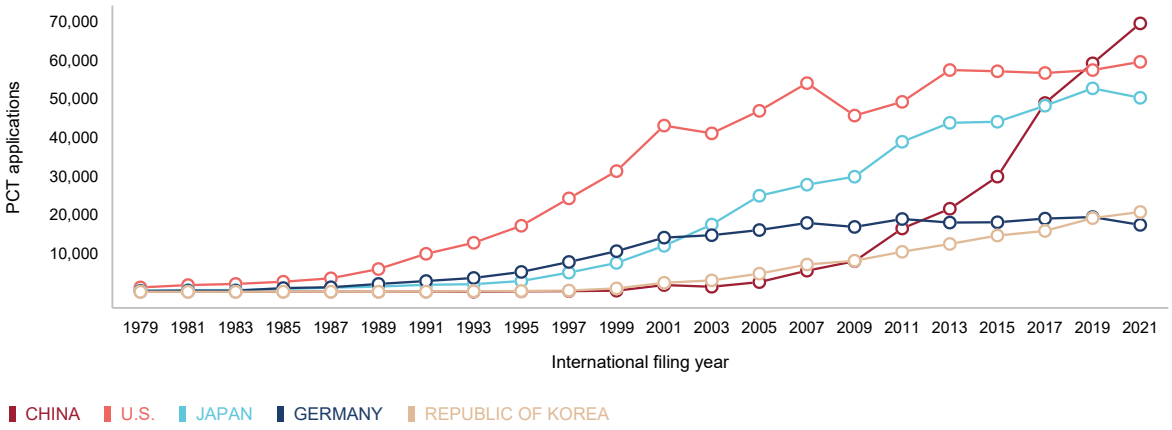


Note: Data for 2021 are WIPO estimates.

Source: WIPO Statistics Database, March 2022.

U.S. applicants filed the most PCT applications every year up until 2019.

A7. Trend in PCT applications for the top five origins, 1979–2021

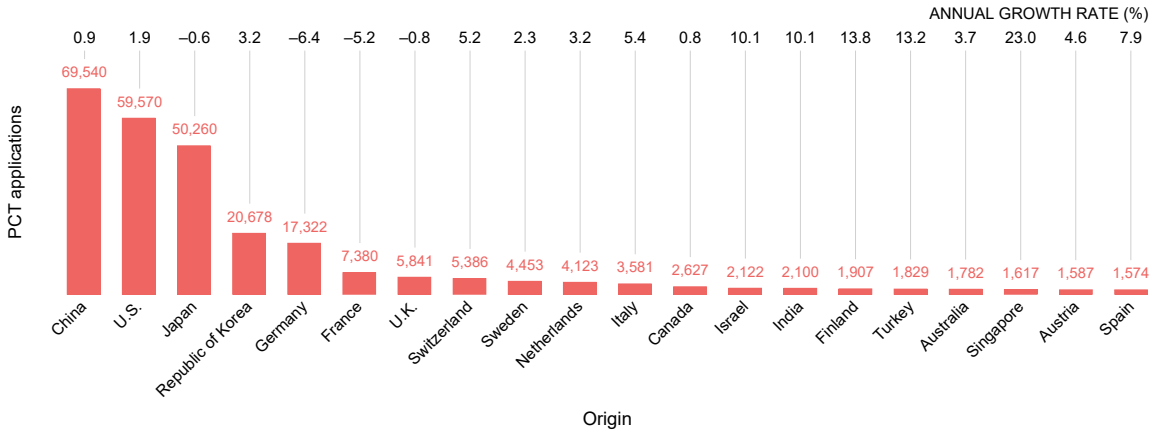


Note: Data for 2021 are WIPO estimates.

Source: WIPO Statistics Database, March 2022.

Among the top 20 origins, Singapore's growth was the sharpest recorded in 2021.

A8. PCT applications for the top 20 origins, 2021



Note: Data for 2021 are WIPO estimates.

Source: WIPO Statistics Database, March 2022.

Africa is the geographical region to have had the biggest growth in filings in 2021.

A9. PCT applications for the top countries by region, 2019–2021

Region	Origin	2019	2020	2021	Regional share 2021 (%)	Change from 2020 (%)
Africa	South Africa	275	240	228	50.4	–5.0
	Morocco	33	40	63	13.9	57.5
	Egypt	44	44	53	11.7	20.5
	Mauritius	12	13	34	7.5	161.5
	Tunisia	12	5	15	3.3	200.0
	Namibia	3	5	10	2.2	100.0
	Others	38	49	49	10.8	0.0
	Total*	**417**	**396**	**452**	**0.2**	**14.1**
Asia	China	59,187	68,923	69,540	46.3	0.9
	Japan	52,702	50,578	50,260	33.5	–0.6
	Republic of Korea	19,074	20,045	20,678	13.8	3.2
	Israel	2,001	1,928	2,122	1.4	10.1
	India	2,041	1,907	2,100	1.4	10.1
	Turkey	1,688	1,616	1,829	1.2	13.2
	Singapore	1,161	1,315	1,617	1.1	23.0
	Saudi Arabia	552	952	822	0.5	–13.7
	Iran (Islamic Republic of)	224	267	364	0.2	36.3
	Thailand	150	159	148	0.1	–6.9
	Others	552	593	600	0.4	1.2
	Total*	**139,332**	**148,283**	**150,080**	**54.1**	**1.2**
Europe	Germany	19,347	18,499	17,322	28.3	–6.4
	France	7,923	7,782	7,380	12.1	–5.2
	U.K.	5,777	5,889	5,841	9.5	–0.8
	Switzerland	4,651	5,119	5,386	8.8	5.2
	Sweden	4,201	4,351	4,453	7.3	2.3
	Netherlands	4,034	3,996	4,123	6.7	3.2
	Italy	3,385	3,398	3,581	5.9	5.4
	Finland	1,660	1,676	1,907	3.1	13.8
	Austria	1,434	1,517	1,587	2.6	4.6
	Spain	1,495	1,459	1,574	2.6	7.9
	Others	7,768	7,684	8,012	13.1	4.3
	Total*	**61,675**	**61,370**	**61,166**	**22.0**	**–0.3**

(Continued)

(A9 continued)

Latin America and the Caribbean	Brazil	642	691	618	49.7	–10.6
	Chile	224	245	167	13.4	–31.8
	Mexico	216	178	167	13.4	–6.2
	Colombia	128	125	99	8.0	–20.8
	Peru	26	35	38	3.1	8.6
	Argentina	34	37	31	2.5	–16.2
	Barbados	59	38	29	2.3	–23.7
	Antigua and Barbuda	47	65	19	1.5	–70.8
	Ecuador	18	4	16	1.3	300.0
	Cuba	9	11	15	1.2	36.4
	Others	67	65	44	3.5	–32.3
	Total*	**1,470**	**1,494**	**1,243**	**0.4**	**–16.8**
North America	U.S.	57,446	58,477	59,570	95.8	1.9
	Canada	2,726	2,605	2,627	4.2	0.8
	Bermuda	21	9	11	0.0	22.2
	Total*	**60,193**	**61,091**	**62,208**	**22.4**	**1.8**
Oceania	Australia	1,768	1,718	1,782	82.6	3.7
	New Zealand	249	298	373	17.3	25.2
	Others	4	4	2	0.1	–50.0
	Total*	**2,021**	**2,020**	**2,157**	**0.8**	**6.8**
Unknown		275	235	194	0.1	–17.4
Total		**265,383**	**274,889**	**277,500**	**n.a.**	**0.9**

Note: Data for 2021 are WIPO estimates. This table shows the top countries for each region (with a maximum of 10 per region) where applicants filed more than 10 PCT applications in 2021. Data for all origins are reported in statistical table A30.

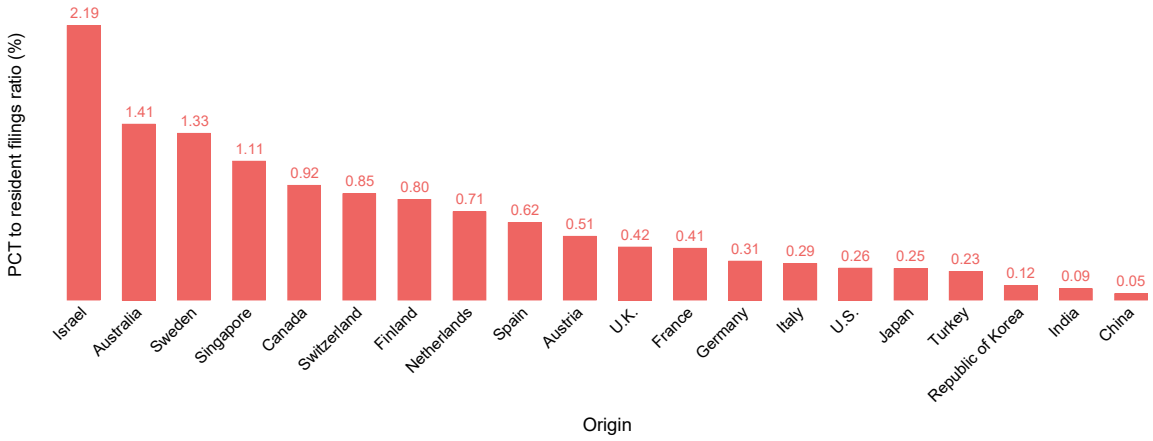
* indicates share of world total.

n.a. indicates not applicable.

Source: WIPO Statistics Database, March 2022.

Israel's conversion rate of a resident patent application into a PCT application is high compared to other origins.

A10. Conversion ratio of direct resident patent applications to PCT applications for the top 20 origins, 2021



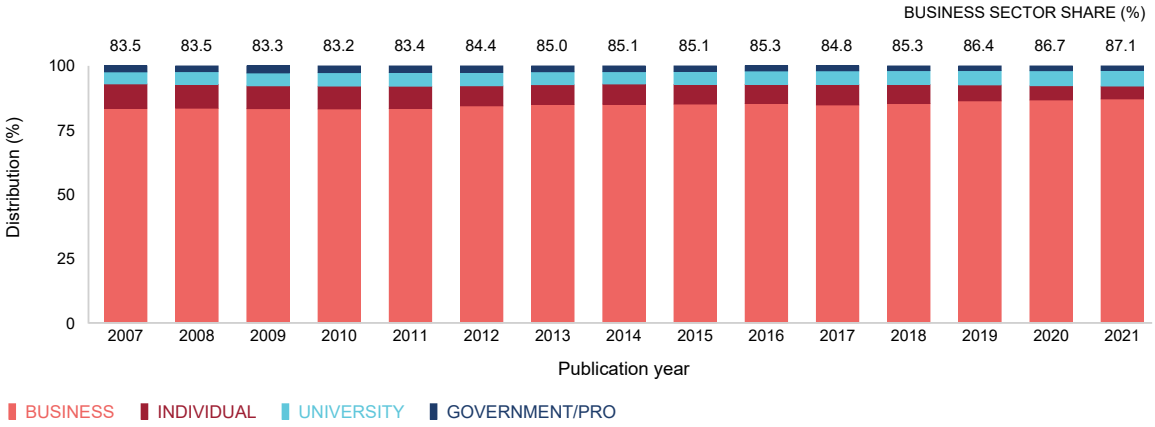
Note: Data for 2021 are WIPO estimates. This hypothetical "conversion ratio" reflects the proportion of direct resident patent applications converted into PCT applications. The ratio is defined for the top 20 origins in terms of PCT applications filed in 2021 divided by resident patent applications (including regional applications and excluding PCT national phase entries) filed in 2020. In theory, the conversion ratio ought to be between 0 and 1. However, it may exceed 1, because some applications do not have priority claims associated with prior resident filings. For example, an applicant from Israel may forego filing an application at the Israel Patent Office and opt instead to file a first application at the USPTO, then convert that prior filing into a PCT application.

Source: WIPO Statistics Database, March 2022.

PCT applications by applicant type

The business sector accounted for 87.1% of all PCT applications filed in 2021.

A11. Distribution of PCT applications by applicant type, 2007–2021

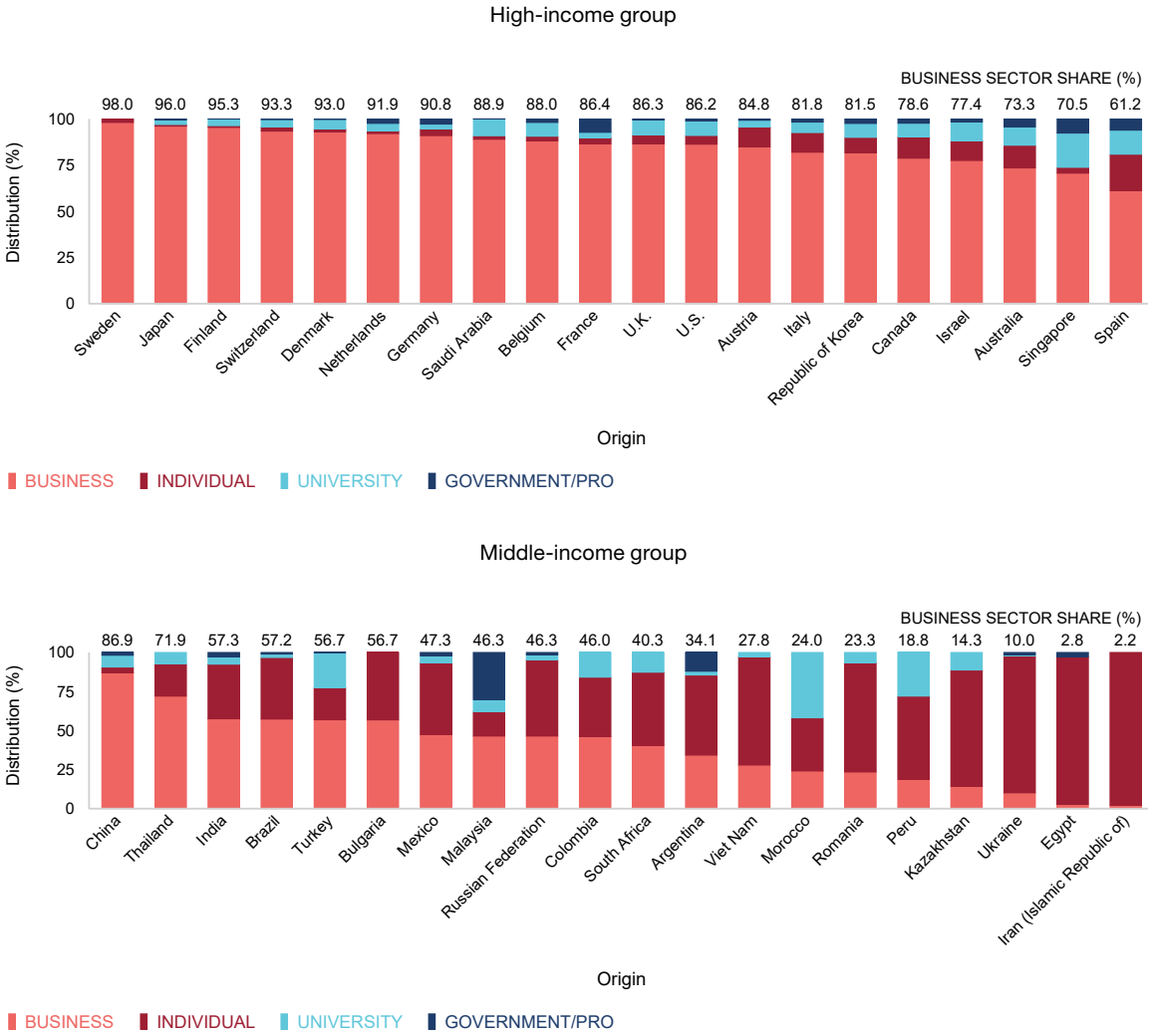


Note: The government and public research organization (PRO) sector includes private non-profit organizations and hospitals. The university sector includes all educational institutions. For confidentiality reasons, data are based on the publication date.

Source: WIPO Statistics Database, March 2022.

Precisely 98% of all PCT applications originating in Sweden were filed by businesses.

A12. Distribution of PCT applications by applicant type for the top 20 origins by income group, 2021

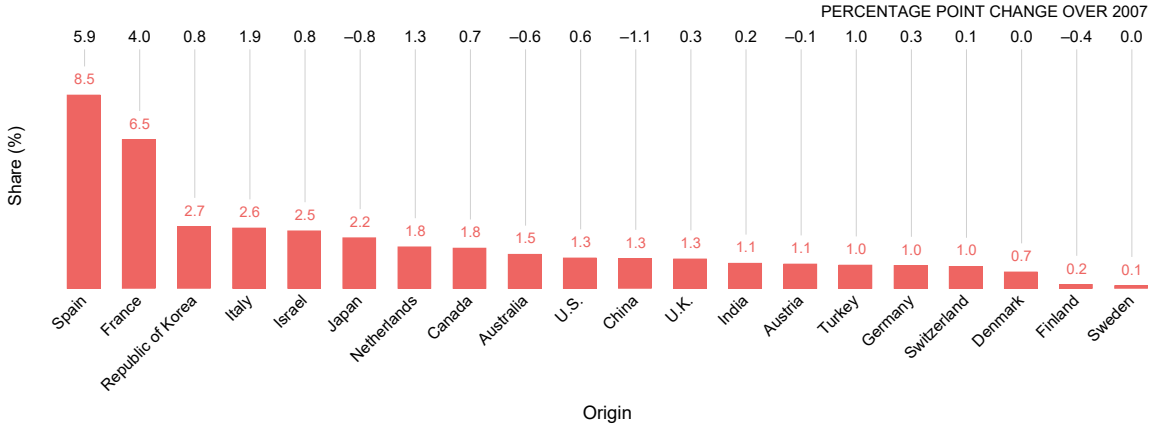


Note: The government and PRO sector includes private non-profit organizations and hospitals. The university sector includes all educational institutions. Lower and upper middle-income groups have been merged. Low-income countries omitted due to insufficient data. For confidentiality reasons, data are based on published applications and on the publication date.

Source: WIPO Statistics Database, March 2022.

Collaboration between the business and public sectors was comparatively high in France and Spain

A13. Share of PCT applications with business and public sector co-applicants for the top 20 origins, 2021

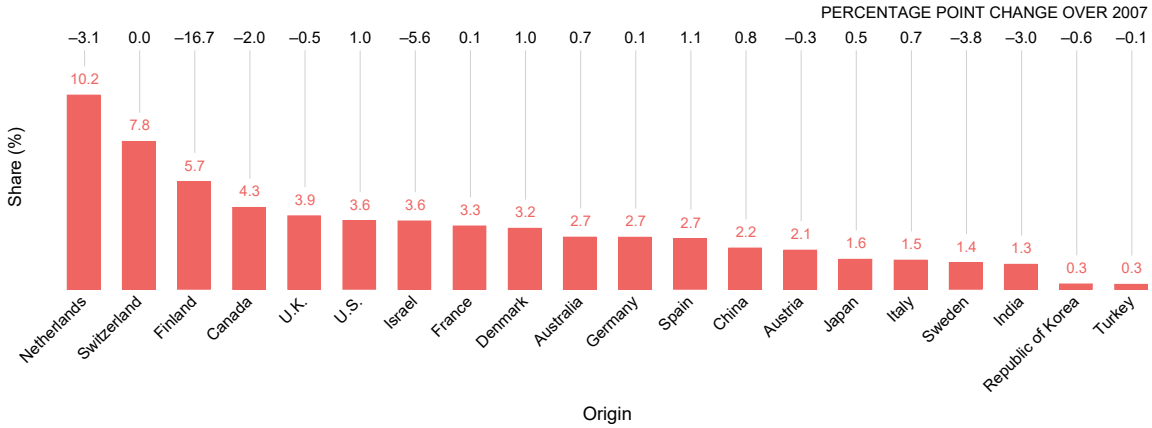


Note: The public sector comprises the university sector and the government and PRO sector. The government and PRO sector includes private non-profit organizations and hospitals. The university sector includes all educational institutions. For confidentiality reasons, data are based on published applications and on the publication date.

Source: WIPO Statistics Database, March 2022.

Applicants residing in the Netherlands and Switzerland filed a relatively large proportion of PCT applications that included foreign co-applicants.

A14. Share of PCT applications with foreign co-applicants for the top 20 origins, 2021



Note: Counts are based on corporate applicants only (excluding individual applicants) and on all applicants named in PCT applications (not only the first named applicant). For confidentiality reasons, data are based on published applications and on the publication date.

Source: WIPO Statistics Database, March 2022.

Top PCT applicants

For a fifth consecutive year, Huawei Technologies ranked top PCT applicant in 2021.

A15. Top 50 business PCT applicants, 2019–2021

Overall ranking	Change in position from 2020	Applicant	Origin	Published PCT applications		
				2019	2020	2021
1	0	HUAWEI TECHNOLOGIES CO., LTD.	China	4,411	5,464	6,952
2	3	QUALCOMM INCORPORATED	U.S.	2,127	2,173	3,931
3	–1	SAMSUNG ELECTRONICS CO., LTD.	Republic of Korea	2,334	3,093	3,041
4	0	LG ELECTRONICS INC.	Republic of Korea	1,646	2,759	2,885
5	–2	MITSUBISHI ELECTRIC CORPORATION	Japan	2,661	2,810	2,673
6	2	GUANG DONG OPPO MOBILE TELECOMMUNICATIONS CORP., LTD	China	1,927	1,801	2,208
7	0	BOE TECHNOLOGY GROUP CO.,LTD	China	1,864	1,892	1,980
8	–2	TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)	Sweden	1,698	1,989	1,877
9	0	SONY GROUP CORPORATION	Japan	1,566	1,793	1,789
10	0	PANASONIC INTELLECTUAL PROPERTY MANAGEMENT CO., LTD.	Japan	1,567	1,611	1,741
11	6	PING AN TECHNOLOGY (SHENZHEN) CO., LTD.	China	1,691	1,304	1,564
12	3	NIPPON TELEGRAPH AND TELEPHONE CORPORATION	Japan	703	1,372	1,508
13	3	ZTE CORPORATION	China	1,085	1,316	1,493
14	–3	HEWLETT–PACKARD DEVELOPMENT COMPANY, L. P.	U.S.	1,510	1,595	1,485
15	5	NEC CORPORATION	Japan	1,024	1,121	1,350
16	7	VIVO MOBILE COMMUNICATION CO., LTD.	China	603	955	1,336
17	–5	MICROSOFT TECHNOLOGY LICENSING, LLC	U.S.	1,370	1,529	1,303
18	–5	ROBERT BOSCH CORPORATION	Germany	1,687	1,375	1,213
19	0	FUJIFILM CORPORATION	Japan	1,158	1,128	1,095
20	1	SZ DJI TECHNOLOGY CO., LTD	China	875	1,075	1,042
21	1	DENSO CORPORATION	Japan	1,026	1,062	915
22	12	MURATA MANUFACTURING CO., LTD.	Japan	701	698	882
23	37	SAUDI ARABIAN OIL CO.	Saudi Arabia	439	435	838
24	–10	LG CHEM, LTD.	Republic of Korea	1,624	1,374	824
25	3	GOOGLE INC.	U.S.	777	781	763
26	0	KONINKLIJKE PHILIPS ELECTRONICS N.V.	Netherlands	982	846	758
27	6	SONY SEMICONDUCTOR SOLUTIONS CORPORATION	Japan	517	703	732
28	2	NTT DOCOMO, INC.	Japan	624	767	713
29	58	AAC ACOUSTIC TECHNOLOGIES (SHENZHEN) CO., LTD.	China	1	298	679
30	–3	3M INNOVATIVE PROPERTIES COMPANY	U.S.	662	789	660
31	8	NOKIA TECHNOLOGIES OY	Finland	579	618	655
32	–8	WUHAN CHINA STAR OPTOELECTRONICS SEMICONDUCTOR DISPLAY TECHNOLOGY CO., LTD.	China	506	872	648
33	–9	SHENZHEN CHINA STAR OPTOELECTRONICS SEMICONDUCTOR DISPLAY TECHNOLOGY CO., LTD.	China	654	872	647
34	–16	SIEMENS AKTIENGESELLSCHAFT	Germany	1,153	1,202	623
35	38	INTERNATIONAL BUSINESS MACHINES CORPORATION	U.S.	477	359	576
36	0	APPLIED MATERIALS, INC.	U.S.	467	636	571
37	0	KYOCERA CORPORATION	Japan	432	626	562
38	9	BASF SE	Germany	573	542	552
40	n.a.	LG ENERGY SOLUTION, LTD.	Republic of Korea	0	0	548
41	–10	SHARP KABUSHIKI KAISHA	Japan	928	745	543
42	11	TENCENT TECHNOLOGY (SHENZHEN) COMPANY LIMITED	China	485	470	511
43	5	SCHAEFFLER TECHNOLOGIES AG & CO. KG	Germany	442	529	505
44	6	MICRON TECHNOLOGY, INC.	U.S.	451	524	504
45	17	NITTO DENKO CORPORATION	Japan	334	425	497
46	–14	BEIJING BYTEDANCE NETWORK TECHNOLOGY CO., LTD.	China	70	719	485
47	12	HITACHI, LTD.	Japan	564	441	474
48	8	BEIJING XIAOMI MOBILE SOFTWARE CO., LTD.	China	362	457	473
49	6	DAIKIN INDUSTRIES, LTD.	Japan	400	458	449
49	–3	HALLIBURTON ENERGY SERVICES, INC.	U.S.	372	559	449
51	–11	APPLE INC.	U.S.	306	615	428

Note: For confidentiality reasons, data are based on published applications and on the publication date.

n.a. indicates not applicable.

Source: WIPO Statistics Database, March 2022.

Digital communication technologies accounted for the largest proportion of PCT applications for the top four applicants.

A16. Share of technology fields for the top 10 business applicants, 2021

Field of technology	Applicant									
	Huawei Tech.	Qualcomm	Samsung Electr.	LG Electr.	Mitsubishi Electr.	OPPO Mobile Tel. Corp	BOE Tech. Group	LM Ericsson	Sony Group Corporation	Panasonic
Electrical machinery, apparatus, energy	3.5	0.2	4.0	3.7	17.8	3.5	0.7	0.6	1.7	28.4
Audio-visual technology	7.1	4.5	11.7	15.6	2.7	10.8	22.9	2.1	18.4	7.1
Telecommunications	8.8	10.6	12.8	10.7	3.2	9.9	1.7	13.3	4.1	1.7
Digital communication	46.9	75.0	29.8	32.1	3.6	51.9	1.8	69.4	18.6	1.6
Basic communication processes	1.3	0.9	0.7	0.2	1.7	0.1	0.4	1.9	0.2	0.5
Computer technology	20.0	4.4	21.9	5.8	9.5	16.8	17.3	8.8	22.8	4.8
IT methods for management	0.3	0.1	1.4	0.5	1.9	0.2	0.6	0.5	3.5	4.1
Semiconductors	1.6	1.5	1.5	3.7	5.1	0.7	31.2	0.0	1.8	3.6
Optics	2.8	0.2	1.9	2.1	2.2	2.5	14.2	0.5	6.9	4.3
Measurement	2.8	1.8	2.0	1.6	7.5	1.1	1.4	1.4	5.5	7.4
Analysis of biological materials	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.4	0.1
Control	1.4	0.5	0.5	1.5	5.9	0.7	0.5	1.0	4.7	3.7
Medical technology	1.0	0.0	1.8	0.7	0.5	0.1	2.6	0.2	3.7	2.8
Organic fine chemistry	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2
Biotechnology	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.2	0.3
Pharmaceuticals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Macromolecular chemistry, polymers	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.1	1.0
Food chemistry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Basic materials chemistry	0.1	0.0	0.2	0.2	0.2	0.0	0.3	0.0	0.0	0.2
Materials, metallurgy	0.1	0.0	0.1	0.6	0.2	0.3	0.1	0.0	0.1	2.9
Surface technology, coating	0.0	0.0	0.1	0.2	0.2	0.2	1.4	0.0	0.1	1.8
Micro-structural and nano-technology	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2
Chemical engineering	0.0	0.0	0.4	0.6	0.4	0.0	1.0	0.0	0.2	1.2
Environmental technology	0.0	0.0	0.2	0.4	0.4	0.0	0.1	0.0	0.1	1.3
Handling	0.1	0.0	1.0	2.2	5.7	0.0	0.2	0.2	1.5	1.2
Machine tools	0.0	0.0	0.1	0.0	1.6	0.1	0.1	0.1	0.0	4.1
Engines, pumps, turbines	0.0	0.0	0.2	1.1	3.5	0.0	0.0	0.0	0.1	1.4
Textile and paper machines	0.0	0.0	0.0	0.2	0.3	0.0	0.1	0.0	0.2	0.1
Other special machines	0.0	0.0	0.2	0.8	0.2	0.2	0.1	0.0	0.1	1.1
Thermal processes and apparatus	0.2	0.0	1.8	2.7	18.1	0.0	0.1	0.0	0.1	3.0
Mechanical elements	0.2	0.0	0.4	0.6	0.9	0.2	0.1	0.1	0.2	0.5
Transport	1.4	0.2	0.3	2.0	5.0	0.0	0.5	0.2	1.8	3.3
Furniture, games	0.2	0.0	1.2	5.0	0.1	0.1	0.2	0.0	1.3	1.1
Other consumer goods	0.2	0.0	3.4	4.8	1.0	0.4	0.1	0.0	1.4	3.3
Civil engineering	0.0	0.0	0.3	0.4	0.2	0.0	0.0	0.0	0.1	1.6

Note: For confidentiality reasons, data are based on published applications and on the publication date. WIPO's IPC technology concordance table (available at: *www.wipo.int/ipstats*) was used to convert IPC symbols into 35 corresponding fields of technology.

