Patent Cooperation Treaty Yearly Review 2020

The International Patent System

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Further information

Online resources

The electronic version of the *Review*, as well as the underlying data used to compile all 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

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Key numbers for 2019

647,700 (+2.6%)
PCT national phase entries

265,800 (+5.2%)
PCT applications filed

127 (unchanged)
Countries in which PCT applications were filed

56.9% (–0.5 percentage point)
Share of PCT national phase entries in worldwide non-resident filings

18.7% (+1.6 percentage points)
Share of women among PCT inventors

Note: The latest available year for PCT national phase entry data is 2018.

Special theme: The top 50 PCT clusters

This year's special theme provides a descriptive analysis of PCT filing activity at the subnational level, based on the location of inventors named in PCT applications. Whereas this is the first time that the *PCT Yearly Review* has analyzed clusters of innovative activity in this way, WIPO's *Global Innovation Index* (*GII*) has since 2018 supplied statistics on the world's top-ranked science and technology clusters, while the 2019 edition of the *World Intellectual Property Report* (*WIPR*) focused on the evolution of the global innovation hotspots and their network over 40 years.

Identifying and analyzing clusters of PCT filings (i.e., PCT clusters) allows for a more detailed overview of where the innovations described in PCT applications took place globally. As can be seen in figure A8, the bulk of PCT applications are filed in just a few countries. On closer analysis, this special theme is able to show that most PCT filing actually originates from a relatively small number of metropolitan areas.

The methodology used to identify and rank PCT clusters consists of three separate steps. Step 1 was to geocode to the highest level of detail obtainable the 3.1 million addresses listed in the 1.1 million PCT applications published between 2014 and 2018, done mainly through Esri's ArcGIS service (see figure S1). Overall, 97% of inventor addresses were accurate to the city level or better. Over 97% of inventor addresses for 16 of the top 20 PCT origins were geocoded with an accuracy of city level or better, with the remaining four having 81% of their addresses geocoded to city level or better. Step 2 consisted in identifying and consolidating clusters – that is, those areas with a high innovative output – by grouping PCT inventors with authors in scientific publications using the Density-Based Spatial Clustering of Applications with Noise (DBSCAN) algorithm.[1] Finally, once clusters had been identified, step 3 was to calculate the respective number of PCT applications using the fractional count (share) of listed inventors present in the clusters. For further details on the methodology used, please refer to WIPO's Economic Research Working Paper No. 34 "Identifying and Ranking the World's Largest Clusters of Inventive Activity" and its subsequent work presented in the 2018 edition of the *GII*.

The indicators presented hereafter allow for the analyzing of PCT filing activity at a global scale and the description of the main characteristics of the top 50 PCT clusters for the period 2014–2018.

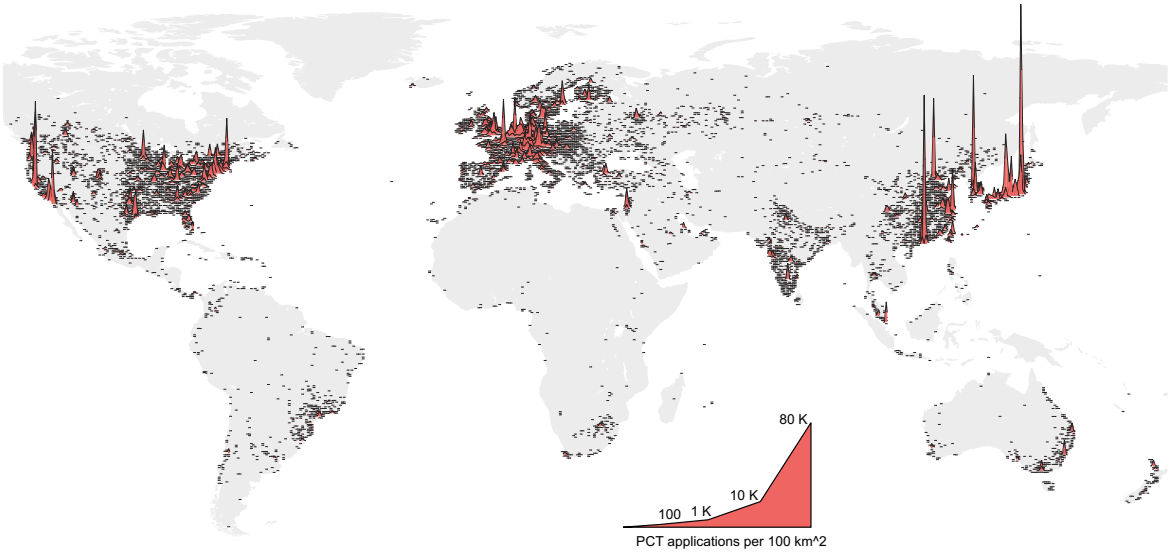
Six of the eight largest PCT clusters were in East Asia

Map S1 shows the location of PCT activity per 100 square kilometers, utilizing the geocoded location of inventors; hence, the higher the peak, the denser is the innovative activity within a geographical area.

As can be seen, PCT activity is widely dispersed geographically. Those areas with particularly dense filing

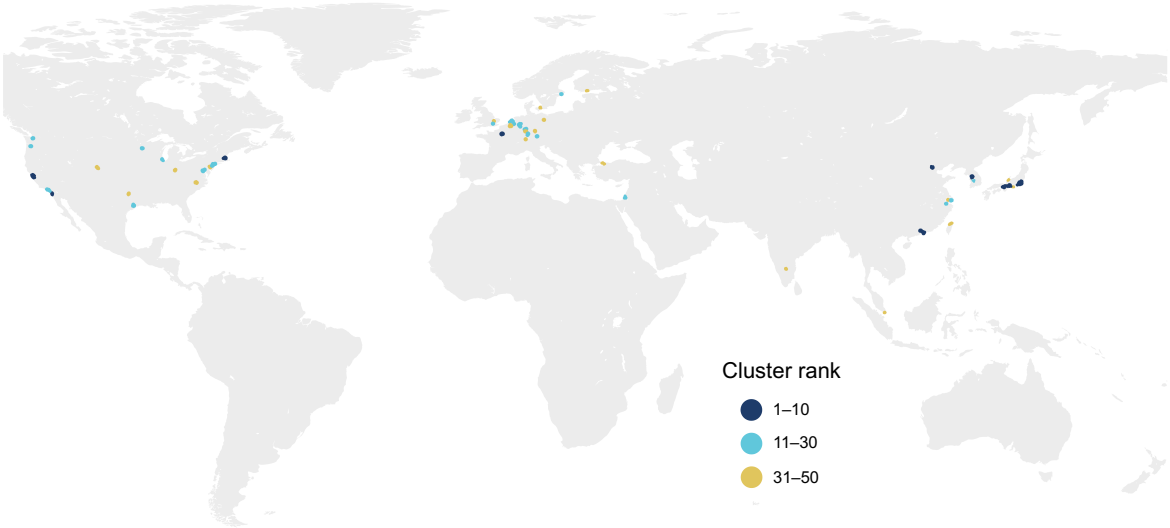
1 This special theme follows the broader definition of a cluster as presented in the special section of the 2018 edition of the *GII*. Patents only present one potential avenue of innovation. Incorporating scientific publications into the clustering process broadens the definition of innovation and provides a refined picture of where dense innovative activity is occurring. Thus, the clusters represent a combination of dense patent activity and dense Academic publication activity. It is important to note that, although Web of Science data was used to form the boundary of each cluster, Scientific publication data have been excluded from this particular analysis. Resulting data and analysis were derived from PCT applications alone.

S1. PCT application density per 100 square kilometers, 2014–2018



Source: WIPO Statistics Database, March 2020.

S2. Top 50 PCT clusters, location, 2014–2018



Source: WIPO Statistics Database, March 2020.

S3. Top 50 PCT clusters, ranking, 2014–2018

Rank	Cluster	Origin	PCT applications	Share of overall PCT applications (%)	Share of origins' PCT applications (%)	Share of inventors in origins' total (%)	Top applicant	Share of top applicant (%)
1	Tokyo-Yokohama	Japan	113,244	10.8	50.8	57.2	Mitsubishi Electric	8.8
2	Shenzhen-Hong Kong-Guangzhou	China / China, Hong Kong SAR	72,259	6.9	46.6*	44.9**	Huawei	23.5
3	Seoul	Republic of Korea	40,817	3.9	59.6	68.9	LG Electronics	19.3
4	San Jose-San Francisco, CA	U.S.	39,748	3.8	13.9	14.5	Google	8.6
5	Osaka-Kobe-Kyoto	Japan	29,464	2.8	13.2	14.9	Murata Manufacturing	11.1
6	Beijing	China	25,080	2.4	16.2	16.4	BOE Technology Group	28.2
7	San Diego, CA	U.S.	19,665	1.9	6.9	7.2	Qualcomm	59.3
8	Nagoya	Japan	19,327	1.8	8.7	9.8	DENSO Corp.	21.8
9	Boston-Cambridge, MA	U.S.	15,458	1.5	5.4	5.6	MIT	6.3
10	Paris	France	13,561	1.3	33.5	35.8	L'Oréal	7.1
11	Shanghai	China	13,347	1.3	8.6	8.7	ZTE Corp.	22.7
12	New York City, NY	U.S.	12,302	1.2	4.3	4.4	Honeywell	6.0
13	Seattle, WA	U.S.	11,558	1.1	4.1	4.2	Microsoft	45.4
14	Houston, TX	U.S.	10,852	1.0	3.8	4.0	Halliburton	19.4
15	Los Angeles, CA	U.S.	9,764	0.9	3.4	3.6	University of California	6.3
16	Stuttgart	Germany	8,336	0.8	9.3	9.2	Robert Bosch	45.7
17	Daejeon	Republic of Korea	8,306	0.8	12.1	14.0	LG Chem	44.1
18	Eindhoven	Netherlands	8,226	0.8	40.1	46.6	Philips Electronics	72.1
19	Cologne	Germany	7,827	0.7	8.7	8.6	Henkel	9.5
20	Munich	Germany	7,532	0.7	8.4	8.3	BMW	16.4
21	Tel Aviv-Jerusalem	Israel	7,076	0.7	84.5	68.5	Intel	5.5
22	Minneapolis, MN	U.S.	6,444	0.6	2.3	2.4	3M Innovative Properties	36.0
23	Portland, OR	U.S.	6,270	0.6	2.2	2.3	Intel	54.3
24	Chicago, IL	U.S.	6,167	0.6	2.2	2.3	Illinois Tool Works	15.7
25	Stockholm	Sweden	5,736	0.5	30.1	36.3	LM Ericsson	46.2
26	Frankfurt am Main	Germany	5,167	0.5	5.8	5.7	Merck Patent	9.9
27	Hangzhou	China	4,832	0.5	3.1	3.1	Alibaba Group	42.9
28	Washington, DC-Baltimore, MD	U.S.	4,592	0.4	1.6	1.7	Johns Hopkins University	12.9
29	Amsterdam-Rotterdam	Netherlands	4,409	0.4	21.5	25.1	Shell	8.4
30	London	U.K.	4,281	0.4	16.4	14.0	British Telecom	9.2
31	Singapore	Singapore	4,019	0.4	93.1	100.0	A*Star	17.9
32	Heidelberg-Mannheim	Germany	3,913	0.4	4.4	4.3	BASF	42.2
33	Cincinnati, OH	U.S.	3,900	0.4	1.4	1.4	Procter & Gamble Company	41.6
34	Nuremberg-Erlangen	Germany	3,729	0.4	4.2	4.1	Siemens	35.3
35	Hamamatsu	Japan	3,407	0.3	1.5	1.7	NTN Corp.	26.2
36	Berlin	Germany	3,333	0.3	3.7	3.7	Siemens	13.8
37	Bengaluru	India	3,289	0.3	1.2	29.7	Hewlett-Packard	10.1
38	Philadelphia, PA	U.S.	3,173	0.3	1.1	1.2	University of Pennsylvania	10.4
39	Brussels	Belgium	3,171	0.3	54.1	51.0	Procter & Gamble Company	5.9
40	Dallas, TX	U.S.	3,157	0.3	1.1	1.2	Halliburton	15.9
41	Zürich	Switzerland	3,117	0.3	15.0	24.3	Sika Technology	5.1
42	Kanazawa	Japan	2,987	0.3	1.3	1.5	Fujifilm Corp.	31.0
43	Copenhagen	Denmark	2,958	0.3	44.8	47.7	Novozymes	10.8
44	Raleigh, NC	U.S.	2,949	0.3	1.0	1.1	Duke University	9.9
45	Helsinki	Finland	2,789	0.3	32.7	39.3	Nokia	11.8
46	Denver, CO	U.S.	2,789	0.3	1.0	1.0	University of Colorado	7.1
47	Taipei-Hsinchu	Taiwan, Province of China	2,721	0.3	1.8*	63.8	MediaTek	14.2
48	Istanbul	Turkey	2,677	0.3	59.1	59.1	Arcelik	47.7
49	Suzhou	China	2,627	0.3	1.7	1.7	Fujitsu	11.8
50	Cambridge	U.K.	2,623	0.3	10.1	8.6	ARM	11.5

Note: * Corresponds to the share of PCT applications in China. ** Data refer to the Chinese mainland part of the cluster. MIT is the Massachusetts Institute of Technology.

Source: WIPO Statistics Database, March 2020.

activity are mostly concentrated in East Asia, Western Europe and the United States of America (U.S.). Six of the eight densest areas in the world are in East Asia and the other two in the U.S. In many other parts of the world, intense filing activity is visible, but generally at a lower density.

Map S2 shows the geographical locations of the top 50 PCT clusters identified using the methodology outlined. Distribution across geographical regions is highly uneven: none of the top 50 PCT clusters are to be found in Africa, Latin America and the Caribbean (LAC) or Oceania, but are instead evenly distributed across the other three regions of the world, namely Asia (17), Europe (17) and North America (16). (Maps showing the areas of PCT filing activity for each of the six geographical regions of the world are provided in figure S6 at the end of this special theme.)

The top 50 PCT clusters account for almost 58% of all PCT filings

Table S3 shows the 50 clusters with the highest number of PCT applications during the period 2014 to 2018. Combined, these top 50 PCT clusters account for 57.8% of all PCT filings. Tokyo-Yokohama is by far the largest PCT cluster. It represents almost 11% of PCT applications published during this period. It is followed by Shenzhen-Hong Kong-Guangzhou and Seoul. San Jose-San Francisco is the highest ranked cluster from the U.S. and is in fourth position, while Paris is the only cluster in Europe to rank among the top 10.

This top 50 list features clusters from 18 economies. Among these, the U.S. has 16 clusters, Germany seven, and China and Japan five each. The Netherlands, the United Kingdom (U.K.) and the Republic of Korea each have two clusters, while the 11 remaining economies have one cluster each.

Of the top 50 clusters, 43 are in high-income economies and the remaining seven in middle-income countries. Among this latter category, China has five clusters, and India and Turkey one each. The Bengaluru cluster in India ranks in 37th position with nearly 3,300 PCT applications, while the Istanbul cluster in Turkey is in 48th position with 2,677 applications.

Six of the top 50 PCT clusters account for the majority of filings from their respective countries. As expected, the cluster in Singapore accounts for a very large proportion of filings from that country, while remaining applications listed no local inventors. Tel Aviv-Jerusalem likewise accounts for a large percentage of its country's filing activity, representing 84.5% of applications from Israel. Among the top five countries in terms of PCT filings (see figure A7), between 50% and 60% of all filings from Japan and the Republic of Korea was concentrated in their capital cities. With 46.6% of filings, the Chinese mainland part of Shenzhen-Hong Kong-Guangzhou also accounted for a large proportion of filings from China.

Twenty-nine of the top 50 PCT clusters accounted for less than 10% of their country's filing activity. The bulk of these are located in Germany and the U.S., reflecting the highly decentralized economic structure of both countries. China and Japan feature three such clusters each. Finally, the Bengaluru cluster accounts for only 1.2% of filing activity in India, as a large proportion of its inventors are listed in applications filed by foreign applicants, mostly from the U.S., as we will see later.

Universities are the top applicant for six clusters

A majority of PCT applications were filed by a cluster's top applicant in only three cases. Philips Electronics filed 72.1% of applications from Eindhoven. Similarly, Qualcomm and Intel filed the majority of applications originating from the U.S. clusters of San Diego and Portland, respectively. In contrast, Sika Technology accounted for only 5.1% of total filings from Switzerland's top cluster, Zürich. Four companies ranked as the top applicant in two clusters. Halliburton and Siemens were the top applicants in two U.S. clusters and in two German clusters, respectively. A third company, Intel, was the top applicant for Portland as well as for Tel Aviv-Jerusalem. Similarly, the Procter & Gamble Company was the top applicant for a cluster located in the U.S. city of Cincinnati and one located in Belgium (Brussels).

The six universities to feature as the main applicant among the top 50 PCT clusters are located in the U.S. The highest ranked cluster to have a university – the Massachusetts Institute of Technology (MIT) – as its top applicant is ninth-placed Boston-Cambridge. Most of the companies and universities that were top applicant for a cluster also ranked among the top PCT applicants overall for 2019 (see figures A15 and A17).

A majority of inventors in Japan are located in the Tokyo-Yokohama cluster

Of all the Japanese-based inventors named in PCT applications filed by applicants in Japan, 57.2% are

from the Tokyo-Yokohama cluster. About two-thirds of inventors from Israel and the Republic of Korea reside in the Tel Aviv-Jerusalem and Seoul clusters, respectively. Exactly 44.9% of all PCT inventors from China are grouped in the Chinese mainland part of Shenzhen-Hong Kong-Guangzhou. In contrast, 14% of inventors reside in the largest PCT clusters found in the U.K. (London) and the U.S. (San Jose-San Francisco). Similarly, Stuttgart accounts for only 9.2% of all PCT inventors from Germany.

Almost a third of filings from Shenzhen-Hong Kong-Guangzhou are in digital communication

Table S4 presents the 15 technology fields to feature most often in published applications made in the top 50 PCT clusters. Digital communication accounts for more than 10% of filing activity in a third of clusters and 40.8% of filings in Stockholm, 31.9% in San Diego and 31.4% in Shenzhen-Hong Kong-Guangzhou. Computer technology is by far the main technology field for Seattle and medical technology accounts for a large proportion of filings in Cincinnati and Minneapolis.

Innovation is more diversified across technology fields in several clusters. Combined, the top three technology fields for Tokyo-Yokohama – electrical machinery, computer technology and optics – account for under a quarter of its total filings. Within the top 10 clusters, Osaka-Kobe-Kyoto and Paris show a similar degree of diversification across their top three technology fields.

U.S. applicants filed over 10% of applications in one half of all clusters

An applicant may reside outside the cluster with which they are associated, because clusters are identified according to the location of the inventors listed in PCT applications. Table S5 details the shares for 17 selected origins in PCT applications that list inventors from the top 50 PCT clusters. As expected, the bulk of PCT applications were filed by applicants residing in the same jurisdiction as their associated cluster. In half of the top 50 PCT clusters, over 90% of applications were filed by local applicants and this rises to above 99% for the Daejeon, Nagoya, and Shenzhen-Hong Kong-Guangzhou clusters. The only exception is Bengaluru, where only 23.4% of filings originated from applicants residing in India. Applicants from the U.S. accounted for 41.3% of Bengaluru's filing activity and applicants from Germany, the Netherlands and the Republic of Korea for a further 20.2%.

Applicants based in the U.S. filed more than 10% of total applications in 25 of the top 50 clusters. Applicants residing in the U.S. filed between 17% and 21% of PCT applications from the Taipei-Hsinchu, Tel Aviv-Jerusalem, and Brussels clusters. They also filed about 14% of the total filings for Hangzhou, Shanghai, and Singapore. Similarly, Japanese applicants accounted for 11.8% of filings made by the Chinese cluster of Suzhou, whereas Chinese applicants filed between 5% and 8% of the applications from Dallas, Munich, and Stockholm.

Conclusion

Based on the addresses of PCT inventors, this special theme has presented a detailed analysis of the world's 50 largest PCT clusters for the period 2014–2018, offering a number of insights into the nature of the innovative activity taking place within these metropolitan areas. At the global scale, statistics at cluster level provide similar information to that found at country level. The bulk of global PCT filing activity is concentrated among the top 50 PCT clusters. These clusters are not distributed equally across geographical regions but instead located only in Asia, Europe and North America; East Asia alone is home to six of the eight densest clusters in the world.

Forty-three of the top 50 PCT clusters are in high-income economies, mainly in Germany, Japan and the U.S. Among middle-income countries, only China, India and Turkey have one or more cluster. By a wide margin, the world's densest PCT cluster is Tokyo-Yokohama, which alone accounted for 10.8% of all PCT applications published between 2014 and 2018. It is followed by Shenzhen-Hong Kong-Guangzhou, Seoul, and San Jose-San Francisco. The top 50 list features clusters in 18 economies, among which six saw a majority of filing activity concentrated within their biggest cluster.

Of the top five countries in PCT applications, Japan and the Republic of Korea are the ones where most of the filing activity is concentrated in its capital cities. The Chinese mainland part of Shenzhen-Hong Kong-Guangzhou represents slightly under half of all filings from China. In contrast, the largest clusters in Germany and the U.S. account for a relatively small proportion of the total PCT filings from these two countries.

In only three clusters did the top applicant account for a majority of filing activity, as was the case in Eindhoven with Philips Electronics. Four companies ranked as the top applicant in two separate clusters; Intel for one was the top applicant for Portland and for

S4. Technology fields for the top 50 PCT clusters, 2014–2018

Rank	Cluster	Field of technology															
		Digital communication	Computer technology	Electrical machinery, apparatus, energy	Medical technology	Measurement	Audio-visual technology	Pharmaceuticals	Transport	Optics	Semiconductors	Telecommunications	Biotechnology	Organic fine chemistry	Basic materials chemistry	IT methods for managemen	All other 20 fields
1	Tokyo-Yokohama	4.5	8.1	9.7	5.8	4.7	5.1	1.4	5.0	5.9	5.0	2.3	1.6	1.7	2.8	2.2	34.2
2	Shenzhen-Hong Kong-Guangzhou	31.4	15.7	6.0	2.4	2.4	6.1	0.9	2.1	4.5	1.9	6.3	0.8	0.5	0.5	2.2	16.3
3	Seoul	17.3	9.9	6.5	5.3	2.6	5.8	3.5	2.2	2.8	3.8	6.8	2.4	1.8	1.6	3.8	23.9
4	San Jose-San Francisco, CA	11.4	23.3	4.2	8.1	4.2	4.1	4.6	1.1	3.0	7.2	2.9	4.8	1.9	0.9	5.7	12.6
5	Osaka-Kobe-Kyoto	2.6	3.1	12.9	5.3	5.9	4.0	2.9	2.7	4.3	6.3	3.2	2.2	2.1	3.4	0.0	39.1
6	Beijing	21.6	18.9	4.0	2.5	3.4	8.5	1.9	1.4	9.0	8.1	3.2	1.7	1.0	1.0	1.4	12.4
7	San Diego, CA	31.9	14.0	2.7	4.4	3.8	6.4	5.1	0.9	1.4	2.8	6.2	4.4	2.3	0.8	1.2	11.7
8	Nagoya	0.8	2.2	18.3	1.8	5.8	6.1	0.0	14.9	1.9	3.4	1.0	0.6	0.6	1.3	0.0	41.3
9	Boston-Cambrdige, MA	2.8	8.0	4.1	11.9	5.2	2.4	16.6	0.9	1.8	2.2	1.6	13.2	5.7	1.6	1.6	20.4
10	Paris	5.4	5.8	5.7	3.9	6.5	1.7	4.4	11.2	3.0	1.2	1.7	3.4	6.4	1.6	1.5	36.6
11	Shanghai	21.5	12.1	7.2	3.6	2.9	3.1	5.3	2.4	2.3	2.2	4.2	2.5	5.9	2.6	1.6	20.6
12	New York City, NY	6.3	8.7	2.0	8.2	3.6	1.4	14.2	0.9	1.4	0.9	2.6	6.3	10.2	3.5	5.5	24.3
13	Seattle, WA	12.7	41.0	2.3	3.7	2.6	4.7	2.6	1.1	3.0	0.6	3.0	3.1	0.7	0.4	7.9	10.6
14	Houston, TX	1.2	7.8	2.1	1.8	11.4	1.1	2.4	1.0	0.9	0.5	0.7	1.9	3.0	9.2	0.6	54.4
15	Los Angeles, CA	4.1	9.4	4.1	19.1	3.9	3.4	7.3	3.3	3.5	1.6	2.3	4.4	2.3	1.2	3.7	26.4
16	Stuttgart	2.9	3.0	12.5	2.3	10.8	1.9	0.9	12.3	1.4	1.6	1.6	1.3	0.0	0.5	0.0	47.0
17	Daejeon	2.6	3.4	21.5	2.4	4.5	2.2	3.4	2.6	4.1	5.0	1.3	3.1	5.0	3.8	1.1	34.0
18	Eindhoven	2.8	11.0	15.6	27.1	7.8	1.8	0.0	0.6	8.2	2.8	1.7	0.4	0.0	0.4	1.1	18.7
19	Cologne	1.5	1.3	5.1	3.2	3.6	0.0	3.0	6.0	0.7	0.6	0.0	2.9	8.2	9.8	0.7	53.4
20	Munich	11.7	8.6	7.7	4.6	6.1	1.9	2.2	12.2	1.6	1.7	3.4	2.7	1.3	1.0	1.3	32.0
21	Tel Aviv-Jerusalem	8.2	17.2	2.9	15.5	5.4	2.2	7.2	2.2	2.8	1.1	2.9	3.8	1.6	1.4	3.0	22.6
22	Minneapolis, MN	1.1	4.0	4.3	31.3	3.1	1.6	2.4	1.0	4.3	1.2	0.8	2.3	1.6	7.8	1.1	32.1
23	Portland, OR	16.5	20.6	3.1	2.4	1.9	2.0	0.8	1.2	2.1	16.5	3.0	0.6	0.3	0.4	1.8	26.8
24	Chicago, IL	7.8	6.0	4.1	7.1	3.3	2.3	4.7	3.1	0.0	0.9	2.7	3.2	5.0	6.5	4.1	39.2
25	Stockholm	40.8	5.7	2.0	4.0	2.6	2.9	2.1	3.6	0.8	0.0	6.4	1.6	0.6	0.5	1.2	25.2
26	Frankfurt am Main	3.1	2.5	5.0	12.9	5.6	0.8	6.7	4.7	1.1	3.0	0.0	3.6	9.2	7.7	0.0	34.1
27	Hangzhou	14.8	29.9	4.3	4.8	3.8	4.7	2.0	2.0	1.0	0.6	3.6	1.1	1.7	0.6	7.6	17.5
28	Washington, DC-Baltimore, MD	5.1	8.3	2.2	11.3	5.2	1.0	17.8	1.3	1.4	1.4	3.1	12.3	3.5	1.6	3.8	20.7
29	Amsterdam-Rotterdam	3.5	2.8	2.9	4.3	6.1	1.2	5.8	5.0	1.8	1.6	0.9	6.2	4.2	4.9	0.0	48.8
30	London	12.1	12.9	2.7	6.9	3.3	2.6	6.9	2.7	1.1	0.0	3.6	5.1	2.2	1.1	5.6	31.2
31	Singapore	3.3	8.1	4.5	6.6	5.9	2.5	5.3	2.4	2.2	4.8	1.0	7.1	3.5	3.0	5.1	34.7
32	Heidelberg-Mannheim	4.1	2.5	5.0	3.4	3.4	0.0	3.6	1.8	1.8	1.2	0.0	4.5	12.4	13.4	0.7	42.2
33	Cincinnati, OH	0.0	1.2	1.2	33.8	1.5	0.0	2.7	1.0	0.3	0.0	0.4	1.4	10.3	6.8	0.6	38.8
34	Nuremberg-Erlangen	3.7	7.6	17.1	3.9	5.5	3.4	0.0	7.1	0.8	2.0	1.3	0.6	0.6	0.9	0.6	44.9
35	Hamamatsu	1.2	3.0	11.7	2.2	7.6	8.7	0.2	14.2	4.2	2.8	1.0	0.9	0.3	0.8	0.0	41.2
36	Berlin	3.9	6.3	11.1	6.1	6.0	2.5	7.0	4.1	3.3	2.1	1.6	4.2	3.5	0.0	1.1	37.2
37	Bengaluru	20.1	21.0	3.4	3.0	3.9	2.4	3.5	1.9	0.9	1.4	2.3	2.4	5.2	4.5	3.8	20.3
38	Philadelphia, PA	2.8	3.1	2.6	11.3	2.1	0.7	21.4	0.8	0.7	0.0	0.7	9.9	10.0	6.4	1.6	25.9
39	Brussels	5.0	6.0	2.7	4.9	3.7	2.0	5.7	2.7	3.5	2.4	2.2	4.5	3.9	8.0	2.1	40.7
40	Dallas, TX	14.2	10.4	4.4	4.9	4.2	2.4	3.0	1.4	2.4	4.3	6.7	1.3	1.6	1.1	3.0	34.7
41	Zürich	2.2	5.1	5.7	8.2	7.1	3.5	4.0	3.0	2.4	3.2	0.0	4.2	2.3	4.1	2.7	42.3
42	Kanazawa	5.7	8.9	5.7	5.2	3.5	3.9	1.7	5.5	7.9	5.9	2.4	2.3	1.5	4.7	1.3	33.9
43	Copenhagen	0.7	3.6	2.9	13.2	4.5	3.8	9.8	1.4	1.7	0.0	0.9	15.0	3.8	5.8	1.1	31.8
44	Raleigh, NC	3.6	7.6	8.2	10.4	3.8	1.1	14.1	1.0	1.7	4.0	1.3	10.2	4.9	5.4	1.6	21.1
45	Helsinki	30.0	6.5	4.0	4.9	4.3	2.2	1.6	1.7	1.1	1.1	2.8	1.8	0.0	1.9	1.7	34.4
46	Denver, CO	6.2	10.9	4.2	12.8	7.2	2.3	5.1	2.2	2.3	1.6	2.4	4.6	2.3	1.9	2.3	31.7
47	Taipei-Hsinchu	10.1	11.0	8.6	5.8	2.1	8.8	9.9	2.1	3.0	5.2	3.0	4.7	2.0	1.4	0.8	21.5
48	Istanbul	4.7	2.6	5.9	5.0	1.5	1.8	7.2	2.3	0.7	0.0	1.7	0.6	0.8	1.5	2.7	61.0
49	Suzhou	10.4	3.8	7.0	6.1	4.4	3.4	4.8	2.3	2.0	4.6	1.8	2.6	5.2	1.3	0.0	40.3
50	Cambridge	4.8	16.2	3.2	8.6	7.7	1.9	8.4	0.0	1.9	4.2	1.7	9.4	3.9	1.3	1.0	25.8

Note: 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 2020.

