Executive Summary
PCT Yearly Review 2022

WIPO

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The International Patent System

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 2022* – available in English at: *www.wipo.int/ipstats*

Key numbers for 2021

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

277,500 (+0.9%)
PCT applications filed

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

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

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

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

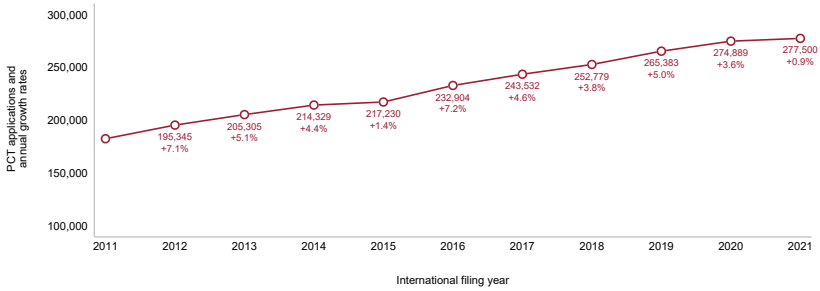
Statistics on the international phase – PCT applications

PCT applications filed grew by a modest 0.9% in 2021

An estimated 277,500 international patent applications (PCT applications) were filed under WIPO's Patent Cooperation Treaty (PCT) in 2021 (figure 1). Despite the COVID-19 pandemic disruption affecting economies worldwide in 2021, there was a slight increase of 0.9% in the number of PCT applications filed compared to 2020.

About 277,500 PCT applications were filed in 2021.

Figure 1. Trend in filings of PCT applications, 2011–2021



Source: WIPO Statistics Database, March 2022.

Applicants from 129 countries filed PCT applications in 2021

In 2021, 153 states were members of the PCT and applicants from 129 countries filed PCT applications at 83 receiving offices (ROs). Despite such a broad geographical spread, most filing activity was concentrated in a small number of economies. Combined, the top 10 ROs accounted for 94.1% of applications filed in 2021. With 73,434 filings, the China National Intellectual Property Administration (CNIPA) received the highest number of PCT applications. It was followed by the United States Patent and Trademark Office (USPTO), the Japan Patent Office (JPO), the European Patent Office (EPO), the Korean Intellectual Property Office (KIPO) and the International Bureau (IB) of WIPO.

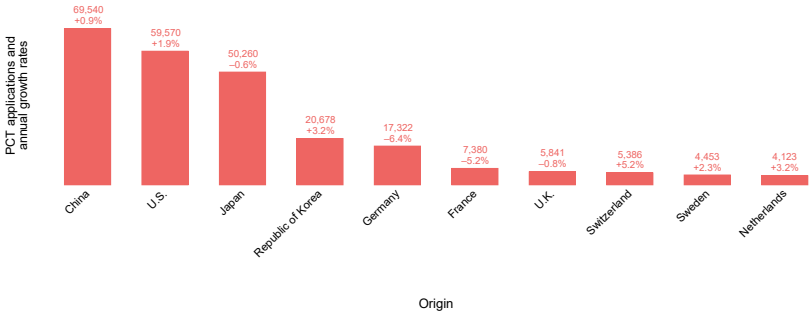
Applicants from China filed almost 70,000 PCT applications in 2021

With 69,540 PCT applications, applicants residing in China filed the most applications in 2021. They were followed by applicants from the United States of America (U.S.) and Japan (figure 2). Combined with applicants from Germany and the Republic of Korea, these top five countries accounted for 78.3% of all PCT applications filed in 2021. Driven mainly by a rapid increase in filings by applicants from China, Japan, the U.S. and the Republic of Korea, the combined share of the top five users of the PCT System has increased by 4.3 percentage points over the past decade.

The top 20 origins included 17 high-income countries – mostly European – and three middle-income economies, namely, China, India and Türkiye. 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, where filings ranged from between 200 and 1,100. Applicants from the Syrian Arab Republic and Uganda accounted for most of the 17 applications filed by applicants residing in low-income countries.

Among the top 10 origins, Switzerland's growth was the sharpest recorded in 2021.