Source: WIPO Statistics Database, March 2022.

Since 1993, the University of California has been the top PCT applicant from the university sector.

A17. Top 50 university PCT applicants, 2019–2021

Overall ranking	Change in position from 2020	Applicant	Origin	Published PCT applications		
				2019	2020	2021
39	5	UNIVERSITY OF CALIFORNIA	U.S.	470	559	551
72	64	ZHEJIANG UNIVERSITY	China	69	209	306
103	–4	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	U.S.	230	269	227
125	–7	TSINGHUA UNIVERSITY	China	265	231	201
132	58	LELAND STANFORD JUNIOR UNIVERSITY	U.S.	132	154	194
149	5	BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM	U.S.	161	184	177
161	22	SOUTH CHINA UNIVERSITY OF TECHNOLOGY	China	165	157	169
170	138	NATIONAL UNIVERSITY OF SINGAPORE	Singapore	79	96	163
185	420	SUZHOU UNIVERSITY	China	33	46	153
187	15	UNIVERSITY OF TOKYO	Japan	119	149	150
192	–15	DALIAN UNIVERSITY OF TECHNOLOGY	China	141	159	146
202	–95	SHENZHEN UNIVERSITY	China	247	252	142
207	224	QINGDAO TECHNOLOGICAL UNIVERSITY	China	14	69	139
211	37	KOREA UNIVERSITY	Republic of Korea	93	118	138
224	22	JOHNS HOPKINS UNIVERSITY	U.S.	87	121	129
239	27	YONSEI UNIVERSITY	Republic of Korea	48	109	122
242	–17	JIANGNAN UNIVERSITY	China	118	131	121
242	–2	HANYANG UNIVERSITY	Republic of Korea	113	124	121
255	53	UNIVERSITY OF MICHIGAN	U.S.	107	96	113
265	–33	OSAKA UNIVERSITY	Japan	105	128	111
267	67	UNIVERSITY OF FLORIDA	U.S.	94	86	110
267	–61	SEOUL NATIONAL UNIVERSITY	Republic of Korea	136	146	110
283	78	SHANDONG UNIVERSITY	China	71	80	105
284	–36	HARVARD UNIVERSITY	U.S.	140	118	104
288	96	KYOTO UNIVERSITY	Japan	76	76	103
293	159	WUYI UNIVERSITY	China	16	65	102
312	14	PEKING UNIVERSITY	China	75	90	95
312	32	KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY	Republic of Korea	97	84	95
326	177	JIANGSU UNIVERSITY	China	61	59	92
328	–68	SHANDONG UNIVERSITY OF SCIENCE AND TECHNOLOGY	China	64	111	91
337	–57	COLUMBIA UNIVERSITY	U.S.	84	104	89
343	347	HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY	China	50	40	87
343	1191	SHANGHAI JIAOTONG UNIVERISTY	China	41	18	87
348	–109	SOUTHEAST UNIVERSITY	China	89	125	86
354	170	DUKE UNIVERSITY	U.S.	73	56	84
354	–14	UNIVERSITY OF ARIZONA	U.S.	80	85	84
354	–83	NORTHWESTERN UNIVERSITY	U.S.	98	109	84
362	–60	KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY	Saudi Arabia	123	97	83
373	111	UNIVERSITY OF PITTSBURGH	U.S.	66	61	81
373	–55	OXFORD UNIVERSITY INNOVATION LIMITED	U.K.	96	93	81
389	526	NATIONAL UNIVERSITY CORPORATION TOKAI NATIONAL HIGHER EDUCATION AND RESEARCH SYSTEM	Japan	0	30	76
391	281	CATHOLIC UNIVERSITY	Republic of Korea	23	41	75
400	–177	NORTHEASTERN UNIVERSITY	China	83	170	72
415	–48	CORNELL UNIVERSITY	U.S.	83	79	70
440	–60	UNIVERSITY OF COLORADO	U.S.	85	77	66
459	–45	UNIVERSITY OF WASHINGTON	U.S.	48	72	63
459	381	SUN YAT–SEN UNIVERSITY	China	48	33	63
459	–75	UNIVERSITY OF PENNSYLVANIA	U.S.	64	76	63
459	–255	CHINA UNIVERSITY OF MINING AND TECHNOLOGY	China	100	148	63
466	128	PURDUE UNIVERSITY	U.S.	45	47	62

Note: The university sector includes all types of educational institutions. For confidentiality reasons, data are based on published applications and on the publication date.

Source: WIPO Statistics Database, March 2022.

The Shenzhen Institute of Advanced Technology became the top PCT applicant for the government and PRO sector in 2021.

A18. Top 30 government and PRO PCT applicants, 2019–2021

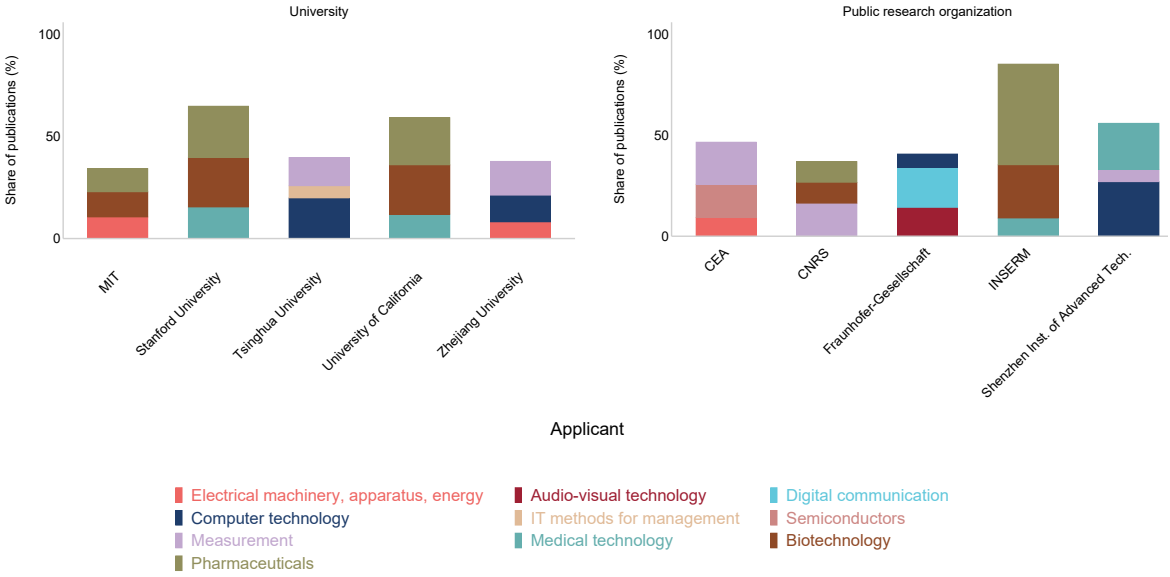
Overall ranking	Change in position from 2020	Applicant	Origin	Published PCT applications		
				2019	2020	2021
53	17	SHENZHEN INSTITUTE OF ADVANCED TECHNOLOGY	China	152	362	396
60	1	FRAUNHOFER–GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	Germany	331	428	343
143	–6	COMMISSARIAT À L'ÉNERGIE ATOMIQUE ET AUX ÉNERGIES ALTERNATIVES	France	229	208	182
196	–26	INSTITUT NATIONAL DE LA SANTÉ ET DE LA RECHERCHE MÉDICALE (INSERM)	France	122	167	144
250	–4	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)	France	130	121	116
284	–73	AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH	Singapore	135	142	104
343	–43	NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY	Japan	121	98	87
384	0	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST–NATUURWETENSCHAPPELIJK ONDERZOEK TNO	Netherlands	70	76	78
392	–44	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	Republic of Korea	70	83	74
400	48	CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS (CSIC)	Spain	56	66	72
440	98	SLOAN–KETTERING INSTITUTE FOR CANCER RESEARCH	U.S.	60	54	66
449	135	U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES	U.S.	103	48	65
482	–8	MIMOS BERHAD	Malaysia	15	62	60
482	–78	MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH	U.S.	88	73	60
500	32	MAX–PLANCK–GESELLSCHAFT ZUR FÖRDERUNG DER WISSENSCHAFTEN E.V.	Germany	47	55	57
587	115	RIKEN (THE INSTITUTE OF PHYSICAL AND CHEMICAL RESEARCH)	Japan	47	39	49
597	–82	KOREA RESEARCH INSTITUTE OF CHEMICAL TECHNOLOGY	Republic of Korea	54	58	48
597	105	COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION	Australia	28	39	48
607	–59	BATTELLE MEMORIAL INSTITUTE	U.S.	30	52	47
675	165	INSTITUTE OF MICROELECTRONICS OF THE CHINESE ACADEMY OF SCIENCES	China	16	33	42
696	372	KOREA ELECTROTECHNOLOGY RESEARCH INSTITUTE	Republic of Korea	28	26	40
696	257	SHANGHAI INSTITUTE OF MATERIA MEDICA, CHINESE ACADEMY OF SCIENCES	China	30	29	40
740	249	NATIONAL RESEARCH COUNCIL OF CANADA	Canada	34	28	37
788	6	KOREA INSTITUTE OF SCIENCE AND TECHNOLOGY	Republic of Korea	36	35	35
788	353	CEDARS–SINAI MEDICAL CENTER	U.S.	34	24	35
788	–98	KOREA INSTITUTE OF INDUSTRIAL TECHNOLOGY	Republic of Korea	45	40	35
788	–183	COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH AN INDIAN REGISTERED BODY INCORPORATED UNDER THE REGN. OF SOC. ACT (ACT XXI OF 1860)	India	45	46	35
809	259	DEUTSCHES ZENTRUM FÜR LUFT– UND RAUMFAHRT E.V.	Germany	34	26	34
838	544	CITY OF HOPE	U.S.	33	20	33
872	917	U.S. GOVERNMENT AS REPRESENTED BY THE DEPARTMENT OF VETERANS AFFAIRS	U.S.	15	15	32
872	196	KOREA RESEARCH INSTITUTE OF BIOSCIENCE AND BIOTECHNOLOGY	Republic of Korea	28	26	32

Note: The government and PRO sector includes private non-profit organizations and hospitals. For confidentiality reasons, data are based on published applications and on the publication date.

Source: WIPO Statistics Database, March 2022.

Pharmaceuticals accounted for the highest share of PCT applications for INSERM and Stanford University.

A19. Share of the top three technology fields for the top five universities and PROs, 2021



Note: CEA is the Commissariat à l'Énergie Atomique et aux Énergies Alternatives, CNRS is the Centre national de la recherche scientifique, INSERM is the Institut National de la Santé et de la Recherche Médicale, MIT is the Massachusetts Institute of Technology, and Shenzhen Inst. of Advanced Tech. is the Shenzhen Institute of Advanced Technology. PROs include private non-profit organizations and hospitals. For confidentiality reasons, data are based on published applications and on the publication date. WIPO's IPC technology concordance table (available at: *www.wipo.int/ipstats*) was used to convert IPC symbols into 35 corresponding fields of technology.

Source: WIPO Statistics Database, March 2022.

PCT applications by field of technology

Biotechnology and pharmaceuticals recorded the fastest growth rates in 2021.

A20. PCT applications by field of technology, 2017–2021

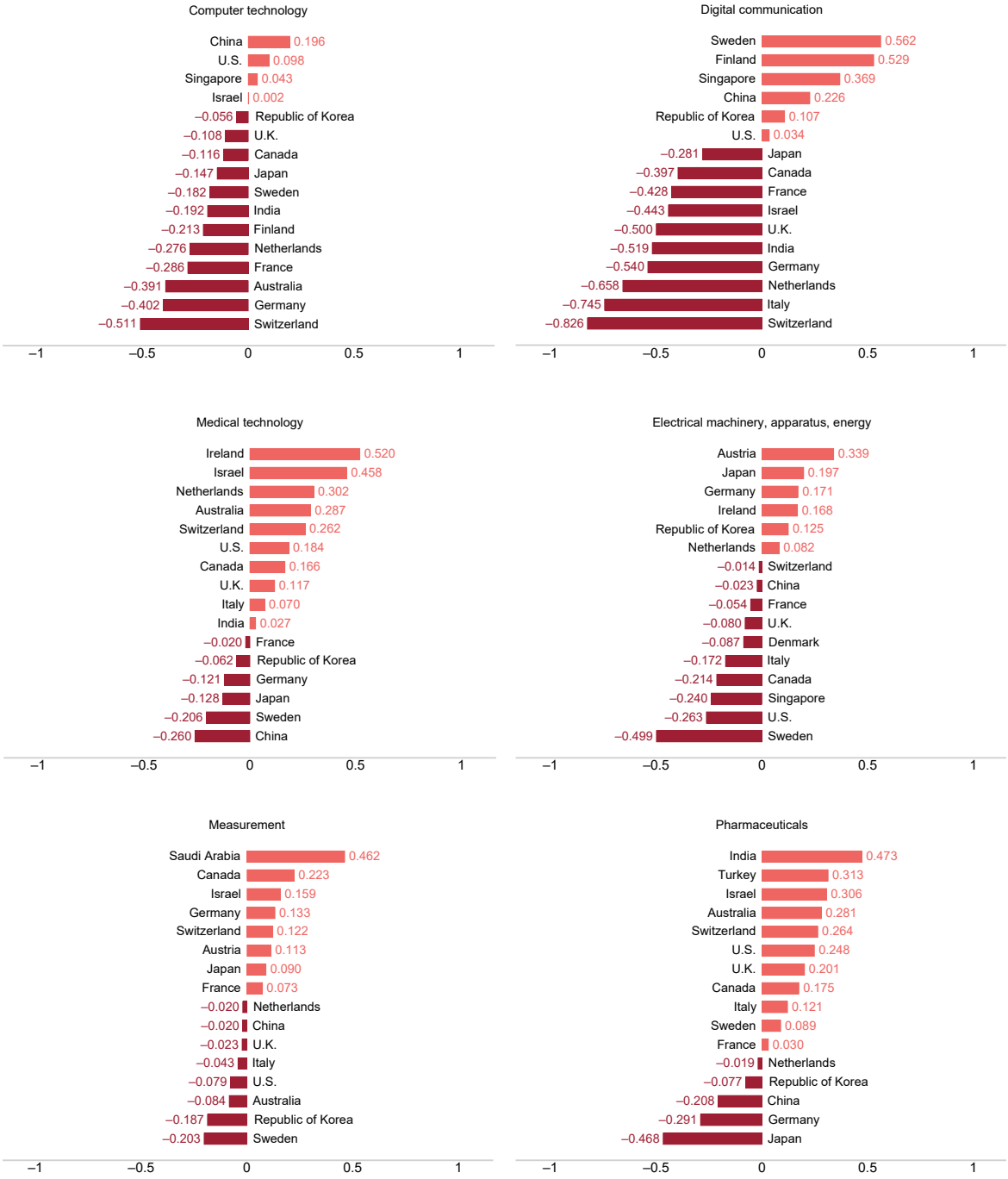
	Technical field	Publication year					2021 share (%)	Change from 2017 (%)
		2017	2018	2019	2020	2021		
I	**Electrical engineering**							
1	Electrical machinery, apparatus, energy	15,233	16,556	17,194	17,367	18,224	6.9	4.9
2	Audio-visual technology	7,530	8,187	8,900	11,534	10,837	4.1	–6.0
3	Telecommunications	5,647	6,132	5,861	6,445	6,371	2.4	–1.1
4	Digital communication	18,364	20,233	19,050	22,078	23,603	9.0	6.9
5	Basic communication processes	1,323	1,712	1,554	1,610	1,647	0.6	2.3
6	Computer technology	19,146	19,181	21,496	24,343	26,092	9.9	7.2
7	IT methods for management	4,702	4,803	5,747	5,891	5,298	2.0	–10.1
8	Semiconductors	6,519	7,183	8,048	8,862	8,346	3.2	–5.8
II	**Instruments**							
9	Optics	7,156	7,610	8,018	8,371	7,919	3.0	–5.4
10	Measurement	10,052	10,775	11,451	12,704	12,152	4.6	–4.3
11	Analysis of biological materials	1,912	1,940	1,917	2,062	2,149	0.8	4.2
12	Control	4,292	5,212	5,363	5,457	5,182	2.0	–5.0
13	Medical technology	15,028	15,798	16,916	17,500	18,552	7.1	6.0
III	**Chemistry**							
14	Organic fine chemistry	5,689	5,787	5,888	6,351	6,150	2.3	–3.2
15	Biotechnology	6,574	6,640	7,404	7,985	8,745	3.3	9.5
16	Pharmaceuticals	8,761	9,130	9,785	10,767	12,147	4.6	12.8
17	Macromolecular chemistry, polymers	3,932	4,249	4,425	4,656	4,478	1.7	–3.8
18	Food chemistry	1,913	2,104	2,214	2,384	2,467	0.9	3.5
19	Basic materials chemistry	5,639	5,573	5,589	5,712	5,482	2.1	–4.0
20	Materials, metallurgy	4,023	4,334	4,417	4,685	4,313	1.6	–7.9
21	Surface technology, coating	3,579	3,680	3,852	4,014	3,834	1.5	–4.5
22	Micro-structural and nano-technology	423	395	390	456	439	0.2	–3.7
23	Chemical engineering	4,685	4,886	5,074	5,285	5,225	2.0	–1.1
24	Environmental technology	2,648	2,732	2,705	3,020	2,769	1.1	–8.3
IV	**Mechanical engineering**							
25	Handling	5,521	5,889	5,954	6,413	6,256	2.4	–2.4
26	Machine tools	3,588	4,077	4,300	4,315	4,307	1.6	–0.2
27	Engines, pumps, turbines	5,630	5,656	5,366	5,123	4,441	1.7	–13.3
28	Textile and paper machines	2,594	2,757	2,769	2,952	2,622	1.0	–11.2
29	Other special machines	6,395	6,959	7,236	7,483	7,232	2.7	–3.4
30	Thermal processes and apparatus	3,635	3,866	4,085	4,306	3,926	1.5	–8.8
31	Mechanical elements	6,115	6,187	5,952	5,847	5,160	2.0	–11.7
32	Transport	9,794	10,941	11,227	11,290	10,110	3.8	–10.5
V	**Other fields**							
33	Furniture, games	4,411	4,669	4,625	4,718	4,491	1.7	–4.8
34	Other consumer goods	4,990	5,403	5,445	6,044	5,840	2.2	–3.4
35	Civil engineering	6,115	6,121	6,387	6,502	6,317	2.4	–2.8

Note: For confidentiality reasons, data are based on published applications and on the publication date. WIPO's IPC technology concordance table (available at: *www.wipo.int/ipstats*) was used to convert IPC symbols into 35 corresponding fields of technology.

Source: WIPO Statistics Database, March 2022.

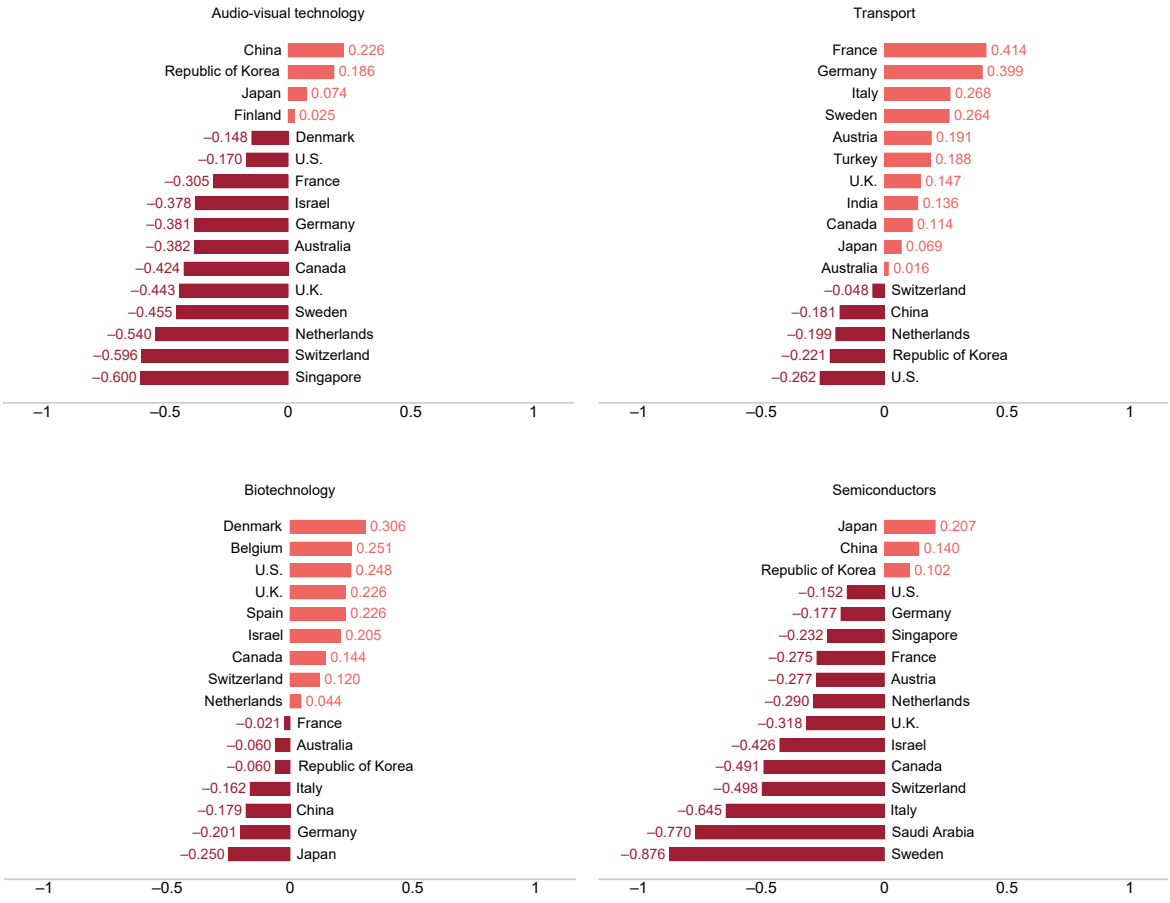
A large proportion of PCT filings from Finland and Sweden related to digital communication.

A21. Relative specialization index for the top 10 fields of technology, 2021



(Continued)

(A21 continued)



Note: This index corrects for the effects of country size and focuses on concentration in specific technology fields; it captures whether applicants in a country tend to have a lower or a higher propensity to file in certain technology fields. It is calculated using the following formula:

$$RSI = Log\left(\frac{F_{cr} \sum F_{cr}}{\sum F_c \sum F_r}\right)$$

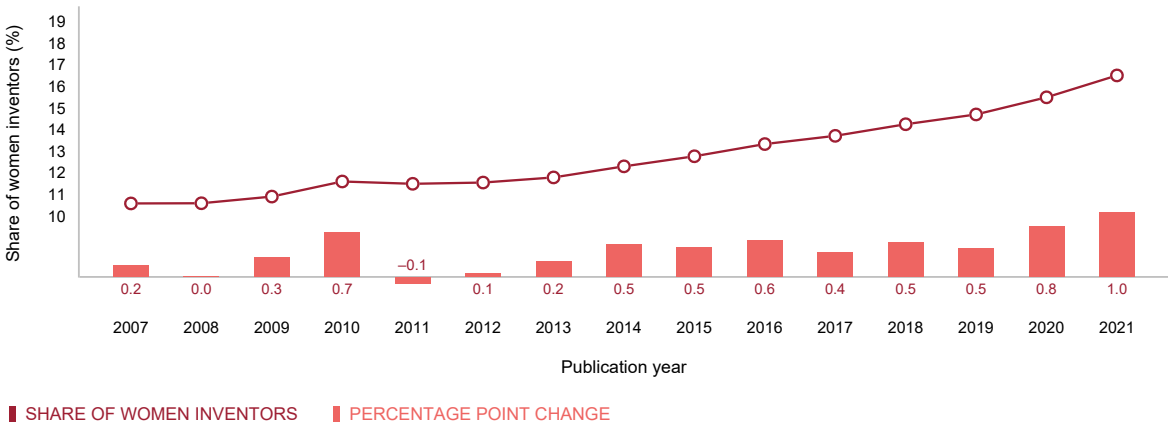
where F_c and F_r denote applications from country C and in a field of technology R. A positive value for a technology indicates that a country has a relatively high share of PCT filings related to that field of technology. For confidentiality reasons, data are based on published applications and on the publication date. WIPO's IPC technology concordance table (available at: *www.wipo.int/ipstats*) was used to convert IPC symbols into 35 corresponding fields of technology.

Source: WIPO Statistics Database, March 2022.

Participation of women inventors in PCT applications

In 2021, 16.5% of inventors listed in PCT applications were women; this is one percentage point higher than for 2020.

A22. Share of women among listed inventors in PCT applications, 2007–2021

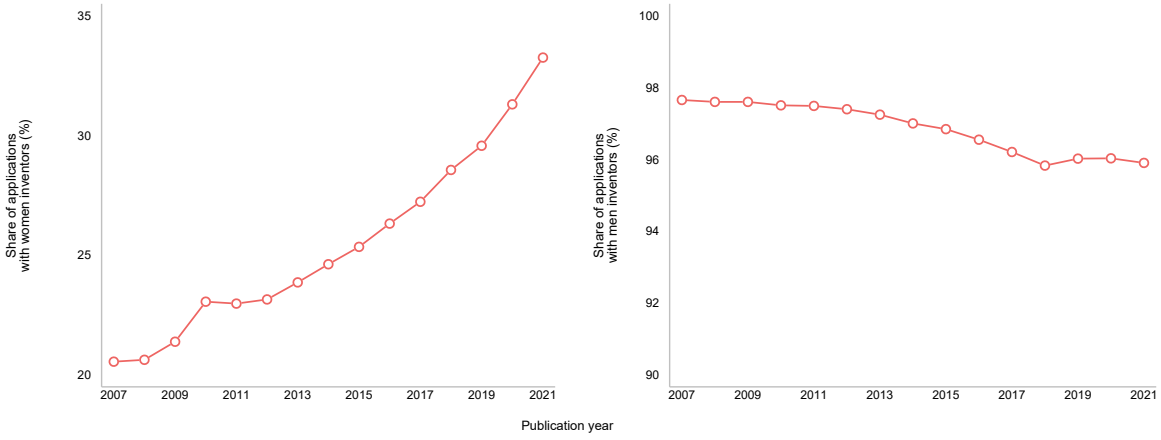


Note: Due to alterations in methodology, data may have changed compared to past reporting. For further details on methodology, refer to *www.wipo.int/econ_stat/en/economics*.

Source: WIPO Statistics Database, March 2022.

In 2021, about 96% of all PCT applications listed at least one man as inventor, whereas only one-third listed at least one woman as inventor.

A23. Share of PCT applications with at least one woman as inventor and with at least one man as inventor, 2007–2021

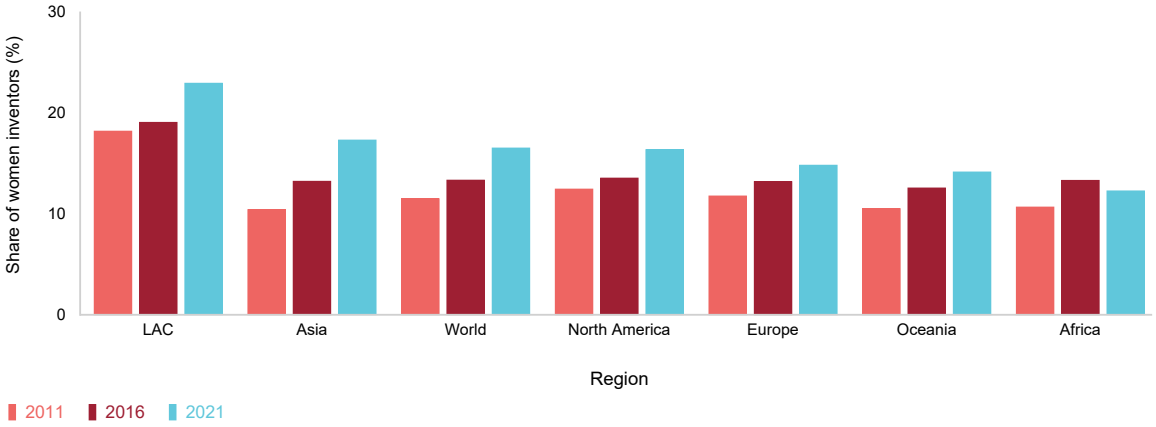


Note: Due to alterations in the methodology, data may have changed compared to past reporting. For further details on methodology, refer to *www.wipo.int/econ_stat/en/economics*.