S5. Applicants' origin for the top 50 PCT clusters, 2014–2018

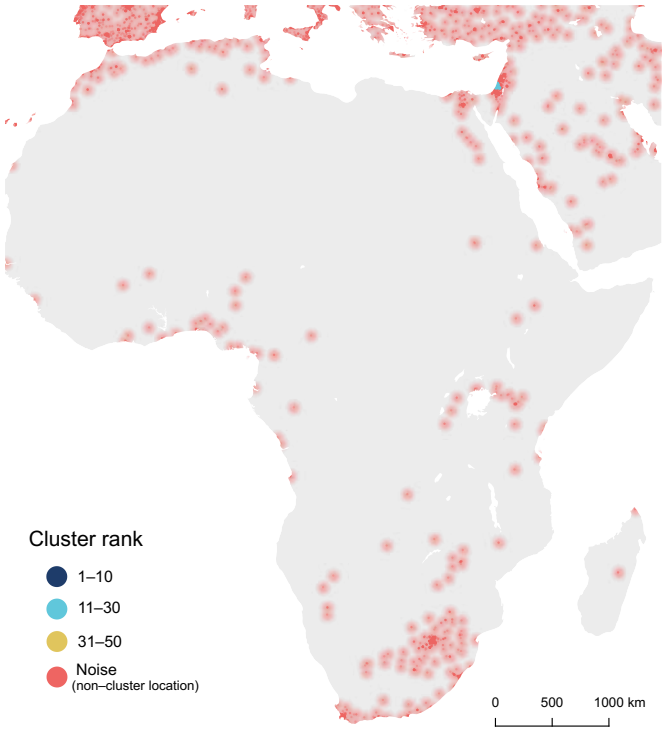
Rank	Cluster	Cluster's origin	Applicant's origin: Belgium	China	Denmark	Finland	France	Germany	India	Israel	Japan	Netherlands	Republic of Korea	Singapore	Sweden	Switzerland	Turkey	UK	U.S.
39	Brussels	Belgium	65.1	0.5	0.1	0.4	7.0	3.0	0.0	0.1	0.5	1.3	0.0	0.1	0.2	1.1	0.0	0.5	17.0
6	Beijing	China	0.0	84.7	0.2	1.4	0.5	0.4	0.0	0.0	2.7	0.1	1.3	0.7	1.9	0.4	0.0	0.1	5.1
27	Hangzhou	China	0.0	82.2	0.0	0.3	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1	14.4
11	Shanghai	China	0.1	73.4	0.0	0.2	3.4	2.6	0.0	0.0	1.5	1.6	0.0	0.0	0.7	1.5	0.0	0.5	14.2
2	Shenzhen-Hong Kong-Guangzhou	China / China, Hong Kong SAR	0.0	99.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
49	Suzhou	China	0.0	83.2	0.1	0.0	0.0	0.8	0.0	0.0	11.8	0.0	0.0	0.1	0.0	0.1	0.0	0.1	3.4
43	Copenhagen	Denmark	0.0	0.0	89.6	0.1	0.3	1.7	0.0	0.0	0.2	0.5	0.0	0.0	1.5	2.3	0.0	0.5	2.0
45	Helsinki	Finland	0.0	0.3	0.1	81.9	0.1	0.4	0.0	0.0	2.2	0.2	0.0	0.0	6.8	2.6	0.0	0.2	3.4
10	Paris	France	0.3	0.1	0.1	0.2	92.7	1.0	0.0	0.0	0.3	0.4	0.0	0.0	0.3	0.9	0.0	0.3	2.3
36	Berlin	Germany	0.1	0.3	0.1	0.5	0.2	90.4	0.0	0.1	0.0	1.2	0.0	0.4	0.1	1.8	0.0	0.3	3.3
19	Cologne	Germany	0.3	0.1	0.2	0.7	0.5	89.3	0.0	0.0	0.3	0.3	0.1	0.0	0.2	1.6	0.0	0.4	5.1
26	Frankfurt am Main	Germany	0.3	0.2	0.1	0.7	3.3	79.0	0.0	0.0	0.8	0.4	0.1	0.1	0.2	2.9	0.0	0.3	10.1
32	Heidelberg-Mannheim	Germany	0.6	0.0	0.4	0.1	0.2	89.1	0.0	0.0	0.6	1.1	0.1	0.0	0.2	2.7	0.0	0.3	3.9
20	Munich	Germany	0.2	7.3	0.1	2.1	0.4	78.2	0.0	0.1	0.8	0.2	0.0	0.0	0.7	1.6	0.0	0.4	6.0
34	Nuremberg-Erlangen	Germany	0.1	0.1	0.0	0.1	0.4	92.5	0.0	0.0	0.0	0.6	0.0	0.6	0.8	0.9	0.0	0.1	2.6
16	Stuttgart	Germany	0.0	0.0	0.0	0.2	2.1	92.4	0.0	0.0	1.3	0.1	0.0	0.2	0.2	1.1	0.0	0.1	1.5
37	Bengaluru	India	0.1	1.7	0.6	2.5	1.1	4.0	23.4	0.0	0.6	9.3	6.9	0.4	3.4	1.9	0.0	0.9	41.3
21	Tel Aviv-Jerusalem	Israel	0.0	0.4	0.0	0.0	0.1	0.3	0.0	77.8	0.0	0.5	0.1	0.2	0.0	0.6	0.0	0.6	17.6
35	Hamamatsu	Japan	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	98.5	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4
42	Kanazawa	Japan	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	96.0	0.1	0.4	0.0	2.0	0.0	0.0	0.0	0.4
8	Nagoya	Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
5	Osaka-Kobe-Kyoto	Japan	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	97.6	0.0	0.1	0.0	0.0	0.1	0.0	0.0	1.6
1	Tokyo-Yokohama	Japan	0.0	0.1	0.0	0.0	0.3	0.1	0.0	0.0	97.9	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.6
29	Amsterdam-Rotterdam	Netherlands	0.6	0.3	0.5	0.1	1.2	1.4	0.0	0.1	0.2	83.7	0.1	0.0	2.3	0.9	0.0	1.2	6.2
18	Eindhoven	Netherlands	0.5	0.0	0.1	0.0	0.0	0.5	0.0	0.0	0.1	97.6	0.0	0.0	0.1	0.3	0.0	0.0	0.4
17	Daejeon	Republic of Korea	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	99.5	0.0	0.0	0.0	0.0	0.0	0.2
3	Seoul	Republic of Korea	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.1	98.6	0.0	0.1	0.0	0.0	0.0	0.7
31	Singapore	Singapore	0.0	0.9	0.5	0.0	1.5	2.7	0.1	0.1	1.9	0.3	0.1	73.8	0.0	1.1	0.0	0.3	14.6
25	Stockholm	Sweden	0.2	5.1	0.1	0.5	0.0	0.5	0.0	0.0	0.1	0.7	0.0	0.0	86.2	0.9	0.0	0.4	2.2
41	Zurich	Switzerland	0.1	0.3	0.3	0.1	0.8	5.1	0.0	0.0	0.5	0.3	0.1	1.6	0.2	76.5	0.0	0.4	11.7
47	Taipei-Hsinchu	Taiwan, Province of China	0.1	65.0	0.0	0.1	0.2	0.7	0.0	0.1	1.4	0.3	0.0	1.6	0.0	0.3	0.0	0.6	20.4
48	Istanbul	Turkey	0.0	0.1	0.0	0.1	0.1	0.5	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.1	97.3	0.1	1.2
50	Cambridge	U.K.	0.2	0.8	0.0	6.8	1.1	1.5	0.1	0.1	0.7	0.8	0.0	0.2	1.3	2.2	0.0	71.4	9.7
30	London	U.K.	0.2	0.4	0.3	0.5	0.7	1.1	0.1	0.1	1.6	0.7	0.1	0.1	0.4	2.1	0.0	82.1	7.4
9	Boston-Cambridge, MA	U.S.	0.1	0.4	0.0	0.0	0.3	0.6	0.0	0.1	1.9	0.2	0.0	0.2	0.2	1.9	0.0	0.4	92.1
24	Chicago, IL	U.S.	0.0	1.4	0.1	2.4	0.1	1.9	0.0	0.0	0.5	0.8	0.0	0.1	0.5	0.2	0.0	0.3	90.5
33	Cincinnati, OH	U.S.	0.0	0.2	0.1	0.0	0.0	1.4	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.6	0.0	0.1	97.0
40	Dallas, TX	U.S.	0.0	7.3	0.0	1.2	2.4	0.2	0.0	0.1	0.1	0.1	4.8	0.0	0.9	0.2	0.0	0.3	79.8
46	Denver, CO	U.S.	0.0	0.2	0.1	0.0	0.1	0.6	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.0	0.5	96.3
14	Houston, TX	U.S.	0.0	0.2	0.1	0.0	0.4	0.3	0.0	0.0	0.0	2.1	0.2	0.1	0.1	0.2	0.0	0.4	89.5
15	Los Angeles, CA	U.S.	0.0	0.9	0.0	0.1	0.6	0.5	0.0	0.1	0.6	0.1	0.5	0.1	0.1	1.8	0.0	0.6	92.8
22	Minneapolis, MN	U.S.	0.0	0.1	0.1	0.0	0.3	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.4	0.0	0.1	97.5
12	New York City, NY	U.S.	0.2	1.1	0.0	0.1	3.5	2.2	0.1	0.3	0.5	0.4	0.2	0.1	0.2	1.6	0.0	0.3	87.3
38	Philadelphia, PA	U.S.	1.8	0.4	0.1	0.0	1.4	0.6	0.0	0.2	0.3	0.3	0.0	0.0	0.5	0.9	0.0	4.9	87.0
23	Portland, OR	U.S.	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.1	98.2
44	Raleigh, NC	U.S.	0.3	0.6	0.8	0.0	0.3	2.8	0.0	0.0	0.7	0.8	0.1	0.1	0.2	4.5	0.0	1.9	86.2
7	San Diego, CA	U.S.	0.2	1.0	0.0	0.1	0.0	0.1	0.0	0.0	1.3	0.4	0.3	0.1	0.1	0.5	0.0	0.2	95.2
4	San Jose-San Francisco, CA	U.S.	0.0	1.6	0.0	0.3	0.3	1.1	0.0	0.1	1.2	0.4	1.1	0.2	1.1	0.6	0.0	0.3	90.5
13	Seattle, WA	U.S.	0.0	0.2	0.0	0.2	0.5	0.1	0.0	0.0	0.2	0.1	0.1	0.0	0.1	0.1	0.0	0.1	98.0
28	Washington, DC-Baltimore, MD	U.S.	0.2	0.4	0.0	0.1	0.1	0.3	0.1	0.3	0.3	0.1	0.1	0.0	0.2	0.4	0.0	0.9	96.0

Note: The origin of applicants includes countries only.

Source: WIPO Statistics Database, March 2020.

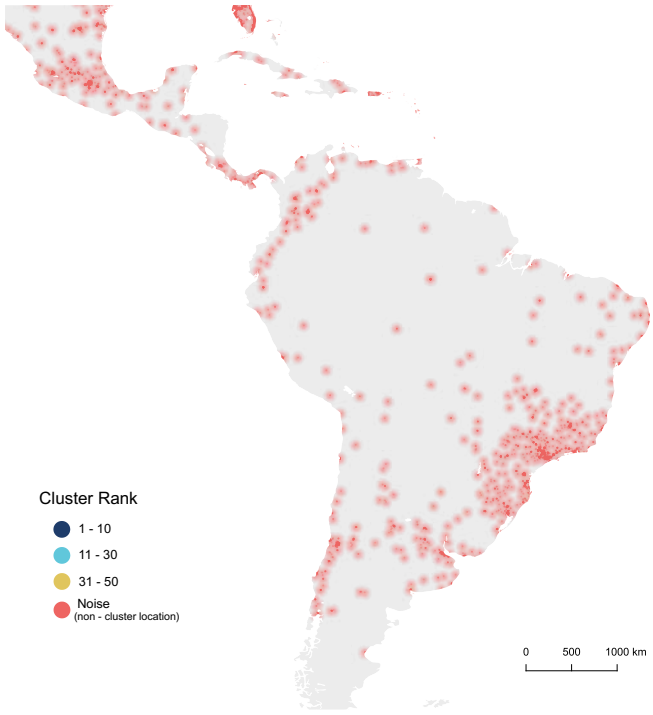
S6. PCT application filing activity per region, 2014–2018

Africa



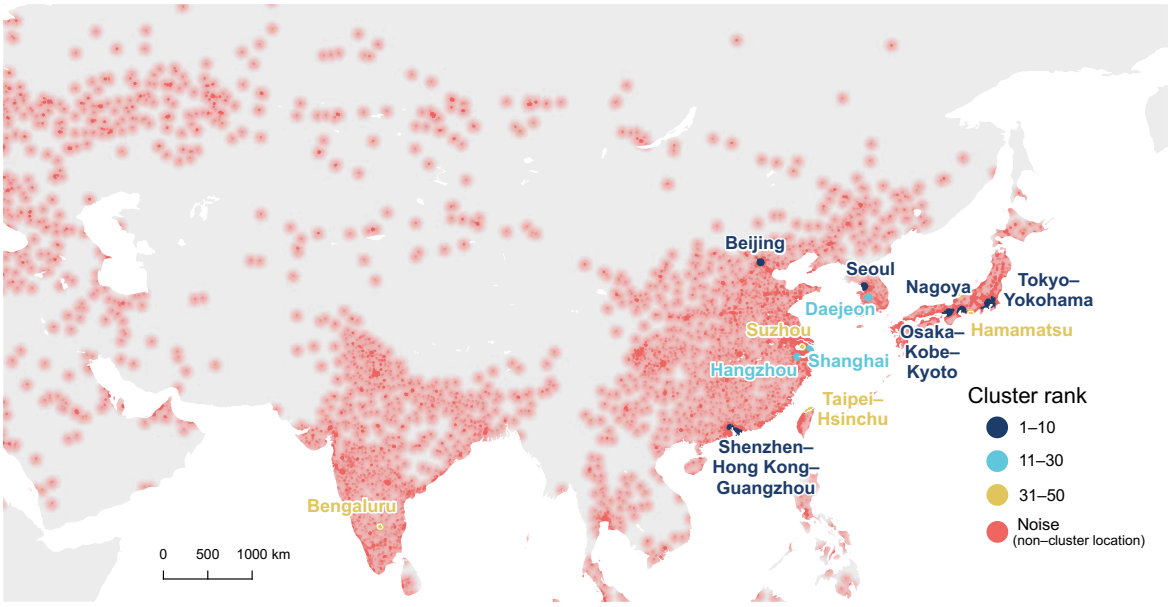
Source: WIPO Statistics Database, March 2020.

Latin America and the Caribbean



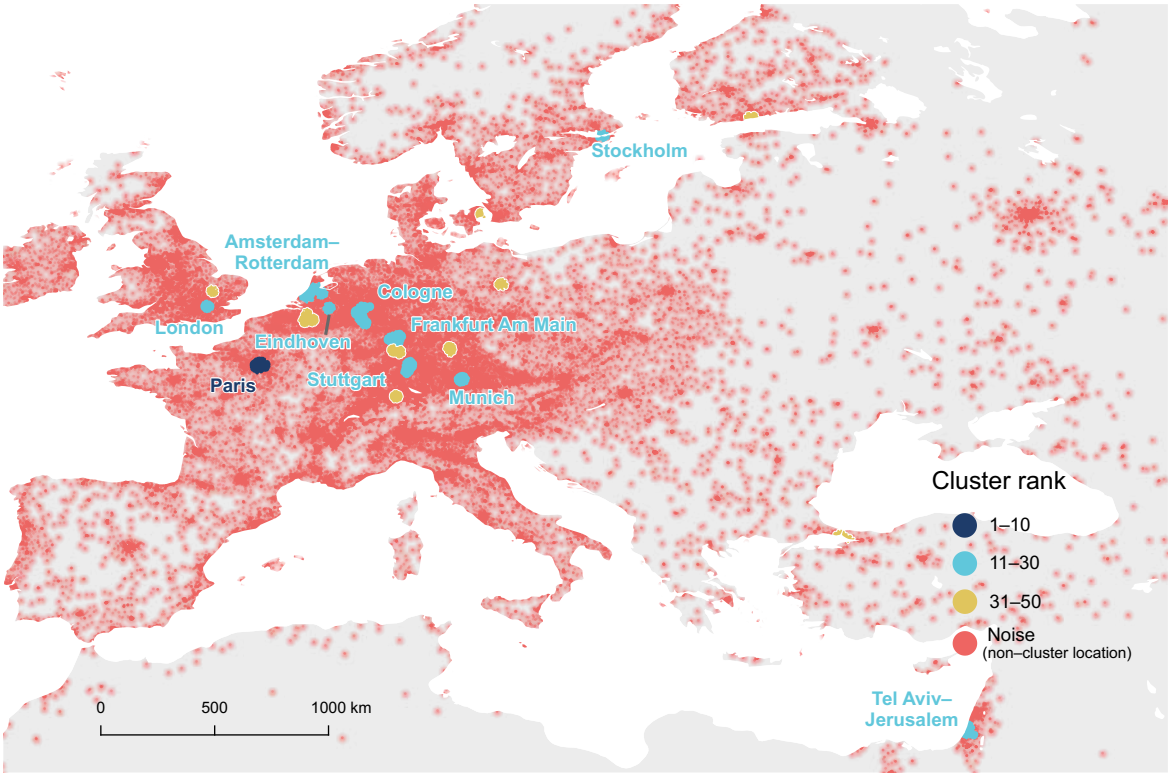
Source: WIPO Statistics Database, March 2020.

Asia

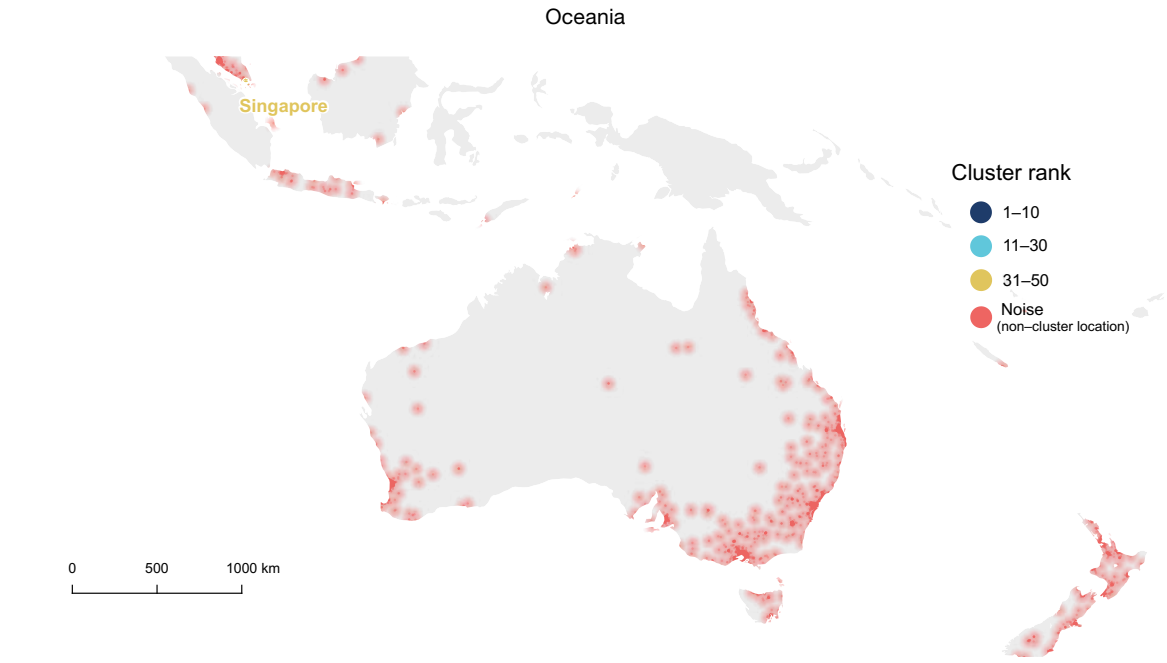


Source: WIPO Statistics Database, March 2020.

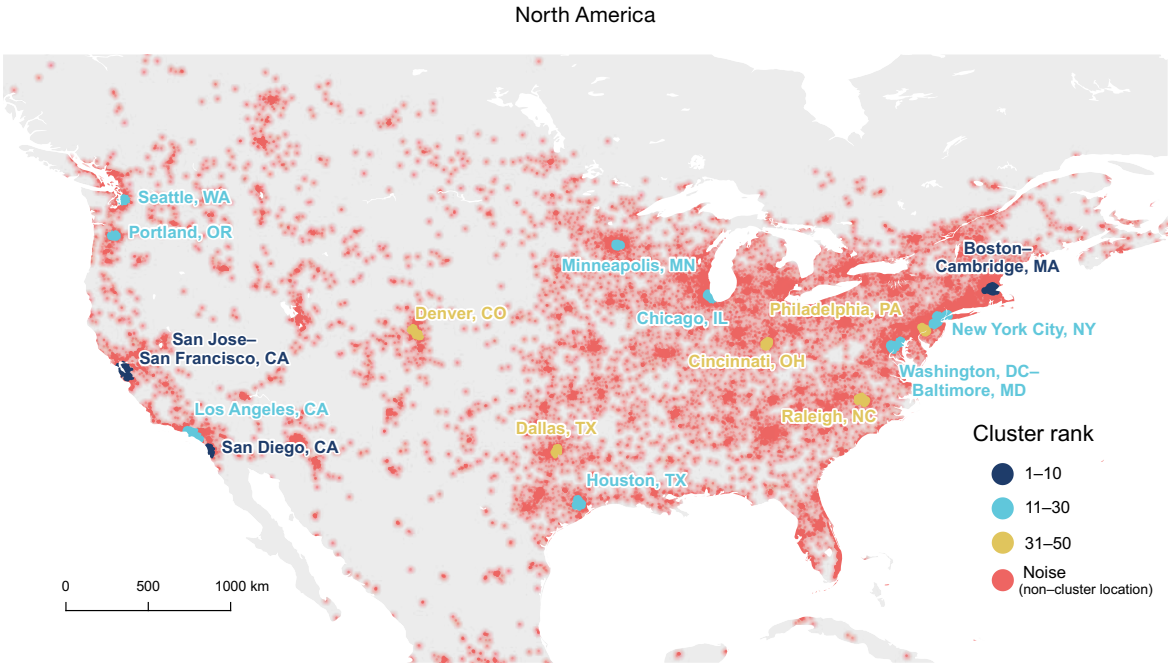
Europe



Source: WIPO Statistics Database, March 2020.



Source: WIPO Statistics Database, March 2020.



Source: WIPO Statistics Database, March 2020.

Tel Aviv-Jerusalem. Six universities also featured as a cluster's top applicant, all located in the U.S. MIT, for example, was top applicant for Boston-Cambridge, the world's ninth largest PCT cluster.

Most of any cluster's filing activity was found to originate from local applicants. The only exception to this was the Bengaluru cluster which had more applications filed by applicants residing in the U.S. than by ones in India. More broadly, applicants in the U.S. filed 10% or more of filings in half of the top 50 PCT clusters.

The distribution of filing activity across technology fields differs widely from one cluster to another. With some, like Stockholm, it is quite concentrated in one technology field. For others, such as Paris, it is diversified across a number of different technology fields. Among the top 50 PCT clusters, those fields with the highest concentration of filings are digital communication, computer technology and medical technology.

Section A
Statistics on the international phase: PCT applications

Highlights

Record number of PCT applications filed

An estimated 265,800 international patent applications (PCT applications) were filed under WIPO's Patent Cooperation Treaty (PCT) in 2019 (see figure A1). This represents a 5.2% increase on 2018 and a tenth consecutive year of growth. Since the PCT System became operational in 1978, almost 4 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 127 countries filed PCT applications in 2019

In 2019, 153 states were members of the PCT and applicants from 127 countries across the six geographical regions of the world filed PCT applications at 87 receiving offices (ROs). Despite this broad geographical spread, most filing activity is concentrated in a small number of economies.

Combined, the top 10 ROs accounted for nearly 94% of applications received in 2019. With 60,993 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 (see figure A4).

For the first time, applicants from China became the biggest users of the PCT System

With 58,990 PCT applications, applicants residing in China filed the most applications in 2019. This was the first year since the PCT System began operating in 1978 that applicants from the U.S moved down to second place, with 57,840 PCT applications filed. They were followed by Japan, Germany and the Republic of Korea (see figure A7). Combined, these top five countries accounted for 78.2% of all PCT applications filed in 2019. Driven mainly by a rapid increase in filings by applicants from China, Japan, the Republic of Korea and the U.S., the combined share of the top five users of the PCT System has increased every year for the last decade.

The top 20 origins included 17 high-income countries – mostly European – and three middle-income countries, namely, China, India and Turkey (see 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 1,300. Applicants from low-income countries filed a total of 10 PCT applications in 2019. Within this category, applicants from the Syrian Arab Republic and Uganda together accounted for half of this total (see table A28).

Compared to 2018, 15 of the top 20 origins filed more PCT applications in 2019. Four countries to record double-digit increases were Turkey (+46.7%), the Republic of Korea (+12.8%), Canada (+12.2%) and China (+10.6%). Solid growth was seen in Spain (+8.1%), Japan (+5.9%) and Israel (+5.7%) also. The five countries within the top 20 list to experience a decrease were Finland (–9.8%), Australia (–3.2%), the Netherlands (–3%), Austria (–2.7%) and Germany (–2%).

Among the large middle-income economies not to feature among the top 20 origins, Thailand (+43.1%), Malaysia (+40.3%) the Islamic Republic of Iran (+30.1%), Ukraine (+18.7%) and the Russian Federation (+17.7%) all underwent a sharp growth in PCT filings. In contrast, Colombia (–20.1%) and Mexico (–19.4%) each saw a marked contraction.

The majority of PCT filings originated from Asia in 2019

Countries located in Asia accounted for 52.4% of all PCT applications in 2019. Applicants in Europe and North America had a similar proportion of filings at 23.2% and 22.8% respectively. The combined share for Africa, Latin America and the Caribbean (LAC) and Oceania amounted to 1.6% of total PCT filings. Asia's share has increased every year since 1993, growing from 32% in 2008 to 52.4% in 2019, primarily due to increases in filings from China, Japan and the Republic of Korea during the period (see figure A3).

The business sector accounted for about 86% of all PCT applications

In 2019, the IB published 246,636 PCT applications, representing a 3.9% rise in published applications on 2018. The business sector accounted for 86.4% of all published PCT applications, followed by individuals (6.2%), the university sector (5.6%) and the government and public research organization (PRO) sector (1.9%) (see figure A11).

The business sector accounted for the majority of published applications received from each of the top 20 origins in the high-income group. This sector's share was especially high for Sweden (97.6%) and Japan (96.1%). Of the top 20 origins from the middle-income category, the business sector accounted for a majority of the published applications from six countries, while individual applicants filed the most in 11 countries. For applications originating from Egypt, the Islamic Republic of Iran and Ukraine, individual applicants accounted for over 94% of published applications (see figure A12).

The university sector was responsible for a particularly large proportion of applications originating from Morocco (40.9%), Colombia (32.2%) and South Africa (17.1%). It also accounted for relatively high shares among several high-income economies, such as Singapore (15.8%), Spain (11.9%) and Israel (11.3%). Governments and PROs were responsible for a relatively large proportion of applications originating from Singapore (13.8%), France (7.6%) and Spain (5.8%). Of the top 20 middle-income origins, Argentina (22.5%) and Malaysia (11%) had the highest shares of applications from the government and PRO sector.

Huawei remained the top PCT applicant in 2019

In 2019, Huawei Technologies of China was the top PCT applicant in the business sector, the fifth time since 2014 (see table A15). However, with 4,411 published PCT applications, it saw its number of published applications fall by almost one thousand compared to 2018. With 2,661 published PCT applications, Mitsubishi Electric Corporation of Japan remained second, again, despite a decreasing number of published applications. These two companies were followed by Samsung Electronics Corporation of the Republic of Korea and Qualcomm Incorporated of the U.S.

ZTE Corporation of China and Intel Corporation of the U.S. experienced a drop in published applications of a similar magnitude to that of Huawei Technologies, with nearly one thousand less each. In contrast, 34 of the top 50 businesses increased their published applications. Ping An Technology (Shenzhen) Corporation and Guang Dong OPPO Mobile Telecommunications Corporation – both of China – increased their numbers of published PCT applications by 1,355 and 885, respectively. Two other Chinese companies, Wuhan China Star Optoelectronics Semiconductor Display Technology and Shenzhen Transsion Communication Limited, entered the 2019 top 50 list after having had their first PCT applications published in 2018.

The top 50 applicants list for 2019 is composed of companies from only eight origins. Japan had 16 of the top applicants, followed by China (13), the U.S. (10), Germany (5) and the Republic of Korea (3). Finland, the Netherlands and Sweden each had one listed applicant.

Companies active in digital communication headed the list of top 50 PCT filers in 2019. Of the top 10 applicants, six filed mainly in digital communication, namely, Ericsson, Huawei Technologies, Oppo Mobile, LG Electronics, Qualcomm Incorporated and Samsung Electronics (see table A16).

Of the top five universities, three are in China and two in the U.S.

With 470 published PCT applications, the University of California remained the biggest user of the PCT System among educational institutions in 2019 (see table A17). Tsinghua University moved up to second spot by doubling its number of published applications. It was followed by Shenzhen University, MIT and the South China University of Technology.

Within the top 50 universities, 20 were located in the U.S., 14 in China, four in Japan, four in the Republic of Korea, two in Singapore, two in the U.K. and one each in India, Israel, Saudi Arabia and Switzerland.

Fraunhofer-Gesellschaft remained the top PCT applicant in the government and PRO sector

With 331 published applications, the German-based Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung headed the list of top 30 government and PRO applicants in 2019. It was followed by the China Academy of Telecommunications Technology, the Commissariat à l'Énergie Atomique et aux Énergies Alternatives of France, the Shenzhen Institute of Advanced Technology of China and the Agency for Science, Technology and Research of Singapore (see table A18).

Applicants from 11 countries are represented in the top 30 list for 2019. The U.S. (7) had the highest number of top applicants, followed by the Republic of Korea (6) and China (3).

Computer technology is back as the main technology field in PCT applications

Computer technology (21,449) regained top position in 2019, having competed with digital communications as the most frequently featured technology field in published PCT applications since 2015. It was followed by digital communication (19,090), electrical machinery, apparatus, energy (17,223), medical technology (16,954) and measurement (11,471) (see table A20). These top five fields of technology, combined, accounted for slightly over one third of all PCT applications published in 2019.

Compared to 2018, the number of published PCT applications decreased in nine of the 35 fields of technology, with basic communications processes (–9.4%), digital communications (–5.8%) and engines, pumps, turbines (–4.9%) declining the most. Over the same period, IT methods for management (+19.5%), semiconductors (+12%), computer technology (+11.9%) and biotechnology (+11.4%) all saw double-digit growth.

The share of women listed as inventors grew slightly faster in 2019 than the year before but remained low

In 2019, women accounted for 18.7% of all inventors listed in PCT applications and men the remaining 81.3% (see figure A22). This is 4.1 percentage points higher than it was in 2014 (14.6%). Since 2005, this share has continuously increased. Moreover, the share of women inventors has grown in each of the world's geographical regions over the past five years. The LAC region (22.4%) had the highest share of women among PCT inventors, followed by Asia (22.2%), Oceania (19.3%), North America (16.5%), Europe (13.7%) and Africa (11.7%) (see figure A24).

About 94% of PCT applications named at least one man as inventor in 2019, and 34.9% named at least one woman as inventor (see figure A23). The share of PCT applications with at least one woman as inventor has risen from 22.6% in 2005 to 34.9% in 2019, while the share for inventors who are men has decreased within the same period from 97% down to 94.1%.

The gender gap among PCT inventors varies considerably across countries. From among the top 20 origins, Australia, China and the Republic of Korea had the highest shares of inventors who were women in 2019 (see figure A25). These three were the only origins among the top 20 to have about one-fifth or more of all their inventors being women. Conversely, Japan (10.7%), Germany (10.5%) and Austria (8.7%) had the lowest shares of women as inventors among the top 20 origins.

Those technology fields related to the life sciences had comparatively high proportions of women among inventors listed in PCT applications (see figure A26). Overall, women represented between 27% and 31% of inventors in the fields of analysis of biological materials, biotechnology, food chemistry, organic fine chemistry and pharmaceuticals. Women accounted for more than a third of inventors listed in PCT applications relating to biotechnology and pharmaceuticals filed by applicants residing in China, France and the Republic of Korea (see figure A27).

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 fields of technology

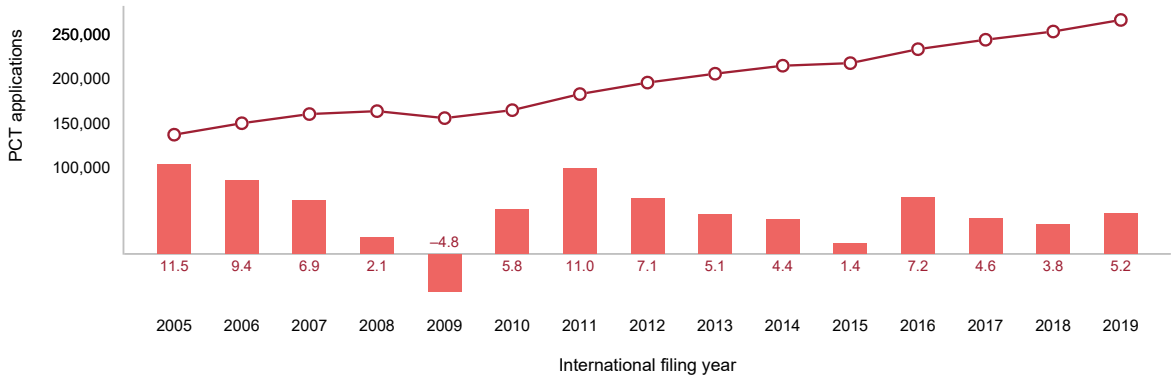
Participation of women inventors in PCT applications

Statistical table

Global trends in PCT applications

The total number of PCT applications grew by 5.2% in 2019.

A1. Trend in filings of PCT applications, 2005–2019

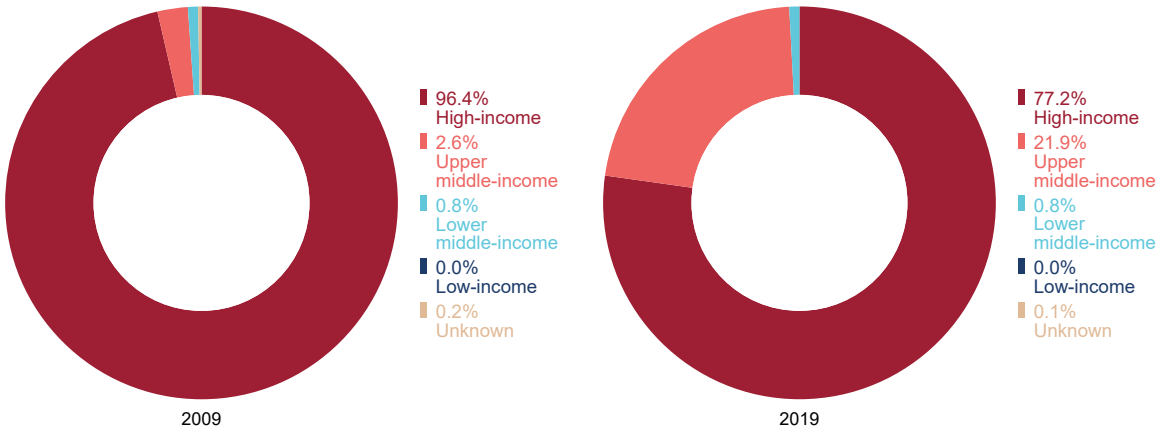


Note: Data for 2019 are WIPO estimates.

