

Patent Cooperation Treaty Yearly Review

The International Patent System

Economics & Statistics Series



2016

Patent Cooperation Treaty Yearly Review

The International Patent System

Economics & Statistics Series

2016

Acknowledgements

The PCT Yearly Review was developed under the direction of Francis Gurry (Director General) and supervised by Carsten Fink (Chief Economist). The report was prepared by a team led by Bruno Le Feuvre and comprising Kyle Bergquist, Mosahid Khan, Ryan Lamb, Gerard Torres, Yukio Yanagimoto and Hao Zhou, all from the Economics and Statistics Division.

Additional valuable contributions were provided by Philippe Baechtold, Matthew Bryan, Debra Collier, Patrick Genin, Thomas Marlow, Ken-Ichiro Natsume, Bert Beijer, James Phillips, Mike Richardson and Ting Zhao and other colleagues in the Patents and Technology Sector.

Samiah Do Carmo Figueiredo and Caterina Valles Galmes provided valuable administrative support. Gratitude is also due to Brenda O'Hanlon for editing the review; to the Communications Division for designing the review; and to staff in the Language Division and the Printing and Publication Production Section for their services.

Finally, WIPO is grateful to national and regional patent offices for sharing their annual statistics.

Further Information

Online resources

The electronic version of the review, as well as the images and the underlying data used to compute 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.

Conditions of use

You are welcome to use the information provided in this publication, but please cite WIPO as the source.

By using WIPO's statistical data, you agree not to republish or commercially resell WIPO's statistical datasets. In addition, when using WIPO's statistics data in any written work, you are requested to cite "WIPO Statistics Database" as the source of the data.

Contact information

Economics and Statistics Division

Website: www.wipo.int/ipstats

e-mail: ipstats.mail@wipo.int

2015 Key Numbers

Number (Trend¹)	Description
595,400 (+5.2%)	PCT national phase entries²
218,000 (+1.7%)	PCT applications filed
48,539 (-2.2%)	Applicants³
132 (+8)	Countries in which PCT applications were filed
57 (+1.4)	Share of PCT national phase entries in worldwide non-resident filings (in percent)

1. Trends correspond to annual growth rates in percentage, in volume or in percentage point.
2. The latest available year for PCT national phase entry data is 2014.
3. PCT applicants refer to first-named applicants in published PCT applications.

Highlights

PCT applications grew by 1.7%

An estimated 218,000 PCT applications were filed in 2015, representing an increase of 1.7% on filings in 2014. The year 2015 marked the fifth consecutive year of growth.

Filings dropped in the U.S. and grew sharply in Asia

Applicants from the U.S. accounted for the largest number of PCT applications, with 57,385 applications filed in 2015. Compared with 2014, the number of such filings decreased by 6.7%. This drop was likely due to an unusually large number of filings in 2014 that was linked to changes in the U.S. patent system.

Of the world's six main geographical regions, Asia recorded by far the sharpest growth in filings (+9%). Filings in Europe (+0.3%) remained stable whereas those in North America (-6.7%) decreased. Four of the top 10 PCT filing countries in Asia saw double-digit growth, such as China (+16.8%) and the Republic of Korea (+11.5%). Japan, the second largest user of the System, saw growth of 4.4% in 2015.

Among middle-income countries, notable increases were seen in Thailand (+94.1%), Peru (+47.1%), Turkey (+19.1%) and Mexico (+12.7%).

Huawei remained the top PCT applicant, with almost 4,000 applications

The top five applicants were largely unchanged from 2014. With 3,898 published PCT applications, Huawei Technologies of China remained the top PCT applicant. It was followed by US-based Qualcomm Incorporated (2,442 published applications) and China's ZTE (2,155). The only change among the top five came from Samsung Electronics (1,683) of the Republic of Korea, which moved up seven places to rank fourth, before Mitsubishi Electric (1,593) of Japan.

Electrical engineering was the main sector of filing for the majority of the top 50 companies; of these companies, 9 were among the top 10 PCT applicants. A large number of the top 50 companies mainly filed in the field of digital communication, including 6 of the top 7 applicants.

The U.S. accounted for the largest number of applicants among the top 50 universities. However, with four fewer applicants than in the previous year, 2015 marked the first time that U.S. universities did not account for the majority of universities in the top PCT applicants list. Altogether, universities from 10 countries ranked among the top 50 applicants, including for the first time a university from Saudi Arabia.

Two government and research institutions from middle-income countries – Malaysia and India – ranked sixth and ninth, respectively, among the top PCT applicants in the government and research institutions sector. The Republic of Korea and the U.S. had the largest number of applicants in the top 30 list for this sector, with six each. They were followed by China, France and Japan, each of which had three applicants.

Computer technology remained the field of technology with the most applications

For the second consecutive year, computer technology was the field of technology with the highest number of PCT applications published (16,385). It was followed by digital communication (16,047) and electrical machinery (14,612). The ranking of these top three fields of technology remained unchanged from 2014.

National phase entries grew by 5% worldwide

National phase entries (NPEs) totaled an estimated 595,400 in 2014, representing an increase of 5.2% compared with 2013. The U.S. (44%), China (15%) and Japan (10%) drove most of this growth. At the global level, NPEs accounted for 57% of all patent applications filed abroad.

China joined the top five origins list

Applicants from the U.S. remained the largest filers of NPEs, with 170,928 applications and a growth rate of 8.2% on 2013. The U.S. was followed by applicants from Japan (123,787), Germany (60,224), France (30,153) and China (22,473). With an annual growth rate of 24.1%, China advanced three places to become the fifth largest filer of NPEs in 2014.

Growth in the number of NPEs initiated was also notable in the case of applicants residing in Saudi Arabia (+148%), Chile (+45.5%), Malaysia (+25.4%), Turkey (+24.7%) and South Africa (+19.6%).

Table of Contents

2015 Key Numbers	4	Section B – Statistics on PCT National Phase Entries	41
Highlights	5	B.1 – Overview	41
A Brief Presentation of the Patent Cooperation Treaty	9	B.1.1 – Overall trend	41
		B.1.2 – Non-resident patent applications by filing route	42
Data Description	12	B.2 – National phase entries by country of origin	42
Special Theme – the PCT Market Share	13	B.2.1 – World map	42
		B.2.2 – Filing trends	44
		B.2.3 – PCT national phase entries per PCT application	46
Section A – Statistics on The International Phase: PCT Applications	25	B.2.4 – Share of PCT national phase entries in total filings abroad	47
A.1 – Overview	25	B.3 – National phase entries by office	48
A.1.1 – Overall trend	25	B.3.1 – Top offices	48
A.1.2 – Top receiving offices	25	B.3.2 – Share of PCT national phase entries in non-resident filings	50
A.2 – PCT applications by country of origin	26		
A.2.1 – World map	26		
A.2.2 – Filing trends	27		
A.2.3 – PCT applications as a share of resident applications	28		
A.3 – PCT applicants	30		
A.3.1 – Distribution of applicants	30		
A.3.2 – Share of PCT applications with foreign co-applicants	30		
A.3.3 – Top PCT applicants	32		
A.4 – PCT applications by fields of technology	34		
A.4.1 – Overall trend	34		
A.4.2 – Countries' specialization	34		

Section C – Performance of the PCT System	53	Section D – Development of the PCT System	75
C.1 – International Bureau	53	D.1 – Electronic Filing and Processing of PCT Applications	75
C.1.1 – Electronic filing and processing	53	D.1.1 – ePCT-Filing	75
C.1.2 – Translation and terminology database	54	D.1.2 – ePCT system	75
C.1.3 – Timeliness in examining and publishing PCT applications	56	D.1.3 – Decommissioning of PCT EASY	76
C.1.4 – Quality in processing applications	58	D.2 – PATENTSCOPE Search System	76
C.1.5 – Efficiency in processing applications	59	D.3 – WIPO Pearl database	77
C.2 – Receiving offices	60	D.4 – Legal Developments	77
C.2.1 – Distribution of applications by medium of filing	60	D.4.1 – Amendments that entered into force in 2015	77
C.2.2 – Timeliness in transmitting applications	60	D.4.2 – Amendments adopted in 2015 that will enter into force in 2016	78
C.3 – International searching authorities	63	D.4.3 – Amendments adopted in 2015 that will enter into force in 2017	78
C.3.1 – International search reports by authority	63	D.5 – Meetings	78
C.3.2 – Timeliness in transmitting reports	65	D.5.1 – Meeting of International Authorities	78
C.4 – Supplementary international searching authorities	67	D.5.2 – PCT Working Group	78
C.4.1 – Supplementary international search reports by authority	67	D.5.3 – PCT Assembly	79
C.5 – International preliminary examining authorities	67	D.6 – PCT Training	79
C.5.1 – International preliminary reports on patentability by authority	67	D.6.1 – Seminars	79
C.5.2 – Timeliness in transmitting reports	68	D.6.2 – Webinars	79
C.6 – PCT-Patent Prosecution Highway pilots	70	D.6.3 – Distance learning	79
C.6.1 – New PCT-PPH pilots	70	D.6.4 – International cooperation	79
C.6.2 – Number of requests by office	70	Statistical Table	81
C.7 – PCT user satisfaction survey	72	Acronyms	84
		Glossary	85
		PCT Contracting States	88
		Additional Resources	89

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 route for pursuing patent rights in different countries. The PCT System makes it possible to seek patent protection for an invention simultaneously in a large number of countries by filing a single “international” patent application instead of filing several separate national or regional patent applications.

When it was first established, the PCT System comprised 18 members. By 2015, it comprised 148 contracting states (figure 1). A table listing all PCT contracting states is provided in the annex.

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.

Compared with 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

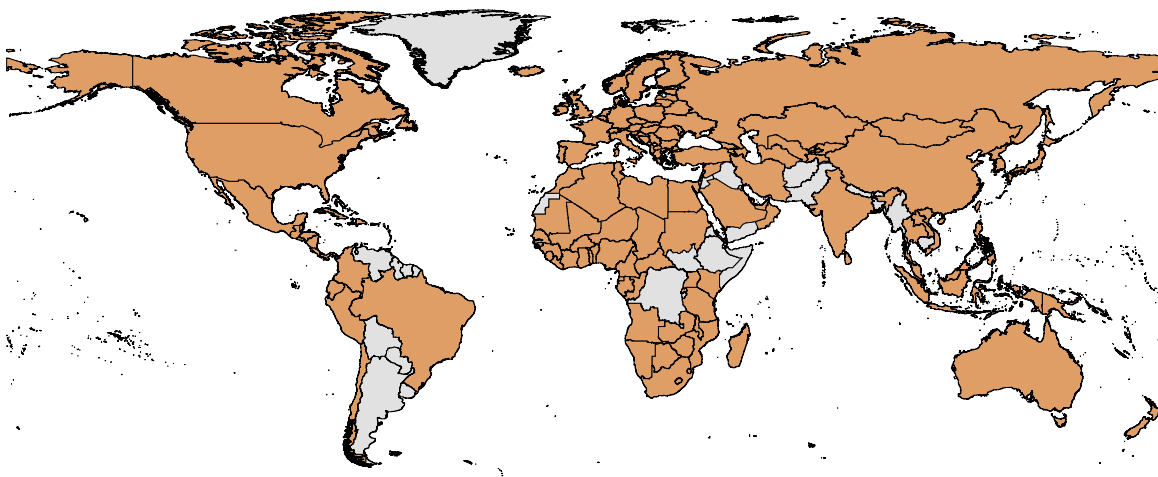
on the potential commercialization of the invention and on the markets in which to seek patent protection.

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.

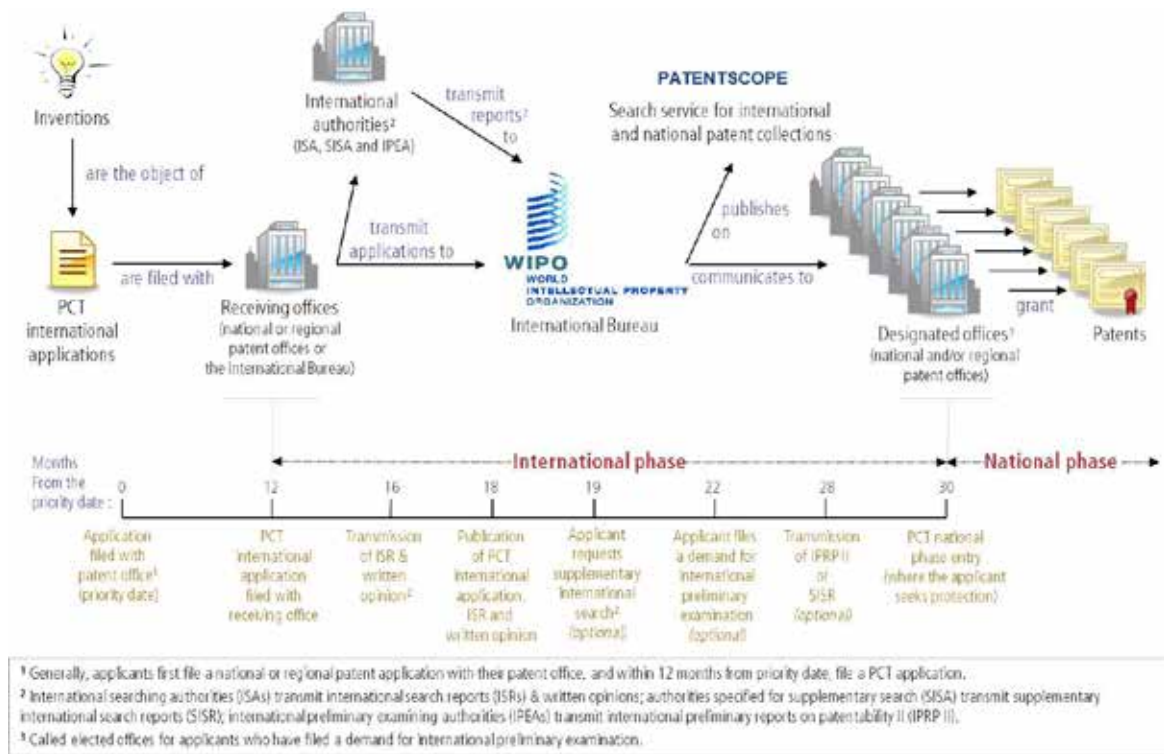
In addition, the PCT System is intended to reduce unnecessary duplication among patent offices and to support work sharing between those offices.

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 and a written opinion on the potential patentability of the invention (figure 2). The International Bureau (IB) of WIPO then publishes the application in its online PATENTSCOPE search database. Following receipt of the international search report and written opinion, the applicant can choose to request a supplementary international search by a supplementary international searching authority, have an international preliminary examination undertaken on this application 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.

Figure 1: Contracting states in 2015



Source: WIPO, December 2015

Figure 2: Overview of the PCT System

Source: World Intellectual Property Organization (WIPO), April 2016.

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 supplementary international search and optional international preliminary examination. Published applications are accessible free of charge through WIPO's online PATENTSCOPE search system.

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), they file an international application under the Patent Cooperation Treaty with a receiving office – the respective national or regional patent office, or the IB – thus beginning the international phase. Only a national or

resident of a PCT contracting state can file a PCT application. If there are several applicants named in the PCT application, only one of them needs to 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 translation of 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 one of the 19 functioning ISAs,⁴ which identify the prior art relevant to the patentability of the invention, establish an international search report, and provide 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 may choose to amend the application to improve the probability of obtaining a patent, to withdraw the application before international publication and before incurring additional costs, or to do nothing.

Supplementary international search

Since January 1, 2009, the supplementary international search service has offered applicants the option to request 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 an ISA's specialty language. Applicants can request a supplementary international search report by a supplementary ISA up to 19 months from the filing (priority) date.

International preliminary examination

After receiving the ISA's written opinion, applicants can request an optional international preliminary examination – 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 resulting international preliminary report on patentability further assists the applicant in determining whether to enter the national phase.

National phase

Applicants have at least 18 months from the filing date of their applications before entering the national phase at individual patent offices. This delay affords additional time – compared with 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, each patent office is responsible for processing the application in accordance with its national patent laws, and for deciding whether to grant patent protection. The time required for that processing varies across patent offices.

Patent Prosecution Highway

The PCT Patent Prosecution Highway (PCT-PPH) pilots comprise bilateral agreements between patent offices to enable applicants to request a fast-track examination procedure. Under these agreements, an applicant receiving a written opinion or an international preliminary report on patentability indicating that at least one claim in the PCT application has novelty, an inventive step and industrial applicability may request that the other patent offices fast-track the examination of corresponding claims in corresponding applications. 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 (a total of 21 at the end of 2015). 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/.

4. The State Intellectual Property Service of Ukraine notified that it would commence operations on February 5, 2016 and the Visegrad Patent Institute was appointed as an international searching authority (ISA), bringing to 21 the total number of ISAs. However, these two offices had not yet commenced operations in 2015.

Data Description

In order to compile figures on the international phase of the PCT System, data were drawn from the WIPO Statistics Database. Due to the delay in transmitting PCT applications to WIPO, the figures for 2015 are estimates. For top filing countries, the 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 decrease was partly due to the fact that in 2014 – as happens every five to six years – the number of weeks of publication was 53 instead of 52, which resulted in an increase in the number of publications recorded that year. This affected the annual growth rates presented in indicators based on published PCT applications, such as the lists of the top PCT applicants.

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 2014. Data may be missing for some offices and may be incomplete for some origins. Data are available for the majority of larger offices. With the 2014 data supplied to WIPO corresponding to 99.5% 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. The equivalent patent application concept is not used in this review. National phase entry data by country of origin may therefore differ slightly from other sources, such as WIPO's IP Statistics Data Center.

The income groups correspond to those used by the World Bank⁵ and the groupings by region are based on the United Nations (UN) definition of regions.⁶

The figures in this review are subject to change.⁷

5. Available at <http://data.worldbank.org/about/country-and-lending-groups>

6. Available at unstats.un.org/unsd/methods/m49/m49regin.htm. Although the geographical terms used by WIPO may differ slightly from those defined by the UN, the composition of regions and subregions remains identical.

7. Regular updates are available at www.wipo.int/ipstats/

Special Theme

The PCT Market Share

When pursuing patent rights outside their home jurisdictions, patent applicants can choose between two filing routes. The first, which has existed since 1883, is the so-called Paris route. This enables an applicant who has filed an application in one office of a Paris Convention signatory to file subsequent applications referring to the same priority date directly in the offices of other signatories, subject to certain conditions. The second option is the PCT route. Since 1978, this has allowed applicants to seek patent protection simultaneously in a large number of offices by filing a single “international” PCT application.

This special theme analyzes the frequency with which applicants choose the PCT rather than the Paris route – that is, the PCT “market share”.

The market share indicators compiled for this special theme rely on international patent family data, rather than patent applications filed abroad. This choice reflects the following considerations:

- Patent family data avoids the multiple counting of patent filings at different offices related to the same invention. A patent family corresponds approximately to a unique invention.
- Patent family data include PCT filings that do not see any subsequent national phase entry. It is arguably important to account for these applications when evaluating the PCT market share, as applicants in these cases showed some intention at the outset to pursue patent rights outside their home jurisdictions.
- Patent family data offer information on the number of patent offices in which applicants eventually seek protection – an important criterion in the choice of filing route.

Please refer to the definitional box for further details of the international patent family data that underlie the analysis in this special theme. Note that the family-based market share indicators presented here are not directly comparable to the application-based market share indicators presented in section B of this review.

The discussion that follows will first take a closer look at international patent family filing trends, analyzing their growth in absolute terms, their distribution and average size by filing route, at the global level and for the top five countries of origin. It will then provide similar information for each of the 35 fields of technology and for the 100 applicants worldwide with the largest numbers of international patent families.

International patent families

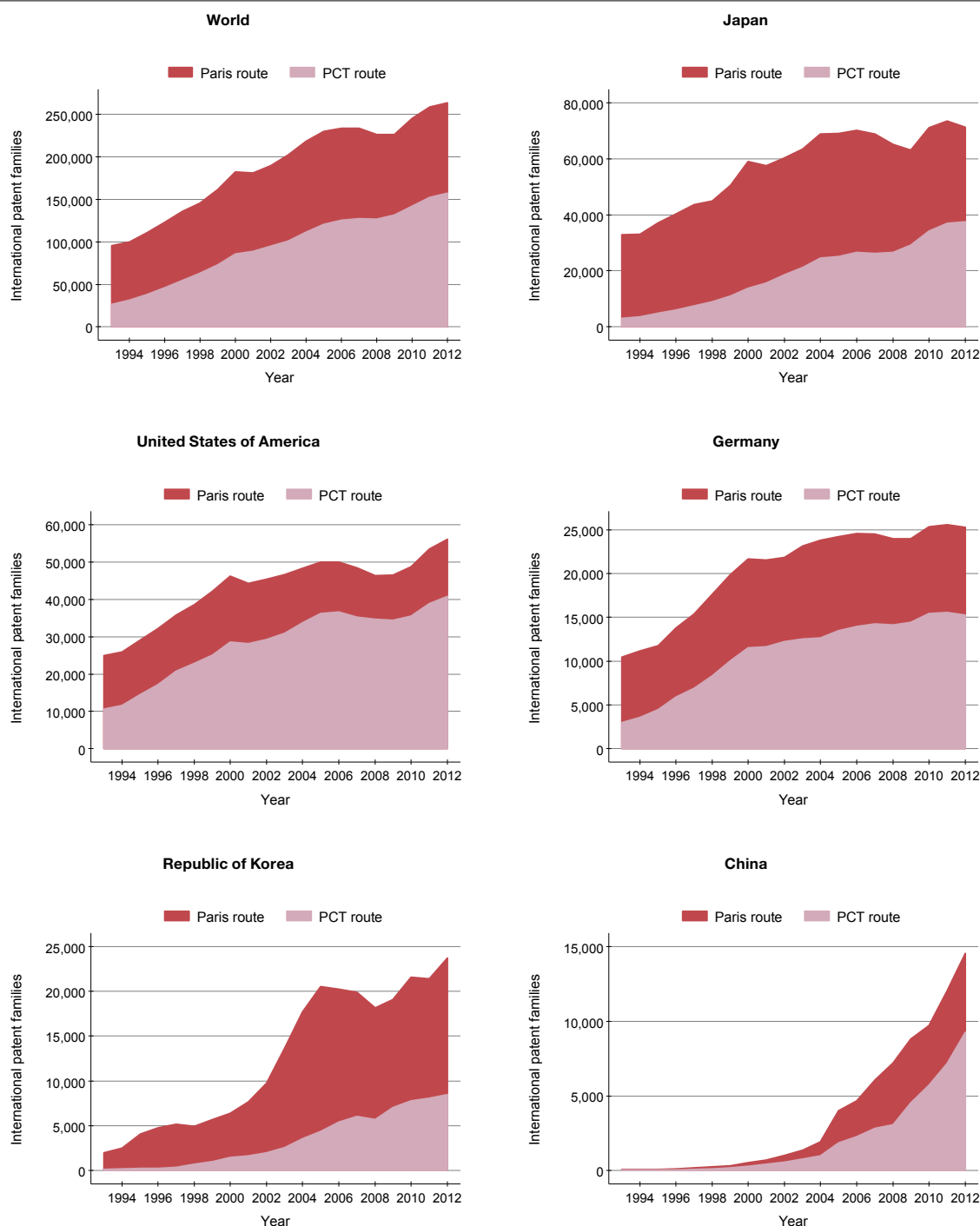
To estimate the number of inventions for which applicants pursue patent rights, WIPO has developed a patent family database. Patent families are a set of interrelated patent applications which are filed in one or more offices, so as to protect the same invention. International patent families are those for which the patent applicants have filed at least one application in an office other than the office in which the priority filing took place.

Patent families are defined as applications interlinked by one or more of the following: addition, continuation application, continuation-in-part application, divisional application, internal priority claim, Paris Convention priority claim, PCT application, PCT national phase entry and provisional application. Data are taken from EPO's PATSTAT database, which contains unit record data for published applications. For the purpose of this analysis, patent families containing a PCT application but no PCT national phase entry are considered to be international patent families, except for the calculation of the average size of families. But families where applicants file abroad first with no subsequent filing are excluded from the analysis. The year of filing, the country or territory of residence of the first-named applicant, and the first-named applicant of the priority filing are used to determine the year, the origin and the applicant's name of a given family. Because one PCT application may refer to more than one priority filing, the number of international patent families using the PCT route may be higher than the number of PCT applications. Due to the usual publication delay, the latest available year for international patent family data is 2012.

Use of the PCT route

In 2012, almost 264,000 international patent families were created worldwide; of these, nearly 60% contained an application filed through the PCT route (figure 1). Since 1993, the number of international patent families has increased from year to year, with only four exceptions (in 2001 and from 2007 to 2009), coinciding with economic downturns. On average, the number of international patent families grew by 5.5% per year since the mid-1990s, with the PCT route (+9.9%) contributing much more to that growth than the Paris route (+2.3%). Indeed, over the period 2003-2012 there was almost no growth in the number of Paris route families (+0.6%) whereas the PCT route saw continuous average annual growth of 5%. This was due to particularly sharp falls in the number of international patent families using the Paris route between 2006 and 2009 combined with a much more rapid recovery for families using the PCT route. The number of the latter increased continuously over the past 20 years, except in 2008, when it decreased by 0.4%.

Figure 1: Trend in international patent families for the top 5 origins and the world by filing route, 1993-2012



Sources: WIPO Statistics Database and EPO PATSTAT database, May 2016.

In 2012, patent applicants residing in Japan and the U.S. created the largest numbers of international patent families worldwide, with 71,274 and 56,000 families, respectively. Japan and the U.S. were followed by Germany (25,295), the Republic of Korea (23,706) and China (14,536). Combined, these five origins accounted for 72.4% of all international patent families worldwide.

On average, during the period 1993-2012, the number of international patent families using the PCT route grew faster than the number of international patent families using the Paris route for all the top five origins. The average annual growth rates for families using the PCT route varied from 7.3% for the U.S. to 34.1% for China, whereas average annual growth rates for families using the Paris route varied from 0.4% for the U.S. to 26.4% for China.

Between 1993 and 2012, the overall share of international patent families using the PCT route increased progressively over time, from 27.6% in 1993 to 59.7% in 2012 (figure 2). Interestingly, the PCT share increased markedly during the course of the global financial crisis – from 53.7% in 2006 to 58.1% in 2009, suggesting that applicants re-evaluated their international patent filing strategies in light of the heightened economic uncertainty.

The shares of international patent families using the PCT route also increased for the five main countries of origin. Between 2008 and 2012, China and Japan recorded the largest increases, with shares of 64% and 53% respectively in 2012. After several years of increases, applicants from Germany and the U.S. reached a plateau during recent years, with, respectively, about 60% and 70% of families using the PCT route. Despite a sharp increase in their use of the PCT System, applicants from the Republic of Korea had by far the lowest share (36%) of international patent families using the PCT route among the top five origins.

The size of international patent families

The size of a patent family indicates the number of patent offices at which patent applications related to the same invention have been filed. The trend in average size of families provides some information on the patenting strategies of applicants over time. At the global level, an international patent family was composed of applications filed at 3.8 different patent offices on average in 2010 (figure 3). This average size

has decreased since its peak in 1998, when it was 4.4 offices. The average size of those using the PCT route dropped to a much greater extent, from 6 offices in 1998 to 4.6 in 2010.

For each of the top five origins, the average size of international patent families has decreased slightly in recent years. Since the early 1990s, only Japan has seen an increase in the average size of its international patent families; this may be due to its use of the PCT route, which increased rapidly over this period. However, since the second half of the 1990s, the average size of international patent families using the PCT route has markedly decreased for each of these five countries. For example, the average size of families using the PCT route for applicants from the Republic of Korea decreased from 6.7 offices in 1994 to 3.9 offices in 2010.

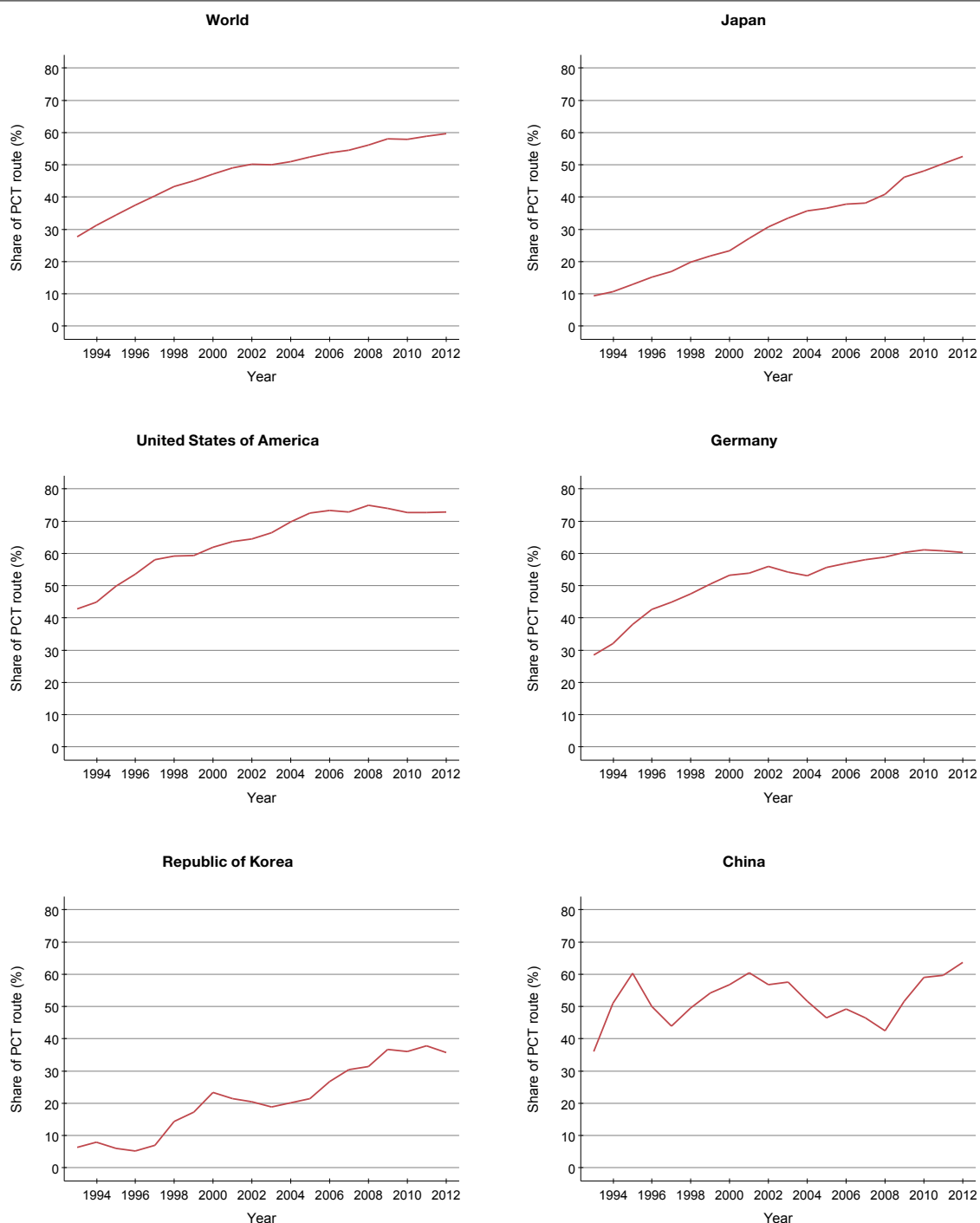
Generally speaking, the attractiveness of the PCT route relative to the Paris route increases with the size of an international patent family. Interestingly, however, the average size of international patent families using the PCT route has progressively decreased since 1995. This likely reflects a general decline in the average size of international patent families as well as applicants deriving greater value from PCT applications, possibly in the face of heightened economic uncertainty. The greater value of the PCT to applicants lies in the information that they receive on the potential patentability of the invention, and the time that they gain in deciding whether to pursue the patent application beyond the PCT international phase and, if so, in which national offices.

Use of the PCT by field of technology

Table 1 shows the number of international patent families using the PCT route by fields of technology for two five-year periods: 2003-07 and 2008-12. It also provides information, for each field, on the share of the PCT System in total and the average size of international patent families.

