

Table SPBS-20

S&E articles in biological and biomedical sciences, whole count, by region, country, or economy: 1996–2020

(Number)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	160,947	161,129	159,453	156,872	164,516	164,936	168,684	175,841	185,449	191,744	203,581	212,811	223,106	232,461	238,366	254,137	266,896	272,536	282,934	289,117	291,017	293,827	303,926	325,773	373,641
North America	71,690	69,275	67,297	64,077	67,079	66,451	67,597	72,446	76,401	76,702	79,113	80,926	81,941	84,017	84,328	89,021	93,087	93,279	95,399	95,675	93,998	94,721	95,197	96,909	105,274
Canada	7,789	7,607	7,345	7,136	7,141	7,067	7,322	8,275	8,478	9,078	9,684	10,085	10,145	10,539	10,730	11,253	12,071	12,130	12,399	12,554	12,392	12,511	12,582	13,230	14,188
Greenland	5	1	4	5	7	9	7	9	18	10	19	12	19	10	18	13	28	30	19	24	20	35	27	27	26
Mexico	892	1,005	1,082	1,037	1,105	1,136	1,226	1,510	1,633	1,770	1,980	2,102	2,425	2,430	2,545	2,764	3,114	3,225	3,581	3,805	3,975	4,237	4,524	4,911	5,500
United States	64,846	62,643	60,812	57,891	60,640	59,829	60,826	65,250	69,059	68,768	70,597	72,076	72,711	74,509	74,665	78,912	81,991	82,126	83,819	83,846	82,302	82,852	82,998	83,982	91,222
Central America and Caribbean	659	566	612	628	619	639	641	784	832	926	1,015	1,120	1,062	1,168	1,181	1,266	1,352	1,296	1,507	1,438	1,431	1,542	1,482	1,646	1,964
Antigua and Barbuda	0	0	0	0	0	0	1	0	0	2	1	1	2	0	1	2	4	0	2	2	2	1	5	4	5
Bahamas, The	2	1	3	3	1	2	0	0	2	2	0	3	5	3	1	4	7	10	13	7	7	19	17	18	9
Barbados	10	6	9	6	7	7	11	11	7	9	10	9	17	10	8	13	6	8	13	14	17	10	13	22	27
Belize	4	3	3	3	1	0	4	1	5	4	11	6	2	10	9	6	8	8	4	11	11	20	12	11	15
Costa Rica	102	92	85	86	79	79	107	119	132	196	157	207	164	190	201	223	211	215	272	251	243	294	307	361	452
Cuba	208	170	240	244	240	240	232	304	291	309	350	325	303	363	343	366	379	343	373	310	273	295	271	289	297
Dominica	2	0	1	0	0	2	0	0	1	2	2	4	1	3	3	7	7	1	4	10	6	7	7	6	8
Dominican Republic	10	8	6	9	6	5	5	7	9	7	1	9	14	12	11	13	18	23	30	36	32	24	36	55	61
El Salvador	3	3	0	1	2	4	5	2	6	9	3	3	9	11	11	9	7	14	14	7	14	8	14	16	11
Grenada	2	1	2	0	0	1	0	5	3	6	26	30	37	18	13	24	26	24	55	40	29	51	56	65	73
Guatemala	28	31	23	17	29	25	22	31	23	40	22	26	22	43	59	35	60	54	51	57	71	79	66	76	92
Haiti	0	3	5	1	2	6	5	7	4	3	7	10	5	13	7	25	16	21	30	22	34	22	25	26	30
Honduras	13	9	9	10	12	9	11	5	6	9	8	10	9	16	19	26	20	34	27	28	30	35	37	56	73
Jamaica	28	37	25	21	15	31	36	19	27	24	32	32	30	39	35	58	33	47	69	43	51	51	33	41	46
Nicaragua	6	8	6	10	10	5	0	7	12	15	20	13	20	23	20	22	30	18	25	31	40	44	41	43	50
Panama	68	47	52	79	69	81	82	103	105	110	145	171	177	172	188	186	226	223	208	272	276	292	298	322	378
Puerto Rico	160	126	122	125	129	136	115	148	180	180	215	244	232	234	254	268	298	251	280	307	311	289	277	275	320
Saint Kitts and Nevis	0	1	0	1	1	0	1	0	0	0	4	2	2	6	9	0	12	9	17	23	36	33	32	34	56
Saint Lucia	3	1	2	0	2	1	0	0	0	0	3	4	1	0	2	1	3	1	1	2	5	1	1	0	5
Saint Vincent and the Grenadines	0	0	0	0	0	0	0	0	1	0	3	1	0	0	0	0	0	0	1	0	3	1	1	4	3
Trinidad and Tobago	23	25	26	21	23	22	21	33	33	32	29	44	38	46	42	40	41	57	74	48	42	52	42	67	72
South America	3,627	3,843	4,231	4,517	4,867	4,932	5,798	6,506	7,043	7,814	9,667	10,323	11,672	12,530	13,298	14,213	15,568	16,040	17,136	18,032	19,197	20,094	21,203	21,980	25,460
Argentina	1,041	1,107	1,191	1,222	1,259	1,274	1,367	1,457	1,541	1,608	1,908	1,910	2,135	2,359	2,453	2,644	2,830	2,746	2,879	2,843	2,921	3,068	3,158	3,118	3,570
Bolivia	18	27	27	28	26	29	34	50	53	61	73	107	114	99	102	108	86	103	117	101	90	105	116	109	158
Brazil	1,742	1,844	2,174	2,337	2,653	2,719	3,265	3,792	4,138	4,702	5,925	6,510	7,342	7,719	8,282	8,821	9,745	10,277	10,954	11,687	12,388	13,056	13,834	14,295	16,504
Chile	359	375	373	403	411	425	544	566	632	702	790	857	974	1,021	1,086	1,242	1,340	1,380	1,573	1,676	1,780	1,791	1,981	2,065	2,464
Colombia	153	161	150	216	197	179	232	222	273	301	419	441	607	755	901	949	1,130	1,134	1,257	1,446	1,666	1,662	1,725	1,980	2,383
Ecuador	27	35	26	33	41	21	49	58	64	86	90	118	123	164	152	153	198	232	266	319	451	579	626	729	826
Guyana	4	3	4	3	5	6	5	3	6	3	5	7	10	8	10	8	4	5	8	10	17	9	13	13	18