Source: WIPO Statistics Database, March 2020.

Upper middle-income countries have seen their share increase sharply over the past decade.

A2. Distribution of PCT applications by income group, 2009 and 2019

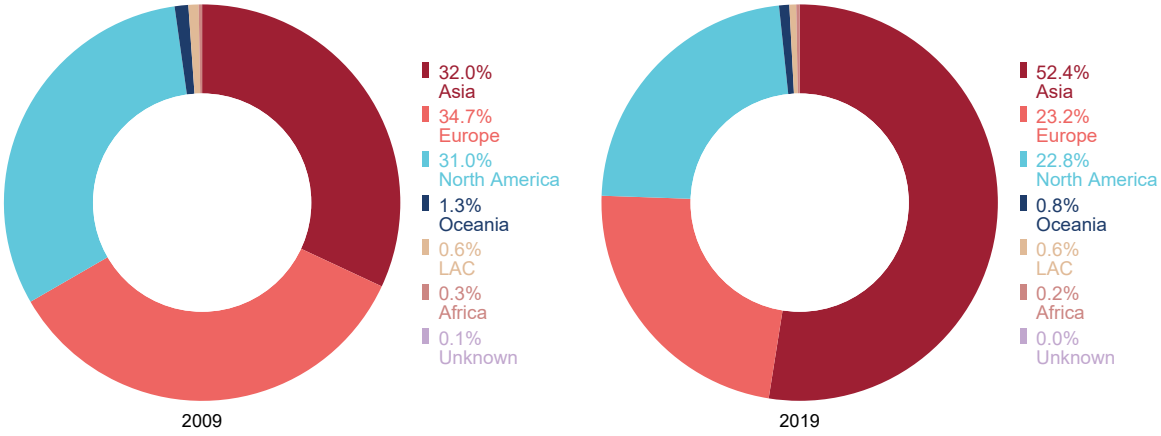


Note: Data for 2019 are WIPO estimates. Each income group includes the following number of origins: high-income (58), upper middle-income (40), lower middle-income (22) and low-income (7). For information on income group classification, see annex, Data description.

Source: WIPO Statistics Database, March 2020.

Asia accounted for the majority of PCT applications filed in 2019.

A3. Distribution of PCT applications by region, 2009 and 2019



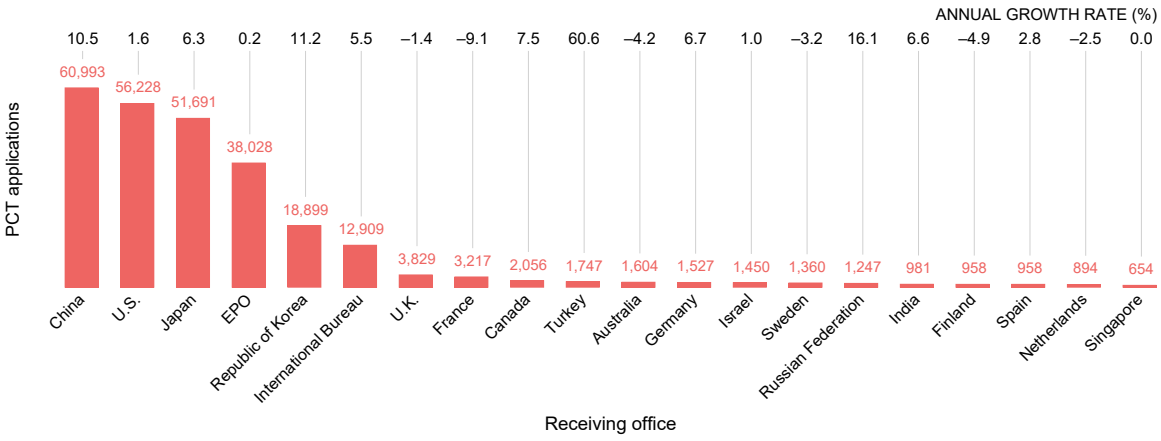
Note: Data for 2019 are WIPO estimates. Each region includes the following number of offices: Africa (21), Asia (36), Europe (43), Latin America and the Caribbean (LAC) (20), North America (3) and Oceania (4).

Source: WIPO Statistics Database, March 2020.

PCT applications by receiving office

The CNIPA received nearly 61,000 PCT applications in 2019.

A4. PCT applications for the top 20 receiving offices, 2019

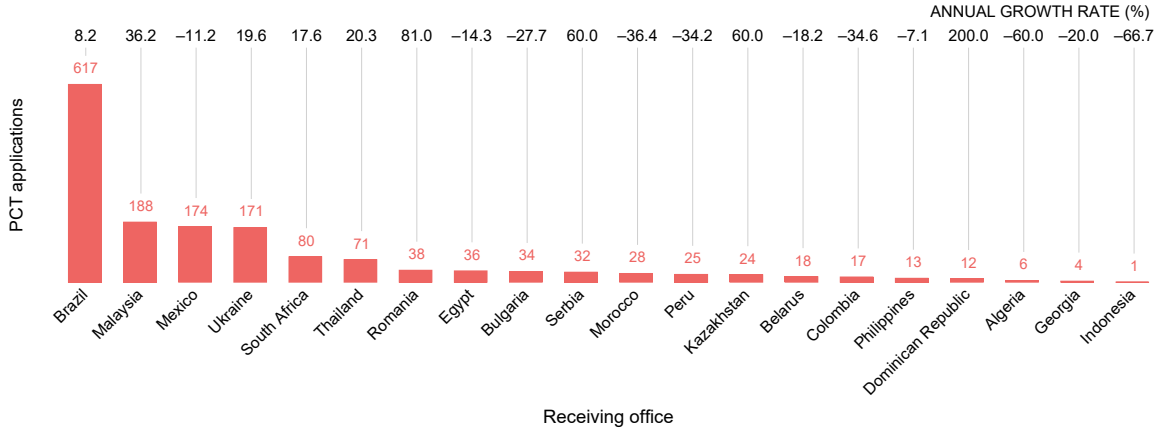


Note: Data for 2019 are WIPO estimates. CNIPA is the China National Intellectual Property Administration and EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2020.

The office of Brazil received 617 PCT applications in 2019.

A5. PCT applications for selected receiving offices of low- and middle-income countries, 2019



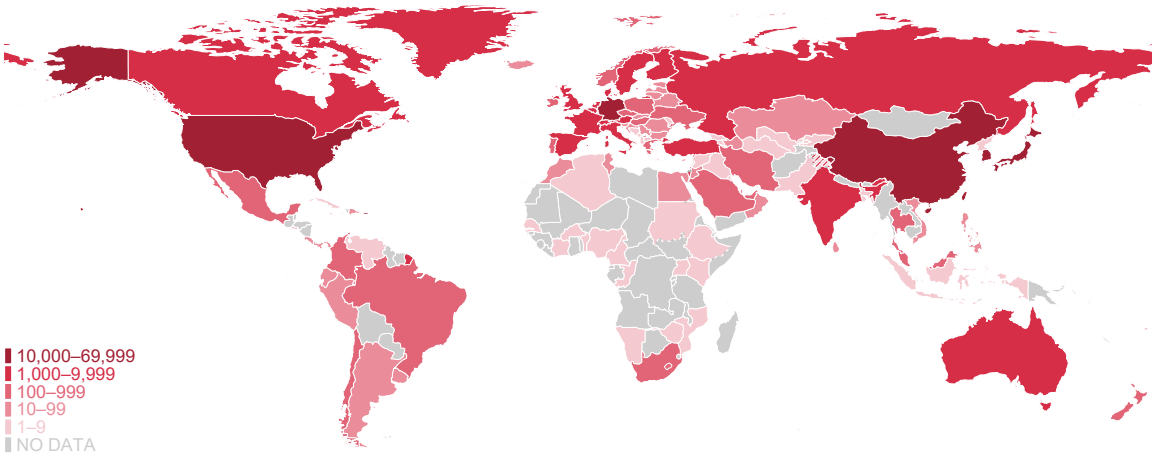
Note: Data for 2019 are WIPO estimates. The selected offices are from different world regions and income groups (low-income, lower middle-income and upper middle-income). Where available, data for all offices are presented in statistical table A28.

Source: WIPO Statistics Database, March 2020.

PCT applications by origin

PCT applications are highly concentrated in a few origins.

A6. PCT applications by origin, 2019

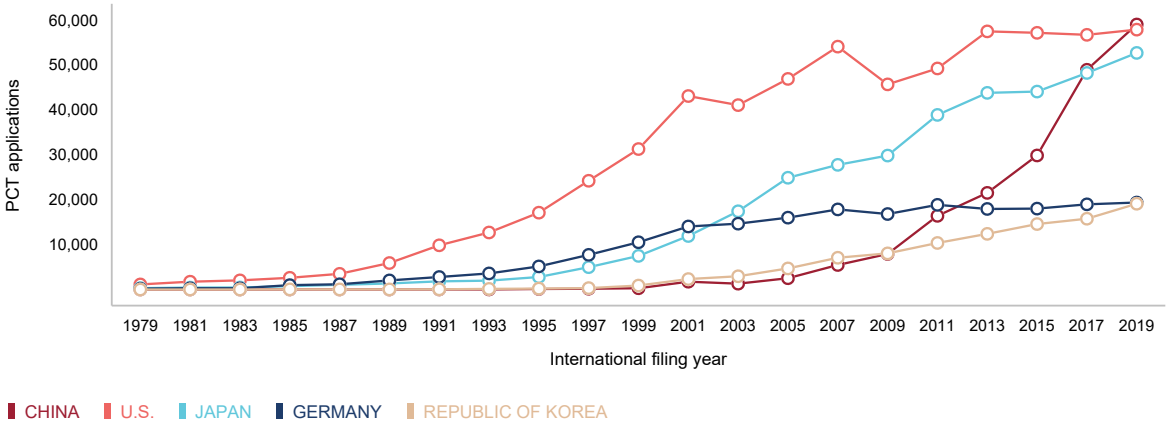


Note: Data for 2019 are WIPO estimates.

Source: WIPO Statistics Database, March 2020.

Up until 2018, U.S.-based applicants had filed the most PCT applications for every year.

A7. Trend in PCT applications for the top five origins, 1979–2019

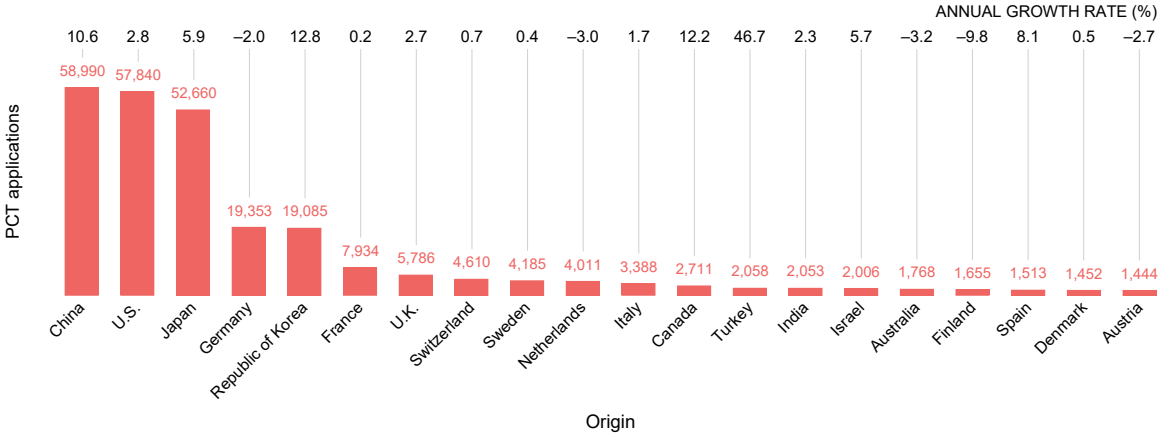


Note: Data for 2019 are WIPO estimates.

Source: WIPO Statistics Database, March 2020.

For the first time since the PCT System came into force in 1978, applicants residing in the U.S. moved down to second spot, surpassed by applicants from China.

A8. PCT applications for the top 20 origins, 2019



Note: Data for 2019 are WIPO estimates.

Source: WIPO Statistics Database, March 2020.

Asia and North America are the only geographical regions to have experienced a growth in filings in 2019.

A9. PCT applications for the top countries by region, 2017–2019

Region	Name	Year of international filing			Regional share 2019 (%)	Change from 2018 (%)
		2017	2018	2019		
Africa	South Africa	295	275	281	66.9	2.2
	Egypt	36	44	44	10.5	0.0
	Morocco	47	49	34	8.1	–30.6
	Others	91	65	61	14.5	–6.2
	Total*	**469**	**433**	**420**	**0.2**	**–3.0**
Asia	China	48,906	53,349	58,990	42.3	10.6
	Japan	48,204	49,706	52,660	37.8	5.9
	Republic of Korea	15,751	16,917	19,085	13.7	12.8
	Turkey	1,251	1,403	2,058	1.5	46.7
	India	1,583	2,007	2,053	1.5	2.3
	Israel	1,816	1,898	2,006	1.4	5.7
	Singapore	871	935	1,029	0.7	10.1
	Saudi Arabia	378	663	552	0.4	–16.7
	Iran (Islamic Republic of)	88	176	229	0.2	30.1
	Malaysia	141	144	202	0.1	40.3
	Others	485	420	504	0.4	20.0
	Total*	**119,474**	**127,618**	**139,368**	**52.4**	**9.2**
Europe	Germany	18,951	19,742	19,353	31.4	–2.0
	France	8,014	7,918	7,934	12.9	0.2
	U.K.	5,569	5,634	5,786	9.4	2.7
	Switzerland	4,485	4,576	4,610	7.5	0.7
	Sweden	3,975	4,168	4,185	6.8	0.4
	Netherlands	4,430	4,134	4,011	6.5	–3.0
	Italy	3,225	3,330	3,388	5.5	1.7
	Finland	1,602	1,834	1,655	2.7	–9.8
	Spain	1,418	1,399	1,513	2.5	8.1
	Denmark	1,430	1,445	1,452	2.4	0.5
	Others	7,596	7,657	7,803	12.6	1.9
	Total*	**60,695**	**61,837**	**61,690**	**23.2**	**–0.2**
Latin America and the Caribbean	Brazil	589	616	644	43.0	4.5
	Chile	167	241	224	15.0	–7.1
	Mexico	270	273	220	14.7	–19.4
	Colombia	143	159	127	8.5	–20.1
	Barbados	67	96	79	5.3	–17.7
	Antigua and Barbuda	57	96	47	3.1	–51.0
	Argentina	36	42	36	2.4	–14.3
	Peru	33	37	26	1.7	–29.7
	Others	75	268	93	6.2	–65.3
	Total*	**1,437**	**1,828**	**1,496**	**0.6**	**–18.2**
North America	U.S.	56,687	56,252	57,840	95.5	2.8
	Canada	2,400	2,417	2,711	4.5	12.2
	Bermuda	29	23	15	0.0	–34.8
	Total*	**59,116**	**58,692**	**60,566**	**22.8**	**3.2**
Oceania	Australia	1,852	1,826	1,768	87.5	–3.2
	New Zealand	273	275	250	12.4	–9.1
	Others	2	2	2	0.1	0.0
	Total*	**2,127**	**2,103**	**2,020**	**0.8**	**–3.9**
Unknown		210	264	240	n.a.	n.a.
Total		**243,528**	**252,775**	**265,800**	**n.a.**	**5.2**

* indicates share of world total.

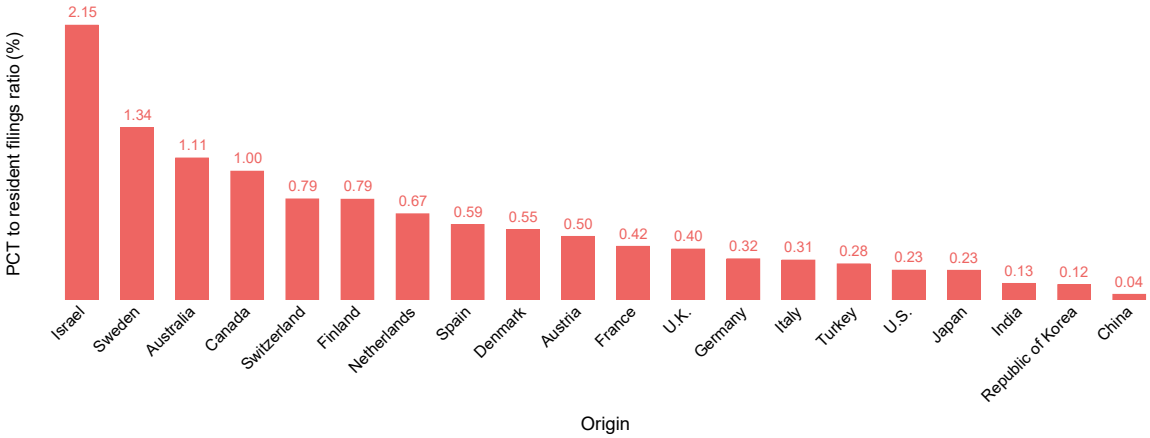
n.a. indicates not applicable.

Note: Data for 2019 are WIPO estimates. This table shows the top countries in each region (with a maximum of 10 countries per region) whose applicants filed more than 20 PCT applications in 2019. Data for all origins are reported in statistical table A28.

Source: WIPO Statistics Database, March 2020.

Israel had a high conversion rate of resident patent application to PCT application compared to other Asian origins.

A10. Conversion ratio of direct resident patent applications to PCT applications for the top 20 origins, 2019



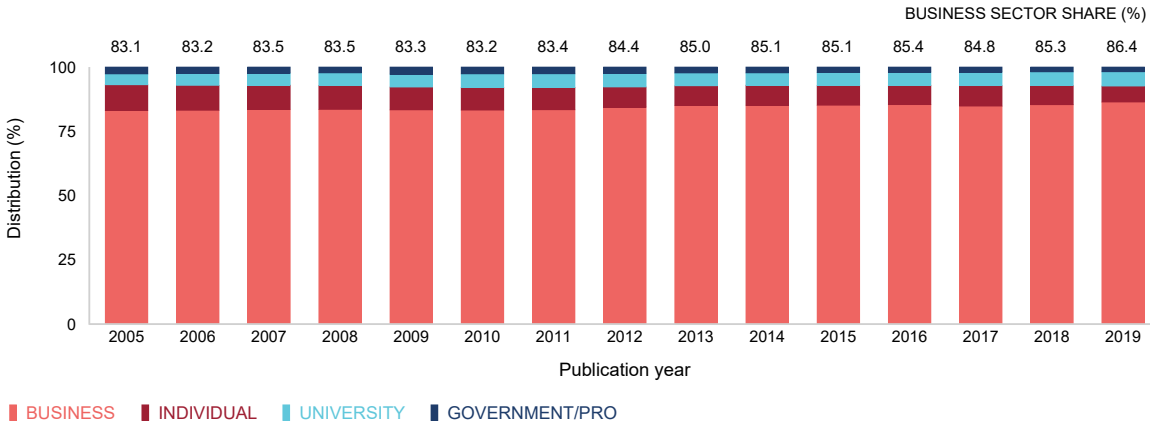
Note: Data for 2019 are WIPO estimates. This hypothetical "conversion ratio" reflects the proportion of direct resident patent applications converted into PCT applications. The ratio is defined for the top 20 origins in terms of PCT applications filed in 2019 divided by resident patent applications (including regional applications and excluding PCT national phase entries) filed in 2018. 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 instead opt to file a first application at the USPTO, then convert that prior filing into a PCT application.

Source: WIPO Statistics Database, March 2020.

PCT applications by applicant type

The business sector accounted for 86.4% of all PCT applications filed in 2019.

A11. Distribution of PCT applications by applicant type, 2005–2019



Note: The government and public research organizations (PROs) 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 2020.

More than 95% of PCT applications originating in Japan and Sweden were filed by businesses.

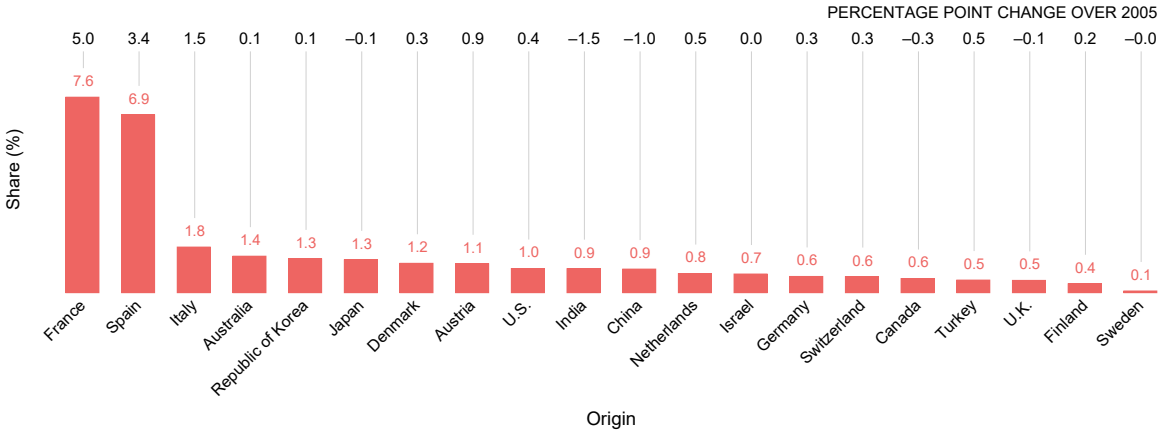
A12. Distribution of PCT applications by applicant type for the top 20 origins by income group, 2019

Note: 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 2020.

France and Spain exhibit a comparatively high level of collaboration between the business and public sectors.

A13. Share of PCT applications with business and public sector co-applicants for the top 20 origins, 2019

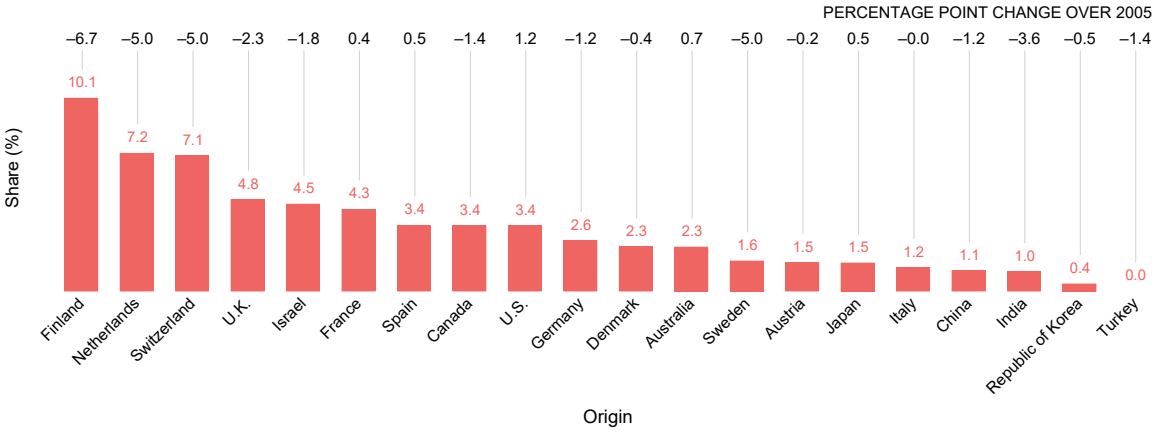


Note: The public sector comprises the university sector and the government and PRO sector. The government and PRO sector includes private non-profit organizations and hospitals. The university sector includes all educational institutions. For confidentiality reasons, data are based on published applications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

Source: WIPO Statistics Database, March 2020.

A relatively high proportion of the PCT applications filed by applicants residing in Finland, the Netherlands and Switzerland included foreign co-applicants.

A14. Share of PCT applications with foreign co-applicants for the top 20 origins, 2019



Note: Counts are based on corporate applicants only (excluding natural persons) 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 2020.

Top PCT applicants

Huawei Technologies stayed the top PCT applicant in 2019.

A15. Top 50 business PCT applicants, 2017–2019

Ranking	Change in position from 2018	Applicant	Origin	Published PCT applications		
				2017	2018	2019
1	0	HUAWEI TECHNOLOGIES CO., LTD.	China	4,024	5,405	4,411
2	0	MITSUBISHI ELECTRIC CORPORATION	Japan	2,521	2,812	2,661
3	2	SAMSUNG ELECTRONICS CO., LTD.	Republic of Korea	1,757	1,997	2,334
4	–1	QUALCOMM INCORPORATED	U.S.	2,163	2,404	2,127
5	12	GUANG DONG OPPO MOBILE TELECOMMUNICATIONS CORP., LTD	China	474	1,042	1,927
6	1	BOE TECHNOLOGY GROUP CO.,LTD	China	1,818	1,813	1,864
7	2	TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)	Sweden	1,564	1,645	1,698
8	53	PING AN TECHNOLOGY (SHENZHEN) CO., LTD.	China	23	336	1,691
9	1	ROBERT BOSCH CORPORATION	Germany	1,354	1,525	1,687
10	–2	LG ELECTRONICS INC.	Republic of Korea	1,945	1,697	1,646
11	9	LG CHEM, LTD.	Republic of Korea	850	969	1,624
12	0	PANASONIC INTELLECTUAL PROPERTY MANAGEMENT CO., LTD.	Japan	1,280	1,465	1,567
13	0	SONY CORPORATION	Japan	1,735	1,342	1,566
14	1	HEWLETT–PACKARD DEVELOPMENT COMPANY, L.P.	U.S.	1,519	1,170	1,507
15	–4	MICROSOFT TECHNOLOGY LICENSING, LLC	U.S.	1,536	1,476	1,370
16	5	FUJIFILM CORPORATION	Japan	970	962	1,158
17	–3	SIEMENS AKTIENGESELLSCHAFT	Germany	1,063	1,211	1,153
18	–14	ZTE CORPORATION	China	2,965	2,080	1,085
19	0	DENSO CORPORATION	Japan	968	998	1,026
20	2	NEC CORPORATION	Japan	899	947	1,024
21	–3	KONINKLIJKE PHILIPS ELECTRONICS N.V.	Netherlands	1,077	1,033	982
22	–6	SHARP KABUSHIKI KAISHA	Japan	963	1,132	928
23	4	SZ DJI TECHNOLOGY CO., LTD	China	273	766	874
24	–18	INTEL CORPORATION	U.S.	2,057	1,835	849
25	38	ALIBABA GROUP HOLDING LIMITED	China	856	495	846
26	–2	GOOGLE INC.	U.S.	789	836	777
27	151	NIPPON TELEGRAPH AND TELEPHONE CORPORATION	Japan	133	138	703
28	–5	MURATA MANUFACTURING CO., LTD.	Japan	684	889	701
29	10	HONDA MOTOR CO., LTD.	Japan	323	504	692
30	1	3M INNOVATIVE PROPERTIES COMPANY	U.S.	678	648	662
31	4	SHENZHEN CHINA STAR OPTOELECTRONICS SEMICONDUCTOR DISPLAY TECHNOLOGY CO., LTD.	China	972	567	654
32	10	NTT DOCOMO, INC.	Japan	318	450	624
33	1	HITACHI AUTOMOTIVE SYSTEMS, LTD.	Japan	503	582	612
34	102	VIVO MOBILE COMMUNICATION CO., LTD.	China	1	179	603
35	–10	OLYMPUS CORPORATION	Japan	934	750	586
36	1	NOKIA TECHNOLOGIES OY	Finland	315	551	579
37	–1	BASF SE	Germany	556	557	573
38	–10	HITACHI, LTD.	Japan	923	714	564
39	2	SONY SEMICONDUCTOR SOLUTIONS CORPORATION	Japan	69	467	517
40	7	BAYERISCHE MOTOREN WERKE AKTIENGESELLSCHAFT	Germany	414	414	516
41	2,304	WUHAN CHINA STAR OPTOELECTRONICS SEMICONDUCTOR DISPLAY TECHNOLOGY CO., LTD.	China	0	10	506
42	19	CORNING INCORPORATED	U.S.	340	336	501
43	–13	TENCENT TECHNOLOGY (SHENZHEN) COMPANY LIMITED	China	560	661	485
44	57	INTERNATIONAL BUSINESS MACHINES CORPORATION	U.S.	104	227	477
45	9,336	SHENZHEN TRANSSION COMMUNICATION LIMITED	China	0	2	476
47	2	APPLIED MATERIALS, INC.	U.S.	360	407	467
47	20	HKC CORPORATION LIMITED	China	0	318	467
49	82	MICRON TECHNOLOGY, INC.	U.S.	94	184	451
50	7	OMRON CORPORATION	Japan	213	346	442
50	–17	SCHAEFFLER TECHNOLOGIES AG & CO. KG	Germany	489	613	442

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

Source: WIPO Statistics Database, March 2020.

The majority of published PCT applications from Ericsson (72.2%), Huawei Technologies (58.6%) and Qualcomm (60.2%) related to digital communication technologies.

A16. Share of technology fields for the top 10 business applicants, 2019

Field of technology	Applicant									
	Huawei Tech.	Mitsubishi Electr.	Samsung Electr.	Qualcomm	OPPO Mobile Tel. Corp	BOE Tech. Group	LM Ericsson	Ping An Tech.	Robert Bosch Corp.	LG Electr.
Electrical machinery, apparatus, energy	2.2	17.0	3.3	1.0	1.8	1.5	0.4	0.0	15.6	3.4
Audio-visual technology	5.6	3.3	13.1	5.5	7.9	23.9	1.7	0.4	1.4	11.6
Telecommunications	10.2	4.5	13.1	10.2	13.9	1.3	13.3	3.1	0.8	7.2
Digital communication	58.6	3.7	25.9	60.2	48.8	1.2	72.2	13.4	3.5	40.4
Basic communication processes	2.1	2.3	0.6	3.2	0.1	0.2	2.8	0.1	1.1	0.3
Computer technology	14.5	8.2	23.1	11.2	22.8	16.9	5.8	53.3	5.3	3.5
IT methods for management	0.7	1.4	1.7	0.2	0.3	0.4	0.6	26.8	0.9	0.3
Semiconductors	1.1	4.5	1.4	2.7	0.2	25.3	0.1	0.0	1.0	3.2
Optics	2.1	2.6	3.6	0.1	2.4	19.6	0.1	0.0	1.5	2.2
Measurement	1.0	6.9	1.5	2.8	0.6	2.3	1.5	0.4	16.4	0.7
Analysis of biological materials	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.3	0.1
Control	0.8	6.2	0.9	1.0	0.1	0.9	1.1	1.1	4.7	0.4
Medical technology	0.3	0.5	2.6	0.9	0.0	1.0	0.0	1.2	1.5	1.0
Organic fine chemistry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Biotechnology	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.2	0.0
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	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Food chemistry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Basic materials chemistry	0.0	0.1	0.2	0.0	0.0	0.3	0.0	0.0	0.1	0.1
Materials, metallurgy	0.0	0.2	0.1	0.0	0.2	0.1	0.0	0.0	0.5	0.5
Surface technology, coating	0.1	0.2	0.2	0.0	0.2	1.2	0.0	0.0	0.6	0.4
Micro-structural and nano-technology	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.9	0.0
Chemical engineering	0.0	0.4	0.2	0.0	0.1	0.5	0.0	0.0	2.0	0.9
Environmental technology	0.0	0.4	0.3	0.0	0.0	0.1	0.0	0.0	1.4	0.2
Handling	0.0	7.1	0.6	0.0	0.0	0.5	0.2	0.0	0.9	3.1
Machine tools	0.0	1.2	0.1	0.0	0.2	0.3	0.0	0.0	3.5	0.1
Engines, pumps, turbines	0.0	4.1	0.3	0.0	0.0	0.1	0.0	0.0	10.5	2.2
Textile and paper machines	0.0	0.6	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0
Other special machines	0.0	0.3	0.2	0.0	0.1	0.2	0.0	0.1	2.7	0.5
Thermal processes and apparatus	0.1	16.8	2.4	0.0	0.1	0.1	0.0	0.1	0.8	4.3
Mechanical elements	0.0	1.0	0.1	0.0	0.1	0.3	0.0	0.0	5.6	0.6
Transport	0.2	3.8	0.9	0.7	0.1	0.8	0.1	0.0	15.4	1.3
Furniture, games	0.0	0.7	1.4	0.0	0.2	0.2	0.0	0.1	0.4	4.5
Other consumer goods	0.0	1.8	2.0	0.0	0.1	0.1	0.0	0.1	0.2	6.4
Civil engineering	0.0	0.2	0.3	0.0	0.0	0.0	0.1	0.0	0.2	0.1

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 2020.

