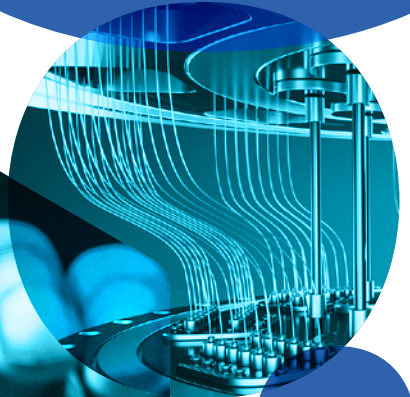


Executive  
Summary  
PCT  
Yearly Review  
2023





# Executive Summary **Patent Cooperation Treaty Yearly Review 2023** 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 2023* – available in English at: [www.wipo.int/ipstats](http://www.wipo.int/ipstats)

# Key numbers for 2022

**715,200** (+7.6%)  
PCT national phase entries

**134** (+3)  
Countries in which PCT applications were filed

**17.1%** (+0.6 percentage point)  
Share of women among PCT inventors

**278,100** (+0.3%)  
PCT applications filed

**58.9%** (+2 percentage points)  
Share of PCT national phase entries in worldwide non-resident patent application filings

Note: The latest available year for PCT national phase entry data is 2021.

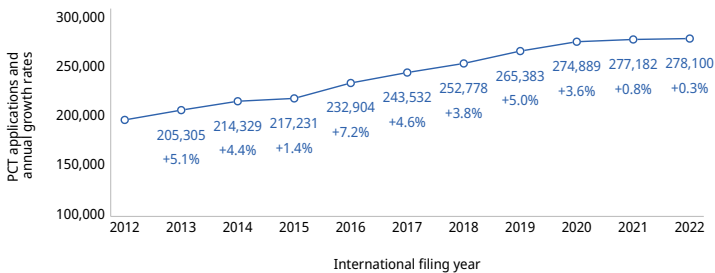
## Statistics on the international phase – PCT applications

### About 278,100 PCT applications were filed in 2022

Approximately 278,100 international patent applications (PCT applications) were filed under WIPO's Patent Cooperation Treaty (PCT) in 2022 (figure 1). This represents a marginal growth of 0.3% compared to the previous year, and marks the slowest rate of increase since a decline in PCT applications in 2009.

### PCT applications grew by 0.3% to reach 278,100 in 2022.

#### 1. Trend in filings of PCT applications, 2012–2022



Source: WIPO Statistics Database, March 2023.

### Applicants from 134 countries filed PCT applications at 85 receiving offices in 2022

In 2022, the PCT had 157 member states and applicants from 134 countries filed PCT applications at 85 receiving offices (ROs). However, despite such a widespread geographical distribution, filing activity was heavily concentrated in a select number of economies.

Combined, the top 10 ROs accounted for 93.8% of applications filed in 2022. With 74,420 filings, the China National Intellectual Property Administration (CNIPA) received the most PCT applications. It was followed by the United States Patent and Trademark Office (USPTO) (55,330), the Japan Patent Office (JPO) (48,826), the European Patent Office (EPO) (38,854), the Korean

Intellectual Property Office (KIPO) (21,964) and the International Bureau (IB) of WIPO (13,713).

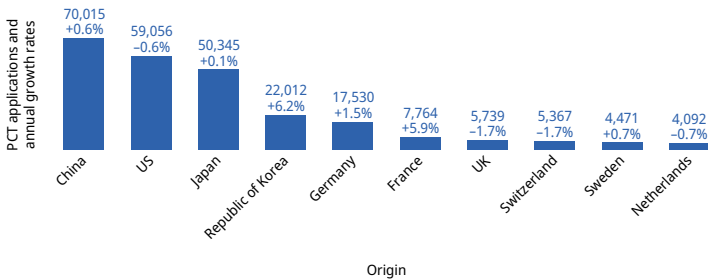
## The top five countries of origin accounted for nearly 79% of PCT applications in 2022

With 70,015 PCT applications, applicants residing in China filed the most applications in 2022. They were followed by applicants from the United States of America (US) (59,056) and Japan (50,345) (figure 2). Together with applicants from Germany and the Republic of Korea, these top five countries accounted for 78.7% of all PCT applications filed in 2022. Driven mainly by a rapid increase in filings by applicants from China, the combined share of the top five PCT System users has increased by 4.2 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, whose filings ranged between 200 and 900. Applicants from the Democratic People’s Republic of Korea, Sudan, the Syrian Arab Republic and Uganda accounted for most of the 14 applications filed by applicants residing in low-income countries.