Source: WIPO Statistics Database, March 2022.

Asia has moved from having the lowest share of PCT applications with women as inventors in 2011 to second highest in 2021.

A24. Share of women among listed inventors in PCT applications by geographical region, 2011, 2016 and 2021

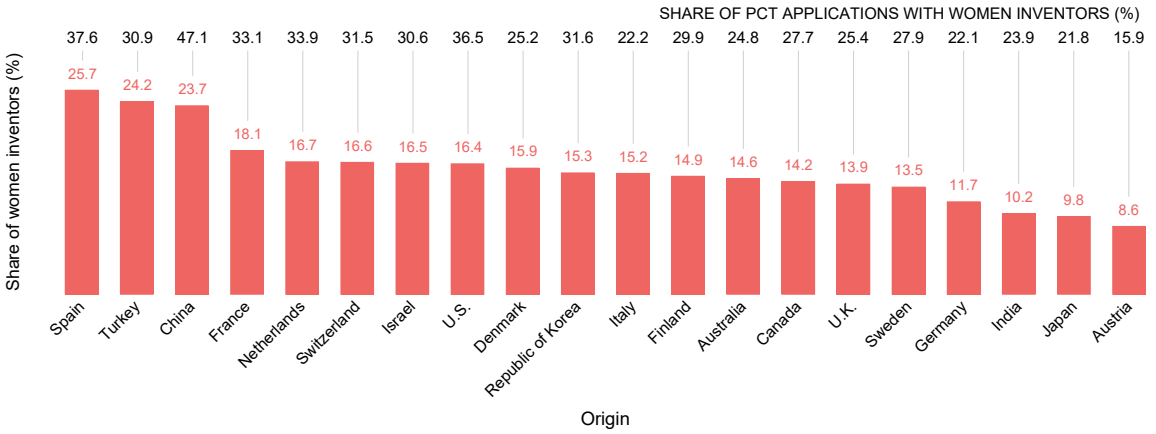


Note: LAC is Latin America and the Caribbean. Due to alterations in the methodology, data may have changed compared to past reporting. For further details on methodology, refer to *www.wipo.int/econ_stat/en/economics*.

Source: WIPO Statistics Database, March 2022.

Over one-quarter of inventors listed in PCT applications from Spain were women.

A25. Share of women among listed inventors and share of PCT applications with at least one woman as inventor for the top 20 origins, 2021



Note: Data are based on published applications and on the publication date. For further details on methodology, refer to *www.wipo.int/econ_stat/en/economics*.

Source: WIPO Statistics Database, March 2022.

Gender parity was reached among inventors listed in PCT applications filed by applicants from the LAC region in the fields of biotechnology, organic fine chemistry, and pharmaceuticals, during the period 2019–2021.

A26. Share of women among listed inventors in PCT applications by geographical region and field of technology, 2019–2021

Field of technology	Region						
	Africa	Asia	Europe	Latin America and the Caribbean	North America	Oceania	World
Electrical machinery, apparatus, energy	7.7	12.7	7.4	5.8	11.1	10.1	11.3
Audio-visual technology	10.0	16.0	7.5	16.3	13.0	6.0	14.7
Telecommunications	0.0	14.8	8.4	3.3	12.5	12.7	13.2
Digital communication	15.4	19.6	12.7	12.5	17.1	6.8	17.7
Basic communication processes	n.a.	9.2	6.5	n.a.	9.8	11.8	8.8
Computer technology	15.0	17.6	11.2	21.7	13.5	11.1	15.4
IT methods for management	15.4	16.9	13.7	12.2	15.5	11.6	16.0
Semiconductors	n.a.	15.0	12.4	5.0	13.0	13.0	14.4
Optics	n.a.	14.0	10.5	14.3	11.7	9.8	13.0
Measurement	0.0	15.1	9.5	23.4	12.8	10.5	13.2
Analysis of biological materials	n.a.	23.3	28.4	43.7	25.5	28.7	25.5
Control	9.4	13.5	8.3	10.0	11.5	7.7	11.9
Medical technology	12.5	17.8	15.7	22.3	15.6	15.4	16.4
Organic fine chemistry	40.0	24.3	29.2	50.9	22.6	25.5	25.3
Biotechnology	29.6	29.0	33.5	48.9	27.7	26.7	29.6
Pharmaceuticals	26.1	29.1	32.3	48.4	25.9	25.3	28.7
Macromolecular chemistry, polymers	n.a.	16.9	23.6	31.8	20.4	20.0	19.4
Food chemistry	17.4	28.2	32.5	34.4	27.2	17.4	29.1
Basic materials chemistry	15.0	17.8	24.2	33.8	21.2	17.0	20.7
Materials, metallurgy	23.7	13.7	16.5	18.8	16.0	15.3	14.7
Surface technology, coating	10.0	13.7	14.2	9.8	15.3	12.7	14.1
Micro-structural and nano-technology	n.a.	19.3	17.7	27.4	16.6	19.6	18.1
Chemical engineering	6.1	16.8	14.6	22.7	14.4	15.1	15.6
Environmental technology	12.5	16.2	11.6	23.2	12.4	12.1	14.4
Handling	20.0	12.4	6.7	9.6	10.4	8.2	10.3
Machine tools	n.a.	11.1	5.6	10.5	9.8	3.6	9.3
Engines, pumps, turbines	3.8	11.2	5.9	0.0	6.0	3.5	8.1
Textile and paper machines	20.0	16.7	18.0	13.3	14.8	19.4	16.5
Other special machines	9.3	15.1	11.9	13.0	12.9	13.9	13.5
Thermal processes and apparatus	5.9	13.4	7.7	9.8	8.0	5.6	11.6
Mechanical elements	10.0	10.7	4.3	2.9	6.4	2.0	7.5
Transport	7.5	12.2	5.9	7.1	8.2	4.4	9.3
Furniture, games	11.8	15.2	9.6	15.7	11.9	7.8	13.0
Other consumer goods	15.4	16.2	12.7	12.2	17.1	15.2	15.3
Civil engineering	3.5	13.3	6.4	11.7	8.2	3.9	9.9

Note: This table shows the share of women inventors for every region and each technical field in which at least 10 inventors are listed. For further details on methodology, refer to *www.wipo.int/econ_stat/en/economics*. WIPO's IPC technology concordance table (available at: *www.wipo.int/ipstats*) was used to convert IPC symbols into 35 corresponding fields of technology.

n.a. indicates not applicable due to too few inventors.

Source: WIPO Statistics Database, March 2022.

Women accounted for about 38% of all inventors listed in PCT applications filed by applicants residing in France and active in biotechnology and pharmaceuticals.

A27. Share of women among listed inventors in PCT applications for the top 10 origins by field of technology, 2021

Field of technology	Origin									
	China	U.S.	Japan	Republic of Korea	Germany	France	U.K.	Switzerland	Sweden	Netherlands
Electrical machinery, apparatus, energy	20.8	11.2	7.7	11.1	5.9	9.7	10.8	7.1	7.2	7.7
Audio-visual technology	24.5	13.0	7.6	13.4	5.9	4.1	9.4	5.6	15.5	9.3
Telecommunications	21.3	12.6	8.1	11.3	4.5	7.3	7.9	8.0	11.7	8.7
Digital communication	24.6	17.2	14.0	11.5	6.2	10.5	9.5	10.2	16.8	5.4
Basic communication processes	15.9	9.9	2.9	6.2	2.9	13.1	7.9	4.5	8.6	6.1
Computer technology	22.3	13.4	10.1	14.4	9.5	12.8	9.9	11.1	11.9	15.7
IT methods for management	23.6	15.4	13.0	16.1	12.2	12.9	18.4	17.6	9.0	18.0
Semiconductors	24.4	13.0	8.1	16.3	11.3	17.9	13.5	7.4	8.1	14.1
Optics	21.8	11.7	8.6	11.7	7.7	16.3	8.6	12.3	13.0	10.4
Measurement	22.7	12.9	8.1	12.9	7.4	13.5	8.7	7.5	9.1	11.7
Analysis of biological materials	28.0	25.8	16.1	24.4	28.3	30.9	20.7	22.2	12.1	27.6
Control	21.3	11.6	8.5	11.7	7.8	11.8	5.4	8.4	7.5	11.6
Medical technology	25.7	15.6	12.7	15.2	11.9	17.9	16.0	12.8	20.7	16.3
Organic fine chemistry	28.6	22.7	16.1	27.8	29.7	36.4	22.2	24.4	22.3	24.8
Biotechnology	34.0	27.6	19.1	30.4	29.0	38.5	28.7	32.1	27.7	28.8
Pharmaceuticals	33.1	25.9	18.8	30.0	30.7	38.3	27.4	30.2	28.2	26.0
Macromolecular chemistry, polymers	27.2	20.4	12.8	17.1	21.5	27.6	22.2	22.3	12.5	18.5
Food chemistry	33.6	27.2	23.4	29.1	23.2	34.7	17.3	36.2	26.7	33.8
Basic materials chemistry	25.4	21.3	13.6	20.2	22.5	28.6	16.7	23.2	30.3	21.2
Materials, metallurgy	22.4	16.3	8.7	11.3	12.9	21.6	18.9	13.1	11.6	17.1
Surface technology, coating	23.6	15.4	11.2	11.3	11.6	17.0	11.1	10.6	13.3	17.3
Micro-structural and nano-technology	27.7	17.3	8.5	14.3	7.2	30.6	10.6	25.0	8.1	5.0
Chemical engineering	23.5	14.5	9.7	14.2	12.7	19.6	12.2	14.2	5.7	14.7
Environmental technology	23.5	12.3	9.2	10.4	8.0	18.9	10.3	12.6	6.9	13.1
Handling	20.5	10.7	7.7	8.6	6.3	6.9	5.8	9.6	6.2	8.3
Machine tools	19.8	9.9	5.5	8.1	4.1	8.3	7.2	5.0	6.3	9.9
Engines, pumps, turbines	21.4	6.0	5.0	10.3	5.4	8.0	2.7	4.6	2.1	6.2
Textile and paper machines	27.3	14.6	11.7	16.4	13.4	23.6	9.7	14.4	19.7	20.4
Other special machines	23.5	13.1	9.6	13.7	10.0	14.0	10.5	14.4	4.1	14.5
Thermal processes and apparatus	20.5	8.0	6.8	11.9	8.8	10.4	6.5	8.2	7.3	8.9
Mechanical elements	18.8	6.5	5.3	7.7	3.8	4.2	3.8	3.6	4.1	6.2
Transport	21.5	8.3	6.5	9.5	5.7	8.2	5.1	3.8	4.8	9.2
Furniture, games	20.9	12.0	9.5	11.9	10.3	17.2	4.6	6.0	8.7	15.0
Other consumer goods	19.9	17.7	12.0	13.7	10.4	19.2	11.9	11.6	9.6	14.2
Civil engineering	18.9	8.3	6.9	11.8	6.0	8.6	6.3	4.0	4.4	12.2

Note: For further details on methodology, refer to *www.wipo.int/econ_stat/en/economics*. WIPO's IPC technology concordance table (available at: *www.wipo.int/ipstats*) was used to convert IPC symbols into 35 corresponding fields of technology.

Source: WIPO Statistics Database, March 2022.

Top clusters of inventors in PCT applications

Tokyo–Yokohama accounted for nearly 11% of all PCT applications published during the period 2016–2020.

A28. Top 50 PCT clusters, 2016–2020

Ranking	Change in position from 2015–2019	Cluster	Origin	PCT applications	Share of total PCT applications (%)	Change from 2015–2019 (%)
1	0	Tokyo–Yokohama	Japan	122,526	10.7	4.9
2	0	Shenzhen–Hong Kong–Guangzhou	China / China, Hong Kong SAR	94,340	8.2	11.9
3	0	Seoul	Republic of Korea	46,273	4.0	8.7
4	0	San Jose–San Francisco, CA	U.S.	42,884	3.7	7.2
5	0	Osaka–Kobe–Kyoto	Japan	34,738	3.0	11.2
6	0	Beijing	China	32,016	2.8	13.0
7	3	Shanghai–Suzhou	China	22,869	2.0	55.6
8	–1	San Diego, CA	U.S.	19,363	1.7	1.0
9	–1	Nagoya	Japan	18,623	1.6	–1.3
10	–1	Boston–Cambridge, MA	U.S.	16,172	1.4	3.4
11	0	Paris	France	14,147	1.2	3.7
12	0	New York City, NY	U.S.	13,020	1.1	8.0
13	0	Seattle, WA	U.S.	11,943	1.0	5.3
14	1	Los Angeles, CA	U.S.	10,515	0.9	9.5
15	1	Daejeon	Republic of Korea	10,286	0.9	9.1
16	–2	Houston, TX	U.S.	9,785	0.9	–5.5
17	2	Munich	Germany	9,166	0.8	14.7
18	–1	Stuttgart	Germany	9,086	0.8	1.8
19	3	Hangzhou	China	8,568	0.7	31.6
20	–2	Eindhoven	Belgium / Netherlands	8,162	0.7	–0.6
21	–1	Cologne	Germany	7,829	0.7	–1.2
22	–1	Tel Aviv–Jerusalem	Israel	7,238	0.6	1.9
23	3	Chicago, IL	U.S.	6,433	0.6	19.6
24	–1	Minneapolis, MN	U.S.	6,382	0.6	2.0
25	–1	Portland, OR	U.S.	6,151	0.5	–1.7
26	–1	Stockholm	Sweden	5,978	0.5	3.1
27	0	Frankfurt Am Main	Germany	5,234	0.5	2.0
28	1	London	U.K.	4,936	0.4	8.5
29	–1	Washington, DC–Baltimore, MD	U.S.	4,727	0.4	2.0
30	1	Singapore	Singapore	4,370	0.4	5.1
31	–1	Amsterdam–Rotterdam	Netherlands	4,304	0.4	–0.4
32	20	Wuhan	China	4,126	0.4	60.1
33	12	Qingdao	China	4,010	0.3	31.7
34	–2	Cincinnati, OH	U.S.	3,913	0.3	–2.5
35	–2	Heidelberg–Mannheim	Germany	3,908	0.3	0.4
36	2	Kanazawa	Japan	3,814	0.3	10.4
37	0	Bengaluru	India	3,746	0.3	7.6
38	–4	Nuremberg–Erlangen	Germany	3,649	0.3	0.9
39	20	Nanjing	China	3,620	0.3	59.3
40	–5	Hamamatsu	Japan	3,548	0.3	–1.5
41	–2	Berlin	Germany	3,518	0.3	3.8
42	2	Taipei–Hsinchu	Taiwan, Province of China	3,439	0.3	11.3
43	–3	Philadelphia, PA	U.S.	3,437	0.3	3.9
44	3	Istanbul	Turkey	3,419	0.3	13.9
45	–2	Zürich	Switzerland / Germany	3,406	0.3	8.9
46	–4	Dallas, TX	U.S.	3,191	0.3	1.8
47	–6	Brussels	Belgium	3,094	0.3	–3.3
48	–2	Copenhagen	Denmark	3,075	0.3	1.1
49	0	Cambridge	U.K.	3,052	0.3	7.1
50	–2	Raleigh, NC	U.S.	2,888	0.3	0.5

Note: For further details on methodology, refer to the Special theme of the 2020 edition of the *PCT Yearly Review*.

Source: WIPO Statistics Database, March 2022.

Seattle had a high concentration of computer technology in 2016–2020.

A29. Top 15 technology fields for the top 20 PCT clusters, 2016–2020

Rank	Cluster	Field of technology: Computer technology	Digital communication	Electrical machinery, apparatus, energy	Medical technology	Measurement	Pharmaceuticals	Transport	Audio-visual technology	Biotechnology	Optics	Semiconductors	IT methods for management	Telecommunications	Organic fine chemistry	Civil engineering	All other fields
1	Tokyo–Yokohama	8.1	4.4	8.8	5.8	5.2	1.3	5.1	5.2	1.6	5.8	4.6	2.5	2.2	1.7	1.4	36.3
2	Shenzhen–Hong Kong–Guangzhou	17.7	27.1	5.7	2.5	3.0	0.9	2.5	6.6	1.0	3.9	2.3	2.8	6.2	0.5	0.8	16.4
3	Seoul	9.5	17.0	6.4	5.7	2.6	3.4	2.3	6.9	2.4	3.1	4.1	3.4	5.8	2.1	1.4	23.7
4	San Jose–San Francisco, CA	22.2	11.6	4.1	8.0	4.5	4.8	1.5	4.5	5.3	3.8	6.4	4.7	2.7	1.8	0.4	13.8
5	Osaka–Kobe–Kyoto	3.0	2.0	12.9	5.4	6.8	2.6	2.5	3.9	2.3	4.5	5.7	0.8	2.8	2.2	0.8	41.8
6	Beijing	17.9	21.7	3.8	2.6	3.9	2.1	1.8	9.3	2.0	6.9	8.2	2.2	2.9	1.0	0.9	12.8
7	Shanghai–Suzhou	10.1	13.2	7.8	5.0	3.9	5.9	3.4	3.3	3.2	2.5	3.0	2.0	2.7	5.5	1.3	27.1
8	San Diego, CA	10.6	35.5	2.2	4.3	3.6	5.9	0.9	5.3	5.1	1.3	2.4	0.8	7.1	2.4	0.2	12.6
9	Nagoya	2.5	1.0	18.8	2.5	6.7	0.5	13.2	6.5	0.7	2.0	3.2	0.5	1.0	0.5	1.0	39.2
10	Boston–Cambridge, MA	7.0	2.5	3.6	11.6	4.8	18.3	1.0	2.2	14.6	1.9	2.0	1.4	1.7	5.9	0.8	20.9
11	Paris	5.9	6.1	6.1	4.4	5.4	4.0	11.4	1.7	3.4	2.9	1.1	1.4	1.7	5.6	2.0	36.8
12	New York City, NY	10.7	5.4	2.0	8.5	3.8	14.5	0.9	1.2	6.8	1.4	1.2	5.5	2.1	9.6	0.9	25.4
13	Seattle, WA	41.2	13.5	2.3	3.3	2.3	3.2	1.0	4.4	3.4	3.1	0.6	7.4	3.0	0.7	0.5	9.9
14	Los Angeles, CA	9.0	3.9	4.2	19.6	3.8	7.8	3.5	5.6	5.0	3.7	1.5	2.8	2.1	2.0	1.8	23.5
15	Daejeon	2.8	1.9	22.6	2.3	4.9	3.0	2.5	2.5	2.5	4.2	5.4	0.9	1.1	5.4	0.7	37.3
16	Houston, TX	7.5	1.3	2.2	2.3	10.7	2.9	1.1	1.2	2.2	0.9	0.4	0.8	0.7	3.2	32.6	29.8
17	Munich	8.5	13.0	7.9	3.9	6.0	2.0	12.8	2.5	2.2	1.7	1.4	1.5	3.5	1.1	1.0	31.0
18	Stuttgart	3.6	3.1	11.8	2.6	11.4	0.8	13.1	1.6	1.2	1.8	1.5	0.5	1.2	0.2	1.4	44.1
19	Hangzhou	29.4	13.5	3.3	4.8	3.7	2.0	2.0	5.1	1.3	0.9	0.8	12.1	2.7	1.3	0.6	16.4
20	Eindhoven	10.8	3.0	13.9	28.7	7.6	0.2	0.8	1.6	0.4	9.8	1.9	1.0	1.5	0.2	0.3	18.5

Note: For further details on methodology, refer to the Special theme of the 2020 edition of the *PCT Yearly Review*. WIPO's IPC technology concordance table (available at: *www.wipo.int/ipstats*) was used to convert IPC symbols into 35 corresponding fields of technology.

Source: WIPO Statistics Database, March 2022.

Statistical table

A30. PCT applications by office and origin, 2020–2021

Name	PCT applications filed in 2021 (international phase)		PCT applications filed in 2020 (international phase)	
	At receiving office	By country of origin	At receiving office	By country of origin
African Intellectual Property Organization	3	n.a.	0	n.a.
African Regional Intellectual Property Organization	2	n.a.	1	n.a.
Albania	0	0	0	1
Algeria	4	7	13	14
Andorra	n.a.	7	n.a.	1
Angola (c)	0	1	0	0
Antigua and Barbuda	0	19	0	65
Argentina	n.a.	31	n.a.	37
Armenia	1	4	0	3
Australia	1,615	1,782	1,592	1,718
Austria	517	1,587	456	1,517
Azerbaijan	6	3	5	7
Bahamas	n.a.	4	n.a.	7
Bahrain	0	5	0	2
Bangladesh	n.a.	2	n.a.	1
Barbados (c)	0	29	0	38
Belarus	20	20	14	14
Belgium	0	1,385	0	1,310
Belize	0	3	0	4
Benin (d)	0	0	0	1
Bermuda	n.a.	11	n.a.	9
Bosnia and Herzegovina	10	13	7	7
Botswana	0	3	0	0
Brazil	588	618	656	691
Brunei Darussalam	0	0	0	1
Bulgaria	34	44	43	51
Burkina Faso (d)	0	0	0	0
Cambodia	0	2	0	1
Cameroon (d)	0	4	0	2
Canada	1,989	2,627	1,927	2,605
Central African Republic (d)	0	0	0	0
Chad (d)	0	0	0	0
Chile	137	167	208	245
China	73,434	69,540	72,338	68,923
Colombia	12	99	19	125
Comoros (d)	0	1	0	0
Congo (d)	0	0	0	1
Costa Rica	2	5	6	10
Côte d'Ivoire (d)	0	0	0	0
Croatia	14	39	8	20
Cuba	15	15	11	11
Cyprus	2	55	3	48
Czech Republic	220	283	157	210
Democratic People's Republic of Korea	1	1	2	2
Democratic Republic of the Congo	n.a.	0	n.a.	1
Denmark	390	1,540	424	1,573
Djibouti	0	0	0	0
Dominica	0	0	0	0
Dominican Republic	0	1	6	10
Ecuador	4	16	1	4
Egypt	48	53	38	44
El Salvador	0	0	1	1
Equatorial Guinea (d)	0	0	0	0
Estonia	2	57	2	57
Eswatini (a)	0	0	0	1
Eurasian Patent Organization	12	n.a.	10	n.a.

(Continued)

(A30 continued)

Name	PCT applications filed in 2021 (international phase)		PCT applications filed in 2020 (international phase)	
	At receiving office	By country of origin	At receiving office	By country of origin
European Patent Office	38,407	n.a.	38,872	n.a.
Finland	934	1,907	896	1,676
France	2,366	7,380	2,536	7,782
Gabon (d)	0	1	0	1
Gambia (a)	0	0	0	0
Georgia	13	18	5	5
Germany	1,472	17,322	1,484	18,499
Ghana	0	1	0	0
Greece	79	92	65	98
Grenada	0	0	0	0
Guatemala	0	2	0	2
Guinea (d)	0	0	0	0
Guinea-Bissau (d)	0	0	0	0
Holy See	n.a.	2	n.a.	0
Honduras	0	1	0	0
Hungary	90	114	105	140
Iceland	12	30	25	49
India	1,201	2,100	1,046	1,907
Indonesia	6	8	4	16
International Bureau	13,538	n.a.	13,430	n.a.
Iran (Islamic Republic of)	32	364	46	267
Ireland	12	840	8	762
Israel	1,562	2,122	1,371	1,928
Italy	497	3,581	417	3,398
Jamaica	n.a.	5	n.a.	0
Japan	49,137	50,260	49,313	50,578
Jordan	17	24	11	19
Kazakhstan	30	33	30	32
Kenya	6	9	6	7
Kuwait	0	7	0	13
Kyrgyzstan	0	0	2	4
Lao People's Democratic Republic (c)	0	0	0	0
Latvia	13	39	6	29
Lebanon	n.a.	6	n.a.	3
Lesotho	0	0	0	0
Liberia	0	0	0	0
Libya	0	1	0	3
Liechtenstein (b)	0	269	0	239
Lithuania	0	47	0	39
Luxembourg	0	337	0	319
Madagascar (c)	0	1	0	0
Malawi	0	0	0	0
Malaysia	133	137	231	242
Mali (d)	0	1	0	0
Malta	0	47	0	39
Mauritania (d)	0	0	0	0
Mauritius	n.a.	34	n.a.	13
Mexico	113	167	123	178
Monaco	0	20	0	17
Mongolia	0	1	0	0
Montenegro (c)	3	3	0	0
Morocco	54	63	34	40
Mozambique (a)	0	0	0	0
Namibia (a)	0	10	0	5
Netherlands	802	4,123	846	3,996
New Zealand	236	373	181	298
Nicaragua	0	0	2	2
Niger (d)	0	0	0	0
Nigeria (c)	0	5	0	4
North Macedonia	4	6	3	6
Norway	288	724	323	702
Oman	10	12	10	11
Pakistan	n.a.	1	n.a.	0

(Continued)

(A30 continued)

Name	PCT applications filed in 2021 (international phase)		PCT applications filed in 2020 (international phase)	
	At receiving office	By country of origin	At receiving office	By country of origin
Panama	0	12	5	19
Papua New Guinea	0	0	0	0
Paraguay	n.a.	1	n.a.	0
Peru	37	38	34	35
Philippines	44	50	25	31
Poland	192	386	196	347
Portugal	45	250	62	251
Qatar	23	27	15	21
Republic of Korea	20,570	20,678	19,675	20,045
Republic of Moldova	3	2	5	5
Romania	17	28	31	39
Russian Federation	1,021	1,095	1,190	1,074
Rwanda	0	0	0	0
Saint Kitts and Nevis	0	3	0	1
Saint Lucia (c)	0	0	0	0
Saint Vincent and the Grenadines (c)	0	0	0	0
Samoa	0	2	0	4
San Marino	0	5	0	5
Sao Tome and Principe (c)	0	0	0	0
Saudi Arabia	32	822	22	952
Senegal (d)	0	3	0	2
Serbia	16	22	22	24
Seychelles	0	2	0	2
Sierra Leone (a)	0	1	0	0
Singapore	831	1,617	802	1,315
Slovakia	24	39	30	48
Slovenia	31	96	37	81
South Africa	71	228	73	240
Spain	988	1,574	885	1,459
Sri Lanka (c)	0	38	0	22
Sudan	3	3	4	6
Sweden	1,333	4,453	1,295	4,351
Switzerland	32	5,386	33	5,119
Syrian Arab Republic	5	6	0	2
Tajikistan	0	0	0	0
Thailand	75	148	84	159
Togo (d)	0	0	0	0
Trinidad and Tobago	0	2	0	1
Tunisia	8	15	3	5
Turkey	1,790	1,829	1,520	1,616
Turkmenistan	0	0	0	0
Uganda	0	4	0	1
Ukraine	104	131	111	127
United Arab Emirates (c)	0	122	0	84
United Kingdom	3,536	5,841	3,446	5,889
United Republic of Tanzania (a)	0	0	0	0
United States of America	56,494	59,570	55,886	58,477
Uruguay	n.a.	5	n.a.	8
Uzbekistan	1	3	0	0
Viet Nam	25	35	18	23
Zambia	0	0	1	1
Zimbabwe	0	1	0	2
Others	0	194	0	235
Total	**277,500**	**277,500**	**274,889**	**274,889**

Note: Data for 2021 are WIPO estimates.

(a) The African Regional Intellectual Property Organization (ARIPO) is the competent receiving office.

(b) The Office of Switzerland is the competent receiving office.

(c) The International Bureau is the competent receiving office.

(d) The African Intellectual Property Organization (OAPI) is the competent receiving office.

n.a. indicates not applicable, as it is not an office of a PCT member state, or else the office does not act as a PCT receiving office.

Source: WIPO Statistics Database, March 2022.

Section B Statistics on PCT national phase entries

Highlights

PCT national phase entries dropped by 1.7% in 2020

PCT national phase entries (NPEs) initiated worldwide amounted to 664,700 applications in 2020 – the latest year for which data are available – representing a 1.7% decline on the previous year (figure B1). This is the first decline since 2016. The drop in 2020 was mostly due to fewer NPEs being initiated by applicants residing in Germany, Japan and the U.S. This decrease masks a trend showing sustained growth over time. Over the past 16 years, the number of NPEs initiated worldwide has doubled. Most of this increase has originated from Japan and the U.S.

NPEs initiated by non-resident applicants represented 83.2% of all NPEs in 2020. This share has tended to decrease slightly over the past decade, mainly due to a growth in resident NPEs initiated at the Japan Patent Office (JPO) and at the United States Patent and Trademark Office (USPTO). In 2020, NPEs initiated by resident applicants at these two offices accounted for 39.9% and 22.7% of total NPEs, respectively (figure B12).

