

## PATENTS

Patent-based indicators provide a measure of the output of a country's R&D, i.e. its inventions. The methodology used for counting patents can however influence the results, as simple counts of patents filed at a national patent office are affected by various kinds of limitations (such as weak international comparability) and highly heterogeneous patent values. To overcome these limits, the OECD has developed triadic patent families, which are designed to capture all important inventions and to be internationally comparable.

### Definition

A patent family is defined as a set of patents registered in various countries (i.e. patent offices) to protect the same invention. Triadic patent families are a set of patents filed at three of these major patent offices: the European Patent Office, the Japan Patent Office and the United States Patent and Trademark Office.

Triadic patent family counts are attributed to the country of residence of the inventor and to the date when the patent was first registered.

Triadic patent families are expressed as numbers and per million inhabitants.

### Overview

Although the volume of triadic patent families remained relatively steady over time, with more than 50 500 triadic patent families filed in 2013, there has been a significant shift in the origin of patented inventions. The share of triadic patent families originating from Europe (26.2%), Japan (26.6%) and the United States (27.0%) report a loss of 1 to 4 percentage points compared to the levels observed in 2003. Asian countries are increasingly contributing to patent families: the most spectacular growth among OECD countries has been observed by Korea, whose share of all triadic patent families increased from 3.8% in 2003 to 5.8% in 2013. Strong rises are also observed for China and India, with an average growth in the number of triadic patents of more than 17% and 12% a year respectively seen between 2003 and 2013.

When triadic patent families are expressed relative to the total population, Switzerland, Japan, Germany, Sweden and Denmark were the five most inventive countries in 2013, with the highest values recorded in Switzerland (148) and Japan (125). Ratios for Austria, Belgium, Finland, Israel, Korea, the Netherlands and the United States are also above the OECD average (40).

### Comparability

The concept of triadic patent families has been developed in order to improve the international comparability and quality of patent-based indicators. Indeed, only patents registered in the same set of countries are included in the family: home advantage and influence of geographical location are therefore eliminated. Furthermore, patents included in the triadic family are typically of higher economic value: patentees only take on the additional costs and delays of extending the protection of their invention to other countries if they deem it worthwhile.

### Sources

- OECD (2015), *OECD Patent Statistics* (Database).

### Further information

#### Analytical publications

- Hašič, I. and M. Migotto (2015), "Measuring Environmental innovation using patent data", *OECD Environment Working Papers*, No. 2015/89.
- OECD (2015), *OECD Science, Technology and Industry Scoreboard*, OECD Publishing.
- OECD (2014), *OECD Science, Technology and Industry Outlook*, OECD Publishing.

#### Methodological publications

- Dernis, H. and M. Khan (2004), "Triadic Patent Families Methodology", *OECD Science, Technology and Industry Working Papers*, No. 2004/2.
- OECD (2009), *OECD Patent Statistics Manual*, OECD Publishing.
- Squicciarini, M., H. Dernis and C. Criscuolo (2013), "Measuring Patent Quality: Indicators of Technological and Economic Value", *OECD Science, Technology and Industry Working Papers*, No. 2013/03.

#### Websites

- Intellectual Property (IP) statistics and analysis, [www.oecd.org/innovation/intellectual-property-statistics-and-analysis.htm](http://www.oecd.org/innovation/intellectual-property-statistics-and-analysis.htm).