Table SPBS-20

S&E articles in biological and biomedical sciences, whole count, by region, country, or economy: 1996–2020

(Number)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Paraguay	15	14	11	9	8	6	11	15	13	19	18	22	19	22	15	29	28	32	43	51	48	64	58	106	107
Peru	64	68	88	98	99	94	99	166	172	179	347	266	232	240	280	319	314	316	375	428	447	530	568	667	870
Suriname	3	5	4	7	1	3	2	3	4	6	2	4	5	2	3	4	9	7	4	9	17	15	20	21	19
Uruguay	76	91	84	94	102	88	93	128	139	156	162	176	203	233	238	276	263	289	336	330	348	344	414	432	466
Venezuela	214	223	223	198	238	215	240	265	302	307	301	330	422	476	408	355	346	335	314	284	269	309	260	248	272
Europe	68,850	69,587	69,593	69,802	71,623	70,764	72,014	76,120	78,934	80,637	83,696	86,283	90,753	93,398	94,767	99,159	104,774	105,582	108,432	111,163	109,776	111,067	112,335	117,825	133,476
EU-27 and UK ^a	60,850	61,537	61,606	61,845	63,167	62,424	63,622	67,348	69,923	71,434	74,329	76,553	80,423	82,762	83,471	87,474	92,595	93,607	95,824	97,543	95,329	96,476	97,041	100,876	115,116
UK	14,917	15,225	15,486	14,983	15,366	14,707	15,187	16,183	17,110	16,698	17,306	18,179	18,383	18,858	19,120	19,436	20,300	20,753	21,326	22,306	22,094	22,501	23,074	23,240	25,972
EU-27 ^b	48,553	49,058	49,131	49,977	50,850	50,530	51,359	54,996	57,060	59,159	61,783	63,641	67,533	69,740	70,547	74,503	79,459	80,378	82,214	83,602	81,780	82,798	83,078	86,895	99,570
Austria	1,240	1,247	1,276	1,321	1,344	1,349	1,452	1,636	1,687	1,672	1,829	2,000	2,242	2,331	2,438	2,619	2,802	2,969	3,088	3,185	3,260	3,297	3,307	3,544	3,950
Belgium	2,001	2,123	2,176	2,250	2,172	2,244	2,262	2,560	2,718	2,966	2,868	3,174	3,281	3,511	3,631	3,961	4,195	4,300	4,324	4,647	4,476	4,573	4,807	4,666	5,292
Bulgaria	408	437	334	330	371	306	420	389	372	472	437	462	527	783	559	538	645	622	688	569	606	597	615	699	725
Croatia	164	170	186	203	213	218	213	262	275	301	355	448	538	483	489	510	585	553	564	566	628	644	652	723	827
Cyprus	26	13	19	17	27	22	31	23	25	40	50	61	63	75	80	95	160	153	147	168	190	205	243	286	387
Czechia	908	818	843	919	952	1,012	975	1,239	1,340	1,334	1,513	1,723	1,966	1,942	2,195	2,032	2,337	2,408	2,625	2,967	3,024	3,076	3,076	3,326	3,677
Denmark	1,625	1,872	1,805	1,874	1,931	1,934	1,877	2,224	2,212	2,243	2,351	2,417	2,586	2,677	2,782	3,054	3,359	3,620	3,823	4,127	4,127	4,087	4,293	4,244	4,755
Estonia	98	112	131	146	126	142	148	162	188	216	221	243	241	286	300	327	405	406	426	450	468	511	518	580	562
