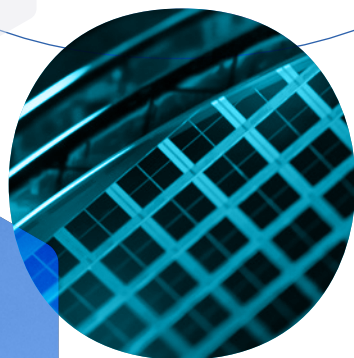


Executive  
Summary  
**PCT**  
**Yearly Review**  
**2024**





# Executive Summary **Patent Cooperation Treaty Yearly Review 2024** 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 2024* – available in English at [www.wipo.int/ipstats](http://www.wipo.int/ipstats)

# Key numbers for 2023

**737,000** (+3.1%)  
PCT national phase entries

**127** (-7)  
Countries of origin of PCT applications

**17.7%** (+0.6 percentage point)  
Share of women among inventors in PCT applications

**272,600** (-1.8%)  
PCT applications filed

**59%** (+0.2 percentage point)  
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 2022.

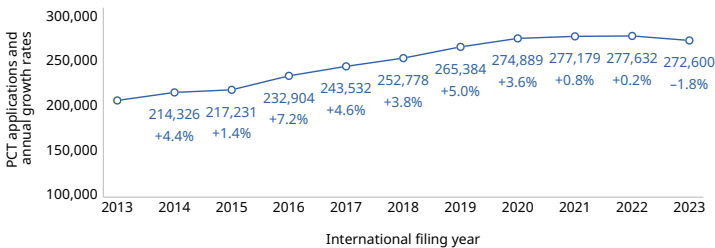
## Statistics on the international phase – PCT applications

### PCT applications dropped by 1.8% in 2023

Approximately 272,600 international patent applications (PCT applications) were filed under WIPO's Patent Cooperation Treaty (PCT) in 2023 (figure 1). This marked a decline of 1.8% compared to the preceding year. This decrease in filings, which ends 13 years of consecutive growth, was primarily attributed to fewer filings of PCT applications from applicants based in Japan and the US.

*About 272,600 PCT applications were filed in 2023.*

#### 1. Trend in filings of PCT applications, 2013–2023



Source: WIPO Statistics Database, March 2024.

### The top 10 receiving offices accounted for almost 95% of PCT applications, combined

In 2023, 157 countries were members of the PCT, with applicants from 127 countries filing PCT applications across 83 receiving offices (ROs). Despite this broad geographical reach, filing activity was notably concentrated in a few economies.

Combined, the top 10 ROs received 94.8% of applications filed in 2023. With 73,812 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) (52,940), the Japan Patent Office (JPO) (47,373), the European Patent Office (EPO) (38,636), the Korean Intellectual Property Office (KIPO) (22,165) and the International Bureau (IB) of WIPO (14,171).

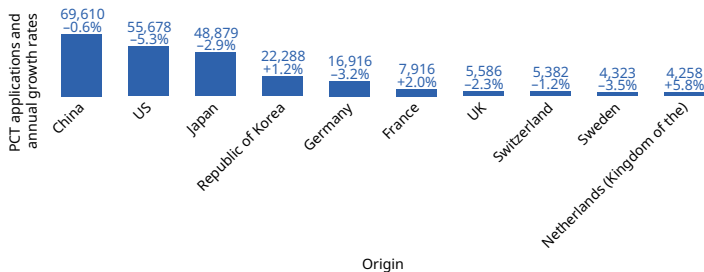
## The Republic of Korea was the only origin among the top five to see growth in 2023

In 2023, applicants residing in China filed the highest number of PCT applications, totaling 69,610 (figure 2). They were followed by applicants from the United States of America (US) (55,678) and Japan (48,879). The top five countries, including Germany and the Republic of Korea, collectively accounted for 78.3% of all PCT applications filed in 2023. Over the past decade, the combined share of the top five users of the PCT System has increased by 3.7 percentage points, primarily due to a notable surge in filings by applicants from China.

The top 20 origins comprised 17 high-income countries, predominantly European, along with three middle-income economies: China, India and Türkiye. Beyond this ranking, notable numbers of PCT applications were filed at other large middle-income economies such as Brazil, Chile, the Islamic Republic of Iran, Mexico, the Russian Federation and South Africa, with filings ranging between 150 and 550. The seven PCT applications filed by applicants residing in low-income countries originated from Burkina Faso, the Democratic People's Republic of Korea, Liberia, Madagascar, Sudan and Uganda.