### Among top 10 origins, the Republic of Korea recorded the sharpest increase in applications.

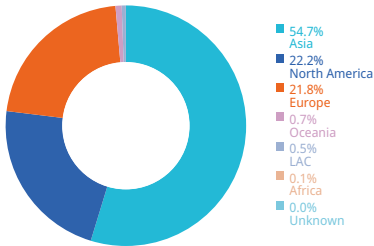
#### 2. PCT applications for the top 10 origins, 2022



Source: WIPO Statistics Database, March 2023.

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

### 3. Distribution of PCT applications by region, 2022



Note: LAC is Latin America and the Caribbean.

Source: WIPO Statistics Database, March 2023.

## A majority of applications were filed in Asia in 2022

In 2022, Asian countries were responsible for 54.7% of all PCT applications filed (figure 3). This represents a sharp increase on this region's 40.3% share in 2012, primarily driven by an increase in filings from China. North America ranked as the second highest region, accounting for 22.2% of PCT applications, followed closely by Europe at 21.8%. The combined share for Africa, Latin America and the Caribbean (LAC), and Oceania amounted to 1.3% of total PCT filings worldwide.

## The business sector accounted for almost 88% of all PCT applications

In 2022, the business sector accounted for 87.6% of all published PCT applications, followed by the university sector (6%), individuals (4.7%), and the government and public research organization (PRO) sector (1.7%).

The business sector accounted for the biggest proportion of published applications from each of the top 20 origins in the high-income group of economies. In particular, the business sector's share comprised over 96% of the total for Finland, Japan and Sweden. Among the top 20 origins in the middle-income group, the business sector constituted the majority of published applications in nine, while individuals accounted for the majority of applications

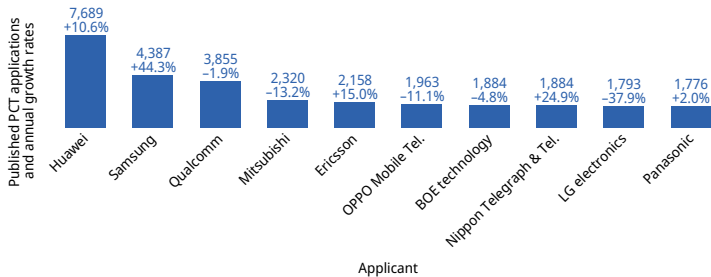
in seven. Notably, individual applicants were responsible for over 80% of applications originating from Egypt, the Islamic Republic of Iran and Ukraine.

## Samsung Electronics saw a sharp increase in published PCT applications in 2022

For the sixth year in a row, China-based telecoms giant, Huawei Technologies, was the top PCT applicant, with 7,689 published applications in 2022 (figure 4). Samsung Electronics of the Republic of Korea came second, followed by Qualcomm of the US, Mitsubishi Electric of Japan and Ericsson of Sweden. Of the top 10 applicants, six filed mainly in the technical field of digital communication.

### Huawei Technologies remained the top PCT applicant in 2022.

#### 4. Top 10 PCT applicants, 2022



Source: WIPO Statistics Database, March 2023.

## A vast majority of applicants featuring in the top 50 university list are from China and the US

Among educational institutions, with 552 published applications, the University of California remained the biggest user of the PCT System in 2022. Zhejiang University came second (309), followed by Suzhou University (303). Two of the top 50 universities doubled their published applications in 2022, namely, the Nanyang Technological University of Singapore and the Jiangsu University of Science and Technology of China. Among the top 50 universities in PCT applications, 19 were located in China and 18 in the US.

## **Shenzhen Institute of Advanced Technology remained the top PCT applicant in the government and PRO sector**

With 486 published applications, the Shenzhen Institute of Advanced Technology of China remained the top government and PRO applicant in 2022. The German-based Fraunhofer- Gesellschaft zur Förderung der angewandten Forschung was second, with 366 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.

Applicants from 12 countries featured in the top 30 list for 2022. With seven PROs, the US had the highest number of applicants in the list.