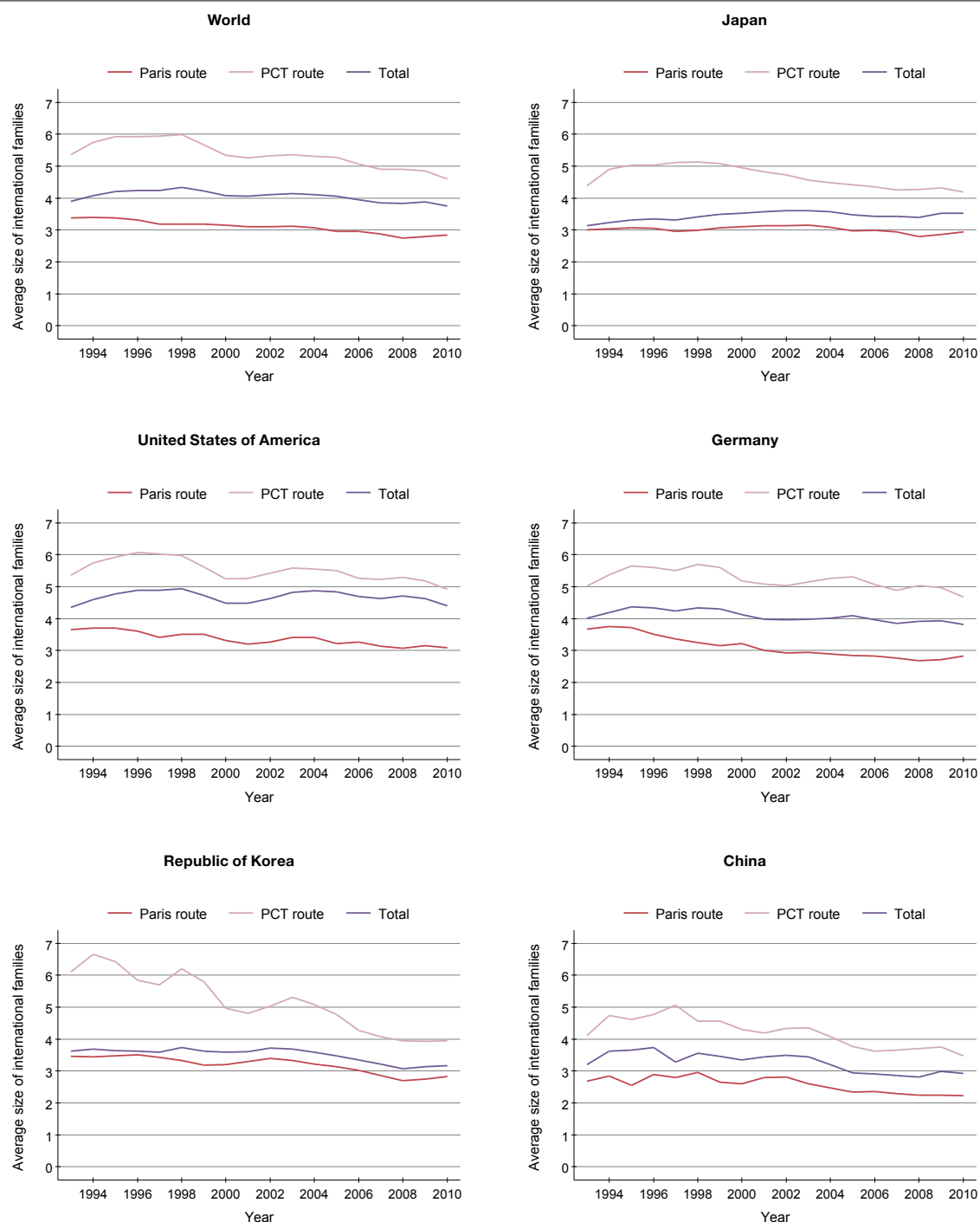
Compared with 2003-07, the number of international patent families using the PCT route increased for 30 of the 35 fields of technology in 2008-12. Digital communication (+67%) and electrical machinery (+57.9%) increased the most, whereas pharmaceuticals (-11.4%) and basic communication processes (-10.3%) saw the sharpest decreases. The share of international patent families using the PCT route increased for all fields of

Figure 2: Share of the PCT route in international patent families for the top 5 origins and the world, 1993-2012



Sources: WIPO Statistics Database and EPO PATSTAT database, May 2016.

Figure 3: Trend in average size of international patent families for the top 5 origins and the world, 1993-2010



Note: The number of patent filings in international patent families as reported in the March 2016 edition of PATSTAT may be incomplete for the most recent years. For this reason, the years 2011 and 2012 have been excluded from these graphs.

Sources: WIPO Statistics Database and EPO PATSTAT database, May 2016.

technology between these two periods. This share increased the most for digital communication (+10.7 percentage points), engines, pumps, turbines (+10.1) and transport (+10). In 2008-12, the PCT share was the highest for pharmaceuticals (93%), biotechnology (91.9%) and organic fine chemistry (89.3%). By contrast, basic communication processes (39.3%) and optics (37.6%) were the only two fields for which applicants mainly used the Paris route.

On average, the size of international patent families decreased between the two periods for all fields of technology, irrespective of the route used. The decreases in average size of families using the PCT route varied from nearly one office to 0.08 offices, depending on the field of technology. For example, they dropped the most for organic fine chemistry (-0.92 offices) and pharmaceuticals (-0.70 offices). The decreases in average size of families using the Paris route were less pronounced, as they varied from 0.41 offices to 0.08 offices. However, compared with the Paris route, the average size of international patent families using the PCT route remained larger for all fields of technology.

The international patent families of the top 100 applicants

During the period 2008-12, the top 100 applicants accounted for 26% of all international patent families. Of those, 48 were from Japan, 13 from the Republic of Korea, 9 from Germany, 7 from France and 6 from both China and the U.S. Altogether, the top 100 applicants had 11 different origins distributed in Asia, Europe and North America. Optics (13 applicants), computer technology (11) and electrical machinery (11) were the fields of technology in which the largest number of these applicants mainly filed.

In 2012, the top 100 applicants filed 45% of their total international patent families using the PCT System. This was 15 percentage points below the average for all applicants (60%). In line with their lower PCT share, the top 100 applicants also showed a smaller overall average patent family size of 3.3 in 2010, compared with 3.7 for all applicants.

With about 23,000 international patent families in 2008-12, Samsung Electronics of the Republic of Korea dominated the ranking by a great margin. It was followed by four Japanese companies: Panasonic Corporation (15,497), Canon Inc. (14,752), Toshiba (12,743) and Sony Corporation (10,949). IBM, in 43rd position, was the U.S. applicant with the most international patent families.

Applicants from the Republic of Korea that ranked in the top 100 applicants list accounted for the majority (53%) of international patent families originating from this country. This share was much higher than the share of the top 100 applicants combined in the world total (26%), reflecting a particularly high concentration of international patent families among a limited number of applicants. While some of the top applicant companies, such as LG Chemical and LG Innotek, used the PCT for a large number of their international patent families, most applicants from the Republic of Korea listed in the top 100 used the PCT route for less than 1% of their international patent families during the period 2008-12. Samsung Electronics alone accounted for 22% of all international patent families from the Republic of Korea during this period, and its PCT share – while increasing – still stood at only 14%. In sum, the relatively low share of families using the PCT route from the Republic of Korea (36%) shown in figure 2 largely reflects the international patent filing strategies of its top applicants.

The top 100 applicants showed high heterogeneity in their use of the PCT: their PCT shares in 2008-12 varied from 0% for five companies to 99.9% for Shenzhen Huaxing Optoelect Tec. Even two companies with a similar profile may use the PCT route quite differently. This is the case, for example, for Panasonic Corporation and Sony Corporation – two Japanese companies filing mainly in the field of audio-visual technology with relatively similar numbers of international patent families. In 2008-12, Panasonic Corporation filed 78% of its international patent families using the PCT while Sony Corporation filed 24% despite having, on average, larger international patent families than Panasonic. Nearly all the top 100 applicants have a practical knowledge of the PCT as they have used it at least once over the past 10 years, and generally for large international patent families.

Table 1: International patent families by field of technology

				International patent families using the PCT route		Share of international families using the PCT route in total (in %)		Average size of international families using the PCT route			Average size of international families using the Paris route		
				2003-07 (1)	2008-12 (2)	Growth (in %) between (1) and (2)	2003-07 (1)	2008-12 (2)	Changes* between (1) and (2)	2003-07 (1)	2008-12 (2)	Changes between (1) and (2)	2003-07 (1)
Field of technology													
I Electrical engineering													
1	Electrical machinery, apparatus, energy	30,329	47,894	57.9	42.2	50.2	8.1	4.7	4.5	-0.18	3.2	3.0	-0.24
2	Audio-visual technology	24,076	26,190	8.8	35.2	41.3	6.1	4.6	4.3	-0.35	3.1	2.8	-0.29
3	Telecommunications	24,778	24,414	-1.5	48.7	55.4	6.7	4.8	4.5	-0.35	3.0	2.7	-0.24
4	Digital communication	26,475	44,216	67.0	60.1	70.8	10.7	4.8	4.3	-0.46	3.1	2.7	-0.30
5	Basic communication processes	6,351	5,697	-10.3	38.7	39.3	0.6	4.7	4.4	-0.30	2.9	2.7	-0.25
6	Computer technology	40,664	50,433	24.0	42.6	45.8	3.1	4.5	4.2	-0.24	2.9	2.7	-0.22
7	IT methods for management	6,156	8,702	41.4	62.0	65.0	3.0	4.6	4.4	-0.23	2.9	2.7	-0.19
8	Semiconductors	19,077	26,742	40.2	30.9	40.6	9.7	4.5	4.3	-0.14	3.1	3.0	-0.13
II Instruments													
9	Optics	17,001	20,041	17.9	30.5	37.6	7.2	4.5	4.3	-0.18	3.1	2.9	-0.19
10	Measurement	24,203	29,141	20.4	51.8	55.7	3.8	4.6	4.4	-0.18	3.1	2.9	-0.12
11	Analysis of biological materials	7,882	8,077	2.5	84.2	86.2	2.1	5.6	5.5	-0.17	3.3	3.0	-0.28
12	Control	9,599	10,319	7.5	47.9	49.5	1.7	4.6	4.4	-0.22	3.1	2.9	-0.26
13	Medical technology	35,033	42,885	22.4	72.9	75.9	3.0	5.2	4.9	-0.27	3.3	3.1	-0.27
III Chemistry													
14	Organic fine chemistry	31,323	29,603	-5.5	86.8	89.3	2.5	7.7	6.8	-0.92	3.8	3.5	-0.22
15	Biotechnology	19,640	22,441	14.3	89.5	91.9	2.5	6.3	6.1	-0.24	3.2	2.9	-0.32
16	Pharmaceuticals	37,233	32,987	-11.4	92.7	93.0	0.3	7.9	7.2	-0.70	3.5	3.1	-0.37
17	Macromolecular chemistry, polymers	13,024	15,139	16.2	75.0	79.8	4.7	5.8	5.4	-0.37	3.9	3.6	-0.30
18	Food chemistry	6,804	7,495	10.2	79.6	83.0	3.3	6.5	6.3	-0.24	3.4	3.1	-0.28
19	Basic materials chemistry	17,938	21,856	21.8	74.8	80.5	5.7	6.5	6.0	-0.47	3.7	3.5	-0.19
20	Materials, metallurgy	10,521	13,721	30.4	67.6	74.9	7.3	5.7	5.4	-0.36	3.6	3.3	-0.25
21	Surface technology, coating	15,163	16,873	11.3	61.6	64.0	2.4	5.3	5.1	-0.24	3.5	3.3	-0.25
22	Micro-structural and nano-technology	1,476	2,001	35.6	58.5	61.6	3.0	5.3	4.9	-0.42	3.4	3.0	-0.41
23	Chemical engineering	15,950	18,414	15.4	67.2	72.4	5.2	5.6	5.3	-0.32	3.5	3.3	-0.19
24	Environmental technology	6,886	9,307	35.2	59.2	65.3	6.1	5.4	5.0	-0.34	3.2	3.0	-0.19
IV Mechanical engineering													
25	Handling	14,158	16,059	13.4	52.4	55.0	2.6	5.4	5.1	-0.33	3.2	2.9	-0.26
26	Machine tools	12,388	15,429	24.5	51.2	55.2	4.0	5.2	4.9	-0.34	3.4	3.2	-0.20
27	Engines, pumps, turbines	12,876	19,780	53.6	42.1	52.2	10.1	4.8	4.7	-0.08	3.3	3.1	-0.12
28	Textile and paper machines	9,515	8,776	-7.8	37.6	41.0	3.4	5.3	5.1	-0.29	3.0	2.8	-0.20
29	Other special machines	16,537	19,842	20.0	57.8	62.2	4.4	5.6	5.2	-0.39	3.3	3.1	-0.20
30	Thermal processes and apparatus	6,861	10,027	46.2	48.0	56.4	8.3	5.0	4.8	-0.17	3.1	2.9	-0.13
31	Mechanical elements	15,025	19,413	29.2	46.4	55.0	8.6	4.8	4.6	-0.25	3.2	3.0	-0.16
32	Transport	18,225	25,936	42.3	40.5	50.5	10.0	4.5	4.4	-0.11	3.0	2.9	-0.08
V Other fields													
33	Furniture, games	9,985	10,417	4.3	48.9	52.2	3.2	4.7	4.6	-0.13	3.1	2.8	-0.38
34	Other consumer goods	9,907	11,571	16.8	52.8	60.0	7.3	5.1	4.8	-0.34	3.3	3.0	-0.30
35	Civil engineering	12'694	17'508	37.9	49.6	59.4	9.8	5.0	4.6	-0.40	2.9	2.7	-0.12

Note: *Changes in percentage points. The number of patent applications in international patent families as reported in the March 2016 edition of PATSTAT may be incomplete for the most recent years. For this reason, the years 2011 and 2012 have been excluded from the average size of international patent families presented in this table.

Sources: WIPO Statistics Database and EPO PATSTAT database, May 2016.

Table 2: Top 100 applicants in international patent families, 2003-12

Overall rank	Applicant	Origin	Main field of technology in 2003-12	International patent families		Share of international families using the PCT route (in %)		Average size of international families using the PCT route		Average size of international families using the Paris route	
				2003-07	2008-12	2003-07	2008-12	2003-07	2008-10	2003-07	2008-10
1	SAMSUNG ELECTRONICS CO., LTD.	Republic of Korea	Computer technology	31,672	22,558	6.8	13.9	5.2	4.3	3.1	2.5
2	PANASONIC CORPORATION	Japan	Audio-visual technology	18,617	15,497	58.9	78.3	3.9	3.6	3	2.7
3	CANON INC	Japan	Optics	12,517	14,752	12.3	15.7	3.8	3.6	2.7	2.6
4	TOSHIBA KK	Japan	Computer technology	11,735	12,743	7.8	15.8	4.3	3.4	2.7	2.4
5	SONY CORPORATION	Japan	Audio-visual technology	9,230	10,949	20.9	24	5.4	5.9	3.6	3.6
6	ROBERT BOSCH GMBH	Germany	Engines, pumps, turbines	7,785	9,838	52.2	55.9	4.2	4.2	2.7	2.7
7	FUJITSU LTD	Japan	Computer technology	10,477	8,425	26.8	26.7	3.1	3.1	2.8	2.5
8	HONGFUJIN PRECISION INDUSTRY (SHENZHEN) CO., LTD.	China	Computer technology	2,659	7,580	–	0.1	n.a.	4	2.1	2
9	SHARP CORPORATION	Japan	Optics	5,856	7,553	43.2	76.9	3.7	3.7	3.1	3
10	SIEMENS AG	Germany	Electrical machinery, apparatus, energy	8,509	7,423	57.8	54.3	4.1	4.2	2.6	2.8
11	FUJIFILM CORPORATION	Japan	Optics	4,436	7,077	19.9	40.4	3.9	4.1	2.6	2.7
12	TOYOTA JIDOSHA KABUSHIKI KAISHA	Japan	Transport	5,776	6,882	66.4	81.9	4.4	3.9	3.1	2.4
13	SEIKO EPSON CORPORATION	Japan	Textile and paper machines	9,105	6,787	7.6	3.5	4.6	5	3.1	2.8
14	MITSUBISHI ELECTRIC CORPORATION	Japan	Electrical machinery, apparatus, energy	4,384	6,099	45.9	65.7	4.2	4.2	3.2	3
15	HONDA MOTOR CO LTD	Japan	Transport	6,312	5,650	19.6	31.5	4.7	4	3.2	3
16	LG ELECTRONICS INC	Republic of Korea	Audio-visual technology	11,956	5,644	27.5	37	4.8	3.8	3.3	3
17	HITACHI LTD	Japan	Computer technology	7,677	5,511	4.1	37.9	3.3	2.9	2.8	2.7
18	RICOH CO LTD	Japan	Optics	6,234	5,070	11.3	11.8	5.2	5.7	2.6	2.6
19	HUAWEI TECHNOLOGIES CO., LTD.	China	Digital communication	2,804	4,903	96.4	93.2	3.2	3.3	2.8	2.7
20	NEC CORPORATION	Japan	Computer technology	4,523	4,880	50.6	85	3.2	3.2	3.2	2.6
21	KOREA ELECTRONICS TELECOMM	Republic of Korea	Digital communication	3,731	4,836	36.6	16	2.8	3.3	2.2	2.1
22	DENSO CORPORATION	Japan	Engines, pumps, turbines	6,505	4,815	1.8	11.9	4.3	3.9	2.9	2.7
23	SAMSUNG ELECTRO MECHANICS	Republic of Korea	Electrical machinery, apparatus, energy	1,982	4,034	–	0.1	n.a.	4	3.4	2.7
24	BROTHER INDUSTRIES LTD	Japan	Textile and paper machines	4,208	4,032	9.3	4.6	3.1	4.9	2.6	2.5
25	ZTE CORPORATION	China	Digital communication	457	3,612	99.8	99.8	3.3	3.5	3	2
26	BASF SE	Germany	Organic fine chemistry	1,221	3,564	94.7	93.5	6.7	6.1	2.2	2.1
27	TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)	Sweden	Digital communication	2,219	3,359	99.1	97.7	4.4	3.2	2	2
28	KONINKLIJKE PHILIPS ELECTRONICS N.V.	Netherlands	Audio-visual technology	8,160	3,205	99.6	98.5	5.1	5.5	2.6	2.1
29	HONGHAI PRECISION INDUSTRY CO., LTD.	Taiwan, Province of China	Electrical machinery, apparatus, energy	1,046	3,187	0.1	–	2	n.a.	2.3	2
30	HYUNDAI MOTOR CO LTD	Republic of Korea	Transport	1,246	3,026	0.1	0.3	4	5.3	3.6	3.4
31	FUJI XEROX CO LTD	Japan	Optics	2,959	2,948	0.5	0.9	4	6	2.6	2.8
32	SANYO ELECTRIC CO	Japan	Electrical machinery, apparatus, energy	4,318	2,923	13.5	34.9	3.8	3.2	3.5	3.1
33	SUMITOMO CHEMICAL CO	Japan	Organic fine chemistry	1,755	2,736	52.9	70.8	5.7	5	4.5	4.3
34	MITSUBISHI HEAVY INDUSTRIES LTD	Japan	Engines, pumps, turbines	955	2,524	57.1	85.8	4.7	4.7	3.7	3.3
35	SAMSUNG DISPLAY CO LTD	Republic of Korea	Semiconductors	6	2,393	–	0.2	n.a.	n.a.	4.5	4.8
36	NITTO DENKO CORPORATION	Japan	Basic materials chemistry	1,309	2,365	40.4	49.2	4.7	4.8	4.7	4.5
37	COMMISSARIAT À L'ÉNERGIE ATOMIQUE ET AUX ÉNERGIES ALTERNATIVES	France	Semiconductors	1,250	2,352	72.1	70.8	4.6	4.6	3.7	3.9
38	INDUSTRY TECHNOLOGY RESEARCH INSTITUTE	Taiwan, Province of China	Semiconductors	2,278	2,329	0.7	1.1	3.7	3.2	2.3	2.3
39	BSH BOSCH SIEMENS HAUSGERÄTE	Germany	Other consumer goods	1,512	2,328	76.2	52.3	3.9	3.6	2.2	2.1
40	LG INNOTEK CO LTD	Republic of Korea	Semiconductors	335	2,299	58.2	41.1	3.8	4	2.4	4
41	KYOCERA CORPORATION	Japan	Telecommunications	1,895	2,286	61	83.9	3.3	3.2	3.1	2.3
42	TOKYO ELECTRON LTD	Japan	Semiconductors	2,192	2,270	43.5	35.2	4.2	4	3.5	3.9

Overall rank	Applicant	Origin	Main field of technology in 2003-12	International patent families		Share of international families using the PCT route (in %)		Average size of international families using the PCT route		Average size of international families using the Paris route	
				2003-07	2008-12	2003-07	2008-12	2003-07	2008-10	2003-07	2008-10
43	INTERNATIONAL BUSINESS MACHINES CORPORATION	United States of America	Computer technology	5,214	2,252	24.5	27.3	4.7	4.5	2.4	2.1
44	HEWLETT PACKARD DEVELOPMENT CO	United States of America	Computer technology	2,210	2,197	28.5	97.6	3.8	3.5	2.7	2.3
45	MURATA MANUFACTURING CO	Japan	Electrical machinery, apparatus, energy	1,141	2,066	82.9	75.5	3.8	3.2	3.3	3.2
46	RENESAS ELECTRONICS CORPORATION	Japan	Semiconductors	14	2,064	14.3	5.6	5	3.8	3.3	2.4
47	LG DISPLAY CO LTD	Republic of Korea	Optics	490	2,013	0.6	0.9	4.3	4	3.2	3.4
48	AU OPTRONICS CORP	Taiwan, Province of China	Optics	1,556	1,929	0.1	1.8	3	n.a.	2.3	2.1
49	HYNIX SEMICONDUCTOR INC	Republic of Korea	Semiconductors	3,436	1,922	0	–	4	n.a.	2.9	2.5
50	SUMITOMO ELECTRIC INDUSTRIES	Japan	Optics	1,290	1,837	44.7	68.4	5.6	5.2	3.1	2.8
51	OLYMPUS CORPORATION	Japan	Optics	2,812	1,814	42.2	42.2	3.6	3.3	2.4	2.4
52	SAMSUNG MOBILE DISPLAY CO LTD	Republic of Korea	Semiconductors	139	1,787	–	0.1	n.a.	4	3.2	3.1
53	YAZAKI CORPORATION	Japan	Electrical machinery, apparatus, energy	1,002	1,754	12.6	70.5	4.1	4.3	3	3
54	NTT DOCOMO INC	Japan	Digital communication	1,456	1,707	43.1	79.4	7	5.4	4.1	3.4
55	KONICA MINOLTA BUSINESS TECHNOLOGIES	Japan	Optics	1,759	1,692	1.2	4	2.9	2.6	2.2	2.4
56	LG CHEMICAL LTD	Republic of Korea	Electrical machinery, apparatus, energy	1,223	1,674	93.4	92.1	5.3	4.9	3.1	3.5
57	NISSAN MOTOR	Japan	Transport	2,185	1,664	16.8	79.6	4	5.5	3.4	3
58	SAMSUNG SDI CO LTD	Republic of Korea	Electrical machinery, apparatus, energy	5,193	1,621	0	0.2	4.5	n.a.	3.5	2.9
59	SK HYNIX INC	Republic of Korea	Computer technology	0	1,570	n.a.	–	n.a.	n.a.	n.a.	2.5
60	SHENZHEN FUTAIHONG PRECISION INDUSTRY CO., LTD.	China	Audio-visual technology	365	1,501	–	–	n.a.	n.a.	2.1	2.1
61	ALCATEL LUCENT	France	Digital communication	788	1,497	42.4	83.8	4.9	5.3	2.9	2.3
62	ASAHI GLASS CO LTD	Japan	Other special machines	904	1,485	80.6	85.3	4.5	4.7	3.7	3.6
63	INTEL CORPORATION	United States of America	Computer technology	1,183	1,465	91	97.5	4.3	4.7	2.9	2.4
64	HITACHI HIGH TECHNOLOGIES CORPORATION	Japan	Measurement	878	1,414	1.5	62	2.9	2.9	2.4	2.7
65	RESEARCH IN MOTION LTD	Canada	Digital communication	1,225	1,404	12.2	22.8	4.5	3.8	3.5	2.3
66	NIPPON KOGAKU KK	Japan	Optics	1,655	1,374	70.1	68.6	4.1	3.5	2.8	2.7
67	SHENZHEN HUAXING OPTOELECT TEC	China	Optics	0	1,370	n.a.	99.9	n.a.	2.2	n.a.	n.a.
68	NOKIA CORPORATION	Finland	Digital communication	2,806	1,359	89.4	95.1	4.3	3.3	2.5	2.6
69	GM GLOBAL TECH OPERATIONS INC	United States of America	Transport	992	1,335	23.4	8.2	4.3	4.5	2.7	3.7
70	KOBE STEEL LTD	Japan	Materials, metallurgy	917	1,255	40.1	53.4	5	4.9	3.8	3.3
71	SCHAEFFLER TECHNOLOGIES GMBH & CO KG	Germany	Mechanical elements	40	1,248	67.5	69	3.8	3.4	2.5	2.4
72	KONICA CORPORATION	Japan	Optics	908	1,225	48.3	64.3	3.5	2.8	2.7	2.4
73	ZAHNRADFABRIK FRIEDRICHSHAFEN	Germany	Mechanical elements	1,421	1,219	46.3	52.8	5	4.3	2.4	2.3
74	TORAY INDUSTRIES	Japan	Macromolecular chemistry, polymers	616	1,200	91.7	99.1	5.6	6.4	4.4	2
75	THOMSON LICENSING	France	Audio-visual technology	1,244	1,183	75.4	72.1	6.1	4.8	5.1	4.7
76	FRAUNHOFER GES FORSCHUNG	Germany	Measurement	1,040	1,164	81.5	78.9	4.2	3.9	2.3	2.5
77	PEUGEOT CITROEN AUTOMOBILES SA	France	Transport	1,118	1,154	35	62.5	3.2	3	2.1	2
78	WISTRON CO., LTD.	Taiwan, Province of China	Computer technology	138	1,153	1.4	–	6	n.a.	2.1	2.1
79	BRIDGESTONE CORPORATION	Japan	Transport	1,071	1,152	85.7	96.5	3.9	4.3	3	3.2
80	THALES SA	France	Measurement	769	1,149	68.1	36.1	4	4.2	2.7	3.3
81	NXP B.V.	Netherlands	Semiconductors	1,265	1,133	99.7	55.4	3.9	2.7	2	2.6

Overall rank	Applicant	Origin	Main field of technology in 2003-12	International patent families		Share of international families using the PCT route (in %)		Average size of international families using the PCT route		Average size of international families using the Paris route	
				2003-07	2008-12	2003-07	2008-12	2003-07	2008-10	2003-07	2008-10
82	SHINETSU CHEMICAL CO	Japan	Macromolecular chemistry, polymers	1,106	1,131	10.8	14.8	5.4	6	3.9	4.4
83	DAIKIN INDUSTRIES LTD	Japan	Thermal processes and apparatus	1,184	1,130	91.8	83	4.8	4.6	2.1	2
84	CASIO COMPUTER CO LTD	Japan	Audio-visual technology	908	1,111	24	2.3	5.5	4.8	3.6	3.8
85	L'OREAL	France	Organic fine chemistry	1,593	1,103	19	76.2	4.5	4	4.2	5
86	KAO CORPORATION	Japan	Organic fine chemistry	1,248	1,097	60.7	90.2	4.8	4.6	3.8	3
87	NOKIA SIEMENS NETWORKS OY	Finland	Digital communication	181	1,093	93.9	98.4	4.1	3.1	2.6	2.5
88	HENKEL KGAA	Germany	Organic fine chemistry	976	1,045	82	83.4	3.6	3.5	2.1	2
89	SNECMA	France	Engines, pumps, turbines	187	1,039	2.7	73	6.8	6.2	5.9	2.8
90	AISIN SEIKI	Japan	Transport	944	1,034	21.2	39.6	3.7	4.2	3.1	3.1
91	HITACHI AUTOMOTIVE SYSTEMS LTD	Japan	Engines, pumps, turbines	0	1,031	n.a.	42.7	n.a.	3.6	n.a.	3.4
92	ABB TECHNOLOGY AG	United States of America	Electrical machinery, apparatus, energy	312	1,016	75	76.1	5.2	4.9	3.9	3.6
93	DSM IP ASSETS BV	Netherlands	Organic fine chemistry	973	1,013	97.9	96.9	6.3	5.5	2.7	2.8
94	JFE STEEL KK	Japan	Materials, metallurgy	421	1,012	91.2	95.1	5.7	6.1	4.3	2.4
95	SEMICONDUCTOR ENERGY LAB	Japan	Semiconductors	1,616	1,010	27.4	30.8	4	4.7	3.5	4.7
96	GENERAL ELECTRIC	United States of America	Engines, pumps, turbines	2,640	995	21.3	35.2	5.4	5	3.8	3.2
97	AUDI AG	Germany	Transport	391	956	20.2	53.8	3.6	3.9	2.3	2.5
98	NTN TOYO BEARING CO LTD	Japan	Mechanical elements	1,441	954	68.9	92.9	3.7	4	2.7	2.3
99	SUMITOMO RUBBER INDUSTRIES	Japan	Transport	693	954	16.5	32.7	5.1	5.4	3.5	3.7
100	TSINGHUA UNIVERSITY	China	Electrical machinery, apparatus, energy	396	946	16.9	19.1	5	3.7	2.8	2.9

Note: The number of patent applications in international patent families as reported in the March 2016 edition of PATSTAT may be incomplete for the most recent years. For this reason, the years 2011 and 2012 have been excluded from the average size of international patent families presented in this table.

Sources: WIPO Statistics Database and EPO PATSTAT database, May 2016.

Conclusion

In 2012, the market share of the PCT was almost 60% of the 264,000 international patent families. Since the mid-1990s, and especially during the financial crisis, the number of international patent families using the PCT route increased faster than the number of families using the Paris route. The number of those using the PCT route grew, on average, by nearly 10% per year between 1993 and 2012, compared with just 2.3% average annual growth for families using the Paris route during the same period. The trends for each of the top five origins are similar to the trend at global level. Their shares of international patent families created using the PCT route have markedly increased since the mid-1990s. In 2012, they varied from 36% for the Republic of Korea to 72.8% for the U.S. The PCT share also increased for all of the 35 fields of technology during the 2008-12 period. Several fields, such as digital communication, saw a sharp increase in their use of the PCT route.

The average size of international patent families decreased slightly over time, and markedly so for the PCT route, where it dropped from 6 offices in 1998 to

4.6 in 2010. The average size of international patent families using the PCT route decreased markedly for each of the top five countries of origin, as well as for each of the 35 fields of technology. This may indicate that applicants derive increasing value from filing PCT applications independent of the intended size of their patent families.

On average, in 2012 the top 100 applicants (45%) used the PCT route proportionally less than did all applicants combined (60%). This may be partly due to the average size of the top 100 applicants' international patent families (3.3), which is smaller than that for all applicants (3.7). Nearly half the top 100 applicants were from Japan. With only seven applicants each, China and the U.S. had the same number of applicants within this top 100 list. In the case of the Republic of Korea, a majority of its international patent families (53%) was concentrated among applicants appearing in the top 100 applicants list. Although the top 100 applicants show a high degree of heterogeneity in their use of the PCT route, nearly all have used this route in recent years.

Section A

Statistics on the International Phase: PCT Applications

Section A covers the international phase of the PCT procedure. It provides a brief overview of global trends and then focuses on PCT applications by receiving office (RO), country of origin and geographical region. It also contains data by type of applicant and field of technology – and for selected ROs and origins. The statistical table in the annex provides data for all offices and origins.

A.1 – Overview

A.1.1 – Overall trend

In 2015, an estimated 218,000 PCT applications were filed, representing an increase of 1.7% on filings in 2014 (figure A.1.1). This was the sixth consecutive year of growth, but also the fourth consecutive year of slow-down in growth, since the 11% increase recorded in 2011.

In 2015, 85 of the 116 ROs, representing 73% of ROs, received at least one PCT application, and of these ROs, 36 received more filings in 2015 than in 2014.

A.1.2 – Top receiving offices

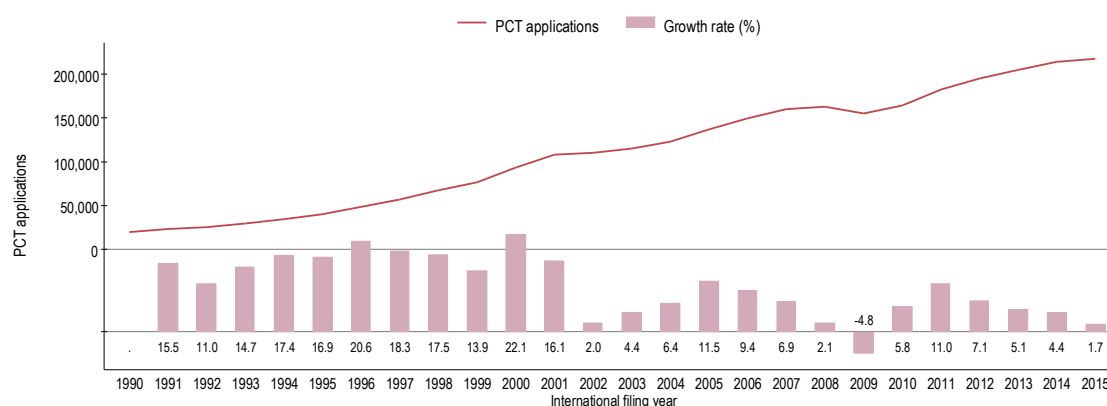
The top 15 ROs accounted for 96% of all applications filed in 2015. With 57,881 filings, the United States Patent and Trademark Office (USPTO) received the highest number of PCT applications; it was followed by the Japan Patent Office (JPO) with 43,285 applications, and the European Patent Office (EPO) with 34,302 (figure A.1.2.1).