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

A17. Top 50 university PCT applicants, 2017–2019

Ranking	Change in position from 2018	Applicant	Origin	Published PCT applications		
				2017	2018	2019
46	–6	UNIVERSITY OF CALIFORNIA	U.S.	482	501	470
93	89	TSINGHUA UNIVERSITY	China	90	137	265
105	15	SHENZHEN UNIVERSITY	China	108	201	247
108	1	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	U.S.	279	216	230
164	–17	SOUTH CHINA UNIVERSITY OF TECHNOLOGY	China	70	170	164
169	–11	BOARD OF REGENTS,THE UNIVERSITY OF TEXAS SYSTEM	U.S.	161	158	161
188	306	DALIAN UNIVERSITY OF TECHNOLOGY	China	17	53	141
191	–43	HARVARD UNIVERSITY	U.S.	179	169	140
200	23	SEOUL NATIONAL UNIVERSITY	Republic of Korea	105	113	136
207	5	LELAND STANFORD JUNIOR UNIVERSITY	U.S.	113	121	132
225	113	KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY	Saudi Arabia	97	78	123
233	49	UNIVERSITY OF TOKYO	Japan	104	92	119
238	116	JIANGNAN UNIVERSITY	China	65	74	118
253	42	HANYANG UNIVERSITY	Republic of Korea	114	89	113
266	58	UNIVERSITY OF MICHIGAN	U.S.	100	81	107
270	–25	OSAKA UNIVERSITY	Japan	75	105	105
278	–57	CHINA UNIVERSITY OF MINING AND TECHNOLOGY	China	99	114	100
286	94	NORTHWESTERN UNIVERSITY	U.S.	59	71	98
290	–15	KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY	Republic of Korea	109	94	97
294	38	OXFORD UNIVERSITY INNOVATION LIMITED	U.K.	75	79	96
298	34	UNIVERSITY OF FLORIDA	U.S.	126	79	94
304	62	KOREA UNIVERSITY	Republic of Korea	90	72	93
317	252	SOUTHEAST UNIVERSITY	China	44	47	89
325	–64	JOHNS HOPKINS UNIVERSITY	U.S.	129	99	87
331	271	UNIVERSITY OF COLORADO	U.S.	51	44	85
335	106	COLUMBIA UNIVERSITY	U.S.	107	59	84
338	9	CORNELL UNIVERSITY	U.S.	55	76	83
349	–17	UNIVERSITY OF ARIZONA	U.S.	81	79	80
355	25	NATIONAL UNIVERSITY OF SINGAPORE	Singapore	37	70	79
367	–63	KYOTO UNIVERSITY	Japan	80	86	76
371	–17	PEKING UNIVERSITY	China	63	74	75
380	–14	DUKE UNIVERSITY	U.S.	84	72	73
393	142	SHANDONG UNIVERSITY	China	16	49	71
402	247	ZHEJIANG UNIVERSITY	China	53	41	69
406	163	ISRAEL INSTITUTE OF TECHNOLOGY	Israel	38	47	68
406	371	NORTHEASTERN UNIVERSITY	China	31	51	68
419	–39	UNIVERSITY OF PITTSBURGH – OF THE COMMONWEALTH SYSTEM OF HIGHER EDUCATION	U.S.	71	70	66
419	–119	TOHOKU UNIVERSITY	Japan	88	87	66
424	–24	CALIFORNIA INSTITUTE OF TECHNOLOGY	U.S.	58	66	65
429	51	UNIVERSITY OF PENNSYLVANIA	U.S.	91	56	64
429	1407	SHANDONG UNIVERSITY OF SCIENCE AND TECHNOLOGY	China	8	13	64
438	164	IMPERIAL INNOVATIONS LTD.	U.K.	53	44	63
449	1	ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE	Switzerland	51	58	62
453	–43	JIANGSU UNIVERSITY	China	50	64	61
459	982	GUANGDONG UNIVERSITY OF TECHNOLOGY	China	25	17	60
465	–74	NANYANG TECHNOLOGICAL UNIVERSITY	Singapore	67	68	59
465	115	YALE UNIVERSITY	U.S.	46	46	59
470	82	INDIAN INSTITUTE OF TECHNOLOGY	India	38	48	58
482	133	UNIVERSITY OF NORTH CAROLINA	U.S.	48	43	56
517	–81	UNIVERSITY OF MARYLAND	U.S.	49	60	53

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 2020.

Fraunhofer-Gesellschaft stayed the top PCT applicant for the government and PRO sector in 2019.

A18. Top 30 government and PRO PCT applicants, 2017–2019

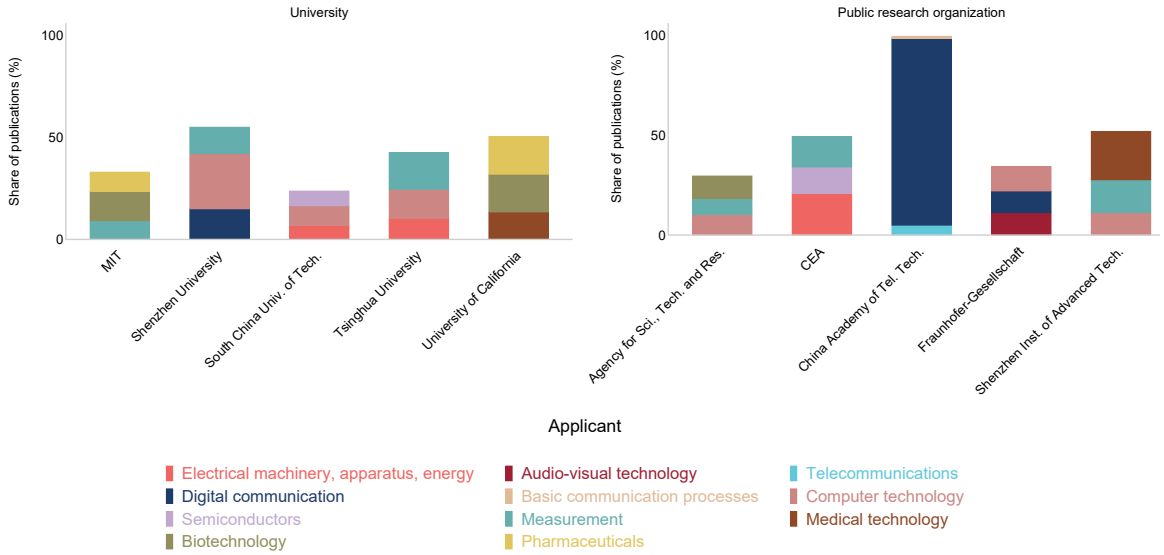
Ranking	Change in position from 2018	Applicant	Origin	Published PCT applications		
				2017	2018	2019
74	–16	FRAUNHOFER–GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	Germany	279	345	331
93	–23	CHINA ACADEMY OF TELECOMMUNICATIONS TECHNOLOGY	China	204	303	265
110	–34	COMMISSARIAT À L'ÉNERGIE ATOMIQUE ET AUX ÉNERGIES ALTERNATIVES	France	300	289	229
179	23	SHENZHEN INSTITUTE OF ADVANCED TECHNOLOGY	China	75	128	152
202	–5	AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH	Singapore	142	130	135
211	–36	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)	France	143	139	130
228	–64	INSTITUT NATIONAL DE LA SANTÉ ET DE LA RECHERCHE MÉDICALE (INSERM)	France	199	149	122
229	–54	NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY	Japan	134	139	121
274	–13	UNITED STATES OF AMERICA, AS REPRESENTED BY THE SECRETARY, DEPARTMENT OF HEALTH & HUMAN SERIVCES	U.S.	103	99	103
321	54	MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH	U.S.	69	71	88
394	158	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST–NATUURWETENSCHAPPELIJK ONDERZOEK TNO	Netherlands	46	48	70
394	11	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	Republic of Korea	79	65	70
459	6	SLOAN–KETTERING INSTITUTE FOR CANCER RESEARCH	U.S.	62	56	60
482	120	CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS (CSIC)	Spain	61	44	56
502	14	KOREA RESEARCH INSTITUTE OF CHEMICAL TECHNOLOGY	Republic of Korea	41	51	54
517	–52	ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE OF KOREA	Republic of Korea	36	56	53
580	–120	RIKEN (THE INSTITUTE OF PHYSICAL AND CHEMICAL RESEARCH)	Japan	45	57	47
580	69	MAX–PLANCK–GESELLSCHAFT ZUR FÖRDERUNG DER WISSENSCHAFTEN E.V.	Germany	41	41	47
605	–53	COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH	India	66	48	45
605	–117	KOREA INSTITUTE OF INDUSTRIAL TECHNOLOGY	Republic of Korea	41	54	45
605	–89	UNITED STATES OF AMERICA AS REPRESENTED BY THE SECRETARY OF THE NAVY	U.S.	39	51	45
621	62	DALIAN INSTITUTE OF CHEMICAL PHYSICS, CHINESE ACADEMY OF SCIENCES	China	22	39	44
696	169	KOREA INSTITUTE OF MACHINERY & MATERIALS	Republic of Korea	53	30	39
728	174	NATIONAL INSTITUTE FOR MATERIALS SCIENCE	Japan	27	29	37
745	95	KOREA INSTITUTE OF SCIENCE AND TECHNOLOGY	Republic of Korea	23	31	36
785	–90	DEUTSCHES ZENTRUM FÜR LUFT– UND RAUMFAHRT E.V.	Germany	36	38	34
785	80	NATIONAL RESEARCH COUNCIL OF CANADA	Canada	14	30	34
785	80	CEDARS–SINAI MEDICAL CENTER	U.S.	46	30	34
809	31	SCRIPPS RESEARCH INSTITUTE	U.S.	37	31	33
809	220	CITY OF HOPE	U.S.	28	25	33

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 2020.

Computer technology and measurement each accounted for the highest shares of PCT applications from six out of 10 selected applicants.

A19. Share of the top three technology fields for the top five universities and PROs, 2019



Note: Agency for Sci., Tech. and Res. is the Agency for Science, Technology and Research, CEA is the Commissariat à l'Énergie Atomique et aux Énergies Alternatives, China Academy of Tel. Tech. is the China Academy of Telecommunications Technology, MIT is the Massachusetts Institute of Technology, South China Univ. of Tech. is the South China University 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 2020.

PCT applications by field of technology

With a growth rate of nearly 12%, computer technology regained first place as the technology field with the most PCT applications published in 2019.

A20. PCT applications by field of technology, 2015–2019

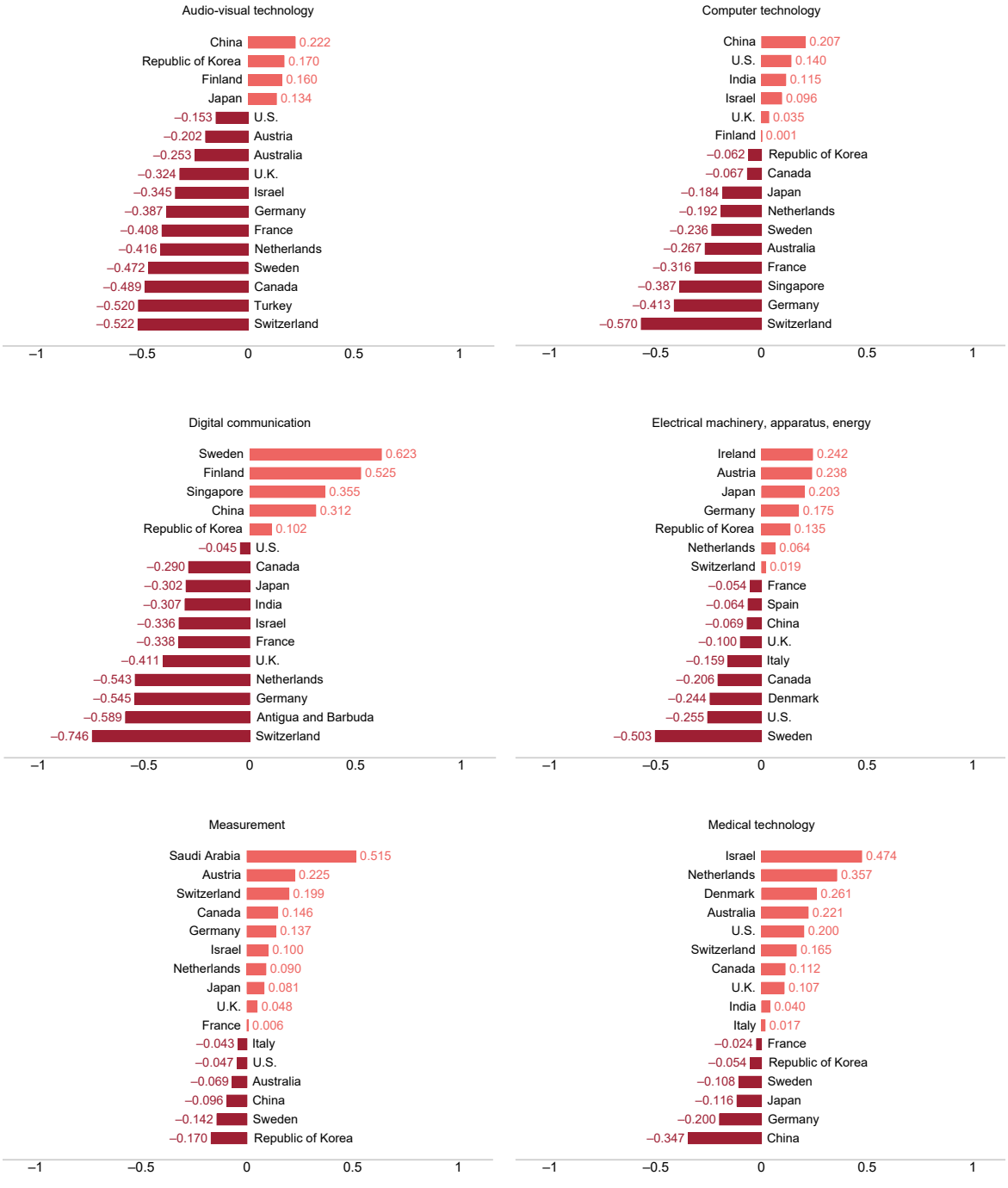
	Technical field	Publication year					2019 share (%)	Change from 2018 (%)
		2015	2016	2017	2018	2019		
I	**Electrical engineering**							
1	Electrical machinery, apparatus, energy	14,646	14,473	15,265	16,593	17,223	7.0	3.8
2	Audio–visual technology	6,573	7,056	7,534	8,200	8,904	3.6	8.6
3	Telecommunications	4,877	5,208	5,626	6,103	5,823	2.4	–4.6
4	Digital communication	16,029	17,758	18,407	20,273	19,090	7.7	–5.8
5	Basic communication processes	1,265	1,383	1,315	1,709	1,548	0.6	–9.4
6	Computer technology	16,411	17,167	19,154	19,175	21,449	8.7	11.9
7	IT methods for management	4,011	4,300	4,690	4,791	5,727	2.3	19.5
8	Semiconductors	6,437	6,542	6,539	7,186	8,047	3.3	12.0
II	**Instruments**							
9	Optics	5,882	6,611	7,147	7,621	8,006	3.2	5.1
10	Measurement	8,609	9,347	10,085	10,802	11,471	4.7	6.2
11	Analysis of biological materials	1,650	1,761	1,904	1,929	1,910	0.8	–1.0
12	Control	3,040	3,678	4,290	5,205	5,344	2.2	2.7
13	Medical technology	12,681	14,296	15,044	15,834	16,954	6.9	7.1
III	**Chemistry**							
14	Organic fine chemistry	5,449	5,713	5,686	5,783	5,874	2.4	1.6
15	Biotechnology	5,696	5,992	6,578	6,641	7,400	3.0	11.4
16	Pharmaceuticals	7,562	8,225	8,742	9,104	9,780	4.0	7.4
17	Macromolecular chemistry, polymers	3,699	3,802	3,921	4,241	4,406	1.8	3.9
18	Food chemistry	1,830	1,883	1,913	2,102	2,214	0.9	5.3
19	Basic materials chemistry	5,478	5,484	5,652	5,566	5,588	2.3	0.4
20	Materials, metallurgy	3,769	3,889	4,008	4,329	4,401	1.8	1.7
21	Surface technology, coating	3,286	3,284	3,591	3,702	3,856	1.6	4.2
22	Micro-structural and nano-technology	373	375	406	365	362	0.1	–0.8
23	Chemical engineering	4,291	4,376	4,695	4,896	5,079	2.1	3.7
24	Environmental technology	2,558	2,584	2,650	2,736	2,705	1.1	–1.1
IV	**Mechanical engineering**							
25	Handling	4,721	5,050	5,510	5,882	5,936	2.4	0.9
26	Machine tools	3,627	3,635	3,584	4,080	4,297	1.7	5.3
27	Engines, pumps, turbines	6,196	5,605	5,626	5,657	5,379	2.2	–4.9
28	Textile and paper machines	2,414	2,531	2,596	2,757	2,785	1.1	1.0
29	Other special machines	5,615	5,759	6,420	6,978	7,269	2.9	4.2
30	Thermal processes and apparatus	3,023	3,144	3,619	3,861	4,072	1.7	5.5
31	Mechanical elements	5,944	5,768	6,112	6,181	5,938	2.4	–3.9
32	Transport	8,664	8,717	9,755	10,876	11,163	4.5	2.6
V	**Other fields**							
33	Furniture, games	3,832	4,038	4,400	4,670	4,628	1.9	–0.9
34	Other consumer goods	4,388	4,743	4,990	5,398	5,440	2.2	0.8
35	Civil engineering	6,361	6,260	6,106	6,116	6,382	2.6	4.3

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 2020.

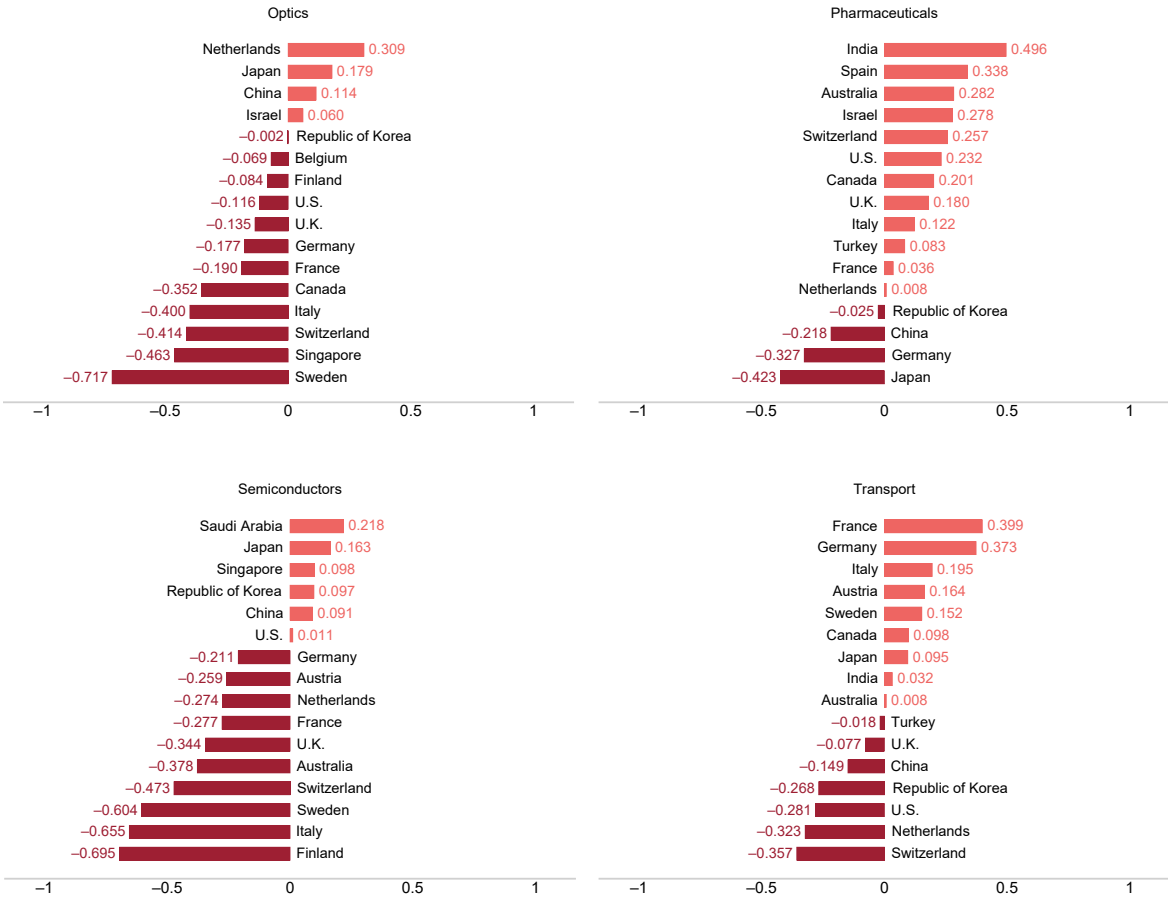
A large proportion of PCT filings from India related to pharmaceuticals, while many of those from Saudi Arabia related to measurement.

A21. Relative specialization index for published PCT applications by selected fields of technology, 2019



(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:

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

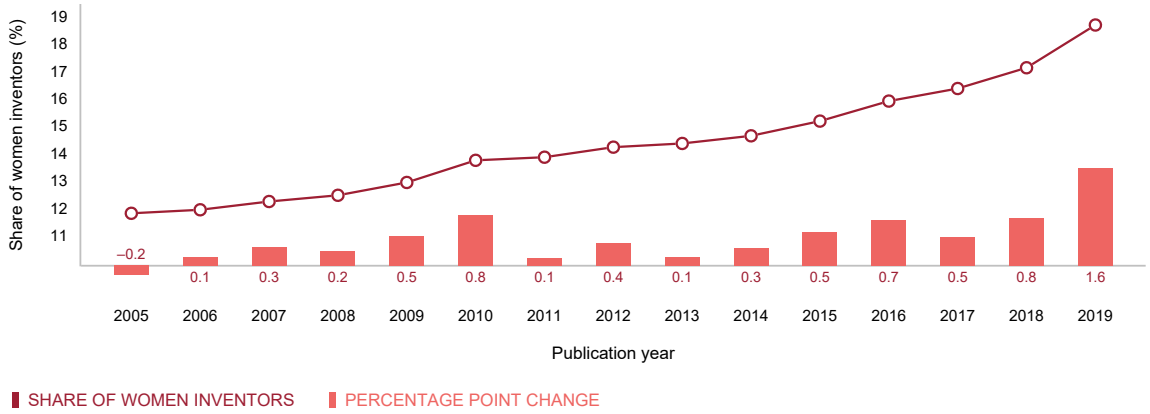
where F_c and F_r denote applications from country C and in a field of technology R. A positive value for a technology indicates that a country has a relatively high share of PCT filings related to that field of technology. For confidentiality reasons, data are based on published applications and on 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 2020.

Participation of women inventors in PCT applications

In 2019, 18.7% of all inventors listed in PCT applications were women; this is 1.6 percentage points higher than for 2018 (17.1%).

A22. Share of women among listed inventors in PCT applications, 2005–2019

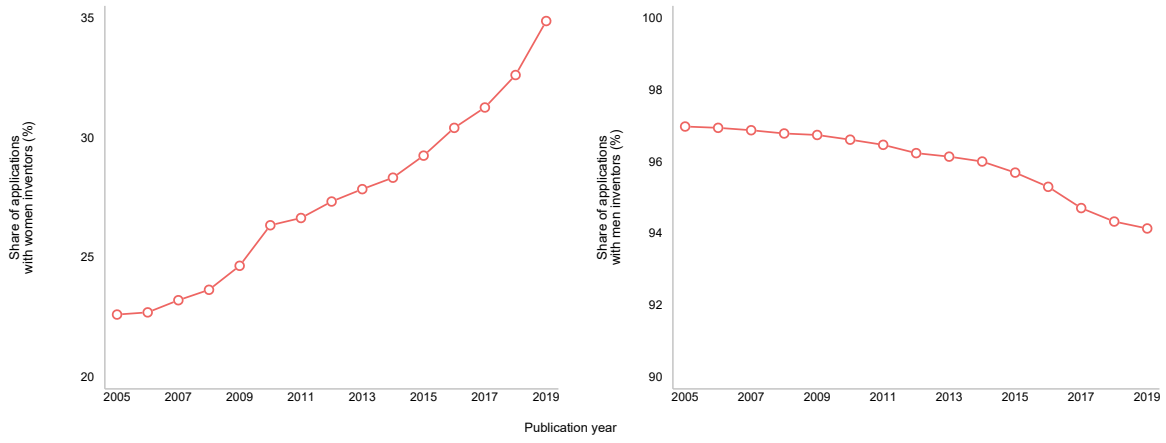


Note: For further details on methodology, refer to Martínez, G.L., Raffo, J. and Saito, K. (2016). Identifying the Gender of PCT Inventors. *Economic Research Working Paper No. 33*. Geneva: WIPO. Available at: *www.wipo.int/publications/en/details.jsp?id=4125*.

Source: WIPO Statistics Database, March 2020.

In 2019, about 94% of PCT applications listed at least one man as inventor and 35% of all PCT applications 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, 2005–2019

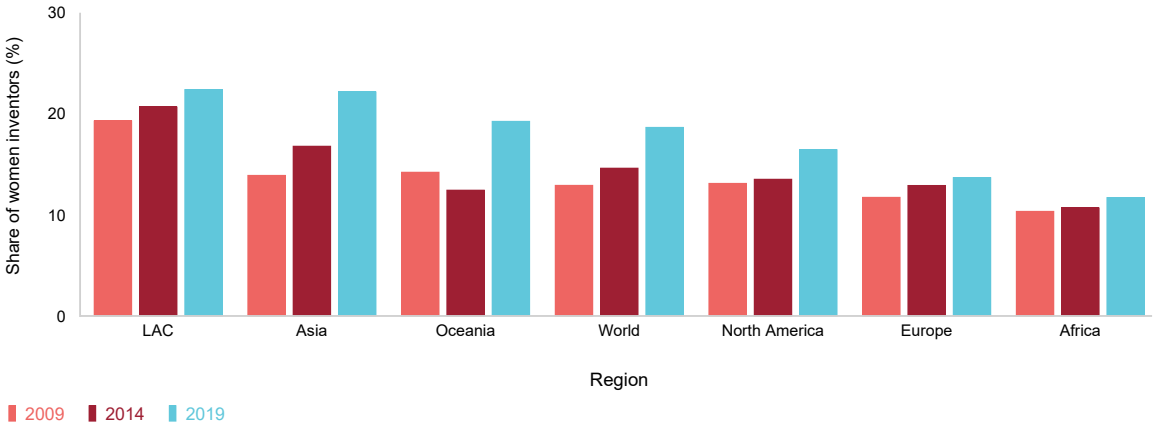


Note: For further details on methodology, refer to Martínez, G.L., Raffo, J. and Saito, K. (2016). Identifying the Gender of PCT Inventors. *Economic Research Working Paper No. 33*. Geneva: WIPO. Available at: *www.wipo.int/publications/en/details.jsp?id=4125*.

Source: WIPO Statistics Database, March 2020.

The proportion of PCT applications with women as inventors rose in each of the world's geographical regions between 2014 and 2019.

A24. Share of women among listed inventors in PCT applications by geographical region, 2009, 2014 and 2019

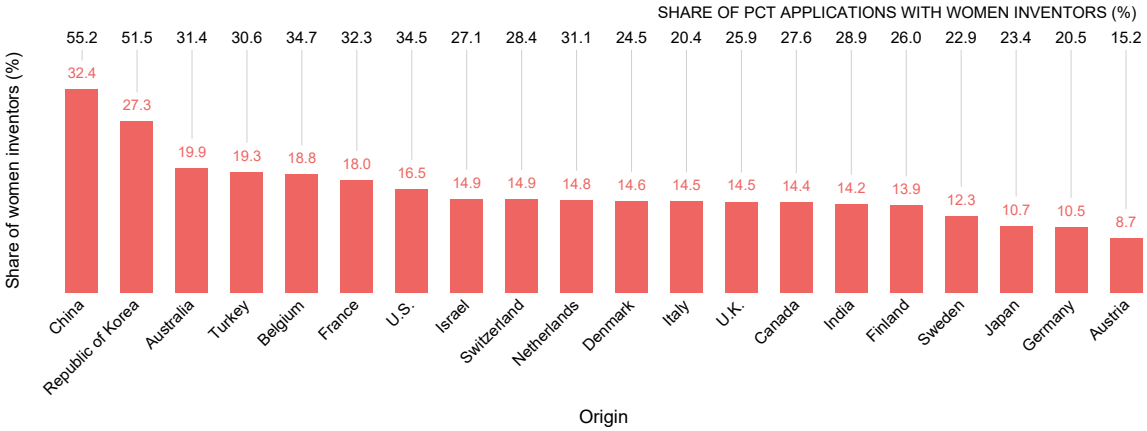


Note: LAC is Latin America and the Caribbean. For further details on methodology, refer to Martínez, G.L., Raffo, J. and Saito, K. (2016). Identifying the Gender of PCT Inventors. *Economic Research Working Paper No. 33*. Geneva: WIPO. Available at: *www.wipo.int/publications/en/details.jsp?id=4125*.

Source: WIPO Statistics Database, March 2020.

Women accounted for over 27% of inventors listed in PCT applications in China and the Republic of Korea.

A25. Share of women among listed inventors and share of PCT applications with at least one woman as inventor for the top 20 origins, 2019



Note: For further details on methodology, refer to Martínez, G.L., Raffo, J. and Saito, K. (2016). Identifying the Gender of PCT Inventors. *Economic Research Working Paper No. 33*. Geneva: WIPO. Available at: *www.wipo.int/publications/en/details.jsp?id=4125*.

Source: WIPO Statistics Database, March 2020.

Women inventors represented a comparatively large proportion of inventors in biotechnology, food chemistry and pharmaceuticals.

A26. Share of women among listed inventors in PCT applications by field of technology, 2019

Note: For further details on methodology, refer to Martínez, G.L., Raffo, J. and Saito, K. (2016). Identifying the Gender of PCT Inventors. *Economic Research Working Paper No. 33*. Geneva: WIPO. Available at: *www.wipo.int/publications/en/details.jsp?id=4125*. 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 2020.

In PCT applications filed by applicants from China (41.7%), the Republic of Korea (37.2%) and France (37.1%), more than one third of inventors working in the field of biotechnology were women.

A27. Share of women among listed inventors in PCT applications for the top 10 origins by field of technology, 2019

	Origin									
Field of technology	U.S.	China	Japan	Germany	Republic of Korea	France	U.K.	Switzerland	Sweden	Netherlands
Electrical machinery, apparatus, energy	12.8	29.1	9.2	6.4	23.9	11.8	10.3	10.5	4.2	11.3
Audio-visual technology	16.0	29.7	9.1	6.0	22.4	9.2	9.9	10.8	5.9	7.6
Telecommunications	14.4	30.1	8.8	4.4	29.0	8.1	8.2	6.3	10.6	7.7
Digital communication	16.8	32.5	11.9	4.9	32.5	11.7	9.0	9.1	14.8	7.4
Basic communication processes	14.4	25.0	6.4	4.8	21.9	12.1	14.2	6.7	14.3	0.0
Computer technology	14.3	30.8	10.6	7.6	25.7	11.6	9.1	13.9	10.4	13.8
IT methods for management	14.5	32.5	13.4	9.4	25.4	6.6	7.3	15.3	9.5	13.8
Semiconductors	15.9	33.5	9.1	12.9	24.5	15.7	12.5	13.2	16.7	8.9
Optics	13.7	29.6	10.3	7.4	28.4	17.8	11.8	10.0	7.0	11.3
Measurement	12.8	32.0	9.1	6.2	23.8	10.6	9.2	6.9	9.2	9.4
Analysis of biological materials	25.0	36.7	21.0	23.3	35.1	35.4	22.1	22.3	21.6	12.8
Control	11.6	29.9	9.0	6.3	22.1	10.4	6.0	6.9	7.5	12.8
Medical technology	15.1	33.0	14.0	11.9	23.9	15.0	13.4	10.9	20.0	13.4
Organic fine chemistry	24.6	36.7	19.2	26.0	31.7	40.4	25.8	23.3	17.9	22.7
Biotechnology	27.7	41.7	18.7	29.5	37.2	37.1	29.6	32.5	21.8	28.6
Pharmaceuticals	26.7	40.6	19.1	29.0	36.9	37.1	30.3	27.6	21.1	30.0
Macromolecular chemistry, polymers	22.2	33.9	15.0	21.0	28.8	29.5	19.7	17.8	28.1	23.5
Food chemistry	26.6	39.8	23.0	22.7	38.3	30.8	33.1	29.2	12.1	28.2
Basic materials chemistry	20.7	37.7	15.0	22.8	29.8	29.4	21.7	19.6	19.8	18.0
Materials, metallurgy	16.8	32.1	10.0	11.7	24.1	21.5	14.6	17.0	14.3	17.9
Surface technology, coating	17.1	30.1	11.4	12.5	23.5	14.8	9.8	9.1	6.0	17.9
Micro-structural and nano-technology	17.4	36.1	11.5	11.5	20.5	27.3	16.4	4.0	21.4	7.7
Chemical engineering	14.8	35.9	10.3	10.4	24.2	19.5	12.2	15.1	12.0	13.6
Environmental technology	13.6	38.4	10.3	10.3	23.4	15.2	8.4	10.4	1.9	14.2
Handling	11.9	30.7	9.8	4.5	23.2	7.8	6.3	7.6	8.8	7.7
Machine tools	10.3	30.2	8.1	4.9	20.7	9.2	7.3	4.1	4.5	6.8
Engines, pumps, turbines	8.0	32.1	5.7	5.3	22.2	9.0	3.3	6.5	3.1	3.4
Textile and paper machines	15.1	35.4	11.0	10.7	30.6	23.8	17.2	11.9	8.5	11.3
Other special machines	13.5	33.6	10.6	9.5	28.7	13.4	10.0	10.2	7.2	13.3
Thermal processes and apparatus	10.4	32.2	6.9	7.6	22.2	8.4	5.4	6.3	7.9	6.0
Mechanical elements	6.2	30.2	7.2	4.5	19.7	5.3	4.2	3.9	3.4	6.1
Transport	8.3	31.2	8.5	5.6	21.3	9.3	7.5	7.5	4.7	5.2
Furniture, games	11.7	31.8	11.8	8.9	25.2	14.6	5.6	5.0	9.8	9.7
Other consumer goods	16.1	31.5	13.3	12.6	28.3	21.2	14.6	11.3	9.7	10.8
Civil engineering	8.8	34.1	7.4	4.8	23.9	7.1	4.2	4.6	2.2	4.7

Note: For further details on methodology, refer to Martínez, G.L., Raffo, J. and Saito, K. (2016). Identifying the Gender of PCT Inventors. *Economic Research Working Paper No. 33*. Geneva: WIPO. Available at: *www.wipo.int/publications/en/details.jsp?id=4125*. 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 2020.