Finland	1,285	1,309	1,400	1,452	1,422	1,458	1,509	1,649	1,727	1,689	1,743	1,877	1,950	1,949	1,999	2,149	2,274	2,289	2,399	2,453	2,395	2,477	2,511	2,605	2,784
France	10,256	10,387	10,506	10,554	10,500	10,193	10,019	10,849	11,139	11,304	11,597	11,811	12,293	12,739	12,976	13,319	13,866	14,233	14,469	14,690	14,821	14,714	14,739	14,889	16,370
Germany	12,090	12,477	12,800	12,747	12,857	12,648	12,746	13,775	14,452	15,174	15,771	16,175	16,768	17,318	17,747	18,460	19,587	19,823	20,889	20,879	20,643	21,156	21,124	21,827	23,822
Greece	632	633	661	702	798	811	945	976	1,109	1,196	1,324	1,358	1,621	1,687	1,597	1,649	1,784	1,752	1,702	1,736	1,714	1,845	1,772	2,071	2,355
Hungary	803	752	867	780	838	820	925	1,025	1,015	1,179	1,238	1,301	1,686	1,406	1,248	1,559	1,516	1,463	1,575	1,611	1,543	1,534	1,558	1,714	1,861
Ireland	449	420	480	487	493	513	515	598	674	786	810	943	1,042	1,177	1,292	1,417	1,401	1,353	1,358	1,348	1,391	1,382	1,532	1,587	1,863
Italy	6,470	6,488	6,203	6,497	6,788	6,471	6,936	7,598	7,934	8,015	8,510	9,121	9,774	10,181	9,944	10,792	11,523	12,018	12,084	12,375	12,173	12,472	12,835	13,467	17,010
Latvia	45	55	52	45	64	56	65	69	76	75	56	70	81	138	90	187	130	169	163	261	170	272	200	328	292
Lithuania	63	71	114	141	112	131	91	126	168	183	197	199	190	201	192	241	241	226	262	304	312	329	326	416	488
Luxembourg	16	20	25	21	27	38	34	36	55	50	67	61	89	115	131	174	173	200	258	277	226	224	242	255	309
Malta	5	10	4	4	9	5	9	12	9	15	13	20	23	29	27	26	29	35	38	43	50	59	68	70	71
Netherlands	4,423	4,288	4,241	4,281	4,108	3,933	4,141	4,523	4,645	4,943	4,932	5,299	5,567	5,727	6,052	6,534	7,090	7,322	7,436	7,444	7,403	7,441	7,859	8,022	8,882
Poland	1,676	1,810	1,584	1,669	1,879	1,995	1,953	2,343	2,460	2,489	2,644	2,581	2,808	3,070	3,271	3,323	3,515	3,946	4,245	4,637	4,554	4,644	4,912	5,271	6,327
Portugal	387	489	433	635	673	716	746	891	999	1,067	1,310	1,374	1,638	1,730	1,887	2,167	2,644	2,764	2,738	2,915	2,847	2,810	2,925	3,273	3,770
Romania	200	262	248	148	147	140	137	161	182	199	221	302	444	545	680	788	947	875	904	976	868	846	902	1,007	1,229
Slovakia	589	488	459	524	488	454	428	486	569	511	608	579	629	616	632	649	663	718	694	770	764	806	787	876	1,047
Slovenia	191	183	184	197	325	229	258	273	260	352	337	357	477	461	435	477	548	571	571	630	579	627	641	669	804
Spain	4,372	4,454	4,701	4,880	4,772	5,053	5,210	5,623	6,010	6,408	7,108	7,241	8,030	8,322	8,668	9,659	10,648	10,499	10,725	11,147	10,709	10,970	11,239	12,313	14,709

Table SPBS-20

S&E articles in biological and biomedical sciences, whole count, by region, country, or economy: 1996–2020

