

PCT Yearly Review 2019 – Executive Summary

The International Patent System

2019



This executive brief identifies key trends in the use of the WIPO-administered Patent Cooperation Treaty (PCT). For fuller statistics, see the PCT Yearly Review 2019 – available in English at: www.wipo.int/ipstats

Key numbers for 2018

630,000 (+2.3%)

PCT national phase entries

253,000 (+3.9%)

PCT applications filed

54,341 (+3.8%)

Applicants

127 (+1)

Countries in which PCT applications were filed

57.3% (+1 percentage point)

Share of PCT national phase entries in worldwide non-resident filings

17.1% (+0.8 percentage points)

Share of women among PCT inventors

Note: The latest available year for PCT national phase entry data is 2017. "Applicants" refers to first named applicants in published PCT applications.

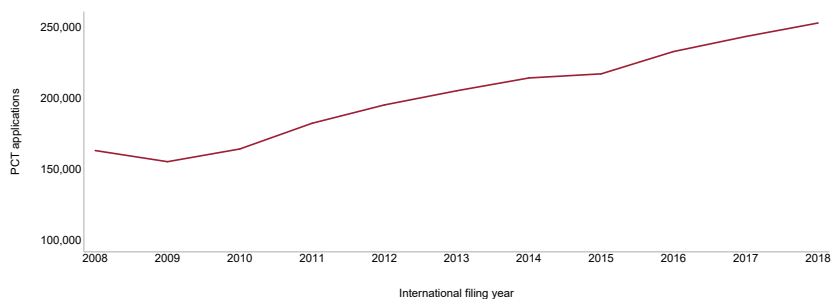
Statistics on the international phase – PCT applications

A new record is set for the number of PCT applications filed

An estimated 253,000 international patent applications (PCT applications) were filed under WIPO's Patent Cooperation Treaty (PCT) in 2018 (figure 1). This represents an annual growth of 3.9% and a ninth consecutive year of growth. Altogether, about 3.7 million PCT applications have been filed since the PCT System became operational in 1978. Over the past 40 years, PCT filings have grown every year except for 2009, when the global financial crisis led to an economic downturn.

The total number of PCT applications grew by 3.9% in 2018.

Figure 1 – Trend in filings of PCT applications, 2008-2018



Source: WIPO Statistics Database, March 2019.

Applicants from 127 different countries filed PCT applications

In 2018, 152 states were members of the PCT and applicants from 127 countries in the six geographical regions filed PCT applications at 84 receiving offices (ROs). Despite this wide geographical spread, most filing activity is concentrated in a small number of economies.

Combined, the top 10 ROs accounted for 93.8% of applications received in 2018. With 55,330 filings and 55,211 filings, respectively, the United States Patent and Trademark Office (USPTO) and the National Intellectual Property Administration of the People’s Republic of China (CNIPA) received the highest numbers of PCT applications. They were followed by the Japan Patent Office (JPO) (48,630), the European Patent Office (EPO) (37,975), the Korean Intellectual Property Office (KIPO) (17,002) and the International Bureau (IB) of WIPO (12,259).

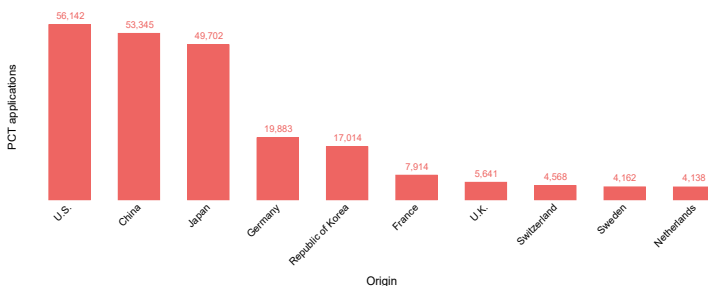
Applicants from the U.S. remained the largest users of the PCT System

Applicants residing in the United States of America (U.S.) filed the most PCT applications in 2018, with 56,142 applications. U.S. applicants were followed by applicants from China (53,345), Japan (49,702), Germany (19,883) and the Republic of Korea (17,014) (figure 2). Combined, the top five countries accounted for 77.5% of all PCT applications filed in 2018. Driven mainly by a rapid increase in filings by applicants from China and Japan, the combined share of the top five has increased every year since 2009, when it was 69.2%.