Filings increased for 6 of the top 15 ROs. Three offices experienced double-digit growth, namely: the State Intellectual Property Office of the People's Republic of China (SIPO) (+14.6%), the Korean Intellectual Property Office (KIPO) (+11.6%), and the office of Israel (+10.1%). In contrast, the sharpest annual decreases were seen at the offices of Sweden (-15%), Finland (-9%) and Canada (-8%). The USPTO (-6.6%) also experienced a sharp decrease, which was likely due to a change in the U.S. patent law. The America Invents Act likely contributed to the temporary surge of filings seen in 2014 and filings at USPTO returned to the long-term trend in 2015.

Among middle-income countries, beyond SIPO, the offices of Turkey (705), India (687) and Brazil (484) received the highest numbers of PCT applications in 2015 (figure A.1.2.2). Filings increased at 9 of the listed 15 ROs, with Serbia (+133.3%), Thailand (+65.5%), Peru (+50%), Turkey (+29.4%), Romania (+22.6%), South Africa (+20.8%) and Egypt (+16.7%) showing double-digit annual growth rates. In contrast, the offices of Morocco (-43.1%), India (-15%) and Malaysia (-12.5%) saw the sharpest decreases.

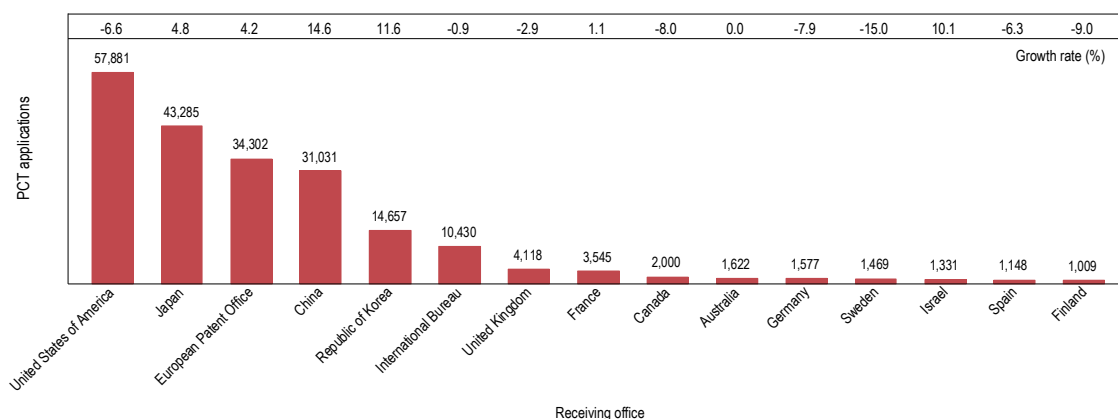
As is the case for all PCT applicants, those from low- and middle-income countries can choose to file their PCT applications with the International Bureau (IB) of WIPO acting as the RO. For certain countries, the IB is the only competent RO. In 2015, the IB as the RO received 1,624 applications from low- and middle-income countries, representing an increase of 7.7% on

Figure A.1.1: Trend in PCT applications



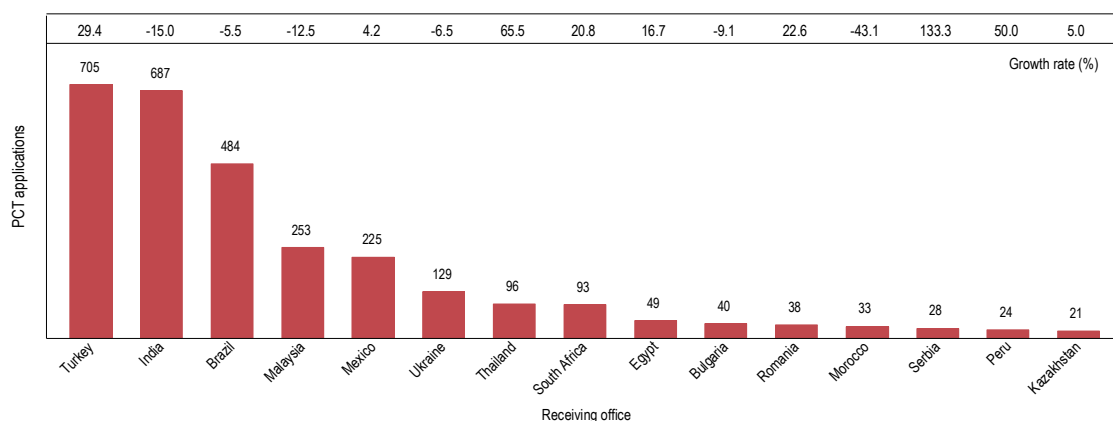
Note: Data for 2015 are WIPO estimates.

Source: WIPO Statistics Database, May 2016.

Figure A.1.2.1: PCT applications for the top 15 receiving offices, 2015

Note: Data for 2015 are WIPO estimates.

Source: WIPO Statistics Database, May 2016.

Figure A.1.2.2: PCT applications for selected offices of middle-income countries, 2015

Note: Data for 2015 are WIPO estimates. China is not included in this figure because it appears in figure A.1.2.1, and also because of the significant difference between the number of PCT applications received by SIPO and by the ROs of other middle-income countries.

Source: WIPO Statistics Database, May 2016.

2014 figures. Among applicants from the 51 low- and middle-income countries which filed at this RO, those from India (707 filings), China (224) and South Africa (218) filed the highest numbers of PCT applications.

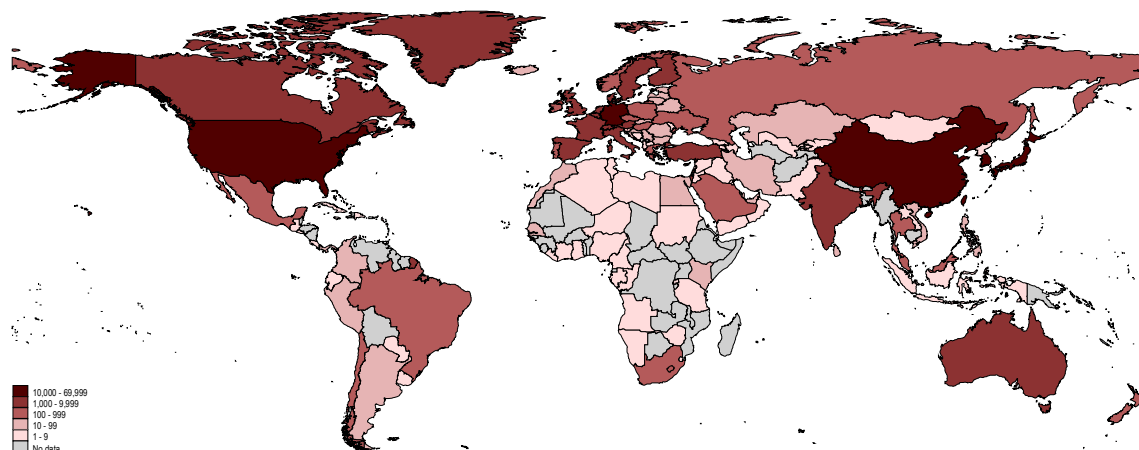
A.2 – PCT applications by country of origin

Counts are based on the international filing date and country of residence of the first-named applicant. A statistical table detailing all origins is provided in the annex.

A.2.1 – World map

Even though applicants from 132 countries filed PCT applications in 2015, the bulk of these applications originated in just a few countries (figure A.2.1). Applicants from Japan and the U.S. combined filed almost half of all applications (47%). When the numbers of filings from China, Germany and the Republic of Korea are included, these top five countries collectively filed 75% of all PCT applications.

High-income countries accounted for 83.5% of total PCT filings, whereas the share for middle-income

Figure A.2.1: PCT applications by country of origin, 2015

Note: Data for 2015 are WIPO estimates.

Source: WIPO Statistics Database, May 2016.

countries was 15.9%. Among middle-income countries, applicants from China were by far the largest users of the PCT System, having filed almost 30,000 applications in 2015. They were followed by applicants from India (1,423), Turkey (1,016) and Brazil (547). Applicants from low-income countries filed 13 PCT applications; of these, filings from the Democratic People's Republic of Korea (6), the United Republic of Tanzania (2) and Zimbabwe (2) accounted for the highest numbers.

A.2.2 – Filing trends

Despite a 6.7% decrease in filings from the U.S. in 2015, its applicants accounted for the largest number of applications (57,385). Prior to 2015, filings from the U.S. grew continuously except during two periods – 2002-03 and 2008-10 – which coincided with economic downturns. The decrease in filings in 2015 was the second sharpest recorded for U.S. applicants since the PCT System entered into force in 1978; the previous highest decrease (-11.6%) recorded for the U.S. occurred in 2009.

Filings from Japan (44,235) increased by 4.4% in 2015. In 2014, they decreased by 3.2%, ending 22 years of consecutive growth, including a period of strong growth between 2010 and 2012.

China saw the highest growth rate among the top 10 PCT filing countries – annual growth of 16.8%, representing 29,846 applications filed. It became the third largest filer in 2013 due to a sharp increase in filings, especially since 2010.

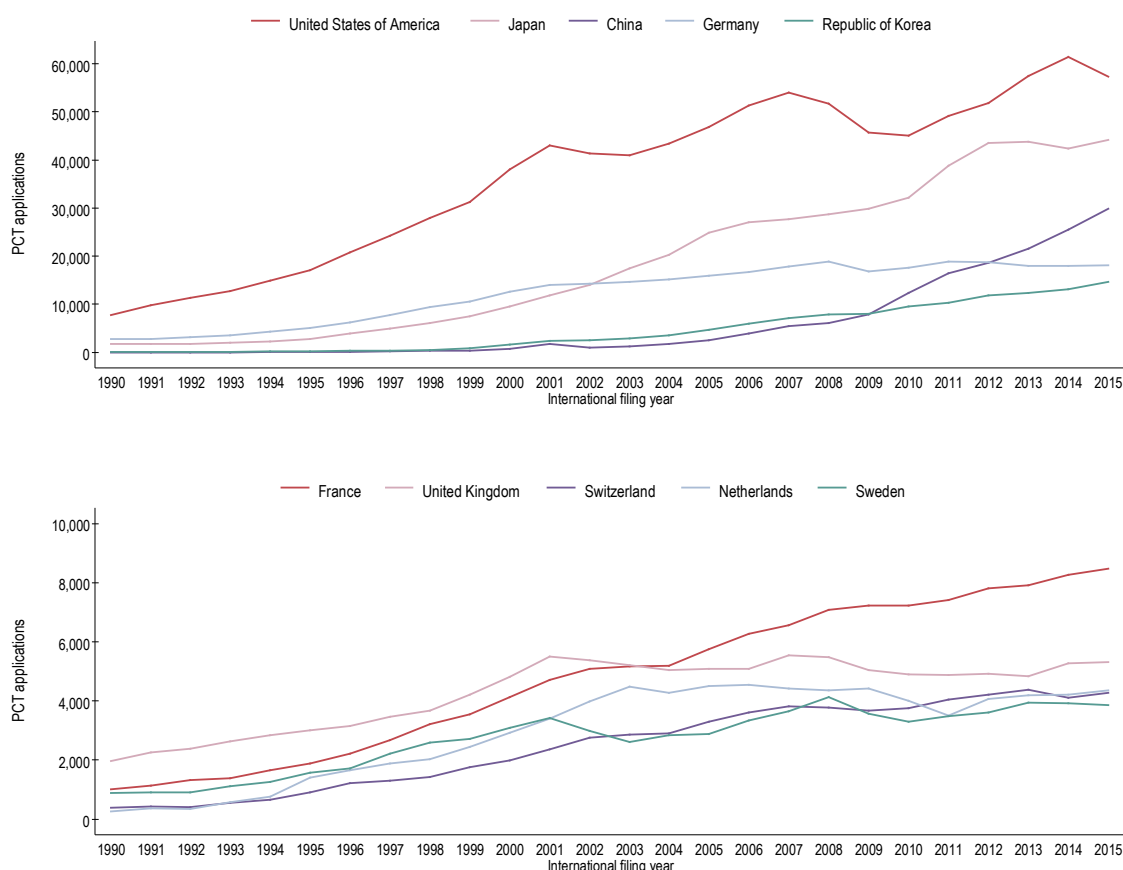
Germany experienced slight growth of 0.5%, with 18,072 applications filed in 2015. From 1990 onwards, German applicants increased their filings each year until the economic downturn of 2009. Since then, German filings have not exceeded their 2008 level.

Applications from the Republic of Korea rose by 11.5% in 2015 to reach 14,626. This represents the sharpest growth since 2012. Among the top five origins, the Republic of Korea is the only country to have achieved virtually constant growth since 1990. The only decrease (-0.3%) recorded during this period dates back to 1997.

All five countries positioned between sixth and tenth place are in Europe. France is the only one that has seen continuous growth in filings since 1990. The four others in this group have experienced several years of decreases since 2008, and Switzerland is the only one to have exceeded its pre-2009 filing level.

Table A.2.2.2 shows the top countries (up to 10) in each region whose applicants filed more than 20 PCT applications in 2015. These regions are based on the United Nations definition of regions. In 2015, applications were filed by applicants from 132 countries – eight countries more than in the preceding year. Altogether, 79 countries saw an increase in filings and 56 saw a decrease compared with 2014. In each region, the top three origins combined accounted for the majority of filings.

Filings in four of the six regions recorded an increase on 2014 figures. The highest annual growth in numbers of

Figure A.2.2.1: Trend in PCT applications for the top 10 origins

Note: Data for 2015 are WIPO estimates.

Source: WIPO Statistics Database, May 2016.

applications was seen in Asia (+9%) and Africa (+2.3%). Filings in Latin America and the Caribbean (LAC) and North America decreased by 3.8% and 6.7%, respectively. Asian countries filed 43.5% of all applications in 2015, followed by North America (27.6%) and Europe (27%). Combined, Africa, LAC and Oceania accounted for slightly less than 2% of the total.

A.2.3 – PCT applications as a share of resident applications

Figure A.2.3 presents a hypothetical “conversion ratio” which reflects the proportion of direct resident patent applications converted into PCT applications, defined as the total number of PCT applications divided by the total number of direct resident applications (including regional applications and excluding PCT national phase entries). Resident application data are lagged by one year because applicants have up to 12 months from

the filing date of the earlier national filing to submit a PCT application.⁸ For example, in order to derive the conversion ratio for Norway, its 2015 PCT applications (679) are divided by the 2014 direct resident applications (1,173), which equals 0.58.

In theory, the conversion ratio should be between zero and one. However, it may exceed one because some applications do not have priority claims associated with prior resident filings. For example, an Israeli applicant may forego filing an application at the Israel Patent Office, but opt to file a first application at the USPTO, after which it is converted into a PCT application.

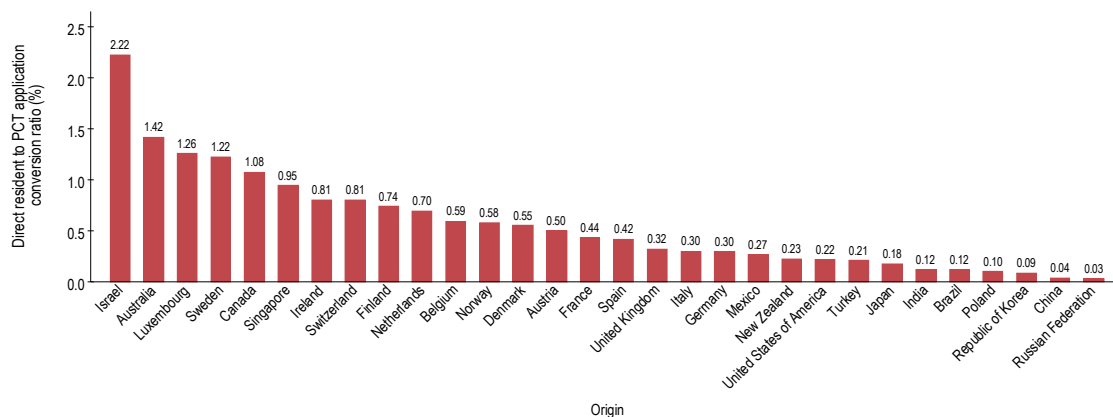
8. Strictly speaking, the calculation of the conversion ratio should be based on “first” filings at national offices (excluding “subsequent” filings). However, the data collected from most patent offices do not distinguish between first and subsequent filings. The data in figure A.2.3 are therefore based on total resident patent filings.

Table A.2.2.2: PCT applications for the top countries by region

Region	Name	Year of international filing					Regional share 2015 (%)	Change from 2014 (%)
		2011	2012	2013	2014	2015		
Africa	South Africa	309	313	351	313	314	64.2	0.3
	Egypt	32	45	50	47	58	11.9	23.4
	Morocco	19	39	54	60	35	7.2	-41.7
	Others	73	55	63	58	82	16.8	41.4
	Total*	433	452	518	478	489	0.2	2.3
Asia	Japan	38,864	43,523	43,771	42,381	44,235	46.7	4.4
	China	16,398	18,620	21,515	25,548	29,846	31.5	16.8
	Republic of Korea	10,357	11,787	12,381	13,117	14,626	15.4	11.5
	Israel	1,449	1,374	1,607	1,581	1,698	1.8	7.4
	India	1,323	1,309	1,320	1,428	1,423	1.5	-0.4
	Turkey	539	536	805	853	1,016	1.1	19.1
	Singapore	668	714	838	940	910	1.0	-3.2
	Saudi Arabia	147	286	187	381	279	0.3	-26.8
	Malaysia	263	292	308	313	268	0.3	-14.4
	Thailand	67	65	69	68	132	0.1	94.1
	Others	200	279	266	332	361	0.4	8.7
	Total*	70,275	78,785	83,067	86,942	94,794	43.5	9.0
Europe	Germany	18,846	18,750	17,920	17,983	18,072	30.7	0.5
	France	7,406	7,802	7,905	8,260	8,476	14.4	2.6
	United Kingdom	4,875	4,917	4,847	5,269	5,313	9.0	0.8
	Netherlands	3,511	4,077	4,188	4,206	4,357	7.4	3.6
	Switzerland	4,045	4,222	4,372	4,100	4,280	7.3	4.4
	Sweden	3,476	3,600	3,946	3,913	3,858	6.6	-1.4
	Italy	2,686	2,845	2,868	3,058	3,083	5.2	0.8
	Finland	2,075	2,312	2,095	1,811	1,592	2.7	-12.1
	Spain	1,732	1,704	1,705	1,706	1,537	2.6	-9.9
	Austria	1,343	1,319	1,262	1,387	1,404	2.4	1.2
	Others	6,307	6,632	6,939	6,973	6,854	11.7	-1.7
	Total*	56,302	58,180	58,047	58,666	58,826	27.0	0.3
Latin America and the Caribbean	Brazil	562	588	657	580	547	40.3	-5.7
	Mexico	226	188	233	284	320	23.5	12.7
	Chile	115	120	142	141	167	12.3	18.4
	Barbados	111	168	149	173	125	9.2	-27.7
	Colombia	55	71	82	101	86	6.3	-14.9
	Argentina	24	25	26	33	28	2.1	-15.2
	Peru	6	11	13	17	25	1.8	47.1
	Others	97	107	83	84	61	4.5	-27.4
	Total*	1,196	1,278	1,385	1,413	1,359	0.6	-3.8
North America	United States of America	49,210	51,860	57,455	61,477	57,385	95.3	-6.7
	Canada	2,914	2,737	2,845	3,069	2,848	4.7	-7.2
	Total*	52,124	54,597	60,300	64,546	60,233	27.6	-6.7
Oceania	Australia	1,748	1,710	1,604	1,722	1,752	82.7	1.7
	New Zealand	329	303	320	348	360	17.0	3.4
	Others	2	2	4	2	6	0.3	200.0
	Total*	2,079	2,015	1,928	2,072	2,118	1.0	2.2
Unknown		27	27	47	197	181	n.a.	-8.1
Total		182,436	195,334	205,292	214,314	218,000	n.a.	1.7

Note: * indicates the share of world total, and n.a. indicates not applicable. Data for 2015 are WIPO estimates. Table A.2.2.2 shows the top countries in each region (with a maximum of 10 countries per region) whose applicants filed more than 20 PCT applications in 2015.

Source: WIPO Statistics Database, May 2016.

Figure A.2.3: Conversion ratio of direct resident patent applications to PCT applications, 2015

Note: The ratio is defined for the top 30 origins in terms of PCT applications filed in 2015, divided by resident patent applications (including regional applications and excluding PCT national phase entries) filed in 2014. Data for 2015 are WIPO estimates.

Source: WIPO Statistics Database, May 2016.

In 2015, applicants from Israel (2.22), Australia (1.42), Luxembourg (1.26), Sweden (1.22) and Canada (1.08) had conversion ratios above one, reflecting numerous PCT filings with no prior resident filings. In contrast, few direct resident filings from the Republic of Korea (0.09), China (0.04) and the Russian Federation (0.03) were converted into PCT applications.

The conversion ratios of the top five filers – ranging from 0.04 for China to 0.3 for Germany – are relatively low. This likely reflects high levels of filing activity by residents in their respective countries.

A.3 – PCT applicants

This subsection provides data on the distribution of applicants, applications by ownership type, share of applications with foreign co-applicants, and top applicants. Applications by type of applicant are based on international filing date and on the country of residence of the first-named applicant. For confidentiality reasons, the list of top applicants is based on the publication date.⁹

A.3.1 – Distribution of applicants

In 2015, 200,928 PCT applications were published by the IB and filed by 48,539 applicants. One-fifth of all of applicants accounted for 81.1% of applications

published in 2015. This represents a higher concentration of publications over time among the largest PCT applicants. In 2004, for example, one-fifth of all applicants accounted for 75.9% of published applications.

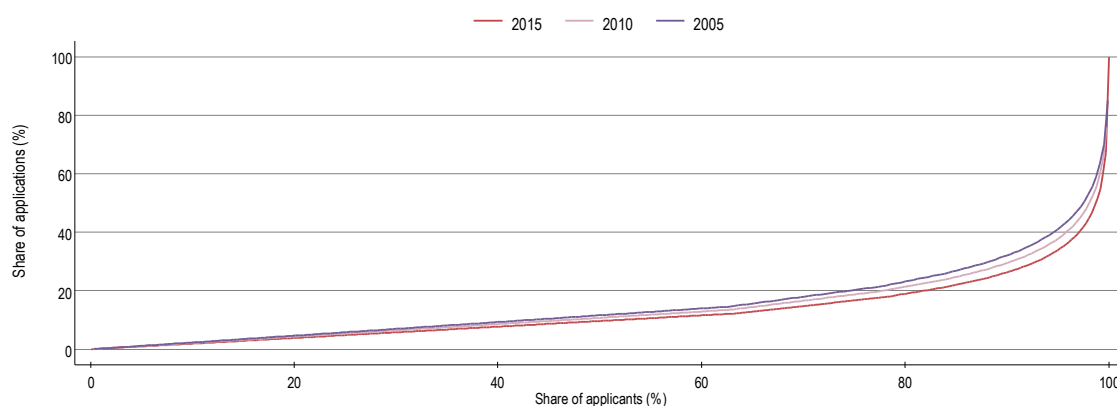
Figure A.3.1.2 shows the distribution of PCT applications for the top 30 origins, broken down by four types of applicant: businesses, individuals, universities, and government and research institutions. In 2015, 85% of all published PCT applications belonged to business applicants, 8% to individuals, 5% to universities, and 2% to government and research institutions.

Businesses represented more than 95% of all published applications from Finland, Japan and Sweden. Individuals accounted for the majority of applications in the Russian Federation (56.6%) and a large proportion in South Africa (42.8%) and Brazil (37.9%). Universities accounted for a large share of applications in South Africa (18.1%), Poland (16.3%), Singapore (15.8%) and Spain (15.6%). Government and research institutions were responsible for a high share of applications originating in Singapore (15.8%), India (10.8%) and France (9.9%).

A.3.2 – Share of PCT applications with foreign co-applicants

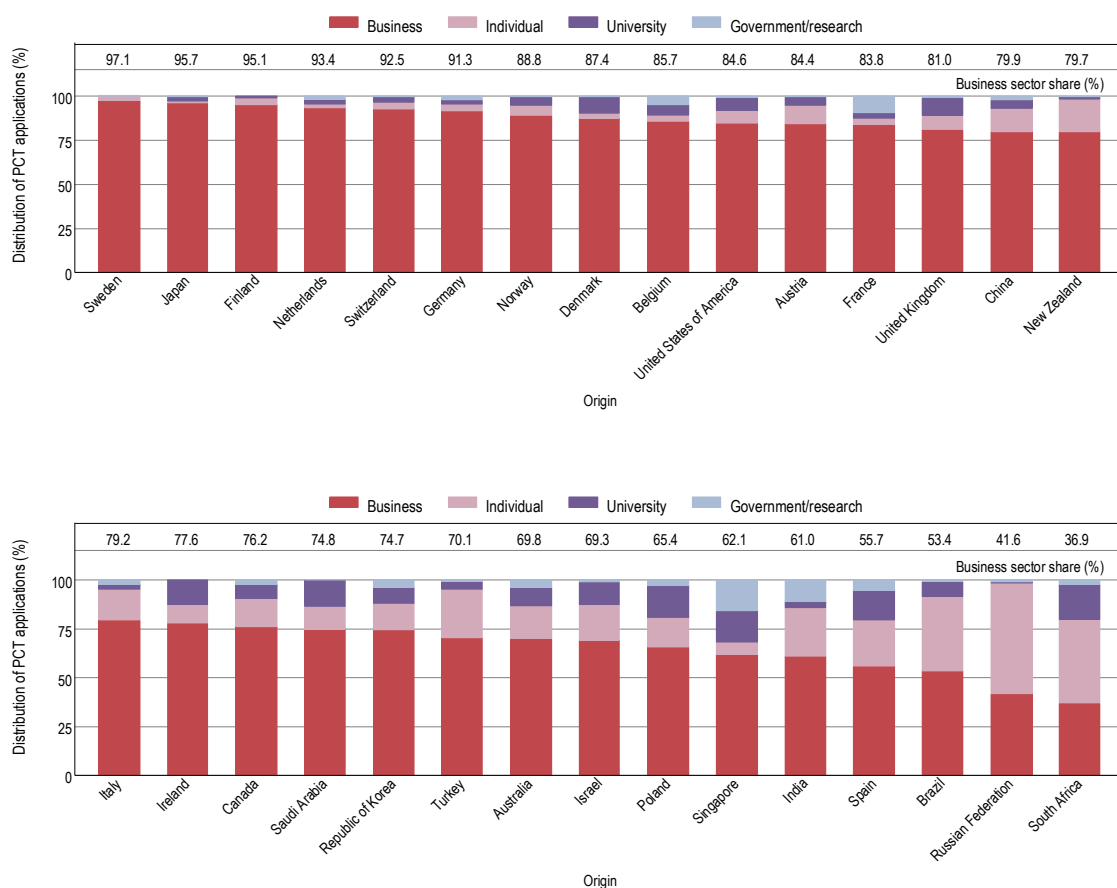
The share of applications jointly filed by applicants from different countries is calculated based on all applicants named in applications published in 2015 (not just first-named applicants) that are corporations (excluding applicants who are natural persons).

9. For the majority of PCT applications, the difference between the international filing date and the publication date is about six months.

Figure A.3.1.1: Distribution of PCT applicants and published PCT applications

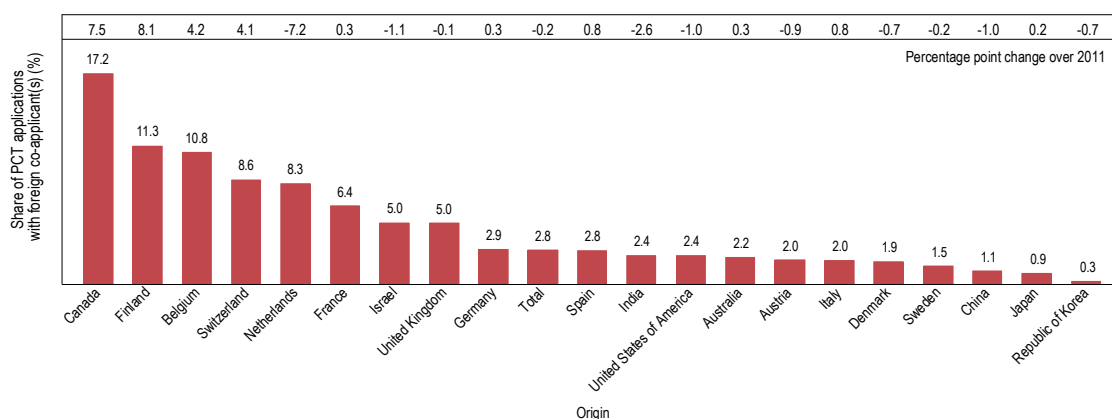
Note: Counts are based on corporate applicants only (excluding natural persons). For confidentiality reasons, data are based on the publication date.

Source: WIPO Statistics Database, May 2016.

Figure A.3.1.2: Distribution of PCT applications by type of applicant for the top 30 origins, 2015

Note: Government and research institutions include 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, May 2016.

Figure A.3.2: Share of PCT applications with foreign co-applicants, 2015

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, PCT data are based on the publication date.

Source: WIPO Statistics Database, May 2016.

On average, international collaboration among applicants from different countries remained fairly low in 2015, with only 2.8% of applications having at least two joint corporate applicants from different countries (figure A.3.2). This share decreased slightly (-0.2 percentage points) on the 2011 figure.

Among the top 20 origins, Canada recorded the largest share of foreign co-applicants, with 17.2% of its applications listing at least one foreign co-applicant. It was followed by Finland (11.3%) and Belgium (10.8%). Among the top 20 origins, applications from China (1.1%), Japan (0.9%) and the Republic of Korea (0.3%) had the lowest shares of foreign co-applicants.

Compared with 2011, the share of applications with foreign co-applicants in 2014 has changed substantially for Finland (+8.1 percentage points), Canada (+7.5) and the Netherlands (-7.2).

A.3.3 – Top PCT applicants

Business sector

Huawei Technologies of China remained the top PCT applicant in 2015, with 3,898 applications published (table A.3.3.1). Since 2007, Huawei Technologies has ranked among the top five applicants, and it was also

the top PCT applicant in 2008 and 2014. Qualcomm, which is incorporated in the U.S., remained in second position, with 2,442 applications published. ZTE Corporation of China and Mitsubishi Electric of Japan retained their third and fifth positions, respectively. The only change among the top five PCT applicants related to Samsung Electronics of the Republic of Korea, which advanced seven places to rank in fourth position.

Electrical engineering was the main sector of filing for the majority (31) of the top 50 PCT applicants; the exception among the top 10 applicants in this group was Philips Electronics, which mainly filed in the instruments sector. The three fields of technology in which the largest number of the top 50 applicants mainly filed applications were digital communication (with 11 applicants), electrical machinery (9) and computer technology (7); these three fields belong to the electrical engineering sector. The main field of technology of filing for 6 of the top 7 applicants was digital communication; the exception among this group of applicants was Mitsubishi Electric, which mainly filed in the electrical machinery field of technology.

With 19 applicants, Japan had the highest number of applicants ranking among the top 50 PCT applicants. Japan was followed by 13 applicants from the U.S., 7 from China, 4 from Germany and 3 from the Republic of Korea.