(Number)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Sweden	3,361	3,325	3,427	3,488	3,381	3,438	3,453	3,740	3,794	3,891	4,065	4,142	4,137	4,350	4,434	4,524	4,883	5,058	5,219	5,508	5,531	5,614	5,783	5,929	6,472
Other Europe	10,076	10,220	10,362	10,363	10,722	10,441	10,648	11,746	12,277	12,624	12,957	13,618	14,421	15,162	16,048	16,923	17,887	18,053	19,014	20,675	21,728	22,299	23,296	25,386	27,940
Other Europe, 2020 ^b	24,543	24,958	25,344	24,811	25,601	24,653	25,276	27,255	28,588	28,536	29,370	30,811	31,773	32,845	33,977	35,028	36,688	37,175	38,638	41,060	41,868	42,657	44,073	46,217	51,200
Albania	13	3	7	5	9	6	7	12	11	12	9	14	12	20	25	23	41	25	35	50	45	50	66	62	81
Andorra	2	1	0	0	0	1	0	2	1	2	1	1	1	1	0	1	3	2	5	5	4	2	4	9	10
Belarus	159	209	171	171	153	184	184	168	181	152	152	135	125	144	119	122	153	113	140	131	135	166	193	192	217
Bosnia and Herzegovina	1	5	1	6	1	3	6	5	11	18	21	30	37	33	45	45	53	50	76	93	87	92	139	122	157
Holy See (Vatican City)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	1	1	5	0
Iceland	42	65	58	77	69	70	73	87	87	100	95	107	125	149	142	153	182	220	169	185	237	218	217	242	238
Kosovo	0	0	0	0	0	0	0	0	0	0	0	0	7	16	15	15	26	21	33	34	31	38	55	56	70
Liechtenstein	0	0	0	0	0	0	0	2	3	1	3	0	4	3	2	4	4	7	5	6	4	8	6	12	5
Moldova	16	17	16	17	18	11	15	16	17	11	15	15	17	20	16	16	18	27	34	45	36	31	30	52	50
Monaco	3	1	7	3	4	3	1	5	10	6	5	6	12	13	9	14	13	15	26	29	31	33	30	37	47
Montenegro ^c	0	0	0	0	0	0	0	0	0	0	0	13	24	20	25	35	41	41	59	45	48	54	62	92	121
North Macedonia	10	21	11	4	12	16	13	11	20	18	9	27	38	54	49	48	71	49	86	82	73	72	82	103	122
Norway	863	973	1,051	973	1,013	1,001	1,087	1,136	1,231	1,316	1,448	1,563	1,509	1,704	1,784	1,959	1,990	2,066	2,186	2,315	2,357	2,525	2,530	2,561	3,109
Russia	4,669	4,349	4,555	4,359	4,755	4,429	4,220	4,613	4,551	4,536	4,181	4,334	4,787	4,739	4,962	5,122	5,225	5,265	5,677	6,772	7,259	7,808	8,629	9,597	9,952
San Marino	1	0	2	0	0	0	0	0	0	0	0	1	0	0	2	0	1	2	1	3	5	8	5	3	3
Serbia ^c	0	0	0	0	0	0	0	0	0	0	0	414	575	574	610	639	852	796	841	887	839	844	892	990	1,022
Serbia and Montenegro ^d	155	250	172	159	177	148	176	175	230	264	306	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	3,157	3,206	3,194	3,335	3,287	3,105	3,129	3,548	3,821	3,800	4,155	4,346	4,460	4,716	5,028	5,375	5,786	5,972	6,191	6,292	6,381	6,756	6,717	6,842	7,557
Turkey	653	797	732	930	904	1,113	1,444	1,718	1,879	2,125	2,372	2,473	2,593	2,833	3,145	3,293	3,406	3,388	3,586	3,876	4,390	3,932	4,072	4,892	5,826
Ukraine	438	446	508	465	469	489	435	433	436	527	421	427	439	467	442	519	544	564	588	636	587	616	645	788	922
Middle East	2,426	2,540	2,486	2,494	2,720	2,663	2,948	3,302	3,544	3,757	4,415	5,015	5,316	5,679	6,805	8,799	8,663	8,966	10,177	10,614	11,652	12,570	13,781	16,509	20,493
Armenia	66	40	56	41	52	48	50	49	38	40	43	35	47	49	57	73	74	75	73	85	83	75	99	143	136
Azerbaijan	17	31	11	17	11	10	10	22	18	32	16	14	18	24	34	44	39	28	33	34	45	42	75	89	109
Bahrain	5	9	4	3	10	9	11	18	18	28	30	22	28	24	28	35	24	34	33	30	38	23	32	56	68
Gaza Strip ^e	2	2	1	2	2	2	8	2	3	2	8	15	4	13	15	9	10	17	22	11	11	14	10	11	22
Georgia	32	31	25	34	47	37	29	20	33	56	57	41	53	65	56	61	75	53	93	113	78	99	115	129	165
Iran	73	95	99	116	188	209	355	439	644	790	1,341	1,916	2,010	2,202	2,786	4,204	3,698	3,625	4,077	4,193	4,896	5,393	6,124	7,314	8,444
Iraq	7	17	11	11	7	7	8	12	8	13	17	22	23	44	66	77	81	90	134	139	324	536	690	1,314	2,095
Israel	1,703	1,863	1,761	1,761	1,887	1,854	1,916	2,075	2,153	2,119	2,149	2,153	2,203	2,218	2,310	2,350	2,429	2,444	2,592	2,669	2,539	2,735	2,692	2,885	3,161
Jordan	51	59	76	69	73	75	69	108	88	97	121	141	129	179	164	190	182	155	195	218	223	251	311	369	511
Kuwait	107	90	122	117	109	96	114	122	117	135	100	114	141	118	109	143	123	142	107	124	127	122	151	188	223
Lebanon	34	43	44	54	60	68	80	83	91	86	110	109	137	147	126	177	191	211	233	239	268	321	363	428	512