Asia remained the region from which most PCT NPEs were initiated worldwide

For a second consecutive year, applicants from Asia initiated the largest proportion of NPEs globally, accounting for 36.2% of all NPEs initiated worldwide in 2020. Asia's share has increased sharply since 2010, when it was just over one-quarter (25.4%) (figure B3). Asia was followed by Europe (31.1%) and North America (29.2%). The combined share of applicants located in Africa, Latin America and the Caribbean (LAC) and Oceania amounted to 2%.

Of the top 20 offices, only six received more NPEs in 2020 than in the previous year. Among those six offices, Israel (+3.9%), Singapore (+2.8%) and the European Patent Office (EPO) (+1.1%) saw the sharpest growth (figure B11). In contrast, the offices of Indonesia (–17.6%) and Malaysia (–12.2%) experienced double-digit falls in the number of NPEs.

Applicants based in the U.S. initiated the most PCT NPEs globally

In 2020, applicants residing in the U.S. initiated 184,452 NPEs. They were followed by applicants from Japan (134,237), Germany (56,780), China (51,638) and the Republic of Korea (34,192) (table B7). The U.S. and Japan combined accounted for nearly half of all NPEs initiated worldwide, with 27.7% and 20.2% of total NPEs, respectively. Despite the high concentration of NPEs among just a few origins, applicants from over 135 countries initiated NPEs in 2020.

Three of the top 10 origins recorded growth, namely, China (+4%), the Republic of Korea (+3%) and the U.K. (+2%). In contrast, the steepest falls originated from the Netherlands (–9%), Sweden (–7.7%) and Germany (–4.5%). Applicants from Japan and the U.S. saw drops of 2.6% and 2.3%, respectively (figure B6). A majority of the top origins listed in table B7 saw a decrease in the number of NPEs they initiated worldwide in 2020.

Of the 161,565 NPEs received at the USPTO, applicants from the U.S. (22.7% of the total), Japan (20.1%) and China (9.9%) initiated the largest shares (figure B12). Combined, these three origins also accounted for the majority of NPEs initiated at the JPO. Applicants from the U.S. accounted for the highest shares of NPEs at 14 of the top 20 offices, while applicants residing in Japan accounted for those at the other six offices. More specifically, U.S.-based applicants were responsible for between 45% and 47% of all NPEs initiated at the offices of Canada, Israel and Mexico, while Japan-based applicants initiated a large proportion of NPEs at the offices of Germany (49.9%), Japan (39.9%) and Indonesia (30.8%).

The PCT System accounted for almost 57% of all non-resident patent applications in 2020

In 2020, an estimated 552,900 non-resident NPEs were initiated worldwide via the PCT route. By comparison, non-resident applicants filed about 419,400 patent applications directly at offices (i.e., via the Paris route). This means that 56.9% of all non-resident patent applications were filed via the PCT route in 2020 (figure B13). This share increased marginally compared to the previous year by 0.1 percentage points.

Over the past decade, the number of non-resident patent applications filed via both routes has trended upward, although the PCT route has grown at a faster pace, with an average annual growth rate of 2.7% between 2011 and 2020 compared to 1.8% for the Paris route.

Of the top 20 offices in terms of non-resident patent applications, 17 received a majority of non-resident filings via the PCT route, with the offices of Brazil and Israel having shares above 93%, and those of Germany, the U.K. and the U.S. between 23% and 39% (figure B15).

Of the top 20 origins for filing applications abroad, applicants from Sweden (73%), Australia (72.5%) and the U.S. (68.7%) relied on the PCT route for the vast majority of their filings abroad. In contrast, applicants from Canada, India, Israel and the Republic of Korea filed the majority of their patent applications abroad directly with foreign offices via the Paris route (figure B14).

Applicants residing in Australia, Denmark and Switzerland initiated a high number of NPEs for every PCT application filed, averaging between 4.2 and 4.4 NPEs per PCT application. In contrast, applicants from China and Turkey averaged just 0.9 and 0.7 NPE per PCT application, respectively (figure B8).

Huawei used the PCT route to create the most foreign-oriented patent families between 2016 and 2018

Huawei of China overtook Samsung Electronics of the Republic of Korea to become the company that created the highest number of foreign-oriented patent families (for a definition, see the Glossary in the annex) using the PCT route, with 8,169 such families created between 2016 and 2018 (figure B17). This company was followed by Samsung Electronics, Mitsubishi and BOE Technology Group, which had between 5,000 and 5,700 families each. Compared to the period 2015–2017, the number of foreign-oriented patent families created using the PCT route almost doubled for Huawei and tripled for Mitsubishi.

Of the top 50 applicants in terms of foreign-oriented patent families between 2016 and 2018, 23 relied primarily on the PCT System to protect innovations abroad, which is two more than during the period 2013–2015 (table B18). Guangdong Oppo Mobile Telecommunications used the PCT route for almost the entirety of its foreign-oriented patent families. It was followed, in descending order, by Ericsson Telefon, Hewlett Packard Development, Alibaba, Huawei, and Microsoft Technology Licensing, each having used the PCT System for more than 96% of their foreign-oriented patent families. In contrast, several other applicants with a high number of foreign-oriented patent families relied on the PCT System hardly at all, for instance, Ford Global Technologies, Hyundai Motor and Toyota Motor.

Global trends in PCT national phase entries

National phase entries by origin

National phase entries by office

Patent applications by filing route

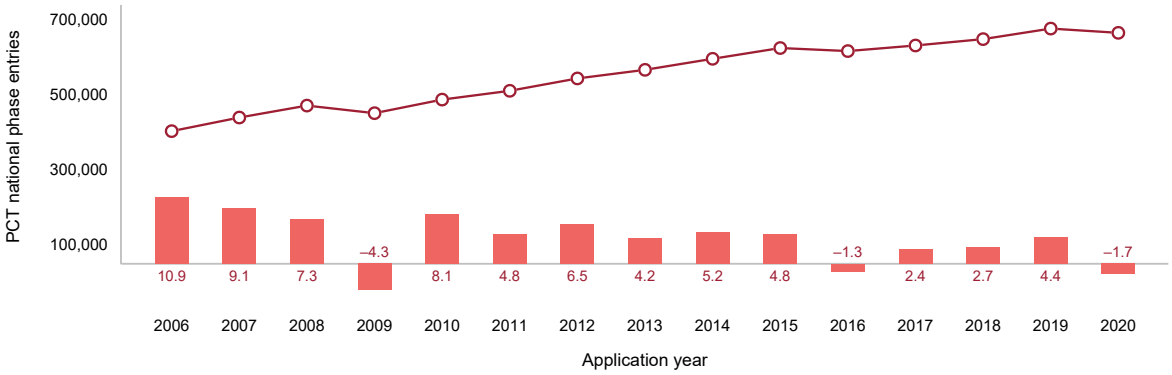
Top applicants in foreign-oriented patent families

Statistical table

Global trends in PCT national phase entries

In 2020, 664,700 PCT national phase entries were initiated, a drop of 1.7% on 2019.

B1. Trend in PCT national phase entries, 2006–2020

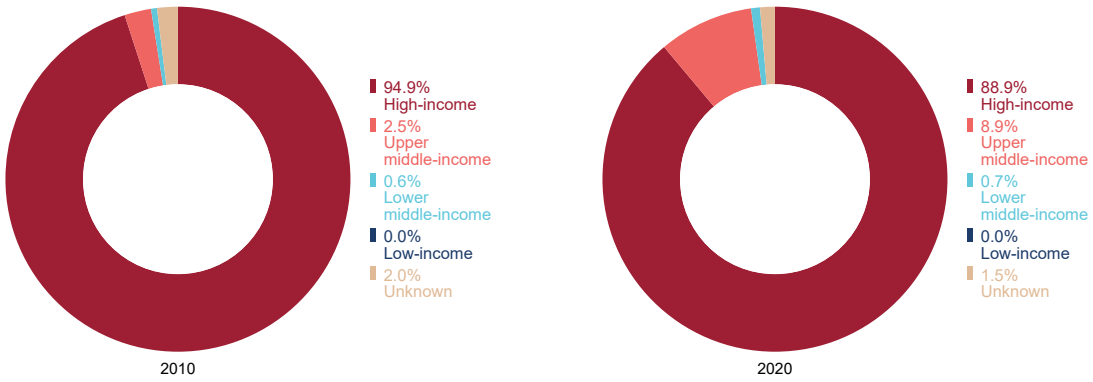


Note: WIPO estimates. National phase data from patent offices are available up to 2020.

Source: WIPO Statistics Database, March 2022.

Applicants from high-income economies initiated almost 89% of PCT national phase entries in 2020.

B2. PCT national phase entries by income group, 2010 and 2020

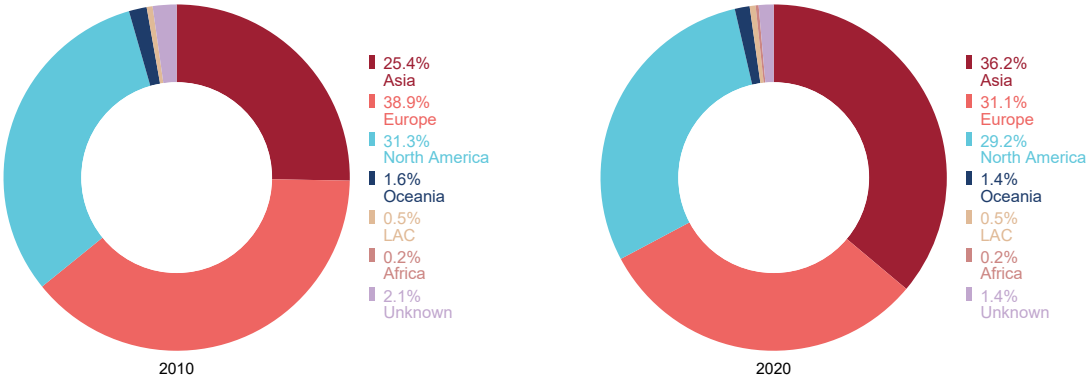


Note: Each category includes the following number of origins: high-income (62), upper middle-income (38), lower middle-income (29) and low-income (6). For information on income group classification, see annex, Data description.

Source: WIPO Statistics Database, March 2022.

Asia accounted for the biggest proportion of PCT national phase entries in 2020.

B3. PCT national phase entries by region, 2010 and 2020



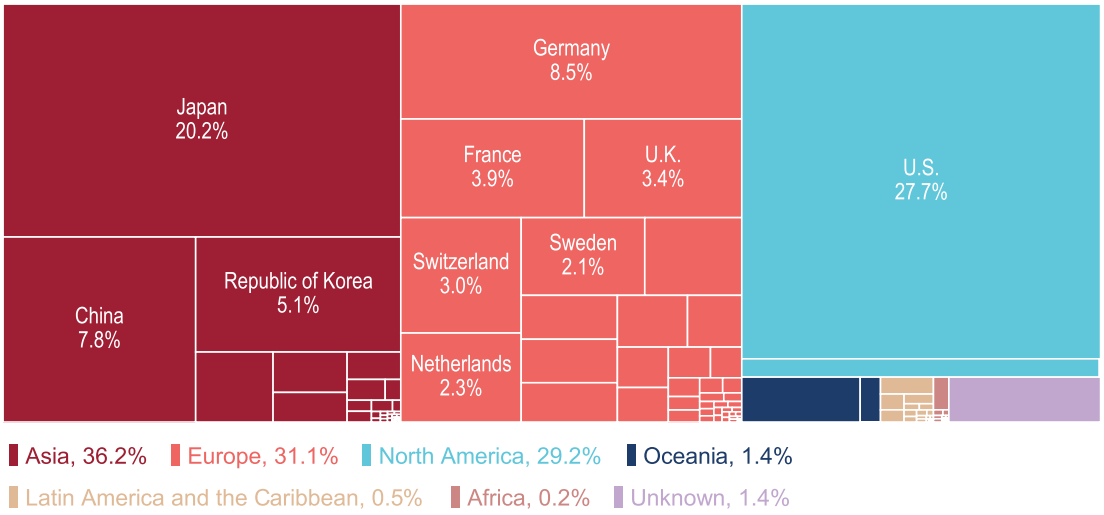
Note: Each region includes the following number of origins: Africa (21), Asia (39), Europe (45), Latin America and the Caribbean (LAC) (24), North America (3) and Oceania (3).

Source: WIPO Statistics Database, March 2022.

National phase entries by origin

Applicants from Japan and the U.S. combined initiated almost 48% of all PCT national phase entries in 2020.

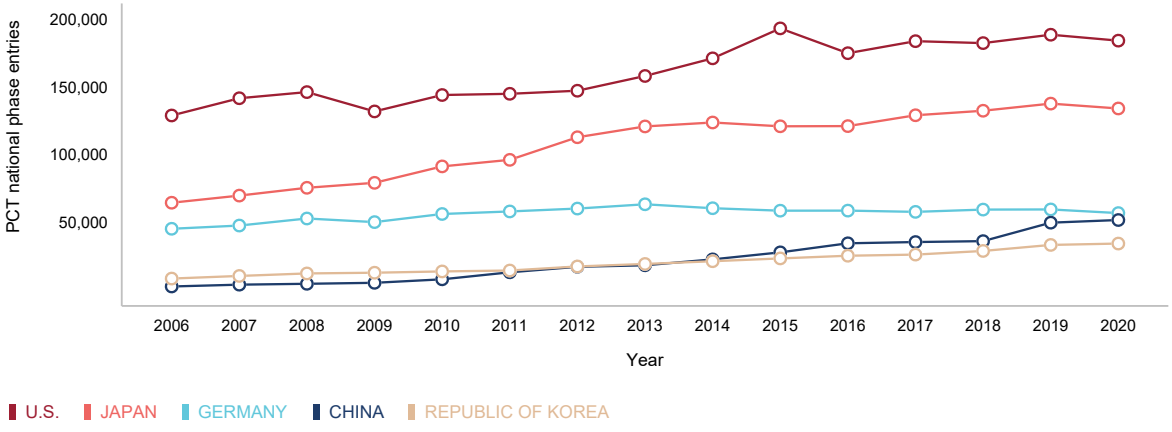
B4. Distribution of PCT national phase entries by region and origin, 2020



Source: WIPO Statistics Database, March 2022.

Ever since the PCT System began, applicants from the U.S. have initiated year-on-year the highest number of PCT national phase entries worldwide.

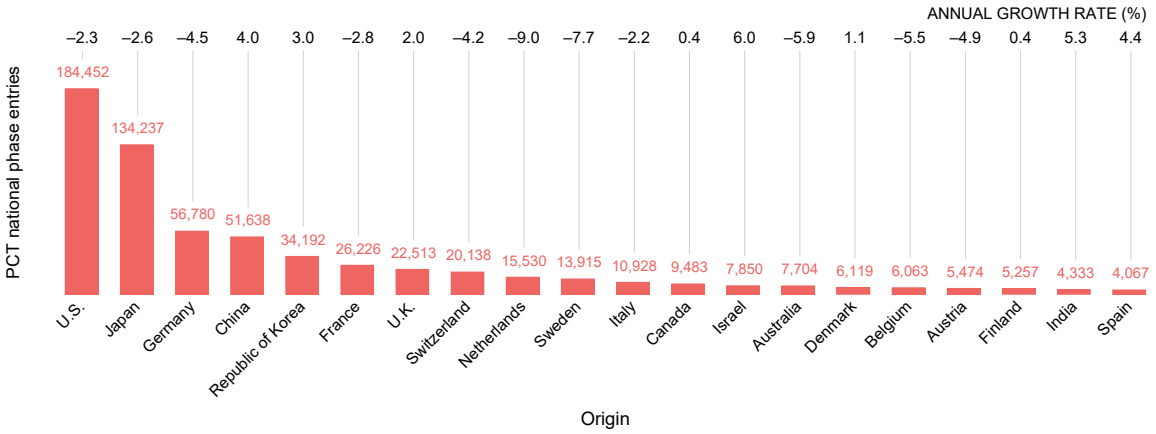
B5. Trends in PCT national phase entries for the top five origins, 2006–2020



Source: WIPO Statistics Database, March 2022.

Eleven of the top 20 origins experienced a fall in PCT national phase entries in 2020.

B6. PCT national phase entries for the top 20 origins, 2020



Source: WIPO Statistics Database, March 2022.

Asia and Latin America and the Caribbean were the only two regions where PCT national phase entries grew in 2020.

B7. PCT national phase entries for the top origins by region, 2018–2020

Region	Origin	2018	2019	2020	Regional share 2020 (%)	Change from 2019 (%)
Africa	South Africa	879	743	730	79.0	–1.7
	Egypt	47	53	48	5.2	–9.4
	Morocco	43	48	40	4.3	–16.7
	Mauritius	42	14	39	4.2	178.6
	Kenya	10	6	14	1.5	133.3
	Tunisia	8	6	11	1.2	83.3
	Others	85	84	42	4.5	–50.0
	Total*	**1,114**	**954**	**924**	**0.1**	**–3.1**
Asia	Japan	132,526	137,808	134,237	55.7	–2.6
	China	35,991	49,664	51,638	21.4	4.0
	Republic of Korea	28,732	33,185	34,192	14.2	3.0
	Israel	7,176	7,407	7,850	3.3	6.0
	India	3,989	4,113	4,333	1.8	5.3
	Singapore	2,829	2,916	3,177	1.3	9.0
	Saudi Arabia	1,104	1,641	2,132	0.9	29.9
	Turkey	1,015	1,168	1,146	0.5	–1.9
	China, Hong Kong SAR	511	500	470	0.2	–6.0
	Thailand	492	622	390	0.2	–37.3
	Others	1,243	1,371	1,306	0.5	–4.7
	Total*	**215,608**	**240,395**	**240,871**	**36.2**	**0.2**
Europe	Germany	59,356	59,457	56,780	27.5	–4.5
	France	28,174	26,979	26,226	12.7	–2.8
	U.K.	23,855	22,078	22,513	10.9	2.0
	Switzerland	22,321	21,020	20,138	9.8	–4.2
	Netherlands	17,847	17,069	15,530	7.5	–9.0
	Sweden	13,703	15,080	13,915	6.7	–7.7
	Italy	11,781	11,179	10,928	5.3	–2.2
	Denmark	5,900	6,054	6,119	3.0	1.1
	Belgium	6,599	6,418	6,063	2.9	–5.5
	Austria	5,985	5,759	5,474	2.7	–4.9
	Others	23,003	22,891	22,832	11.1	–0.3
	Total*	**218,524**	**213,984**	**206,518**	**31.1**	**–3.5**

(Continued)

(B7 continued)

Latin America and the Caribbean	Brazil	1,074	1,224	1,297	37.6	6.0
	Mexico	618	749	540	15.7	–27.9
	Antigua and Barbuda	400	266	415	12.0	56.0
	Chile	392	407	414	12.0	1.7
	Colombia	162	119	138	4.0	16.0
	Barbados	342	182	128	3.7	–29.7
	Argentina	111	126	119	3.5	–5.6
	Cuba	90	61	100	2.9	63.9
	Peru	43	39	84	2.4	115.4
	Panama	10	23	54	1.6	134.8
	Others	205	179	156	4.5	–12.8
	Total*	**3,447**	**3,375**	**3,445**	**0.5**	**2.1**
North America	U.S.	182,607	188,809	184,452	95.1	–2.3
	Canada	9,161	9,448	9,483	4.9	0.4
	Bermuda	27	69	34	0.0	–50.7
	Total*	**191,795**	**198,326**	**193,969**	**29.2**	**–2.2**
Oceania	Australia	7,448	8,188	7,704	85.4	–5.9
	New Zealand	1,397	1,255	1,321	14.6	5.3
	Others	13	17	1	0.0	–94.1
	Total*	**8,858**	**9,460**	**9,026**	**1.4**	**–4.6**
Unknown*		8,545	9,604	9,870	1.5	2.8
World		**647,900**	**676,100**	**664,700**	**n.a.**	**–1.7**

Note: World totals are WIPO estimates. This table shows the top countries in each region (with a maximum of 10 countries per region) where applicants filed more than 10 PCT national phase entries in 2020. Data for all origins are reported in statistical table B19.

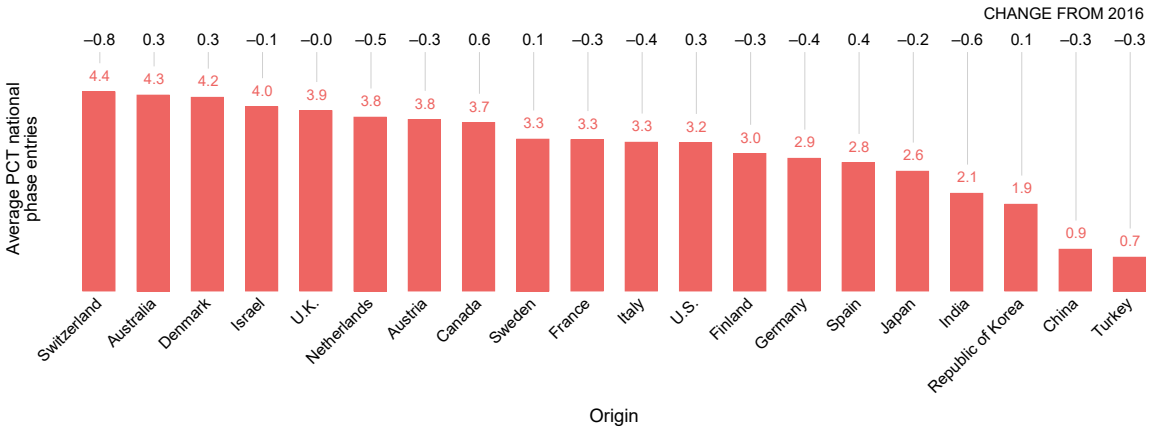
* indicates share of world total.

n.a. indicates not applicable.

Source: WIPO Statistics Database, March 2022.

Applicants residing in Switzerland initiated an average of 4.4 NPEs per PCT application.

B8. Average number of national phase entries per PCT application for the top 20 origins, 2020



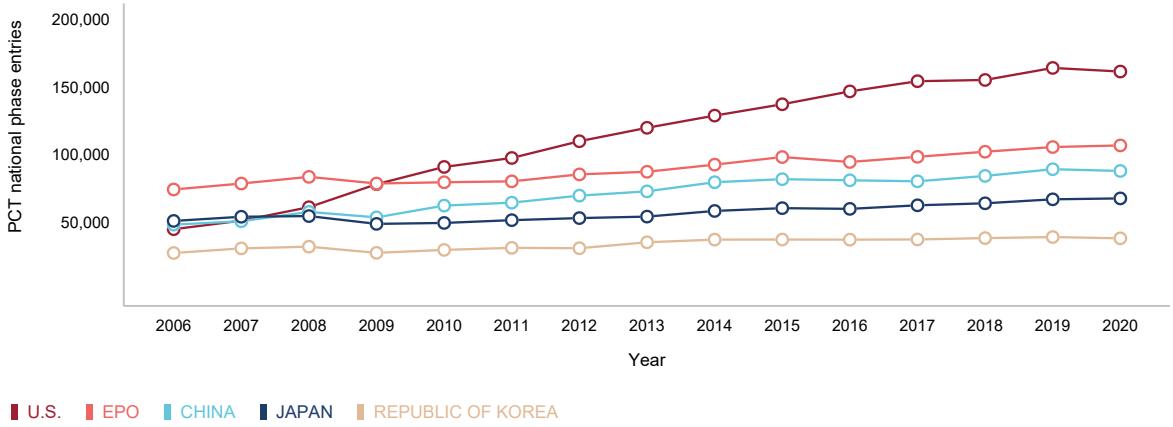
Note: The average is defined as the number of national phase entries initiated in 2020 divided by the average number of PCT applications filed in the two preceding years.

Source: WIPO Statistics Database, March 2022.

National phase entries by office

Since 2010, the U.S. has continued to attract the most PCT national phase entries.

B9. Trends in PCT national phase entries for the top five offices, 2006–2020

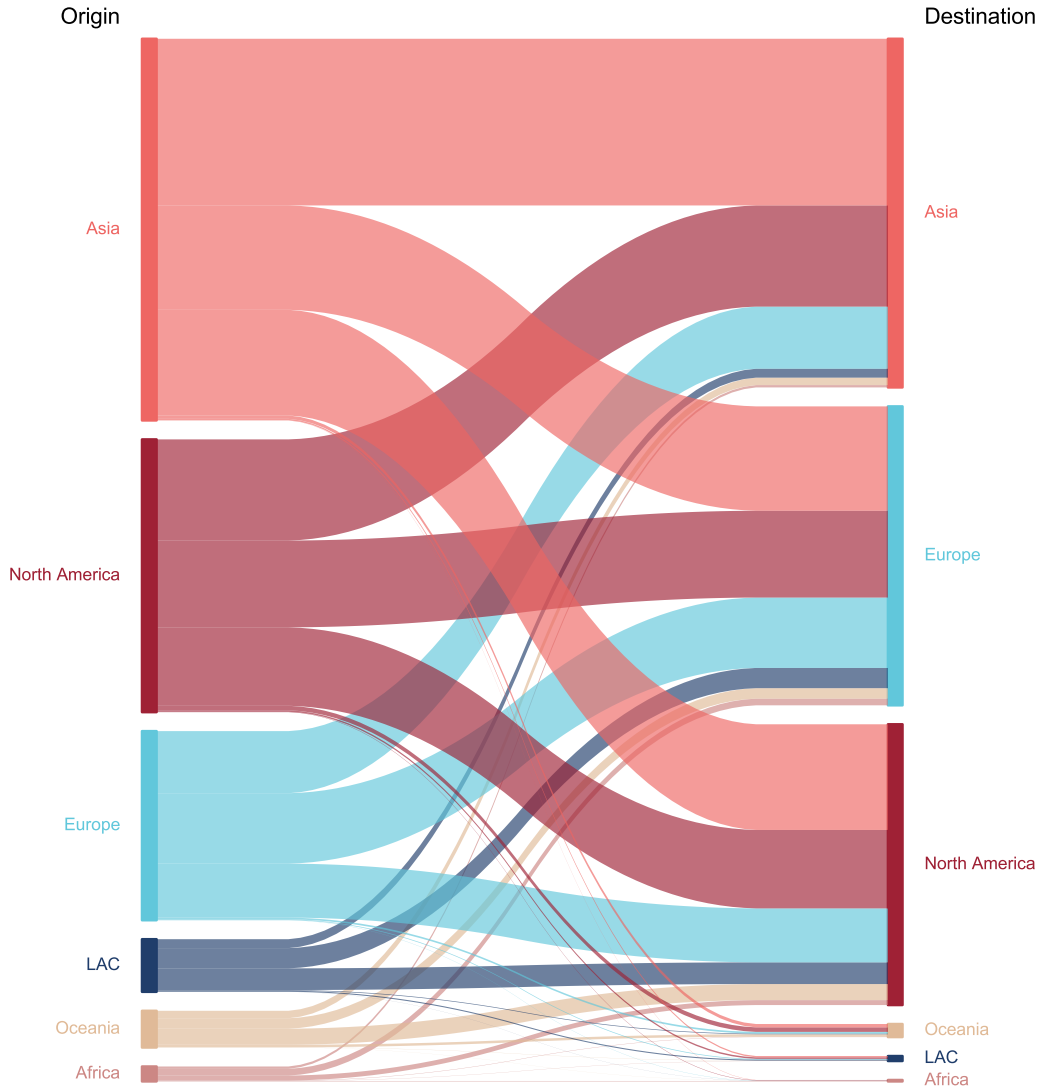


Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

Applicants resident in Asia initiated the majority of their national phase entries in their home region.

B10. Flow of national phase entries between regions of origin and regions of destination, 2020

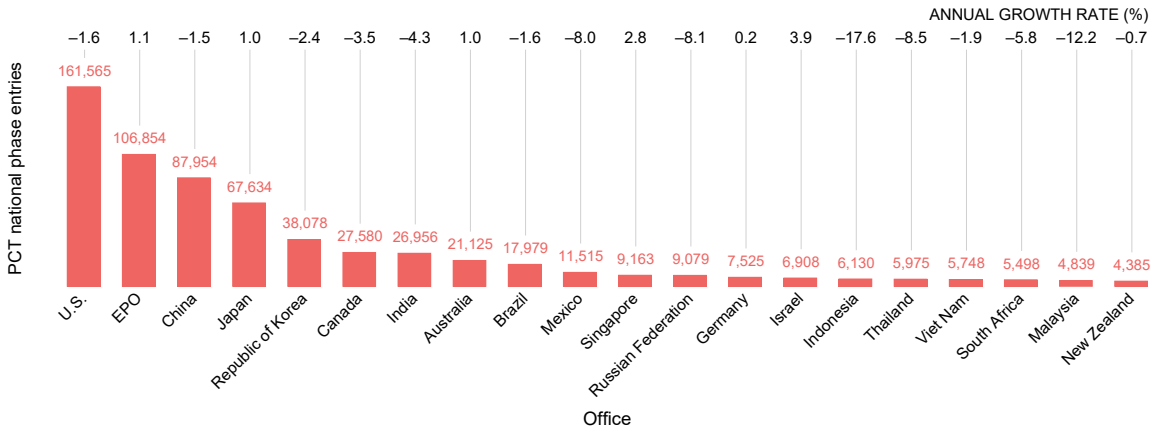


Note: LAC is Latin America and the Caribbean.