Table A.3.3.1: Top 50 PCT applicants: businesses, 2015

Overall rank	Change in position from 2014	Applicants	Origin	Applications	Change from 2014
1	0	HUAWEI TECHNOLOGIES CO., LTD.	China	3,898	456
2	0	QUALCOMM INCORPORATED	United States of America	2,442	33
3	0	ZTE CORPORATION	China	2,155	-24
4	7	SAMSUNG ELECTRONICS CO., LTD.	Republic of Korea	1,683	302
5	0	mitsubishi electric corporation	Japan	1,593	0
6	1	TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)	Sweden	1,481	-31
7	9	LG ELECTRONICS INC.	Republic of Korea	1,457	319
8	13	SONY CORPORATION	Japan	1,381	399
9	1	KONINKLIJKE PHILIPS ELECTRONICS N.V.	Netherlands	1,378	-13
10	15	HEWLETT-PACKARD DEVELOPMENT COMPANY, L.P.	United States of America	1,310	484
11	-2	SIEMENS AKTIENGESELLSCHAFT	Germany	1,292	-107
12	-6	INTEL CORPORATION	United States of America	1,250	-289
13	0	ROBERT BOSCH CORPORATION	Germany	1,247	-124
14	20	BOE TECHNOLOGY GROUP CO.,LTD	China	1,227	674
15	-3	TOYOTA JIDOSHA KABUSHIKI KAISHA	Japan	1,214	-164
16	57	PANASONIC INTELLECTUAL PROPERTY MANAGEMENT CO., LTD.	Japan	1,185	918
17	3	HITACHI, LTD.	Japan	1,165	169
18	8	HALLIBURTON ENERGY SERVICES, INC.	United States of America	1,121	321
19	-5	SHARP KABUSHIKI KAISHA	Japan	1,073	-154
20	-3	TENCENT TECHNOLOGY (SHENZHEN) COMPANY LIMITED	China	981	-105
21	-3	FUJIFILM CORPORATION	Japan	947	-125
22	-7	NEC CORPORATION	Japan	895	-320
23	n/a	MICROSOFT TECHNOLOGY LICENSING, LLC	United States of America	860	860
24	10	LG CHEM, LTD.	Republic of Korea	739	186
25	2	BASF SE	Germany	735	-45
26	-4	GOOGLE INC.	United States of America	721	-196
27	-4	SHENZHEN CHINA STAR OPTOELECTRONICS TECHNOLOGY CO., LTD	China	710	-194
28	1	DENSO CORPORATION	Japan	704	39
29	-1	3M INNOVATIVE PROPERTIES COMPANY	United States of America	676	-20
30	-11	UNITED TECHNOLOGIES CORPORATION	United States of America	661	-352
31	2	MURATA MANUFACTURING CO., LTD.	Japan	658	70
32	40	OLYMPUS CORPORATION	Japan	614	342
33	21	SCHAEFFLER TECHNOLOGIES AG & CO. KG	Germany	608	245
34	-10	KABUSHIKI KAISHA TOSHIBA	Japan	595	-261
35	7	PROCTER & GAMBLE COMPANY	United States of America	546	72
36	1	KONICA MINOLTA, INC.	Japan	516	-3
37	-5	GENERAL ELECTRIC COMPANY	United States of America	500	-107
38	5	KYOCERA CORPORATION	Japan	459	-13
39	8	HUAWEI DEVICE CO., LTD.	China	442	22
40	0	ALCATEL LUCENT	France	419	-76
41	-5	FUJITSU LIMITED	Japan	418	-134
42	2	DOW GLOBAL TECHNOLOGIES INC.	United States of America	411	-60
44	-6	APPLE COMPUTER, INC.	United States of America	383	-131
45	6	APPLIED MATERIALS, INC.	United States of America	376	-19
46	9	SCHLUMBERGER CANADA LIMITED	Canada	374	12
47	-16	NISSAN MOTOR CO., LTD.	Japan	368	-252
47	-6	mitsubishi heavy industries, ltd.	Japan	368	-119
49	3	NITTO DENKO CORPORATION	Japan	366	-26
51	241	KIMREE HI-TECH INC.	China	348	267
52	17	HITACHI AUTOMOTIVE SYSTEMS, LTD.	Japan	343	53

Note: For confidentiality reasons, data are based on publication date.

Source: WIPO Statistics Database, May 2016.

University sector

The University of California remained the largest filer among educational institutions, with 361 published applications in 2015; it was followed by the Massachusetts Institute of Technology (213) and Johns Hopkins University (170) (table A.3.3.2). The University of California was the only educational institution that ranked among the top 50 PCT applicants.

The top seven university applicants were from the U.S. Altogether, 24 of the top 50 applicants in 2015 were based in the U.S.; the comparable figure in 2014 was 28. This was the first year where universities from the U.S. did not account for the majority of the top 50. The U.S. was followed by universities from the Republic of Korea (6), China (5) and Japan (5). Altogether, universities from 10 countries were ranked among the top 50 in 2015. This is one country more than in 2014, with Saudi Arabia included for the first time.

Government and research institutions sector

With 409 published applications, the Commissariat à l'Énergie Atomique et aux Énergies Alternatives of France remained the top PCT applicant among government and research institutions (table A.3.3.3). It was the only such institution that ranked among the top 50 PCT applicants in 2015. It was followed by the Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. of Germany and the Agency of Science, Technology and Research of Singapore.

With six applicants each, the Republic of Korea and the U.S. had the largest number of applicants in this list. China, France and Japan each had three applicants. Two government and research institutions from middle-income countries, other than China, ranked among the top 30 PCT applicants, namely Mimos Berhad of Malaysia and the Council of Scientific and Industrial Research of India, ranking as the top sixth and top ninth PCT applicant, respectively, in the government and research institutions sector in 2015.

A.4 – PCT applications by fields of technology

PCT applications span a wide range of technologies. The tendency to file patent applications differs across technologies, as some technologies depend more on

the patent system than others. This subsection shows the distribution of PCT applications across fields of technology by year and origin, as well as the relative specialization index.

For confidentiality reasons, statistics are based on the publication date rather than the filing date. Statistics based on the publication date have a delay of approximately six months compared with those based on the international filing date. The breakdown of published PCT applications by field of technology is based on a concordance table that relates the International Patent Classification (IPC) symbols to 35 fields of technology.¹⁰

A.4.1 – Overall trend

With 16,385 published applications, computer technology remained the technical field in which the largest number of PCT applications was published in 2015. It was followed by digital communication (16,047), electrical machinery (14,612), medical technology (12,633) and transport (8,627) (table A.4.1). This latter field advanced one place on its 2014 position, and was the only change in ranking among the top five fields of technology. The top five fields of technology accounted for slightly more than one-third of the total in 2015.

A.4.2 – Countries' specialization

The relative specialization index (RSI) measures how much a country specializes in a given technological field. The RSI corrects for the effects of country size and focuses on the concentration in specific technology fields; it seeks to capture whether applicants from a particular country tend to have a lower or a higher propensity to file in certain technology fields.¹¹

Austria and Japan had a high concentration of applications in electrical machinery (figure A.4.2). RSI values for digital communication are skewed toward just a few origins (China, Finland, Malaysia, the Republic of Korea and Sweden), whereas those for measurement are more evenly distributed. As was the case in 2014, India had a high share of PCT applications in pharmaceuticals in 2015.

10. The concordance table is available at www.wipo.int/ipstats/en/statistics/patents/.

11. The RSI is calculated using the following formula: $RSI = \log \left(\frac{FC}{FT} \right) - 1$ where FC and FT denote applications from country C and in technological field T, respectively. A positive RSI value for a technology indicates that a particular country has a relatively high share of PCT filings related to that field of technology.

Table A.3.3.2: Top 50 PCT applicants: universities, 2015

Overall rank	Change in position from 2014	Applicants	Origin	Applications	Change from 2014
50	-2	UNIVERSITY OF CALIFORNIA	United States of America	361	-52
91	-6	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	United States of America	213	-21
114	49	JOHNS HOPKINS UNIVERSITY	United States of America	170	35
121	12	UNIVERSITY OF TEXAS SYSTEM	United States of America	163	9
129	18	HARVARD UNIVERSITY	United States of America	158	11
186	117	UNIVERSITY OF MICHIGAN	United States of America	116	38
209	83	UNIVERSITY OF FLORIDA	United States of America	108	27
220	114	TSINGHUA UNIVERSITY	China	102	32
223	79	UNIVERSITY OF TOKYO	Japan	101	22
229	-29	LELAND STANFORD JUNIOR UNIVERSITY	United States of America	99	-14
235	16	SEOUL NATIONAL UNIVERSITY	Republic of Korea	95	3
284	28	PEKING UNIVERSITY	China	81	5
286	-80	COLUMBIA UNIVERSITY	United States of America	80	-32
293	30	ISIS INNOVATION LIMITED	United Kingdom	78	4
296	-23	CORNELL UNIVERSITY	United States of America	77	-10
297	-5	KYOTO UNIVERSITY	Japan	76	-5
297	-50	UNIVERSITY OF PENNSYLVANIA	United States of America	76	-18
304	6	KOREA UNIVERSITY	Republic of Korea	75	-2
310	-18	DANMARKS TEKNISKE UNIVERSITET	Denmark	74	-7
310	-87	CALIFORNIA INSTITUTE OF TECHNOLOGY	United States of America	74	-29
322	57	OSAKA UNIVERSITY	Japan	72	10
332	86	YONSEI UNIVERSITY	Republic of Korea	70	14
335	83	NATIONAL UNIVERSITY OF SINGAPORE	Singapore	69	13
338	94	HANYANG UNIVERSITY	Republic of Korea	68	14
349	-60	NANYANG TECHNOLOGICAL UNIVERSITY	Singapore	63	-19
382	-36	KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY	Republic of Korea	57	-10
382	-52	KYUSHU UNIVERSITY	Japan	57	-15
390	33	TOHOKU UNIVERSITY	Japan	56	1
390	-67	UNIVERSITY OF WASHINGTON	United States of America	56	-18
420	33	DUKE UNIVERSITY	United States of America	52	1
431	126	STATE UNIVERSITY OF NEW YORK	United States of America	51	10
444	597	SOUTH CHINA UNIVERSITY OF TECHNOLOGY	China	49	27
459	473	HEBREW UNIVERSITY OF JERUSALEM	Israel	47	22
477	-81	UNIVERSITY OF NORTH CAROLINA	United States of America	45	-14
498	59	UNIVERSITY OF PITTSBURGH	United States of America	43	2
498	28	CHINA UNIVERSITY OF MINING AND TECHNOLOGY	China	43	-1
498	23	ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE	Switzerland	43	-2
510	325	YALE UNIVERSITY	United States of America	42	14
510	97	NORTHWESTERN UNIVERSITY	United States of America	42	4
510	74	YEDA RESEARCH AND DEVELOPMENT CO. LTD.	Israel	42	3
510	-24	NORTHEASTERN UNIVERSITY	United States of America	42	-6
522	85	UNIVERSITY OF HOUSTON	United States of America	41	3
536	429	KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY	Saudi Arabia	40	16
536	332	UNIVERSITY OF ARIZONA	United States of America	40	13
536	21	IMPERIAL INNOVATIONS LTD.	United Kingdom	40	-1
555	1014	HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY	China	39	25
573	1097	ISRAEL INSTITUTE OF TECHNOLOGY	Israel	38	25
573	262	UNIVERSITY OF MASSACHUSETTS	United States of America	38	10
593	71	UNIVERSITY OF COLORADO	United States of America	37	2
593	-107	KYUNGPOOK NATIONAL UNIVERSITY	Republic of Korea	37	-11
593	-129	EIDGENOSSISCHE TECHNISCHE HOCHSCHULE ZURICH	Switzerland	37	-13

Note: The university sector includes all types of educational institutions. For confidentiality reasons, data are based on publication date.

Source: WIPO Statistics Database, May 2016.

Table A.3.3.3: Top 30 PCT applicants: government and research institutions, 2015

Overall rank	Change in position from 2014	Applicants	Origin	Applications	Change from 2014
43	3	COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	France	409	-25
59	4	FRAUNHOFER-GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	Germany	323	5
142	-5	AGENCY OF SCIENCE, TECHNOLOGY AND RESEARCH	Singapore	148	-4
155	6	INSTITUT NATIONAL DE LA SANTE ET DE LA RECHERCHE MEDICALE (INSERM)	France	137	1
155	-15	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)	France	137	-13
177	14	MIMOS BERHAD	Malaysia	121	2
179	-71	CHINA ACADEMY OF TELECOMMUNICATIONS TECHNOLOGY	China	118	-78
194	4	NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY	Japan	112	-2
201	-8	COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH	India	110	-7
263	26	U.S.A., AS REPRESENTED BY THE SECRETARY DEPT. OF HEALTH AND HUMAN SERVICES	United States of America	87	5
329	47	KOREA INSTITUTE OF INDUSTRIAL TECHNOLOGY	Republic of Korea	71	8
339	268	MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH	United States of America	67	29
345	6	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST-NATUURWETENSCHAPPELIJK ONDERZOEK TNO	Netherlands	64	-2
374	49	JAPAN SCIENCE AND TECHNOLOGY AGENCY	Japan	59	4
374	-114	CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS (CSIC)	Spain	59	-31
390	96	SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH	United States of America	56	8
399	280	KOREA RESEARCH INSTITUTE OF BIOSCIENCE AND BIOTECHNOLOGY	Republic of Korea	55	21
437	-145	KOREA INSTITUTE OF ENERGY RESEARCH	Republic of Korea	50	-31
444	-58	BATTELLE MEMORIAL INSTITUTE	United States of America	49	-11
465	-334	INSTITUTE OF MICROELECTRONICS OF CHINESE ACADEMY OF SCIENCES	China	46	-110
522	-143	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	Republic of Korea	41	-21
614	139	DALIAN INSTITUTE OF CHEMICAL PHYSICS, CHINESE ACADEMY OF SCIENCES	China	36	5
614	281	SCRIPPS RESEARCH INSTITUTE	United States of America	36	10
623	-16	COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION	Australia	35	-3
655	-232	ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE OF KOREA	Republic of Korea	33	-22
695	-257	CLEVELAND CLINIC FOUNDATION	United States of America	31	-22
716	37	KOREA RESEARCH INSTITUTE OF STANDARDS AND SCIENCE	Republic of Korea	30	-1
742	402	FONDAZIONE ISTITUTO ITALIANO DI TECNOLOGIA	Italy	29	9
742	-98	RIKEN (THE INSTITUTE OF PHYSICAL AND CHEMICAL RESEARCH)	Japan	29	-7
770	-233	MAX-PLANCK-GESELLSCHAFT ZUR FORDERUNG DER WISSENSCHAFTEN E.V.	Germany	28	-15

Note: Government and research institutions include private non-profit organizations and hospitals. For confidentiality reasons, data are based on publication date.

Source: WIPO Statistics Database, May 2016.

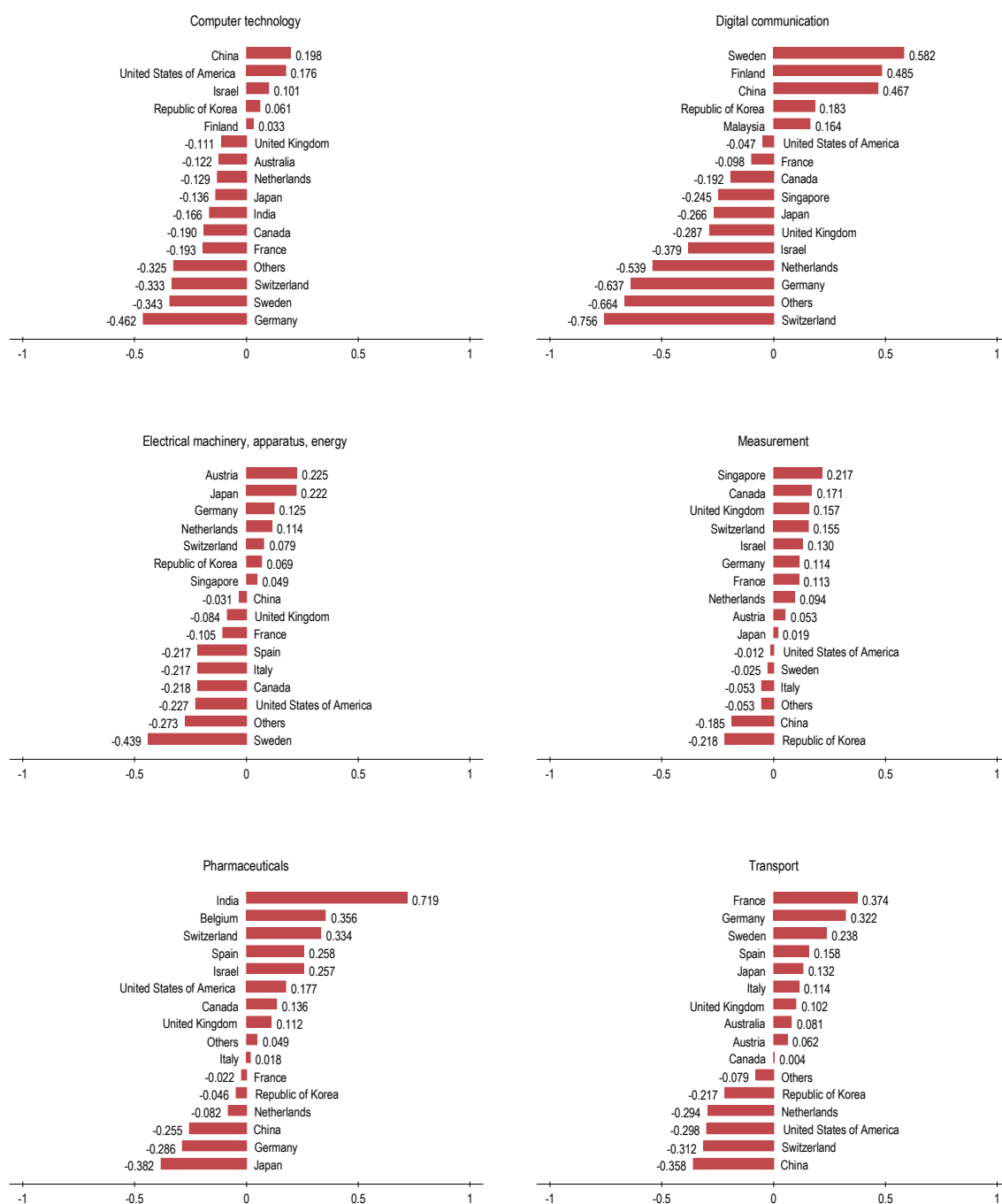
Table A.4.1: PCT applications by field of technology

	Technical field	Year					2015 share (%)	Change from 2014 (%)
		2011	2012	2013	2014	2015		
I	Electrical engineering							
1	Electrical machinery, apparatus, energy	11,358	13,455	15,050	15,291	14,612	7.3	-4.4
2	Audio-visual technology	5,838	6,376	6,854	6,833	6,583	3.3	-3.7
3	Telecommunications	4,987	4,998	5,268	5,436	4,851	2.4	-10.8
4	Digital communication	11,652	12,637	14,120	16,211	16,047	8.0	-1.0
5	Basic communication processes	1,203	1,300	1,292	1,295	1,258	0.6	-2.9
6	Computer technology	10,498	12,455	14,786	17,742	16,385	8.2	-7.6
7	IT methods for management	2,367	2,937	3,776	4,210	4,032	2.0	-4.2
8	Semiconductors	6,512	6,911	7,332	7,197	6,435	3.2	-10.6
II	Instruments							
9	Optics	4,553	5,120	6,301	5,980	5,858	2.9	-2.0
10	Measurement	6,571	7,313	7,996	9,033	8,581	4.3	-5.0
11	Analysis of biological materials	1,787	1,725	1,856	1,843	1,661	0.8	-9.9
12	Control	2,164	2,344	2,578	3,140	3,005	1.5	-4.3
13	Medical technology	10,767	11,376	11,954	14,032	12,633	6.3	-10.0
III	Chemistry							
14	Organic fine chemistry	5,307	5,601	5,561	6,003	5,398	2.7	-10.1
15	Biotechnology	5,245	5,317	5,526	5,898	5,613	2.8	-4.8
16	Pharmaceuticals	7,715	7,814	7,739	8,587	7,691	3.8	-10.4
17	Macromolecular chemistry, polymers	3,107	3,287	3,546	3,781	3,691	1.8	-2.4
18	Food chemistry	1,584	1,736	1,760	1,879	1,820	0.9	-3.1
19	Basic materials chemistry	4,896	4,975	5,119	5,715	5,447	2.7	-4.7
20	Materials, metallurgy	3,225	3,425	3,763	4,070	3,767	1.9	-7.4
21	Surface technology, coating	2,666	2,936	3,248	3,496	3,292	1.6	-5.8
22	Micro-structural and nano-technology	359	436	402	413	358	0.2	-13.3
23	Chemical engineering	3,862	4,235	4,298	4,606	4,301	2.1	-6.6
24	Environmental technology	2,473	2,647	2,719	2,771	2,544	1.3	-8.2
IV	Mechanical engineering							
25	Handling	4,071	4,020	4,266	4,799	4,696	2.3	-2.1
26	Machine tools	3,048	3,380	3,508	3,774	3,622	1.8	-4.0
27	Engines, pumps, turbines	5,057	5,590	6,172	6,903	6,186	3.1	-10.4
28	Textile and paper machines	1,980	2,160	2,252	2,290	2,404	1.2	5.0
29	Other special machines	4,231	4,666	4,864	5,375	5,602	2.8	4.2
30	Thermal processes and apparatus	2,613	2,732	2,993	3,007	3,004	1.5	-0.1
31	Mechanical elements	4,452	4,799	5,151	5,878	5,909	2.9	0.5
32	Transport	6,262	7,416	7,966	8,668	8,627	4.3	-0.5
V	Other fields							
33	Furniture, games	3,207	3,335	3,569	3,809	3,807	1.9	-0.1
34	Other consumer goods	3,174	3,363	3,413	4,002	4,385	2.2	9.6
35	Civil engineering	4,827	5,338	5,544	6,493	6,330	3.2	-2.5

Note: Due to confidentiality requirements, data are based on publication date.

Source: WIPO Statistics Database, May 2016.

Figure A.4.2: Relative specialization index for published PCT applications by selected fields of technology, 2015



Note: The IPC technology concordance table (available at: www.wipo.int/ipstats/en) was used to convert IPC symbols into 35 corresponding fields of technology. The data refer to published applications.

Source: WIPO Statistics Database, May 2016.

Section B

Statistics on PCT National Phase Entries

The PCT process begins with the international phase and ends with the national phase. The national or regional patent office at which an applicant enters the PCT national phase processes the application further with a view to either granting or refusing it, in accordance with the applicable law, taking into account the search result and optional examination from the international phase.

The analysis of national phase entry (NPE) data provides information on the use of the PCT System for seeking patent protection at national and regional offices. Section B briefly describes the global trends for NPEs, comparison of the use of the PCT and the direct filing routes (Paris route), the origin of NPEs, and the main offices of destination.

The data reported here are based on data supplied to WIPO by national and regional patent offices. However, it should be noted that not all offices supply NPE data to WIPO. Offices share their data with WIPO several months after the end of each calendar year. For this reason, the latest available data refer to 2014.

B.1 – Overview

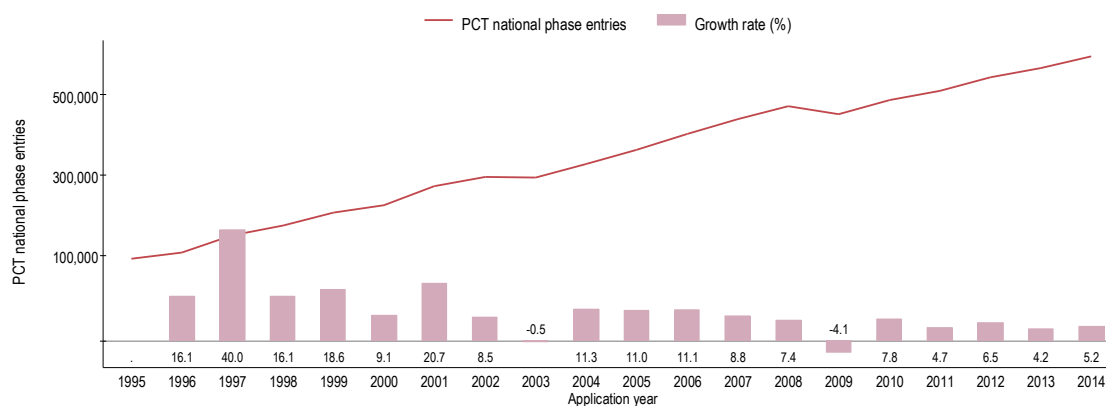
This subsection analyzes the global and latest trends in NPEs as well as their use relative to the Paris route.

B.1.1 – Overall trend

An estimated 595,400 NPEs were initiated in 2014, representing a 5.2% increase on 2013 (figure B.1.1). The year 2014 marked the fifth consecutive year of growth, following a sharp drop in 2009 – the height of the financial crisis. U.S. applicants accounted for 44% of the total growth in NPEs; they were followed by applicants from China (15%) and Japan (10%).

In 2014, about 84% of all NPEs were filed by non-residents (abroad) and 16% were filed by residents (at their country's home office). The share of NPEs initiated by resident applicants has increased from 13% in 2004 to 16% in 2014. The increase was mainly due to strong growth in resident NPEs at the JPO and the USPTO.

Figure B.1.1: Trend in PCT national phase entries



Note: These are WIPO estimates. Missing data for offices that do not provide statistics have been estimated by WIPO on an aggregate basis.

Source: WIPO Statistics Database, May 2016.

The long-term trend shows continuous year-on-year growth in NPEs since 1995, except for two years: 2003 and 2009. This growth partly reflects the increasing trend of protecting inventions abroad, as well as increasing PCT membership, which makes the System more attractive to its users. The 4.1% decrease in NPEs in 2009 was mainly due to a fall in NPEs originating in Germany, the Netherlands and the U.S.

B.1.2 – Non-resident patent applications by filing route

To file a patent application abroad (seeking protection in a foreign country), applicants can decide either to file directly at an office (using the Paris route) or to use the PCT route and pursue the application through NPEs. In 2014, an estimated 501,900 non-resident NPEs were initiated worldwide and about 378,700 applications were filed directly at offices by non-resident applicants (figure B.1.2). In 2014, non-resident NPEs increased by 5.5% on 2013, while non-resident Paris route filings saw a small decrease (-0.3%).

The long-term trend shows that since 1995 both routes trended upward, although the PCT route grew at a much faster rate. On average, the Paris route grew 1.9% a year from 1995 to 2014, but the PCT route grew much faster, by 10% a year. The trend for the Paris route also showed five years of decreases, compared with only two for the PCT route. During the financial crisis and the economic downturn in 2009, Paris route filings decreased by 10%, compared with a 5.5% drop in PCT NPEs.

In 1995, just over three-quarters of all applications filed by non-residents were filed via the Paris route. By 2007, over half of non-resident applications were filed via the PCT route and in 2014 this share reached 57%.

B.2 – National phase entries by country of origin

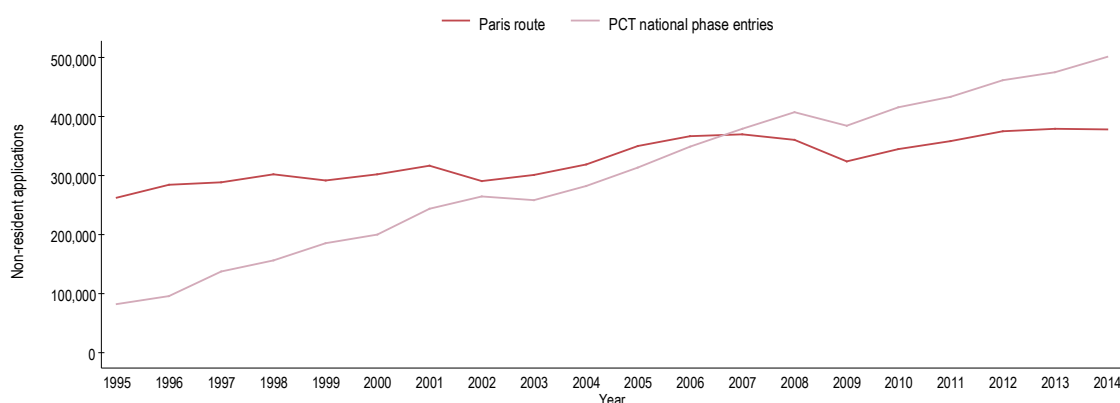
This subsection analyzes NPEs according to the applicant's origin. It also provides data by income group and further compares the use of the PCT System with that of the Paris route. Note that the origin of an application is defined using the country/territory of residence of the first-named applicant. Data by origin may be incomplete. A statistical table listing all origins is provided in the annex.

B.2.1 – World map

In 2014, NPEs were initiated by applicants from 148 different origins, but most NPEs were concentrated among Germany, Japan and the U.S. Combined, these three countries were the origin of 60% of all NPEs initiated worldwide in 2014 (figure B.2.1). Levels were low for many countries. For example, the top 10 origins accounted for 84% of total NPEs in 2014, while the remaining 138 origins accounted for 16%.

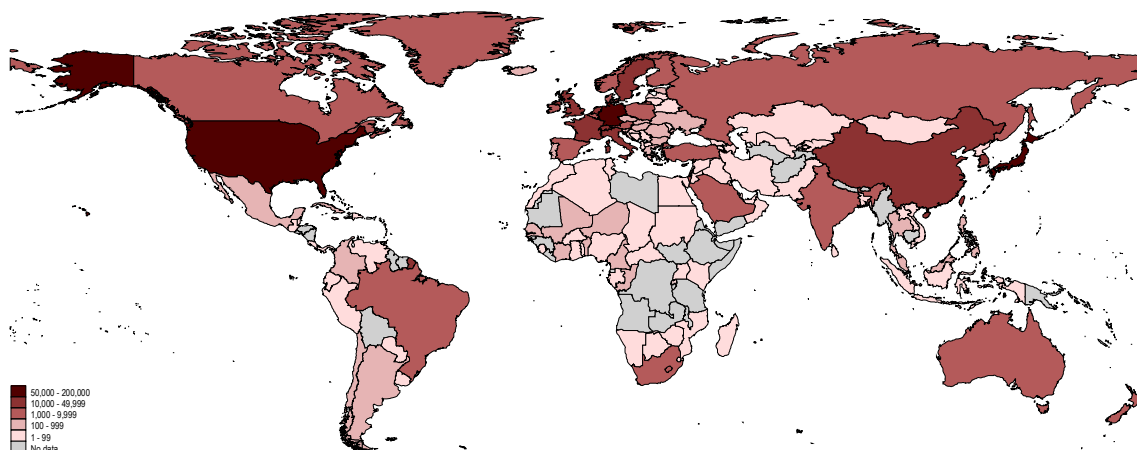
High-income countries accounted for 93% of NPEs, whereas middle-income countries accounted for 5.6%. China, with 22,473 NPEs, filed by far the highest number of NPEs among middle-income countries; it was

Figure B.1.2: Trend in non-resident applications by filing route

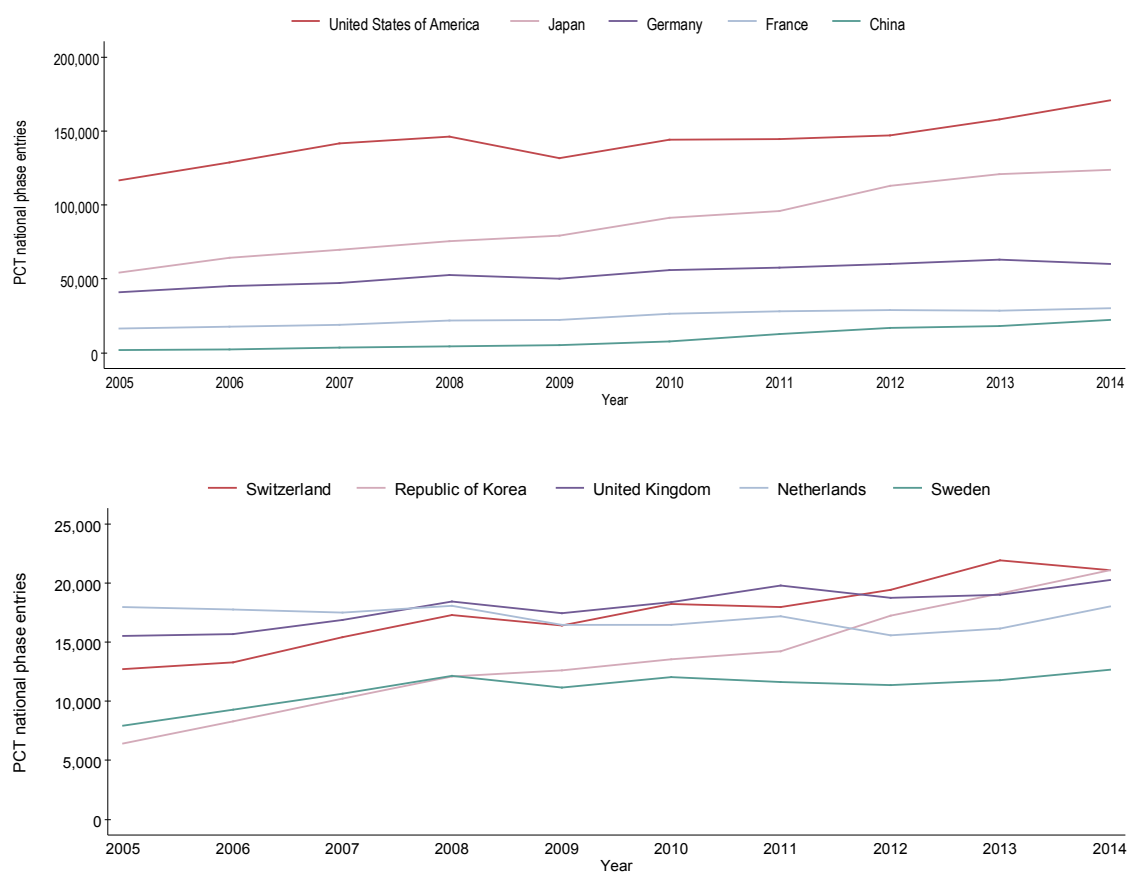


Note: These are WIPO estimates. Missing data for offices that did not provide statistics have been estimated by WIPO on an aggregate basis.