Table SPBS-20

S&E articles in biological and biomedical sciences, whole count, by region, country, or economy: 1996–2020

(Number)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Oman	25	18	26	25	30	18	34	42	38	41	54	61	59	61	94	95	98	115	148	148	181	202	239	257	319
Qatar	8	5	6	4	7	7	6	6	12	9	16	20	27	38	58	64	96	139	211	250	308	252	289	398	488
Saudi Arabia	189	156	157	153	153	147	179	191	170	180	191	212	280	380	726	1,083	1,374	1,683	2,070	2,278	2,461	2,342	2,409	2,899	4,156
Syria	36	29	37	38	31	32	39	42	43	46	51	62	84	67	90	111	117	115	79	65	68	80	82	85	106
United Arab Emirates	65	66	53	58	54	54	55	90	89	104	138	118	132	117	157	175	154	193	242	249	311	397	445	494	721
West Bank ^e	5	3	7	7	7	5	12	9	12	11	28	23	31	21	27	38	30	35	48	38	43	52	56	55	87
Yemen	11	5	6	3	9	11	7	11	11	7	15	9	13	31	35	35	31	35	48	29	28	43	62	53	93
Africa	2,665	2,809	2,894	2,948	2,971	3,006	3,140	3,811	3,802	4,367	4,937	5,637	5,864	6,774	7,647	8,559	9,212	9,563	10,157	11,154	11,930	12,947	14,055	15,812	19,092
Algeria	40	32	46	38	32	36	40	67	81	80	127	153	154	189	194	205	250	315	312	363	407	481	562	603	676
Angola	1	2	2	4	3	1	2	3	4	6	6	8	3	10	8	9	15	12	15	19	27	36	22	36	36
Benin	30	39	38	33	37	41	30	40	45	44	58	63	93	98	88	104	117	148	134	121	120	157	157	182	204
Botswana	24	22	31	20	14	18	31	36	37	38	41	54	55	56	48	63	76	77	91	83	105	116	140	120	161
Burkina Faso	16	28	31	32	23	31	27	59	41	59	77	59	92	102	101	127	129	117	131	174	153	152	164	192	191
Burundi	3	4	2	4	2	1	1	1	1	4	2	3	2	2	6	7	12	8	7	14	14	11	19	14	19
Cabo Verde	1	0	0	0	1	0	0	0	1	0	3	1	2	2	5	0	6	7	6	5	8	8	6	5	27
Cameroon	47	62	83	65	76	92	84	116	113	130	180	203	187	201	234	227	243	267	306	322	324	374	428	441	495
Central African Republic	5	8	3	8	4	4	1	11	11	8	14	12	8	14	14	19	19	16	20	19	25	16	31	15	21
Chad	0	1	0	0	0	1	2	4	3	4	9	8	6	6	1	9	3	7	5	6	10	15	10	18	13
Comoros	0	1	0	0	1	0	0	2	1	4	1	2	1	1	5	9	2	4	2	4	2	4	9	8	5
Congo, Democratic Republic of the	11	8	8	26	11	4	6	4	12	19	13	23	29	17	41	42	67	66	69	93	86	105	126	139	157
Congo, Republic of the	8	11	14	12	13	10	6	10	12	27	28	19	23	27	28	41	46	39	63	55	88	58	89	101	80
Côte d'Ivoire	36	58	43	52	49	33	30	63	54	55	58	68	70	64	72	82	98	84	107	106	99	122	181	169	177
Djibouti	0	1	0	0	0	1	0	0	2	3	1	2	1	5	1	4	2	5	4	4	3	5	9	3	7
Egypt	434	430	435	430	425	421	428	572	522	567	636	699	825	1,273	1,312	1,710	2,119	1,801	2,130	2,134	2,393	2,433	2,814	3,344	4,430
Equatorial Guinea	0	2	0	0	0	2	0	1	5	2	1	1	2	3	3	1	2	2	7	10	10	2	3	4	3
Eritrea	4	0	4	3	4	4	4	4	2	6	9	7	3	1	0	6	2	8	8	9	1	4	9	12	17
Eswatini	5	9	9	2	3	1	3	3	1	2	4	3	5	5	9	12	9	6	8	13	15	18	40	25	34
Ethiopia	59	64	57	52	57	64	70	83	70	112	119	154	135	138	151	195	221	330	347	418	464	638	815	1,058	1,160
Gabon	12	21	25	29	22	28	32	33	42	52	55	43	48	53	48	64	61	67	82	87	72	84	79	85	77
Gambia, The	17	25	26	27	23	32	23	35	35	37	52	55	64	56	56	44	72	68	71	77	73	108	59	85	97
Ghana	41	49	30	55	47	42	47	62	68	82	85	86	101	148	140	127	194	210	208	320	362	395	499	534	676
Guinea	4	1	5	1	4	5	4	3	6	6	15	7	11	12	11	17	15	14	17	35	46	54	35	51	49
Guinea-Bissau	5	6	5	8	3	4	5	8	7	14	6	14	9	8	13	16	14	21	31	22	30	31	27	27	29
Kenya	199	225	206	197	210	232	239	298	281	298	364	357	414	454	469	569	610	598	682	746	843	910	887	1,028	1,178
Lesotho	3	2	3	1	3	4	5	2	1	2	1	3	2	6	5	9	8	7	4	9	5	10	14	20	29