The top 20 origins included 17 high-income countries – mostly European – and three middle-income countries, namely, China, India (2,013 applications) and Turkey (1,578). Outside the top 20 origins, other large middle-income economies with notable numbers of PCT applications were the Russian Federation (963), Brazil (619), Mexico (274) and South Africa (274).

Applicants residing in China, Japan and the U.S. filed by far the most PCT applications.

Figure 2 – PCT applications for the top 10 origins, 2018



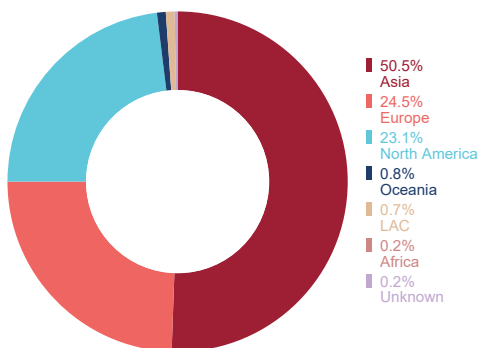
Source: WIPO Statistics Database, March 2019.

The majority of PCT filings originated from Asia

For the first time since the PCT System came into force in 1978, applicants originating from a single region accounted for the majority of filings. Countries located in Asia accounted for 50.5% of all PCT applications in 2018 (figure 3). Applicants in Europe (24.5%) and North America (23.1%) also made a substantial proportion of the filings. The combined share for Africa, Latin America and the Caribbean (LAC) and Oceania amounted to 1.7% of total PCT filings. Asia's share has increased every year since 1993 and has grown from 28.9% in 2008 to 50.5% in 2018, primarily due to increases in filings from China, Japan and the Republic of Korea.

Asia accounted for the majority of PCT applications filed.

Figure 3 – Distribution of PCT applications by region, 2018



Source: WIPO Statistics Database, March 2019.

The business sector accounted for about 85% of all PCT applications

In 2018, the IB published almost 237,400 PCT applications filed by 54,341 applicants. This represents a 6.2% increase in published applications on 2017. The business sector accounted for 85.3% of all published PCT applications, followed by individuals (7.5%), the university sector (5.4%) and the government and public research organization (PRO) sector (1.9%).

The business sector accounted for the majority of published applications in each of the top 20 origins from the high-income group. Of the top 20 origins from the middle-income category, the business sector accounted for the majority of published applications in seven countries and individual applicants filed the most in eight countries. In the Islamic Republic of Iran (93.3%) and Egypt (91.4%), individual applicants accounted for the vast majority of published applications.

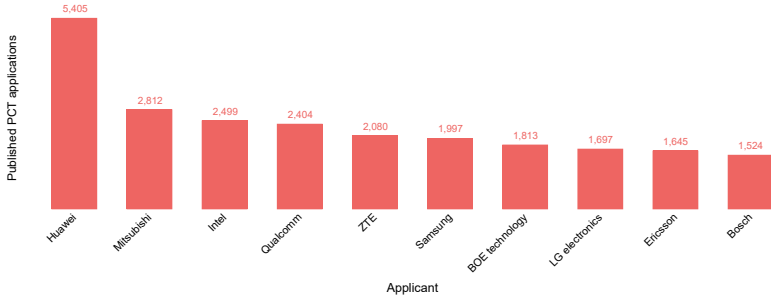
Huawei remained the top PCT applicant

In 2018, Huawei Technologies of China was the top PCT applicant, for the fourth time since 2014 (figure 4). With 5,405 published PCT applications, Huawei Technologies became the first company to have had more than 5,000 PCT applications published within the period of a year. With 2,812 published PCT applications, Mitsubishi Electric Corporation of Japan moved up two spots to rank second thanks to an increase of 291 published applications compared to 2017. These two companies were followed by Intel Corporation (2,499) and Qualcomm Incorporated (2,404), both U.S.-based companies.