*Seven of the top 10 origins experienced a drop in applications.*

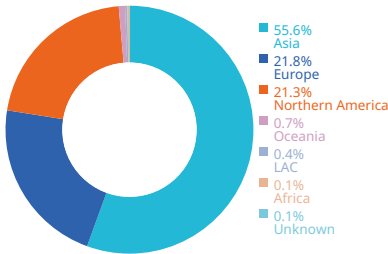
### 2. PCT applications for the top 10 origins, 2023



Source: WIPO Statistics Database, March 2024.

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

### 3. Distribution of PCT applications by region, 2023



Note: LAC is Latin America and the Caribbean.

Source: WIPO Statistics Database, March 2024.

## The majority of PCT applications were filed in Asia in 2023

Asian countries accounted for 55.6% of all PCT applications filed in 2023 (figure 3). This marks a notable increase from their 40.5% share in 2013, mainly due to higher filings from China and the Republic of Korea. Europe ranked as the second-highest region, contributing to 21.8% of PCT applications, followed closely by Northern America at 21.3%. The combined share for Africa, Latin America and the Caribbean (LAC) and Oceania amounted to no more than 1.2% of total PCT filings.

## The vast majority of PCT applications were filed by the business sector

In 2023, the business sector accounted for 88.3% of the total, followed by the university sector (5.9%), individuals (3.9%) and the government and public research organization (PRO) sector (1.8%).

The business sector represented the largest proportion of published applications from each of the top 20 origins within the high-income group. Specifically, the business sector's share constituted more than 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 three-quarters or more of applications in Egypt, the Islamic Republic of Iran and Ukraine.

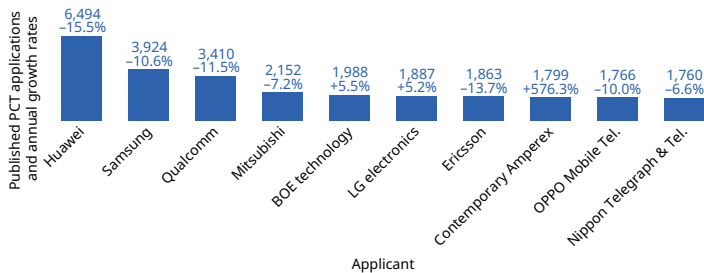
## Contemporary Amperex Technology, Limited saw a sharp increase in applications in 2023

For the seventh consecutive year, Huawei Technologies, a telecommunications company based in China, remained the top PCT applicant, with 6,494 published applications in 2023 (figure 4). Samsung Electronics of the Republic of Korea followed in second place, trailed by Qualcomm of the US, Mitsubishi Electric of Japan and BOE Technology Group of China. Of the top 10 applicants, six filed mainly in digital communication.

Contemporary Amperex Technology, Limited (CATL) of China exhibited the fastest growth rate among the top 10 applicants, with an increase of 576.3%, propelling it 84 positions up to the eighth spot in the ranking. BOE Technology Group (+5.5%) and LG Electronics (+5.2%) also experienced growth. However, the remaining seven top 10 applicants saw a decline, with the sharpest decreases observed for Huawei Technologies (-15.5%), Ericsson (-13.7%) and Qualcomm (-11.5%).

*Seven top 10 applicants had fewer applications published in 2023*

### 4. Top 10 PCT applicants, 2023



Source: WIPO Statistics Database, March 2024.

## Twenty-two of the top 50 universities are from the US

Among educational institutions, with 531 published applications, the University of California remained the largest user of the PCT System in 2023. Suzhou University of China came second, followed by the University of Texas. Within the top 50 universities the sharpest increases in 2023 were for Yale University of the US (+92.5%), Nanjing University of Posts and Telecommunications of China (+71.4%) and Delft University of Technology of the Kingdom of the Netherlands (+48.8%).

Fifty-one universities from seven countries featured in the top 50. The US and China had 22 and 13 universities, respectively.

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

With 696 published applications, the Shenzhen Institute of Advanced Technology of China remained the top government and PRO applicant in 2023. The German-based Fraunhofer- Gesellschaft zur Förderung der angewandten Forschung was second, with 238 applications. It was followed by the Commissariat à l'Énergie Atomique et aux Énergies Alternatives (CEA) of France, the Institut National de la Santé et de la Recherche Médicale (INSERM) of France and the Agency for Science, Technology and Research of Singapore.

Applicants from 12 countries featured in the top 30 list for 2023. The US (7) had the highest number of applicants in the list, followed by the Republic of Korea (6), China (4), France (3), Germany (3) and Japan (3).

## **Applications in electrical machinery and transport grew sharply in 2023**

For an eleventh consecutive year, the technology field of computer technology had the most PCT applications, with 27,280 published in 2023. It was followed by digital communication, electrical machinery, medical technology and pharmaceuticals.