Table SPBS-20

S&E articles in biological and biomedical sciences, whole count, by region, country, or economy: 1996–2020

(Number)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Liberia	1	0	0	0	0	0	2	0	1	0	1	1	1	0	2	2	2	0	7	13	15	13	11	20	8
Libya	9	4	12	9	3	10	12	4	8	9	22	21	14	27	44	44	32	41	44	45	48	45	53	53	71
Madagascar	23	26	20	32	37	29	42	47	47	76	71	105	87	87	108	110	129	150	100	141	134	159	147	150	188
Malawi	17	26	18	33	35	37	36	50	56	48	47	59	68	61	82	97	117	95	116	134	137	179	197	219	232
Mali	12	14	14	19	16	29	21	27	27	40	46	31	57	46	47	63	67	74	61	102	83	99	91	111	120
Mauritania	4	4	3	1	5	4	5	4	3	5	4	5	4	7	4	7	15	11	10	7	8	9	11	12	10
Mauritius	8	8	13	11	12	17	21	20	25	22	27	20	20	22	26	23	34	37	40	27	44	66	81	113	107
Morocco	96	92	133	126	111	129	156	164	161	161	150	191	203	188	203	234	303	316	306	359	330	429	457	515	790
Mozambique	3	7	11	8	9	19	11	8	6	28	20	29	23	35	39	56	58	67	58	107	94	109	141	149	170
Namibia	16	25	28	12	18	21	23	34	24	31	34	25	28	31	24	43	48	57	58	74	70	76	77	102	102
Niger	6	14	16	16	10	7	12	6	12	12	16	18	27	31	39	32	34	36	49	57	54	53	54	47	51
Nigeria	257	218	225	243	290	244	225	360	275	360	374	537	496	675	863	843	704	694	784	794	937	1,066	1,268	1,541	2,094
Rwanda	5	7	10	6	2	6	2	2	4	7	10	22	18	17	25	35	43	35	46	74	63	65	75	99	131
São Tomé and Príncipe	1	0	1	0	0	1	1	1	1	1	2	0	0	1	1	0	2	2	2	0	0	5	3	2	2
Senegal	56	56	55	67	62	41	42	75	78	92	77	97	82	79	84	123	145	162	153	168	198	211	171	177	209
Seychelles	1	3	1	1	8	3	5	11	5	3	8	12	8	14	14	17	18	22	20	23	25	25	19	16	43
Sierra Leone	4	4	4	1	2	1	4	2	0	0	3	0	7	3	7	12	14	12	15	39	48	43	46	41	56
Somalia	2	1	0	1	0	0	0	0	0	0	0	0	2	0	3	1	1	1	1	1	0	2	7	9	19
South Africa	974	1,038	1,044	1,050	1,056	1,079	1,169	1,240	1,353	1,474	1,626	1,676	1,878	1,907	2,199	2,354	2,464	2,794	2,965	3,363	3,527	3,738	3,842	4,286	4,945
South Sudan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	5	3	2	3	6	10	13
Sudan	19	29	40	31	30	25	24	38	37	33	47	68	56	94	121	135	87	102	116	99	127	133	167	172	253
Tanzania	55	61	55	59	69	57	66	94	111	121	149	184	151	184	218	234	225	274	304	365	400	405	429	498	571
Togo	8	9	13	17	12	8	9	13	6	13	14	18	15	19	19	35	23	24	36	33	30	27	56	67	79
Tunisia	60	79	76	98	86	122	163	155	174	264	369	497	505	615	689	807	772	805	694	800	825	846	767	825	881
Uganda	34	52	62	75	96	74	53	96	127	119	137	223	183	223	265	270	290	329	339	337	426	472	492	532	566
Zambia	20	31	27	27	20	33	24	32	32	45	47	48	65	51	76	90	100	100	118	122	142	185	149	171	224
Zimbabwe	70	59	73	73	69	68	61	84	61	63	66	104	83	84	91	85	121	138	157	163	216	220	207	210	253
Asia	24,599	26,278	27,056	27,979	28,803	28,797	30,627	34,228	38,186	42,220	47,205	52,364	57,205	61,810	66,168	73,561	79,108	85,436	90,841	96,111	100,492	101,913	110,512	123,950	148,063
Afghanistan	0	0	0	0	1	0	0	4	0	3	5	5	8	3	11	15	14	6	11	4	19	17	28	30	26
Bangladesh	126	95	100	105	120	106	97	167	171	190	230	262	238	316	354	397	454	469	500	566	559	688	745	915	1,323
Bhutan	1	2	2	0	0	0	2	0	3	2	10	7	4	8	14	15	14	26	24	29	29	35	39	35	67
Brunei	4	5	12	11	7	7	4	3	7	6	10	14	12	14	12	13	23	26	28	44	54	51	39	54	62
Burma	5	1	4	4	7	6	4	12	13	19	20	15	19	29	28	30	23	21	35	65	87	111	171	196	263
Cambodia	2	0	2	4	4	6	8	11	20	24	28	38	35	57	72	74	82	92	100	114	128	137	134	166	171
China	2,681	3,230	3,793	4,182	4,445	4,922	5,655	7,472	9,270	12,332	15,312	18,356	21,050	24,070	26,396	30,215	33,842	38,741	42,968	47,757	51,483	52,263	59,453	70,509	82,890
India	3,128	3,280	3,277	3,543	3,554	3,709	3,901	4,780	5,211	5,988	6,693	7,389	8,050	8,933	10,077	11,143	12,082	12,681	14,333	14,072	14,962	14,724	14,995	15,522	20,327