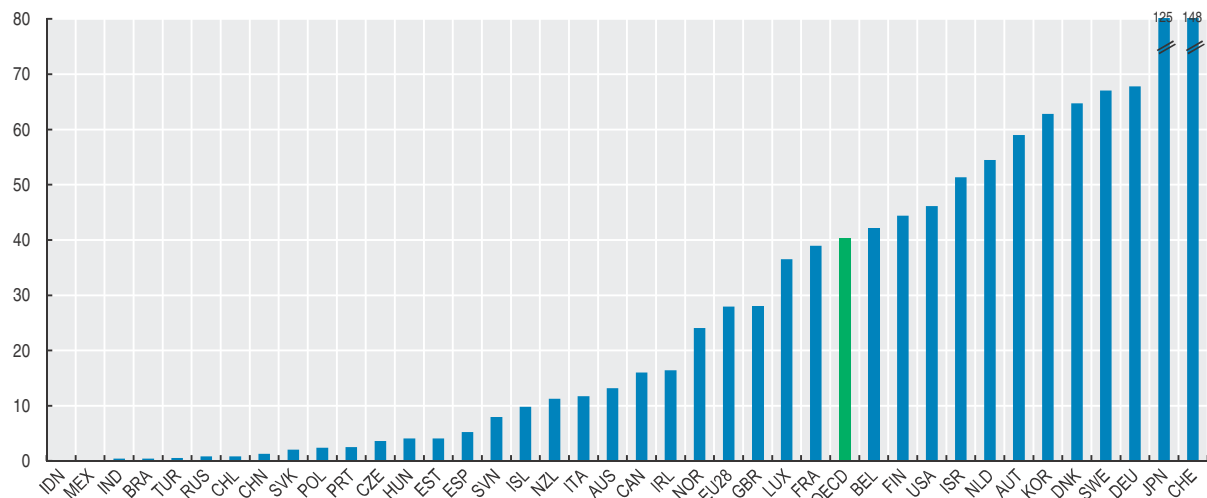

**Triadic patent families**

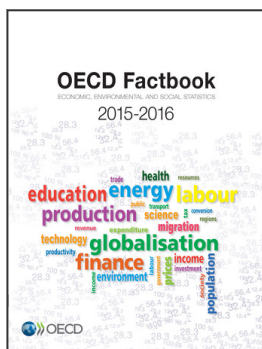
Number

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Australia	466	491	498	524	482	365	346	317	351	305	301	299	304
Austria	339	349	346	353	408	355	376	343	367	389	419	458	500
Belgium	438	473	464	565	541	478	430	457	479	474	490	487	471
Canada	635	681	669	736	715	667	682	690	678	554	545	562	564
Chile	9	6	3	7	6	9	7	9	11	15	16	16	15
Czech Republic	20	23	23	24	25	28	23	28	17	14	29	32	38
Denmark	281	287	312	369	390	317	316	345	258	302	340	347	364
Estonia	3	1	6	0	3	7	4	3	3	3	5	5	5
Finland	417	318	350	396	390	293	259	253	224	226	230	240	241
France	2 809	2 753	2 757	2 968	3 051	2 885	2 782	2 887	2 722	2 472	2 606	2 539	2 484
Germany	7 242	6 890	6 747	6 997	7 143	6 532	5 809	5 473	5 561	5 352	5 396	5 440	5 465
Greece	11	12	20	15	24	22	14	16	15	5	9	9	8
Hungary	42	37	50	60	59	48	59	31	50	37	40	41	40
Iceland	5	14	6	5	7	8	10	5	2	3	3	3	3
Ireland	61	67	86	96	97	76	93	84	85	64	70	74	75
Israel	387	323	363	422	501	421	349	369	377	350	367	389	414
Italy	917	929	900	974	964	822	729	759	737	700	688	696	705
Japan	16 630	16 830	17 909	18 712	17 717	17 992	17 722	15 726	15 330	16 042	16 423	16 220	15 970
Korea	1 157	1 570	2 195	2 570	2 750	2 350	1 982	1 828	2 108	2 460	2 668	2 887	3 154
Luxembourg	28	15	23	27	21	24	15	20	20	24	24	22	20
Mexico	14	14	21	19	19	27	19	17	15	14	15	16	17
Netherlands	1 364	1 870	1 987	1 974	1 761	1 478	1 065	1 127	1 052	819	961	930	916
New Zealand	57	81	76	80	73	72	56	72	55	44	45	48	50
Norway	113	132	120	134	142	123	106	87	129	116	118	121	122
Poland	15	20	16	24	18	18	25	37	32	61	71	81	92
Portugal	9	8	12	12	16	21	42	29	17	16	21	22	26
Slovak Republic	4	4	6	1	2	3	4	5	2	8	11	11	11
Slovenia	8	17	16	14	22	8	12	16	17	16	15	16	16
Spain	213	225	207	293	292	269	258	269	255	236	254	249	244
Sweden	754	794	758	804	970	885	964	837	797	641	675	677	644
Switzerland	983	992	1 042	1 100	1 087	1 149	1 008	995	968	1 060	1 106	1 153	1 207
Turkey	12	10	11	17	16	17	9	27	28	34	38	41	42
United Kingdom	2 294	2 231	2 202	2 098	2 169	2 091	1 799	1 699	1 724	1 681	1 693	1 715	1 770
United States	16 022	16 504	16 807	17 230	17 399	15 502	13 916	13 829	13 537	12 823	13 254	13 819	14 606
EU 28	17 287	17 356	17 340	18 101	18 411	16 678	15 106	14 738	14 460	13 558	14 067	14 111	14 162
OECD	53 762	54 969	57 009	59 618	59 281	55 359	51 292	48 690	48 023	47 362	48 945	49 661	50 604
Brazil	65	58	57	67	76	71	70	84	78	65	69	78	88
China	154	272	358	403	522	565	695	826	1 297	1 417	1 542	1 657	1 785
India	109	172	167	175	206	214	197	290	310	375	439	484	528
Indonesia	2	5	3	2	1	5	1	1	1	3	4	5	6
Russian Federation	83	80	79	70	91	75	78	59	87	89	102	111	119
South Africa	28	39	43	38	49	40	37	52	35	30	39	42	42
World	54 541	56 013	58 149	60 830	60 762	56 815	52 946	50 598	50 519	50 080	51 950	52 867	54 037

 1 2 <http://dx.doi.org/10.1787/888933336477>
**Triadic patent families**

Number per million inhabitants, 2013


 1 2 <http://dx.doi.org/10.1787/888933335331>



**From:**  
**OECD Factbook 2015-2016**  
Economic, Environmental and Social Statistics

**Access the complete publication at:**  
<https://doi.org/10.1787/factbook-2015-en>

**Please cite this chapter as:**

OECD (2016), "Patents", in *OECD Factbook 2015-2016: Economic, Environmental and Social Statistics*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/factbook-2015-66-en>

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