## **The fields of computer technology and digital communication reported sharp growth in 2022**

For a 10<sup>th</sup> consecutive year, the field of computer technology had the most PCT applications, with 28,224 published in 2022. It was followed by digital communication, electrical machinery, medical technology, and measurement. These top five technology fields, combined, accounted for 38.5% of all PCT applications published in 2022.

Eight of the top 10 technology fields grew in 2022, with digital communication (+8.7%) reporting the fastest rate of growth, followed by computer technology (+8.1%), semiconductors (+6.8%), biotechnology (+6.7%) and electrical machinery (+6.2%).

## **In 2022, women accounted for only 17.1% of inventors**

In 2022, women accounted for 17.1% of all inventors listed in PCT applications and men the remaining 82.9%. Compared to 2021, the proportion of women inventors rose by 0.6 percentage points in 2022. Since 2008, the share of women inventors has exhibited an almost continuous increase, with only a slight dip observed in 2011.



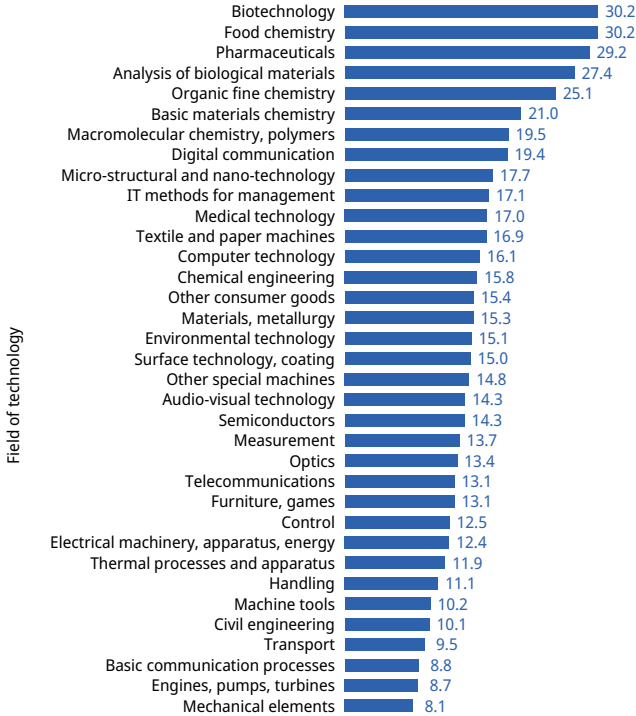
The share of women inventors has grown in each of the world's geographical regions over the past 10 years. In 2022, the LAC region (22.9%) had the largest proportion of women among PCT inventors, followed by Asia (18.1%), North America (16.9%), Europe (15%), Oceania (14.8%) and Africa (13.6%).

Of the top 20 origins of published PCT applications, China and Türkiye had the largest proportion of inventors who were women in 2022. They were the only two origins among the top 20 with nearly one-quarter of women as inventors.

Technology fields relating to the life sciences had comparatively high shares of women among inventors listed in PCT applications published during 2020–2022 (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.

### 5. Share of women among listed inventors in PCT applications by field of technology, 2020–2022



Share of applications with women inventors (%)

Source: WIPO Statistics Database, March 2023.

## **The top 50 PCT geographical clusters accounted for most PCT filings**

Combined, the top 50 PCT clusters represented 60.2% of PCT applications published between 2018 and 2022. Over this period, Tokyo–Yokohama was the largest PCT cluster, with 127,418 PCT applications accounting for 10.1% of overall PCT applications. Tokyo–Yokohama was followed by Shenzhen–Hong Kong–Guangzhou, Seoul, and San Jose–San Francisco. The number one cluster in Europe was Paris, which ranks in 11<sup>th</sup> position globally. All top 50 PCT clusters are located in either Asia, Europe or North America.

## Statistics on PCT national phase entries

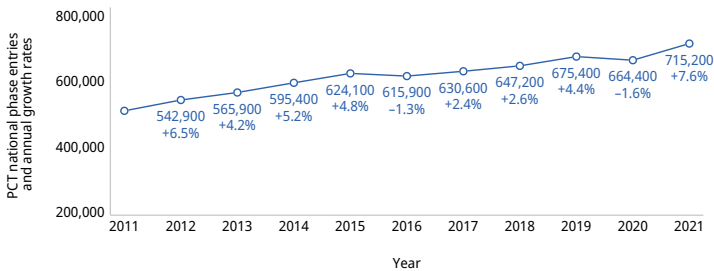
### PCT national phase entries increased sharply by 7.6% in 2021

The number of PCT national phase entries (NPEs) initiated worldwide reached 715,200 applications in 2021 – the latest year for which data are available (figure 6). This represents a 7.6% increase on the previous year and marks the biggest surge in NPEs since 2010, mainly driven by an increase in filings from China and the US.