Statistical table

A28. PCT applications by office and origin, 2018–2019

Name	PCT applications filed in 2019 (international phase)		PCT applications filed in 2018 (international phase)	
	At receiving office	By country of origin	At receiving office	By country of origin
African Intellectual Property Organization	2	n.a.	0	n.a.
African Regional Intellectual Property Organization	1	n.a.	2	n.a.
Albania	1	3	0	0
Algeria	6	9	15	16
Andorra	n.a.	4	n.a.	7
Angola (c)	n.a.	0	n.a.	0
Antigua and Barbuda	0	47	0	96
Argentina	n.a.	36	n.a.	42
Armenia	0	3	0	6
Australia	1,604	1,768	1,674	1,826
Austria	499	1,444	441	1,484
Azerbaijan	10	12	16	17
Bahamas	n.a.	2	n.a.	4
Bahrain	0	2	0	1
Bangladesh	n.a.	2	n.a.	0
Barbados (c)	n.a.	79	n.a.	96
Belarus	18	16	22	23
Belgium (e)	n.a.	1,355	3	1,299
Belize	0	0	0	1
Benin (d)	n.a.	1	n.a.	0
Bermuda	n.a.	15	n.a.	23
Bosnia and Herzegovina	2	2	3	5
Botswana	0	0	0	0
Brazil	617	644	570	616
Brunei Darussalam	1	2	1	1
Bulgaria	34	49	47	60
Burkina Faso (d)	n.a.	1	n.a.	0
Cambodia	0	0	0	0
Cameroon (d)	n.a.	1	n.a.	1
Canada	2,056	2,711	1,913	2,417
Central African Republic (d)	n.a.	0	n.a.	0
Chad (d)	n.a.	0	n.a.	0
Chile	195	224	202	241
China	60,993	58,990	55,204	53,349
Colombia	17	127	26	159
Comoros (d)	n.a.	0	n.a.	0
Congo (d)	n.a.	1	n.a.	0
Costa Rica	3	12	11	13
Côte d'Ivoire (d)	n.a.	1	n.a.	0
Croatia	31	41	24	39
Cuba	9	9	7	7
Cyprus	2	44	2	39
Czech Republic	123	186	124	180
Democratic People's Republic of Korea	1	1	2	2
Democratic Republic of the Congo	n.a.	0	n.a.	1
Denmark	445	1,452	457	1,445
Djibouti	0	0	0	0
Dominica	0	0	0	0
Dominican Republic	12	13	4	4
Ecuador	0	18	2	31
Egypt	36	44	42	44
El Salvador	1	2	0	1
Equatorial Guinea (d)	n.a.	0	n.a.	0
Estonia	1	38	4	49
Eswatini (a)	n.a.	0	n.a.	0
Ethiopia	n.a.	1	n.a.	0
Eurasian Patent Organization	8	n.a.	11	n.a.
European Patent Office	38,028	n.a.	37,937	n.a.
Fiji	n.a.	1	n.a.	1
Finland	958	1,655	1,007	1,834

(Continued)

(A28 continued)

Name	PCT applications filed in 2019 (international phase)		PCT applications filed in 2018 (international phase)	
	At receiving office	By country of origin	At receiving office	By country of origin
France	3,217	7,934	3,538	7,918
Gabon (d)	n.a.	0	n.a.	0
Gambia (a)	n.a.	0	n.a.	0
Georgia	4	6	5	6
Germany	1,527	19,353	1,431	19,742
Ghana	0	0	0	0
Greece	91	123	59	115
Grenada	0	0	0	0
Guatemala	0	0	0	1
Guinea (d)	n.a.	0	n.a.	0
Guinea-Bissau (d)	n.a.	0	n.a.	0
Guyana	n.a.	0	n.a.	1
Holy See	n.a.	0	n.a.	1
Honduras	0	0	0	0
Hungary	104	157	113	153
Iceland	19	41	14	49
India	981	2,053	920	2,007
Indonesia	1	7	3	7
International Bureau	12,909	n.a.	12,236	n.a.
Iran (Islamic Republic of)	35	229	27	176
Iraq	n.a.	2	n.a.	0
Ireland	10	642	16	628
Israel	1,450	2,006	1,436	1,898
Italy	404	3,388	434	3,330
Jamaica	n.a.	1	n.a.	0
Japan	51,691	52,660	48,630	49,706
Jordan	12	19	9	12
Kazakhstan	24	27	15	18
Kenya	3	8	3	8
Kuwait	0	5	0	6
Kyrgyzstan	1	2	0	0
Lao People's Democratic Republic (c)	n.a.	0	n.a.	3
Latvia	1	36	0	31
Lebanon	n.a.	3	n.a.	6
Lesotho	0	0	0	0
Liberia	0	0	0	0
Libya	0	0	0	2
Liechtenstein (b)	n.a.	265	n.a.	263
Lithuania	1	32	0	37
Luxembourg	0	348	0	388
Madagascar (c)	n.a.	0	n.a.	1
Malawi	0	0	0	0
Malaysia	188	202	138	144
Mali (d)	n.a.	0	n.a.	0
Malta	0	38	0	43
Mauritania (d)	n.a.	0	n.a.	0
Mauritius	n.a.	10	n.a.	4
Mexico	174	220	196	273
Monaco (e)	n.a.	12	n.a.	23
Mongolia	0	0	0	2
Montenegro	1	1	0	8
Morocco	28	34	44	49
Mozambique (a)	n.a.	1	n.a.	0
Namibia (a)	n.a.	3	n.a.	3
Netherlands	894	4,011	917	4,134
New Zealand	164	250	183	275
Nicaragua	0	0	1	1
Niger (d)	n.a.	0	n.a.	1
Nigeria (c)	n.a.	1	n.a.	2
North Macedonia	5	5	5	6
Norway	314	781	346	767
Oman	10	10	11	14

(Continued)

(A28 continued)

Name	PCT applications filed in 2019 (international phase)		PCT applications filed in 2018 (international phase)	
	At receiving office	By country of origin	At receiving office	By country of origin
Pakistan	n.a.	1	n.a.	0
Panama	0	17	23	186
Papua New Guinea	0	0	0	0
Peru	25	26	38	37
Philippines	13	21	14	18
Poland	202	364	201	333
Portugal	54	196	68	250
Qatar	17	25	7	15
Republic of Korea	18,899	19,085	16,990	16,917
Republic of Moldova	6	7	5	5
Romania	38	42	21	32
Russian Federation	1,247	1,218	1,074	1,035
Rwanda	0	0	0	1
Saint Kitts and Nevis	0	5	0	4
Saint Lucia (c)	n.a.	0	n.a.	0
Saint Vincent and the Grenadines (c)	n.a.	0	n.a.	0
Samoa	n.a.	1	n.a.	1
San Marino	1	5	0	3
Sao Tome and Principe (c)	n.a.	0	n.a.	0
Saudi Arabia	31	552	40	663
Senegal (d)	n.a.	4	n.a.	4
Serbia	32	38	20	20
Seychelles	0	1	0	2
Sierra Leone (a)	n.a.	0	n.a.	0
Singapore	654	1,029	654	935
Slovakia	22	41	28	50
Slovenia	35	89	63	116
South Africa	80	281	68	275
Spain	958	1,513	932	1,399
Sri Lanka (c)	n.a.	17	n.a.	18
Sudan	3	3	6	6
Sweden	1,360	4,185	1,405	4,168
Switzerland	64	4,610	78	4,576
Syrian Arab Republic	3	3	1	1
Tajikistan	0	0	0	1
Thailand	71	146	59	102
Togo (d)	n.a.	0	n.a.	0
Trinidad and Tobago	0	3	3	6
Tunisia	10	11	6	7
Turkey	1,747	2,058	1,088	1,403
Turkmenistan	0	1	0	0
Uganda	0	2	0	1
Ukraine	171	184	143	155
United Arab Emirates (c)	n.a.	108	n.a.	100
United Kingdom	3,829	5,786	3,885	5,634
United Republic of Tanzania (a)	n.a.	0	n.a.	2
United States of America	56,228	57,840	55,343	56,252
Uruguay	n.a.	10	n.a.	8
Uzbekistan	0	1	1	2
Venezuela (Bolivarian Republic of)	n.a.	1	n.a.	0
Viet Nam	23	34	8	22
Yemen	n.a.	0	n.a.	1
Zambia	0	0	0	2
Zimbabwe	0	2	0	1
Others	0	240	0	264
Total	**265,800**	**265,800**	**252,775**	**252,775**

(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 (IB) is the competent receiving office.
(d) The African Intellectual Property Organization (OAPI) is the competent receiving office.
(e) The European Patent Office is the competent receiving office.
n.a. indicates not applicable, as it is not an office of a PCT member state, or the office does not act as PCT receiving office.
Note: Data for 2019 are WIPO estimates.
Source: WIPO Statistics Database, March 2020.

Section B
Statistics on PCT national phase entries

Highlights

The number of PCT national phase entries grew by 2.6% in 2018

An estimated 647,700 PCT national phase entries (NPEs) were initiated worldwide in 2018 – the latest year for which NPE data are available. This represents an increase of 2.6% on the previous year (see figure B1). Overall, growth in NPEs has gradually slowed over the past 15 years and actually fell, first in 2009 and again in 2016.

NPEs initiated by non-resident applicants represented about 83% of total NPEs in 2018. This share has tended to decrease slightly in recent years, mainly due to a strong growth in resident NPEs initiated at the Japan Patent Office (JPO) and at the United States Patent and Trademark Office (USPTO). In 2018, resident NPEs accounted for 39.2% and 22.4% of total NPEs at these respective offices (see figure B12).

Asia and Europe each accounted for about a third of initiated PCT NPEs

In 2018, applicants based in Europe initiated 33.7% of all NPEs, followed closely by those in Asia and North America. The combined share of the countries and territories located in Africa, Latin America and the Caribbean (LAC) and Oceania was only 2%. Asia's share increased sharply in the decade between 2008 and 2018 (see figure B3).

Almost a quarter of PCT NPEs initiated worldwide were destined for the U.S.

In 2018, the USPTO remained the office receiving by far the most patent applications via the PCT System, with 155,322 NPEs, or 24% of all NPEs initiated worldwide (see figure B9). The USPTO was followed in descending order by the European Patent Office (EPO), the China National Intellectual Property Administration (CNIPA) and the JPO, each receiving between 64,000 and 103,000 NPEs. Including the Korean Intellectual Property Office (KIPO), the top five offices accounted for about 69% of the NPEs initiated in 2018.

Half of the top 20 offices are patent offices from high-income economies and the other half from middle-income countries. Aside from the CNIPA, the offices from middle-income economies to have received more than 10,000 NPEs in 2018 were Brazil, India, Mexico and the Russian Federation. All six geographical regions are represented among the top 20 offices: 11 of the offices were located in Asia; Europe, Latin America and the Caribbean (LAC), North America and Oceania each had two offices; and Africa had one (see figure B11).

Eight of the top 10 offices received more NPEs in 2018 than the previous year, among which Australia, the CNIPA and India saw growth of 5%. Brazil and Mexico experienced slight drops in NPEs initiated compared to 2018.

Applicants based in the U.S. initiated 28.2% of PCT NPEs worldwide

In 2018, applicants residing in the U.S. initiated 182,573 NPEs. The U.S. was followed by applicants from Japan (132,520), Germany (59,351), China (35,991) and the Republic of Korea (28,730) (see table B7). The U.S. and Japan combined accounted for 48.6% of all NPEs initiated in 2018, while the top five together accounted for 67.8% of total NPEs. Beside this high concentration of NPEs among just a few origins, applicants from over 130 countries also initiated NPEs in 2018.

Among the top 20 origins, Sweden (+11.5%), the Republic of Korea (+10.4%), Belgium (+7.8%), Austria (+7.6%) and Switzerland (+7.5%) reported the highest annual increases in NPEs. In contrast, Finland-based applicants recorded a significant decline in NPEs in 2018, amounting to –9.6%. The four other countries among the top 20 origins to have initiated fewer NPEs in 2018 were France (–4.9%), the Netherlands (–3.1%), India (–1.7%) and the U.S. (–0.8%) (see figure B6).

Of the 155,322 NPEs received at the USPTO, applicants residing in the U.S. and in Japan were each responsible for approximately one-fifth (see figure B12). U.S.-based applicants accounted for the highest shares of NPEs at 13 of the top 20 offices, while applicants residing in Japan accounted for the highest shares at the seven other offices. More specifically, U.S.-based applicants accounted for over 45% of all NPEs initiated at the offices of Canada and Mexico, while Japan-based applicants initiated over 47% of all NPEs at the offices of Germany and Thailand.

The PCT System accounted for 56.9% of all non-resident filings in 2018

An estimated 539,500 non-resident NPEs were initiated worldwide in 2018 via the PCT route. By comparison, about 408,400 patent applications were filed directly at offices by non-resident applicants (i.e. the Paris route). This means that 56.9% of non-resident applications were filed via the PCT route in 2018, a 0.5 percentage point lower than in 2017 (57.4%) but considerably higher than their share in 2004 (see figure B13). Long-term data show that the number of applications filed via both routes has trended upward, although the PCT route has grown at the fastest pace of the two, with an average annual growth rate of 4.7% between 2004 and 2018, as compared to 1.8% for the Paris route (see figure B13). The slight decrease in share of non-resident NPEs in 2018 compared to the previous year was due to a higher growth rate in non-resident direct filings as compared to that in non-resident NPEs.

Of the top 20 offices in terms of non-resident patent applications, 17 received a majority of their non-resident filings via the PCT route, with the offices of Brazil, Israel and South Africa having shares above 88%, and those of Germany, the U.K. and the U.S. having shares below 40% (see figure B15).

When looking at the top 20 origins filing most applications overseas, applicants from Australia, France, the Netherlands, Sweden and the U.S. relied on the PCT route for over two-thirds of their filings abroad. Applicants from Canada, India and the Republic of Korea had far lower shares of filings abroad using the PCT route (see figure B14).

Applicants residing in Belgium and Switzerland initiated a high number of NPEs for each PCT international application filed, averaging approximately five NPEs per PCT application. In contrast, applicants from China and the Republic of Korea averaged just 0.8 and 1.8 NPEs per PCT application, respectively (see figure B8).

Huawei Technologies created the highest number of foreign-oriented patent families using the PCT route

Huawei Technologies of China created the highest number of foreign-oriented patent families (for a definition, see annex, Glossary) using the PCT route, with 6,509 such families created between 2014 and 2016 (see figure B17). It was followed by Mitsubishi Electric Corporation of Japan and Samsung Electronics of the Republic of Korea.

Of the top 50 applicants in terms of foreign-oriented patent families, half relied primarily on the PCT System to protect their innovations abroad between 2014 and 2016 (see table B18). Within this list, the applicant Shenzhen China Star Optoelectronics Technology Co. used the PCT route for almost all its foreign-oriented patent families. It was followed in this by three U.S.-based companies – Halliburton Energy, Microsoft Technology Licensing LLC and Qualcomm Incorporated – which each used the PCT for over 98% of its foreign-oriented patent families. In contrast, several applicants with large numbers of such families, such as Samsung Display Co. and Ford Global Tech LLC, relied hardly at all on the PCT System.

Global trends in PCT national phase entries

National phase entries by origin

National phase entries by office

Patent applications by filing route

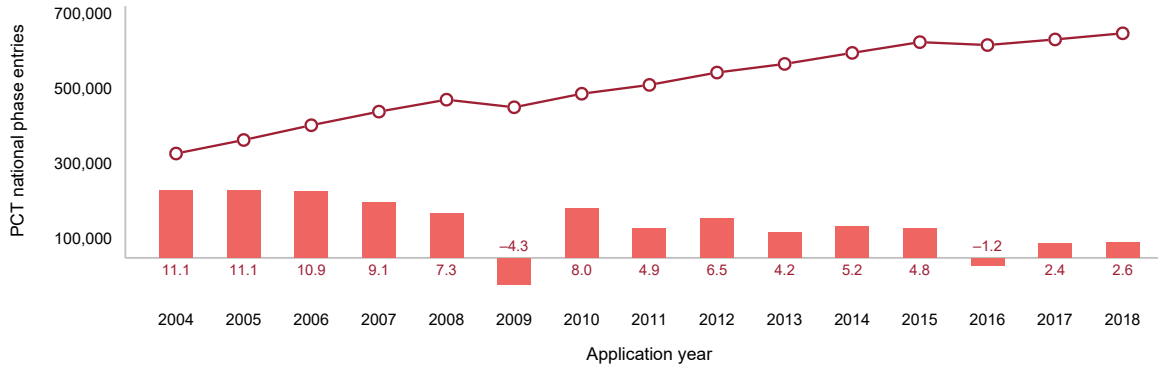
Top applicants in foreign-oriented patent families

Statistical table

Global trends in PCT national phase entries

In 2018, 647,700 PCT national phase entries were initiated, representing an increase of 2.6% on 2017.

B1. Trend in PCT national phase entries, 2004–2018

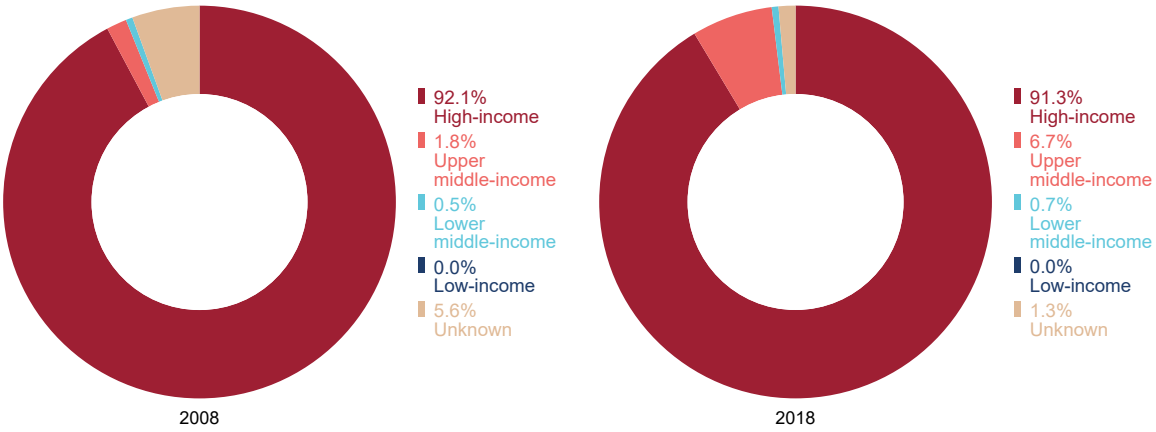


Note: These are WIPO estimates. National phase data from patent offices are available only up to 2018.

Source: WIPO Statistics Database, March 2020.

As in 2008 a decade earlier, high-income economies initiated more than 90% of national phase entries in 2018.

B2. PCT national phase entries by income group, 2008 and 2018

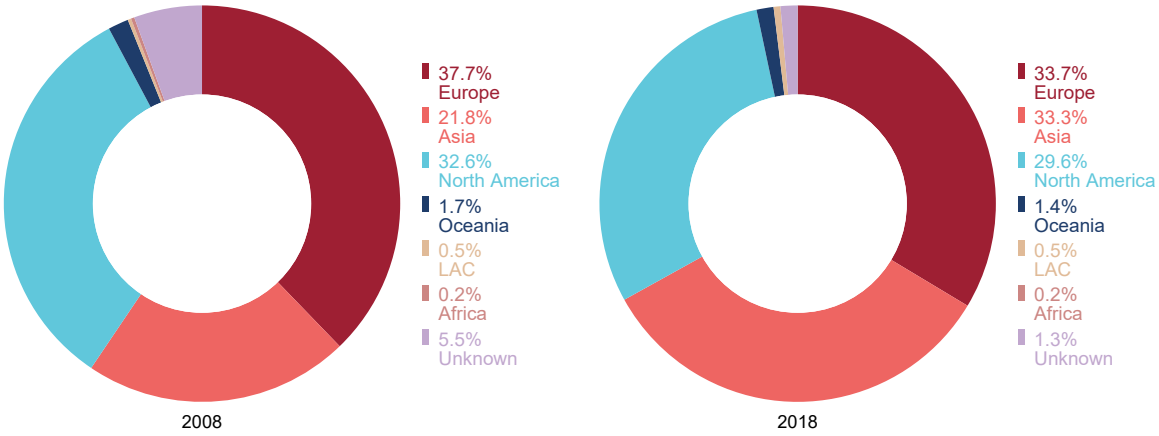


Note: Each category includes the following number of origins: high-income (60), upper middle-income (50), lower middle-income (32) and low-income (18). For information on income group classification, see annex, Data description.

Source: WIPO Statistics Database, March 2020.

Europe and Asia each accounted for around a third of all PCT national phase entries in 2018.

B3. PCT national phase entries by region, 2008 and 2018



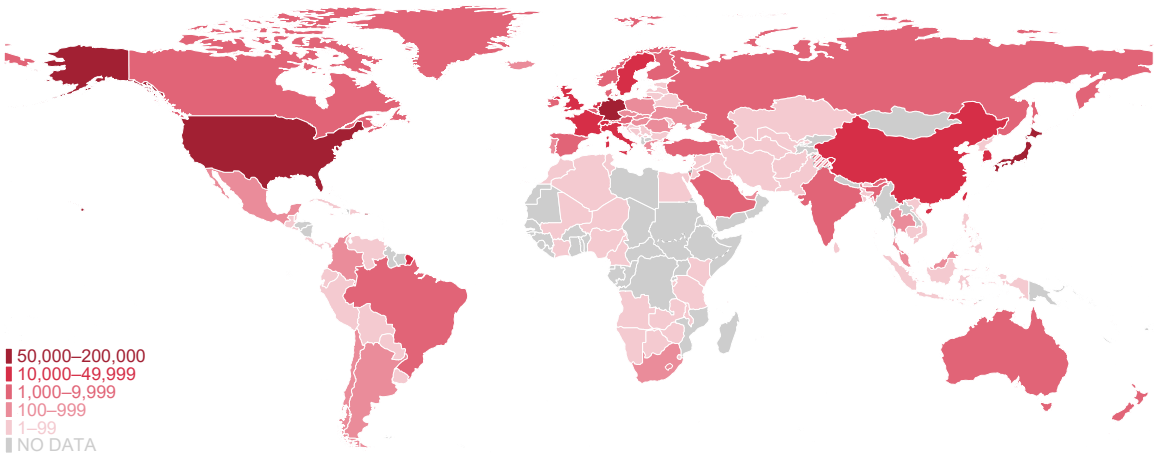
Note: Each region includes the following number of origins: Africa (32), Asia (45), Europe (45), Latin America and the Caribbean (LAC) (32), North America (2) and Oceania (4).

Source: WIPO Statistics Database, March 2020.

National phase entries by origin

Applicants from more than 130 countries initiated PCT national phase entries in 2018.

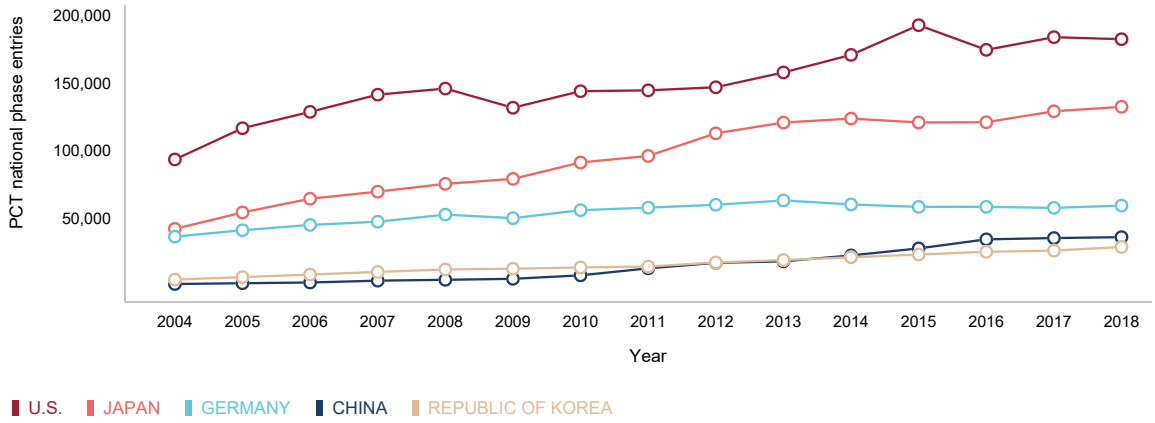
B4. PCT national phase entries by origin, 2018



Source: WIPO Statistics Database, March 2020.

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

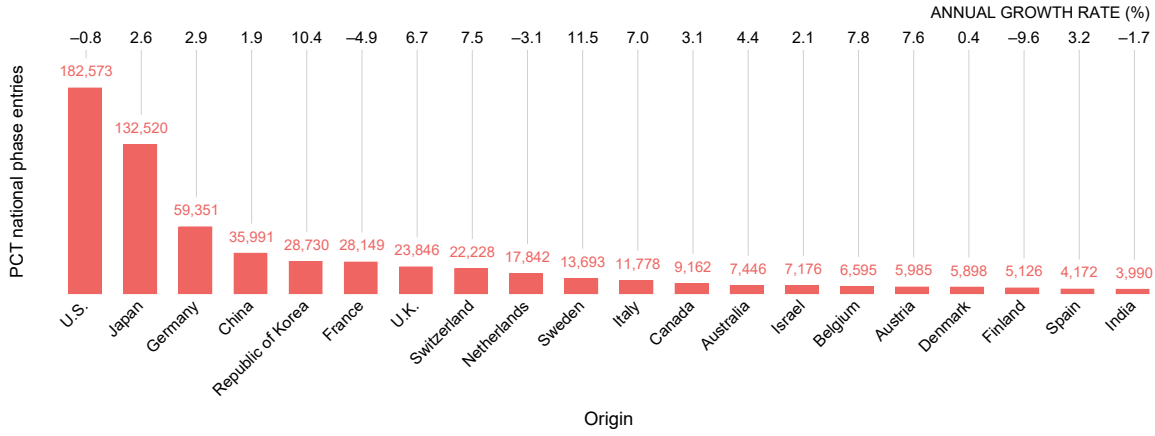
B5. Trends in PCT national phase entries for the top five origins, 2004–2018



Source: WIPO Statistics Database, March 2020.

In 2018, China experienced its slowest annual growth in PCT national phase entries since 2001.

B6. PCT national phase entries for the top 20 origins, 2018



Source: WIPO Statistics Database, March 2020.

PCT national phase entries from applicants in Latin America and the Caribbean increased by 13.8% in 2018.

B7. PCT national phase entries for the top origins by region, 2016–2018

Region	Origin	2016	2017	2018	Regional share 2018 (%)	Change from 2017 (%)
Africa	South Africa	962	1,020	879	80.0	–13.8
	Egypt	21	38	47	4.3	23.7
	Morocco	11	23	43	3.9	87.0
	Mauritius	50	16	40	3.6	150.0
	Seychelles	41	19	34	3.1	78.9
	Kenya	15	20	10	0.9	–50.0
	Others	36	32	46	4.2	43.8
	Total*	**1,136**	**1,168**	**1,099**	**0.2**	**–5.9**
Asia	Japan	121,079	129,202	132,520	61.5	2.6
	China	34,377	35,332	35,991	16.7	1.9
	Republic of Korea	25,158	26,028	28,730	13.3	10.4
	Israel	6,724	7,027	7,176	3.3	2.1
	India	3,933	4,059	3,990	1.9	–1.7
	Singapore	2,890	2,941	2,830	1.3	–3.8
	Saudi Arabia	1,133	692	1,104	0.5	59.5
	Turkey	998	1,248	1,015	0.5	–18.7
	China, Hong Kong SAR	341	408	511	0.2	25.2
	Thailand	253	436	492	0.2	12.8
	Others	763	1,166	1,113	0.5	–4.5
	Total*	**197,649**	**208,539**	**215,472**	**33.3**	**3.3**
Europe	Germany	58,463	57,682	59,351	27.2	2.9
	France	29,887	29,614	28,149	12.9	–4.9
	U.K.	20,825	22,348	23,846	10.9	6.7
	Switzerland	21,624	20,685	22,228	10.2	7.5
	Netherlands	18,299	18,421	17,842	8.2	–3.1
	Sweden	12,315	12,276	13,693	6.3	11.5
	Italy	11,080	11,010	11,778	5.4	7.0
	Belgium	5,497	6,120	6,595	3.0	7.8
	Austria	5,571	5,562	5,985	2.7	7.6
	Denmark	5,151	5,875	5,898	2.7	0.4
	Others	20,958	21,730	22,822	10.5	5.0
	Total*	**209,670**	**211,323**	**218,187**	**33.7**	**3.2**
Latin America and the Caribbean	Brazil	1,130	1,159	1,074	35.9	–7.3
	Mexico	528	555	620	20.7	11.7
	Antigua and Barbuda	–	11	400	13.4	3,536.4
	Chile	369	381	392	13.1	2.9
	Colombia	150	143	162	5.4	13.3
	Argentina	84	165	111	3.7	–32.7
	Cuba	82	18	90	3.0	400.0
	Peru	56	40	43	1.4	7.5
	Costa Rica	12	21	42	1.4	100.0
	Ecuador	2	3	14	0.5	366.7
	Others	373	130	40	1.3	–69.2
	Total*	**2,786**	**2,626**	**2,988**	**0.5**	**13.8**
North America	U.S.	174,678	184,048	182,573	95.2	–0.8
	Canada	8,997	8,885	9,162	4.8	3.1
	Total*	**183,675**	**192,933**	**191,735**	**29.6**	**–0.6**
Oceania	Australia	6,829	7,131	7,446	84.2	4.4
	New Zealand	1,385	1,580	1,397	15.8	–11.6
	Others	2	0	2	0.0	n.a.
	Total*	**8,216**	**8,711**	**8,845**	**1.4**	**1.5**
Unknown*		14,531	6,000	9,374	1.4	56.2
World		**616,300**	**631,300**	**647,700**	**100.0**	**2.6**

Note: World totals are WIPO estimates. This table shows the top countries in each region (with a maximum of 10 countries per region) whose applicants filed more than 10 PCT national phase entries in 2018. Data for all origins are reported in statistical table B19.

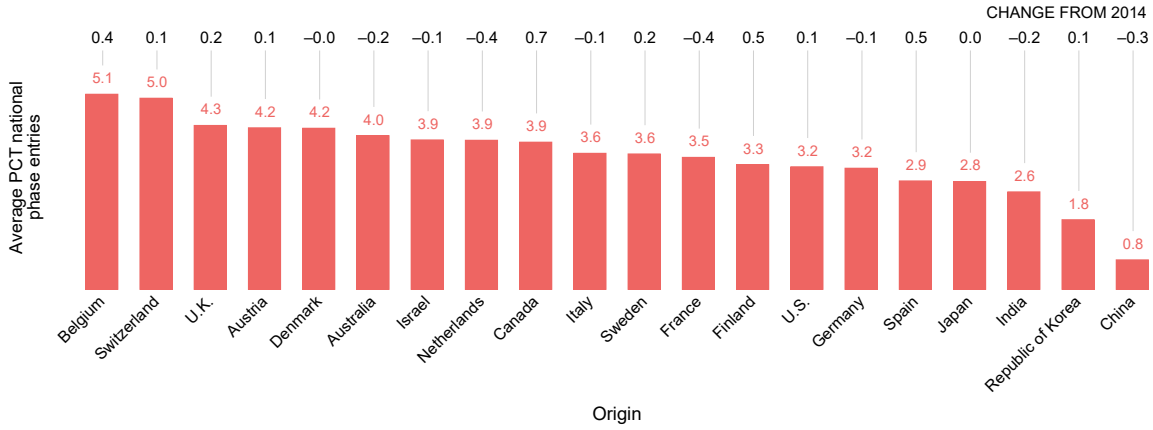
* indicates share of world total.

n.a. indicates not applicable.