Figure 2. PCT applications for the top 10 origins, 2021



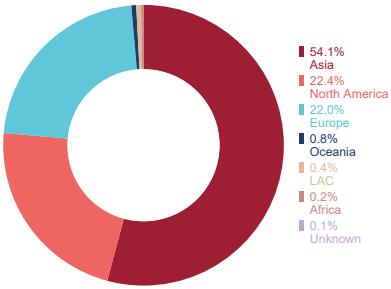
Source: WIPO Statistics Database, March 2022.

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

Countries located in Asia accounted for 54.1% of all PCT applications filed in 2021 (figure 3). Asia's share grew from 38.5% in 2011 to 54.1% in 2021, primarily due to increased filings from China. North America was the second ranked region in terms of PCT applications, followed closely by Europe.

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

Figure 3. Distribution of PCT applications by region, 2021



Note: LAC is Latin America and the Caribbean.

Source: WIPO Statistics Database, March 2022.

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

In 2021, the business sector accounted for 87.1% of all published PCT applications, followed by the university sector (6.1%), individuals (5%) and the government and public research organization (PRO) sector (1.8%).

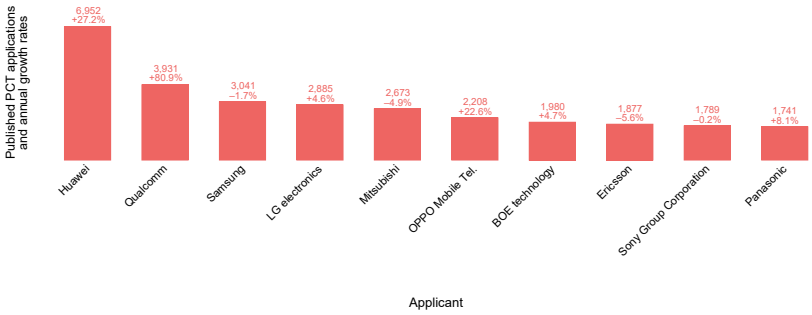
The business sector accounted for a majority of published applications received from each top 20 origin in the high-income group. This sector's share was especially high for Sweden (98%) and Japan (96%). Of the top 20 origins from the middle-income category, the business sector accounted for a majority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

Huawei maintained its top position in 2021

China-based telecoms giant Huawei Technologies topped the ranking of PCT applicants for a fifth consecutive year, with 6,952 PCT applications published in 2021 (figure 4). Qualcomm Inc. of the U.S. ranked in second position, followed by Samsung Electronics of the Republic of Korea, LG Electronics Inc. of the Republic of Korea and Mitsubishi Electric Corp. of Japan. Of the top 10 applicants, six filed mainly in digital communication.

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

Figure 4. Top 10 PCT applicants, 2021



Source: WIPO Statistics Database, March 2022.

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

Among educational institutions, with 551 published applications, the University of California remained the biggest user of the PCT System in 2021. Zhejiang University ranked second, followed by the Massachusetts Institute of Technology, Tsinghua University and Stanford University. Four of the five top 50 universities that more than doubled their published applications in 2021 were from China.

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

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

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

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

Computer technology remained the main technology field in PCT applications

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

Six of the top 10 technology fields grew in 2021, with pharmaceuticals (+12.8%) reporting the fastest rate of growth, followed by biotechnology (+9.5%), computer technology (+7.2%) and digital communication (+6.9%).

Only 16.5% of inventors were listed as women in 2021

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

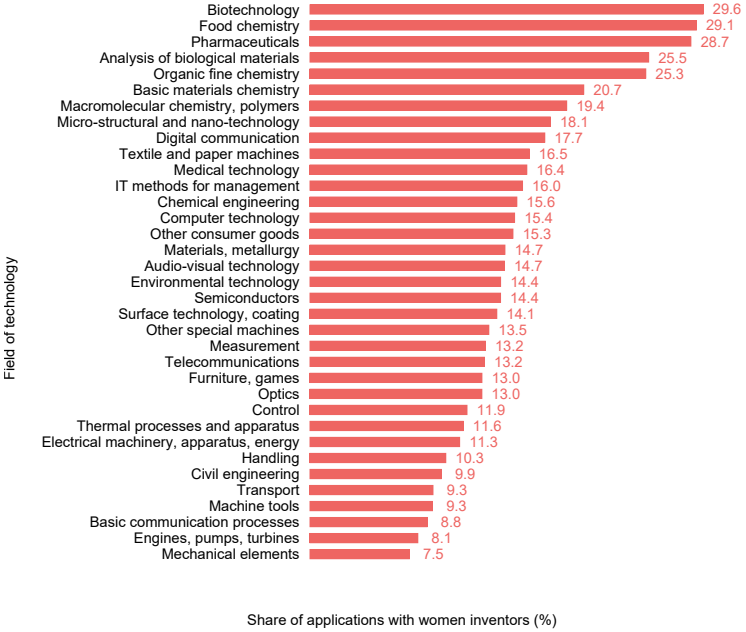
The share of women inventors has grown in each of the world's geographical regions over the past 10 years. In 2021, the Latin America and the Caribbean (LAC) region (22.9%) had the largest proportion of women among PCT inventors, followed by Asia (17.3%), North America (16.4%), Europe (14.8%), Oceania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