Companies active in digital communication head the list of top 50 PCT filers in 2018. Of the top 10 applicants, seven filed mainly in digital communication, namely, Ericsson, Huawei Technologies, Intel Corporation, LG Electronics, Qualcomm Incorporated, Samsung Electronics and ZTE Corporation.

Huawei Technologies set a new record in the number of applications published by one applicant in a single year.

Figure 4 – Top 10 PCT applicants, 2018



Source: WIPO Statistics Database, March 2019.

Of the top 10 universities, five are from the U.S. and four from China

With 501 published PCT applications, the University of California remained the largest user of the PCT System among educational institutions in 2018. The Massachusetts Institute of Technology (216) retained its second spot, despite a drop in published applications of 63 compared to 2017. It was followed by the Shenzhen University (201), the South China University of Technology (170) and Harvard University (169). This is the first time that Chinese universities have ranked among the top 10. Universities based in the U.S. have traditionally largely dominated the top 10 ranking.

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

With 345 published applications, the German-based Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung heads the list of the top 30 government and PRO applicants in 2018, followed by the China Academy of Telecommunications Technology (303). These two PROs overtook the Commissariat à l'Énergie Atomique et aux Énergies Alternatives (289) of France, which had been the top filer for seven consecutive years until 2017.

Digital communication became the main field of technology in PCT applications

Digital communication (20,271) regained the top position that it held in 2016 by being the most frequently featured technology field in published PCT applications in 2018. It was followed by computer technology (19,152), electrical machinery, apparatus, energy (16,577), medical technology (15,826) and transport (10,867). These top five fields of technology, combined, accounted for more than one third (34.9%) of all published PCT applications made in 2018.

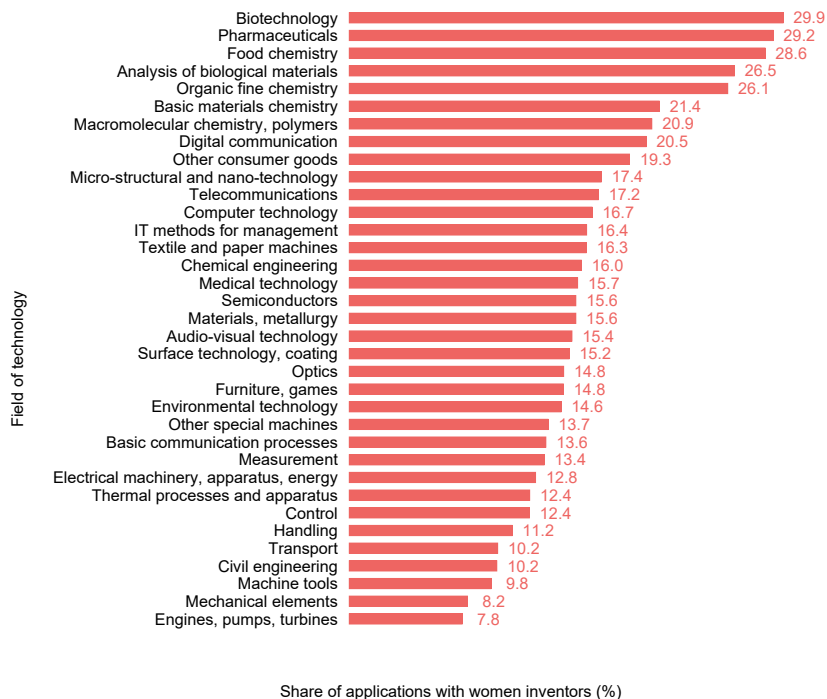
Only 17.1% of inventors listed in PCT applications were women

In 2018, women accounted for 17.1% of all inventors listed in PCT applications and men the remaining 82.9%. Since 2005, this share has continuously increased, from 11.8% to 17.1%. Moreover, the share of women inventors has increased in each of the world's geographical regions over the past five years, except for Africa (13.1%), where it decreased slightly by 0.5 percentage points. The gender gap among PCT inventors varies considerably across countries. Within the top 20 origins, China (28.9%), the Republic of Korea (26.8%) and Spain (24.4%) had the highest shares of inventors who were women in 2018.