Source: WIPO Statistics Database, March 2020.

Applicants residing in Belgium and Switzerland initiated around five NPEs per PCT application, on average.

B8. Average number of national phase entries per PCT application for selected origins, 2018



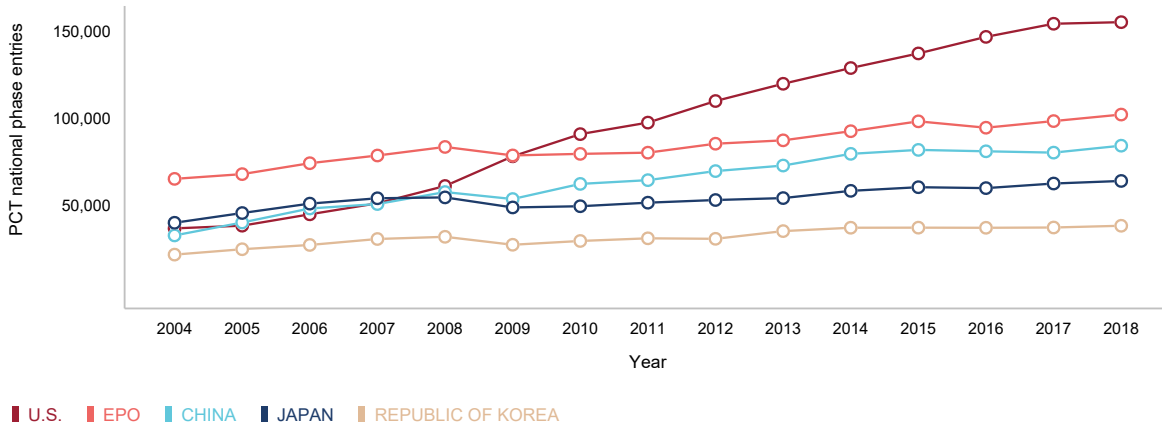
Note: The average is defined as the number of national phase entries initiated in 2018 divided by the average number of PCT applications filed in the two preceding years.

Source: WIPO Statistics Database, March 2020.

National phase entries by office

In 2018, PCT national phase entries destined for the U.S. almost stagnated compared to 2017.

B9. Trends in PCT national phase entries for the top five offices, 2004–2018

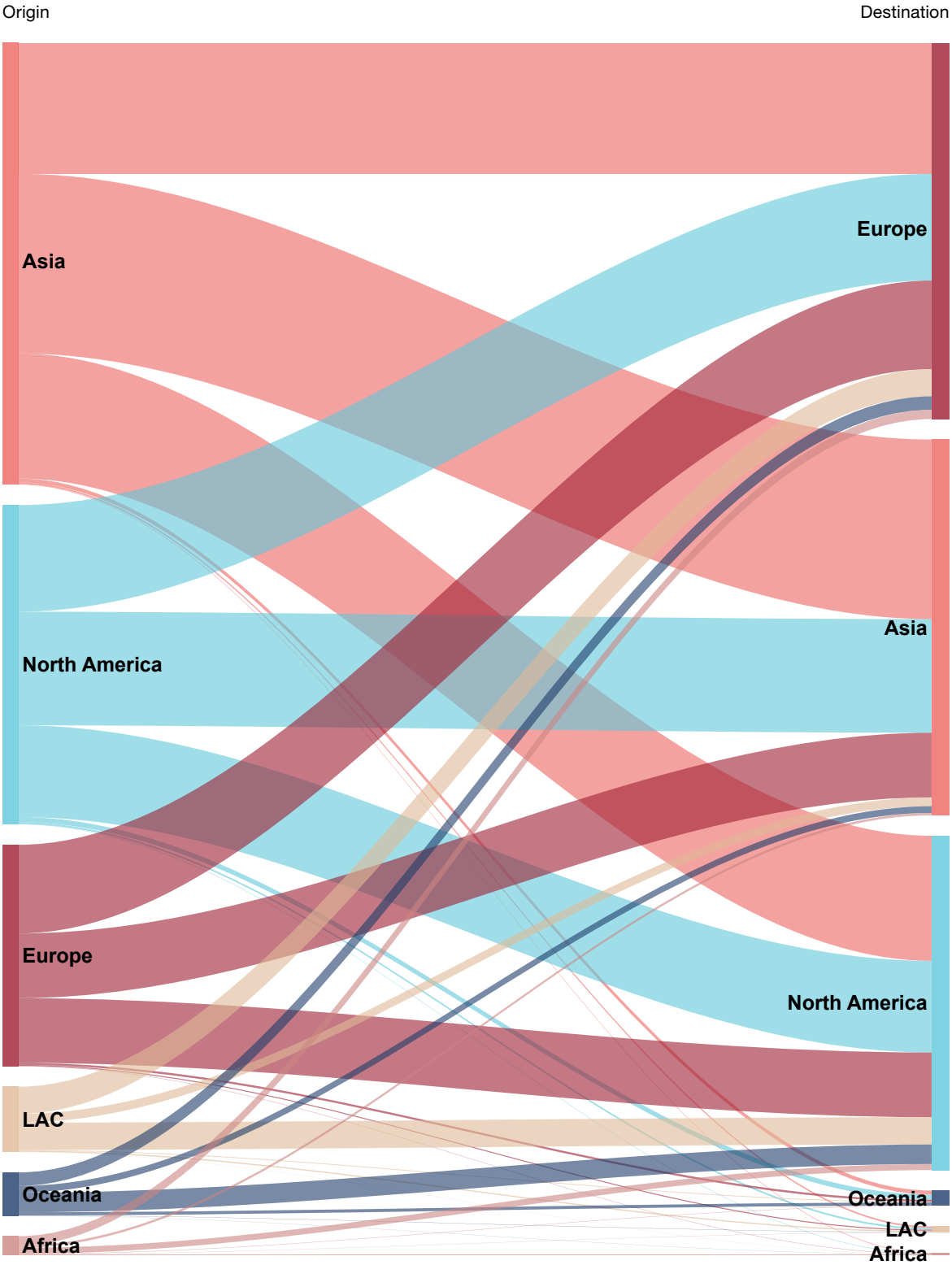


Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2020.

Applicants residing in Latin America and the Caribbean initiated a large proportion of total national phase entries in North America.

B10. Flow of national phase entries between regions of origin and regions of destination, 2018

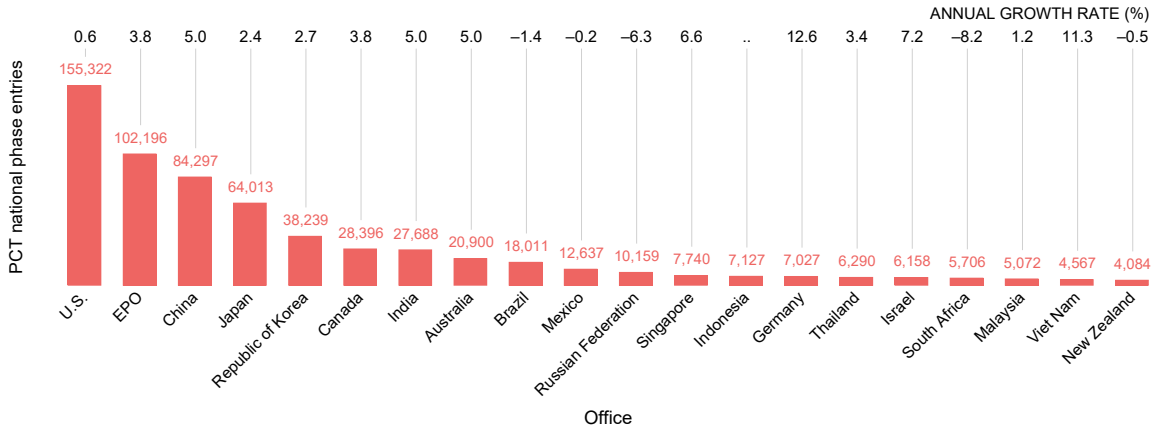


Note: LAC is Latin America and the Caribbean.

Source: WIPO Statistics Database, March 2020.

Of the top 20 offices, Germany and Viet Nam experienced double-digit growth in PCT national phase entries.

B11. PCT national phase entries for the top 20 offices, 2018



Note: This graph shows the top 20 offices for which NPE data by origin are available. EPO is the European Patent Office.

.. indicates data are unknown.

Source: WIPO Statistics Database, March 2020.

Applicants residing in Japan accounted for the highest share of PCT national phase entries initiated at the Japan Patent Office, with 39.2% 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, 2018

	Origin										
Office	U.S.	Japan	Germany	China	Republic of Korea	France	U.K.	Switzerland	Netherlands	Sweden	Other origins
U.S.	22.4	21.4	9.6	8.2	6.4	4.9	4.5	1.9	2.2	2.3	16.2
EPO	28.7	15.4	11.6	7.0	4.5	5.7	3.6	3.3	3.2	2.7	14.3
China	27.8	28.1	11.2	0.7	6.3	4.1	2.4	3.3	3.3	2.0	10.7
Japan	22.7	39.2	7.2	5.7	4.4	3.3	2.3	3.0	2.7	1.2	8.3
Republic of Korea	30.2	27.8	9.4	6.7	2.4	4.0	2.9	3.1	2.3	1.7	9.5
Canada	46.8	5.9	6.6	2.9	0.9	4.3	4.2	4.5	1.8	1.5	20.4
India	31.0	13.4	7.8	8.8	5.5	3.5	4.0	3.8	4.3	3.5	14.6
Australia	43.6	6.2	5.7	5.1	2.1	2.7	5.4	4.6	2.1	2.0	20.5
Brazil	37.5	7.6	9.8	3.5	1.4	6.0	3.8	5.9	4.6	2.7	17.2
Mexico	45.8	8.6	8.0	2.0	1.5	3.7	3.2	6.6	2.5	2.1	16.0
Russian Federation	22.9	10.3	12.2	6.4	2.3	6.1	4.1	8.2	5.6	3.3	18.4
Singapore	33.0	17.1	5.6	6.6	2.2	3.5	4.4	5.7	1.6	1.2	19.1
Germany	21.6	50.2	14.4	3.0	2.4	0.6	1.4	0.6	0.5	0.9	4.5
Indonesia	22.8	28.9	5.8	6.7	5.8	3.3	3.1	5.0	4.5	1.7	12.5
Israel	43.8	3.5	6.7	1.5	0.8	4.2	4.5	8.0	2.2	2.0	22.9
South Africa	32.0	3.3	9.6	5.4	0.8	4.2	8.7	4.1	2.9	3.8	25.2
Thailand	15.0	47.1	5.4	4.5	3.0	4.1	1.5	4.3	2.9	1.2	10.9
Malaysia	21.4	25.0	6.7	6.8	5.0	3.3	5.0	6.8	2.3	2.3	15.4
Viet Nam	15.7	28.8	5.4	11.9	13.8	2.2	1.7	4.5	2.4	1.5	12.1
New Zealand	42.9	5.0	6.0	2.5	1.3	2.7	6.6	4.9		2.1	26.1

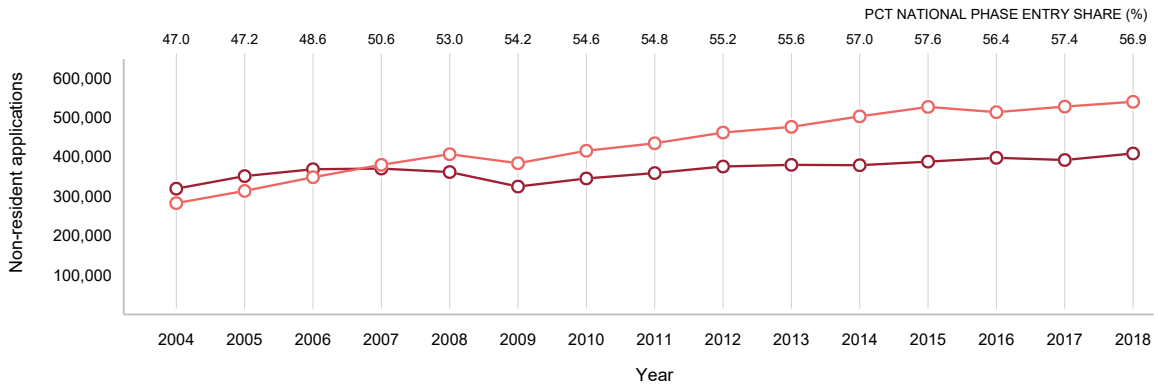
Note: This table shows the top 10 origins for which national phase entry office data are available. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2020.

Patent applications by filing route

In 2018, PCT national phase entries accounted for 56.9% of non-resident filings.

B13. Trend in non-resident patent applications by filing route, 2004–2018

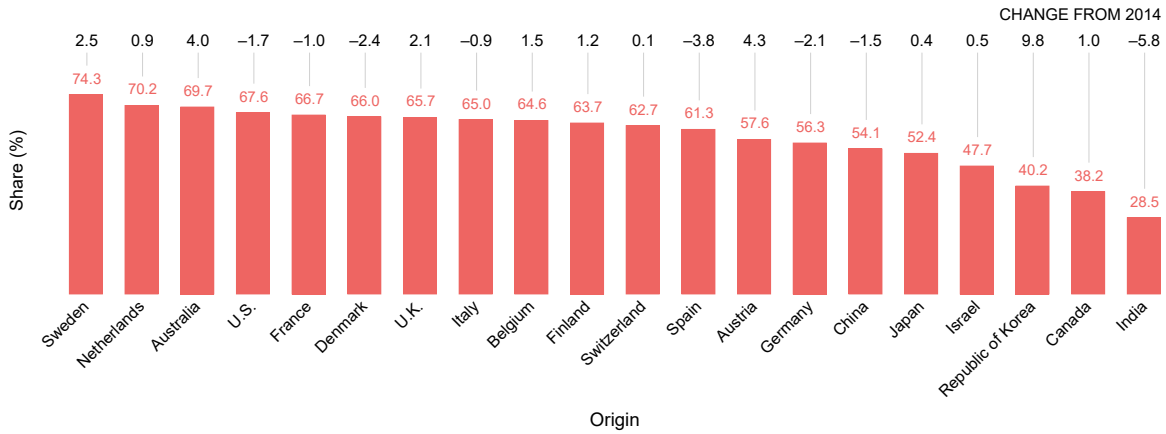


Note: These data are WIPO estimates.

Source: WIPO Statistics Database, March 2020.

Applicants from Sweden filed 74.3% of their applications abroad using the PCT route.

B14. Share of PCT national phase entries in total filings abroad for the top 20 origins, 2018

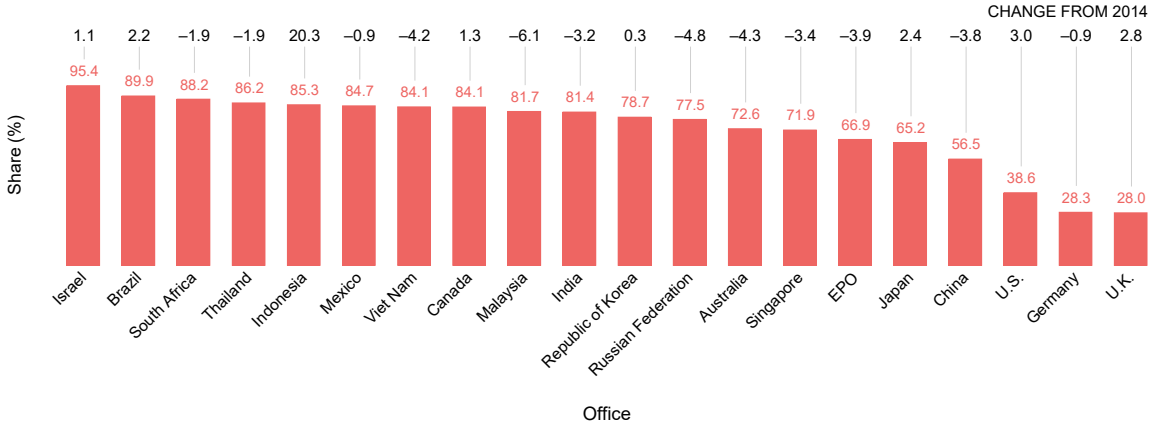


Note: The share is defined as the number of PCT national phase entries initiated abroad divided by the total number of patent applications filed abroad. It includes data from the 20 origins that filed the most applications abroad in 2018.

Source: WIPO Statistics Database, March 2020.

Offices of middle-income countries, such as Brazil, South Africa and Thailand, received the bulk of their non-resident filings via the PCT System.

B15. Share of PCT national phase entries in total non-resident filings for the top 20 offices, 2018



Note: The 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 that received the most non-resident filings in 2018; that is, data from countries that are members of the PCT System and that provided data broken down by filing route. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2020.

Applicants from China used the PCT route for three-quarters of their filings at the EPO.

B16. Share of PCT national phase entries in total non-resident filings for the top 10 origins and the top 20 offices, 2018

Office	Origin									
	U.S.	Japan	Germany	China	Republic of Korea	France	U.K.	Switzerland	Netherlands	Sweden
U.S.		38.9	48.2	39.1	29.1	61.6	51.3	53.2	67.2	69.7
EPO	66.5	69.4		75.2	62.4					
China	60.3	52.3	61.0		38.4	71.8	71.9	72.8	82.4	79.3
Japan	62.3		70.8	67.4	55.4	76.7	76.7	70.2	85.1	75.3
Republic of Korea	87.9	67.7	81.7	80.9		88.8	91.0	89.1	90.6	90.0
Canada	80.5	90.9	86.7	75.3	91.6	86.2	88.9	93.2	97.7	98.2
India	82.7	76.9	76.1	82.2	63.0	77.5	91.9	75.3	96.1	97.2
Australia	67.7	77.4	81.3	84.3	73.5	82.2	83.8	80.5	83.1	87.7
Brazil	88.7	80.7	88.9	95.4	97.2	89.1	92.8	95.8	98.3	96.4
Mexico	80.4	91.4	86.8	89.6	84.9	90.6	94.3	92.4	89.5	95.3
Russian Federation	72.7	67.0	77.4	85.1	64.4	84.5	82.1	88.3	92.9	91.8
Singapore	71.9	70.7	76.6	57.0	46.9	78.8	81.6	86.5	76.6	87.7
Germany	22.7	43.9		42.6	12.6	12.7	26.4	4.8	23.7	15.3
Indonesia	95.7	77.9	91.9	86.1	69.8	96.6	98.2	94.3	99.4	97.5
Israel	95.1	99.1	95.5	94.7	94.0	90.5	97.2	98.8	99.3	100.0
South Africa	89.0	91.3	90.5	72.2	94.0	90.5	95.6	91.8	93.7	96.0
Thailand	93.7	79.3	93.3	84.5	85.7	97.7	98.8	92.0	99.3	100.0
Malaysia	81.3	76.7	83.8	80.5	78.3	89.5	92.2	92.8	90.3	95.0
Viet Nam	97.7	86.3	94.2	89.8	67.9	99.0	98.7	95.7	100.0	100.0
New Zealand	74.4	81.0	85.2	83.5	76.5	87.3	88.5	85.7		92.4

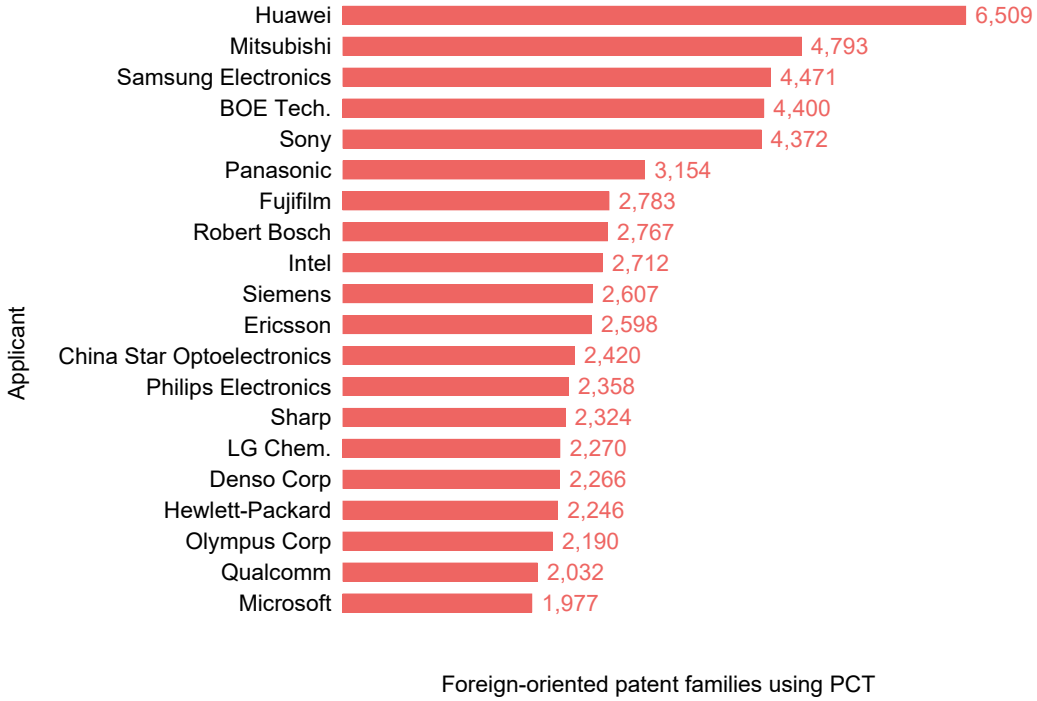
Note: This figure includes data from the 20 offices that received the most non-resident filings in 2018; that is, data from countries that are members of the PCT System and that provided data broken down by filing route. In general, national offices of European Patent Office (EPO) member states receive relatively small proportions of national phase entries, because applicants may apply via the EPO to seek protection within any EPO member state.

Source: WIPO Statistics Database, March 2020.

Top applicants in foreign-oriented patent families

Huawei Technologies had by far the highest number of foreign-oriented patent families using the PCT route between 2014 and 2016.

B17. Top 20 applicants in foreign-oriented patent families using the PCT System, 2014–2016



Note: The number of patent applications in foreign-oriented patent families as reported in the autumn 2019 edition of PATSTAT may be incomplete for most recent years. A patent family is a set of interrelated patent applications filed in 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 2020.

Half of the top 50 applicants relied primarily on the PCT System to protect their innovations abroad between 2014 and 2016.

B18. Top 50 applicants in foreign-oriented patent families, 2011–2013 and 2014–2016

		Foreign-oriented patent families		Foreign-oriented patent families using the PCT route (%)	
Rank	Applicant	2011–2013	2014–2016	2011–2013	2014–2016
1	SAMSUNG ELECTRONICS CO., LTD.	15,436	15,793	20.3	28.3
2	CANON INC	10,424	9,823	12.6	9.0
3	HUAWEI TECHNOLOGIES CO., LTD.	4,672	6,801	93.0	95.7
4	ALIBABA GROUP HOLDING LTD	864	6,701	28.0	28.9
5	FORD GLOBAL TECH LLC	2,750	6,543	1.4	1.9
6	SAMSUNG DISPLAY CO LTD	4,990	6,484	0.3	0.1
7	ROBERT BOSCH GMBH	6,693	6,285	47.9	44.0
8	BOE TECHNOLOGY GROUP CO., LTD.	1,844	6,278	75.4	70.1
9	PANASONIC IP MAN CORP	1,471	6,138	63.3	51.4
10	TOYOTA JIDOSHA KABUSHIKI KAISHA	5,412	5,874	76.1	15.8
11	MITSUBISHI ELECTRIC CORP	4,735	5,838	69.2	82.1
12	FUJITSU LTD	5,558	5,238	24.9	13.6
13	HYUNDAI MOTOR CO LTD	3,236	5,159	0.6	0.4
14	SEIKO EPSON CORP	4,678	5,013	6.7	11.5
15	SONY CORP	6,560	4,992	40.2	87.6
16	SIEMENS AG	6,162	4,945	45.2	52.7
17	TOSHIBA KK	7,922	4,916	20.9	18.9
18	DENSO CORP	4,039	4,259	28.1	53.2
19	HONDA MOTOR CO LTD	4,054	4,188	28.5	22.0
20	RICOH CO LTD	4,264	3,913	9.5	13.6
21	LG ELECTRONICS INC	2,968	3,838	28.2	48.9
22	FUJIFILM CORP	4,173	3,702	65.0	75.2
23	GEN ELECTRIC	4,649	3,430	19.9	26.0
24	GM GLOBAL TECH OPERATIONS INC	4,326	3,241	0.5	2.0
25	INTEL CORP	3,194	3,175	86.0	85.4
26	TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)	2,939	2,701	90.8	96.2
27	LG CHEMICAL LTD	1,863	2,690	92.2	84.4
28	OLYMPUS CORP	1,440	2,687	63.5	81.5
29	SHARP CORP	3,758	2,646	80.7	87.8
30	SK HYNIX INC	2,127	2,516	0.0	0.1
31	KONINKLIJKE PHILIPS ELECTRONICS N.V.	1,503	2,498	91.6	94.4
32	HITACHI LTD	3,359	2,464	51.9	55.1
33	SHENZHEN CHINA STAR OPTOELECTRONICS TECHNOLOGY CO., LTD.	278	2,427	96.4	99.7
34	FUJI XEROX CO LTD	1,778	2,397	3.3	2.0
35	HEWLETT PACKARD DEVELOPMENT CO	1,996	2,366	83.8	94.9
36	MURATA MANUFACTURING CO	1,741	2,365	77.7	69.3
37	KYOCERA DOCUMENT SOLUTIONS INC	1,465	2,259	4.9	10.9
38	KONICA CORP	1,405	2,224	44.0	30.1
39	NEC CORP	2,674	2,188	88.9	85.9
40	QUALCOMM INCORPORATED	1,672	2,054	96.2	98.9
41	SAMSUNG ELECTRO MECH	3,266	2,025	0.2	0.1
42	LG DISPLAY CO LTD	1,383	2,022	2.5	2.8
43	MICROSOFT TECHNOLOGY LICENSING LLC	994	2,004	79.3	98.7
44	ELECTRONICS & TELECOMMUNICATIONS RES INST	250	1,977	12.0	11.2
45	SCHAEFFLER TECHNOLOGIES GMBH & CO KG	1,227	1,962	69.8	53.6
46	BROTHER IND LTD	2,469	1,924	3.2	8.5
47	HALLIBURTON ENERGY SERV INC	1,609	1,904	96.0	98.1
48	BASF SE	2,162	1,902	88.1	89.7
49	SUMITOMO ELECTRIC INDUSTRIES	1,530	1,879	69.9	77.9
50	HONGHAI PRECISION INDUSTRY CO., LTD.	8,574	1,786	0.1	1.2

Note: The number of patent applications in foreign-oriented patent families as reported in the autumn 2019 edition of PATSTAT may be incomplete for most recent years. A patent family is a set of interrelated patent applications filed in 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 applicant's home office.

Source: WIPO Statistics Database and EPO PATSTAT Database, March 2020.

Statistical table

B19. PCT national phase entries by office and origin, 2017–2018

Name	PCT national phase entries in 2018		PCT national phase entries in 2017	
	At designated office	By country of origin	At designated office	By country of origin
Afghanistan	n.a.	1	n.a.	4
African Intellectual Property Organization	398	n.a.	400	n.a.
African Regional Intellectual Property Organization	772	n.a.	701	n.a.
Albania	3	0	n.a.	1
Algeria	497	4	574	3
Andorra	n.a.	13	n.a.	29
Angola	..	7	..	1
Antigua and Barbuda	5	400	8	11
Argentina	n.a.	111	n.a.	165
Armenia	3	15	2	18
Australia	20,900	7,446	19,898	7,131
Austria	427	5,985	565	5,562
Azerbaijan	15	13	20	4
Bahamas	n.a.	22	n.a.	24
Bahrain	213	3	229	5
Bangladesh	n.a.	1	n.a.	3
Barbados	..	342	..	337
Belarus	60	33	59	6
Belgium (c)	n.a.	6,595	n.a.	6,120
Belize	24	3	..	10
Benin (d)	n.a.	0	n.a.	0
Bermuda	n.a.	25	n.a.	40
Bhutan	n.a.	3	n.a.	1
Bolivia (Plurinational State of)	n.a.	3	n.a.	2
Bonaire, Sint Eustatius and Saba (c)	n.a.	0	n.a.	1
Bosnia and Herzegovina	7	2	..	2
Botswana	..	1	..	0
Brazil	18,011	1,074	18,268	1,159
Brunei Darussalam	90	1	97	3
Bulgaria	4	99	3	82
Burkina Faso (d)	n.a.	0	n.a.	0
Burundi	n.a.	6	n.a.	16
Cabo Verde	n.a.	0	n.a.	1
Cambodia	26	9	..	0
Cameroon (d)	n.a.	7	n.a.	0
Canada	28,396	9,162	27,350	8,885
Central African Republic (d)	n.a.	0	n.a.	0
Chad (d)	n.a.	0	n.a.	1
Chile	2,578	392	2,362	381
China	84,297	35,991	80,301	35,332
China, Hong Kong SAR	n.a.	511	n.a.	408
China, Macao SAR	n.a.	28	n.a.	14
Colombia	1,707	162	1,692	143
Comoros (d)	n.a.	0	n.a.	0
Congo (d)	n.a.	0	n.a.	0
Costa Rica	486	42	495	21
Côte d'Ivoire (d)	n.a.	2	n.a.	0
Croatia	2	46	5	62
Cuba	120	90	143	18
Curaçao (c)	n.a.	1	n.a.	9
Cyprus (c)	n.a.	184	n.a.	186
Czech Republic	24	551	25	484
Democratic People's Republic of Korea	..	40	..	9
Denmark	93	5,898	81	5,875
Djibouti	..	0	..	0
Dominica	4	0	3	0
Dominican Republic	208	8	242	8
Ecuador	364	14	385	3
Egypt	1,226	47	1,226	38

(Continued)

(B19 continued)

Name	PCT national phase entries in 2018		PCT national phase entries in 2017	
	At designated office	By country of origin	At designated office	By country of origin
El Salvador	128	2	167	4
Equatorial Guinea (d)	n.a.	0	n.a.	0
Estonia	4	86	4	63
Eswatini (a)	n.a.	93	n.a.	2
Eurasian Patent Organization	2,643	n.a.	2,523	n.a.
European Patent Office	102,196	n.a.	98,431	n.a.
Finland	24	5,126	32	5,669
France (c)	n.a.	28,149	n.a.	29,614
Gabon (d)	n.a.	0	n.a.	1
Gambia	..	1	..	0
Georgia	151	11	147	10
Germany	7,027	59,351	6,238	57,682
Ghana	26	0	..	1
Greece (c)	n.a.	300	n.a.	347
Grenada	..	0	..	0
Guatemala	220	3	268	36
Guinea (d)	n.a.	0	n.a.	0
Guinea-Bissau (d)	n.a.	0	n.a.	0
Honduras	144	0	184	0
Hungary	11	522	14	414
Iceland	7	107	1	142
India	27,688	3,990	26,373	4,059
Indonesia	7,127	21	6,186	10
Iran (Islamic Republic of)	..	21	..	35
Iraq	n.a.	2	n.a.	0
Ireland (c)	n.a.	2,295	n.a.	1,801
Israel	6,158	7,176	5,745	7,027
Italy (c)	n.a.	11,778	n.a.	11,010
Jamaica	n.a.	5	n.a.	5
Japan	64,013	132,520	62,530	129,202
Jordan	16	7	..	9
Kazakhstan	..	26	..	19
Kenya	38	10	38	20
Kuwait	256	5	..	12
Kyrgyzstan	..	0	..	0
Lao People's Democratic Republic	40	0	90	0
Latvia (c)	n.a.	38	n.a.	33
Lebanon	n.a.	28	n.a.	42
Lesotho	..	0	..	0
Liberia	..	0	..	2
Libya	..	0	..	0
Liechtenstein (b)	n.a.	567	n.a.	565
Lithuania (c)	n.a.	58	n.a.	57
Luxembourg	..	1,812	..	1,863
Madagascar	37	0	41	2
Malawi	..	1	..	0
Malaysia	5,072	437	5,012	457
Maldives	n.a.	0	n.a.	2
Mali (d)	n.a.	2	n.a.	7
Malta (c)	n.a.	176	n.a.	260
Marshall Islands	n.a.	1	n.a.	0
Mauritania (d)	n.a.	0	n.a.	0
Mauritius	n.a.	40	n.a.	16
Mexico	12,637	620	12,664	555
Monaco (c)	n.a.	33	n.a.	76
Mongolia	69	0	85	1
Montenegro	..	8	..	0
Morocco	1,963	43	1,668	23
Mozambique	13	0	25	0
Myanmar	n.a.	0	n.a.	2
Namibia	7	2	7	2

(Continued)

(B19 continued)

Name	PCT national phase entries in 2018		PCT national phase entries in 2017	
	At designated office	By country of origin	At designated office	By country of origin
Netherlands (c)	n.a.	17,842	n.a.	18,421
Netherlands Antilles (c)	n.a.	1	n.a.	2
New Zealand	4,084	1,397	4,106	1,580
Nicaragua	..	0	..	2
Niger (d)	n.a.	1	n.a.	0
Nigeria	148	9	120	2
North Macedonia	..	0	..	0
Norway	544	3,298	818	2,716
Oman	400	0	379	15
Pakistan	n.a.	8	n.a.	9
Panama	347	10	364	27
Papua New Guinea	..	0	..	0
Paraguay	n.a.	5	n.a.	4
Peru	1,065	43	1,061	40
Philippines	3,182	57	2,798	43
Poland	53	927	43	862
Portugal	10	482	17	453
Qatar	..	56	558	47
Republic of Korea	38,239	28,730	37,248	26,028
Republic of Moldova	20	7	34	5
Romania	20	109	17	74
Russian Federation	10,159	1,603	10,838	1,549
Rwanda	..	0	..	0
Saint Kitts and Nevis	4	8	9	9
Saint Lucia	..	0	..	0
Saint Vincent and the Grenadines	4	0	3	0
Samoa	n.a.	2	n.a.	35
San Marino	..	23	..	2
Sao Tome and Principe	408	1	379	0
Saudi Arabia	2,464	1,104	2,325	692
Senegal (d)	n.a.	0	n.a.	1
Serbia	7	65	1	39
Seychelles	16	34	19	19
Sierra Leone	..	0	..	1
Singapore	7,740	2,830	7,263	2,941
Slovakia	3	134	7	101
Slovenia (c)	n.a.	163	n.a.	115
South Africa	5,706	879	6,216	1,020
Spain	96	4,172	57	4,041
Sri Lanka	234	18	227	23
Sudan	..	0	..	8
Sweden	73	13,693	86	12,276
Switzerland	82	22,228	72	20,685
Syrian Arab Republic	..	7	16	4
Tajikistan	..	0	..	0
Thailand	6,290	492	6,082	436
Togo (d)	n.a.	0	n.a.	0
Trinidad and Tobago	134	1	171	1
Tunisia	271	8	383	1
Turkey	215	1,015	359	1,248
Turkmenistan	..	1	..	0
Uganda	..	0	..	0
Ukraine	1,613	143	1,555	192
United Arab Emirates	1,664	201	1,744	218
United Kingdom	2,573	23,846	2,873	22,348
United Republic of Tanzania	9	9	..	1
United States of America	155,322	182,573	154,403	184,048
Uruguay	n.a.	79	n.a.	11
Uzbekistan	157	4	185	5
Vanuatu	n.a.	10	n.a.	3
Venezuela (Bolivarian Republic of)	n.a.	8	n.a.	3
Viet Nam	4,567	34	4,104	26

(Continued)

(B19 continued)

Name	PCT national phase entries in 2018		PCT national phase entries in 2017	
	At designated office	By country of origin	At designated office	By country of origin
Yemen	n.a.	0	n.a.	1
Zambia	..	1	10	2
Zimbabwe	..	2	..	5
Others	1,102	9,374	743	6,000
Total	**647,700**	**647,700**	**631,300**	**631,300**

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 2020.