Source: WIPO Statistics Database, May 2016.

Figure B.2.1: PCT national phase entries by country of origin, 2014

Source: WIPO Statistics Database, May 2016.

Figure B.2.2.1: Trends in PCT national phase entries for the top 10 origins

Note: Data are WIPO estimates.

Source: WIPO Statistics Database, May 2016.

followed by India (3,681), South Africa (1,364) and Brazil (1,292). Low-income countries filed 80 NPEs, with applicants residing in the Democratic People's Republic of Korea (29), Niger (10) and Mali (9) accounting for the largest number of such filings.

B.2.2 – Filing trends

The top 10 origins represented 84% of total NPEs in 2014 (figure B.2.2.1). With 170,928 NPEs, applicants from the U.S. remained the largest users of the PCT System; they were followed by applicants from Japan (123,787), Germany (60,224) and France (30,153). China (22,473), which has ranked among the top 10 origins since 2011, advanced to fifth position, overtaking Switzerland (21,095), the Republic of Korea (21,090) and the U.K. (20,277). With the exception of China, which is an upper middle-income country, the top 10 origins are all high-income countries.

The share of the top 10 origins has increased from 80% in 1995 to 84% in 2014. All of the top 10 origins had a higher number of NPEs in 2014 compared with 2005. Among the top 10 origins, the three Asian countries reported the strongest average annual growth between 2005 and 2014 with 31.5% for China, 14.1% for the Republic of Korea and 9.6% for Japan. Except the Netherlands (+0.1%), all other countries had annual growth rates ranging between 3% for the U.K. and 6.9%

for France. Germany and the U.S. each had annual average growth of 4.3%.

Table B.2.2.2 shows the top origins for each region. These data are based on 2014 totals and on the United Nations' definition of regions.

Europe remained the region that initiated the highest number of NPEs worldwide; NPEs from Europe accounted for 35.3% of total NPEs in 2014. This is two percentage points below its 2009 share. With the sharp increase in NPEs from China, Japan and the Republic of Korea, the share of Asia increased from 23.5% in 2009 to 30.8% in 2014, and was ranked in second position. The share of North America remained stable between 2009 and 2014 and was ranked in third position, accounting for 30.2% of world total in 2014.

The share of NPEs within regions is skewed towards two or three origins. For example, the U.S. accounted for 95% of all NPEs originating from North America in 2014. Similarly, Australia and New Zealand accounted for almost all NPEs originating from Oceania, while China, Japan and the Republic of Korea accounted for 91.3% of the total in Asia. The share of NPEs within Europe is less skewed compared with other regions. For example, the top origin – Germany – accounted for 28.6% of all NPEs originating from Europe.

Table B.2.2.2: PCT national phase entries for the top origins by region

Region	Name	Year of national phase entry					Regional share 2014 (%)	Change from 2013 (%)
		2010	2011	2012	2013	2014		
Africa	South Africa	804	984	934	1,140	1,364	83.4	19.6
	Seychelles	28	41	34	89	37	2.3	-58.4
	Egypt	12	42	24	36	32	2.0	-11.1
	Senegal		1	1		27	1.7	..
	Côte d'Ivoire			1	2	22	1.3	1000.0
	Others	70	112	111	125	154	9.4	23.2
	Total*	914	1,180	1,105	1,392	1,636	0.3	17.5
Asia	Japan	91,240	96,101	112,862	120,839	123,787	67.5	2.4
	China	7,724	12,913	16,978	18,106	22,473	12.3	24.1
	Republic of Korea	13,565	14,213	17,238	19,086	21,090	11.5	10.5
	Israel	5,224	4,967	5,527	5,498	6,055	3.3	10.1
	India	2,570	2,950	3,322	3,890	3,681	2.0	-5.4
	Singapore	1,821	1,950	2,009	2,368	2,581	1.4	9.0
	Saudi Arabia	207	241	211	381	945	0.5	148.0
	Turkey	446	594	693	653	814	0.4	24.7
	Malaysia	252	486	470	544	682	0.4	25.4
	China, Hong Kong SAR	176	217	214	238	279	0.2	17.2
	Others	384	411	615	1,374	995	0.5	-27.6
	Total*	123,609	135,043	160,139	172,977	183,382	30.8	6.0
Europe	Germany	55,914	57,814	59,966	63,173	60,224	28.6	-4.7
	France	26,552	28,039	28,943	28,534	30,153	14.3	5.7
	Switzerland	18,245	17,971	19,428	21,913	21,095	10.0	-3.7
	United Kingdom	18,367	19,771	18,748	19,020	20,277	9.6	6.6
	Netherlands	16,452	17,160	15,567	16,126	18,035	8.6	11.8
	Sweden	12,024	11,636	11,365	11,795	12,663	6.0	7.4
	Italy	8,476	8,841	9,368	9,895	10,370	4.9	4.8
	Finland	6,077	5,089	5,774	5,528	6,093	2.9	10.2
	Denmark	4,788	5,255	4,975	5,550	5,662	2.7	2.0
	Belgium	5,049	5,135	5,272	5,193	5,419	2.6	4.4
	Others	14,023	14,048	20,226	20,575	20,410	9.7	-0.8
	Total*	189,710	194,920	199,632	207,302	210,401	35.3	1.5
Latin America and the Caribbean	Brazil	1,016	1,169	1,167	1,250	1,292	40.8	3.4
	Mexico	448	569	576	545	487	15.4	-10.6
	Chile	127	239	316	279	406	12.8	45.5
	Barbados	307	305	271	434	364	11.5	-16.1
	Colombia	69	145	115	79	147	4.6	86.1
	Cuba	67	91	103	151	134	4.2	-11.3
	Argentina	75	104	121	79	124	3.9	57.0
	Panama	41	40	11	47	43	1.4	-8.5
	Bahamas	122	73	69	63	39	1.2	-38.1
	Ecuador	5	6	1	12	20	0.6	66.7
	Saint Vincent and the Grenadines	10	7	10	17	20	0.6	17.6
	Others	142	116	119	132	87	2.8	-34.1
	Total*	2,429	2,864	2,879	3,088	3,163	0.5	2.4
North America	United States of America	143,944	144,598	146,988	157,943	170,928	95.0	8.2
	Canada	8,006	8,563	8,947	8,894	8,920	5.0	0.3
	Bermuda	177	71	61	95	77	0.0	-18.9
	Total*	152,127	153,232	155,996	166,932	179,925	30.2	7.8
Oceania	Australia	6,831	6,675	6,941	7,261	6,817	83.8	-6.1
	New Zealand	1,132	1,090	1,004	1,183	1,307	16.1	10.5
	Others	22	7	8	28	12	0.1	-57.1
	Total*	7,985	7,772	7,953	8,472	8,136	1.4	-4.0
Unknown		10,026	14,789	15,196	5,737	8,757	n.a.	52.6
Total		486,800	509,800	542,900	565,900	595,400	n.a.	5.2

Note: World totals and filings of unknown origin are WIPO estimates. * indicates the share of world total. n.a. indicates not applicable. The table shows the top countries of origin whose applicants filed at least 20 NPEs in 2014 for each region (with a maximum of 10 countries per region). Data for all origins are reported in the statistical table in the annex.

Source: WIPO Statistics Database, May 2016.

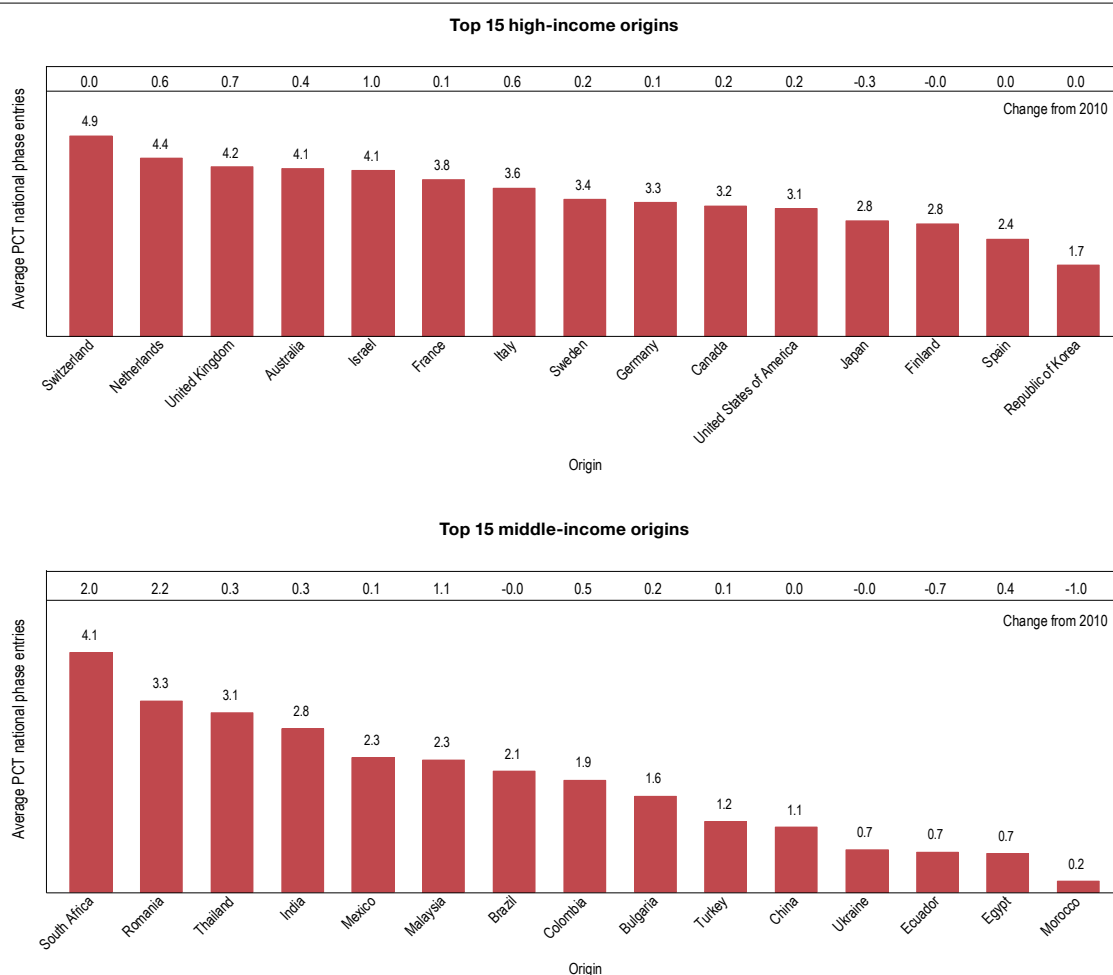
B.2.3 – PCT national phase entries per PCT application

Among high-income countries, applicants from Switzerland had the highest number of NPEs per PCT application (4.9); they were followed by applicants from the Netherlands (4.4), the U.K. (4.2), Australia (4.1) and Israel (4.1). Among the top high-income origins, applicants from the Republic of Korea (1.7) and Spain (2.4) had the lowest numbers of NPEs per PCT application (figure B.2.3). The U.S. and Japan recorded the largest numbers of NPEs (see figure B.2.2.1), but their

respective average numbers of NPEs per PCT application are considerably lower than that of Switzerland, for example.

Among the top 15 middle-income origins, South Africa had the highest number of NPEs per PCT application (4.1) – the same ratio as Australia and Israel, which are high-income countries. Romania (3.3), Thailand (3.1) and India (2.8) also had a high ratio and their 2014 ratio was above high-income origins such as Spain and the Republic of Korea. Among the top 10 origins in NPEs (see figure B.2.2.1), China (1.1) had the lowest average

Figure B.2.3: Average number of national phase entries per PCT application for selected origins, 2014



Note: The average is defined as the number of PCT national phase entries (NPEs) initiated in 2014 divided by the average number of PCT applications filed in the two preceding years.

Source: WIPO Statistics Database, May 2016.

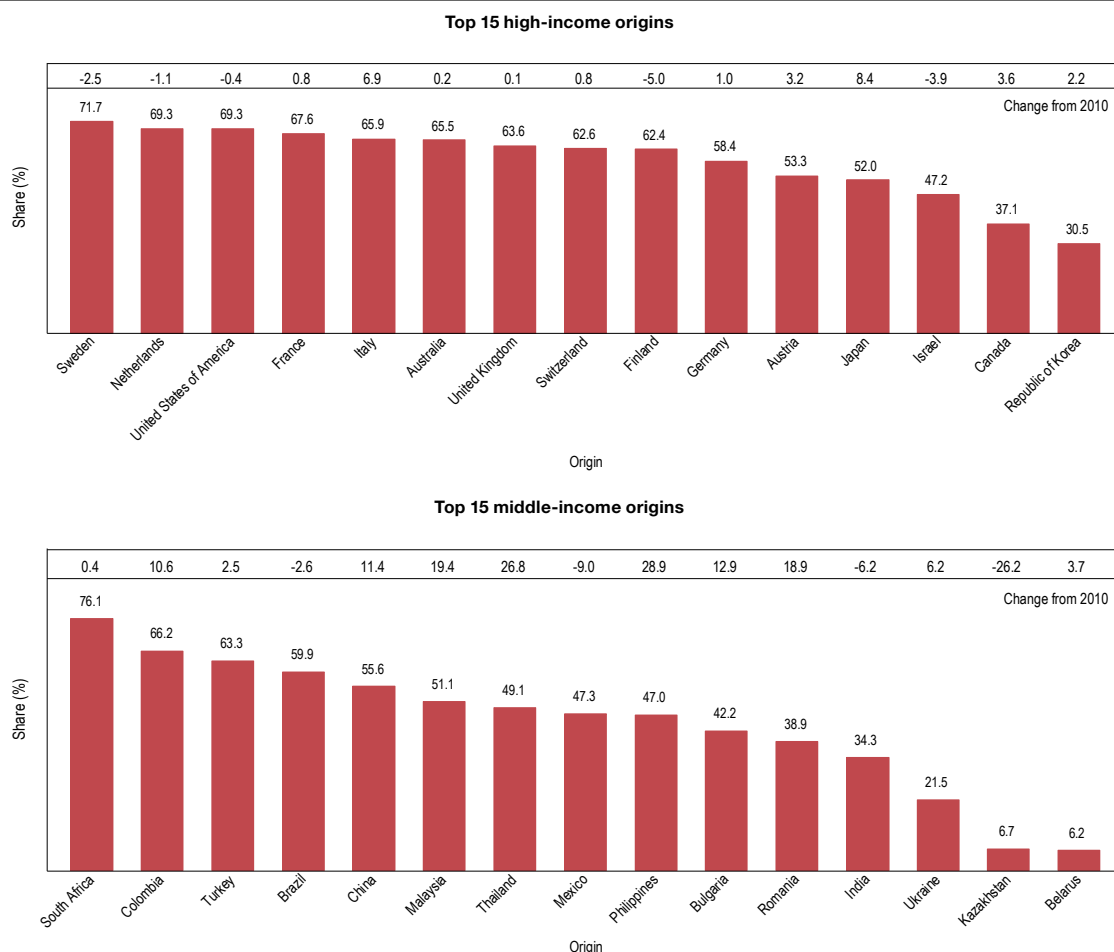
number of NPEs per PCT application. The majority of the reported origins had a higher average number of NPEs per PCT application in 2014 than in 2010.

B.2.4 – Share of PCT national phase entries in total filings abroad

The top 15 origins are selected based on the total number of filings abroad.¹² In 2014, applicants in high-income countries – who accounted for 58% of NPEs initiated abroad – relied slightly more on the PCT System than did applicants in middle-income countries (50%).

The share of NPEs in total filings abroad for the top 15 high-income origins ranged from 71.7% for Sweden to 30.5% for the Republic of Korea (figure B.2.4). Among the top 15 origins, applicants from only three origins – namely Canada, Israel and the Republic of Korea – relied more on the Paris route than on the PCT System. Compared with 2010, the share of NPEs in total filings abroad increased for a majority of the high-income countries reported in figure B.2.4 (10 countries out of a total of 15), with Japan (+8.4 percentage points) and Italy (+6.9) recording the sharpest increases.

Figure B.2.4: Share of PCT national phase entries in total filings abroad, 2014



Note: The share is defined as the number of PCT NPEs initiated abroad divided by the total number of patent applications filed abroad. Both of these numbers are WIPO estimates.

Source: WIPO Statistics Database, May 2016.

12. NPEs recorded at the EPO by applicants from European Patent Convention (EPC) member countries are included here as they are considered both resident filings and filings abroad.

The use of the PCT System across middle-income countries ranged from 76.1% for South Africa to 6.2% for Belarus. Brazil (59.9%), Colombia (66.2%) and Turkey (63.3%) also had a high share of NPEs in total filings abroad. In contrast, Ukraine (21.5%) and India (34.3%) had a relatively low share of NPEs in total filings abroad. A number of origins saw a large increase in the share of NPEs in total filings abroad between 2010 and 2014. Four in particular – Malaysia, the Philippines, Romania and Thailand – recorded the fastest growth among this selection of origins.

B.3 – National phase entries by office

This subsection provides information on the destinations of NPEs, NPEs by office and origin, and the NPE share in total non-resident applications. A statistical table listing all offices is provided in the annex. Data for some offices are not available or inexistent.¹³

B.3.1 – Top offices

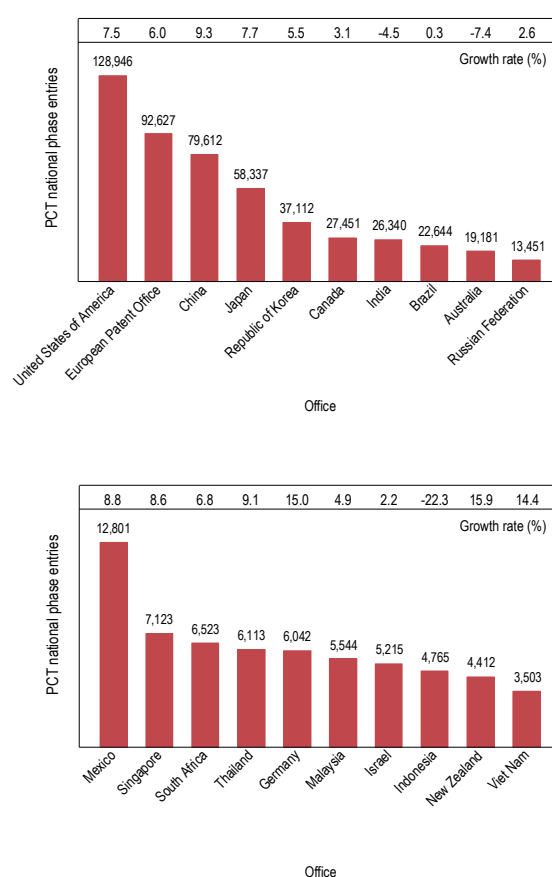
The number of NPEs for the top 20 offices reflects the commercial attractiveness of the country or region represented by that patent office. The top 20 offices attracted 95.4% of all NPEs initiated in 2014, which is similar to the 2013 share. The USPTO – the most preferred patent office by destination in 2014 – received 128,946 NPEs, representing 21.7% of all NPEs initiated (figure B.3.1.1). The USPTO was followed by the EPO (92,627) and SIPO (79,612). The top 20 offices include, among others, a number of middle-income countries' offices, such as those of India (26,340), Brazil (22,644) and South Africa (6,523). Thailand, which joined the PCT System in December 2009, received more than 6,000 NPEs in 2014.

All the top 20 offices, except Australia, India and Indonesia, reported growth in the number of NPEs in 2014, with New Zealand (+15.9%), Germany (+15%) and Viet Nam (+14.4%) recording the sharpest increases. In contrast, Indonesia (-22.3%) saw the sharpest decrease in 2014 compared with 2013.

13. For some offices, such as the Institut National de la Propriété Industrielle (INPI) of France, the "national route" via the PCT System is closed (see the PCT contracting states table in the annex). In such cases, PCT applicants must enter the national phase at a regional patent office in order to obtain patent protection in that contracting state via the PCT. For these offices, relevant NPEs are included in the figures for regional offices. Additionally, data are missing on the offices of destination for an estimated 1,245 NPEs initiated in 2014.

In terms of volume, the biggest increases in the numbers of NPEs were recorded at the USPTO (+9,047), SIPO (+6,745), the EPO (+5,260) and the JPO (+4,180). These four offices accounted for 85% of total NPEs growth in 2014.

Figure B.3.1.1: PCT national phase entries for the top 20 offices, 2014



Source: WIPO Statistics Database, May 2016.

Table B.3.1.2 captures the "flow of patents" between territories through the PCT System.¹⁴ Among the 128,946 NPEs initiated at the USPTO in 2014, about one-quarter (31,341) originated from applicants resident in Japan and almost one-fifth (24,112) originated from U.S. applicants. In addition, U.S. applicants

14. A PCT applicant seeking patent protection in a European Patent Convention (EPC) member state (see list of PCT contracting states in the annex) can choose to enter the national phase at the national office (if the national route is not closed, as is the case for France) or at the EPO. As a result, the number of NPEs at some European national patent offices is lower than would otherwise be expected given the size of some of these countries' economies.

accounted for the largest shares of NPEs at 13 of the top 20 offices, and applicants from Japan accounted for the largest shares at the remaining seven offices. Specifically, U.S. applicants accounted for 46% of all NPEs initiated at the patent offices of Canada and Mexico. Similarly, Japanese applicants accounted for almost two-fifths of all NPEs at the patent offices of Germany and Thailand. The combined shares of Japanese and U.S. applicants ranged from 35% in South Africa to 71% in Germany.

The PCT System is normally used to seek protection in foreign jurisdictions. However, in 2014, applicants from some countries, such as Japan and the U.S., initiated a notable proportion of their NPEs at their respective national offices. Japanese applicants accounted for the largest share of NPEs initiated at the JPO in 2014, and almost one-fifth of all NPEs initiated at the USPTO in 2014 originated from applicants residing in the U.S.

In Japan and the U.S., there is an upward trend in the use of the PCT System to seek protection at the applicant's home office.

In 2014, NPEs initiated by the top 10 middle-income countries of origin, excluding China (which is reported in table B.3.1.2), represented 28% of all middle-income country NPEs initiated worldwide.¹⁵

The most attractive patent office for NPEs originating in a middle-income country was the USPTO. For example, India accounted for nearly half (1,228 out of 2,537) of all NPEs originating from middle-income countries at the USPTO. Eight of the top 10 origins initiated the largest proportion of their NPEs at the USPTO. The EPO was the most attractive office for applicants from Turkey, whereas applicants from South Africa filed the largest proportion of their NPEs at their national IP office.

Table B.3.1.2: National phase entries for the top 20 offices and top 10 origins, 2014

Office	Origin											Total
	China	France	Germany	Japan	Netherlands	Republic of Korea	Sweden	Switzerland	United Kingdom	United States of America	Others	
United States of America	7,213	7,195	14,727	31,341	3,120	7,365	3,160	2,448	6,387	24,112	21,878	128,946
European Patent Office	3,777	5,688	11,929	15,500	2,894	2,757	2,691	3,009	3,105	27,455	13,822	92,627
China	3,061	3,598	8,681	22,299	2,463	4,003	1,605	2,446	1,549	21,623	8,284	79,612
Japan	1,779	2,709	4,768	20,616	1,863	2,586	726	1,650	1,248	15,421	4,971	58,337
Republic of Korea	1,218	1,983	3,473	10,552	692	888	552	1,148	834	12,129	3,643	37,112
Canada	502	1,447	2,100	1,686	548	310	463	1,242	1,063	12,738	5,352	27,451
India	790	1,262	2,689	4,311	1,234	594	842	1,250	1,000	8,299	4,069	26,340
Brazil	513	1,600	2,387	1,981	1,365	323	564	1,332	722	8,139	3,718	22,644
Australia	506	683	1,245	1,340	539	385	415	890	938	8,495	3,745	19,181
Russian Federation	528	974	1,764	1,413	1,011	340	464	902	406	3,485	2,164	13,451
Mexico	248	514	1,205	832	526	198	186	923	293	5,941	1,935	12,801
Singapore	280	253	416	1,092	137	111	68	462	263	2,691	1,350	7,123
South Africa	300	359	681	211	188	88	120	199	368	2,096	1,913	6,523
Thailand	214	78	7	2,456	36	122	24	7	83	1,240	1,846	6,113
Germany	248	50	852	2,577	19	142	33	38	28	1,726	329	6,042
Malaysia	216	207	335	1,293	175	122	88	398	275	1,624	811	5,544
Israel	54	68	13	191	27	38	48	5	131	2,304	2,336	5,215
Indonesia	180	189	326	1,451	210	136	68	295	152	1,056	702	4,765
New Zealand	83	126	267	186	106	31	85	304	223	1,780	1,221	4,412
Viet Nam	174	121	206	1,095	98	243	40	197	66	745	518	3,503

Note: This table shows the top 20 offices for which NPE data by origin are available.

Source: WIPO Statistics Database, May 2016.

15. The share of the top 10 middle-income country origins including China is 97%.

Table B.3.1.3: National phase entries for top 20 offices in terms of middle-income country filings and the top 10 middle-income origins, 2014

Office	Origin											Total
	Brazil	Colombia	Cuba	India	Malaysia	Mexico	Philippines	South Africa	Thailand	Turkey	Others	
United States of America	367	39	19	1,228	109	128	15	238	38	163	193	2,537
European Patent Office	148	12	7	429	44	40	13	102	16	244	101	1,156
South Africa	25		5	128	10	8	1	442	1	4	17	641
China	107	6	5	217	56	26	10	70	21	71	49	638
India	45	2	8	258	42	32	7	72	12	16	39	533
Japan	66	7	7	170	25	17	7	32	12	42	29	414
Brazil	121	12	8	106	15	34	2	47	5	14	26	390
Australia	38	1	5	163	27	9	5	67	12	12	25	364
Canada	51	3	8	146	14	26	1	54	5	10	35	353
Republic of Korea	58	1	6	116	19	22	4	29	11	23	34	323
Mexico	69	11	7	77	6	53	1	20	3	7	14	268
Singapore	27	2	3	78	34	1	2	14	6	2	74	243
Thailand	6		3	26	106	2	3	1	10		2	159
Russian Federation	16		4	55	4	4		18	3	15	27	146
Malaysia	8	4	2	46	38	2	3	14	12	3	13	145
Indonesia	5		3	42	38	2	3	9	9	5	14	130
African Intellectual Property Organization	2							2			126	130
Turkey	1			7	3			1		114	2	128
New Zealand	6		2	72	6	3		19	1	2	7	118
Philippines	3	2	4	50	22	2	5	6	11	1	6	112

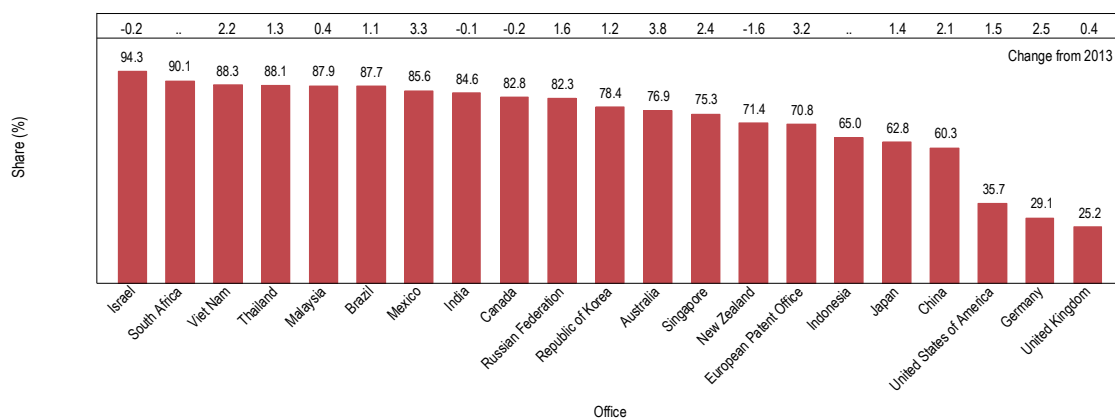
Note: This table shows the top 20 offices in terms of middle-income country filings for which NPE data by origin are available. China, a top 10 origin, is not reported in this table as it is included in table B.3.1.2.

Source: WIPO Statistics Database, May 2016.

B.3.2 – Share of PCT national phase entries in non-resident filings

In 2014, the use of the PCT route (as opposed to the Paris route) for non-resident filings varied widely from one office to another, with shares ranging from 94.3% for Israel to 25.2% for the U.K. (figure B.3.2).

The use of the PCT System is, however, quite intense at the offices of middle-income countries. Seven of the top 10 offices are in the middle-income country category. In contrast, several offices in the high-income country category had a low share of NPEs; these include the patent offices of Germany, Japan, the U.K. and the U.S.

Figure B.3.2: Share of PCT national phase entries in total non-resident filings by office, 2014

Note: The share is defined as non-resident PCT NPEs initiated, divided by the number of non-resident patent applications filed. It includes data from the 20 offices that received the most non-resident filings in 2014, i.e. data from countries that are members of the PCT System and that provided data broken down by filing route.

Source: WIPO Statistics Database, May 2016.

Section C

Performance of the PCT System

C.1 – International Bureau

In addition to its role as a receiving office (RO), the International Bureau (IB) of WIPO is responsible for functions related to the international phase of the PCT System, including examining formalities, translating abstracts, titles and patentability reports, and publishing PCT applications.

C.1.1 – Electronic filing and processing

Medium of filing

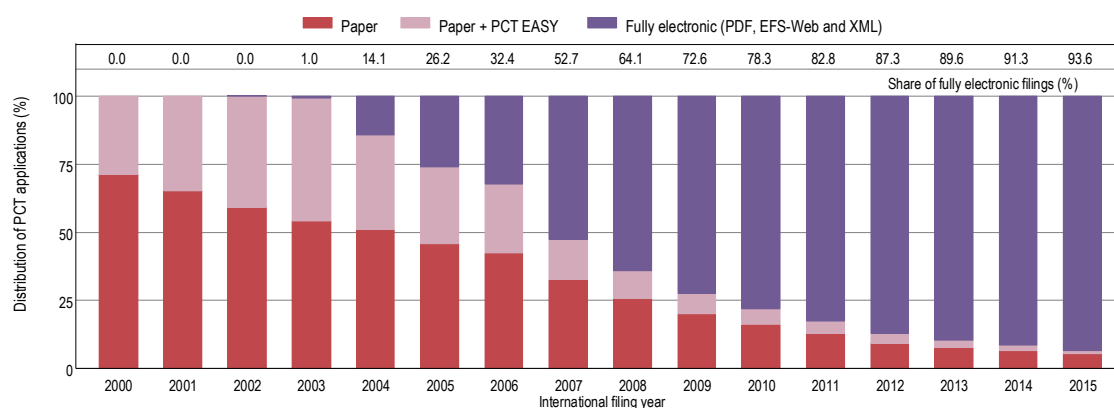
Every PCT application is filed using one of three methods: paper; paper plus PCT-EASY (the application is prepared electronically using WIPO-provided software known as PCT-SAFE); and fully electronic media in different formats, such as PDF or XML (figure C.1.1). Electronic filing is encouraged by way of fee reductions, as it offers benefits to applicants, offices and the IB.

The share of electronic filings continued to increase in 2015, rising to nearly 94% of all applications filed. Following the introduction of fully electronic filing, the number of paper plus PCT-EASY filings dropped considerably. As of July 1, 2015, it is no longer possible to file a PCT application using PCT-EASY. Paper filings accounted for just 5.5% of all filings in 2015.

ePCT-Filing

As highlighted above, electronic filings have increased rapidly in recent years and continue to account for a vast majority of PCT applications filed. At the end of 2014, two challenges remained: first, to make it practical for the remaining applicants who had so far been unable to file electronically to do so; second, to further improve the quality of electronic filings submitted. In 2015, the ePCT System successfully addressed both challenges. Prior to 2015, ePCT-Filing was available at 10 ROs. However, in 2015, 19 additional

Figure C.1.1: PCT applications by medium of filing



Note: Data for 2015 are WIPO estimates.

Source: WIPO Statistics Database, May 2016.

ROs announced that they would begin receiving and processing ePCT-Filings. Several of the offices concerned had not previously permitted electronic filing, but were able to benefit from services hosted by the IB.

In addition to the increase in coverage in terms of the number of ROs offering ePCT-Filing to applicants, the spread of ePCT-Filing has also markedly improved the quality of electronically filed applications, since the business validations prior to filing are checked in real time against the IB's centralized reference data.

In 2015, the request form was made available also in the Arabic language in ePCT-Filing (the only PCT electronic software that offers this feature), which means that all 10 publication languages are now covered by the ePCT system.

For details of other developments within the ePCT System, please see section D.1.