In 2021, non-resident applications accounted for 83.5% of all NPEs, a share that has remained quite stable since 2013. Most resident NPEs originated from Japan and the US, which accounted for 32% and 23.8% of global resident NPEs in 2021, respectively.

### In 2021, PCT national phase entries grew at their fastest in the past decade.

#### 6. Trend in PCT national phase entries, 2011–2021



Source: WIPO Statistics Database, March 2023.

### Asian applicants initiated the most PCT NPEs worldwide

In 2021, Asia remained the top region for PCT NPEs, initiating 36% of all NPEs worldwide. This figure marks a sharp increase of nearly 10 percentage points over 2011, when Asia accounted for 26.5% of global NPEs. In 2021, Europe and North America were the next largest regions, each accounting for around 30% of all NPEs. Africa, LAC and Oceania, combined, accounted for nearly 2% of global NPEs.

## **Applicants based in the US initiated the most PCT NPEs globally**

In 2021, applicants residing in the US initiated 203,081 NPEs. They were followed by applicants from Japan, China, Germany and the Republic of Korea (figure 7). The US and Japan combined accounted for nearly half of all NPEs initiated worldwide, with 28.4% and 19.1% of total NPEs, respectively. Despite the high concentration of NPEs among just a few origins, applicants from over 147 origins initiated NPEs in 2021.

All top 20 NPE origins experienced growth in 2021. Among top 10 origins, China saw the biggest increase in NPEs, with a growth rate of 20.1%, followed by Switzerland and the US.

## **The PCT System share in total non-resident patent applications globally grew to almost 59% in 2021**

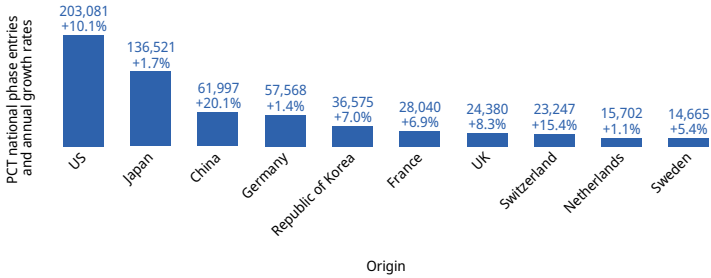
In 2021, the PCT route was used for 58.9% of non-resident patent applications worldwide, resulting in a total of 598,600 non-resident NPEs initiated (figure 8). This marks a 2 percentage points increase on the previous year (56.9%), representing the highest concentration of non-resident filings in NPEs to date. Compared to the Paris route, where applicants filed 417,300 non-resident patent applications directly at offices, the PCT route has grown the fastest, with an average annual growth rate of 2.9% between 2012 and 2021, as compared to 1.2% for the Paris route.

Out of the top 20 offices for non-resident patent applications, 16 received more than two-thirds of non-resident filings through the PCT route. Notably, the offices of Brazil and Israel had PCT route shares above 93%.

Among the top 20 origins for filing applications abroad, applicants from Australia (72.7%), Sweden (72.6%) and the US (69.6%) used the PCT route for the majority of filings. Conversely, applicants from Canada, India, Israel, the Republic of Korea and Singapore primarily filed their patent applications directly with foreign offices through the Paris route.

## China, Switzerland and the US saw double-digit growth in PCT national phase entries in 2021.

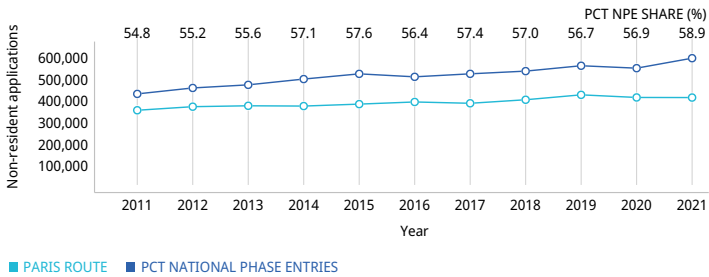
### 7. PCT national phase entries for the top 10 origins, 2021



Source: WIPO Statistics Database, March 2023.