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 45% of PCT applications were published in English in 2019

The vast majority of PCT applications are published in the language in which they were filed. In 2019, 44.7% of all PCT applications were published in English, followed by Japanese (19.7%) and Chinese (19%). The seven remaining languages of publication, combined, accounted for 16.6% of the total (see figure C1). Whereas the combined share of the top three languages has remained relatively stable between 2013 and 2019, their respective contributions have changed drastically. While the use of Japanese has not altered much during this period, back in 2013, a majority of applications were published in English and Chinese accounted for a low share in comparison.

Applicants filed 97.7% of PCT applications electronically and the remaining 2.3% on paper (see figure C2). The proportion of electronic filings has continuously increased, ever since electronic filing media were introduced. In 2009, less than three-quarters of PCT applications were filed using fully electronic media.

Nearly 13% of all PCT applications were filed through the ePCT-filing portal in 2019

In 2019, 64 ROs accepted PCT filings through the ePCT-filing portal and applicants filed 34,335 PCT applications this way. This represents an increase of 42.6% on the previous year and corresponds to 12.9% of all PCT applications filed in 2019 (see figure C3). Applicants from the U.S. (6,940) filed by far the most applications via the ePCT portal, followed by those from India (1,758) and Italy (1,688), representing respectively, 12%, 85.6% and 49.8% of the total filings received from applicants residing in these three countries (see figure C4).

The IB examined almost 80% of all PCT applications within one week of receipt

In 2019, the IB performed a formalities examination of 79.3% of PCT applications within one week of receipt of the application and had processed 98.2% within a month (see figure C5).

Slightly more than 77% of publications occurred during the week following the expiration of the 18-month period from the priority date, and 99.5% of publications occurred within two weeks of that period (see figure C6). When an international search report (ISR) is unavailable at the time of publication, an application is republished together with its ISR once it is available. The proportion of applications republished within two months of receipt of the ISR was 89.5%. Almost all republications occurred within three months of receipt of the ISR at the IB (see figure C7).

The receiving offices

A PCT application is filed with an 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).

Seventeen of the top 20 offices received more than 90% of applications electronically in 2019

Of the top 20 ROs, China, Israel, Japan, Singapore and the U.S. received more than 99% of PCT applications electronically in 2019. The share of electronic filings exceeded 82% at all the top 20 offices, except for the office of the Russian Federation, which received 77.6% of its PCT applications on paper (see figure C12).

Australia and India transmitted all their PCT applications to the IB within four weeks

In 2019, on average, ROs transmitted their PCT applications to the IB within 2.7 weeks of the international filing date (see figure C14). Australia and India transmitted all their applications to the IB within four weeks of the filing date. Sixteen of the top 20 offices had a transmittal rate within this timeframe of above 80%. In contrast, the office of Turkey transmitted just 1% of applications to the IB within four weeks of the international filing date (see figure C15).

The shares of PCT applications transmitted by ROs to the ISAs within four weeks varied slightly from those they transmitted to the IB. They were above 80% for only half of the top 20 ROs and below a third for the offices of France, the Netherlands, the Russian Federation and Turkey (see figure C16).

International Searching Authorities

Each PCT application must undergo an international search by an ISA. Once the ISA has performed this 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 light of the documents found in the search.

The EPO issued slightly under one third of all ISRs in 2019

In 2019, 251,300 ISRs were issued by the 23 existing ISAs. The EPO issued almost 80,800 ISRs and was followed by the China National Intellectual Property Administration (CNIPA) and the Japan Patent Office (JPO). Together, these three ISAs accounted for nearly three-quarters of all ISRs issued (see figure C17). Of the top 10 ISAs, the offices of Canada (+12.7%) and the Republic of Korea (+12.5%) experienced double-digit growth. From among all 23 ISAs, Turkey and Ukraine issued far more ISRs than they had in 2018 and the Philippines issued its first ISRs.

Of all ISRs required to be transmitted to the IB within three months from the date of receipt of the application, nearly 87% were successfully transmitted within this timeframe in 2019 (see figure C20). At all ISAs, except for Egypt, almost three-quarters of ISRs that should have been transmitted to the IB within three months from the date of receipt of the search copy met this deadline. As for those required to be transmitted within 9 months of the priority date, almost 81% were transmitted within this timeframe (see figure C21). All ISAs transmitted at least 62% of such ISRs within 9 months, except for the Nordic Patent Institute.

Most ISRs of PCT applications filed in the U.S. between 2012 and 2014 were issued by the EPO or the Korean Intellectual Property Office (KIPO). The vast majority of such applications entered the PCT national phase at one or more of the top five patent offices (see figure C23).

PCT applications by publication language and filing medium

PCT applications filed via the ePCT-filing portal

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

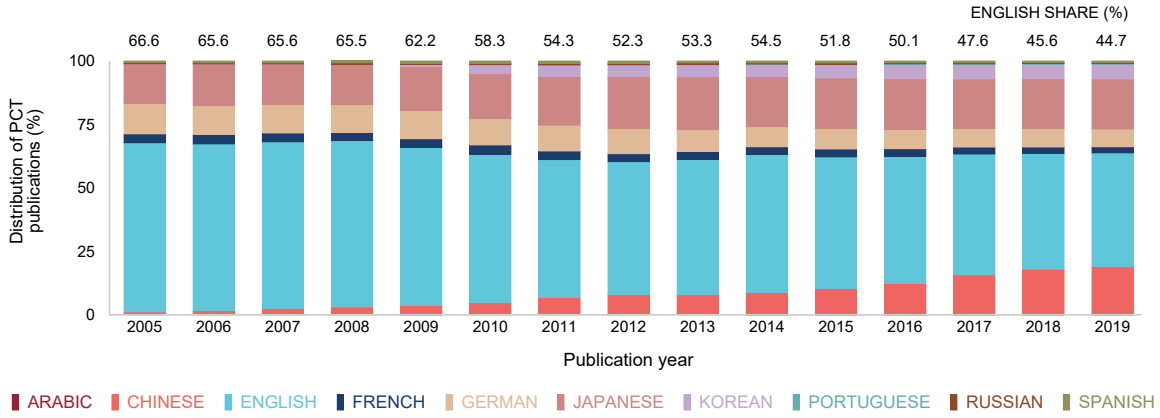
International Preliminary Examining Authorities

PCT-Patent Prosecution Highway pilots

PCT applications by publication language and filing medium

Around 45% of PCT applications were published in English in 2019.

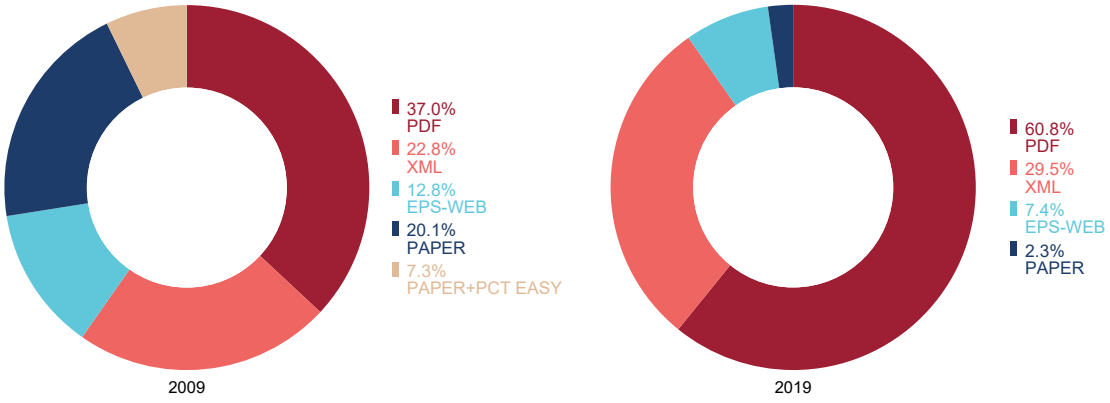
C1. Distribution of PCT applications by language of publication, 2005–2019



Source: WIPO Statistics Database, March 2020.

Almost 98% of all PCT applications were filed electronically in 2019.

C2. Distribution of PCT applications by filing medium, 2009 and 2019



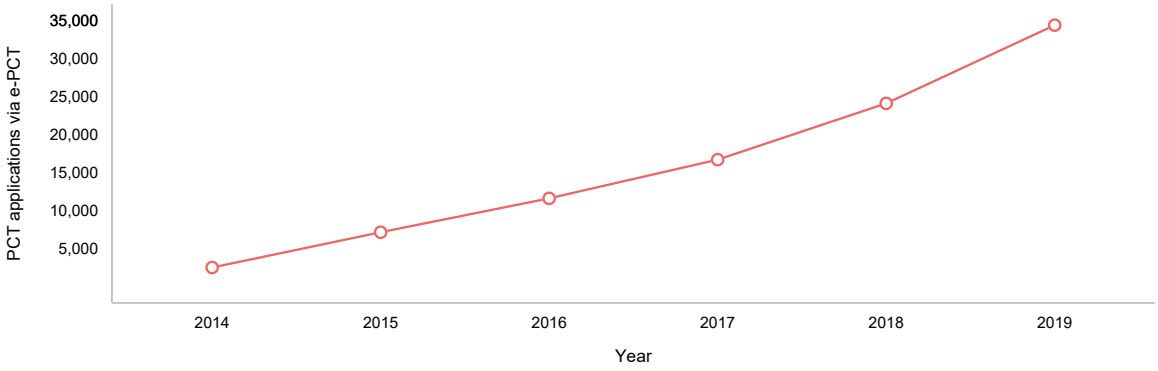
Note: PDF, EFS-WEB and XML are the three fully electronic filing mediums. Since mid-2015, PCT applications can no longer be filed using PCT-EASY.

Source: WIPO Statistics Database, March 2020.

PCT applications filed via the ePCT-filing portal

Applicants filed 34,335 PCT applications using ePCT in 2019, representing almost 13% of the total number of PCT applications filed and an increase of 42.6% from 2018.

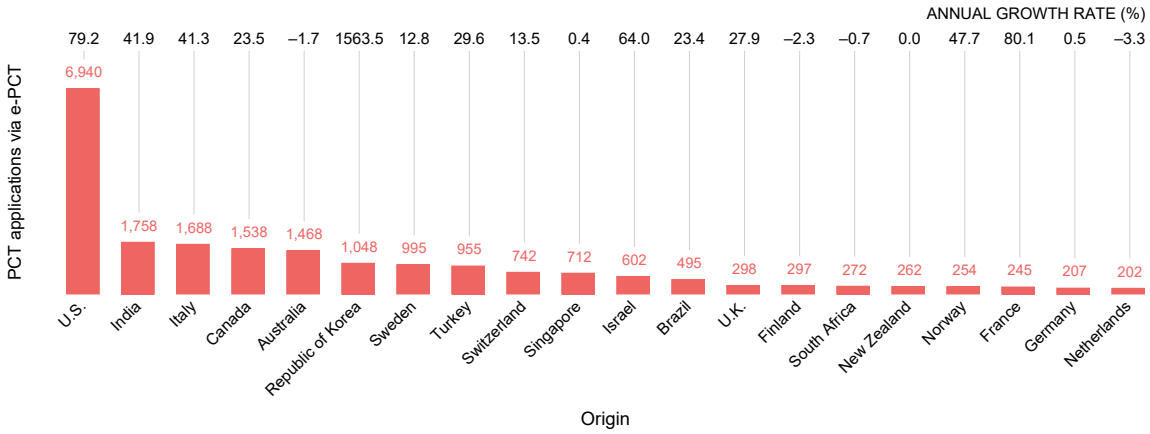
C3. Trend in PCT applications filed using ePCT, 2014–2019



Source: WIPO Statistics Database, March 2020.

Applicants residing in the U.S. filed nearly 7,000 applications via ePCT in 2019.

C4. PCT applications filed using ePCT for the top 20 origins, 2019

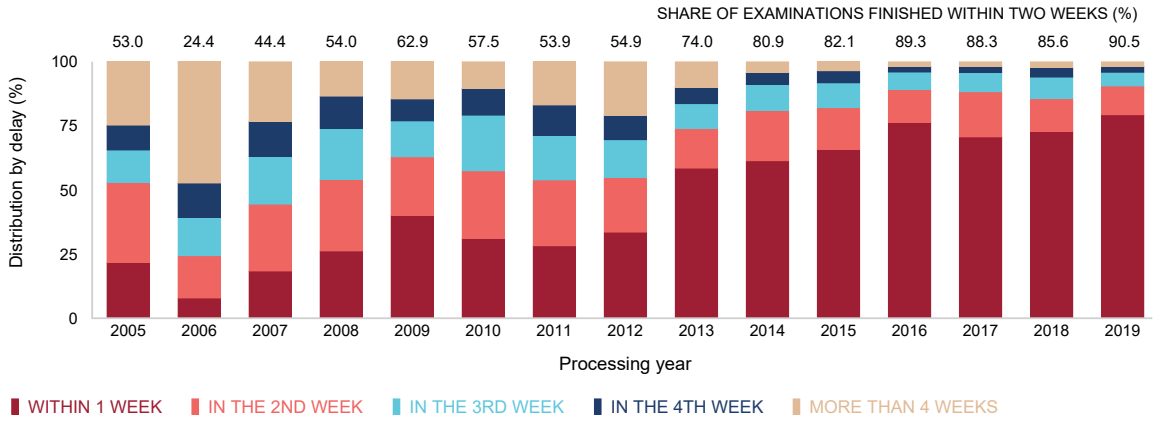


Source: WIPO Statistics Database, March 2020.

Timeliness in processing PCT applications by the International Bureau

The formalities examination was completed within two weeks for 90.5% of PCT applications in 2019.

C5. Timeliness of formalities examination, 2005–2019

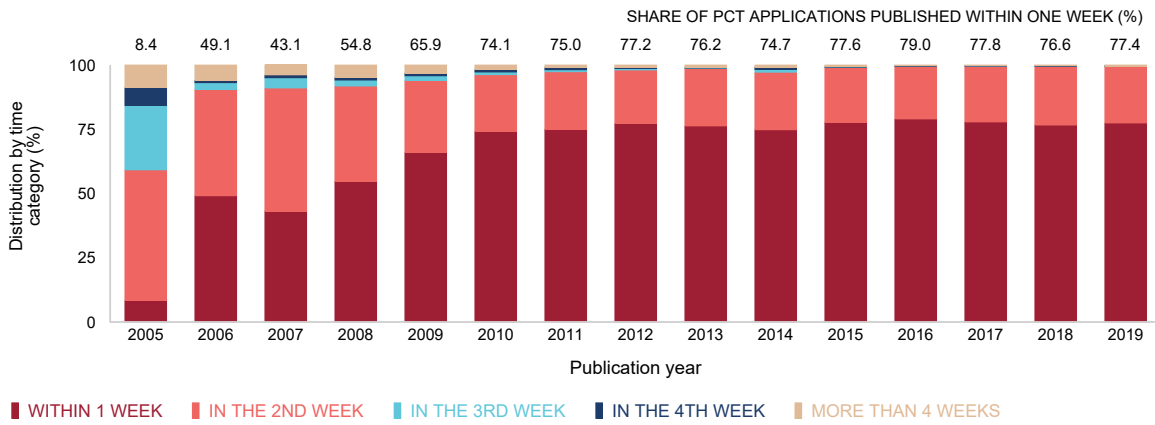


Note: The International Bureau (IB) performs a formality examination of PCT applications and related documents promptly after receipt. Once the formality examination of a PCT application is completed, the IB sends a form to the applicant acknowledging receipt of the application. Timeliness is calculated as the time elapsed 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 2020.

Since 2011, about three-quarters or more of PCT applications have been published within one week of the expiration of the 18-month limit.

C6. Timeliness in publishing PCT applications, 2005–2019

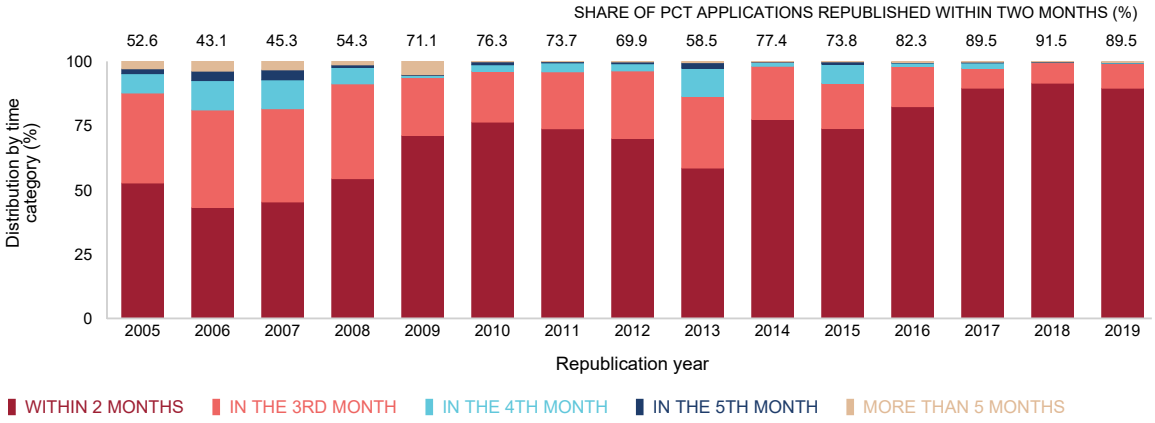


Note: PCT applications and related documents are to be published "promptly" after the expiration of 18 months from the priority date, unless the applicant requests early publication, or the application is withdrawn or considered withdrawn. Timeliness is calculated as the time elapsed between the time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

Source: WIPO Statistics Database, March 2020.

In 2019, around 90% of republications occurred within two months of receipt of an ISR.

C7. Timeliness in republishing PCT applications with international search reports, 2005–2019



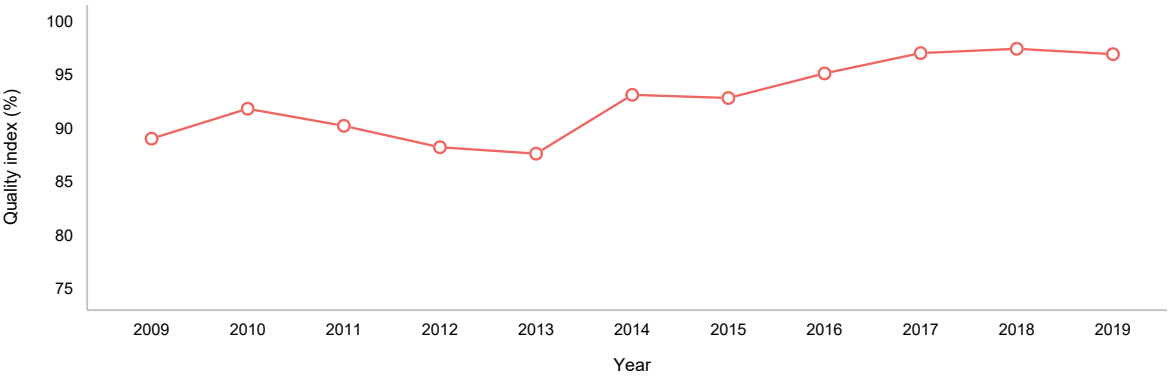
Note: The International Bureau (IB) is required to publish applications even in the absence of an international search report (ISR). In such cases, the application is republished along with an ISR after the report is received. Timeliness is calculated as the time elapsed between the date of receipt of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

Source: WIPO Statistics Database, March 2020.

Efficiency in processing PCT applications by the International Bureau

The overall quality of the formalities examination has improved markedly since 2013.

C8. Formalities examination quality index, 2009–2019

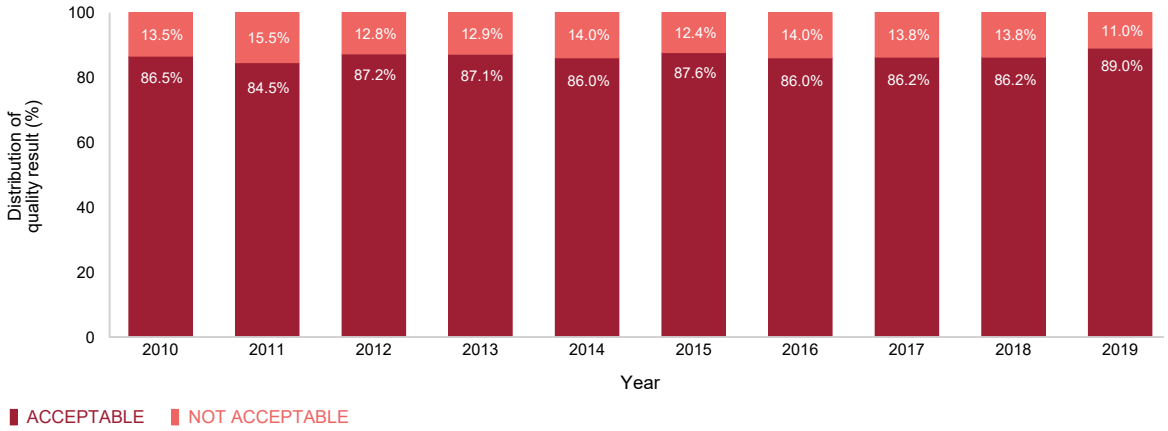


Note: In order to measure the quality of the formalities examination by the International Bureau (IB) in a simple and comprehensive manner, the IB has developed an aggregate quality index, calculated as the average of four lead quality indicators. Three of these are based on the timeliness of key transactions. 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 after the international filing date; (iii) the percentage of republications with an international search report (ISR) within two months from the IB receiving the ISR; and (iv) the percentage of corrections to bibliographic 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 2020.

The proportion of translations that were acceptable was 89% in 2019.

C9. Translation quality indicator, 2010–2019



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 such quality control performed by the IB across all language combinations and document types.

Source: WIPO Statistics Database, March 2020.

Since 2017, over 90% of abstract and report translations have been outsourced.

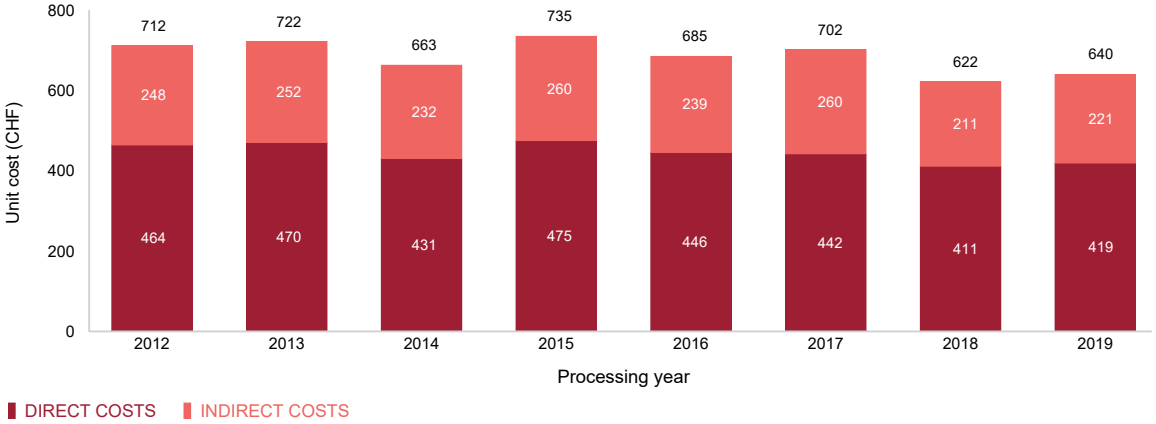
C10. Distribution of translation work, 2009–2019

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 was 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 2020.

The average cost of processing a published PCT application in 2019 was 640 Swiss francs (CHF).

C11. Unit cost of processing a published PCT application, 2012–2019



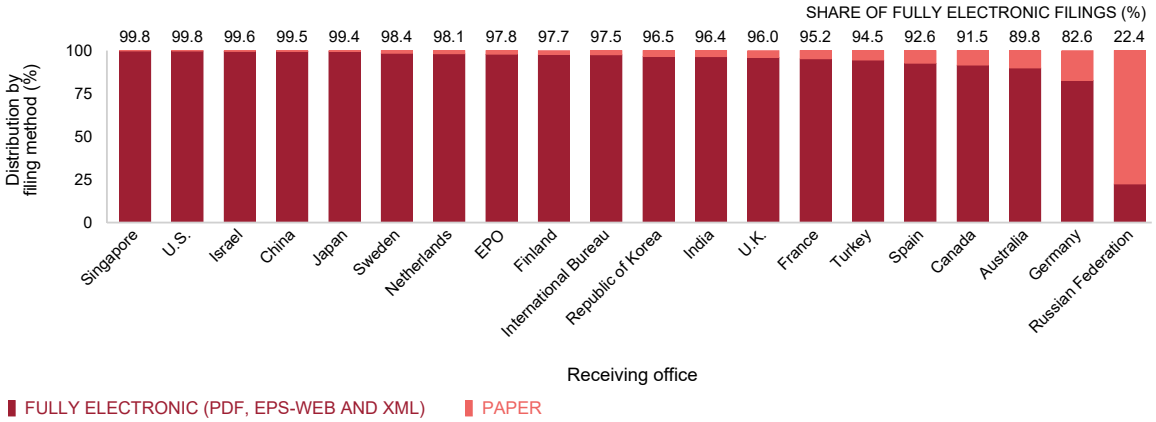
Note: The International Bureau (IB)'s efficiency in processing PCT applications can be measured by the unit cost of processing, defined as the average total cost of publishing a PCT application. Average total cost is determined by total PCT System expenditure, plus a proportion of expenditure on support and management activities. The unit cost includes the cost of all PCT activities, including translation, communication, management, etc. 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 2020.

Receiving offices

The offices of the U.S. and Singapore received 99.8% of their PCT filings electronically.

C12. Distribution of PCT applications by filing medium, top 20 receiving offices, 2019

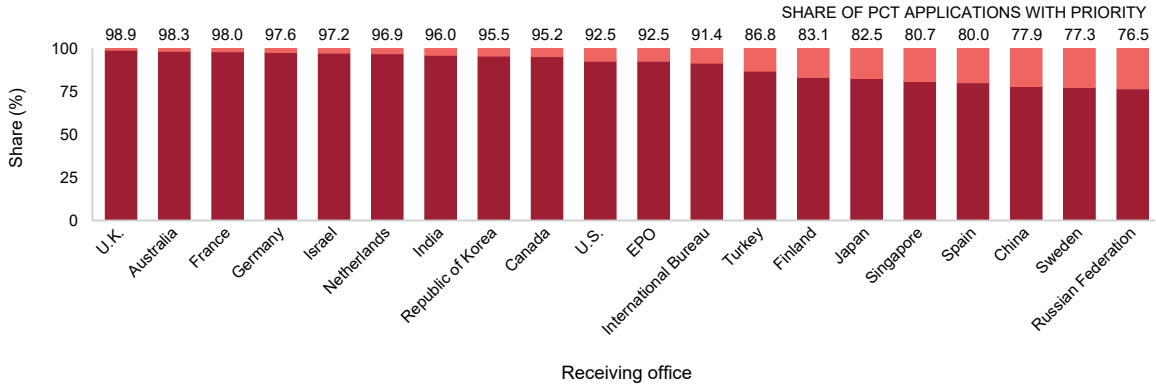


Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2020.

At least 98% of PCT applications filed at the offices of Australia, France and the U.K. were based on priority filings.

C13. Share of PCT applications with priority filings, top 20 receiving offices, 2019

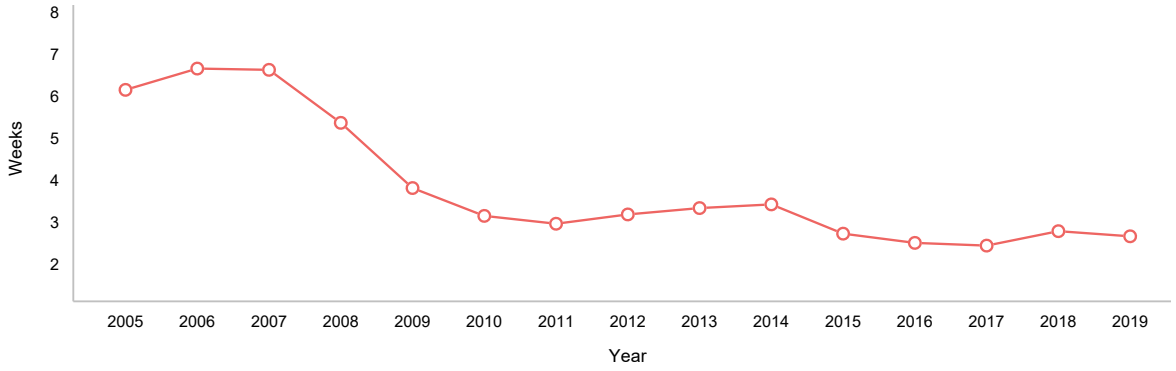


Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2020.

Receiving offices' average timeliness in transmitting PCT applications to the International Bureau was of 2.7 weeks in 2019.