Source: WIPO Statistics Database, March 2022.

Fourteen of the top 20 offices experienced a fall in PCT national phase entries.

B11. PCT national phase entries for the top 20 offices, 2020



Note: This table shows data for the 20 offices to receive the most PCT national phase entries. NPE data may not be available at some offices. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

Applicants resident in Japan were responsible for the highest share of PCT national phase entries initiated at the Japan Patent Office, with almost 40% of the total.

B12. Flow of national phase entries for the top 20 offices and the top 10 origins as a percentage of total national phase entries at respective offices, 2020

	Origin										
Office	U.S.	Japan	Germany	China	Republic of Korea	France	U.K.	Switzerland	Netherlands	Sweden	Other origins
U.S.	22.7	20.1	9.2	9.9	7.1	4.4	4.3	1.9	1.9	2.2	16.2
EPO	27.6	14.9	10.8	10.0	5.1	5.2	3.4	2.9	2.6	2.6	14.9
China	26.5	29.7	11.0	0.7	7.3	4.0	2.4	3.0	2.8	2.0	10.6
Japan	21.7	39.9	5.8	7.9	5.4	2.8	2.2	2.6	2.3	1.3	8.3
Republic of Korea	30.7	26.2	8.0	9.6	2.6	3.4	2.7	3.0	2.1	1.7	10.1
Canada	46.7	4.9	6.4	4.4	1.3	4.2	4.2	3.5	1.8	1.5	21.0
India	30.4	14.0	7.0	12.6	6.1	3.1	3.1	3.0	3.7	2.7	14.2
Australia	41.4	6.3	5.1	9.7	2.9	2.7	4.8	3.7	1.7	1.8	19.9
Brazil	36.2	7.9	8.7	6.3	2.0	5.2	3.2	5.6	4.1	2.6	18.3
Mexico	45.4	7.3	7.9	4.8	1.6	3.5	2.8	4.8	2.6	2.8	16.5
Singapore	34.6	14.2	4.4	11.3	3.1	2.8	3.8	3.6	0.9	0.8	20.3
Russian Federation	20.0	9.8	11.9	11.0	3.1	6.2	3.6	7.2	4.5	4.1	18.6
Germany	21.4	49.9	15.6	3.1	1.5	0.9	0.7	0.8	0.5	0.8	4.8
Israel	46.2	4.0	5.9	2.4	0.9	3.5	4.8	5.6	2.4	1.5	22.9
Indonesia	17.0	30.8	5.6	11.7	5.7	2.8	2.2	4.1	3.9	1.9	14.5
Thailand	5.4	16.4	2.2	3.0	1.7	1.2	0.3	1.0	0.8	0.7	67.4
Viet Nam	17.0	26.6	4.6	18.1	13.3	1.7	1.2	2.1	2.2	1.4	11.8
South Africa	31.9	3.1	8.4	8.3	1.3	3.4	6.8	4.5	2.0	4.5	25.9
Malaysia	23.6	22.0	5.9	10.8	6.3	2.4	3.6	5.9	1.6	2.6	15.4
New Zealand	43.0	4.7	5.7	4.5	1.3	2.1	6.9	4.0	2.2	1.8	23.7

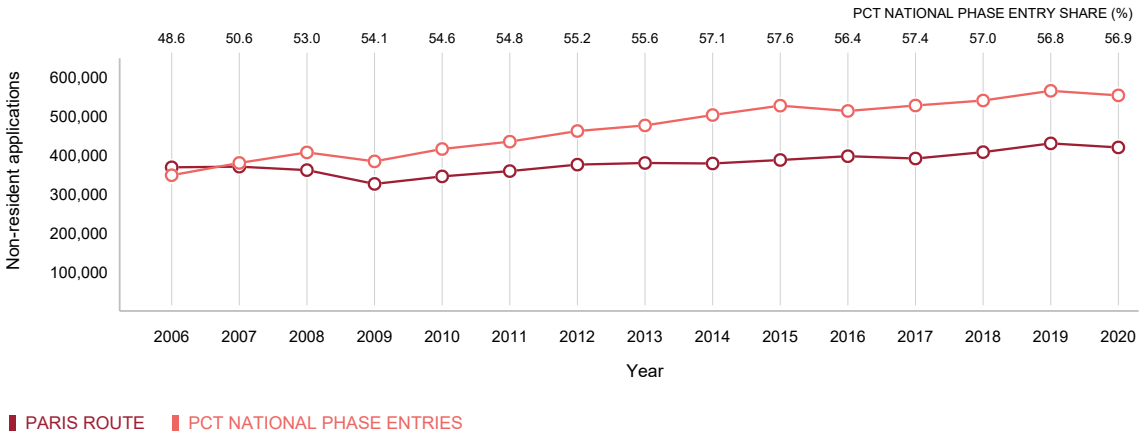
Note: This table shows data for the 20 offices to receive the most PCT national phase entries and the 10 origins to file the most applications for entry into the national phase in 2020. NPE data by origin may not be available at some offices. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

Patent applications by filing route

PCT national phase entries accounted for nearly 57% of all non-resident patent applications filed worldwide in 2020.

B13. Trend in non-resident patent applications by filing route, 2006–2020

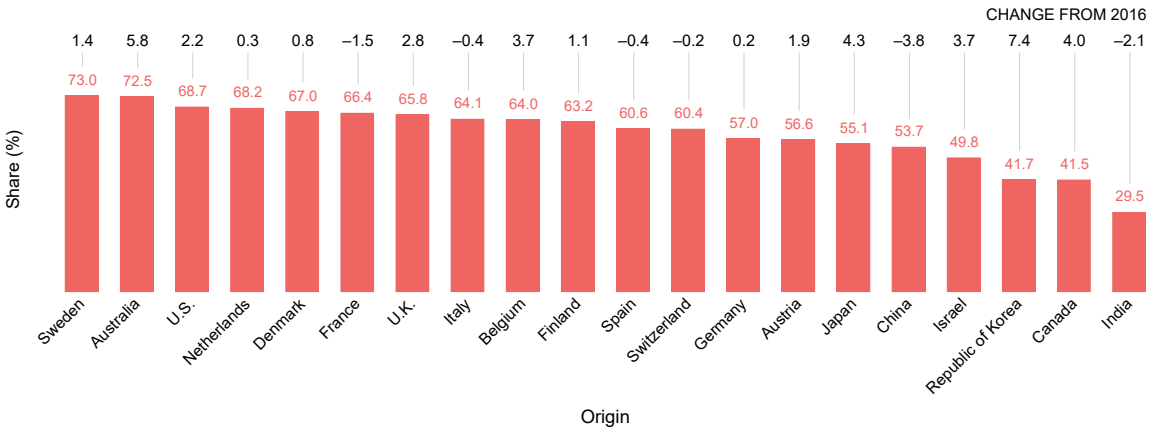


Note: These data are WIPO estimates.

Source: WIPO Statistics Database, March 2022.

Applicants from Sweden used the PCT route for 73% of their applications filed abroad.

B14. Share of PCT national phase entries in total filings abroad for the top 20 origins, 2020

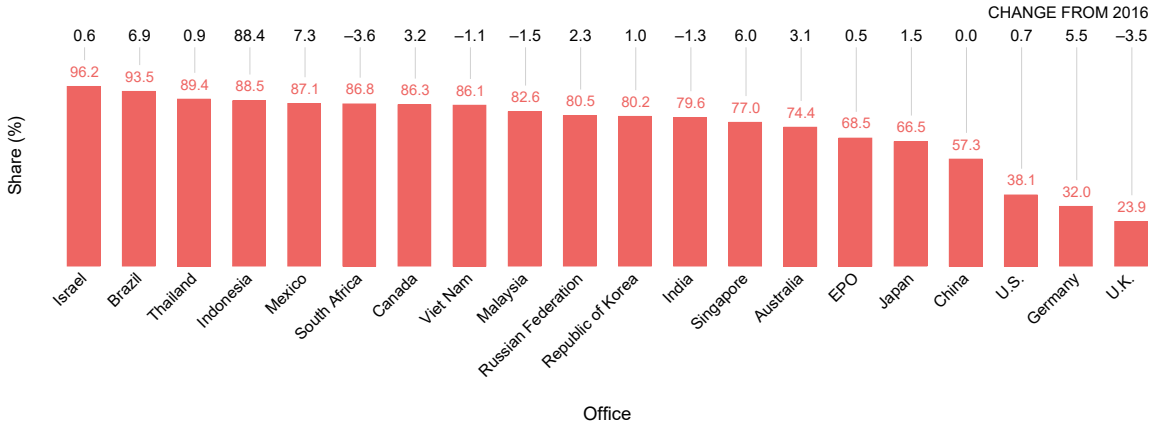


Note: Share is defined as the number of PCT national phase entries initiated abroad divided by the total number of patent applications filed abroad. It includes data from the 20 origins that filed the most applications abroad in 2020.

Source: WIPO Statistics Database, March 2022.

Israel received more than 96% of non-resident patent applications via the PCT System.

B15. Share of PCT national phase entries in total non-resident filings for the top 20 offices, 2020



Note: Share is defined as non-resident PCT national phase entries initiated divided by the total number of non-resident patent applications filed. It includes data from the 20 offices to receive the most non-resident filings in 2020; that is, data from countries that are members of the PCT System and who provided data broken down by filing route. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

Applicants from China used the PCT route for 97.3% of patent filings at the office of Brazil.

B16. Share of PCT national phase entries in total non-resident filings for the top 10 origins and the top 20 offices, 2020

Office	Origin: U.S.	Japan	Germany	China	Republic of Korea	France	U.K.	Switzerland	Netherlands	Sweden
U.S.	n.a.	41.5	51.5	38.8	30.6	63.5	53.0	55.7	68.3	71.6
China	61.5	54.6	60.1	n.a.	38.5	71.4	73.3	70.6	79.6	73.5
EPO	66.7	72.5	n.a.	79.8	59.5	n.a.	n.a.	n.a.	n.a.	n.a.
Japan	65.3	n.a.	70.7	63.4	61.7	78.5	75.5	68.8	83.3	74.7
Republic of Korea	87.6	71.1	83.3	85.1	n.a.	89.6	94.2	88.5	84.6	89.1
India	78.2	78.1	75.2	90.1	61.5	81.0	87.3	78.9	92.3	93.5
Canada	82.3	94.0	89.6	84.8	94.8	84.6	92.4	94.0	93.2	94.1
Australia	67.6	81.5	82.3	88.5	75.9	80.7	84.1	82.3	82.5	86.9
China, Hong Kong SAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Germany	27.4	51.8	n.a.	47.3	7.1	21.9	30.1	7.3	22.6	18.4
Brazil	91.7	91.1	93.5	97.3	98.4	90.6	98.0	97.6	98.8	97.7
Mexico	84.2	91.3	88.4	96.2	79.5	91.7	89.3	88.0	94.6	95.5
Singapore	81.2	74.5	75.4	62.9	67.0	85.5	83.0	84.8	85.3	87.4
Russian Federation	76.7	77.5	83.3	92.1	70.2	80.8	78.0	85.1	87.0	89.9
U.K.	53.2	37.0	4.3	12.1	11.9	15.2	n.a.	5.3	17.2	2.0
Indonesia	96.8	81.5	92.0	95.8	87.7	96.0	100.0	96.5	99.6	99.1
Viet Nam	96.0	89.9	91.3	93.8	71.4	95.2	100.0	92.4	99.2	98.8
Thailand	89.0	68.0	87.2	78.2	81.5	93.4	84.2	92.4	100.0	95.1
Israel	96.8	98.9	92.0	96.4	100.0	92.5	98.5	97.2	98.2	100.0
South Africa	86.9	94.4	90.9	62.2	100.0	93.0	94.0	92.5	90.3	98.8

Note: This figure includes data from the 20 offices to receive the most non-resident filings in 2020, regardless of whether or not they accept applications for entry into the national phase.

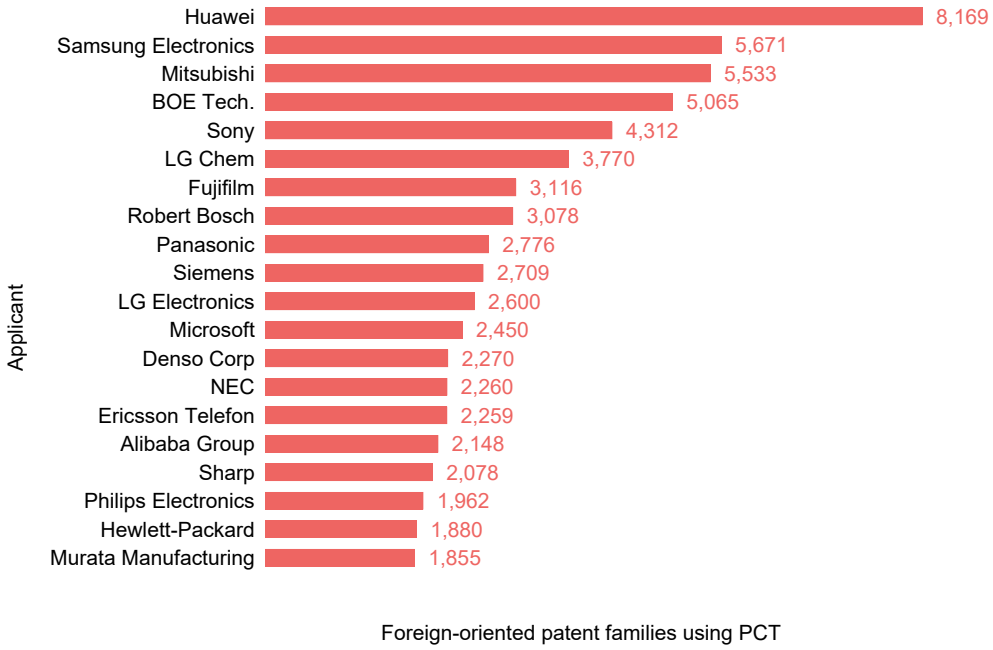
n.a. not applicable

Source: WIPO Statistics Database, March 2022.

Top applicants in foreign-oriented patent families

Huawei had the highest number of foreign-oriented patent families using the PCT route in 2016–2018.

B17. Top 20 applicants in foreign-oriented patent families using the PCT System, 2016–2018



Note: The number of patent applications in foreign-oriented patent families as reported in the autumn 2021 edition of PATSTAT may be incomplete for the most recent years. A patent family is a set of interrelated patent applications filed at one or more offices to protect the same invention. Patent applications in a family are interlinked by one or more of the following: priority claim, PCT national phase entry, continuation, continuation-in-part, internal priority, and addition or division. Foreign-oriented patent families have at least one filing at an office other than the applicant's home office.

Source: WIPO Statistics Database and EPO PATSTAT Database, March 2022.

Almost half (23) of the top 50 applicants in foreign-oriented patent families in 2016–2018 relied primarily on the PCT System for the protection of their innovations abroad.

B18. Top 50 applicants in foreign-oriented patent families, 2013–2015 and 2016–2018

		Foreign-oriented patent families		Foreign-oriented patent families using the PCT route (%)	
Rank	Applicant	2013–2015	2016–2018	2013–2015	2016–2018
1	SAMSUNG ELECTRONICS CO LTD	16,753	12,983	25.1	43.7
2	CANON KK	10,263	9,363	9.3	10.3
3	HUAWEI TECH CO LTD	6,134	8,427	94.2	96.9
4	BOE TECHNOLOGY GROUP CO LTD	5,232	8,008	73.6	63.2
5	FORD GLOBAL TECH LLC	5,333	7,229	1.2	2.6
6	TOYOTA MOTOR CORP	4,934	6,995	30.6	3.9
7	BOSCH GMBH ROBERT	6,386	6,409	42.7	48
8	MITSUBISHI ELECTRIC CORP	5,331	6,345	76.9	87.2
9	HONDA MOTOR CO LTD	3,901	5,915	23.8	26.6
10	HYUNDAI MOTOR CO LTD	4,808	4,709	0.7	0.1
11	SONY CORP	5,405	4,631	72.7	93.1
12	BAYERISCHE MOTOREN WERKE AG	3,206	4,485	32.2	27.5
13	SAMSUNG DISPLAY CO LTD	7,263	4,480	0.1	3.6
14	SIEMENS AG	5,453	4,404	48.5	61.5
15	LG ELECTRONICS INC	3,800	4,299	42.8	60.5
16	SEIKO EPSON CORP	5,299	4,289	11.2	4.6
17	LG CHEMICAL LTD	2,298	4,040	94	93.3
18	FUJITSU LTD	5,124	4,039	16	15
19	UNIV NORTHEASTERN	1,957	3,889	1.4	3.6
20	PANASONIC IP MAN CO LTD	2,944	3,793	67.1	73.2
21	DENSO CORP	4,305	3,784	46.5	60
22	FUJIFILM CORP	3,700	3,774	73.1	82.6
23	GEN ELECTRIC	3,248	3,368	24	30.8
24	KIA MOTORS CORP	1,092	3,129	0.5	0.2
25	SHARP KK	2,789	3,036	85.7	68.4
26	PANASONIC IP MAN CORP	2,241	2,976	33.9	33.8
27	INTEL CORP	3,365	2,753	81	49.7
28	RICOH CO LTD	4,158	2,710	12.2	12.2
29	MURATA MANUFACTURING CO	2,048	2,703	76.4	68.6
30	MICROSOFT TECHNOLOGY LICENSING LLC	2,076	2,542	98.8	96.4
31	TOSHIBA CORP	5,146	2,534	13.1	9.8
32	NEC CORP	2,440	2,512	87	90
33	SK HYNIX INC	2,324	2,467	0	0.2
34	ERICSSON TELEFON AB L M	2,372	2,314	93.5	97.6
35	FUJI XEROX CO LTD	1,854	2,300	2.7	2
36	HITACHI LTD	2,849	2,243	54.9	47.9
37	LG DISPLAY CO LTD	1,730	2,239	3.9	1.1
38	ALIBABA GROUP HOLDING LTD	1,210	2,214	70.7	97
39	KONINKLIJKE PHILIPS NV	2,479	2,153	96.1	91.1
40	SUMITOMO ELECTRIC INDUSTRIES	1,729	2,136	72	78.3
41	KONICA MINOLTA INC	2,117	2,127	33.5	20.8
42	HKC CO LTD	0	2,107	n.a.	61.2
43	KYOCERA DOCUMENT SOLUTIONS INC	2,263	2,001	10.2	8.3
44	SCHAEFFLER TECHNOLOGIES AG	1,508	1,986	58.6	49
45	OLYMPUS CORP	2,482	1,942	80.7	76.6
46	HEWLETT PACKARD DEVELOPMENT CO	1,602	1,927	97	97.6
47	GUANGDONG OPPO MOBILE TELECOMMUNICATIONS CORP LTD	26	1,843	100	98.8
48	BROTHER IND LTD	2,051	1,830	5.5	9.2
49	FANUC LTD	1,166	1,803	0	0.1
50	IBM	3,181	1,752	19.6	62.1

Note: The number of patent applications in foreign-oriented patent families as reported in the autumn 2021 edition of PATSTAT may be incomplete for the most recent years. A patent family is a set of interrelated patent applications filed at one or more offices to protect the same invention. Patent applications in a family are interlinked by one or more of the following: priority claim, PCT national phase entry, continuation, continuation-in-part, internal priority, and addition or division. Foreign-oriented patent families have at least one filing at an office other than the applicant's home office.

n.a. indicates not applicable.

Source: WIPO Statistics Database and EPO PATSTAT Database, March 2022.

Statistical table

B19. PCT national phase entries by office and origin, 2019–2020

Name	PCT national phase entries in 2020		PCT national phase entries in 2019	
	At designated office	By country of origin	At designated office	By country of origin
Afghanistan	n.a.	0	n.a.	1
African Intellectual Property Organization	324	n.a.	408	n.a.
African Regional Intellectual Property Organization	705	n.a.	816	n.a.
Albania	..	1	..	3
Algeria	541	1	503	0
Andorra	n.a.	33	n.a.	38
Angola	..	0	108	0
Antigua and Barbuda	..	415	..	266
Argentina	n.a.	119	n.a.	126
Armenia	5	29	1	20
Aruba	n.a.	0	n.a.	5
Australia	21,125	7,704	20,908	8,188
Austria	468	5,474	429	5,759
Azerbaijan	16	7	16	5
Bahamas	n.a.	4	n.a.	7
Bahrain	256	3	316	43
Bangladesh	n.a.	7	n.a.	4
Barbados	29	128	31	182
Belarus	59	33	64	26
Belgium (c)	..	6,063	..	6,418
Belize	23	5	32	12
Benin (d)	..	0	..	0
Bermuda	n.a.	34	n.a.	69
Bhutan	n.a.	1	n.a.	1
Bolivia (Plurinational State of)	n.a.	1	n.a.	6
Bosnia and Herzegovina	8	7	5	8
Botswana	..	0	..	0
Brazil	17,979	1,297	18,270	1,224
Brunei Darussalam	112	1	118	9
Bulgaria	7	121	4	74
Burkina Faso (d)	..	0	..	0
Burundi	n.a.	0	n.a.	6
Cambodia	47	1	66	1
Cameroon (d)	..	0	..	0
Canada	27,580	9,483	28,577	9,448
Central African Republic (d)	..	0	..	0
Chad (d)	..	0	..	0
Chile	2,402	414	2,739	407
China	87,954	51,638	89,249	49,664
China, Hong Kong SAR	n.a.	470	n.a.	500
China, Macao SAR	n.a.	16	n.a.	62
Colombia	1,706	138	1,665	119
Comoros (d)	..	0	..	0
Congo (d)	..	0	..	1
Costa Rica	509	16	474	20
Côte d'Ivoire (d)	..	1	..	0
Croatia	1	63	5	73
Cuba	77	100	85	61
Curaçao	n.a.	1	n.a.	11
Cyprus (c)	..	135	..	141
Czech Republic	25	417	18	505
Democratic People's Republic of Korea	6	7	5	12
Democratic Republic of the Congo	n.a.	0	n.a.	0
Denmark	78	6,119	86	6,054

(Continued)

(B19 continued)

Name	PCT national phase entries in 2020		PCT national phase entries in 2019	
	At designated office	By country of origin	At designated office	By country of origin
Djibouti	..	1	..	0
Dominica	..	1	..	0
Dominican Republic	201	19	220	14
Ecuador	374	12	401	11
Egypt	1,199	48	1,123	53
El Salvador	123	0	145	0
Equatorial Guinea (d)	..	0	..	0
Estonia	..	79	..	62
Eswatini (a)	..	0	..	29
Eurasian Patent Organization	2,486	n.a.	2,581	n.a.
European Patent Office	106,854	n.a.	105,681	n.a.
Finland	41	5,257	22	5,237
France (c)	..	26,226	..	26,979
Gabon (d)	..	0	..	3
Gambia	16	0	16	0
Georgia	134	24	110	1
Germany	7,525	56,780	7,507	59,457
Ghana	8	0	..	4
Greece (c)	..	300	..	404
Grenada	2	2	..	0
Guatemala	196	3	222	1
Guinea (d)	..	0	..	3
Guinea-Bissau (d)	..	0	..	0
Honduras	..	0	179	0
Hungary	5	502	13	567
Iceland	2	127	8	83
India	26,956	4,333	28,155	4,113
Indonesia	6,130	89	7,440	105
Iran (Islamic Republic of)	..	48	..	27
Iraq	n.a.	0	n.a.	3
Ireland (c)	..	2,546	..	2,231
Israel	6,908	7,850	6,649	7,407
Italy (c)	..	10,928	..	11,179
Jamaica	n.a.	0	n.a.	5
Japan	67,634	134,237	66,968	137,808
Jordan	244	19	254	11
Kazakhstan	97	10	..	28
Kenya	31	14	36	6
Kuwait	..	3	..	1
Kyrgyzstan	..	0	..	0
Lao People's Democratic Republic	..	7	..	1
Latvia (c)	..	50	..	36
Lebanon	n.a.	27	n.a.	10
Lesotho	..	0	..	0
Liberia	..	0	..	0
Libya	..	1	..	6
Liechtenstein (b)	..	611	..	640
Lithuania (c)	..	93	..	73
Luxembourg	105	1,394	..	1,506
Madagascar	18	2	28	0
Malawi	..	0	..	0
Malaysia	4,839	379	5,511	437
Mali (d)	..	2	..	0
Malta (c)	..	147	..	153
Mauritania (d)	..	0	..	0
Mauritius	n.a.	39	n.a.	14
Mexico	11,515	540	12,516	749
Monaco (c)	..	60	..	52
Mongolia	80	0	80	4
Montenegro	..	15	..	0

(Continued)

(B19 continued)

Name	PCT national phase entries in 2020		PCT national phase entries in 2019	
	At designated office	By country of origin	At designated office	By country of origin
Morocco	2,029	40	2,178	48
Mozambique	10	0	23	0
Namibia	..	3	8	9
Nepal	n.a.	1	n.a.	0
Netherlands (c)	..	15,530	..	17,069
Netherlands Antilles	n.a.	0	n.a.	2
New Zealand	4,385	1,321	4,414	1,255
Nicaragua	..	0	..	0
Niger (d)	..	0	..	0
Nigeria	589	2	665	2
North Macedonia	3	41	..	0
Norway	511	2,984	562	3,141
Oman	..	5	468	6
Pakistan	n.a.	2	n.a.	7
Panama	290	54	324	23
Papua New Guinea	50	0	61	0
Paraguay	n.a.	0	n.a.	2
Peru	1,092	84	1,074	39
Philippines	3,237	34	3,495	37
Poland	40	852	53	783
Portugal	15	547	11	706
Qatar	610	39	814	53
Republic of Korea	38,078	34,192	39,021	33,185
Republic of Moldova	8	2	7	14
Romania	11	60	19	64
Russian Federation	9,079	1,878	9,882	1,944
Rwanda	..	0	..	0
Saint Kitts and Nevis	..	44	..	27
Saint Lucia	..	1	..	2
Saint Vincent and the Grenadines	5	0	3	0
Samoa	..	1	..	17
San Marino	..	7	1	19
Sao Tome and Principe	..	0	..	0
Saudi Arabia	2,451	2,132	2,691	1,641
Senegal (d)	..	2	..	0
Serbia	2	40	7	37
Seychelles	..	8	6	9
Sierra Leone	..	0	..	0
Singapore	9,163	3,177	8,914	2,916
Slovakia	5	148	5	207
Slovenia (c)	..	224	..	192
South Africa	5,498	730	5,834	743
Spain	72	4,067	89	3,896
Sri Lanka	240	25	241	40
Sudan	3	6	4	9
Sweden	65	13,915	70	15,080
Switzerland	95	20,138	73	21,020
Syrian Arab Republic	16	6	32	1
Tajikistan	..	0	1	0
Thailand	5,975	390	6,527	622
Togo (d)	..	0	..	0
Trinidad and Tobago	111	1	112	4
Tunisia	..	11	..	6
Turkey	265	1,146	274	1,168
Turkmenistan	..	0	..	0
Uganda	..	2	1	0
Ukraine	1,583	122	1,554	116
United Arab Emirates	1,803	345	1,795	234
United Kingdom	2,329	22,513	2,291	22,078
United Republic of Tanzania	..	5	..	1

(Continued)

(B19 continued)

Name	PCT national phase entries in 2020		PCT national phase entries in 2019	
	At designated office	By country of origin	At designated office	By country of origin
United States of America	161,565	184,452	164,221	188,809
Uruguay	n.a.	46	n.a.	44
Uzbekistan	203	1	153	30
Venezuela (Bolivarian Republic of)	n.a.	0	n.a.	6
Viet Nam	5,748	35	5,861	36
Zambia	..	5	21	0
Zimbabwe	..	1	..	2
Others	1,701	9,951	1,377	9,607
Total	**664,700**	**664,700**	**676,100**	**676,100**

Note: World totals are WIPO estimates. Offices of destination are designated and/or elected offices.

(a) The African Regional Intellectual Property Organization is the competent designated or elected office.

(b) The Office of Switzerland is the competent designated or elected office.

(c) The European Patent Office is the competent designated or elected office.

(d) The African Intellectual Property Organization is the competent designated or elected office.

.. indicates data are unknown.

n.a. indicates not applicable.

Source: WIPO Statistics Database, March 2022.

Section C Statistics on the performance of the PCT System

Highlights

The International Bureau

In addition to its role as a receiving office (RO), the International Bureau (IB) of WIPO is responsible for functions relating to the international phase of the PCT System, including examining formalities; translating abstracts, titles and patentability reports; and publishing PCT applications.

