



APPENDIX TABLE 6-56

USPTO patents granted in sustainable energy technologies, by region, country, or economy: 1998–2016

(Number)

Region, country, or economy	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	3,698	3,717	3,701	4,116	4,129	4,207	4,056	3,521	3,866	3,806	3,904	4,496	6,598	7,355	9,060	10,152	11,428	11,424	11,011
North America	2,036	2,057	2,005	2,206	2,100	2,140	2,079	1,813	2,078	1,962	2,018	2,304	3,215	3,630	4,423	4,924	5,293	4,997	4,941
Canada	103	126	128	123	136	128	150	138	126	123	131	116	158	173	226	217	224	245	207
Mexico	3	0	1	4	7	2	2	2	1	1	6	0	7	3	8	16	10	6	7
Puerto Rico	0	0	1	0	0	2	0	1	0	1	1	1	1	1	3	2	4	0	2
United States	1,931	1,931	1,875	2,080	1,957	2,008	1,928	1,672	1,950	1,837	1,880	2,187	3,049	3,453	4,187	4,689	5,055	4,746	4,725
Central and South America	5	10	1	8	7	8	8	5	4	5	6	9	7	27	23	23	28	25	29
Argentina	0	1	1	1	1	4	0	0	0	0	0	0	1	3	4	2	1	3	1
Brazil	3	2	0	2	4	3	4	3	2	3	3	3	4	16	10	14	14	7	16
All others	1	7	0	5	3	1	4	2	2	3	4	6	1	8	10	7	12	15	12
Europe	667	694	664	752	741	729	665	605	556	618	644	677	1,083	1,166	1,469	1,789	2,084	2,027	1,933
EU	608	636	615	677	703	690	618	548	510	582	598	629	1,021	1,096	1,382	1,658	1,970	1,909	1,797
Austria	11	13	8	11	14	11	13	17	14	19	12	16	18	15	31	28	29	45	41
Belgium	6	6	8	10	14	9	9	7	13	8	6	13	16	16	15	33	34	31	41
Denmark	13	13	11	22	15	23	18	20	8	21	28	27	58	103	133	118	172	154	156
Finland	12	15	12	19	14	20	14	13	14	17	16	15	17	16	25	24	46	37	34



Region, country, or economy	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
France	109	96	110	104	114	97	78	71	62	91	78	94	151	161	158	237	279	241	285
Germany	280	293	306	326	313	335	304	264	249	257	278	308	484	477	603	726	779	787	654
Hungary	2	1	1	0	2	2	0	2	0	0	2	0	5	1	2	4	7	6	4
Ireland	0	1	2	0	1	2	1	4	3	1	3	3	3	4	6	7	14	9	17
Italy	29	24	29	25	38	30	35	26	29	23	34	28	45	47	65	77	87	108	84
Netherlands	25	41	22	28	34	31	25	18	9	23	23	22	34	51	58	60	88	71	50
Spain	5	5	10	5	8	10	11	10	6	12	8	13	21	30	40	54	63	75	66
Sweden	36	53	38	54	64	37	38	31	32	30	33	20	51	47	71	88	119	101	103
United Kingdom	76	73	51	68	66	73	66	61	68	73	69	64	93	109	142	169	225	217	232
All others	4	3	6	7	4	10	7	6	2	8	8	4	25	18	31	33	29	28	30
Other Europe	60	58	49	74	38	39	47	56	45	36	46	48	62	70	87	131	114	118	136
Former Soviet Union	2	2	1	1	2	2	1	2	1	3	0	2	0	2	2	3	1	1	4
Norway	6	11	8	13	3	8	10	15	9	8	11	8	17	13	16	30	25	30	37
Russia	9	11	6	16	13	8	7	11	5	6	14	10	14	13	13	23	16	11	14
Switzerland	40	31	34	43	18	21	27	29	29	18	21	27	30	40	51	71	69	71	78
All others	3	3	1	1	1	0	1	0	1	1	0	2	1	2	5	5	3	5	4
Asia	941	906	984	1,104	1,233	1,273	1,248	1,053	1,172	1,179	1,188	1,449	2,211	2,429	3,016	3,251	3,831	4,158	3,897
China	10	6	12	9	10	15	15	14	24	26	27	47	87	98	171	191	248	295	311
India	1	1	5	7	8	10	7	12	5	16	8	13	21	37	52	46	61	87	79



Region, country, or economy	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Japan	813	797	882	941	1064	1,087	1,061	882	966	910	915	1,042	1,511	1,645	2,039	2,033	2,304	2,387	2,237
Malaysia	1	0	2	2	0	0	3	0	1	2	0	1	2	2	5	4	6	5	8
Singapore	1	1	1	4	3	3	5	2	2	5	6	5	8	7	16	10	19	26	27
South Korea	67	58	46	91	94	93	94	84	101	145	160	241	442	473	537	725	950	1096	1014
Taiwan	44	40	35	46	52	63	61	57	72	74	70	96	132	161	194	234	235	250	217
All others	4	3	1	4	2	3	3	2	2	1	1	3	8	4	1	8	9	11	5
Middle East	21	17	18	21	20	29	26	19	19	14	20	26	41	48	74	103	111	134	144
Israel	21	14	14	19	16	28	23	15	18	10	17	23	32	39	52	57	74	75	77
All others	1	3	4	2	3	1	3	3	1	4	3	4	9	9	23	45	37	59	66
Africa	2	6	7	9	4	1	4	4	12	6	4	4	10	8	7	11	14	7	10
South Africa	2	6	7	9	3	1	3	4	11	6	4	3	9	8	7	8	12	6	7
All others	0	0	0	0	1	0	1	0	1	1	0	1	1	0	1	3	2	1	3
Australia and Oceania	24	26	20	16	24	26	26	22	24	20	24	26	32	47	47	51	66	74	58
Australia	18	22	17	15	24	23	24	21	23	20	21	22	27	44	40	42	60	67	46
New Zealand	6	4	3	1	0	4	2	1	1	0	3	4	5	3	7	8	7	7	13
Unclassified	2	1	3	1	0	0	0	0	1	0	0	1	0	0	1	1	0	2	0

EU = European Union; USPTO = U.S. Patent and Trademark Office.

Note(s)



Patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. The EU includes 28 member countries. China includes Hong Kong. Sustainable energy technologies include alternative energy, energy storage, smart grid, and pollution mitigation. Alternative energy includes bioenergy, solar, wind, nuclear, fuel cells, hydropower, wave/tidal/ocean, geothermal, and electric/hybrid. Energy storage includes batteries, compressed air, flywheels, superconducting magnet energy systems, ultracapacitors, hydrogen production and storage, and thermal energy. Pollution mitigation includes recycling; control of air, water, and solid waste pollution; environmental remediation; cleaner coal; and capture and storage of carbon and other greenhouse gases. Technologies are based on a classification developed by The Patent Board.

Source(s)

Science-Metrix, PatentsView and USPTO patent data.

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