Automation

In 2015, the IB continued to improve and expand automation of certain processes related to formalities examination of international search reports, declarations under Article 17(2)a, written opinions of the ISA and international preliminary reports on patentability (Chapter II of the PCT) received in Extensible Markup Language (XML) and PDF format from the EPO, JPO, KIPO and SIPO acting as ISAs. The formality

examination has been automated for approximately 70% of international search reports and 90% of written opinions of the ISAs. This has allowed the IB to maintain productivity and timeliness in processing these documents. The procedure will also be extended to future documents received from other ISAs in XML and PDF format.

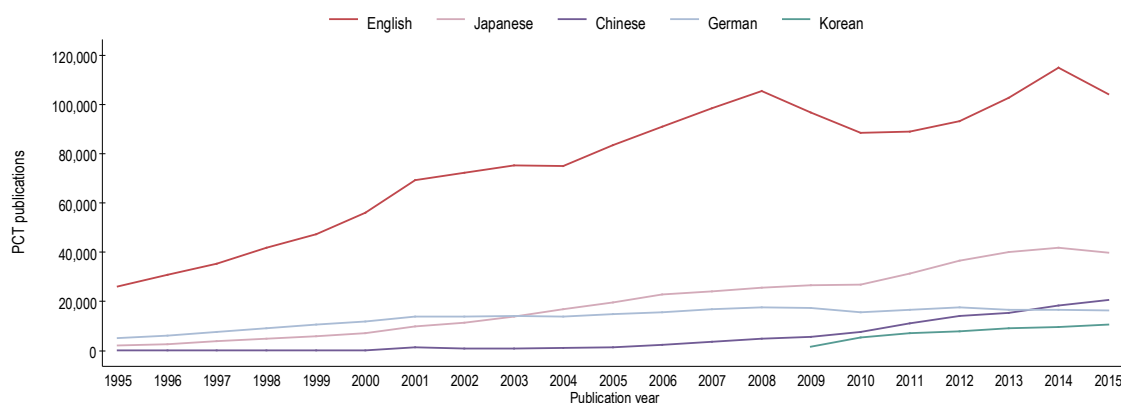
C.1.2 – Translation and terminology database

Languages of publication

A PCT application may be filed in any language accepted by the relevant RO, but must be published in one of the 10 official publication languages.

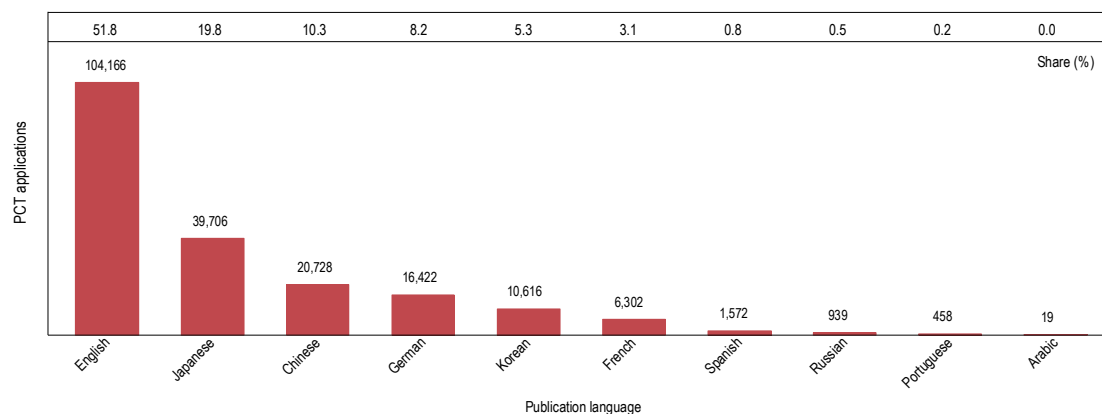
Figure C.1.2.1 shows that the number of applications published in English increased almost continuously from 1995 to 2008. In 2009, 2010 and 2015, however, the number of publications in English decreased sharply compared with previous years. Japanese, which since 2004 has been the second most frequently used language of publication, experienced its first decrease in 2015. Chinese, which has experienced dramatic increases since 2010, became the third most frequently used language of publication in 2014. Since 2006, the number of applications published in German each year has remained fairly stable, ranging between 15,700 and 17,800. Korean has seen uninterrupted growth since 2009, the year it became one of the 10 official publication languages.

Figure C.1.2.1: Trend in PCT applications for top five languages of publication



Note: Data for 2015 are WIPO estimates.

Source: WIPO Statistics Database, May 2016.

Figure C.1.2.2: PCT applications for the 10 languages of publication, 2015

Note: Data for 2015 are WIPO estimates.

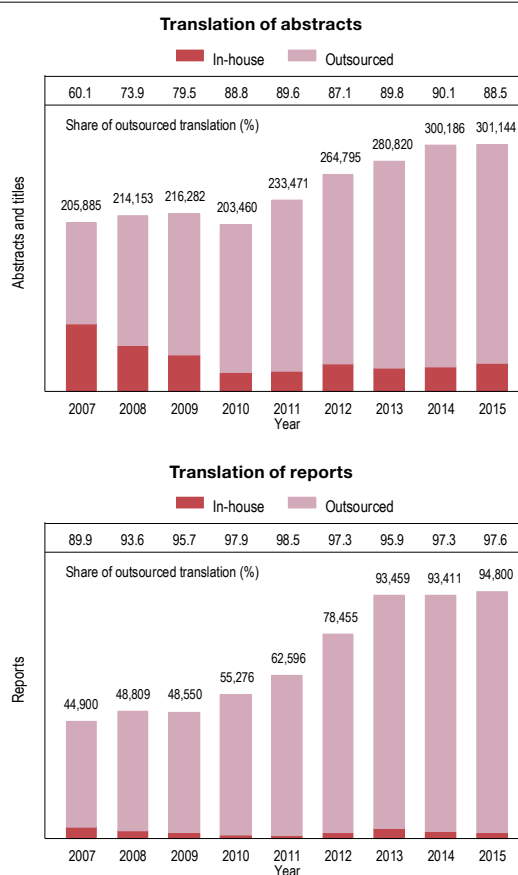
Source: WIPO Statistics Database, May 2016.

With 104,166 applications, English accounted for half (51.8%) of all languages of publication in 2015 (figure C.1.2.2). Japanese accounted for nearly 40,000 PCT applications published or 19.8% of total publications. The 20,728 applications published in Chinese accounted for 10.3% of the total. These three languages combined represented 81.9% of all applications published in 2015.

Translation

Translations by the 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 languages in which the original documents were 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 all international search and preliminary examination reports are available in English.

Figure C.1.2.3 presents the distribution of in-house and outsourced translations since 2007 for both titles and abstracts (hereafter, abstracts) and international search and preliminary examination reports (hereafter, reports).

Figure C.1.2.3: Distribution of translation work

Source: WIPO, May 2016.

In 2015, the number of translated abstracts remained stable compared with 2014 at just over 300,000 translations. Substantial increases in Korean and Chinese translations and a more moderate increase in Japanese translations were offset by decreases in English-French translations and Russian translations. The number of reports translated and the share of reports translated outside the IB also remained relatively stable in 2015.

Other important developments in 2015 included the following:

The IB continued its roll-out of the translation management system, which makes the translation process more efficient and also ensures a higher level of security for the increased volumes of text-based electronic data received from the offices. In addition, since 2014 it has been possible to use the translation management system to track translations back to individual translators in translation agencies.

The increasing length of reports is a continued cause for concern and one that is likely to have a substantial budgetary impact. The average length of a translated report increased from 685 words in 2014 to 750 words in 2015, with the largest increases seen in Korean and Chinese language reports.

A tender for Japanese translation was successfully concluded, achieving a reduction in unit price, which had a budgetary impact starting in the middle of 2015.

The number of early translations of patentability reports fell from 1,059 in 2014 to 954 in 2015, which led to a slight reduction in the internal workload.

Finally, a new localization translation management system was successfully implemented, resulting in a highly efficient system with smooth software developer integration.

Terminology database

In order to improve the quality of internally and externally produced translations, the IB continued to develop its multilingual terminology database. Emphasis was placed on adding terms in languages that were

underrepresented in the database – Arabic, Chinese, German, Japanese, Korean, Portuguese, Russian and Spanish. During 2015, approximately 13,300 terms were added across all 10 publication languages, with the largest growth seen in German, followed by Spanish and Portuguese. At the end of 2015, the database contained 113,819 terms, 98% of which were validated. The validated content of the database has been made freely available on the WIPO website since 2014 as WIPO Pearl (see D.3).

C.1.3 – Timeliness in examining and publishing PCT applications

The IB performs a formality examination of PCT applications and related documents promptly after their receipt. Once the formality examination of a PCT application is completed, the IB sends a form to the applicant acknowledging receipt of the application.

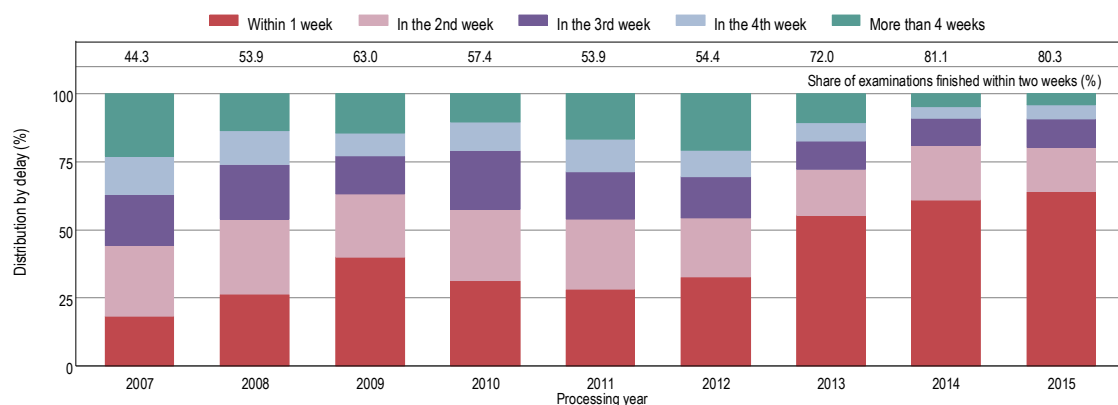
In 2015, 80.3% of these forms were sent within two weeks after the date on which the PCT application was received, and 90.7% were sent within three weeks (figure C.1.3.1). These were the highest shares observed since 2007 after those of 2014.

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.

In 2015, 77.9% of publications occurred within one week after the expiration of the 18-month period, and almost all publications (99.1%) occurred within two weeks (figure C.1.3.2).

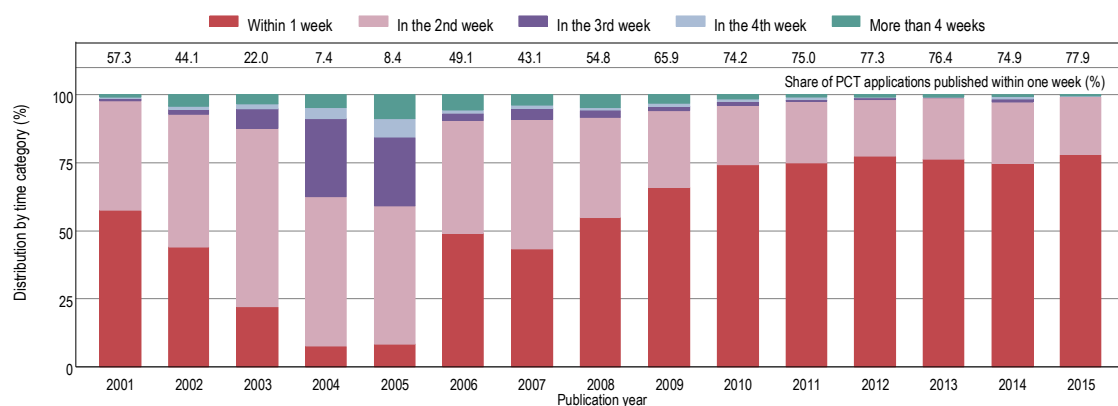
The IB is required to publish applications, even in the absence of an international search report (ISR). In such cases, the application is republished along with the ISR after the report is received.

In 2015, the proportion of applications republished within two months was 73.8%, which was the third highest share since 2001 (figure C.1.3.3). Almost all republishings (98.9%) occurred within four months of the IB receiving the ISR.

Figure C.1.3.1: Timeliness in formalities examination

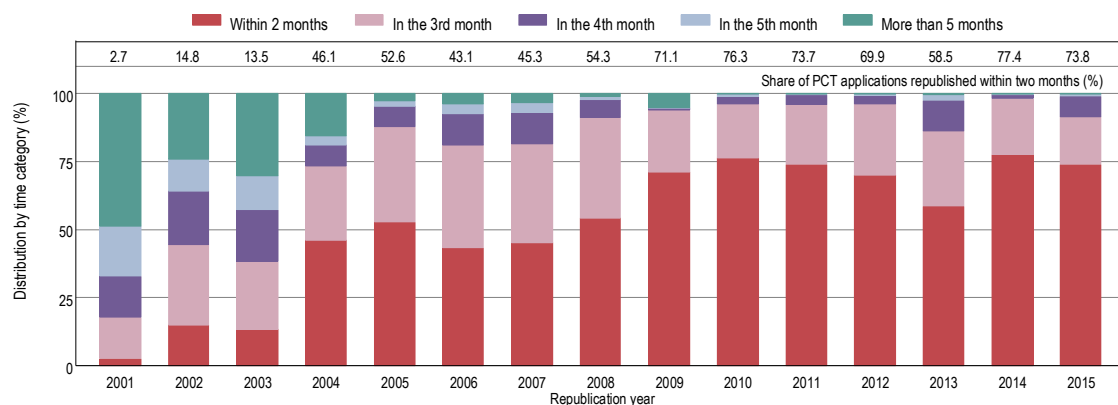
Note: Timeliness is calculated as the time elapsed between the date of receipt of the record copy of the PCT application and the date of issuance of form PCT/IB/301.

Source: WIPO Statistics Database, May 2016.

Figure C.1.3.2: Timeliness in publishing PCT applications

Note: 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, May 2016.

Figure C.1.3.3: Timeliness in republishing PCT applications with ISRs

Note: Timeliness is calculated as the time elapsed between the date of the receipt of the ISR at the IB and the date of republication by the IB.

Source: WIPO Statistics Database, May 2016.

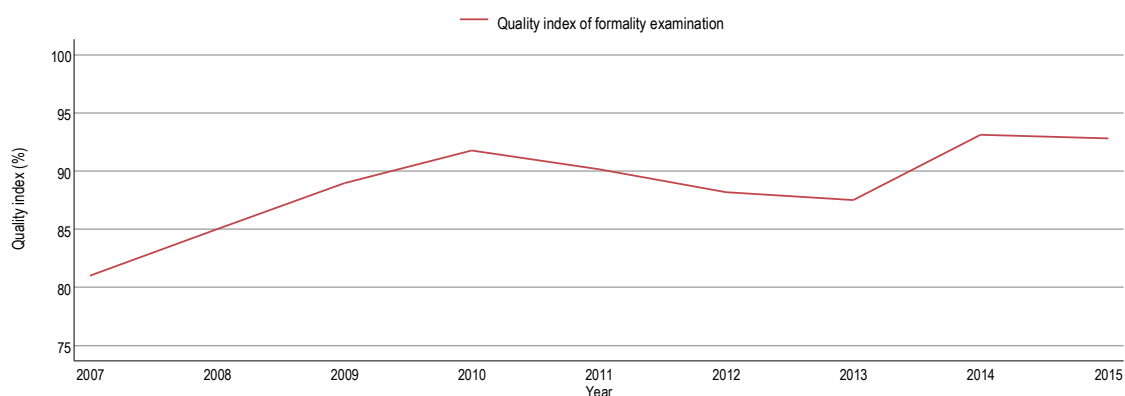
C.1.4 – Quality in processing applications

Formalities examination

In order to measure the quality of the formalities examination by the 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: acknowledgement of receipt of the application; publication; and republication with ISRs. The fourth lead quality indicator reflects the PCT operation quality control error rate.

The overall quality, as measured by the aggregate index, improved markedly from an average of 81% in 2007 to 92.8% in 2015 (figure C.1.4.1). When the figures for 2014 (77.4%) and 2015 (73.8%) are analyzed, they show that the slight decrease of 0.3 percentage points observed in 2015 was due to a slight decline in timeliness in republishing PCT applications with ISRs within two months (see figure C.1.3.3). The three other key transactions used to compute this aggregate quality index improved in 2015 compared with 2014.

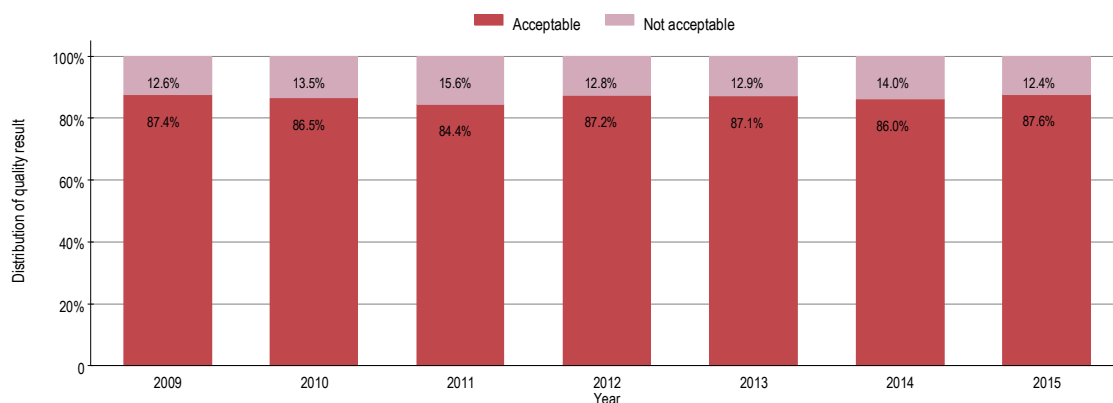
Figure C.1.4.1: Formalities examination quality index



Note: 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 ISRs within two months after the IB receives the ISR; (iv) the percentage of corrections to bibliographic data in the published PCT application (from 2007 to 2011); and (v) the PCT operation quality control error rate (from 2012 onwards).

Source: WIPO Statistics Database, May 2016.

Figure C.1.4.2: Translation quality indicator



Source: WIPO, May 2016.

Translation

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 IB's regular quality control checks (figure C.1.4.2).

In 2015, 87.6% of documents translated by the IB were considered acceptable. This was the highest percentage achieved since 2009. The share of acceptable translations has remained relatively unchanged since 2009, fluctuating within a margin of three percentage points over six years (with a minimum of 84.4% in 2011 and a maximum of 87.6% in 2015).

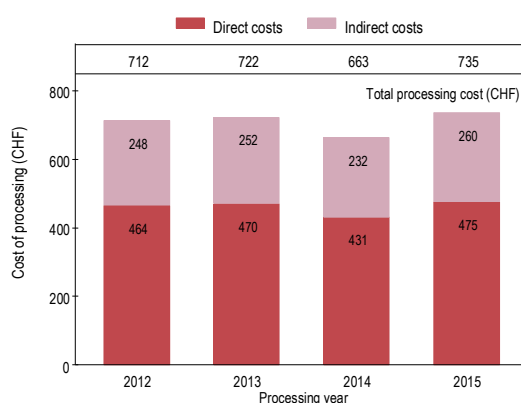
C.1.5 – Efficiency in processing applications

The 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.¹⁶ 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 publications.

The average cost of processing a published PCT application was 735 Swiss Francs in 2015, up 11% on 2014 figures. On the one hand, this sharp increase was due to the total cost of production, which increased by 5.9%, having remained almost unchanged in 2014 compared with 2013. On the other hand, it was due to a sharp decrease of 4.6% in the number of published applications. (See the Data description section for further details of this decrease in publications.)

Figure C.1.5: Unit cost of processing a published PCT application



Note: The average cost of processing a published PCT application is an estimate that is calculated by dividing the total processing cost by the number of published PCT applications.

Source: WIPO Statistics Database, May 2016.

16. The methodology used to compute the unit cost was revised in 2013 in order to align it with other WIPO unit and union cost calculations, and also in order to better capture a fast-changing environment.

C.2 – Receiving offices

A PCT application is filed with an RO, which may be a national or regional patent office or the IB. In 2015, 116 ROs were responsible for receiving PCT applications, examining their compliance with PCT formality requirements, receiving the payment of fees, and transmitting copies of the application for further processing to the IB and the ISA. Subsection A.1.2 presents the number of PCT applications filed in 2015 at selected ROs. The statistical table in the annex shows the number of PCT applications for all offices and origins.

C.2.1 – Distribution of applications by medium of filing

Each RO determines the filing media that applicants are allowed to use. Fee reductions may apply for certain media. By the end of 2015, 49 ROs accepted the filing of PCT applications in fully electronic format – 17 more offices than in the preceding year.

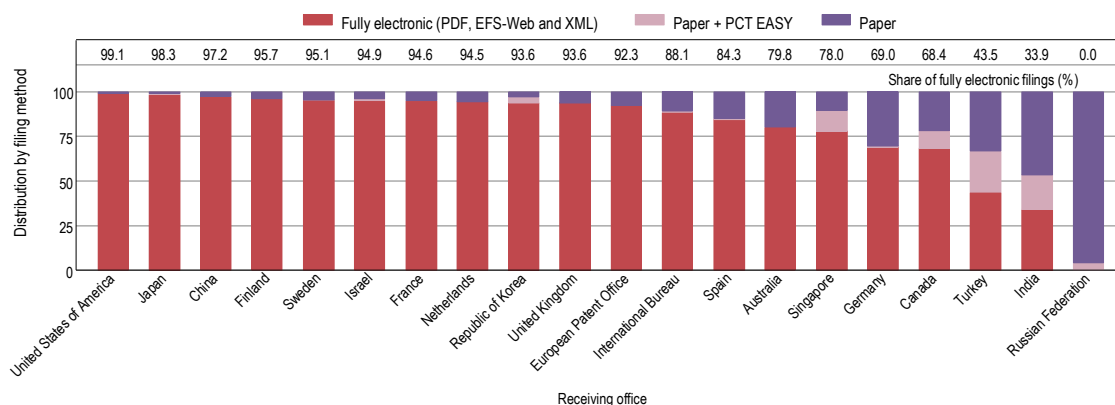
In 2015, on average 93.6% of PCT applications were filed using a fully electronic medium (see C.1.1). This share varied considerably across the top 20 ROs, ranging from 0% for the Russian Federation to 99.1% for the U.S. (figure C.2.1).

Paper remained the dominant filing medium for the Russian Federation (96.2%). Despite the fact that since July 2015 paper plus PCT-EASY is no longer a medium of filing, it accounted for more than one-tenth of filings in Turkey (23%), India (19.5%) and Singapore (11.2%).

C.2.2 – Timeliness in transmitting applications

The copy of the PCT application sent by the RO must reach the IB before the expiration of the 13th month from the priority date.¹⁷ 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.

Figure C.2.1: Distribution of media of filing for top 20 receiving offices, 2015



Note: Data for 2015 are WIPO estimates.

Source: WIPO Statistics Database, May 2016.

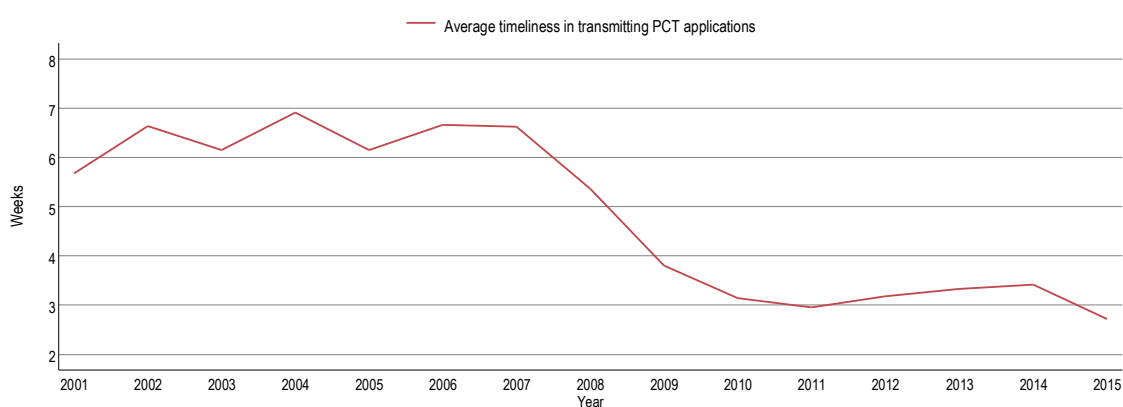
17. A copy of the PCT application, known as the record copy, is transmitted to the IB by the RO for processing, publication and communication.

For the first time since 2012, the average transmittal time decreased in 2015, to 2.7 weeks (figure C.2.2.1). This is the shortest transmittal time achieved since 2001. Between 2001 and 2007, the average transmittal time fluctuated within about six or seven weeks from the international filing date. It then improved markedly, taking approximately three weeks in 2010. This is partly attributable to a shift to electronic filing, which made

the exchange of information between ROs and the IB more efficient.

In 2015, offices transmitted, on average 93.4% of their applications to the IB within four weeks, nearly 10 percentage points higher than in 2014 (83.5%). Australia, Finland, Israel and Japan transmitted more than 99.6% of their applications to the IB within this four-week time frame (figure C.2.2.2).

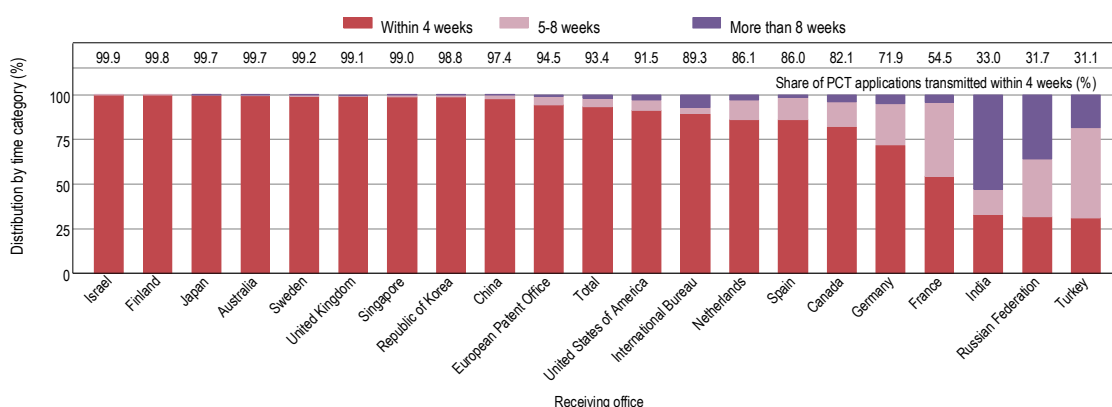
Figure C.2.2.1: Average timeliness in transmitting PCT applications to the IB



Note: 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, May 2016.

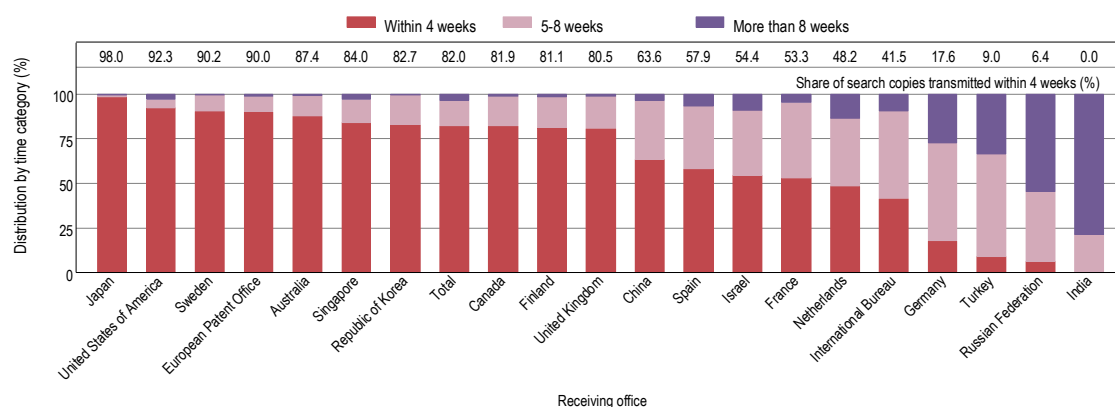
Figure C.2.2.2: Timeliness in transmitting PCT applications to the IB by time category and by receiving office, 2015



Note: 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, May 2016.

Figure C.2.2.3: Timeliness in transmitting PCT applications to ISAs by time category and by receiving office, 2015



Note: Timeliness is calculated as the time elapsed between the international filing date and the date on which the ISA received the PCT application (also called search copy) from the RO. 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.

Source: WIPO Statistics Database, May 2016.

Compared with 2014, the share of applications transmitted within four weeks increased most at the USPTO (+23 percentage points), the office of India (+19), the office of the Russian Federation (+19), the IB (+18), the office of Germany (+13) and SIPO (+10).

On average, ROs transmitted 82% of their applications to ISAs within four weeks in 2015. The share of applications transmitted to ISAs within four weeks ranged from 98% at the JPO to 0% at the office of India (figure C.2.2.3).

When compared with 2014, the share of applications transmitted within four weeks to ISAs in 2015 improved most at the USPTO (+24 percentage points) and the IB (+8). On average, this share improved by eight percentage points compared with 2014.

C.3 – International searching authorities

Each PCT application must undergo an international search by an ISA. ROs have agreements with at least one (but sometimes several) ISAs that carry out international searches. If an RO has an agreement with multiple ISAs, the applicant selects one of them.

Once the ISA has performed the search, the applicant receives an ISR containing a list of documents relevant for assessing the patentability of the invention. 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. Consequently, an applicant who has an ISR and a written opinion can make a more informed decision about whether or how to enter the PCT national phase.

The office of Singapore commenced operations on September 1, 2015, and at the end of 2015, the office of Ukraine confirmed that it would commence operations on February 5, 2016. Thus, at the time of writing, there were 20 national or regional patent offices operating as ISAs and IPEAs. Furthermore, in October 2015, the Visegrad Patent Institute (VPI) – an intergovernmental organization for cooperation in the field of patents comprising the national offices of the

Czech Republic, Hungary, Poland and Slovakia – was appointed by the Assembly of the PCT Union as an ISA and IPEA. This appointment will be effective from a future date to be notified by the office when it is ready to begin operations.

C.3.1 – International search reports by authority

In 2015, with almost 79,600 ISRs, the EPO remained the most selected ISA. It was followed by the JPO (43,292), SIPO (31,578), KIPO (29,285) and the USPTO (20,914) (table C.3.1). These top five ISAs combined accounted for 94% of all ISRs issued in 2015. Among the most selected ISAs, SIPO (+14.4%) and the JPO (+6.1%) recorded the sharpest growth and the USPTO (-4.6%) and KIPO (-4.4%) recorded the sharpest drops.

The office of Singapore commenced operations in 2015 and issued 115 ISRs during the year. Chile and Egypt, which also began issuing ISRs in recent years, increased their volumes almost fivefold and threefold, respectively. The office of Israel (+35.1%) and the office of India (+32.1%) recorded double-digit growth; whereas, the four European national offices acting as ISAs experienced double-digit decreases: Sweden (-18.4%), Finland (-17.9%), Spain (-12.8%) and Austria (-10.4%).