Fields of technology related to the life sciences had comparatively high shares of women among PCT inventors (figure 5). Women represented more than a quarter of inventors listed in PCT applications in the fields of biotechnology (29.9%), pharmaceuticals (29.2%), food chemistry (28.6%), analysis of biological materials (26.5%) and organic fine chemistry (26.1%).

Women inventors represented a relatively high proportion of inventors in biotechnology, food chemistry and pharmaceuticals.

Figure 5 – Share of women among listed inventors in PCT applications by field of technology, 2018



Source: WIPO Statistics Database, March 2019.

Statistics on PCT National Phase Entries

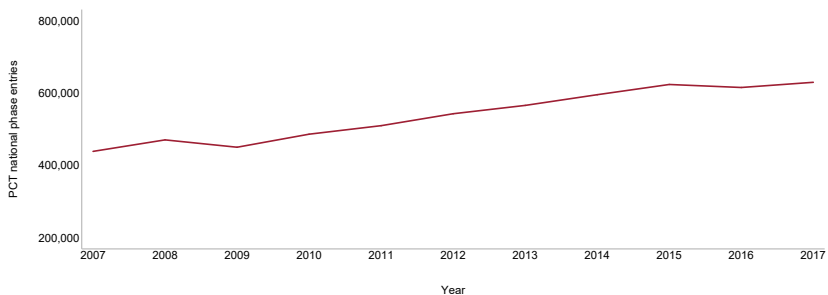
After a slight decline in 2016, growth in PCT national phase entries resumes

An estimated 630,000 PCT national phase entries (NPEs) were initiated worldwide in 2017 – the latest year for which NPEs data are available. This represents an increase of 2.3% on the previous year (figure 6). NPEs decreased in only three of the past 15 years, 2003, 2009 and 2016. Other years saw increases of between 4.3% and 11%, except for 2017, which registered a comparatively moderate growth rate of 2.3%. In 2017, the number of NPEs originating from several European countries fell and those from China and the Republic of Korea experienced growth slower than seen in recent years.

NPEs initiated by non-resident applicants represented about 83% of total NPEs in 2017. This share has tended to decrease slightly in recent years, mainly due to a strong growth in resident NPEs at the JPO and at the USPTO. In 2017, resident NPEs accounted for 38.8% and 21.5% of total NPEs at these respective offices.

In 2017, the number of PCT national phase entries increased by 2.3%.

Figure 6 – Trend in PCT national phase entries, 2007-2017



Source: WIPO Statistics Database, March 2019.

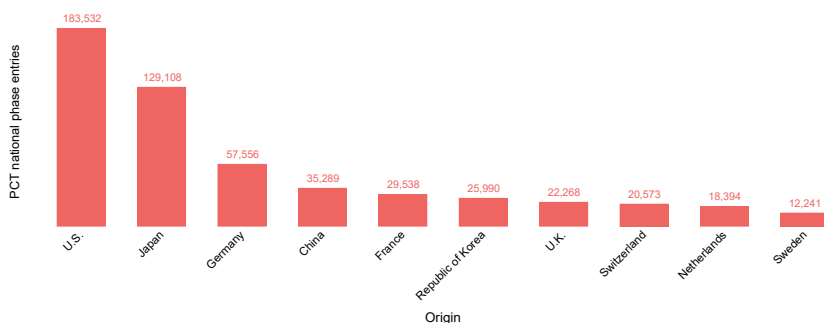
Half of PCT NPEs initiated worldwide originated from applicants based in either Japan or the U.S.