Table SPBS-20

S&E articles in biological and biomedical sciences, whole count, by region, country, or economy: 1996–2020

(Number)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Indonesia	166	170	211	167	206	162	195	196	240	284	312	329	321	390	439	501	561	689	658	802	976	1,204	1,697	2,359	3,248
Japan	15,011	15,880	15,610	15,688	16,002	15,136	15,498	15,686	16,431	15,943	16,124	16,185	16,483	16,264	15,545	15,792	16,117	16,275	15,451	15,582	15,486	15,455	15,370	15,517	17,512
Kazakhstan	45	31	42	36	32	28	35	46	38	45	48	42	40	53	48	57	44	83	108	152	190	249	269	350	420
Kyrgyzstan	5	4	2	5	6	7	3	3	5	7	5	6	7	14	14	9	10	16	21	17	31	25	35	54	89
Laos	2	2	3	1	3	2	8	4	10	28	25	15	27	46	34	51	53	61	57	70	72	60	86	103	112
Malaysia	184	210	197	232	215	194	243	231	304	388	404	475	595	863	1,265	1,959	1,982	1,992	1,910	2,143	2,305	2,299	2,527	2,709	3,470
Maldives	1	0	1	0	1	2	0	1	0	3	0	2	0	1	0	2	2	2	5	5	3	5	2	4	18
Mongolia	12	21	16	16	9	18	9	22	19	25	28	38	53	58	59	50	67	70	73	76	105	92	96	113	157
Nepal	26	28	30	31	32	44	42	57	49	74	67	104	78	80	121	111	132	152	170	213	220	277	296	345	472
North Korea	0	2	0	0	0	0	0	1	1	4	1	4	2	7	5	2	4	1	2	10	9	4	5	13	21
Pakistan	200	217	284	263	237	256	307	349	403	437	690	757	947	1,095	1,389	1,734	1,748	1,914	1,962	2,108	2,146	2,479	2,721	3,106	3,879
Papua New Guinea	32	24	29	31	25	55	31	46	36	25	32	40	62	49	38	52	59	45	65	65	73	53	63	73	61
Philippines	140	148	158	154	195	164	187	209	182	215	225	220	240	252	274	366	300	416	384	523	490	552	582	648	816
Singapore	248	268	311	361	369	360	458	534	738	874	939	1,044	1,076	1,244	1,479	1,534	1,780	1,863	1,892	1,941	2,010	2,088	2,038	2,152	2,489
South Korea	1,526	1,635	1,898	2,185	2,313	2,435	2,748	3,316	3,830	3,964	4,352	5,211	5,944	6,099	6,796	7,714	8,115	8,560	8,900	9,257	8,939	8,932	9,072	9,716	11,211
Sri Lanka	66	62	56	60	63	58	64	85	86	98	91	137	130	131	144	149	168	171	197	216	258	323	343	344	452
Taiwan	1,122	1,127	1,200	1,127	1,170	1,316	1,369	1,482	1,831	1,929	2,145	2,250	2,616	2,760	2,926	3,222	3,295	3,371	3,261	3,173	3,054	3,157	3,129	3,580	4,290
Tajikistan	10	2	4	9	7	4	8	3	3	2	6	3	7	3	9	13	13	9	8	9	13	17	23	34	38
Thailand	239	279	341	339	429	386	515	663	677	881	1,293	1,438	1,527	1,564	1,799	1,788	1,981	1,974	2,233	2,257	2,336	2,585	3,025	2,976	3,536
Timor-Leste	0	0	0	0	0	0	0	0	1	1	2	1	1	0	2	1	5	5	6	3	8	13	12	6	4
Turkmenistan	2	1	2	2	2	5	2	1	1	2	2	3	1	0	3	1	1	0	4	1	0	4	2	3	3
Uzbekistan	108	137	118	112	111	117	109	98	83	74	88	80	80	71	85	91	78	71	81	54	70	93	85	113	205
Vietnam	41	50	80	80	68	80	93	121	139	174	178	225	263	266	334	369	458	549	584	686	759	888	1,083	1,383	1,781
Australia and Oceania	5,495	5,686	5,833	5,882	6,280	6,121	6,414	6,678	7,104	7,502	8,146	8,543	9,094	9,485	9,960	10,635	11,392	12,561	13,077	13,447	14,073	13,712	14,453	14,866	16,365
Australia	4,589	4,839	4,873	4,863	5,255	5,094	5,384	5,582	5,949	6,259	6,897	7,151	7,705	8,065	8,436	9,097	9,731	10,789	11,308	11,659	12,224	11,911	12,729	12,994	14,394