Table C.3.1: Distribution of international search reports by ISA and by origin

International searching authorities	Total plus the top three origins	International filing year					ISA share 2015 (%)	Change from 2014 (%)
		2011	2012	2013	2014	2015		
Australia	Australia	1,636	1,544	1,473	1,594	1,597	61.0	0.2
	Singapore	381	387	444	460	329	12.6	-28.5
	New Zealand	283	253	261	249	284	10.8	13.9
	Total*	3,140	2,832	2,699	2,756	2,619	1.2	-5.0
Austria	South Africa	82	91	121	106	93	48.7	-12.7
	United Arab Emirates	8	10	25	30	24	12.7	-19.6
	Singapore	20	25	22	16	20	10.6	25.7
	Total*	251	178	233	212	190	0.1	-10.4
Brazil	Brazil	432	425	497	451	429	96.4	-4.8
	Peru					5	1.1	n.a.
	Colombia			5	2	5	1.1	151.4
	Total*	435	429	509	453	445	0.2	-1.7
Canada	Canada	2,301	2,179	2,228	2,340	2,163	95.7	-7.6
	Barbados	11	6	4	45	44	2.0	-1.7
	United States of America	21	80	60	53	15	0.7	-71.5
	Total*	2,396	2,339	2,324	2,506	2,259	1.0	-9.8
Chile	Chile				35	126	69.8	259.1
	Mexico				1	22	12.3	2,112.0
	Colombia					21	11.7	n.a.
	Total*				38	180	0.1	373.6
China	China	16,207	18,273	21,127	25,091	29,414	93.1	17.2
	United States of America	583	1,023	1,101	1,254	987	3.1	-21.3
	Japan	145	103	137	186	220	0.7	18.4
	Total*	18,017	20,720	23,707	27,603	31,578	14.5	14.4

International searching authorities	Total plus the top three origins	International filing year					ISA share 2015 (%)	Change from 2014 (%)
		2011	2012	2013	2014	2015		
Egypt	Egypt			14	13	21	55.3	62.4
	Saudi Arabia				1	17	44.7	1,609.3
	Total*			14	14	38	0.02	172.9
European Patent Office	United States of America	17,584	18,656	20,993	21,736	21,328	26.8	-1.9
	Germany	18,523	18,423	17,623	17,577	17,757	22.3	1.0
	France	7,194	7,528	7,681	8,081	8,261	10.4	2.2
	Total*	71,620	75,142	77,414	79,587	79,581	36.5	0.0
Finland	Finland	914	969	792	588	479	99.0	-18.6
	Estonia					2	0.4	n.a.
	Sweden	5	1	1		1	0.2	n.a.
	Total*	928	977	795	589	484	0.2	-17.9
India	India			108	516	676	94.5	30.9
	Iran (Islamic Republic of)				12	27	3.8	126.2
	United States of America				6	5	0.7	-16.2
	Total*			108	541	715	0.33	32.1
Israel	Israel		332	815	806	923	78.5	14.5
	United States of America		11	21	37	229	19.5	519.6
	China			1	3	10	0.9	235.2
	Total*		358	854	871	1,176	0.54	35.1
Japan	Japan	36,964	41,388	41,890	40,263	42,608	98.4	5.8
	United States of America	44	158	136	179	234	0.5	30.9
	Singapore	7	18	55	107	139	0.3	29.7
	Total*	37,094	41,677	42,270	40,803	43,292	19.9	6.1
Nordic Patent Institute	Norway	118	130	115	128	129	54.5	0.5
	Denmark	134	128	101	100	99	41.7	-1.5
	United Arab Emirates					3	1.3	n.a.
	Total*	275	278	223	230	236	0.11	2.7
Republic of Korea	Republic of Korea	10,234	11,736	12,312	13,019	14,547	49.7	11.7
	United States of America	15,963	14,880	17,269	16,327	13,528	46.2	-17.1
	Canada	211	220	276	447	409	1.4	-8.5
	Total*	27,180	27,580	30,659	30,641	29,285	13.43	-4.4
Russian Federation	United States of America	18	1,367	2,362	1,495	1,430	57.6	-4.4
	Russian Federation	930	996	1,069	855	687	27.7	-19.7
	Ukraine	113	96	126	118	98	3.9	-17.3
	Total*	1,181	2,678	3,802	2,706	2,482	1.14	-8.3
Singapore	Singapore					113	98.2	n.a.
	United States of America					1	0.9	n.a.
	Mexico					1	0.9	n.a.
	Total*					115	0.05	n.a.
Spain	Spain	1,106	1,069	1,013	1,027	917	73.4	-10.7
	Mexico	170	150	205	240	241	19.3	0.5
	Colombia	38	58	58	80	48	3.9	-39.7
	Total*	1,445	1,401	1,412	1,432	1,249	0.57	-12.8
Sweden	Sweden	1,401	1,217	1,272	1,156	951	85.3	-17.7
	Norway	131	82	100	105	88	7.9	-15.7
	Finland	317	217	108	82	60	5.4	-26.4
	Total*	1,941	1,577	1,522	1,366	1,115	0.51	-18.4
United States of America	United States of America	14,550	15,299	15,178	20,178	19,276	92.2	-4.5
	Israel	662	493	326	300	317	1.5	5.6
	India	216	250	204	176	181	0.9	2.8
	Total*	16,488	17,118	16,696	21,925	20,914	9.6	-4.6
Unknown		45	50	52	40	45	n.a.	n.a.
Total		182,436	195,334	205,293	214,313	218,000	100.0	1.7

Note: * indicates the share of total PCT applications, and n.a. indicates not applicable. Data for 2015 are WIPO estimates.

Source: WIPO Statistics Database, May 2016.

C.3.2 – Timeliness in transmitting reports

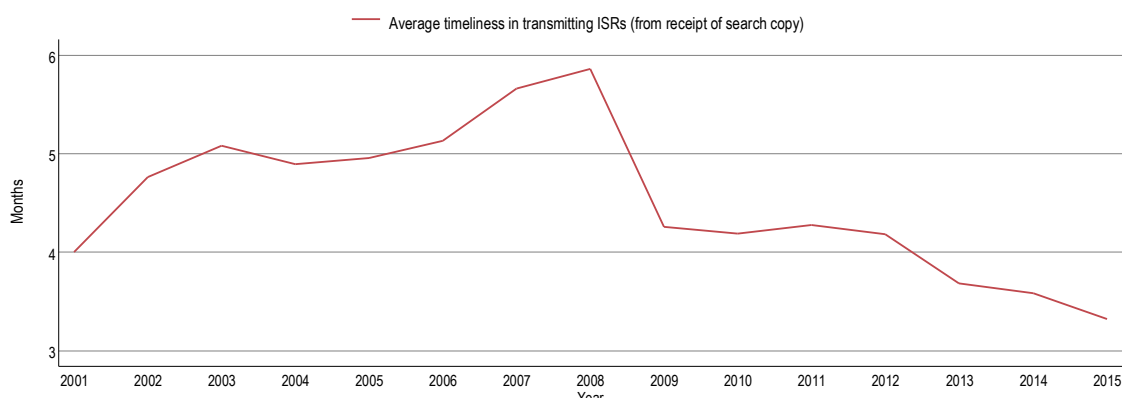
The ISA must establish the ISR within three months of receiving a copy of the application (the “search copy”) or nine months from the priority date (or, if no priority is claimed, from the international filing date), whichever expires later.

In 2015, the average time in transmitting ISRs to the IB was 3.3 months (figure C.3.2.1). This is the shortest transmittal time achieved since 2001. From 2001 to 2008, the average transmittal time, measured from the date of receipt of search copy to the IB, increased by approximately

two months (from four months to almost six months); however, since 2008, it has improved enormously. The electronic transmittal of numerous ISRs to the IB may have played an important role in this improvement.

In 2015, ISAs transmitted on average 76.3% of ISRs to the IB within three months from the date of receipt of the search copy (figure C.3.2.2). In 2015, this share improved on average by nearly 10 percentage points compared with 2014 (67%). It improved most at the office of the Republic of Korea (+25 percentage points), the office of Finland (+12) and the EPO (+11). In contrast, it decreased most at the office of Brazil (-7) and the office of India (-20).

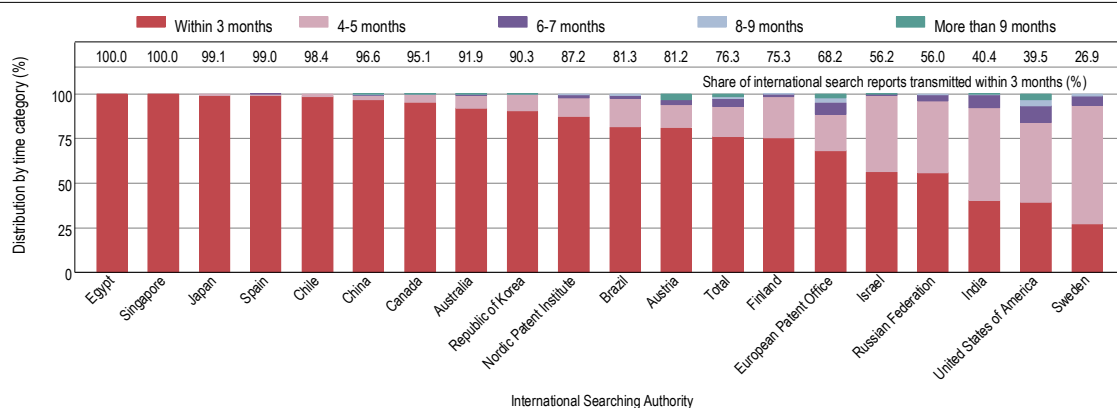
Figure C.3.2.1: Average timeliness in transmitting ISRs to the IB, measured from the date of receipt of the search copy



Note: Timeliness is calculated as the time between the date when the ISA receives a copy of the PCT application and the date when the ISA transmits the ISR to the IB (or, if applicable, the date of receipt of the declaration under Article 17(2)(a)). The 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, May 2016.

Figure C.3.2.2: Timeliness in transmitting ISRs to the IB, measured from date of receipt of the search copy by time category and by ISA, 2015



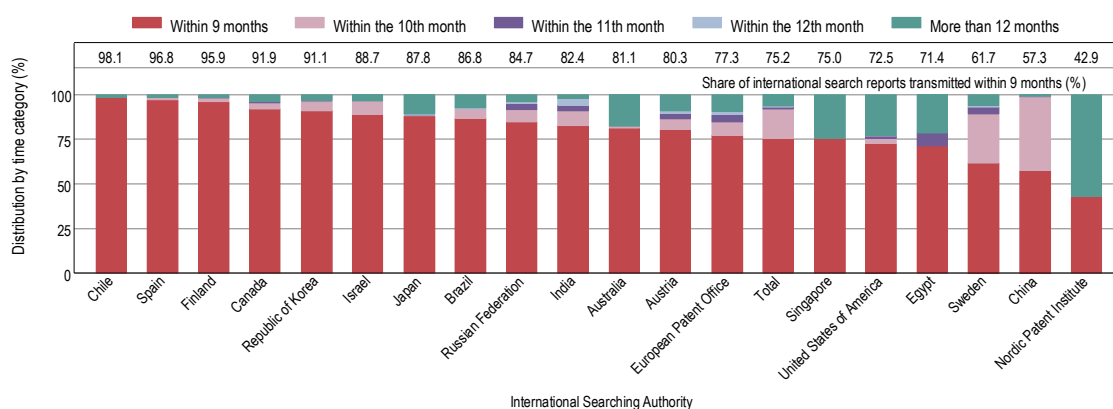
Note: Timeliness is calculated as the time between the date when the ISA receives a copy of the PCT application and the date when the ISA transmits the ISR to the IB (or, if applicable, the date of receipt of the declaration under Article 17(2)(a)). The figure shows timeliness in establishing the ISR, where the applicable time limit for establishing the ISR under Rule 42 is three months from receipt of the search copy.

Source: WIPO Statistics Database, May 2016.

Figure C.3.2.3 presents the timeliness in transmitting ISRs to the IB for ISRs where the deadline is nine months from the priority date. On average, the share of ISRs transmitted within nine months from the priority date was 75.2% in 2015. On average, the share of ISRs transmitted within nine months increased by 13.4 percentage points compared with 2014 (61.8%). This share improved most at the office of Finland (+24 percentage points), KIPO (+20) and SIPO (+18). In contrast, it decreased most at the office of Egypt (-29), at the Nordic Patent Institute (-20), the office of Israel (-6) and the office of Brazil (-5).

A further measure of timeliness of an ISA is the proportion of ISRs that are transmitted to the IB in time for publication with the PCT application. Figure C.3.2.4 presents this measure of timeliness, showing the percentage of applications published with the ISR (A1 publication) by ISA. Overall, 93.4% of PCT applications were published with the ISR in 2015, compared to 89.7% in 2014. The share of A1 publications was above 95% for 12 of the 18 ISAs in 2015.

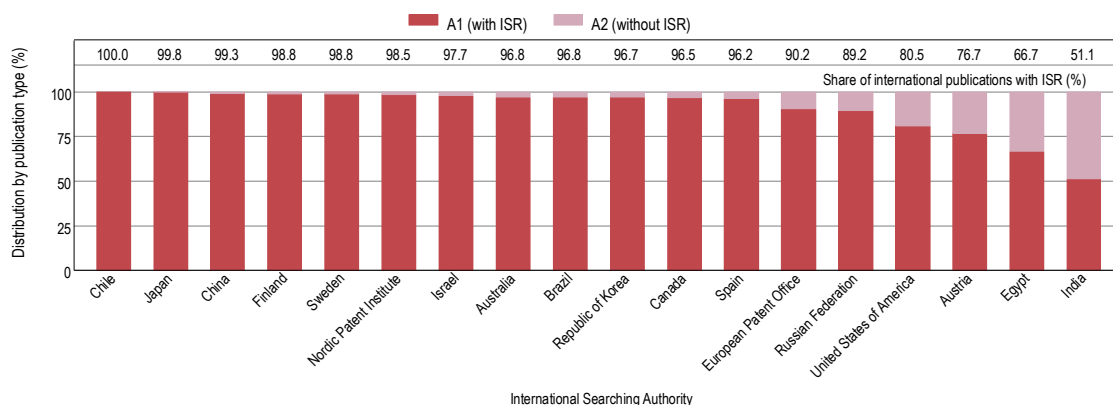
Figure C.3.2.3: Timeliness in transmitting ISRs to the IB, measured from priority date by time category and by ISA, 2015



Note: Timeliness is calculated as the time elapsed between the priority date and the date on which the ISA transmits the ISR to the IB (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.

Source: WIPO Statistics Database, May 2016.

Figure C.3.2.4: Share of published PCT applications with and without ISRs by ISA, 2015



Source: WIPO Statistics Database, May 2016.

C.4 – Supplementary international searching authorities

Since 2009, the supplementary international search (SIS) service has enabled PCT applicants to request searches in additional languages, complementing the search by the main ISAs.

C.4.1 – Supplementary international search reports by authority

In 2015, 64 SIS requests were recorded, representing 45 fewer requests than in the previous year (table C.4.1). Only three offices recorded SIS requests, namely the EPO with 40 requests, the office of the Russian Federation (22) and the office of Austria (2).

Table C.4.1: Distribution of supplementary international search reports by SISA

Supplementary International Searching Authority	Year				
	2011	2012	2013	2014	2015
Austria	1	2	2	2	2
European Patent Office	7	21	30	61	40
Finland		1			
Nordic Patent Institute		3			
Russian Federation	31	19	32	46	22
Sweden	2		3		
Total	41	46	67	109	64

Note: The figures for 2015 may be incomplete.

Source: WIPO Statistics Database, May 2016.

C.5 – International preliminary examining authorities

PCT applicants can request an optional international preliminary examination (IPE) from an international preliminary examining authority (IPEA) with competence based on negotiated agreements between ROs and IPEAs.

Once the IPE has been carried out, an International Preliminary Report on Patentability (IPRP) is sent by the IPEA to the applicant, who is then better placed to make an informed decision about whether or not to enter the PCT national phase. The report is also transmitted to national offices in their capacity as the “elected” office.¹⁸ In examining the PCT application during the national phase, patent offices take into account the IPRP (as well as the ISR and the written opinion of the ISA) when considering the patentability of the underlying invention.

The office of Singapore commenced operations on September 1, 2015, and at the end of 2015 the office of Ukraine confirmed that it would commence operations on February 5, 2016. Thus, at the time of writing, there were 20 national or regional patent offices operating as ISAs and IPEAs. Furthermore, in October 2015, the Visegrad Patent Institute (VPI), an intergovernmental organization for cooperation in the field of patents comprising the national offices of the Czech Republic, Hungary, Poland and Slovakia, was appointed by the Assembly of the PCT Union as an ISA and IPEA. This appointment will be effective from a future date to be notified by the office when it is ready to begin operations.

C.5.1 – International preliminary reports on patentability by authority

In 2015, the number of IPRPs issued reached 15,706, representing an increase of 14.4% on 2014 (table C.5.1). The EPO (+1,483 reports) and the JPO (+250) accounted for most of this increase.

18. “Elected” offices are national or regional offices at which the PCT application has potential legal effect.

Table C.5.1: Distribution of IPRPs by IPEA

International preliminary examining authority	2011	2012	Year 2013	2014	2015	2015 share (%)	Change from 2014 (%)
Australia	701	818	653	640	619	3.9	-3.3
Austria	28	14	28	16	6	0.0	-62.5
Brazil	15	45	47	48	43	0.3	-10.4
Canada	184	360	255	249	291	1.9	16.9
China	340	450	433	335	407	2.6	21.5
Egypt				1	4	0.0	300.0
European Patent Office	7,177	7,745	7,305	7,636	9,119	58.1	19.4
Finland	122	115	91	104	104	0.7	0.0
India					6	0.0	n.a.
Israel			9	40	75	0.5	87.5
Japan	2,206	2,741	2,470	2,232	2,482	15.8	11.2
Nordic Patent Institute	40	37	48	41	47	0.3	14.6
Republic of Korea	248	254	254	259	238	1.5	-8.1
Russian Federation	67	76	123	93	68	0.4	-26.9
Spain	148	106	85	75	66	0.4	-12.0
Sweden	356	332	249	251	293	1.9	16.7
Total	15,090	15,721	14,696	13,732	15,706	100.0	14.4

Note: The figures for 2015 may be incomplete. n.a. indicates not applicable.

Source: WIPO Statistics Database, May 2016.

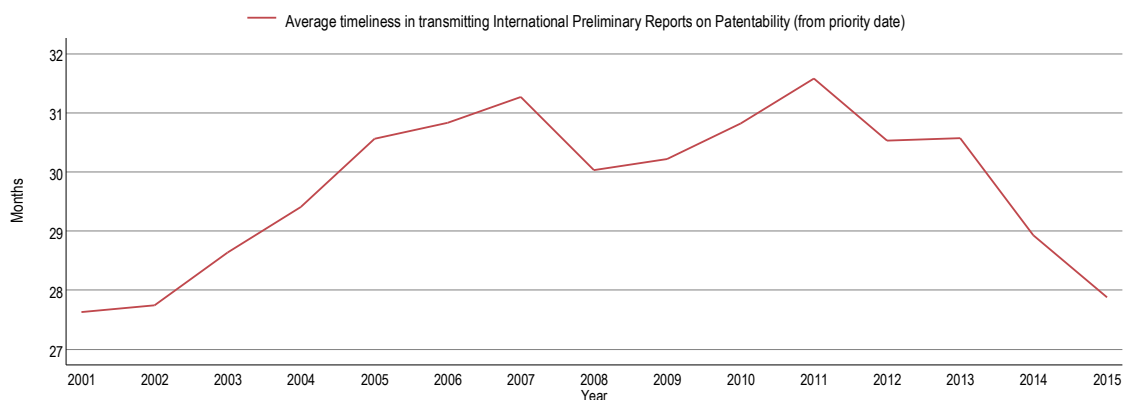
C.5.2 – Timeliness in transmitting reports

The PCT Regulations set a time limit for establishing the IPRP: 28 months from the priority date, six months from the start of the preliminary examination, or six months from the date of receipt of the translated application document by the IPEA (where relevant) – whichever time limit expires later. Timeliness is measured using the date the IB receives reports, rather than the date when the reports were established. The measurement may therefore be influenced by transmittal times.

In practice, most applicants enter the national phase immediately before the expiration of the time limit set by the PCT – generally 30 months from the priority date. The establishment of IPRPs before 28 months from the priority date is therefore intended to give applicants two months, in principle, to evaluate the IPRP and consider its impact on the decision to enter the PCT national phase.

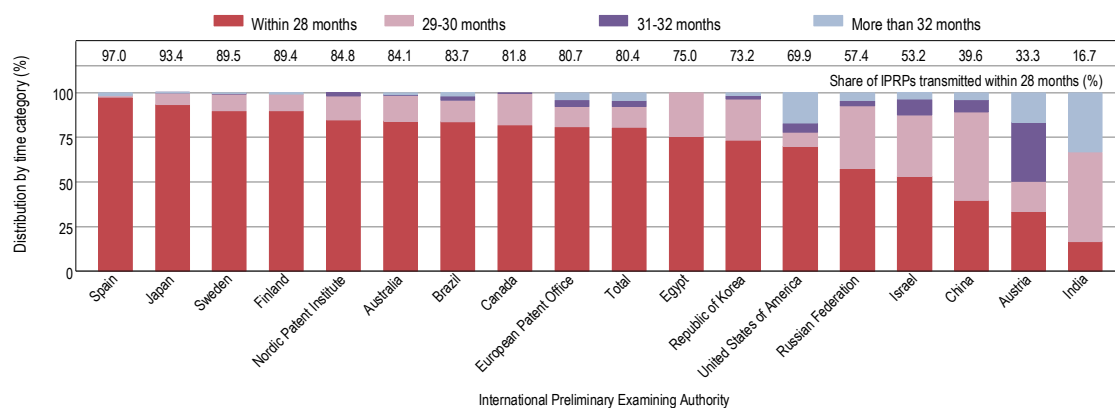
Average time in transmitting IPRPs was 27.9 months in 2015 (figure C.5.2.1). Since 2001, the delay in transmitting IPRPs rose from 27.6 months, before peaking in 2011 at 31.6 months. Since then, it has decreased almost continuously each year, before reaching in 2015 a level similar to that observed in 2001.

In 2015, on average 80.4% of IPRPs were transmitted to the IB within 28 months from the priority date (figure C.5.2.2). Spain (97%) and Japan (93.4%) each transmitted more than 90% of IPRPs within 28 months from the priority date of the application. When compared with figures for 2014, this share improved most at the USPTO (+20 percentage points) and KIPO (+17), and it decreased most at the office of Austria (-29), the office of Egypt (-25) and SIPO (-22).

Figure C.5.2.1: Average timeliness in transmitting IPRPs to the IB

Note: Timeliness is calculated as the time elapsed between the priority date and the date on which the IB received the IPRP from the IPEA.

Source: WIPO Statistics Database, May 2016.

Figure C.5.2.2: Timeliness in transmitting IPRPs to the IB by time, category and IPEA, 2015

Note: Figure C.5.2.2 presents the same timeliness information for 2014 as that presented in figure C.5.2.1, but breaks down this information by IPEA. Timeliness is calculated as the time elapsed between the priority date and the date when the IB received the IPRP from the IPEA.

Source: WIPO Statistics Database, May 2016.

C.6 – PCT-Patent Prosecution Highway pilots

Where a favorable written opinion or IPRP has been issued by the participating ISA and/or IPEA, use of the PCT-Patent Prosecution Highway (PCT-PPH) pilots enables applicants to fast-track patent examination procedures in the national phase and, generally, to obtain a patentability decision more quickly from participating offices.

In 2015, 69 PCT-PPH bilateral pilots were active, with the participation of 28 offices, including 14 international authorities. More comprehensive pilot programs with multilateral agreements, which also include PCT work products, were also active – namely, the Global PPH pilot program (GPPH) and the IP5 PPH pilot program. Between them, they included 23 participating offices at the end of 2015.

C.6.1 – New PCT-PPH pilots

Bilateral and unilateral pilots

The following offices commenced bilateral PCT-PPH pilots in 2015 (in chronological order):

- Canadian Intellectual Property Office and the EPO
- EPO and Israel Patent Office
- EPO and Mexican Institute of Industrial Property
- EPO and Industrial Property Office of Singapore
- Industrial Property Office (Czech Republic) and the JPO
- State Office for Inventions and Trademarks (Romania) and the JPO.

Global PPH pilot

In 2015, the Estonian Patent Office and the German Patent and Trade Mark Office joined the pilot program of the GPPH arrangement, whereby it is possible for a

request for accelerated processing to be made at any participating office based on work products, including a written opinion or IPRP under the PCT, from any of the other participating offices. The pilot program uses a single set of qualifying requirements and aims to simplify and improve the existing PPH network to make it more accessible to users. In 2015, 21 offices took part in the GPPH pilot.

C.6.2 – Number of requests by office

Table C.6.2.1 presents the number of requests for PCT-PPH fast-track patent examination in 2015 by office of PCT national phase entry and by ISA. Due to technical reasons, the USPTO, as the office of PCT national phase entry – which in 2013 accounted for 54.8% of all requests – did not provide its 2014 and 2015 PCT-PPH statistics. Data for the offices of Germany and Indonesia are also missing.

Offices of PCT national phase entry received a total of 5,804 requests in 2015, with the exception of the three above-mentioned offices. This represents an increase of 40.6% on 2014 figures. Almost all offices presented in the table experienced growth compared with the previous year. SIPO recorded the sharpest increase in the number of requests (+537), followed by the JPO (+308) and the EPO (+240).

Table C.6.2.2 compares the July to December 2015 data for PCT-PPH applications with total patent applications for some key elements of the patent examination procedure. It should be noted that due to important differences in patenting procedures among offices, a cross-office comparison is not relevant.

Compared with the available PPH statistics, the grant rates and first-action allowance rates were higher for PCT-PPH applications in all cases.

Table C.6.2.1: Distribution of PCT-PPH requests by international authority and office of PCT national phase entry, 2015

Office of PCT national phase entry	International authority															
	Australia	Austria	Canada	China	European Patent Office	Finland	Israel	Japan	Nordic Patent Institute	Republic of Korea	Russian Federation	Singapore	Spain	Sweden	United States of America	Total
Japan	6	0	7	84	461	2	3	1,262	0	78	7	0	4	10	19	1,943
China	-	2	-	-	507	9	6	765	-	125	6	-	5	17	48	1,490
European Patent Office	-	-	29	125	-	-	20	423	-	63	-	-	-	-	86	746
Republic of Korea	4	2	8	64	173	7	4	219	1	56	3	0	1	9	42	593
Canada	5	3	144	-	92	3	3	40	0	42	4	0	0	4	57	397
Australia	0	0	11	-	-	1	7	58	0	70	1	0	0	13	78	239
Russian Federation	1	0	7	5	-	2	2	74	0	3	0	0	1	3	29	127
Israel	0	0	1	0	36	0	18	8	0	16	3	1	0	3	9	95
Mexico	-	-	0	0	13	-	-	55	-	0	-	-	21	-	2	91
Philippines	-	-	-	-	-	-	-	24	-	-	-	-	-	-	12	36
Malaysia	-	-	-	-	-	-	-	23	-	-	-	-	-	-	-	23
United Kingdom	0	0	0	4	-	0	0	2	1	3	0	0	0	0	0	10
Singapore	0	0	0	-	1	0	0	2	0	3	0	0	0	0	1	7
Denmark	0	0	0	0	-	0	0	2	0	0	0	0	0	0	0	2
Finland	0	0	0	-	0	0	0	2	0	0	0	0	0	0	0	2
Sweden	0	0	0	0	-	0	0	1	0	0	0	0	0	1	0	2
Norway	0	0	0	-	-	0	0	0	0	1	0	0	0	0	0	1
Total	16	7	207	282	1,283	24	63	2,960	2	460	24	1	32	60	383	5,804

Note: - indicates PCT-PPH is not available between these two offices. Data for Germany, Indonesia and the USPTO acting as office of PCT national phase entry are missing. The office of Germany and the USPTO do not distinguish between PCT-PPH and PPH in their statistical reporting. The office of Indonesia did not provide its 2015 statistics.

Source: WIPO, based on data from the JPO, May 2016.

Table C.6.2.2: Additional statistics on PCT-PPH applications, July to December 2015

Additional statistics	Office of PCT national phase entry								
	Canada	United Kingdom	Israel	Japan	Republic of Korea	Mexico	Malaysia	Russian Federation	Sweden
Grant rate (%)									
PCT-PPH applications	89.0	100.0	100.0	82.1	77.0	88.9	56.0	100.0	100.0
All applications combined	59.0			69.3*				79.7	
First action allowance rate (%)									
PCT-PPH applications	25.0	40.0	93.0	16.0	10.3	55.6	56.0	80.0	100.0
All applications combined	2.6			9.0				25.0	

Note: *January to December 2014.

Source: WIPO, based on data from the JPO, May 2016.

C.7 – PCT user satisfaction survey

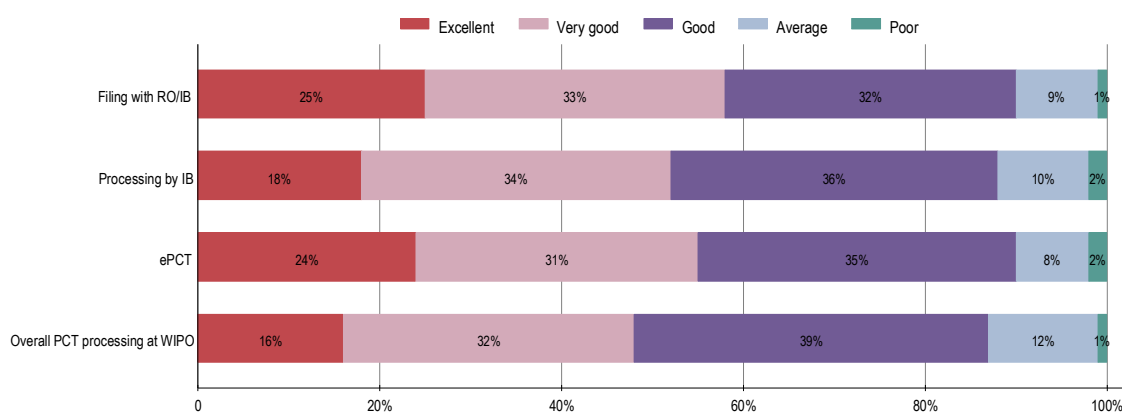
A survey of PCT users was conducted in 2015.¹⁹ It aimed to measure user satisfaction with the PCT services provided by WIPO, patent offices and international authorities within the PCT System. This was the second survey of PCT users conducted by WIPO and was developed in cooperation with Mbee.M, an external service provider. Slightly more than 1,000 users completed the survey and provided free-text comments. Applicants from the U.S. (17%), China (14%) and Japan (9%) accounted for the largest proportion of respondents. The results showed a high level of satisfaction with PCT services provided by WIPO among the survey respondents, with all comparable areas showing improvement over the baseline established in 2009, when the first survey was conducted.

The overall global satisfaction indicator for the PCT information products and services provided by WIPO was 89%. WIPO received an overall rating of 87% for the processing of PCT applications (including filing with the RO of the IB), processing by the IB, and ePCT (figure C.7.1).

The PCT training provided by WIPO was highly rated, with user satisfaction ratings of over 90% for the individual training-related services: seminars, webinars, distance learning course and video training series (figure C.7.2). Despite this positive feedback, users indicated a lack of awareness with regard to the availability of PCT training.

Offices and international authorities were evaluated collectively and achieved an overall satisfaction rating of 83% (figure C.7.3). The services provided by ROs (with the exception of the RO of the IB) received an overall satisfaction rating of 83%. Services provided by ISAs received an overall satisfaction rating of 82% and those provided by IPEAs received an overall satisfaction rating of 81%. The overall usefulness of PCT reports produced by the ISAs and IPEAs was highly rated, although there were reduced levels of satisfaction with regard to timeliness, the specific quality of products, and the accessibility and availability of staff in the international authorities when such contact was needed.

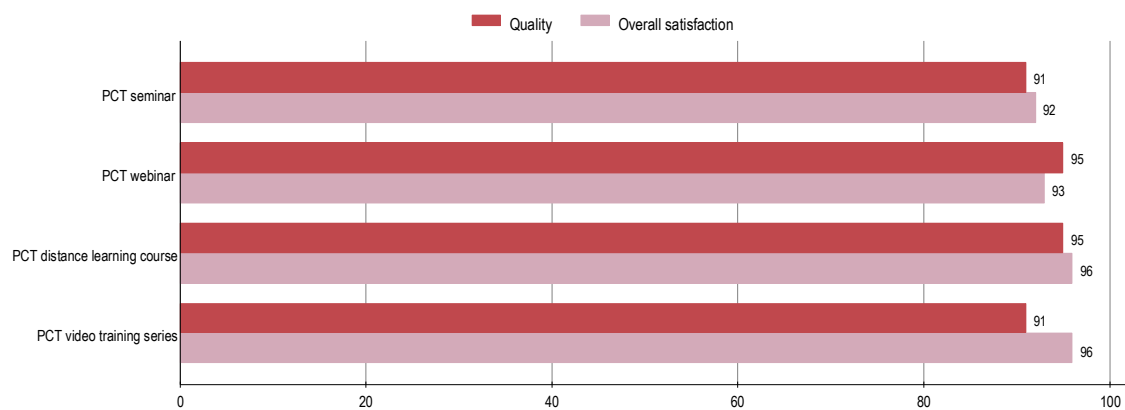
Figure C.7.1: Specific overall satisfaction ratings for processing of PCT applications



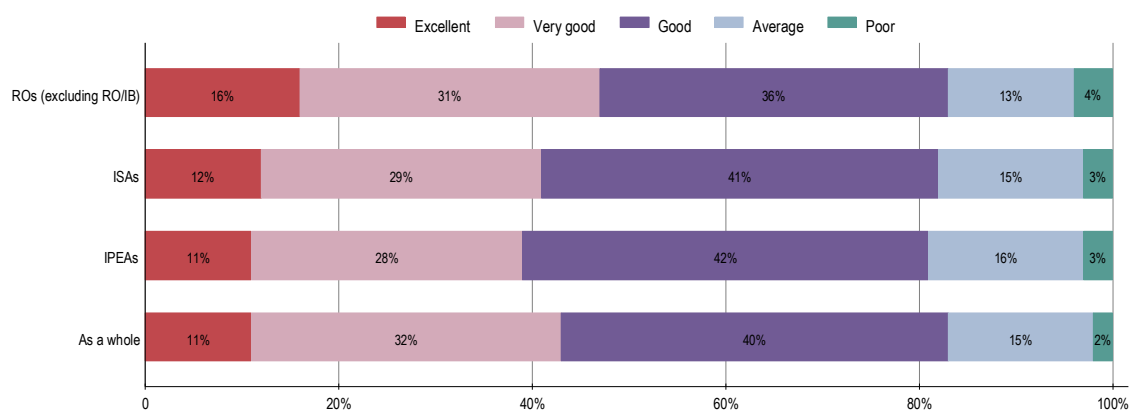
Note: Overall satisfaction rating: 87%

Source: WIPO, PCT Survey, 2015.