About 44% of PCT applications were published in English in 2021

In 2021, almost 44% of all PCT applications were published in English, followed by Chinese (23.1%) and Japanese (17.8%) (figure C1). The seven remaining languages of publication combined accounted for 15.1% of the total. The share of applications filed in Chinese has increased sharply over the past 15 years, rising from 2.5% in 2007 to 23.1% in 2021. Conversely, the share of applications filed in English has dropped considerably since 2007, when they accounted for almost two-thirds of total filings.

PCT applications filed electronically made up almost 99% of the total

Applicants filed 98.7% of PCT applications electronically and the remaining 1.3% on paper in 2021 (figure C2). Since the means for electronic filing were first made available to applicants, their use has continuously increased.

ePCT-filings increased by 36.4% in 2021

In 2021, 76 ROs accepted ePCT-filings and applicants filed 60,784 PCT applications using that online service. This represents an increase of 36.4% on the previous year and corresponds to 21.9% of all PCT applications filed in 2021 (figure C3). Applicants from the U.S. (15,301) filed by far the most applications using ePCT, followed by those from the Republic of Korea (7,783), Italy (2,321), Canada (1,980) and India (1,837). Among the 20 origins filing most actively via ePCT, Japan (+93.8%), the Republic of Korea (+52.5%), the Russian Federation (+50.4%), the U.K. (+43.8%) and the U.S. (+41%) were the ones to record the sharpest increases compared to 2020 (figure C4).

The IB examined more than 83% of all PCT applications within one week of receipt

In 2021, the IB performed the PCT-required formalities examination for 83.4% of PCT applications within one week of receipt and 97.6% within three weeks (figure C5).

Over 77% of publications occurred during the week following the expiration of the 18-month period from the priority date, and nearly all (99.7%) publications occurred within two weeks of that period (figure C6). When an international search report (ISR) is unavailable at the time of publication, an application is republished together with its ISR, once available. Nearly every (99.3%) application was republished within three months of receipt of the ISR (figure C7).

The receiving offices

A PCT application is filed with a RO, which can be a national or regional patent office or the IB. ROs are responsible for receiving PCT applications, examining compliance with PCT formality requirements, receiving payment of fees and transmitting copies of the application for further processing to the IB and the appropriate International Searching Authority (ISA).

Eighteen of the top 20 ROs received more than 95% of applications electronically in 2021

Of the top 20 ROs, China, Israel, Singapore, Turkey and the U.S. received more than 99.5% of PCT applications electronically in 2021. The share of electronic filings exceeded 95% at almost every top 20 office, except for those of Germany (88.3%) and the Russian Federation (49.2%) (figure C12).

Thirteen of the top 20 ROs received PCT applications via ePCT in 2021, of which eight received a majority of filings via this portal. The offices of India, Singapore and Turkey received over 99% of the PCT applications filed using ePCT.

ROs transmitted PCT applications to the IB within 2.5 weeks

In 2021, on average, ROs transmitted PCT applications to the IB within 2.5 weeks of the international filing date (figure C14). Finland and the Republic of Korea transmitted all applications to the IB within four weeks of the filing date. Among the top 20 ROs, 16 transmitted more than 90% of PCT applications within this timeframe. Conversely, the offices of the Russian Federation and Turkey transmitted a majority of applications to the IB more than four weeks after the international filing date had past (figure C15).

The proportion of PCT applications transmitted by ROs to the ISAs within four weeks varied slightly from that transmitted to the IB. It was above 98% for Japan and Sweden; and above 70% for 15 of the top 20 ROs (figure C16).

International Searching Authorities

Each PCT application must undergo an international search by an ISA. Once the ISA has performed a search, the applicant receives an ISR containing a list of documents relevant to assessing the invention's patentability. The ISA also establishes a written opinion, providing a detailed analysis of the potential patentability of the invention in view of the documents found in the search.

The EPO and China combined accounted for a majority of the ISRs issued in 2021

In 2021, 270,948 ISRs were issued by the 23 existing ISAs. The EPO issued 79,005 ISRs and the office of China 74,169. Together, these two ISAs accounted for nearly 57% of all ISRs issued (figure C17). Of the top 10 ISAs, China (+14.3%), India (+7%) and the U.S. (+6.6%) experienced growth, whereas the Russian Federation (–10%), Turkey (–6%) and Canada (–5.8%) saw the steepest falls. Of the 23 ISAs, 11 issued more ISRs than they did in 2020.

Of all the ISRs required to be transmitted to the IB within three months of the date of receipt of the application, 85.6% were transmitted within this timeframe in 2021 (figure C20). At 16 ISAs, more than 90% of ISRs were transmitted to the IB within the three-month deadline from the date of receipt of the search copy. As for those required to be transmitted within 9 months of the priority date, 81.6% met this deadline in 2021 (figure C21). Four ISAs transmitted all such ISRs within the required 9 months, and 15 ISAs transmitted at least 92% within the timeframe.

PCT applications by publication language and filing medium

PCT applications filed using ePCT

Timeliness in processing PCT applications by the International Bureau

Efficiency in processing PCT applications by the International Bureau

Receiving offices

International Searching Authorities

Supplementary International Searching Authorities

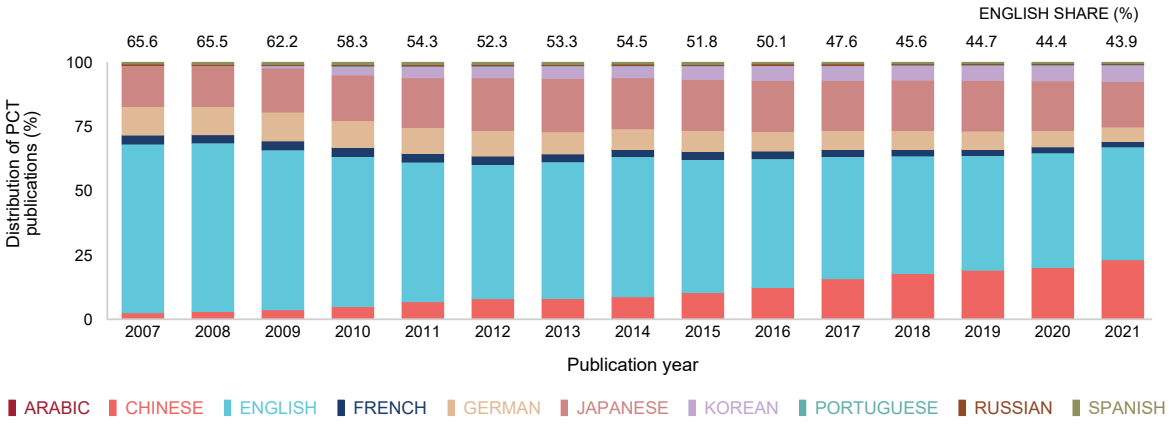
International Preliminary Examining Authorities

PCT-Patent Prosecution Highway pilots

PCT applications by publication language and filing medium

Almost 44% of PCT applications were published in English in 2021.

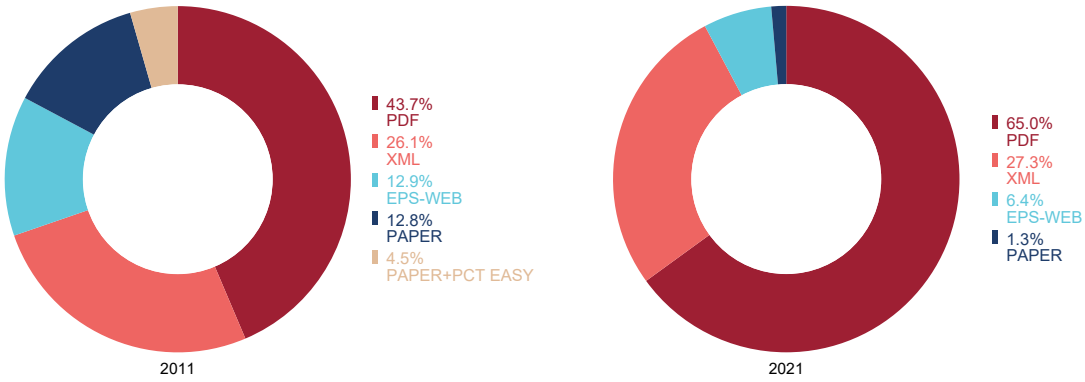
C1. Distribution of PCT applications by language of publication, 2007–2021



Source: WIPO Statistics Database, March 2022.

Nearly all PCT applications were filed electronically in 2021.

C2. Distribution of PCT applications by filing medium, 2011 and 2021



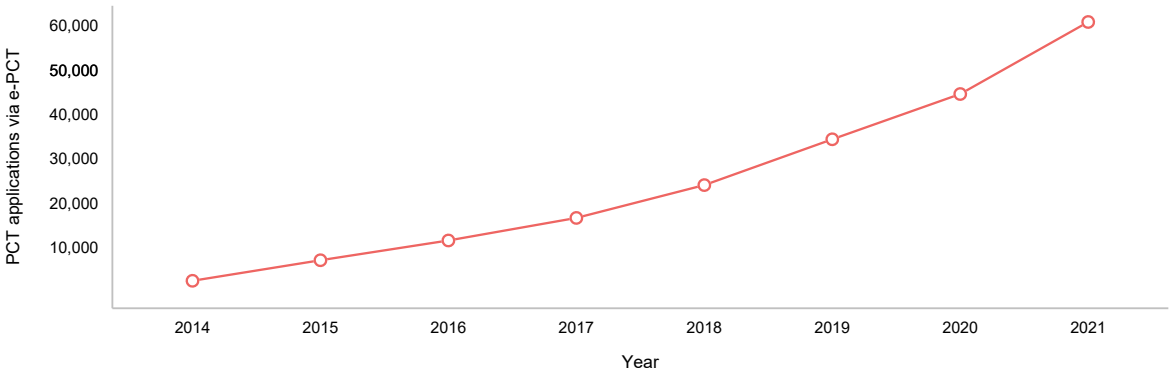
Note: PDF, EFS-WEB and XML are the three fully electronic filing mediums. Since 2015, PCT applications can no longer be filed using PCT-EASY.

Source: WIPO Statistics Database, March 2022.

PCT applications filed using ePCT

About 60,800 PCT applications were filed by applicants using ePCT in 2021, an increase of 36.4% on 2020.

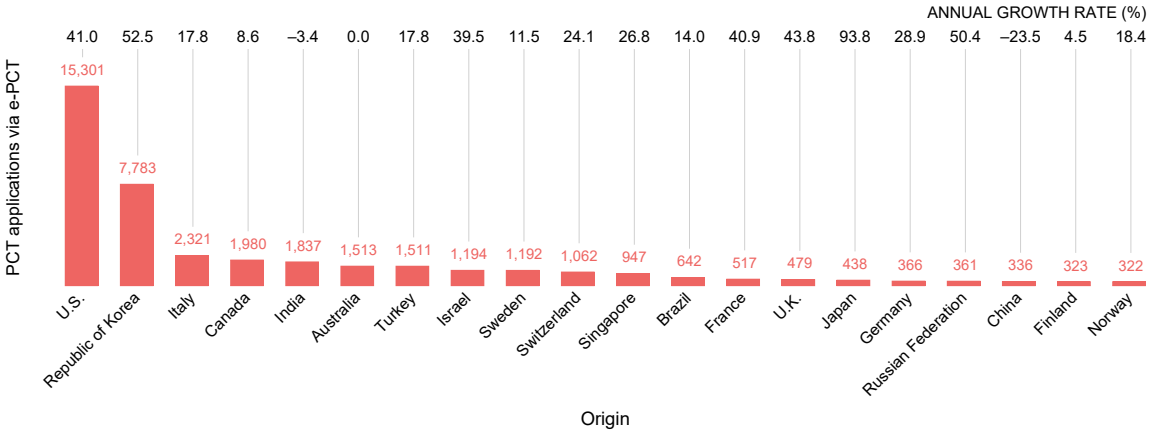
C3. Trend in PCT applications filed using ePCT, 2014–2021



Source: WIPO Statistics Database, March 2022.

Applicants resident in the U.S. filed 15,301 applications using ePCT.

C4. PCT applications filed using ePCT for the top 20 origins, 2021

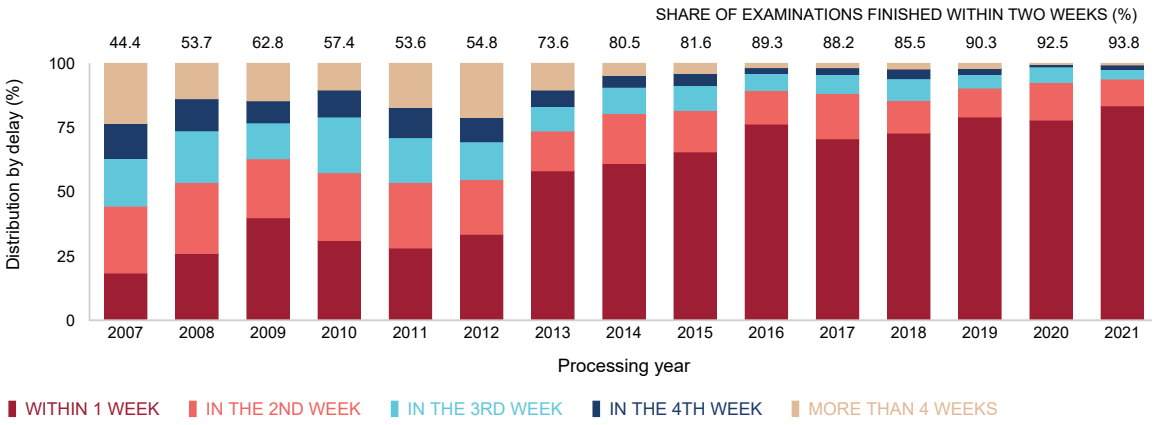


Source: WIPO Statistics Database, March 2022.

Timeliness in processing PCT applications by the International Bureau

The formalities examination was completed within two weeks for almost 94% of PCT applications processed in 2021.

C5. Timeliness of formalities examination, 2007–2021

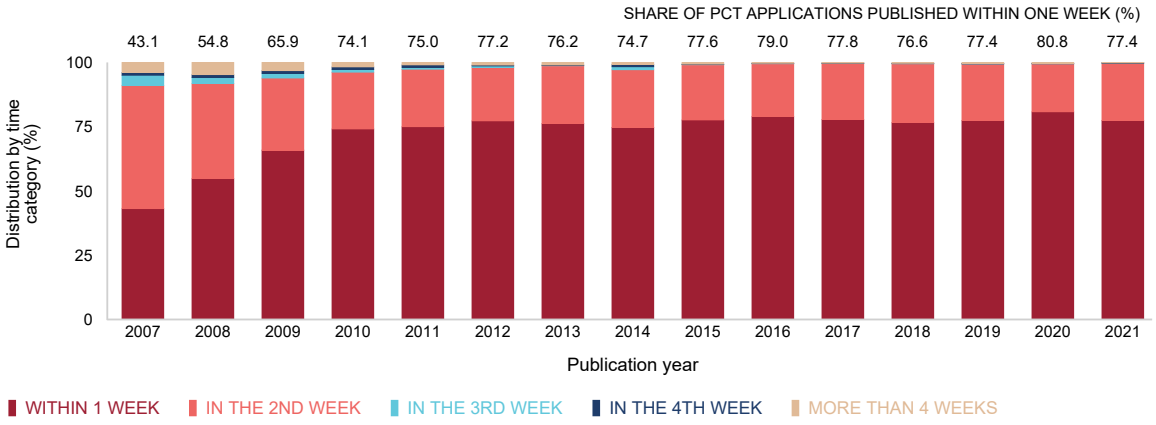


Note: The International Bureau (IB) performs a formality examination of PCT applications and related documents promptly upon receipt. Once the formality examination of a PCT application is completed, the IB sends a form to the applicant acknowledging receipt of the application. Timeliness is calculated as the time between the date of receipt of the record copy of the PCT application and the date of issuance of form PCT/IB/301.

Source: WIPO Statistics Database, March 2022.

Since 2015, over three-quarters of PCT applications have been published within one week of expiration of the 18-month limit.

C6. Timeliness in publishing PCT applications, 2007–2021

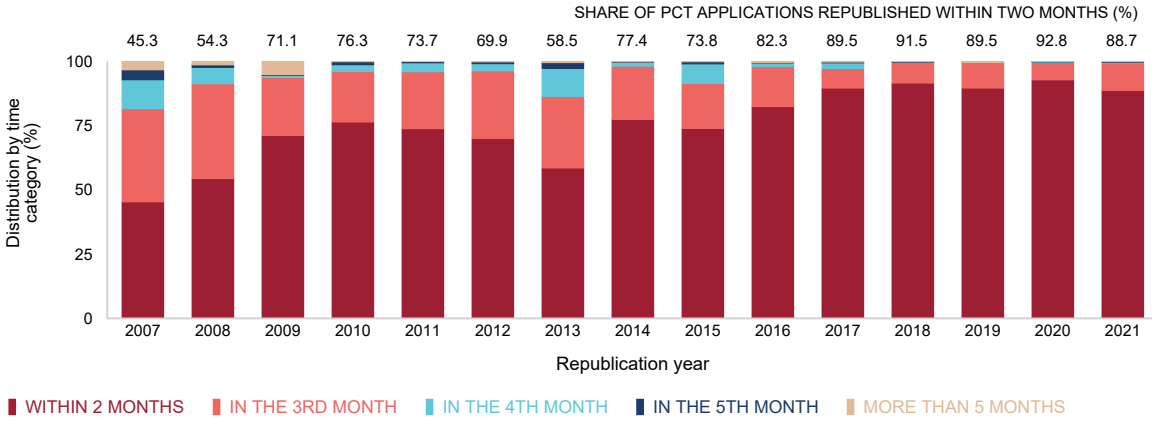


Note: PCT applications and related documents are to be published “promptly” after the expiration of 18 months from the priority date, unless the applicant requests early publication, or the application is withdrawn or considered withdrawn. Timeliness is calculated as the time between the time limit of 18 months from the priority date and the actual publication date.

Source: WIPO Statistics Database, March 2022.

In 2021, nearly 89% of republications occurred within two months of receipt of an ISR.

C7. Timeliness in republishing PCT applications with international search reports, 2007–2021



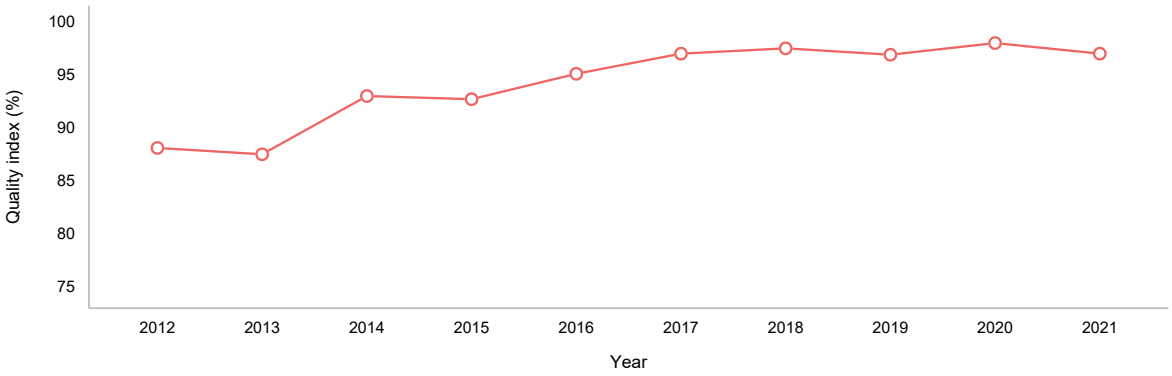
Note: The International Bureau (IB) is required to publish applications even in the absence of an international search report (ISR). In such cases, the application is republished along with an ISR after the report is received. Timeliness is calculated as the time elapsed between the date of receipt of the ISR at the IB and the date of republication by the IB.

Source: WIPO Statistics Database, March 2022.

Efficiency in processing PCT applications by the International Bureau

The overall quality of the formalities examination was scored at 97% in 2021.

C8. Formalities examination quality index, 2012–2021

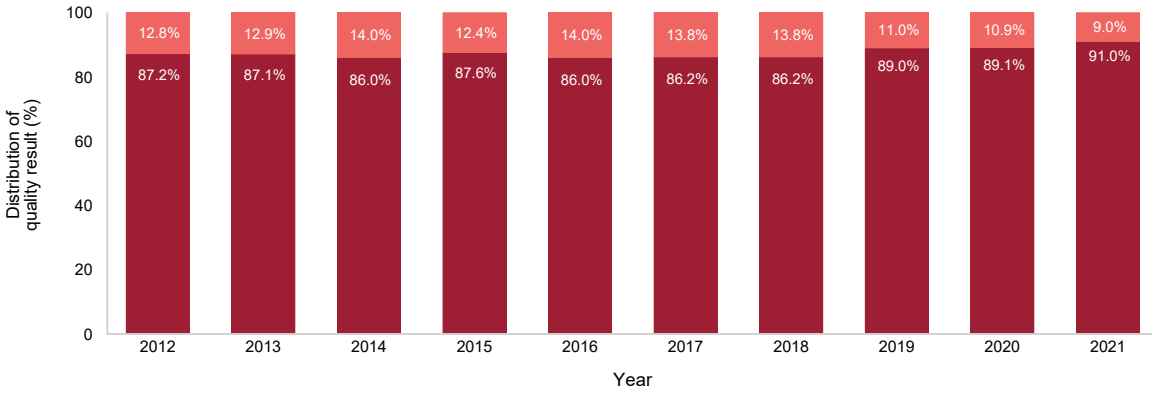


Note: In order to measure the quality of the formalities examination by the International Bureau (IB) in a simple and comprehensive manner, the IB has developed an aggregate quality index, calculated as the average of four lead quality indicators. Three of these are based on the timeliness of key transactions. The quality index is the simple average of: (i) the percentage of forms PCT/IB/301 (notification of receipt of a PCT application) sent within five weeks of the IB receiving a PCT application; (ii) the percentage of PCT applications published within six months and three weeks of the international filing date; (iii) the percentage of republications with an international search report (ISR) within two months of the IB receiving the ISR; and (iv) the percentage of corrections to bibliographical data in the published PCT application (from 2009 to 2011) and the PCT operation quality control error rate (from 2012 onwards).

Source: WIPO Statistics Database, March 2022.

In 2021, 91% of translations were rated as being of an acceptable quality.

C9. Translation quality indicator, 2012–2021



Note: The translation quality indicator shows the average quality of abstracts and reports translated by external suppliers and in-house translators combined, based on the results of the International Bureau (IB)'s regular quality control checks. This indicator aggregates the results of quality control performed by the IB across all language combinations and document types.

Source: WIPO Statistics Database, March 2022.

Since 2019, at least 98% of report translations have been outsourced.

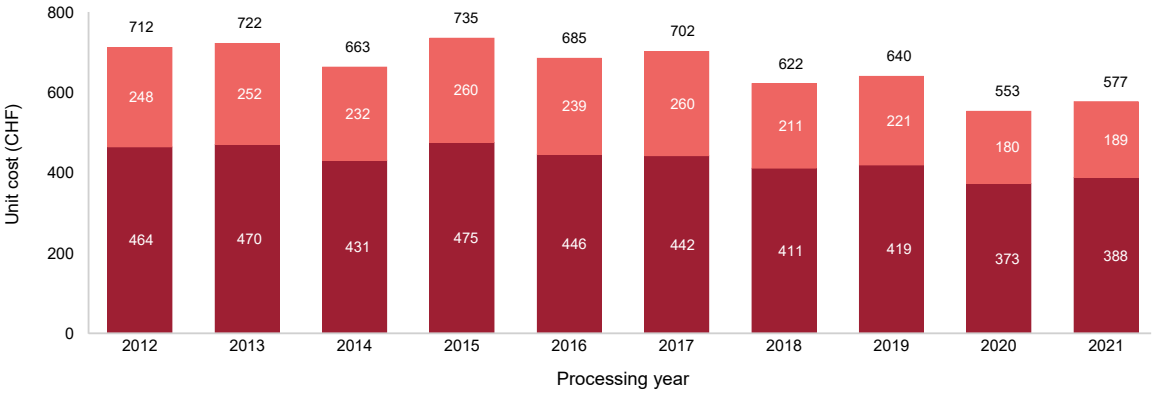
C10. Distribution of translation work, 2012–2021

Note: Translations by the International Bureau (IB) are intended to enhance the patent system's disclosure function by making the technological information in PCT applications accessible in languages other than the language in which the original documents were filed. In order to meet this objective, the IB ensures that all titles and abstracts of PCT applications are available in English and French, and that all international search and preliminary examination reports are available in English.

Source: WIPO Statistics Database, March 2022.

The average cost of processing a published PCT application was 577 Swiss francs (CHF) in 2021.

C11. Unit cost of processing a published PCT application, 2012–2021



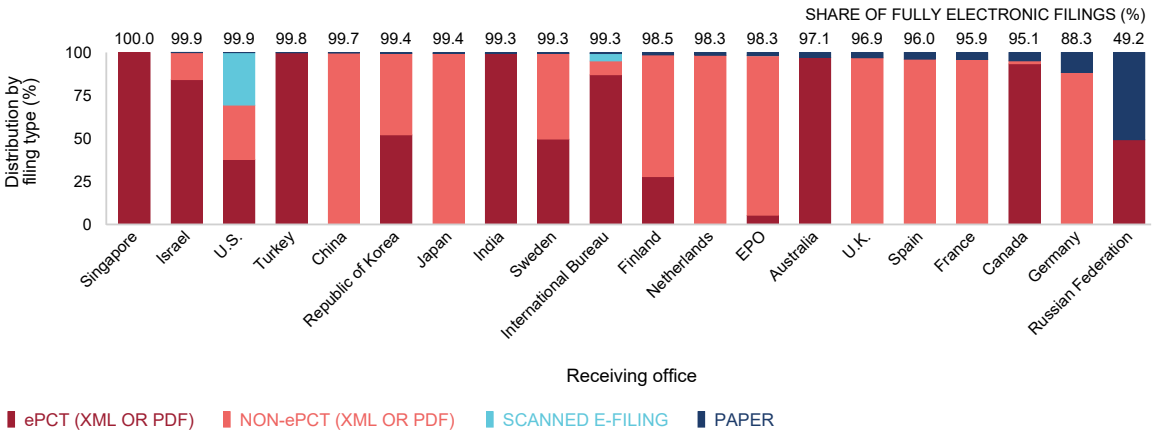
Note: The International Bureau (IB)'s efficiency in processing PCT applications can be measured by the unit cost of processing, defined as the average total cost of publishing a PCT application. Average total cost is determined by total PCT System expenditure, plus a proportion of expenditure on support and management activities. The unit cost includes the cost of all PCT activities, including translation, communication, management, and so on. Costs have direct and indirect components. Direct costs reflect expenditure incurred by the IB in administering the PCT System and related programs. Indirect costs reflect expenditure for supporting activities, such as buildings and information technology. Indirect costs are weighted in order to take into account only the share that is attributable to the PCT System. The unit cost is calculated by dividing the total cost of production by the number of PCT applications published.

Source: WIPO Statistics Database, March 2022.

Receiving offices

The office of Singapore received all its PCT applications via ePCT.

C12. Distribution of PCT applications by filing medium, top 20 receiving offices, 2021

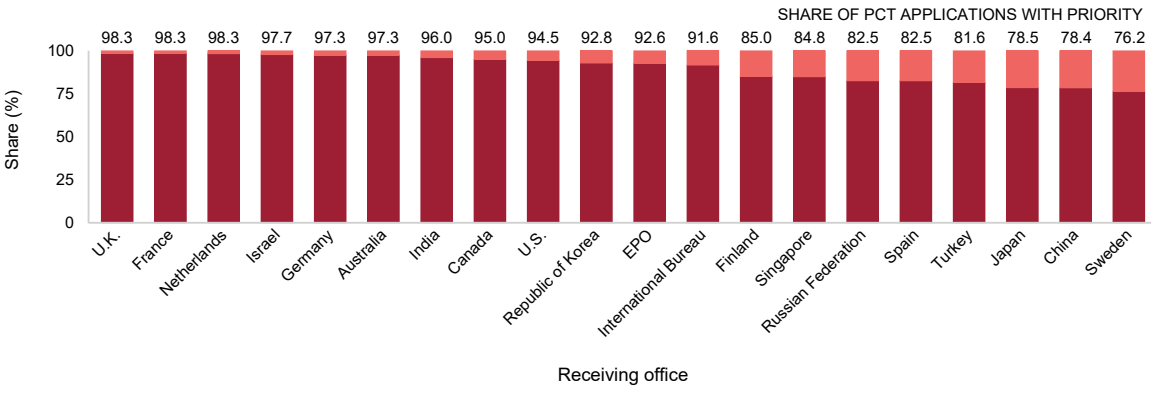


Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

More than the three-quarters of PCT applications filed at the top 20 offices were based on priority filings.