Only four of the top 10 technology fields grew in 2023, with electrical machinery (+8.8%) reporting the fastest rate of growth, followed by transport (+7.7%), semiconductors (+5.6%) and biotechnology (+3.8%). In contrast, measurements (-6.5%), audio-visual technology (-6.5%) and medical technology (-6%) experienced the steepest drops.

## **In 2023, only 17.7% of inventors listed in PCT applications were women**

In 2023, women accounted for 17.7% of all inventors listed in PCT applications and men the remaining 82.3%. Compared to 2022, the proportion of women inventors rose by 0.6 percentage points. Since 2009, the share of women inventors has exhibited an almost continuous increase, gaining 6.8 percentage points over the period.



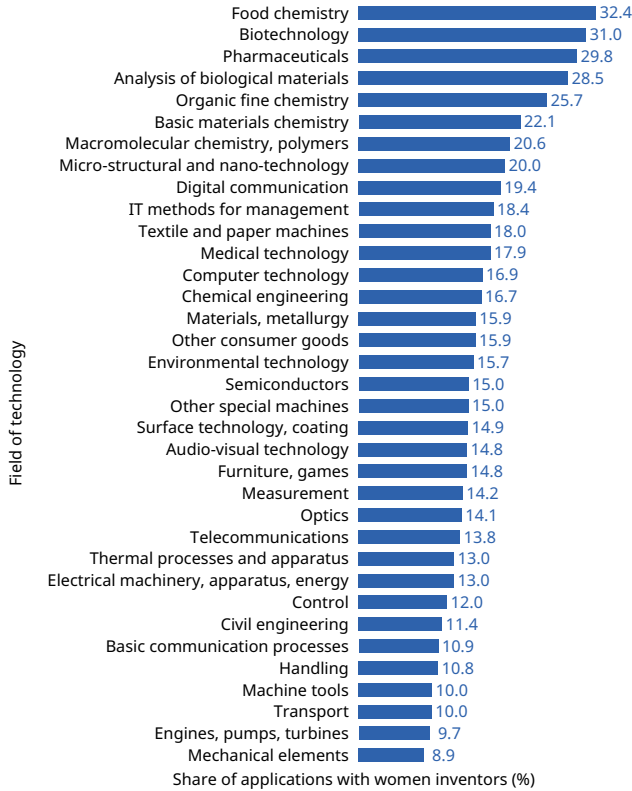
The share of women inventors has grown in each of the world's geographical regions over the past 10 years. In 2023, the LAC region (20.8%) had the largest proportion of women among PCT inventors, followed by Asia (18.6%), Northern America (17.7%), Africa (16.8%), Europe (15.4%) and Oceania (14.4%).

Of the top 20 origins of published PCT applications, Spain (26.9%), China (24.4%) and Türkiye (22.8%) had the largest proportion of inventors who were women in 2023. They were the only three origins among the top 20, with above one-fifth 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 2021–2023 (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.

*Technology fields with the highest proportion of women were biotechnology, food chemistry and pharmaceuticals.*

### 5. Share of women among listed inventors in PCT applications by field of technology, 2021–2023



Source: WIPO Statistics Database, March 2024.

## **The top 50 PCT geographical clusters accounted for almost 63% of PCT applications**

Combined, the top 50 PCT clusters represented 62.6% of PCT applications published between 2019 and 2023. Over this period, Tokyo–Yokohama remained the largest PCT cluster, with 134,769 PCT applications. Tokyo–Yokohama, which accounted for 10.5% of total PCT applications, was followed by Shenzhen–Hong Kong–Guangzhou (9%), Seoul (5.2%), San Jose–San Francisco (3.8%) and Beijing (3.3%). The number one cluster in Europe was Paris, ranked in eleventh position globally. Compared to 2018–2022, the position of the top 5 applicants remained unchanged. All top 50 PCT clusters are located in either Asia, Europe or Northern America.

## Statistics on PCT national phase entries

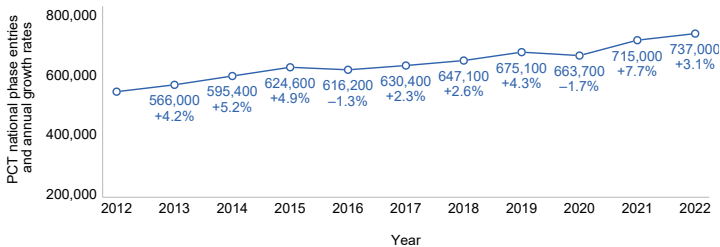
### PCT national phase entries grew by 3.1% in 2022

About 737,000 PCT national phase entries (NPEs) were initiated worldwide in 2022 – the latest year for which data are available (figure 6). This represents a 3.1% increase on the previous year, mainly driven by an increase in filings from China and the US.