## PCT national phase entries accounted for nearly 59% of all non-resident patent applications filed worldwide in 2021.

### 8. Trend in non-resident applications by filing route, 2011–2021



Source: WIPO Statistics Database, March 2023.

### The International Bureau

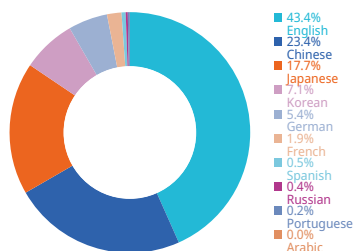
## About 43% of PCT applications were published in English in 2022

In 2022, about 43% of all PCT applications were published in English, followed by Chinese and Japanese (figure 9). The other seven languages of publication combined accounted for 15.5% of the total.

The share of applications filed in Chinese has increased sharply over the past 15 years, rising from 3.1% in 2008 to 23.4% in 2022. Conversely, the share of applications filed in English has dropped by over 20 percentage points since 2008.

### About 43% of PCT applications were published in English in 2022.

#### 9. Distribution of PCT applications by language of publication, 2022



Source: WIPO Statistics Database, March 2023.

## ePCT-filing was the portal used to file one-third of PCT applications in 2022

In 2022, 86 ROs accepted ePCT filings and applicants filed 93,522 PCT applications using this online service. This represents an increase of 53.5% on the previous year and corresponds to one-third of all PCT applications filed in 2022. Applicants from the US filed by far the most applications using ePCT, followed by those from the Republic of Korea and Italy.

Among the 10 origins filing most actively via ePCT, the US (+47.5%), Israel (+46.6%) and the Republic of Korea (+40.3%) recorded the sharpest increases compared to 2021.

### The receiving offices

#### **Eleven of the top 20 ROs received most of their applications via ePCT in 2022**

Of the top 20 ROs, Australia, Singapore and Türkiye received all PCT applications electronically in 2022. The share of electronic filings exceeded 90% at every top 20 office, except for that of the Russian Federation.

Sixteen of the top 20 ROs received PCT applications via ePCT in 2022, of which eleven received a majority of filings via this portal. The offices of Australia, India, Singapore and Türkiye received over 99% of PCT applications via ePCT.

#### **ROs transmitted PCT applications to the IB within 2.9 weeks**

In 2022, on average, ROs transmitted PCT applications to the IB within 2.9 weeks of the international filing date. Finland, India and the Republic of Korea transmitted all applications to the IB within four weeks of the filing date. Among the top 20 ROs, 13 transmitted more than 95% of PCT applications within this timeframe.

### International Searching Authorities

#### **The EPO and China combined accounted for a vast majority of ISRs issued**

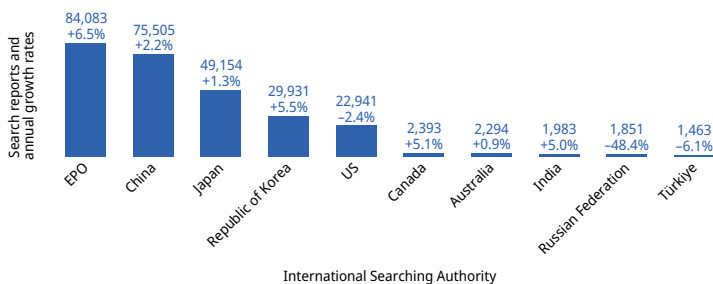
In 2022, 276,917 ISRs were issued by the 24 existing ISAs. The EPO issued 84,083 ISRs and the CNIPA 75,505 (figure 10). Together, these two ISAs accounted for nearly 58% of all ISRs issued. Of the top 10 ISAs, the EPO (+6.5%) experienced the sharpest growth, whereas the Russian Federation (-48.4%) saw the steepest fall. Of the 23 ISAs functioning in 2021, nine issued more ISRs in 2022 than the year before.



Of all the ISRs requiring transmission to the IB within three months of the date of receipt of the application, 84.6% were transmitted within this timeframe in 2022. At 17 ISAs, more than 90% of ISRs were transmitted to the IB within the three-month deadline from the date of receipt of the search copy. As for those requiring transmission within 9 months of the priority date, 89.6% met the deadline in 2022.

## The European Patent Office issued 84,083 international search reports in 2022.

### 10. International search reports issued by the top 10 International Searching Authorities, 2022



Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2023.



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