C13. Share of PCT applications with priority filings, top 20 receiving offices, 2021

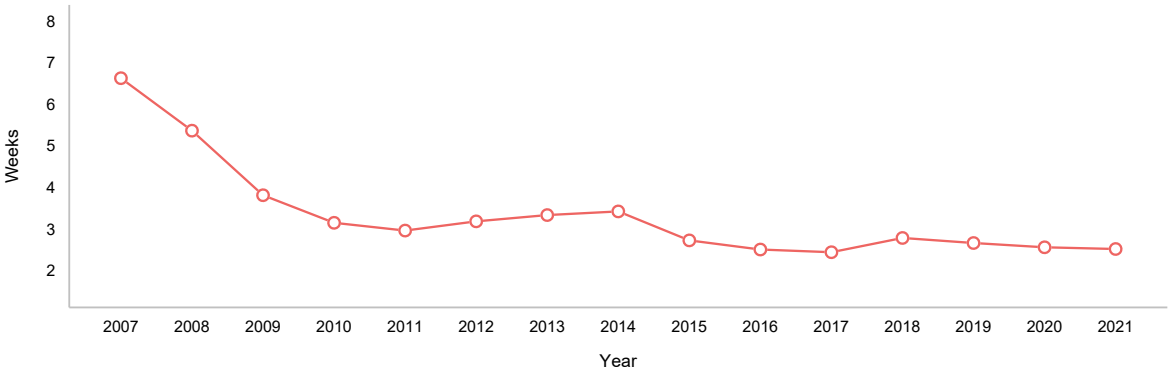


Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

On average, receiving offices transmitted PCT applications to the International Bureau within 2.5 weeks in 2021.

C14. Average timeliness in transmitting PCT applications to the International Bureau, 2007–2021

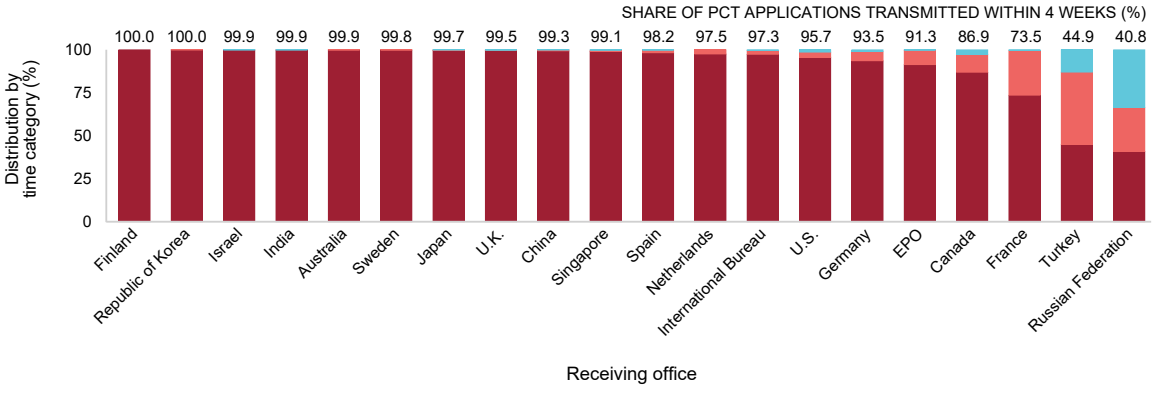


Note: The copy of the PCT application – known as the record copy – sent by the receiving office (RO) must reach the International Bureau (IB) before expiration of the 13th month from the priority date. PCT applications are usually filed before the expiration of 12 months from the priority date. Where this occurs, the IB should receive the application within one month of the international filing date. Timeliness is calculated as the time elapsed between the international filing date and the date on which the IB received the PCT application from the RO. Applications transmitted under PCT Rule 19.4 are excluded.

Source: WIPO Statistics Database, March 2022.

The offices of Finland and the Republic of Korea transmitted all their PCT applications to the International Bureau within four weeks.

C15. Timeliness in transmitting PCT applications to the International Bureau, top 20 receiving offices, 2021

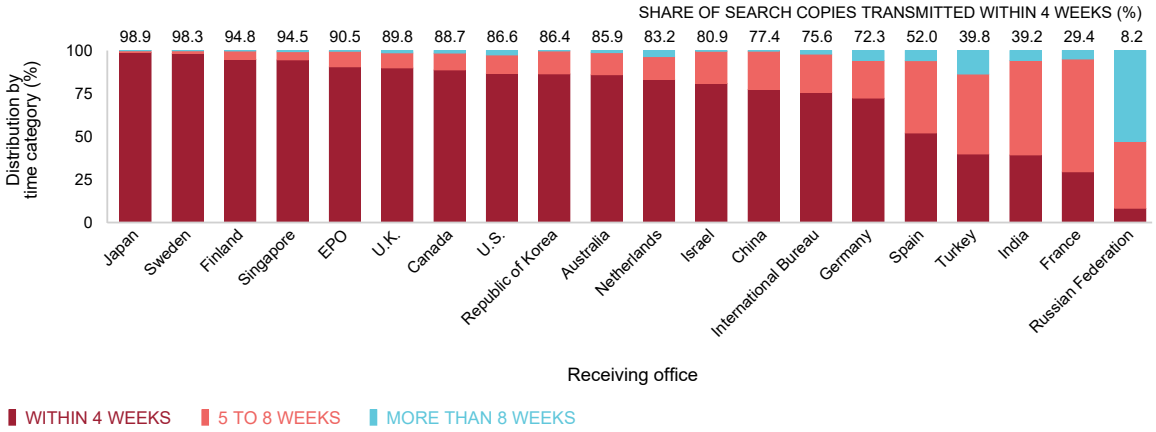


Note: The copy of the PCT application – known as the record copy – sent by the RO must reach the IB before expiration of the 13th month from the priority date. PCT applications are usually filed before the expiration of 12 months from the priority date. Where this occurs, the IB should receive the application within one month of the international filing date. Timeliness is calculated as the time elapsed between the international filing date and the date on which the IB received the PCT application from the RO. Applications transmitted under PCT Rule 19.4 are excluded. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

The office of Japan transmitted almost 99% of its PCT applications to an International Searching Authority within four weeks.

C16. Timeliness in transmitting PCT applications to International Searching Authorities, top 20 receiving offices, 2021



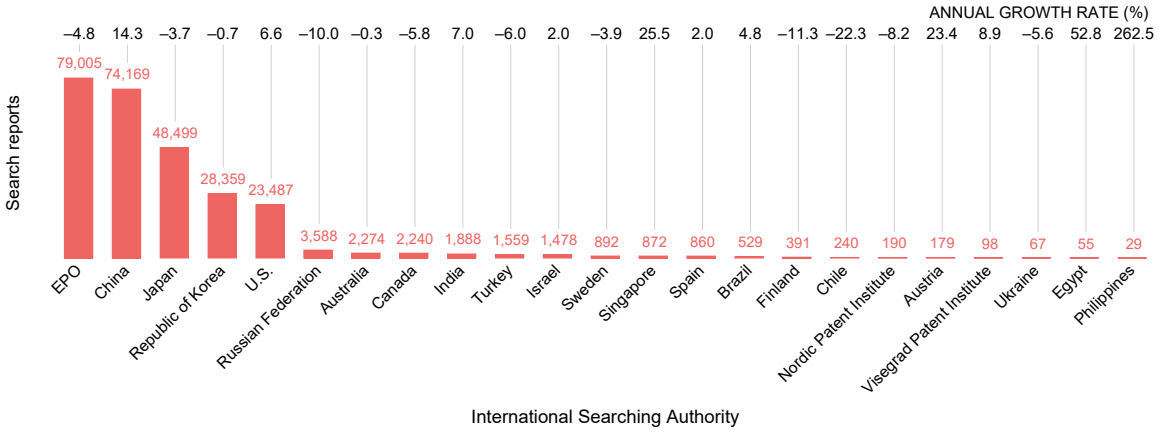
Note: Timeliness is calculated as the time elapsed between the international filing date and the date on which the International Searching Authority (ISA) received the PCT application – known as the search copy – from the receiving office. Dates of search fee payments are not used, due to the unavailability of data. Applications transmitted under the terms of PCT Rule 19.4 are excluded. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

International Searching Authorities

The European Patent Office issued 79,005 international search reports in 2021.

C17. International search reports issued by International Searching Authority, 2021

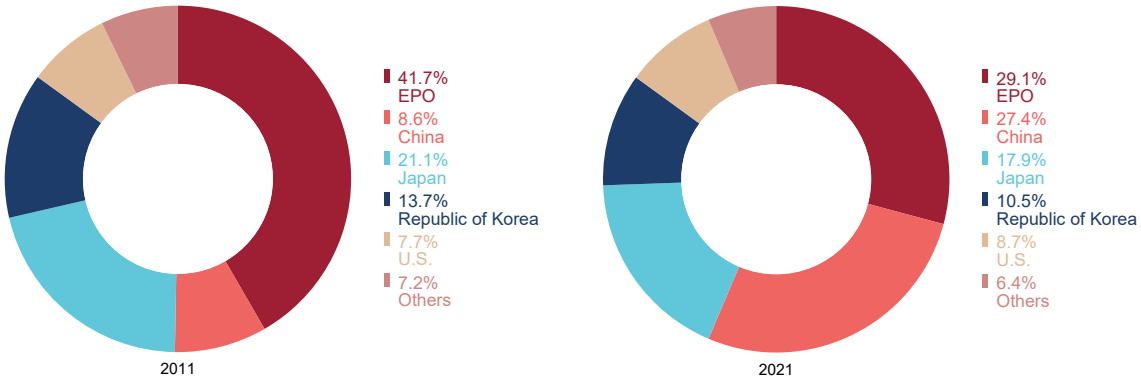


Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

The office of China and the European Patent Office combined, established the majority of international search reports issued in 2021.

C18. Distribution of international search reports issued by International Searching Authority, 2011 and 2021

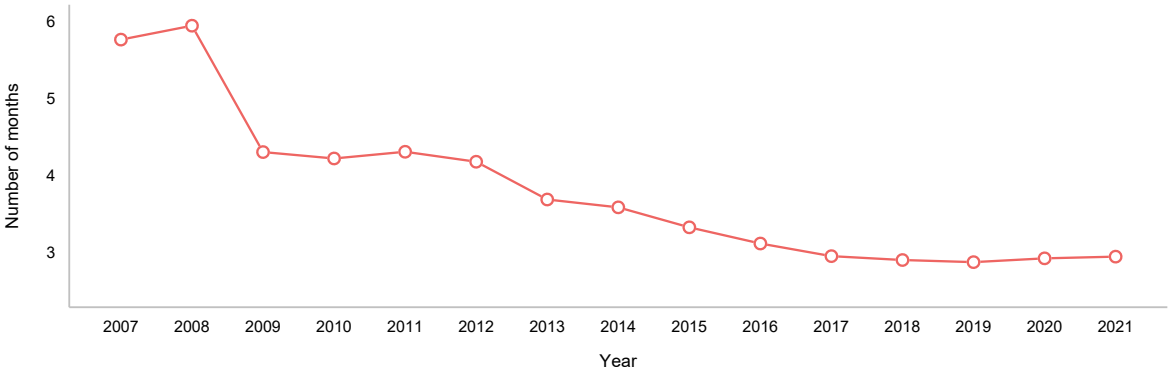


Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

Since 2018, the average timeliness in transmitting international search reports to the International Bureau has been 2.9 months.

C19. Average timeliness in transmitting international search reports to the International Bureau, measured from the date of receipt of the search copy, 2007–2021



Note: The International Searching Authority (ISA) must establish an international search report (ISR) within three months of receiving a copy of an application – known as the search copy – or nine months from the priority date (or, if no priority is claimed, from the international filing date), whichever expires later. Timeliness is calculated as the time between the date the ISA receives a copy of the PCT application and the date when it transmits the ISR to the International Bureau (or, if applicable, the date of receipt of the declaration under Article 17(2)(a)). This figure shows timeliness in establishing the ISR where the applicable time limit for establishing the ISR under Rule 42 is three months after the date of receipt of the search copy.

Source: WIPO Statistics Database, March 2022.

All international search reports that ought to be transmitted to the International Bureau within three months of the date of receipt of the search copy met this deadline at the office of Chile and the Visegrad Patent Institute.

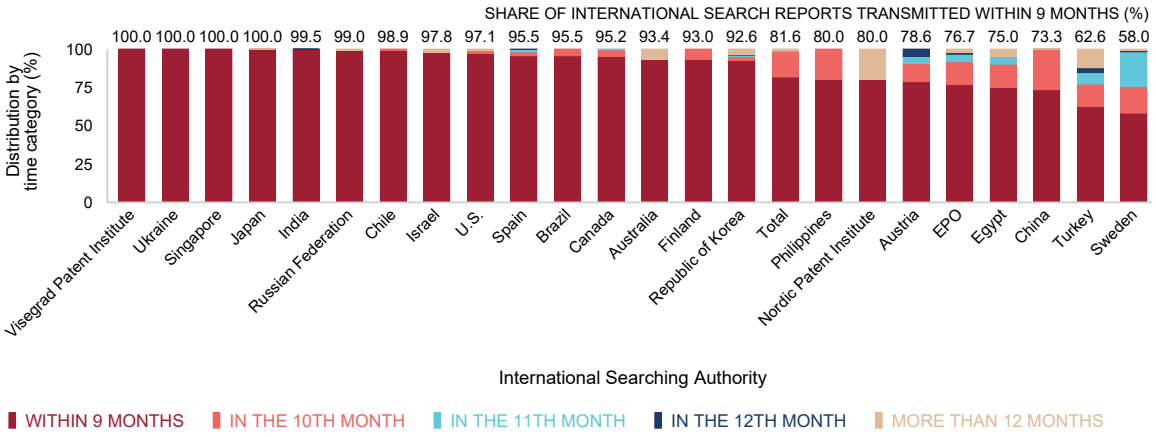
C20. Timeliness in transmitting international search reports to the International Bureau, measured from date of receipt of the search copy by International Searching Authority, 2021

Note: The International Searching Authority (ISA) must establish the international search report (ISR) within three months of receiving a copy of the application – known as the search copy – or nine months from the priority date (or, if no priority is claimed, from the international filing date), whichever expires later. Timeliness is calculated as the time between the date when the ISA receives a copy of the PCT application and the date when it transmits the ISR to the International Bureau (or, if applicable, the date of receipt of the declaration under Article 17(2)(a)). This figure shows timeliness in establishing the ISR where the applicable time limit for establishing the ISR under Rule 42 is three months from receipt of the search copy. When the date of receipt of the search copy is unknown and the ISA is the same office as the receiving office, we consider the search copy to have been received on the international filing date and calculate the timeliness accordingly. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

At fifteen International Searching Authorities, more than 90% of international search reports required to be transmitted to the International Bureau within nine months of the priority date met the deadline.

C21. Timeliness in transmitting international search reports to the International Bureau, measured from priority date by International Searching Authority, 2021



Note: The International Searching Authority (ISA) must establish the international search report (ISR) within three months of receiving a copy of the application – known as the search copy – or nine months from the priority date (or, if no priority is claimed, from the international filing date), whichever expires later. Timeliness is calculated as the time elapsed between the priority date and the date on which the ISA transmits the ISR to the International Bureau (or, if applicable, the date of receipt of the declaration under Article 17(2)(a)) for ISRs where the deadline is nine months from the priority date. This figure shows timeliness in establishing the ISR where the applicable time limit for establishing the ISR under Rule 42 is nine months from the priority date (or international filing date if no priority is claimed). When the date of receipt of the search copy is unknown and the ISA is not the same office as the receiving office, we calculate the timeliness from the priority date. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

The International Bureau published more than 90% of PCT applications together with an international search report for 21 of the 23 International Searching Authorities.

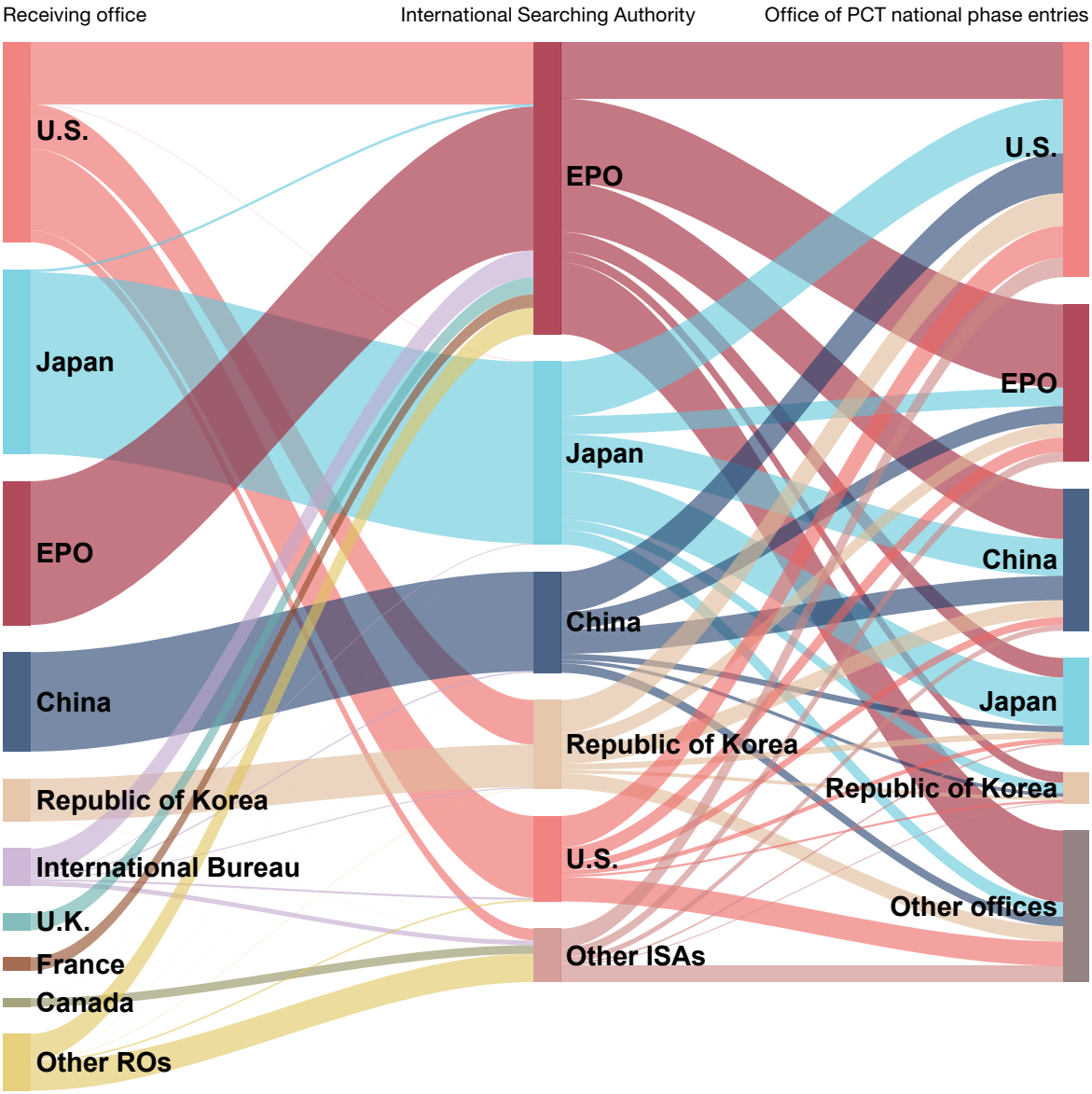
C22. Share of published PCT applications with or without an international search report by International Searching Authority, 2021

Note: A further measure of the performance of an ISA is the proportion of ISRs transmitted to the IB in time for publication with the PCT application, known as A1 publication. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

A large proportion of PCT applications filed at the office of the U.S had an international search report produced by the European Patent Office. This latter office also issued such reports for nearly half of national phase entries at offices other than the top five.

C23. Flow of PCT applications transmitted from the top nine receiving offices to the top five International Searching Authorities and the top five offices of PCT national phase entries, 2016–2018



Note: The 2016–2018 period refers to the years of PCT national phase entry and corresponds to the latest available data. National phase entry (NPE) data may be incomplete. This figure shows the flow of PCT applications between selected receiving offices (ROs), International Searching Authorities (ISAs) and offices of NPEs. Data for the offices of NPEs are based on fractional counts of PCT applications. Each RO may specify one or more ISA as competent for PCT applications filed with it. EPO is the European Patent Office.

Source: WIPO Statistics Database and EPO PATSTAT Database, March 2022.

Supplementary International Searching Authorities

The number of supplementary international search reports decreased by 10% in 2021.

C24. Distribution of supplementary international search reports by Supplementary International Searching Authority, 2019–2021

	Year		
Supplementary International Searching Authority	2019	2020	2021
Austria	2	2	1
European Patent Office	94	50	48
Nordic Patent Institute	2	1	1
Russian Federation	3	1	3
Singapore	4	2	
Sweden	1	1	1
Turkey	2	1	
Ukraine	**4**	**1**	
Visegrad Patent Institute	2	1	
Total	**114**	**60**	**54**

Note: Data for 2021 may be incomplete.

Source: WIPO Statistics Database, March 2022.

International Preliminary Examining Authorities

The number of international preliminary reports on patentability issued in 2021 dropped by 3.5%.

C25. Distribution of international preliminary reports on patentability by International Preliminary Examining Authority, 2019–2021

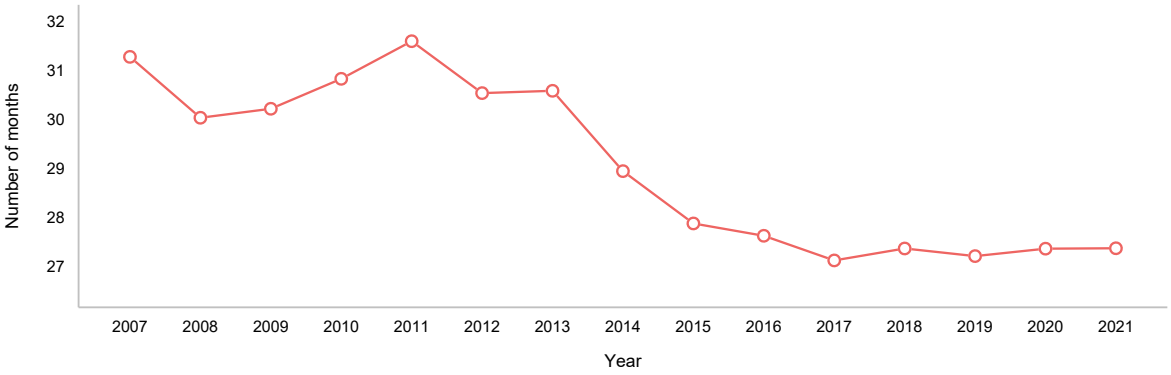
International Preliminary Examining Authority	Year			2021 share (%)	Change from 2020 (%)
	2019	2020	2021		
Australia	530	484	506	5.2	4.5
Austria	7	8	11	0.1	37.5
Brazil	61	72	80	0.8	11.1
Canada	168	172	166	1.7	–3.5
Chile	12	10	12	0.1	20.0
China	471	418	412	4.2	–1.4
Egypt	3	6	2	0.0	–66.7
European Patent Office	6,043	5,404	5,317	54.6	–1.6
Finland	55	63	39	0.4	–38.1
India	89	67	67	0.7	0.0
Israel	88	76	77	0.8	1.3
Japan	1,945	1,815	1,562	16.0	–13.9
Nordic Patent Institute	27	36	34	0.3	–5.6
Republic of Korea	130	105	133	1.4	26.7
Russian Federation	57	36	56	0.6	55.6
Singapore	93	91	109	1.1	19.8
Spain	38	63	49	0.5	–22.2
Sweden	87	77	71	0.7	–7.8
Turkey	18	46	57	0.6	23.9
Ukraine	7	8	7	0.1	–12.5
United States of America	969	1,033	965	9.9	–6.6
Visegrad Patent Institute	5	5	5	0.1	0.0
Total	**10,903**	**10,095**	**9,737**	**100.0**	**–3.5**

Note: Data for 2021 may be incomplete.

Source: WIPO Statistics Database, March 2022.

Since 2018, the average timeliness in transmitting international preliminary reports on patentability to the International Bureau was of 27.4 months.

C26. Average timeliness in transmitting international preliminary reports on patentability to the International Bureau, 2007–2021

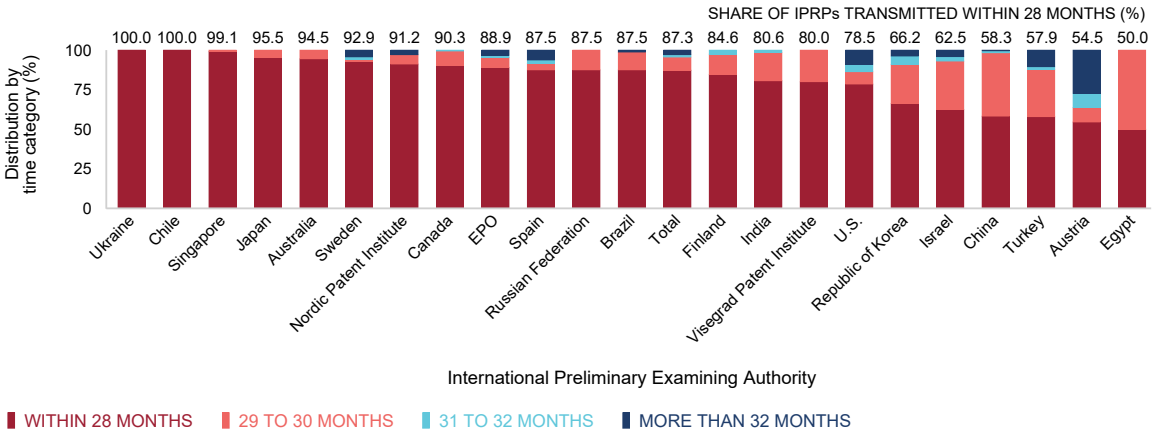


Note: Timeliness is calculated as the time elapsed between the priority date and the date on which the International Bureau received the international preliminary report on patentability (IPRP) from the International Preliminary Examining Authority (IPEA).

Source: WIPO Statistics Database, March 2022.

Fifteen offices transmitted at least 80% of international preliminary reports on patentability to the International Bureau within 28 months of the priority date.

C27. Timeliness in transmitting international preliminary reports on patentability to the International Bureau by International Preliminary Examining Authority, 2021



Note: This figure presents the same timeliness information for 2021 as that presented in figure C26, but breaks it down by International Preliminary Examining Authority (IPEA) and time category. Timeliness is calculated as the time elapsed between the priority date and the date when the International Bureau received the international preliminary report on patentability (IPRP) from the IPEA. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

PCT-Patent Prosecution Highway pilots

Japan, the U.S. and the European Patent Office were the offices of earlier examination for 82.2% of all PCT-Patent Prosecution Highway (PPH) requests received in 2021.

C28. Distribution of PCT-PPH requests by office of earlier and later examination, 2021

	Office of earlier examination															
Office of later examination	Japan	EPO	U.S.	China	Republic of Korea	Canada	Australia	Israel	Sweden	Russian Federation	Singapore	Spain	Hungary	Finland	Others	Total
Japan	1,219	460	113	92	32	6	13	8	1	4	2	0	0	4	0	1,954
China	352	703	187	0	61	10	0	6	15	13	15	0	0	3	0	1,365
EPO	160	0	179	111	27	32	13	10	15	0	1	0	0	0	0	548
Canada	19	227	111	26	20	115	5	4	3	3	1	1	0	3	1	539
Republic of Korea	129	203	88	44	36	3	4	7	1	0	2	0	0	1	6	524
Australia	31	122	174	0	11	5	0	1	1	0	3	0	0	0	6	354
Israel	6	109	42	3	1	2	2	22	1	2	0	0	18	0	0	208
Philippines	73	0	88	0	28	0	0	0	0	0	0	0	0	0	0	189
Russian Federation	17	82	18	26	4	0	0	1	1	2	0	0	0	0	0	151
Singapore	18	23	18	51	10	0	2	1	0	0	0	0	0	2	0	125
Malaysia	48	16	0	51	8	0	0	0	0	0	0	0	0	0	0	123
Mexico	4	41	13	3	0	0	0	0	0	0	0	19	0	0	0	80
Colombia	2	13	39	0	2	1	7	0	2	0	0	2	0	0	1	69
U.K.	16	0	22	10	1	1	1	0	0	0	0	0	0	0	0	51
New Zealand	2	0	15	0	1	0	16	0	0	1	0	0	0	0	2	37
Eurasian Patent Organization	0	18	0	0	1	0	0	0	0	0	0	0	0	0	0	19
Others	5	2	7	8	2	1	2	0	0	1	0	2	0	0	1	31
Total	**2,101**	**2,019**	**1,114**	**425**	**245**	**176**	**65**	**60**	**40**	**26**	**24**	**24**	**18**	**13**	**17**	**6,367**

Note: EPO is the European Patent Office. Data for several offices of later examination, such as Germany, Indonesia and the United States Patent and Trademark Office (USPTO) are missing.