In 2017, applicants residing in the U.S. initiated 183,532 NPEs and those based in Japan 129,108 (figure 7). They were followed by applicants from Germany (57,556), China (35,289) and France (29,538). The top two countries, combined, accounted for 49.6% of all NPEs initiated in 2017, and the top five, combined, for 69.1% of total NPEs. Beside this high concentration among just a few origins, applicants from over 130 countries initiated NPEs in 2017.

Of the 154,403 NPEs received at the USPTO, applicants residing in Japan (21.6%) and in the U.S. (21.5%) each accounted for around one-fifth of the total. U.S.-based applicants accounted for the largest shares of NPEs at 13 of the top 20 offices, and applicants residing in Japan accounted for the largest shares at the remaining 7 offices. Specifically, U.S.-based applicants accounted for more than 45% of all NPEs initiated at the offices of Australia, Canada, Israel and Mexico. Japan-based applicants accounted for more than 45% of all NPEs initiated at the offices of Germany and Thailand.

Applications originating from Japan and the U.S. accounted for 49.6% of all NPEs.

Figure 7 – PCT national phase entries for the top 10 origins, 2017



Source: WIPO Statistics Database, March 2019.

The PCT System accounted for 57.3% of all non-resident filings in 2017

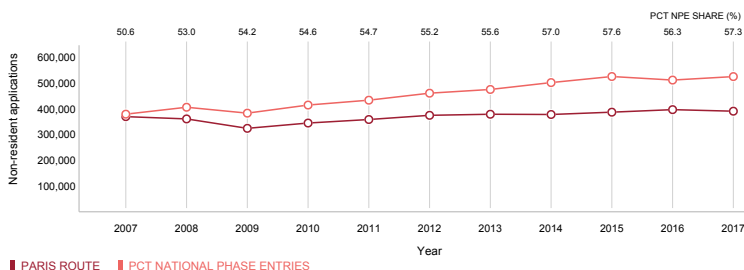
An estimated 526,000 non-resident NPEs were initiated worldwide in 2017 (the PCT route). By comparison, about 391,400 patent applications were filed directly at offices by non-resident applicants (the Paris route). Thus, 57.3% of non-resident applications were filed via the PCT route in 2017. This is one percentage point more than in 2016 (56.3%) and much higher than the 2003 share (46.3%). The long-term data show that the number of filings via both routes has trended upward, although the PCT route has grown at the faster pace (figure 8).

The increase in the share of non-resident NPEs – rising from 56.3% in 2016 to 57.3% in 2017 – was due to a fall in non-resident direct filings (-1.5%) in combination with an increase in non-resident NPEs (+2.6%). The 2016 share (56.3%) was also much lower than the 2015 share (57.6%). Non-resident NPEs initiated by U.S. applicants increased sharply in 2015 (+12.3%) and then fell drastically in 2016 (-12.9%), causing an overall decrease in NPEs. It is most likely that the peak in 2015 was a consequence of the spike in the number of PCT international applications filed by U.S. applicants in 2014 due to the enactment of the Leahy-Smith America Invents Act.

When looking at the top 20 origins filing most applications abroad, applicants from Sweden (72.2%), the Netherlands (70%), Australia (69.3%) and the U.S. (68.5%) were the ones who relied most heavily on the PCT route when filing internationally. Those from India (31%), the Republic of Korea (37.3%) and Canada (37.6%) had the lowest shares of filings abroad using the PCT route.

In 2017, PCT national phase entries accounted for 57.3% of total non-resident filings.

Figure 8 – Trend in non-resident applications by filing route, 2007-2017



Source: WIPO Statistics Database, March 2019.