In 2022, non-resident applications accounted for 83.9% of all NPEs, a share that has remained almost stable since 2013. Most resident NPEs originated from the Japan Patent Office (JPO) and the United States Patent and Trademark Office (USPTO), which accounted for 37.2% and 21.6% of global resident NPEs, respectively.

*In 2022, about 737,000 PCT national phase entries were initiated worldwide.*

#### 6. Trend in PCT national phase entries, 2012–2022



Source: WIPO Statistics Database, March 2024.

### Asia accounted for nearly 36% of PCT NPEs initiated worldwide

In 2022, Asia retained its position as the leading region for PCT NPEs, initiating 35.8% of all NPEs. This represents a notable rise from 2012, when Asia contributed 29.5% of global NPEs. Northern America and Europe were the subsequent largest regions in 2022, with each accounting for approximately 30% of all NPEs. Combined, Africa, LAC, along with Oceania, constituted 2% of global NPEs.

## **Applicants from Japan and the US initiated nearly half of PCT NPEs globally**

In 2022, applicants residing in the US initiated 215,569 NPEs, followed by applicants from Japan (132,966), China (68,840), Germany (54,163) and the Republic of Korea (39,551) (figure 7). Together, the US and Japan accounted for 47.4% of all NPEs initiated worldwide, representing 29.3% and 18.1% of total NPEs, respectively. Despite the concentration of NPEs among a few origins, applicants from over 130 countries initiated NPEs in 2022.

Among the top 20 origins that experienced growth in 2022, China (+11%), the Republic of Korea (+8.1%), India (+7.6%) and Switzerland (+7.5%) witnessed the most substantial increases in NPEs. Applicants from the US (+6.1%) also grew notably, while those from Germany (-5.9%) and Japan (-2.6%) experienced decline.

## **Since 2008, the PCT route has been more widely used than the Paris route for filing patent applications abroad**

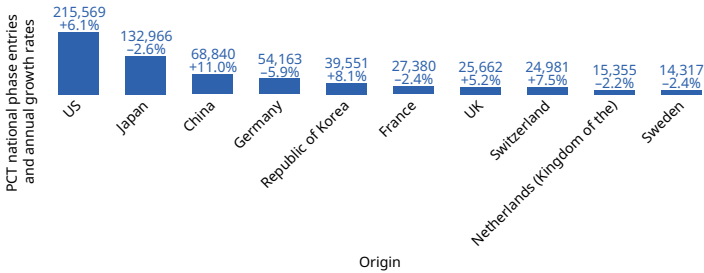
In 2022, the PCT route was used for 59% of non-resident patent applications worldwide, resulting in a total of 618,000 non-resident NPEs initiated (figure 8). This marks a relatively modest 0.2 percentage point increase on the previous year. In comparison to the Paris route, where applicants filed 430,100 non-resident patent applications directly at offices in 2022, the PCT route has shown notably faster growth. Between 2008 and 2022, the PCT route maintained an average annual growth rate of 3%, whereas the Paris route had grown by 1.3%.

Out of the top 20 offices for non-resident patent applications, 17 received most non-resident filings through the PCT route. Notably, the offices of Brazil, Israel and Thailand had PCT route shares of 90% or more.

Among the top 20 origins for filing applications abroad, applicants from Australia (72.7%), the US (70.2%) and Sweden (70.1%) used the PCT route in greatest proportion. Conversely, applicants from Canada, India, Israel and the Republic of Korea primarily filed their patent applications directly with foreign offices through the Paris route.

*China was the only top 10 origin to see double-digit growth in national phase entries.*

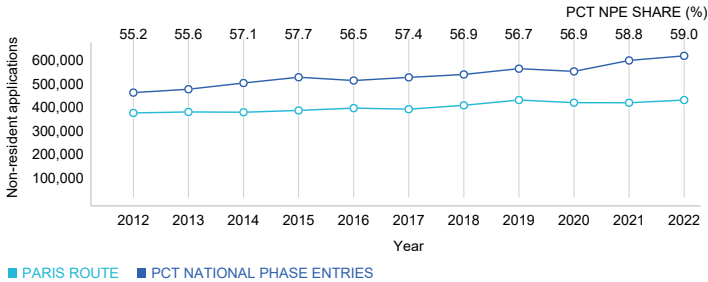
**7. PCT national phase entries for the top 10 origins, 2022**



Source: WIPO Statistics Database, March 2024.