Source: WIPO, based on data from the Japan Patent Office, March 2022.

A brief presentation of the Patent Cooperation Treaty

The Patent Cooperation Treaty (PCT) is an international treaty administered by the World Intellectual Property Organization (WIPO). Since entering into force in 1978, the PCT has served as an alternative to the Paris Convention route for pursuing patent rights in different countries. The PCT System makes it possible to seek patent protection for an invention simultaneously in multiple countries by filing a single "international" patent application instead of filing several separate national or regional patent applications. When first established, the PCT System comprised 18 members. By the end of 2021, it comprised 153 Contracting States, as shown on the map below. A table listing all PCT Contracting States is provided at the end of this review.

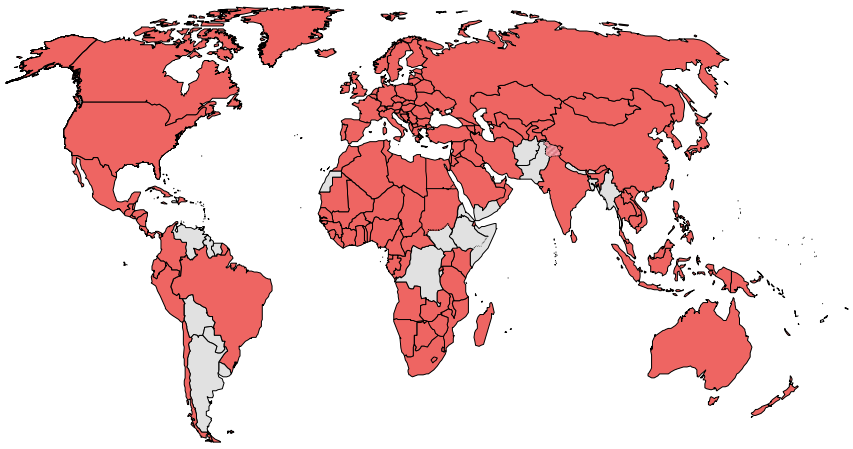
Advantages of the Patent Cooperation Treaty

Applicants and patent offices of Contracting States benefit from uniform formality requirements, international search, supplementary international search and preliminary examination reports, and centralized international publication.

Unlike the Paris Convention route, applicants can delay examination procedures at national patent offices, as well as the payment of associated legal fees and translation costs. By deferring national and regional procedures, applicants gain time to make decisions on the potential commercialization of their invention and the markets in which to seek patent protection. The reports produced by the international authorities which applicants receive during the international phase – about relevant prior art and the potential patentability of their inventions – help them make well-informed decisions.

In addition, the PCT System is intended to reduce unnecessary duplication among patent offices and to support work sharing between offices. Under the PCT System, an applicant must file a patent application with a receiving office (RO) and choose an International Searching Authority (ISA) to provide an international search report (ISR) and a written opinion on the potential patentability of the invention in question. The International Bureau (IB) of WIPO then publishes the application in PATENTSCOPE, its online database. Following receipt of the ISR and a written opinion, the applicant can choose to request a supplementary international search (SIS) by a Supplementary International Searching Authority (SISA), have an international preliminary

Contracting States in 2021



Source: WIPO, March 2022.

examination (IPE) of this application undertaken by an International Preliminary Examining Authority (IPEA) or take no further action. The applicant generally has a minimum of 30 months from the earliest filing (priority) date during which to decide whether to enter the national phase in the countries or regions in which protection is sought.

International phase

The international phase usually continues for a period of 18 months and mainly involves the filing and formal examination of the application, international search, international publication, optional SIS and optional IPE. Published applications are accessible free of charge through PATENTSCOPE, WIPO's online database.

Filing applications

Typically, applicants seeking protection for an invention in more than one country first file a national or regional patent application at their national or regional patent office. Within 12 months of the filing date of that first application (a time limit set by the Paris Convention), applicants must file an international application under the PCT with an RO – the respective national or regional patent office, or the IB – thereby beginning the international phase. Only a national or resident of a PCT Contracting State can file a PCT application. Where several applicants are named in a PCT application, only one need comply with this requirement.

Because the application has legal effect in all Contracting States, applicants can effectively postpone the requirement to pay certain substantial fees and costs, such as that of translating the application into national languages.

The RO transmits a copy of the application to the IB, which is responsible for:

- receiving and storing all application documents;
- performing a second formalities examination;
- translating the title and abstract of the application and certain associated documents into English and/or French, where necessary;
- publishing the application and related documents in PATENTSCOPE; and
- communicating documents to offices and third parties.

International search

Applications are subject to an international search by an ISA, which identifies the prior art relevant to the patentability of the invention, establishes an ISR and provides a written opinion on the invention's potential patentability. The opinion provided can assist the applicant in deciding whether to continue to seek protection for the invention. If the written opinion is unfavorable, the applicant can either choose to amend the application in order to improve the probability of obtaining a patent, withdraw the application before international publication and before incurring additional costs, or do nothing.

Supplementary international search

Since January 1, 2009, the SIS service has afforded applicants the option of requesting additional searches from ISAs other than the one that carried out the initial search. This service aims to give applicants the option of obtaining a more complete overview of the prior art in the international phase by allowing them to have an additional search performed in the ISA's specialty language. Applicants can request an SIS report by an SISA up to 22 months from the filing (priority) date.

International preliminary examination

After receiving the ISA's written opinion, applicants can request an optional IPE – a second evaluation of the invention's patentability – to be carried out by an IPEA, usually on an amended version of the application (all ISAs are also IPEAs). The resultant international preliminary report on patentability (IPRP) further assists the applicant in determining whether to enter the national phase and contains useful information for elected offices in the national phase.

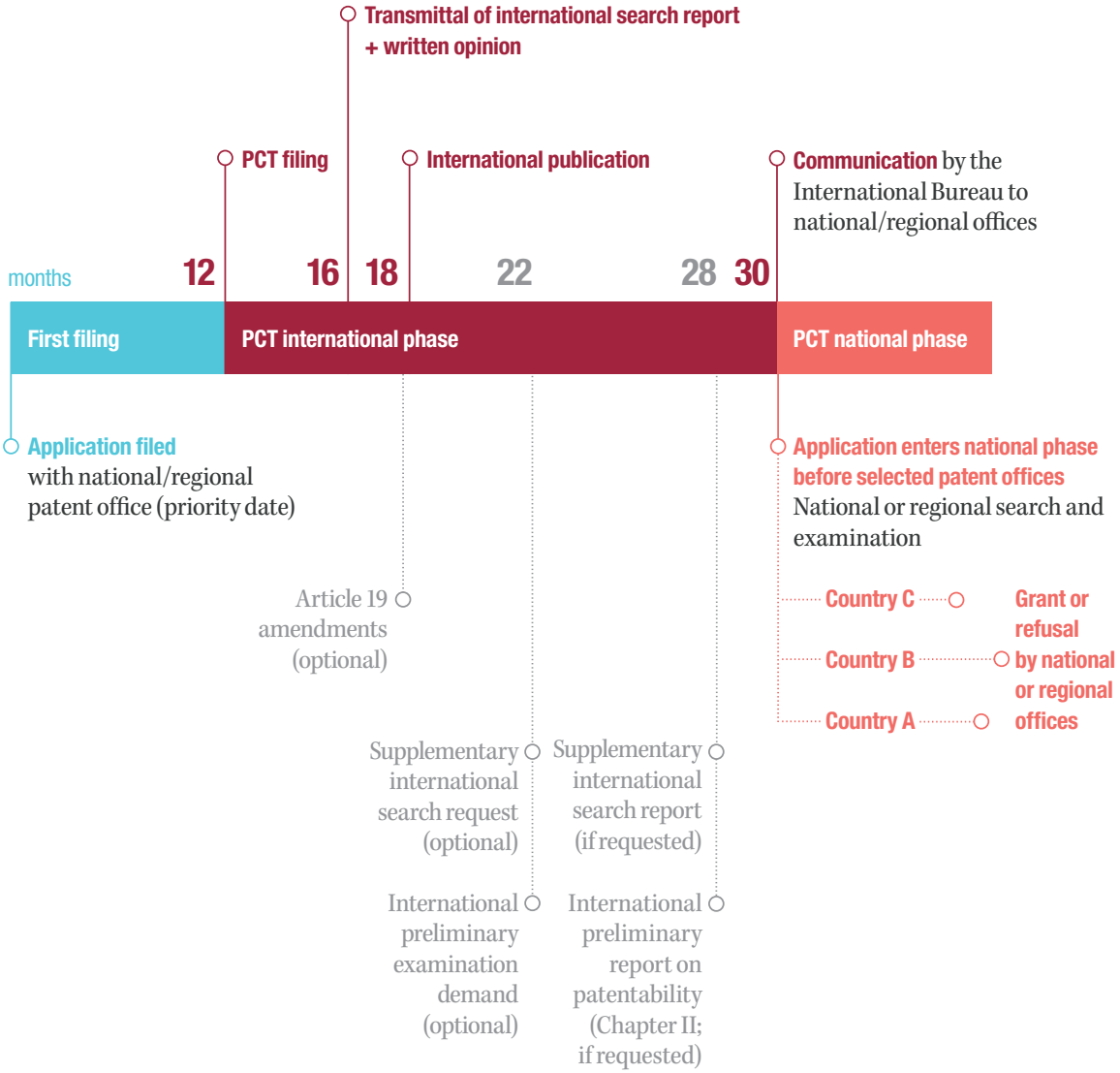
National phase

Applicants have at least 18 months from the filing date before an application needs to enter the national phase at individual patent offices. This delay affords additional time – compared to that allowed under the Paris Convention – to evaluate the chances of obtaining a patent and to plan how to use the invention commercially in the countries in which protection is sought. In the national phase, certain PCT protections continue to apply. During this phase, the particular patent office processes the application in accordance with its national patent laws and decides whether to grant patent protection. The time required for processing varies between patent offices.

Patent Prosecution Highway

The PCT-Patent Prosecution Highway (PCT-PPH) pilots comprise bilateral agreements between patent offices that enable applicants to request accelerated processing of national phase applications. Under these agreements, an applicant receiving a written opinion or an IPRP indicating that at least one claim in the PCT application has novelty, an inventive step or industrial applicability may request that other participating patent offices take up the processing of the application out of turn. An applicant may request the PCT-PPH procedure when entering the national phase of the PCT in a participating designated state. The advantage for PCT applicants is that patent applications are processed faster and more efficiently by designated (or elected) offices. Participating offices also benefit from a reduced examination workload and additional knowledge sharing.

Overview of the PCT System



Benefits

- One PCT application with legal effect in all PCT Contracting States
- Harmonized formal requirements
- Receive patentability information to support strategic decision-making
- Postpone significant costs for national processing by 18 months

The Global Patent Prosecution Highway (GPPH) pilot is a single, multilateral agreement between a group of offices. It enables applicants to request accelerated processing at any participating office, based on work products (including PCT reports) from any of the other participating offices, using a single set of qualifying requirements.

For more information on the PCT, please visit *www.wipo.int/pct*.

Data description

Data presented in this review were drawn from the WIPO Statistics Database. Due to a delay in transmitting PCT applications to WIPO, the figures for the international phase of the PCT for 2021 are estimates.

Publication of PCT applications usually takes place every Thursday. The years 2014 and 2020 each had 53 Thursdays instead of 52 as in other years, which slightly affects trends in statistics based on published PCT applications.

For the national phase of the PCT System, statistics are based on data supplied to WIPO by national and regional patent offices – data which WIPO often receives six months or more after the end of the year in question. Therefore, the latest year for which data are available is 2020. Data may be missing for some offices and incomplete for some origins. Data are available for most of the larger offices, if not all. With the 2020 data supplied to WIPO corresponding to 99.9% of the world total, only a very small proportion of the total is estimated. Missing data are usually estimated using linear extrapolation and averaging adjacent data points.

Due to its minor impact on data, the equivalent patent application concept for patent statistics by origin is not used in this review. National phase entry data by origin may therefore differ slightly from other sources, such as WIPO's IP Statistics Data Center.

Income groups correspond to those used by the World Bank and groupings by region are based on the United Nations (UN) definition of regions.

The figures in this review are subject to revision. Regular updates are available at WIPO's IP Statistics Data Center and Statistical Country Profiles at: *www.wipo.int/ipstats*.

Acronyms

ARIPO	African Regional Intellectual Property Organization
CNIPA	China National Intellectual Property Administration
EPO	European Patent Office
GPPH	Global Patent Prosecution Highway
IB	International Bureau of WIPO
IP	intellectual property
IPC	International Patent Classification
IPE	international preliminary examination
IPEA	International Preliminary Examining Authority
IPRP	international preliminary report on patentability
ISA	International Searching Authority
ISR	international search report
JPO	Japan Patent Office
KIPO	Korean Intellectual Property Office
LAC	Latin America and the Caribbean
NPE	national phase entry
OAPI	African Intellectual Property Organization
PCT	Patent Cooperation Treaty
PCT-PPH	Patent Cooperation Treaty-Patent Prosecution Highway
PDF	portable document format
PRO	public research organization
RO	receiving office
SIS	supplementary international search
SISA	Supplementary International Searching Authority (authority specified for supplementary search)
SISR	supplementary international search report
U.K.	United Kingdom
U.S.	United States of America
USPTO	United States Patent and Trademark Office
WIPO	World Intellectual Property Organization
XML	extensible markup language

Glossary

Applicant: An individual or legal entity that files a patent application. There may be more than one applicant in an application. For PCT statistics, the place of residence of the first named applicant is used to determine the origin of a PCT application.

Application: The procedure for requesting IP rights at a patent office which then examines the application and decides whether to grant protection. Also refers to a set of documents submitted to an office by the applicant.

Application abroad: See "Filing abroad."

Authority specified for supplementary international search (SISA): An International Searching Authority (ISA) that provides a supplementary international search service – also known as a Supplementary International Searching Authority (SISA).

Chapter I of the PCT: The provisions in the PCT regulating the filing of PCT applications, the international searches and written opinions of ISAs, and the international publication of PCT applications – and that provide for the communication of PCT applications plus related documents to designated offices.

Chapter II of the PCT: The provisions in the PCT regulating the optional international preliminary examination (IPE) procedure.

Designated office: A national or regional office of, or acting for, a state designated in a PCT application under Chapter I of the PCT.

Designated state: A Contracting State in which protection for an invention is sought, as specified in the PCT application.

Elected office: The national or regional office of, or acting for, a state elected by the applicant under Chapter II of the PCT where the applicant intends to use the results of the international preliminary examination.

Filing abroad: For statistical purposes, an application filed by a resident of a given state or jurisdiction at an IP office of another state or jurisdiction. For example, an application filed at the Japan Patent Office (JPO) by an applicant domiciled in Lithuania is considered an application abroad from the perspective of Lithuania. This differs from a "non-resident application," which describes an application filed by a resident of a foreign state or jurisdiction from the perspective of the office receiving the application; so, the example above would be a non-resident application from the point of view of the JPO.

Foreign-oriented patent families: A patent family is a set of interrelated patent applications filed at one or more offices to protect the same invention. The patent applications in a family are interlinked by one or more of the following: priority claim, PCT national phase entry, continuation, continuation-in-part, internal priority, and addition or division. Foreign-oriented patent families have at least one filing at an office other than the applicant's home office.

Global Patent Prosecution Highway (GPPH): The GPPH pilot is a single, multilateral agreement between a group of offices. It allows applicants to make a request for accelerated processing at any participating office, based on work products from any of the other participating offices (including PCT reports), using a single set of qualifying requirements.

International application: See "PCT application."

International authority: A national or regional patent office or intergovernmental organization that fulfills specific tasks, as prescribed by the PCT.

International Bureau (IB) of WIPO: In the context of the PCT, the IB of WIPO handles certain processing tasks for all PCT applications filed at all receiving offices worldwide. It also acts as a receiving office for PCT applications from all Contracting States.

International filing date: The date on which the receiving office receives a PCT application, provided certain formal requirements have been met.

International Patent Classification (IPC): An internationally recognized patent classification system, the IPC has a hierarchical structure of language-independent symbols and is divided into sections, classes, subclasses and groups. IPC symbols are assigned according to the technical features in patent applications. A patent application that relates to multiple technical features can be assigned several IPC symbols.

International phase of the PCT: The international phase consists of five main stages:

1. Filing of a PCT application by an applicant and its processing by the receiving office;
2. Establishment of an ISR and a written opinion by an ISA;
3. Publication of the PCT application and related documents, as well as their communication to designated and elected offices by the IB;
4. Optional establishment of an SISR by a SISA;
5. Optional establishment of an IPRP by an IPEA.

For further details on the international phase, see annex, A brief presentation of the Patent Cooperation Treaty.

International Preliminarily Examining Authority (IPEA): A national or regional patent office or intergovernmental organization appointed by the PCT Assembly to carry out international preliminary examinations (IPEs). Its task is to establish the IPRP (Chapter II of the PCT).

International preliminary report on patentability (Chapter II of the PCT) (IPRP): A preliminary, non-binding opinion established by an IPEA at the request of an applicant on whether the claimed invention appears to be novel, to involve an inventive step (i.e., is not obvious) and to be industrially applicable. Prior to January 1, 2004, this report was known as the "International Preliminary Examination Report."

International search report (ISR): A report established by an ISA containing citations of documents (prior art) considered relevant for determining in particular the novelty and inventive step of the invention as claimed. The ISR also includes the classification of the subject matter of the invention and an indication of the fields searched, as well as any electronic databases searched.

International Searching Authority (ISA): A national patent office or intergovernmental organization appointed by the PCT Assembly to carry out international searches. ISAs establish ISRs and written opinions on PCT applications.

Invention: A new solution to a technical problem. To obtain patent rights, an invention must be novel, involve an inventive step and be industrially applicable, as judged by a person skilled in the art.

National phase entry (NPE): The national phase under the PCT follows the international phase of the PCT procedure and consists of the entry and processing of the international application in the individual countries or regions in which the applicant seeks protection for an invention. The entry must in general take place within 30 months from the priority date of the application, although longer time periods are afforded by some offices. NPE involves the payment of fees and, where necessary, the submission of a translation of the PCT application.

Non-resident application: For statistical purposes, a "non-resident" application refers to an application filed at the IP office of, or acting for, a state or jurisdiction in which the first named applicant in the application is not domiciled. For example, an application filed at the Japan Patent Office (JPO) by an applicant residing in Senegal is considered a non-resident application from the perspective of the JPO. Non-resident applications are sometimes referred to as foreign applications.

Origin: For statistical purposes, the origin of an application means the country or territory of residence (or nationality, in the absence of a valid residence) of the first named applicant in an application.

Paris Convention: The Paris Convention for the Protection of Industrial Property is an international convention signed in Paris (France) on March 20, 1883. It is one of the first and most important intellectual property treaties. The Paris Convention establishes, among other things, the "right of priority" principle, which enables a patent applicant to claim a priority of up to 12 months when filing an application in countries other than the original country of filing.

Paris route: Applications for patent protection filed directly with the national/regional office of, or acting for, the relevant state or jurisdiction (as opposed to the "national phase under the PCT"). The Paris route is also called the "direct route" or "national route."

Patent: An exclusive right granted by law to an applicant for an invention for a limited period of time (generally 20 years from the date of filing). The patent system is designed to encourage innovation by providing innovators with time-limited exclusive legal rights, enabling them to appropriate returns from their innovative activity. In return, the applicant is obliged to disclose the invention to the public in a manner that enables others skilled in the art to replicate it. The patent system is also designed to balance the interests of applicants (exclusive rights) with the interests of society (disclosure of the invention). Patents are granted by national or regional patent offices and limited to the jurisdiction of the issuing authority. Patent rights can be sought by filing an application directly with the relevant national or regional office(s), or by filing a PCT application.

Patent Cooperation Treaty (PCT): An international treaty administered by WIPO, the PCT allows applicants to seek patent protection for an invention simultaneously in a large number of countries (PCT Contracting States) by filing a single PCT international application. The granting of patents, which remains under the control of national or regional patent offices, is carried out during what is called the "national phase under the PCT."

PATENTSCOPE: Provides access, free of charge, to all published PCT applications along with related documents, and to the national or regional patent collections from numerous offices worldwide. Since April 2006, the PATENTSCOPE search system has been the authentic publication source for PCT applications.

PCT application: A patent application filed through the WIPO-administered PCT, also known as an international application.

PCT route: The procedure outlined in the PCT, as opposed to the Paris route.

PCT System: The PCT, an international treaty administered by WIPO, facilitates the acquisition of patent rights in a large number of jurisdictions. The PCT System simplifies the process of multiple national patent filings by reducing the requirement to file a separate application in each jurisdiction. However, the decision on whether to grant patent rights remains the prerogative of national and regional patent offices, and patent rights remain limited to the jurisdiction of the patent-granting authority. The PCT application process starts with the international phase, during which an international search and, possibly, a preliminary examination are performed, and concludes with the national phase, during which a national or regional patent office decides on the patentability of an invention according to national law.

PCT-Patent Prosecution Highway pilots (PCT-PPH): A number of bilateral agreements signed between patent offices that enable applicants to request an accelerated examination procedure, because of positive patentability findings made by the International Searching and/or International Preliminary Examining Authority, in the written opinion of an International Searching Authority, the written opinion of an International Preliminary Examining Authority or the international preliminary report on patentability.

Prior art: All information disclosed to the public about an invention, in any form, before a given date. Information on the prior art can assist in determining whether the claimed invention is new and involves an inventive step (i.e., is not obvious) for the purposes of international searches and international preliminary examination (IPE).

Priority date: The filing date of the application on the basis of which priority is claimed.

Publication of PCT application: The IB publishes the PCT application and related documents promptly after the expiration of 18 months from the priority date. If the PCT application is withdrawn or considered withdrawn before the technical preparations for publication are completed, the application is not published. An applicant can request early publication of a PCT application.

Receiving office (RO): A patent office – or the IB – at which the PCT application is filed. The role of the RO is to check and process the application in accordance with the regulations governing the PCT.

Resident application: For statistical purposes, a resident application refers to an application filed with the IP office of, or acting for, the state or jurisdiction in which the first named applicant in the application has residence. For example, an application filed with the Japan Patent Office (JPO) by a resident of Japan is considered a resident application by the JPO. Resident applications are sometimes referred to as "domestic applications."

Supplementary international search report (SISR): A report, similar to the ISR, established during the supplementary international search, that allows an applicant to request, in addition to the main international search, one or more supplementary international searches, each to be carried out by an international authority other than the ISA undertaking the main international search. The SISR primarily focuses on the patent documentation in the language in which the SISA specializes.

Supplementary International Searching Authority (SISA): See "Authority specified for supplementary international search."

World Intellectual Property Organization (WIPO): A United Nations specialized agency dedicated to the promotion of innovation and creativity for the economic, social and cultural development of all countries through a balanced and effective international intellectual property (IP) system. Established in 1967, WIPO's mandate is to promote the protection of IP globally through cooperation among states and in collaboration with other international organizations.

Written opinion of the ISA (WOSA): For every PCT application filed on or after January 1, 2004, an ISA establishes, at the same time that it establishes the ISR, a preliminary and non-binding written opinion on whether the claimed invention appears to be novel, involve an inventive step and be industrially applicable.

PCT Contracting States

On November 10, 2021, Jamaica deposited its instrument of accession to the PCT, thus becoming the 154th Contracting State of the PCT, and on February 10, 2022, became bound by the PCT.

Albania	Dominica	Liberia	Saint Lucia
Algeria	Dominican Republic	Libya	Saint Vincent and the Grenadines
Angola	Ecuador	Liechtenstein	Samoa
Antigua and Barbuda	Egypt	Lithuania	San Marino
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Australia	Equatorial Guinea	Madagascar	Saudi Arabia
Austria	Estonia	Malawi	Senegal
Azerbaijan	Eswatini	Malaysia	Serbia
Bahrain	Finland	Mali	Seychelles
Barbados	France	Malta	Sierra Leone
Belarus	Gabon	Mauritania	Singapore
Belgium	Gambia	Mexico	Slovakia
Belize	Georgia	Monaco	Slovenia
Benin	Germany	Mongolia	South Africa
Bosnia and Herzegovina	Ghana	Montenegro	Spain
Botswana	Greece	Morocco	Sri Lanka
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Brunei Darussalam	Guatemala	Namibia	Sweden
Bulgaria	Guinea	Netherlands	Switzerland
Burkina Faso	Guinea-Bissau	New Zealand	Syrian Arab Republic
Cambodia	Honduras	Nicaragua	Tajikistan
Cameroon	Hungary	Niger	Thailand
Canada	Iceland	Nigeria	Togo
Central African Republic	India	North Macedonia	Trinidad and Tobago
Chad	Indonesia	Norway	Tunisia
Chile	Iran (Islamic Republic of)	Oman	Turkey
China	Ireland	Panama	Turkmenistan
Colombia	Israel	Papua New Guinea	Uganda
Comoros	Italy	Peru	Ukraine
Congo	Jamaica (from February 10, 2022)	Philippines	United Arab Emirates
Costa Rica	Japan	Poland	United Kingdom
Côte d'Ivoire	Jordan	Portugal	United Republic of Tanzania
Croatia	Kazakhstan	Qatar	United States of America
Cuba	Kenya	Republic of Korea	Uzbekistan
Cyprus	Kuwait	Republic of Moldova	Viet Nam
Czech Republic	Kyrgyzstan	Romania	Zambia
Democratic People's Republic of Korea	Lao People's Democratic Republic	Russian Federation	Zimbabwe
Denmark	Latvia	Rwanda	
Djibouti	Lesotho	Saint Kitts and Nevis	

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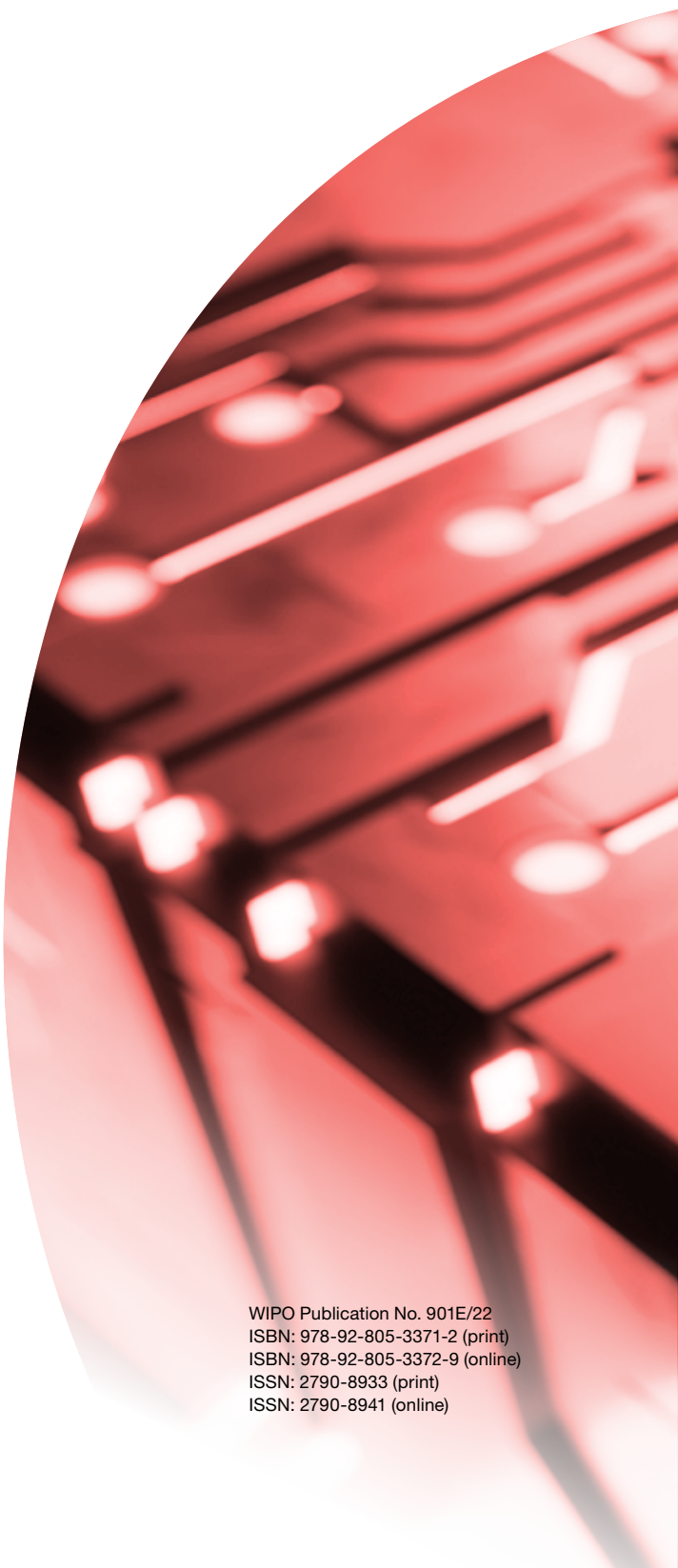

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