18. Available at: www.wipo.int/edocs/mdocs/pct/en/pct_wg_9/pct_wg_9_11.pdf

Figure C.7.2: Overall satisfaction ratings for PCT training, in percent

Source: WIPO, PCT Survey, 2015

Figure C.7.3: Specific overall satisfaction ratings for PCT services provided by patent offices and international authorities

Note: Overall satisfaction rating: 83%

Source: WIPO, PCT Survey, 2015.

Section D

Development of the PCT System

D.1 – Electronic filing and processing of PCT applications

By the end of 2015, 49 out of a total of 116 PCT ROs (17 more than at the end of 2014) accepted the filing of PCT applications in fully electronic format.

D.1.1 – ePCT-Filing

By the end of 2015, 29 ROs were accepting PCT filings using the ePCT-Filing portal. During the course of the year, the offices of the following countries announced that they were prepared to accept such filings: Algeria, Azerbaijan, Colombia, Czech Republic, Denmark, Estonia, Hungary, Latvia, Mexico, Norway, Poland, Qatar, Saudi Arabia, Singapore, South Africa and Turkey.

In addition, at the end of 2015 the ROs of Brunei Darussalam, Iceland, Indonesia, the Philippines and the Russian Federation notified the IB that they would begin accepting such filings from January 2016.

D.1.2 – ePCT system

The ePCT system enables applicants to securely file and manage their PCT applications and to access the bibliographic data and documents in real time throughout the lifetime of the international application, including prior to publication. The system comprises two modes: ePCT public services (submission of electronic documents but no access to confidential data and documents, online “Actions” limited to requests to record changes under PCT Rule 92bis for published applications, and submission by third parties of observations as to close prior art) and ePCT private services (filing of PCT applications, real-time access to confidential data and documents, and 17 semi-automated “Actions”).

The system also provides services for offices – primarily for ROs, but also in roles as ISAs, IPEAs and designated and elected offices. By the end of 2015, 59 offices had accessed the system.

ePCT for applicants

Following an initial pilot phase during which the interface was available in English only, it became available in the other nine languages of international publication (Arabic, Chinese, French, German, Japanese, Korean, Portuguese, Russian and Spanish) on April 16, 2015.

The updates to the ePCT System that were deployed in April, August and December 2015 incorporated a number of new features, including:

- new ePCT Actions, including one to submit amendments to the claims under PCT Article 19 to the IB in text format (with the possibility to save a draft copy prior to submission and use a function which assists with the preparation of the letter that must accompany the amendments), one to prepare a power of attorney and submit it to the IB post-filing, and one to submit a translation for international publication to the IB and convert it into the required format;
- the ability to select multiple applications and manage access rights for all the selected applications in one step;
- the possibility to select several new PCT applications on the ePCT-Filing screen and either manage the access rights or delete them in a single operation;
- default access rights automatically applied when a new international application is created for filing via ePCT;
- when cloning an existing application to create a new application, the user can specify that, in addition to the bibliographic data, the documents contained in the application are also to be cloned;
- the National Institute of Industrial Property (Brazil) has informed WIPO that it provides certified copies of earlier applications in electronic format (signed PDF). Therefore, it is now possible to attach such signed PDF documents in ePCT-Filing on the priority claims screen and also when using the Upload Documents function in ePCT private and public services;
- in ePCT-Filing, where the selected receiving office has a fee structure involving more than one currency, it is now possible to indicate multiple currencies on the Fees screen;
- provided that a PCT application has been published, it is possible to use the ePCT Action “Rule 92bis change request” in ePCT public services; and
- an improved format for FAQ documentation that makes it easier to find answers and solutions to common issues, whether related to ePCT, digital certificates or other PCT electronic services.

ePCT for offices

A number of new features were added to ePCT for offices and international authorities in August and December 2015, including:

- the possibility to transmit priority documents to the IB;
- an Action to record receipt of a demand for international preliminary examination and transmit it to the IB;
- an Action to withdraw an application;
- an Action for the receiving office to input data relating to requests under Rule 92bis;
- the possibility to generate a number of forms through ePCT for use by receiving offices, including a feature to specify the delivery method (e-mail, fax);
- functions for processing of documents (edit pagination, merge documents);
- an Action for designated offices to notify receipt of a national phase entry by specifying the national application number and the date, and subsequently have access to documents on file in ePCT; and
- the ability to generate a variety of reports to assist the management of RO and ISA functions.

D.1.3 – Decommissioning of PCT-EASY

On July 1, 2015, the PCT-EASY functionality of PCT-SAFE was decommissioned. It therefore became no longer possible to file PCT applications with the request form in PCT-EASY format, namely on paper, together with a copy of the request and the abstract in electronic form in character-coded format. PCT-EASY filings had been possible since 1998, and were a precursor to the current fully electronic filing systems available with PCT-SAFE and ePCT-Filing. Although PCT-EASY filings made up about 45% of all PCT filings in 2003, their share of filings later decreased significantly due to the growing importance of fully electronic filing systems, and in recent years they represented only small proportion of total filings (see C.1.1).

PCT applicants who did not already do so were actively encouraged to file using ePCT-Filing in order to benefit from the many advantages offered under this mode of filing. Nevertheless, the special EFS-Web functionality for the USPTO acting as RO remained in the software, and filers continued to be able to prepare and upload the “PCT-EASY.zip” file to the EFS-Web system.

D.2 – PATENTSCOPE Search System

The national collections of Tunisia and the U.K. were added to PATENTSCOPE. This brings to 41 the number of national (or regional) offices whose data are available in PATENTSCOPE. In 2015, it was possible to search over 50 million patent documents, including over 2.8 million published PCT applications.

Following the addition of Arabic on August 20, 2015, the PATENTSCOPE search system has now become available in all 10 languages of publication.

A new “machine translation” button allows users to choose between machine translation tools, including WIPO’s machine translation tool “WIPO Translate” for translation into eight languages. Additionally, this tool is available for the translation of full-length Chinese documents into English, and vice versa. WIPO Translate can also be used as an individual translation tool for the translation of patent-related texts in 14 language pairs.

Access to the PATENTSCOPE website and all of the associated functionality has become more secure due to the strong encryption available via the http protocol, “https”. With this encryption, user confidentiality is ensured as account data, identity data, search data and results are protected from being modified or monitored.

D.3 – WIPO Pearl database

Since September 2014, WIPO Pearl has been providing free access to a wealth of multilingual scientific and technical terminology found in patents and published patent applications.²⁰ It promotes accurate and consistent use of terms across the 10 publication languages of the PCT and makes it easier to search and share scientific and technical knowledge.

The IB continued to develop WIPO Pearl during 2015, adding to the contents of the database and enhancing the application. More than 1,000 new concepts and 20,000 new terms were added, such that at the end of the year the database contained 16,300 concepts and 110,000 terms, all entered and validated by WIPO-PCT language experts (translators and terminologists) who have considerable experience in working with patent documents in multiple languages. In addition, more than 10,000 concepts are now linked to other concepts in the database, and these relationships can be browsed in the Concept Map Search.

The new features added to WIPO Pearl in 2015 included:

- a “picture” icon that allows users to search for images of terms found in Linguistic Search;
- a quick-view “Term” list in Linguistic Search that helps users see at a glance all the terms that are relevant for the searched term, before exploring details in the main hit list;
- statistics in Linguistic Search that show the number of hits per language and subject field; and
- concept maps accessed from Linguistic Search can now be expanded to show all the concepts in the subfield.

Feedback on WIPO Pearl is welcomed and can be sent to wipopearl@wipo.int or via the “Contact us” link on the WIPO website.

D.4 – Legal developments

Changes in the PCT Regulations that entered into force or were adopted by the Assembly of the International Patent Cooperation Union (PCT Assembly) in 2015 are presented below.

D.4.1 – Amendments that entered into force in 2015

Amendments adopted by the PCT Assembly in October 2014 – and which entered into force on July 1, 2015 – included the introduction of a requirement, in the case of applicants making an express request for early national phase entry, to file any request for the restoration of the right of priority at the designated or elected office within one month from the date of receipt of the request for early national phase entry (rather than one month from the expiration of the normal period for entering the national phase) (amendment of PCT Rule 49ter.2 and 76.5). An amendment was also made to enable the IB, in cases where it receives a notice of withdrawal together with a copy of the general power of attorney, to process the notice of withdrawal without requiring the agent to submit a separate original power of attorney.

In view of the withdrawal of the PCT-EASY service on July 1, 2015, the PCT Schedule of Fees was also revised with effect from that date to remove the fee reduction available for such filings. Furthermore, the eligibility criteria for the 90% reduction in the international filing fee, the supplementary search handling fee and the handling fee, which is available for applicants from certain states, were revised with effect from July 1, 2015, with the following effect: natural persons who are nationals and residents of Singapore and the United Arab Emirates will no longer benefit from the fee reduction, but natural persons who are nationals and residents of the Bahamas, Cyprus, Greece, Malta, Nauru, Palau, Portugal, Saudi Arabia, Slovenia and Suriname will be able to benefit from the fee reduction.

As a consequence of the above-mentioned amendments to the Regulations under the PCT, modifications to the Administrative Instructions under the PCT, the PCT Receiving Office Guidelines, the PCT International Search and Preliminary Examination Guidelines and certain PCT forms were made accordingly, with effect from July 1, 2015.

20. Available at: www.wipo.int/reference/en/wipopearl

D.4.2 – Amendments adopted in 2015 that will enter into force in 2016

Amendments to the PCT Regulations which were adopted by the PCT Assembly in October 2015, and which will enter into force on July 1, 2016, were agreed so as to enable applicants to request that information normally included accidentally in the international application or associated documents be omitted from the published version of an international application or the associated files if it does not obviously serve the purpose of informing the public about the international application, if it would prejudice the personal or economic interests of any person and if there is no prevailing public interest to have access to that information (amendment of PCT Rules 9, 48 and 94).

Amendments were also agreed to allow applicants to request that certain documents relating to requests for restoration of the right of priority not be forwarded by the receiving offices to the IB (amendment of PCT Rules 26*bis* and 48). A new provision was introduced to PCT Rule 82*quater* to allow time limits to be extended where a time limit had been missed because of a general failure of electronic communications services in the area where the interested party resides; such extension of time limits is subject to the fulfillment of certain conditions.

Furthermore, an enabling provision was added to PCT Rule 92 under which the IB will allow applicants to write to the IB in publication languages other than English or French. Initially, this will be where such correspondence is transmitted through ePCT.

D.4.3 – Amendments adopted in 2015 that will enter into force in 2017

Amendments were agreed to the PCT Regulations adopted by the PCT Assembly in October 2015. The Regulations, which will enter into force on July 1, 2017, require receiving offices to forward details of search and/or classification results from earlier applications to the ISA when permitted to do so under national law (amendment of PCT Rules 12*bis*, 23*bis* and 41). Also, in order to increase the amount of information available in PATENTSCOPE and in bulk format to other patent information providers concerning national phase entries, national publication and grants, amendments were agreed to PCT Rules 86 and 95 to require designated offices to send such information in a timely manner to the IB.

D.5 – Meetings

Several meetings take place every year between the PCT International Authorities, the IB, PCT member states and/or offices, in order to ensure the smooth operation of the System, improve its performance and facilitate its use. The main developments in 2015 are described below.

D.5.1 – Meeting of International Authorities

The 22nd session of the Meeting of International Authorities under the PCT was held in Tokyo, Japan, from February 4 to February 6, 2015. The matters discussed at the meeting included: a document by the USPTO proposing areas for further work (for example, mandatory replies to negative indications by the ISA/IPEA on national phase entry, formal incorporation of the PPH into the PCT and a mandatory written opinion under the Chapter II procedure); a report by the JPO on ongoing discussions relating to the strengthening of links between the international and national phases of the PCT procedure; a report by the EPO on its new “PCT Direct” service (this allows applicants, when filing a PCT application claiming priority of an earlier application which has already been searched by the EPO, to furnish to the EPO in its capacity as an ISA informal comments on any objections raised in the search opinion drawn up on the earlier application – Authorities supported extending this possibility to other ROs); and a proposal by KIPO concerning the requirements under PCT Rule 6.4 for dependent claims in an international application. The Meeting also noted a Summary by the Chair of the Meeting’s Quality Subgroup and approved the recommendations for further work, for example, on the exchange of quality policies and guidelines, and the sharing of search strategy information.

D.5.2 – PCT Working Group

The eighth session of the PCT Working Group was held in Geneva from May 26 to May 29, 2015. The Working Group recommended proposed amendments to the PCT Regulations which were later adopted by the PCT Assembly (see D.4.2 and D.4.3). The Working Group discussed a number of other matters, including: the setting of equivalent amounts of the international filing fee on an annual basis with hedging of the fee as far as the risk resulting from transactions in euro, Japanese yen and U.S. dollars is concerned; the progress being made with WIPO’s electronic services; the problem of lack of agreement regarding whether or not an erroneously

filed specification should be allowed to be replaced under the “missing parts” arrangements; whether or not to allow claims of priority from “earlier” applications filed on the same date as the PCT application; and the possible coordination by the IB of examiner training activities for national offices.

D.5.3 – PCT Assembly

The 47th session of the PCT Assembly was held in Geneva from October 5 to October 14, 2015, as part of the meetings of the Assemblies of the Member States of WIPO. The PCT Assembly adopted amendments to the PCT Regulations which will enter into force on either July 1, 2016 or July 1, 2017 (see D.4.2 and D.4.3). It appointed the Visegrad Patent Institute (VPI) as an ISA and IPEA, effective from a future date to be notified by the office when it is ready to begin operations. In addition, the Assembly noted reports on the work being undertaken by the PCT Working Group and the PCT Meeting of International Authorities to find ways to improve the delivery of PCT services to stakeholders, and it approved recommendations on further work.

D.6 – PCT training

The IB offers training sessions and provides training materials on the PCT System to a wide range of interested parties worldwide.

D.6.1 – Seminars

In 2015, the PCT Legal Division participated in 58 seminars for PCT users. The seminars were held in 15 countries (Australia, Belgium, China, Finland, France, Germany, Japan, Latvia, New Zealand, Poland, Spain, Sweden, Switzerland, the U.K. and the U.S.) and were provided in five languages (Chinese, English, French, German and Japanese). The above list includes an annual seminar organized at WIPO Headquarters that is offered free of charge to current and potential users of the PCT System. In addition, 46 presentations were provided to academics, user groups, companies and other stakeholders.

D.6.2 – Webinars

In 2015, eight webinars, including “PCT update” webinars and webinars on the use of the ePCT System, were provided to a total of 557 participants. The recordings and accompanying PowerPoint presentations are available on the PCT website. In addition, 11 webinars were

held on a number of topics related to the use of the PATENTSCOPE search system. The PowerPoint slides that were used for those webinars are also available on the WIPO website.

D.6.3 – Distance learning

The PCT distance learning course entitled “Introduction to the PCT”, available in all 10 PCT languages of publication, was followed via the Internet by 4,346 participants.

D.6.4 – International cooperation

The PCT International Cooperation Division organized and participated in 46 events such as seminars and workshops mainly for offices of PCT member states and possible PCT member states as well as other stakeholders. These were held in 34 countries and at WIPO Headquarters. There were more than 3,000 participants from more than 65 countries.

Statistical Table

The table shows the number of PCT applications filed in 2015 and the number of PCT national phase entries in 2014 by office and by country or territory of origin.²¹

The following example may be of assistance in understanding the table below: the patent office of Australia

received 1,622 PCT applications as a PCT receiving office in 2015 and 19,181 PCT national phase entries as a designated office in 2014; applicants residing in Australia filed 1,752 PCT applications in 2015 and initiated 6,817 PCT national phase entries worldwide in 2014.

Name	Code	PCT applications filed in 2015 (international phase)		PCT national phase entries in 2014	
		at receiving office	by country of origin	at office of destination	by country of origin
African Intellectual Property Organization	OA	1	n.a.	149	n.a.
African Regional Intellectual Property Organization	AP	0	n.a.	788	n.a.
Albania	AL	2	2	2	3
Algeria	DZ	6	8	701	3
Andorra	AD	n.a.	5	n.a.	1
Angola	AO	IB	1	--	--
Antigua and Barbuda	AG	0	0	15	--
Argentina	AR	n.a.	28	n.a.	124
Armenia	AM	4	5	2	22
Aruba	AW	n.a.	0	n.a.	1
Australia	AU	1,622	1,752	19,181	6,817
Austria	AT	494	1,404	462	5,358
Azerbaijan	AZ	1	1	1	71
Bahamas	BS	n.a.	10	n.a.	39
Bahrain	BH	0	5	196	3
Bangladesh	BD	n.a.	0	n.a.	8
Barbados	BB	IB	125	38	364
Belarus	BY	5	12	81	14
Belgium	BE	71	1,185	EP	5,419
Belize	BZ	0	0	36	12
Benin	BJ	OA	0	OA	6
Bermuda	BM	n.a.	0	n.a.	77
Bonaire, Sint Eustatius and Saba	BQ	n.a.	0	n.a.	1
Bosnia and Herzegovina	BA	3	4	2	6
Botswana	BW	0	0	5	1
Brazil	BR	484	547	22,644	1,292
Brunei Darussalam	BN	0	5	--	2
Bulgaria	BG	40	55	6	75
Burkina Faso	BF	OA	0	OA	5
Cameroon	CM	OA	1	OA	26
Canada	CA	2,000	2,848	27,451	8,920
Central African Republic	CF	OA	0	OA	4
Chad	TD	OA	0	OA	2
Chile	CL	137	167	2,468	406
China	CN	31,031	29,846	79,612	22,473
China, Hong Kong SAR	HK	n.a.	0	n.a.	279
China, Macao SAR	MO	n.a.	0	n.a.	10
Colombia	CO	12	86	1,819	147
Comoros	KM	OA	0	OA	1
Congo	CG	OA	1	OA	9
Cook Islands	CK	n.a.	0	n.a.	1
Costa Rica	CR	2	6	530	5
Côte d'Ivoire	CI	OA	2	OA	22
Croatia	HR	22	28	15	42

21. A PCT applicant seeking protection in any of the European Patent Convention (EPC) member states can generally choose to enter the national phase at the relevant national office or at the EPO (see EPC member states indicated in the PCT contracting states table in the annex). This explains why the number of PCT national phase entries at some European national offices is lower than would otherwise be

expected. The PCT national phase route is closed for France, Italy, the Netherlands and several other countries (again, see the PCT contracting states table in the annex). A PCT applicant seeking protection in those countries must enter the PCT national phase at the regional office (the EPO). Only countries and territories for which statistical data were available are included in the table.

ANNEXES

Name	Code	PCT applications filed in 2015 (international phase)		PCT national phase entries in 2014	
		at receiving office	by country of origin	at office of destination	by country of origin
Cuba	CU	2	2	118	134
Curaçao	CW	n.a.	0	n.a.	11
Cyprus	CY	1	49	EP	193
Czech Republic	CZ	165	191	24	347
Democratic People's Republic of Korea	KP	6	6	--	29
Denmark	DK	466	1,332	79	5,662
Dominica	DM	0	1	--	--
Dominican Republic	DO	5	5	227	3
Ecuador	EC	1	5	--	20
Egypt	EG	49	58	1,353	32
El Salvador	SV	0	1	182	--
Estonia	EE	7	36	1	74
Eurasian Patent Organization	EA	2	n.a.	2,894	n.a.
European Patent Office	EP	34,302	n.a.	92,627	n.a.
Finland	FI	1,009	1,592	41	6,093
France	FR	3,545	8,476	EP	30,153
Gabon	GA	OA	1	OA	5
Georgia	GE	2	6	179	9
Germany	DE	1,577	18,072	6,042	60,224
Ghana	GH	1	1	--	1
Greece	GR	65	122	EP	249
Grenada	GD	0	0	1	--
Guatemala	GT	0	2	279	1
Hungary	HU	105	148	31	468
Iceland	IS	17	46	15	137
India	IN	687	1,423	26,340	3,681
Indonesia	ID	6	6	4,765	27
International Bureau	IB	10,430	n.a.	n.a.	n.a.
Iran (Islamic Republic of)	IR	0	71	--	4
Iraq	IQ	n.a.	2	n.a.	2
Ireland	IE	21	457	EP	1,784
Israel	IL	1,331	1,698	5,215	6,055
Italy	IT	324	3,083	EP	10,370
Jamaica	JM	n.a.	1	n.a.	1
Japan	JP	43,285	44,235	58,337	123,787
Jordan	JO	n.a.	1	n.a.	6
Kazakhstan	KZ	21	22	--	11
Kenya	KE	3	11	75	6
Kuwait	KW	n.a.	3	n.a.	8
Kyrgyzstan	KG	1	1	7	1
Lao People's Democratic Republic	LA	IB	2	--	1
Latvia	LV	9	28	EP	33
Lebanon	LB	n.a.	7	n.a.	12
Liberia	LR	0	1	--	--
Libya	LY	1	1	--	--
Liechtenstein	LI	CH	242	CH	446
Lithuania	LT	7	37	13	46
Luxembourg	LU	0	405	--	1,382
Madagascar	MG	IB	0	28	1
Malaysia	MY	253	268	5,544	682
Mali	ML	OA	0	OA	9
Malta	MT	0	67	EP	233
Marshall Islands	MH	n.a.	1	n.a.	11
Mauritius	MU	n.a.	0	n.a.	17
Mexico	MX	225	320	12,801	487
Monaco	MC	0	35	EP	54
Mongolia	MN	0	1	--	1
Morocco	MA	33	35	714	9
Mozambique	MZ	AP	0	--	3
Namibia	NA	AP	4	--	1
Netherlands	NL	966	4,357	EP	18,035
Netherlands Antilles	AN	n.a.	0	n.a.	6
New Zealand	NZ	263	360	4,412	1,307
Nicaragua	NI	0	0	140	--

Name	Code	PCT applications filed in 2015 (international phase)		PCT national phase entries in 2014	
		at receiving office	by country of origin	at office of destination	by country of origin
Niger	NE	OA	1	OA	10
Nigeria	NG	IB	5	--	1
Norway	NO	291	679	416	2,623
Oman	OM	IB	3	--	3
Pakistan	PK	n.a.	2	n.a.	14
Panama	PA	3	15	241	43
Paraguay	PY	n.a.	1	n.a.	2
Peru	PE	24	25	1,089	16
Philippines	PH	17	27	3,063	121
Poland	PL	304	440	59	794
Portugal	PT	61	161	13	334
Qatar	QA	4	19	464	87
Republic of Korea	KR	14,657	14,626	37,112	21,090
Republic of Moldova	MD	7	7	62	2
Romania	RO	38	34	17	95
Russian Federation	RU	839	792	13,451	1,337
Rwanda	RW	0	1	--	1
Saint Kitts and Nevis	KN	0	1	--	3
Saint Lucia	LC	IB	1	--	--
Saint Vincent and the Grenadines	VC	IB	0	8	20
Samoa	WS	n.a.	5	n.a.	--
San Marino	SM	0	3	--	5
Saudi Arabia	SA	22	279	--	945
Senegal	SN	OA	16	OA	27
Serbia	RS	28	38	5	25
Seychelles	SC	0	7	--	37
Sierra Leone	SL	AP	0	--	3
Singapore	SG	665	910	7,123	2,581
Slovakia	SK	19	38	9	96
Slovenia	SI	37	84	EP	169
South Africa	ZA	93	314	6,523	1,364
Spain	ES	1,148	1,537	147	4,072
Sri Lanka	LK	IB	14	--	8
Sudan	SD	0	5	8	2
Swaziland	SZ	AP	3	AP	3
Sweden	SE	1,469	3,858	64	12,663
Switzerland	CH	190	4,280	76	21,095
Syrian Arab Republic	SY	2	1	--	1
T F Y R of Macedonia	MK	2	2	--	6
Thailand	TH	96	132	6,113	206
Togo	TG	OA	0	OA	3
Trinidad and Tobago	TT	0	4	180	2
Tunisia	TN	4	8	394	19
Turkey	TR	705	1,016	296	814
Uganda	UG	AP	0	3	2
Ukraine	UA	129	139	2,138	100
United Arab Emirates	AE	IB	77	1,383	77
United Kingdom	GB	4,118	5,313	2,330	20,277
United Republic of Tanzania	TZ	AP	2	--	--
United States of America	US	57,881	57,385	128,946	170,928
Uruguay	UY	n.a.	6	n.a.	11
Uzbekistan	UZ	2	3	209	15
Venezuela (Bolivarian Republic of)	VE	n.a.	0	n.a.	12
Viet Nam	VN	15	21	3,503	43
Yemen	YE	n.a.	1	n.a.	--
Zambia	ZM	0	0	22	--
Zimbabwe	ZW	0	2	--	1
Unknown		n.a.	181	1,245	8,757
Total		218,000	218,000	595,400	595,400

-- indicates data are unknown;

n.a. indicates not applicable, as it is not an office of a PCT member state; AP, CH, EP, IB and OA are the competent – designated, elected or receiving – offices for certain member states; PCT national phase entries by origin, world totals and PCT application data are WIPO estimates; and offices of destination are designated and/or elected offices.

Source: WIPO Statistics Database, May 2016.

Acronyms

EPC	European Patent Convention
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
NPE	national phase entry
PCT	Patent Cooperation Treaty
PCT-PPH	Patent Cooperation Treaty-Patent Prosecution Highway
PCT-SAFE	PCT-Secure Application Filed Electronically
PDF	portable document format
RO	receiving office
SAFE	secure application filed electronically
SIPO	State Intellectual Property Office of the People's Republic of China
SIS	supplementary international search
SISA	authority specified for supplementary search (supplementary international searching authority)
SISR	supplementary international search report
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 by 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 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 with an IP office of another state or jurisdiction. For example, an application filed by an applicant domiciled in France with 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 JPO’s point of view.

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 international 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 acts as a receiving office for PCT applications from all contracting states. It also handles certain processing tasks for all PCT applications filed with all receiving offices worldwide.

International filing date: The date on which the receiving office receives a PCT application, provided certain formality 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 “A brief presentation of the Patent Cooperation Treaty”.

International preliminary examining authority (IPEA): A national or regional patent office appointed by the PCT Assembly to carry out international preliminary examination. 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 (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. National phase entry (NPE) involves the payment of fees and, where necessary, the submission of a translation of the PCT application.

Non-resident filing: 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

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 time of filing). The patent system is designed to encourage innovation by providing innovators with time-limited exclusive legal rights, which enables them to appropriate the 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 is the authentic publication source of PCT applications.

PCT application: A patent application filed through the WIPO-administered PCT, also known as an international application.

PCT-Patent Prosecution Highway Pilots (PCT-PPH): A number of bilateral agreements signed between patent offices that enable applicants to request a fast-track examination procedure, whereby patent examiners can make use of the work products of another office or offices. These work products can include the results of a favorable written opinion by an international searching authority, the written opinion of an international preliminary examining authority or the international preliminary report on patentability issued within the framework of the PCT. By requesting this procedure, applicants can generally obtain patents from participating offices more quickly.

PCT route: Patent applications filed or patents granted based on PCT international applications.

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 (is not obvious) for the purposes of international searches and international preliminary examination.

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 – with 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 filing: 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 JPO by a resident of Japan is considered a resident application for the JPO. Resident applications are sometimes referred to as “domestic applications”.

Supplementary international searching authority (SISA): See “Authority specified for supplementary international search”.

Supplementary international search report (SISR): A report, similar to the ISR, established during the supplementary international search, that allows the 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 that carries out the main international search. The SIS primarily focuses on the patent documentation in the language in which the SISA specializes.

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 IP system. Established in 1967, WIPO’s mandate is to promote the protection of IP throughout the world 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 2015, 148 countries were contracting states of the PCT.

Albania (EP)	Dominica	Lithuania (EP)	Sao Tome and Principe (AP) ⁵
Algeria	Dominican Republic	Luxembourg (EP)	Saudi Arabia
Angola	Ecuador	Madagascar	Senegal (OA) ²
Antigua and Barbuda	Egypt	Malawi (AP)	Serbia (EP)
Armenia (EA)	El Salvador	Malaysia	Seychelles
Australia	Equatorial Guinea (OA) ²	Mali (OA) ²	Sierra Leone (AP)
Austria (EP)	Estonia (EP)	Malta (EP) ²	Singapore
Azerbaijan (EA)	Finland (EP)	Mauritania (OA) ²	Slovakia (EP)
Bahrain	France (EP) ²	Mexico	Slovenia (EP) ²
Barbados	Gabon (OA) ²	Monaco (EP) ²	South Africa
Belarus (EA)	Gambia (AP)	Mongolia	Spain (EP)
Belgium (EP) ²	Georgia	Montenegro ¹	Sri Lanka
Belize	Germany (EP)	Morocco ³	Sudan (AP)
Benin (OA) ²	Ghana (AP)	Mozambique (AP)	Swaziland (AP) ²
Bosnia and Herzegovina ¹	Greece (EP) ²	Namibia (AP)	Sweden (EP)
Botswana (AP)	Grenada	Netherlands (EP) ²	Switzerland (EP)
Brazil	Guatemala	New Zealand	Syrian Arab Republic
Brunei Darussalam	Guinea (OA) ²	Nicaragua	Tajikistan (EA)
Bulgaria (EP)	Guinea-Bissau (OA) ²	Niger (OA) ²	Thailand
Burkina Faso (OA) ²	Honduras	Nigeria	The former Yugoslav Republic of Macedonia (EP)
Cameroon (OA) ²	Hungary (EP)	Norway (EP)	Togo (OA) ²
Canada	Iceland (EP)	Oman	Trinidad and Tobago
Central African Republic (OA) ²	India	Panama	Tunisia
Chad (OA) ²	Indonesia	Papua New Guinea	Turkey (EP)
Chile	Iran (Islamic Republic of)	Peru	Turkmenistan (EA)
China	Ireland (EP) ²	Philippines	Uganda (AP)
Colombia	Israel	Poland (EP)	Ukraine
Comoros (OA) ²	Italy (EP) ²	Portugal (EP)	United Arab Emirates
Congo (OA) ²	Japan	Qatar	United Kingdom (EP)
Costa Rica	Kazakhstan (EA)	Republic of Korea	United Republic of Tanzania (AP)
Côte d'Ivoire (OA) ²	Kenya (AP)	Republic of Moldova ⁴	United States of America
Croatia (EP)	Kyrgyzstan (EA)	Romania (EP)	Uzbekistan
Cuba	Lao People's Democratic Republic	Russian Federation (EA)	Viet Nam
Cyprus (EP) ²	Latvia (EP) ²	Rwanda (AP)	Zambia (AP)
Czech Republic (EP)	Lesotho (AP)	Saint Kitts and Nevis	Zimbabwe (AP)
Democratic People's Republic of Korea	Liberia (AP)	Saint Lucia	
Denmark (EP)	Libya	Saint Vincent and the Grenadines	
	Liechtenstein (EP)	San Marino (EP)	

Note: 1 Extension of European patent possible. 2 May only be designated for a regional patent (the national route via the PCT has been closed). 3 Validation of European patent possible for international applications filed on or after March 1, 2015. 4 Validation of European patent possible for international applications filed on or after November 1, 2015. 5 Only PCT applications filed on or after August 19, 2014 will include the designation of Sao Tome and Principe for an ARIPO patent.

Where a state can be designated for a regional patent, the two-letter code for the regional patent concerned is indicated in parentheses (AP = ARIPO patent, EA = Eurasian patent, EP = European patent, OA = OAPI patent).

Source: WIPO, January 2016.

Additional Resources

The following patent resources are available on the WIPO website:

PATENTSCOPE – enables the search and download of published PCT applications and national/regional patent collections. It also provides access to related patent and technology information programs and services.
www.wipo.int/patentscope

ePCT Portal – provides access to ePCT public and private services.
<https://pct.wipo.int>

PCT resources – WIPO's gateway to PCT resources for the public, applicants and offices.
www.wipo.int/pct

PCT newsletter – PCT monthly magazine containing information about the filing of PCT applications and news about changes relating to the PCT.
www.wipo.int/pct/en/newslett

PCT statistics – provides access to the IP Statistics Data Center (enabling access to WIPO's statistical data), to the top PCT applicants list and to the electronic version of this review.
www.wipo.int/ipstats

Law of patents – includes current and emerging issues related to patents, information on WIPO-administered treaties, access to national/regional patent laws, patent law harmonization.
www.wipo.int/patents



For more information
contact **WIPO** at www.wipo.int

World Intellectual Property Organization
34, chemin des Colombettes
P.O. Box 18
CH-1211 Geneva 20
Switzerland

Tel: +4122 338 91 11
Fax: +4122 733 54 28

WIPO Publication No. 901E16
ISBN 978-92-805-2760-5