*The share of PCT national phase entries in all non-resident patent applications filed worldwide grew to 59% in 2022.*

**8. Trend in non-resident applications by filing route, 2012–2022**



Source: WIPO Statistics Database, March 2024.

### The International Bureau

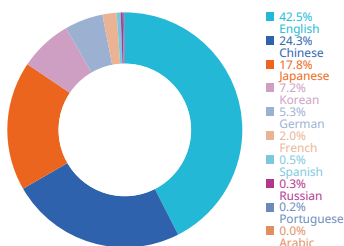
#### The share of PCT applications published in Chinese rose from 3.7% in 2009 to 24.3% in 2023

In 2023, PCT applications published in English accounted for 42.5% of total. English was followed by Chinese (24.3%) and Japanese (17.8%) (figure 9). The other seven languages of publication combined accounted for 15.4% of the total.

The share of applications filed in Chinese has increased sharply over the past 15 years, rising from 3.7% in 2009 to 24.3% in 2023. Conversely, the share of applications filed in English has dropped from 62.2% to 42.5% over the same period.

*About 42.5% of PCT applications were published in English in 2023.*

#### 9. Distribution of PCT applications by language of publication, 2023



Source: WIPO Statistics Database, March 2024.

#### The ePCT-filing service was used to file about 38% of PCT applications in 2023

In 2023, 87 ROs accepted ePCT filings and applicants filed 104,673 PCT applications using this online service. This represents an increase of 11.6% on the previous year and corresponds to 38.4% of all PCT applications filed in 2023. Applicants from the US (39,020) filed by far the most applications using ePCT, followed by those from the Republic of Korea (22,175) and Germany (4,426).

Among the 10 origins filing most actively via ePCT, India (+45.6%), France (+31.7%) and the Republic of Korea (+18.3%) recorded the sharpest increases compared to 2022.

## The receiving offices

### **Eight of the top 20 ROs received over 90% of their applications via ePCT in 2023**

Of the top 20 ROs, Singapore and Türkiye received all PCT applications electronically in 2023. The share of electronic filings exceeded 90% at every one of the top 20 offices, except for that of the Russian Federation (47.8%).

Sixteen of the top 20 ROs received PCT applications via ePCT in 2023, of which eight received 92% or more of filings via this portal. Six offices received more than 99% of PCT applications via ePCT.

### **ROs transmitted PCT applications to the IB within 2.7 weeks**

In 2023, on average, ROs transmitted PCT applications to the IB within 2.7 weeks of the international filing date. Finland, Israel and the Republic of Korea transmitted all applications to the IB within four weeks of the filing date. Among the top 20 ROs, 17 transmitted over 75% of PCT applications within this timeframe.

## The International Searching Authorities

### **Most ISAs issued fewer ISRs in 2023 than in the preceding year**

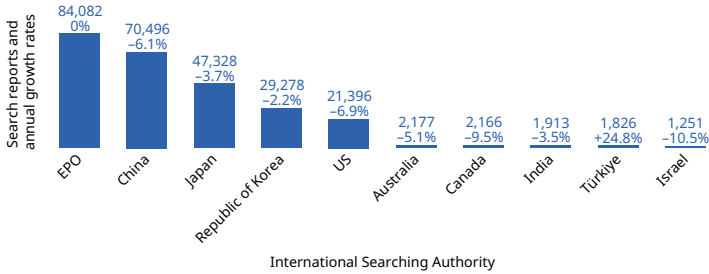
In 2023, 266,566 ISRs were issued by the 24 existing ISAs. The EPO issued 84,082 ISRs and the CNIPA 70,496. Together, these two ISAs accounted for 58% of all ISRs issued (figure 10). The Eurasian Patent Organization (EAPO) (+360%), Singapore (+74.6%) and Türkiye (+24.8%) experienced the sharpest growth. In contrast, 18 ISAs saw a fall. Of the top five ISAs, the US (-6.9%), China (-6.1%), Japan (-3.7%) and the Republic of Korea (-2.2%) experienced drops, while the EPO saw zero growth.

Of all the ISRs required to be transmitted to the IB within three months of the date of receipt of the application, 86.3% were transmitted within this timeframe in 2023. At 16 ISAs, more than 90% of ISRs were transmitted to the IB within the three-month deadline from the date of receipt of the search copy. As for those required to be transmitted within nine months of the priority date, 96.9% met this deadline in 2023.



*Türkiye was the only top 10 International Searching Authority that issued substantially more international search reports in 2023 than in the previous year.*

## 10. International search reports issued by the top 10 International Searching Authorities, 2023



Note: EPO is the European Patent Office.

Source: WIPO Statistics Database, March 2024.

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