Statistics on the Performance of the PCT System

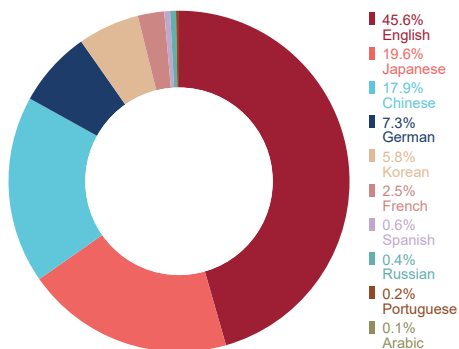
The International Bureau

Around 46% of PCT applications were published in English

In 2018, 45.6% of all PCT applications were published in English, followed by Japanese (19.6%) and Chinese (17.9%). These three languages, combined, represented 83.1% of all applications published (figure 9). Whereas the combined share of these three languages has remained relatively stable between 2013 and 2018, their respective contributions have changed drastically. In 2013, the bulk of applications were published in English (53.5%) and Chinese accounted for a comparatively low share (8%) of total publications. While the use of Japanese has remained stable over this period, under half of publications in 2018 were published in English.

Around 46% of PCT applications were published in English.

Figure 9 – Distribution of PCT applications by language and year of publication, 2018



Source: WIPO Statistics Database, March 2019.

Applicants used ePCT to file nearly 10% of PCT applications

In 2018, applicants filed about 24,070 PCT applications using the ePCT-filing portal. This represents a 44.1% increase on the previous year and corresponds to 9.5% of the total of 253,000 PCT applications filed in 2018. Applicants from the U.S. (3,873) filed the most applications via the ePCT portal, followed by those from Australia (1,482) and India (1,240).

The IB examined 98% of all PCT applications within a month of receipt

In 2018, the IB performed a formalities examination of 72.8% of PCT applications within a week of receipt of the application, and had processed almost 98% of them within a month.

Nearly 77% of publications occurred during the week following the expiration of the 18-month period from the priority date, and almost all publications (99.5%) occurred within no more than two weeks of that period. When the international search report (ISR) is unavailable at the time of publication, an application is republished together with the ISR once it is available. The proportion of applications republished within two months of the receipt of the ISR was 91.5%. Nearly all replications (99.5%) occurred within three months of receipt of the ISRs at the IB.

The receiving offices

Nineteen of the top 20 offices received more than 80% of applications electronically

Of the top 20 ROs, the CNIPA, the JPO, the USPTO and the office of Israel received more than 99% of their PCT applications electronically in 2018. The share of electronic filings exceeded 80% for 19 of the top 20 offices. The only exception was the office of the Russian Federation, which received 81.9% of PCT applications on paper.

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

On average, in 2018, ROs transmitted their PCT applications to the IB within 2.8 weeks of the international filing date. Australia, Finland and India transmitted all their applications to the IB within four weeks of this date. The offices of Israel, Japan, the Republic of Korea, Sweden and the United Kingdom (U.K.) had transmittal rates above 99% also. In contrast, the offices of Spain (1.1%) and Turkey (2.2%) transmitted a very small proportion of their applications to the IB within four weeks of the international filing date.

International searching authorities

The EPO issued one third of all international search reports

In 2018, almost 242,000 ISRs were issued by the 22 existing international searching authorities (ISAs). The EPO issued 80,780 ISRs and was followed by the CNIPA (52,038), which overtook the JPO (47,934) to become the second ISA in terms of ISRs issued in 2018 (figure 10). KIPO (24,138) and the USPTO (21,109) ranked, in fourth and fifth positions, respectively. While the EPO accounted for 33.4% of all ISRs issued in 2018, the top five ISAs, combined, issued 93.4% of total ISRs.

Of all ISRs that were required to be transmitted to the IB within three months from the date of receipt of the application, 85% were transmitted within this timeframe in 2018. The JPO, the Visegrad Patent Institute and the offices of Chile and India transmitted more than 99% of such ISRs within three months. As for those that were required to be transmitted within 9 months from the priority date, 81.7% were transmitted within this timeframe. The office of Ukraine and the Visegrad Patent Institute transmitted all ISRs within 9 months in 2018.

The European Patent Office issued nearly 81,000 international search reports.

Figure 10 – International search reports issued by the top 10 international searching authorities, 2018



Source: WIPO Statistics Database, March 2019.



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