Of the top 20 origins, China, Spain and Türkiye had the largest proportion of inventors who were women in 2021. They were the only three origins among the top 20 where at least one-fifth of inventors were women.

Technology fields relating to the life sciences had comparatively higher shares of women among inventors listed in PCT applications published between 2019 and 2021 (figure 5). Overall, women represented more than one-quarter of inventors in the fields of analysis of biological materials, biotechnology, food chemistry, organic fine chemistry, and pharmaceuticals.

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

Figure 5. Share of women among listed inventors in PCT applications by field of technology, 2019–2021



Source: WIPO Statistics Database, March 2022.

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

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

Statistics on PCT national phase entries

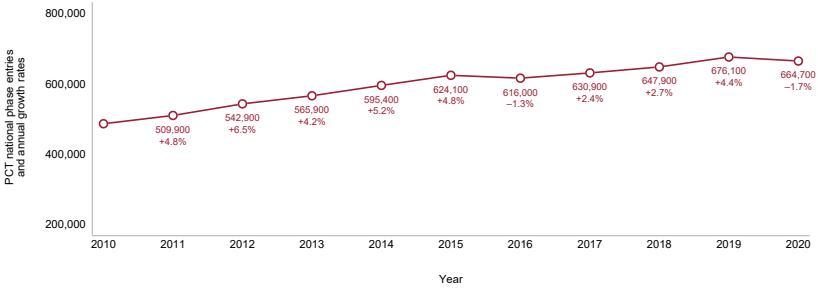
PCT national phase entries dropped by 1.7% in 2020

PCT national phase entries (NPEs) initiated worldwide amounted to 664,700 applications in 2020 – the latest year for which data are available –, representing a 1.7% decline on the previous year (figure 6). This is the first decline since 2016. The drop in 2020 was mostly due to fewer NPEs being initiated by applicants residing in Germany, Japan and the U.S. This decrease masks a trend showing sustained growth over time. Over the past 16 years, the number of NPEs initiated worldwide has doubled. Most of this increase has originated from Japan and the U.S.

NPEs initiated by non-resident applicants represented 83.2% of all NPEs in 2020. This share has tended to decrease slightly over the past decade, mainly due to a growth in resident NPEs initiated at the JPO and at the USPTO.

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

Figure 6. Trend in PCT national phase entries, 2010–2020



Source: WIPO Statistics Database, March 2022.

Asia remained the region where most PCT NPEs were initiated worldwide

For a second consecutive year, applicants from Asia initiated the largest proportion of NPEs globally, accounting for 36.2% of all NPEs initiated worldwide in 2020. Asia was followed by Europe (31.1%) and North America (29.2%). The combined share of applicants located in Africa, LAC and Oceania amounted to 2%.

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

In 2020, applicants residing in the U.S. initiated 184,452 NPEs. They were followed by applicants from Japan, Germany, China and the Republic of Korea (figure 7). The U.S. and Japan combined accounted for nearly half of all NPEs initiated worldwide, with 27.7% and 20.2% of total NPEs, respectively. Despite the high concentration of NPEs among just a few origins, applicants from over 135 countries initiated NPEs in 2020.

Seven of the top 10 origins experienced a fall in PCT national phase entries in 2020.

Figure 7. PCT national phase entries for the top 10 origins, 2020

Source: WIPO Statistics Database, March 2022.