C14. Average timeliness in transmitting PCT applications to the International Bureau, 2005–2019

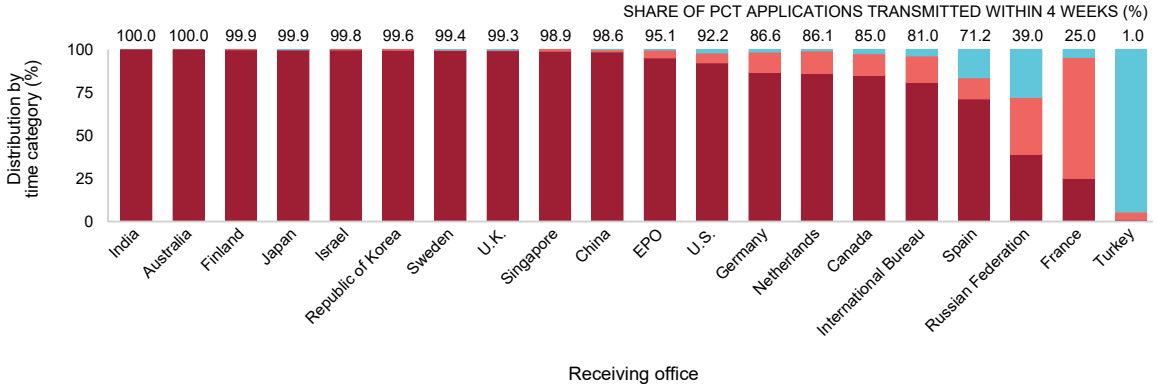


Note: The copy of the PCT application – known as the record copy – sent by the receiving office (RO) must reach the International Bureau (IB) before the expiration of the thirteenth month from the priority date. PCT applications are usually filed before the expiration of 12 months from the priority date. 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 2020.

Australia and India transmitted all of their PCT applications to the International Bureau within four weeks.

C15. Timeliness in transmitting PCT applications to the International Bureau, top 20 receiving offices, 2019

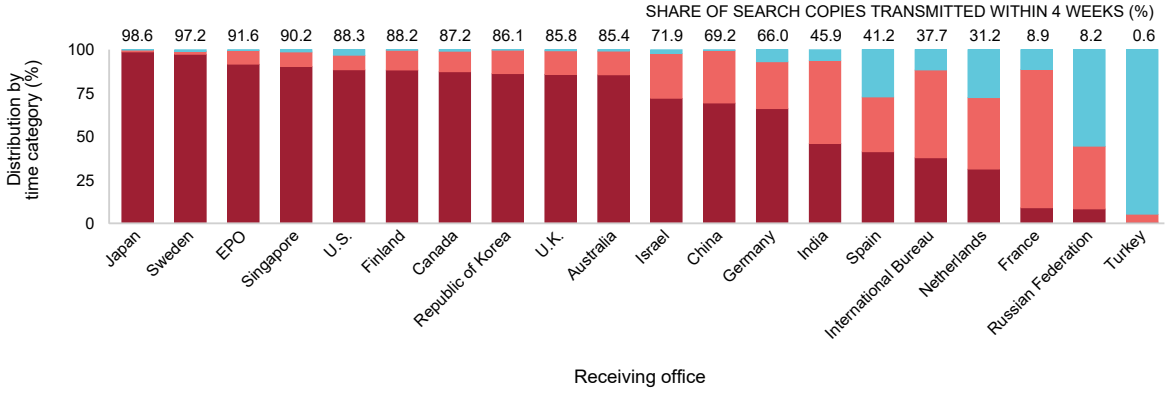


Note: The copy of the PCT application – known as the record copy – sent by the RO must reach the IB before the expiration of the thirteenth month from the priority date. PCT applications are usually filed before the expiration of 12 months from the priority date. Where this occurs, the IB should receive 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 2020.

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

C16. Timeliness in transmitting PCT applications to International Searching Authorities, top 20 receiving offices, 2019



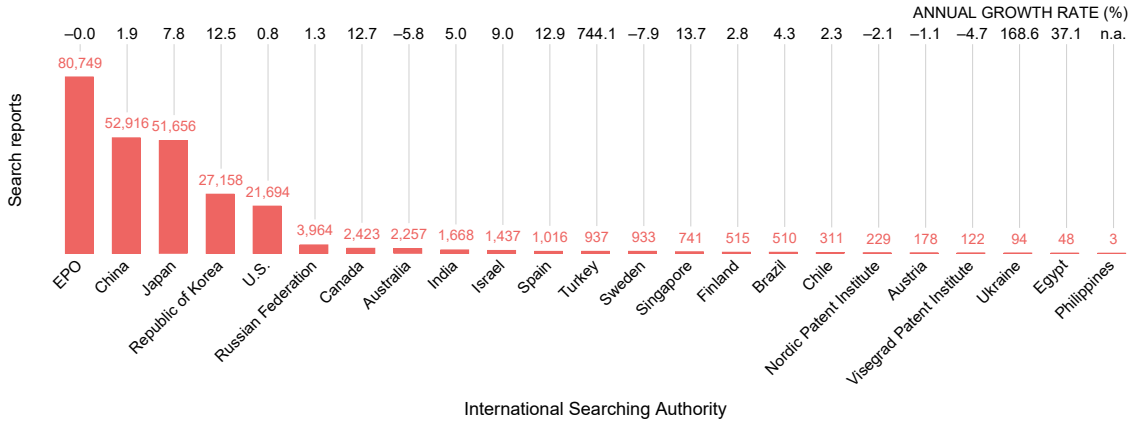
Note: Timeliness is calculated as the time elapsed between the international filing date and the date on which the International Searching Authority (ISA) received the PCT application – known as the search copy – from the receiving office. Dates of search fee payments are not used, due to the unavailability 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 2020.

International Searching Authorities

The European Patent Office issued nearly 80,800 international search reports.

C17. International search reports issued by International Searching Authority, 2019



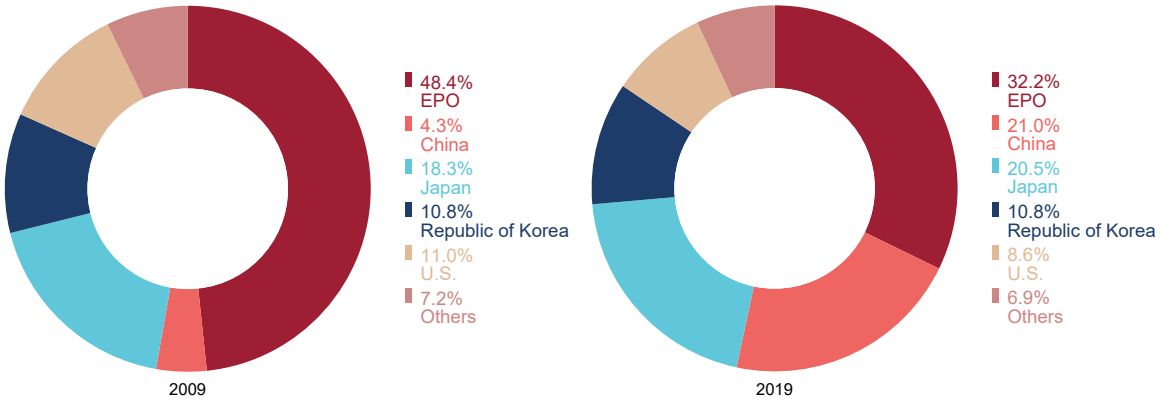
Note: EPO is the European Patent Office.

n.a. indicates not applicable.

Source: WIPO Statistics Database, March 2020.

China, the European Patent Office and Japan, combined, established almost three-quarters of all international search reports issued in 2019.

C18. Distribution of international search reports issued by International Searching Authority, 2009 and 2019

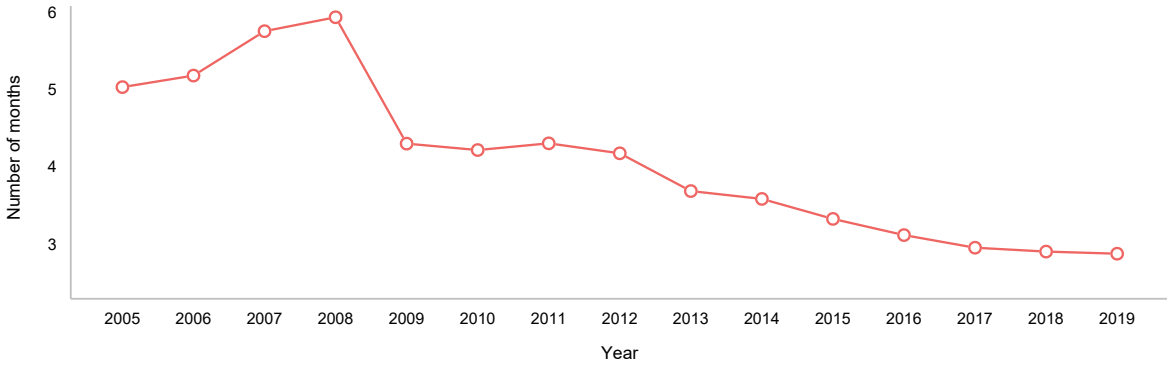


Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2020.

Since 2008, there has been a near continuous improvement in timeliness in transmitting international search reports to the International Bureau, reaching an average time of 2.9 months for 2019.

C19. Average timeliness in transmitting international search reports to the International Bureau, measured from the date of receipt of the search copy, 2005–2019



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 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 2020.

At almost all International Searching Authorities, the vast majority of international search reports that should be transmitted to the International Bureau within three months from the date of receipt of the search copy met this deadline.

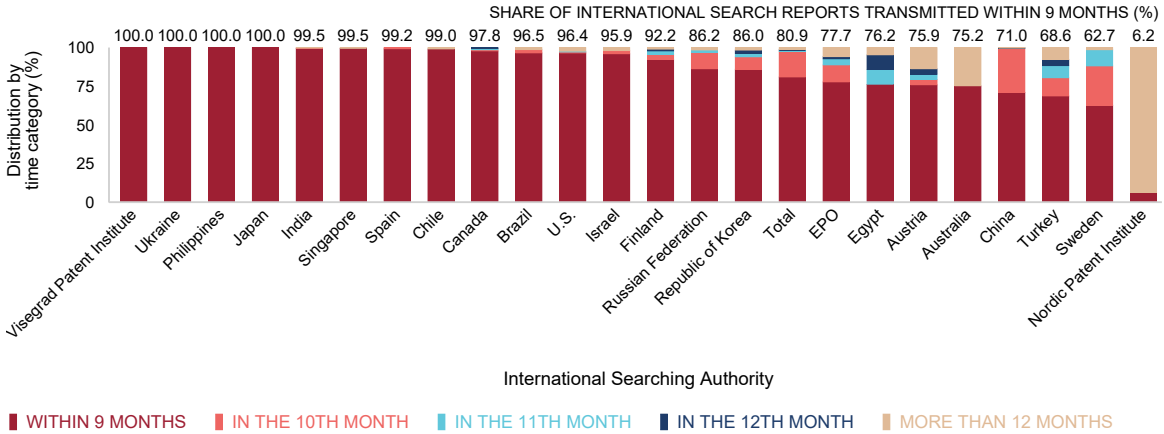
C20. Timeliness in transmitting international search reports to the International Bureau, measured from date of receipt of the search copy by International Searching Authority, 2019

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 2020.

At almost all International Searching Authorities, the bulk of international search reports that should be transmitted to the International Bureau within nine months of the priority date met this deadline.

C21. Timeliness in transmitting international search reports to the International Bureau, measured from priority date by International Searching Authority, 2019

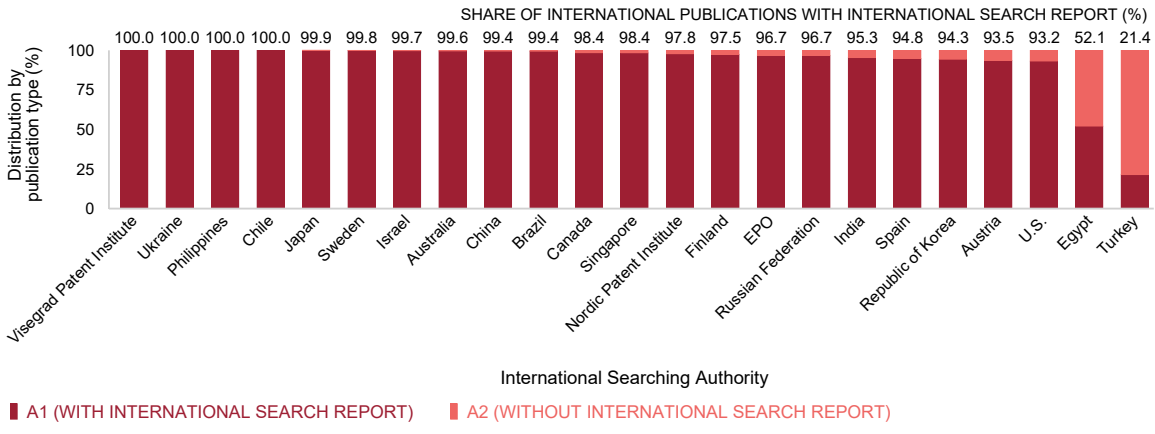


Note: The International Searching Authority (ISA) must establish the international search report (ISR) within three months of receiving a copy of the application – known as the search copy – or nine months from the priority date (or, if no priority is claimed, from the international filing date), whichever 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 2020.

For 10 International Searching Authorities, the share of PCT applications published by the International Bureau together with the international search report they have issued was close to 100%.

C22. Share of published PCT applications with or without an international search reports by International Searching Authority, 2019

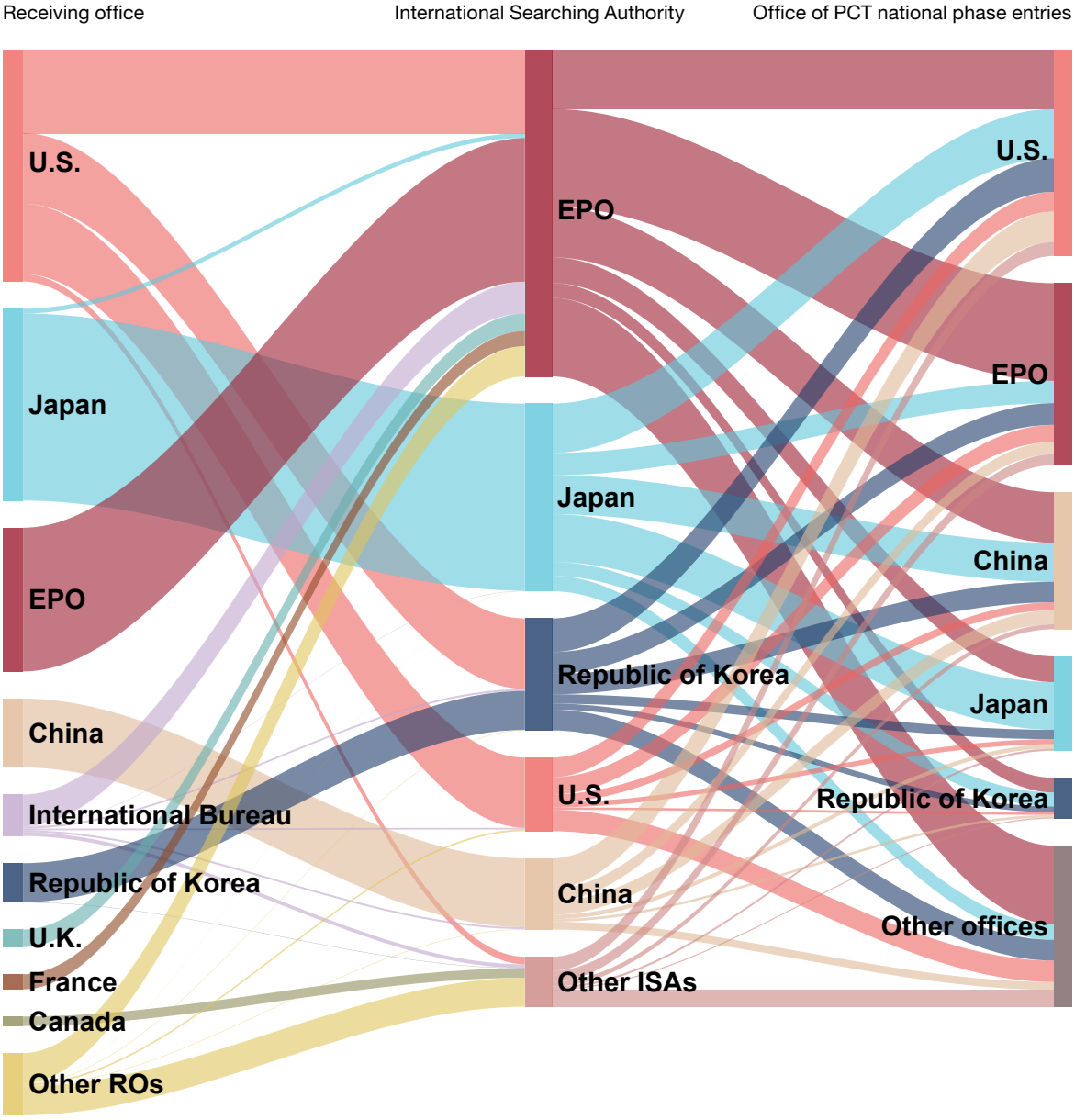


Note: A further measure of the performance of an ISA is the proportion of ISRs that are transmitted to the IB in time for publication with the PCT application, known as A1 publication. EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2020.

Of all PCT applications filed at the USPTO between 2012 and 2014, a large proportion entered the national phase at offices other than the top five based on an international search report produced by the United States Patent and Trademark Office.

C23. Flow of PCT applications transmitted from selected receiving offices to the top five International Searching Authorities and the top five offices of PCT national phase entries, 2012–2014



Note: 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 2020.

Supplementary International Searching Authorities

In 2019, the number of supplementary international search reports nearly doubled compared to 2018.

C24. Distribution of supplementary international search reports by Supplementary International Searching Authority, 2015–2019

Supplementary International Searching Authority	Year				
	2015	2016	2017	2018	2019
Austria	2		1	1	2
European Patent Office	40	44	40	54	94
Nordic Patent Institute					2
Russian Federation	22	3	6		3
Singapore		1		3	4
Sweden				3	1
Turkey				1	2
Ukraine			**2**	**1**	4
Visegrad Patent Institute					2
Total	**64**	**48**	**49**	**63**	**114**

Note: Data for 2019 may be incomplete.

Source: WIPO Statistics Database, March 2020.

International Preliminary Examining Authorities

The European Patent Office issued 55.5% of all international preliminary reports on patentability in 2019.

C25. Distribution of international preliminary reports on patentability by International Preliminary Examining Authority, 2017–2019

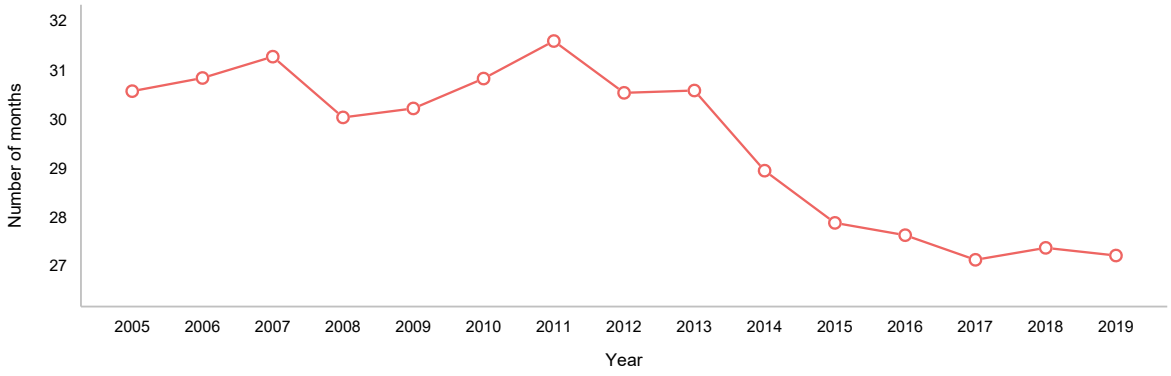
International Preliminary Examining Authority	Year			2019 share (%)	Change from 2018 (%)
	2017	2018	2019		
Australia	545	590	531	4.9	–10.0
Austria	9	3	7	0.1	133.3
Brazil	50	66	61	0.6	–7.6
Canada	213	172	169	1.5	–1.7
Chile	8	16	12	0.1	–25.0
China	316	397	473	4.3	19.1
Egypt	1	2	3	0.0	50.0
European Patent Office	8,360	7,700	6,065	55.5	–21.2
Finland	76	66	55	0.5	–16.7
India	28	41	89	0.8	117.1
Israel	98	68	88	0.8	29.4
Japan	1,945	2,129	1,945	17.8	–8.6
Nordic Patent Institute	32	36	27	0.2	–25.0
Republic of Korea	162	135	131	1.2	–3.0
Russian Federation	51	50	57	0.5	14.0
Singapore	106	111	93	0.9	–16.2
Spain	47	41	37	0.3	–9.8
Sweden	134	127	88	0.8	–30.7
Turkey		4	18	0.2	350.0
Ukraine	4	7	7	0.1	0.0
U.S.	1,059	990	976	8.9	–1.4
Visegrad Patent Institute	3	6	5	0.0	–16.7
Total	**13,247**	**12,757**	**10,937**	**100.0**	**–14.3**

Note: Data for 2019 may be incomplete.

Source: WIPO Statistics Database, March 2020.

Timeliness in transmitting international preliminary reports on patentability to the International Bureau has improved markedly since 2011, reaching an average time of 27.2 months for 2019.

C26. Average timeliness in transmitting international preliminary reports on patentability to the International Bureau, 2005–2019

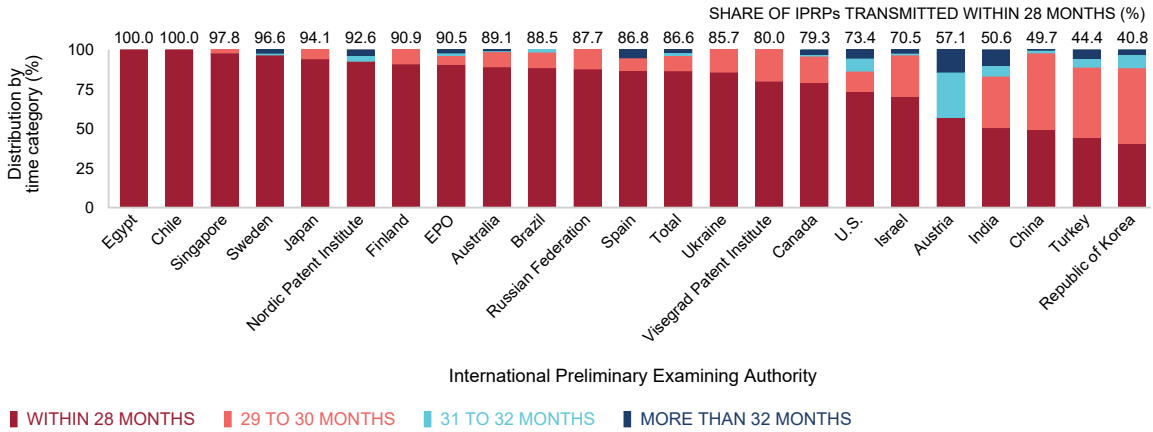


Note: Timeliness is calculated as the time elapsed between the priority date and the date on which the International Bureau received the international preliminary report on patentability (IPRP) from the International Preliminary Examining Authority (IPEA).

Source: WIPO Statistics Database, March 2020.

The offices of Chile and Egypt transmitted all 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, 2019



Note: This figure presents the same timeliness information for 2019 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 2020.

PCT-Patent Prosecution Highway pilots

China received a total of 1,686 PCT-Patent Prosecution Highway (PPH) requests, half of which originated from the European Patent Office.

C28. Distribution of PCT-PPH requests by international authority and office of PCT national phase entry, 2019

	Office of earlier examination														
Office of later examination	Japan	EPO	U.S.	China	Republic of Korea	Canada	Israel	Russian Federation	Australia	Sweden	Finland	Singapore	Spain	Others	Total
Japan	1,501	621	94	86	46	6	5	10	9	1	6	0	0	5	2,390
China	556	857	112	0	81	13	10	26	0	18	8	5	0	0	1,686
Republic of Korea	245	225	95	48	42	4	6	3	2	4	4	2	0	2	682
EPO	317	0	140	65	24	30	12	8	3	0	0	6	0	0	605
Canada	79	197	79	40	29	103	2	9	6	0	1	3	1	2	551
Philippines	301	20	120	0	10	0	0	0	0	0	0	0	0	0	451
Russian Federation	89	135	37	42	14	1	6	0	1	3	1	1	1	0	331
Australia	30	119	83	0	24	5	3	2	0	0	0	1	0	0	267
Mexico	84	67	9	3	0	0	0	0	0	0	0	0	12	0	175
Israel	3	86	18	8	3	0	30	0	2	0	0	0	0	1	151
Malaysia	93	0	0	0	0	0	0	0	0	0	0	0	0	0	93
Colombia	2	23	34	0	0	3	0	0	1	0	0	0	0	5	68
U.K.	13	0	21	4	3	1	2	2	2	0	0	0	0	0	48
Eurasian Patent Organization	10	26	0	0	0	0	0	0	0	0	0	0	0	0	36
Brazil	0	0	5	2	0	0	0	0	0	0	0	0	0	8	15
New Zealand	0	0	8	0	3	0	0	0	1	0	0	0	0	0	12
Singapore	0	9	0	0	0	0	0	0	0	0	0	0	1	0	10
Others	4	0	0	0	0	0	0	1	0	1	0	0	0	2	8
Total	**3,327**	**2,385**	**855**	**298**	**279**	**166**	**76**	**61**	**27**	**27**	**20**	**18**	**15**	**25**	**7,579**

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 2020.

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 2019, 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.

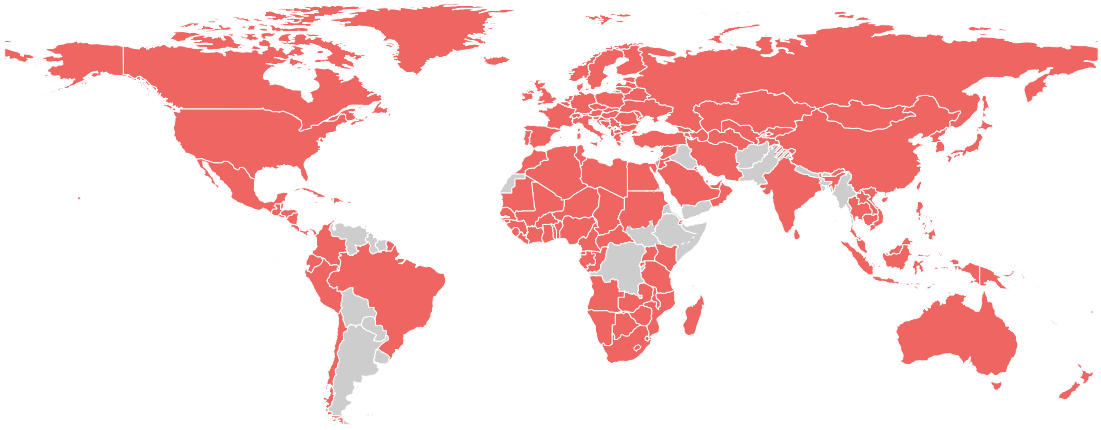
Unlike the Paris Convention route, applicants can delay examination procedures at national patent offices, as well as the payment of associated legal fees and translation costs. By deferring national and regional procedures, applicants gain time to make decisions on the potential commercialization of their invention and the markets in which to seek patent protection.

The reports produced by the international authorities that 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 these 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. 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 examination (IPE) of this application undertaken

Contracting States in 2019



Source: WIPO, March 2020.

by an International Preliminary Examining Authority (IPEA) or take no further action. The applicant generally has at least 30 months from the earliest filing (priority) date 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 to protect an invention in more than one country first file a national or regional patent application with their national or regional patent office. Within 12 months from the filing date of that first application (a time limit set by the Paris Convention), applicants must then 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 the 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 the cost 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. That opinion 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 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 international preliminary examination (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.

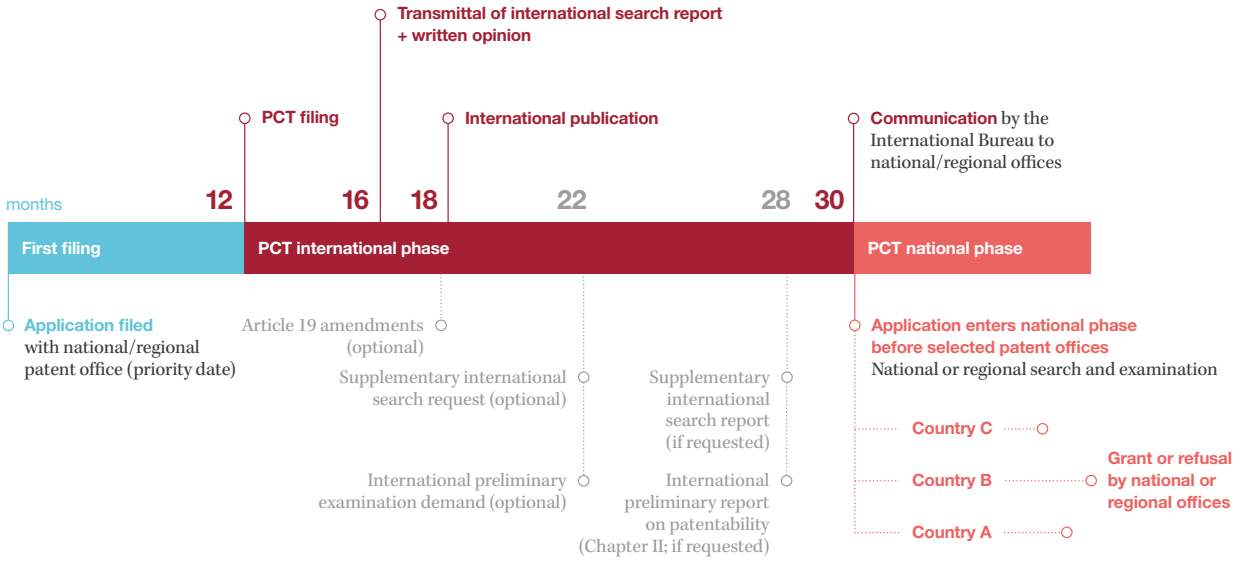
National phase

Applicants have at least 18 months from the filing date of an application before it 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 their national phase applications. Under these agreements, an applicant receiving a written opinion

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

Source: WIPO, April 2019.

or an IPRP indicating that at least one claim in the PCT application has novelty, an inventive step and industrial applicability, may request that other participating patent offices take up the processing of that application out of turn. The 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.

The Global Patent Prosecution Highway (GPPH) was launched in 2014. The GPPH pilot is a single, multilateral agreement between a group of offices. It enables applicants to make a request for 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 2019 are estimates. For top filing countries, estimates are made using several statistical and econometric models. For other countries, the estimates adjust actual received applications according to each country's share of the estimated total PCT filings.

In 2015, the number of published PCT applications decreased by nearly 5%. This was partly due to the fact that in the previous year – as happens every five to six years – the number of weeks of publication was 53 instead of 52, resulting in an increase in the number of publications recorded for 2014. This may affect the annual growth rates presented in indicators based on published PCT applications.

For confidentiality reasons, the lists of top applicants and PCT applications by fields of technology are based on the publication date.

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 2018. Data may be missing for some offices and may be incomplete for some origins. Data are available for most of the larger offices, if not all. With the 2018 data supplied to WIPO corresponding to 99.9% of the world total, only a small proportion of the total is estimated. Missing data are estimated using such methods as 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[2] and groupings by region are based on the United Nations (UN) definition of regions.[3]

The figures in this review are subject to change. Regular updates are available at: *www.wipo.int/ipstats*.

2 Available at: *https://datahelpdesk.worldbank.org/knowledgebase/articles/906519.*

3 Available at: *https://unstats.un.org/unsd/methodology/m49/.* Although the geographical terms used by WIPO may differ slightly from those defined by the UN, the composition of regions and subregions remains identical.

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	authority specified for supplementary search (Supplementary International Searching Authority)
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 that regulate 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 and related documents to designated offices.

Chapter II of the PCT: The provisions in the PCT that regulate 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 the 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 by an applicant domiciled in France at the Japan Patent Office (JPO) is considered an application abroad from the perspective of France. 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 in 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 the 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 the 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 allowed 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 with 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 with the Japan Patent Office (JPO) by an applicant residing in France 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 the 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 are 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 in what is called the "national phase under the PCT".

PATENTSCOPE search system: Provides access, free of charge, to all published PCT applications along with their 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 in the hands 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 PCT and its regulations.

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, to involve an inventive step and to be industrially applicable.

PCT Contracting States

In 2019, the number of Contracting States was of 153. On 2 October 2019, Samoa deposited its instrument of accession to the PCT, thus becoming the 153rd Contracting State of the PCT, and on 2 January 2020, will become bound by the PCT.

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Armenia	El Salvador	Madagascar	Saudi Arabia
Australia	Equatorial Guinea	Malawi	Senegal
Austria	Estonia	Malaysia	Serbia
Azerbaijan	Eswatini	Mali	Seychelles
Bahrain	Finland	Malta	Sierra Leone
Barbados	France	Mauritania	Singapore
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Denmark	Lesotho	Saint Kitts and Nevis	
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