Cook Islands	0	1	1	0	0	0	0	0	0	1	1	0	0	1	1	3	1	2	0	2	1	1	1	2	1
Fiji	7	5	7	5	5	8	14	15	16	21	20	29	20	28	22	29	34	29	33	45	66	45	54	73	76
Kiribati	1	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0	2	3	1	1	1	1	4	6
Marshall Islands	0	0	0	0	0	0	0	0	4	1	2	1	0	0	0	1	1	1	1	0	2	1	1	1	1
Micronesia, Federated States of	2	0	4	2	3	2	0	3	4	6	4	7	2	5	7	2	5	3	6	4	5	6	4	3	10
Nauru	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
New Zealand	989	929	1,038	1,100	1,116	1,085	1,114	1,219	1,288	1,425	1,412	1,575	1,621	1,647	1,770	1,832	1,959	2,118	2,129	2,175	2,206	2,203	2,185	2,336	2,453
Niue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Palau	1	1	0	0	0	4	2	1	4	2	4	2	2	3	3	2	4	3	2	7	3	4	3	7	6
Samoa	1	2	2	3	1	2	0	3	2	1	3	1	5	13	5	6	6	3	6	6	11	6	8	9	18
Solomon Islands	0	3	5	4	3	1	0	4	1	0	2	5	1	1	3	6	3	4	7	16	14	15	16	12	24

Table SPBS-20

S&E articles in biological and biomedical sciences, whole count, by region, country, or economy: 1996–2020

(Number)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Tonga	0	1	1	1	1	0	1	3	4	0	1	1	1	2	2	1	2	0	0	6	2	3	2	2	3
Tuvalu	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Vanuatu	0	0	1	2	0	1	1	1	5	5	6	4	5	6	3	6	5	6	4	14	16	9	10	11	13
Unassigned	2,138	1,871	1,872	2,816	1,710	1,699	1,122	2,705	1,604	1,820	1,687	1,501	1,959	1,833	2,767	2,880	2,551	1,535	1,161	1,257	1,927	2,199	2,482	2,890	3,751

EU = European Union; UK = United Kingdom.

^a The UK was a part of the EU for data purposes from 1973 to 2019.^b Beginning in 2020, the UK was no longer a member of the EU.^c Beginning in 2006, Serbia and Montenegro represented individual countries.^d Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.^e West Bank and Gaza Strip are separate entities in this list but are grouped in the World Bank Lending Groups classification list. Here, the economic status of the group is applied to both individual regions.**Note(s):**

Article counts refer to publications from selected journals and conference papers in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) of author(s) listed in the article. Articles are credited on a whole count basis. In whole counting, each region, country, or economy with a collaborating author on an article is credited with one count. The sum of the whole count for regions, countries, or economies does not add to the world total because of multiple counts of coauthored publications. Some publications have incomplete address information for coauthored publications in the Scopus database. The Unassigned category count is the sum of whole counts for publications that cannot be assigned to a region, country, or economy.

Source(s):

National Center for Science and Engineering Statistics; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed May 2021.

Science and Engineering Indicators