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

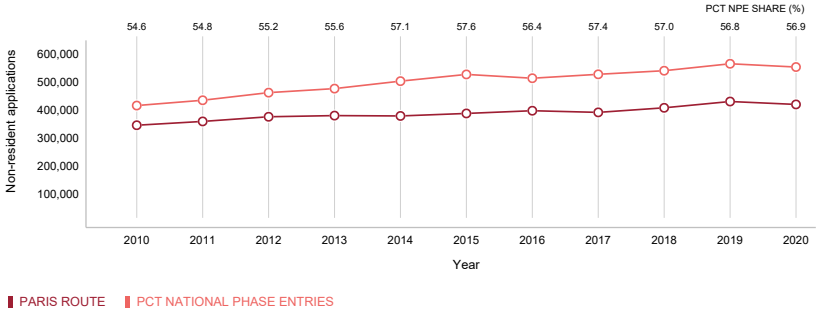
In 2020, an estimated 552,900 non-resident NPEs were initiated worldwide via the PCT route. By comparison, non-resident applicants filed about 419,400 patent applications directly at offices (i.e., via the Paris route). This means that 56.9% of all non-resident patent applications were filed via the PCT route in 2020 (figure 8). This share increased marginally compared to the previous year by 0.1 percentage points.

Of the top 20 offices in terms of non-resident patent applications, 17 received a majority of non-resident filings via the PCT route, with the offices of Brazil and Israel having shares above 93%.

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

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

Figure 8. Trend in non-resident applications by filing route, 2010–2020



Source: WIPO Statistics Database, March 2022.

Statistics on the performance of the PCT System

The International Bureau

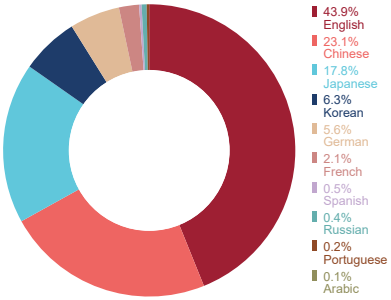
About 44% of all PCT applications were published in English in 2021

In 2021, almost 44% of all PCT applications were published in English, followed by Chinese and Japanese (figure 9). The seven remaining languages of publication combined accounted for 15.1% of the total.

The share of applications filed in Chinese has increased sharply over the past 15 years, rising from 2.5% in 2007 to 23.1% in 2021. Conversely, the share of applications filed in English has dropped considerably since 2007, when they accounted for almost two-thirds of total filings.

Almost 44% of PCT applications were published in English.

Figure 9. Distribution of PCT applications by language of publication, 2021



Source: WIPO Statistics Database, March 2022.

ePCT-filings increased by 36.4% in 2021

In 2021, 76 ROs accepted ePCT-filings and applicants filed 60,784 PCT applications using that online service. This represents an increase of 36.4% on the previous year and corresponds to 21.9% of all PCT applications filed in 2021. Applicants from the U.S. (15,301) filed by far the most applications using ePCT, followed by those from the Republic of Korea (7,783), Italy (2,321), Canada (1,980) and India (1,837).

Among the 20 origins filing most actively via ePCT, Japan (+93.8%), the Republic of Korea (+52.5%), the Russian Federation (+50.4%), the U.K. (+43.8%) and the U.S. (+41%) were the ones to record the sharpest increases compared to 2020.

The receiving offices

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

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

ROs transmitted PCT applications to the IB within 2.5 weeks

In 2021, on average, ROs transmitted PCT applications to the IB within 2.5 weeks of the international filing date. Finland and the Republic of Korea transmitted all applications to the IB within four weeks of the filing date. Among the top 20 ROs, 16 transmitted more than 90% of PCT applications within this timeframe.

International Searching Authorities

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

In 2021, 270,948 international search reports (ISRs) were issued by the 23 existing ISAs. The EPO issued 79,005 ISRs and the CNIPA 74,169 (figure 10). Together, these two ISAs accounted for nearly 57% of all ISRs issued. Of the top 10 ISAs, China (+14.3%), India (+7%) and the U.S. (+6.6%) experienced growth, whereas the Russian Federation (–10%), Türkiye (–6%) and Canada (–5.8%) saw the steepest falls.

Of all the ISRs required to be transmitted to the IB within three months of the date of receipt of the application, 85.6% were transmitted within this timeframe in 2021. As for those required to be transmitted within 9 months of the priority date, 81.6% met this deadline in 2021.

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

Figure 10. International search reports issued by the top 10 International Searching Authorities, 2021

Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2022.

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