



APPENDIX TABLE 5-32

S&E articles in computer sciences, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	67,577.0	83,413.0	111,282.0	120,976.0	137,497.0	154,429.0	181,751.0	206,663.0	200,142.0	196,054.0	189,696.0	195,084.0	200,495.0	191,637.0
North America	22,316.9	25,944.0	31,648.3	31,965.0	34,200.9	33,312.7	34,373.9	34,706.1	35,187.2	34,205.3	34,474.3	33,740.5	33,916.1	31,140.0
Canada	2,415.1	2,843.7	3,936.4	4,184.5	4,817.0	4,624.0	4,996.5	4,850.8	4,755.6	4,798.9	4,612.3	4,734.5	4,355.2	4,057.2
Greenland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Mexico	318.3	437.5	540.6	602.3	613.0	835.0	766.9	846.2	779.0	797.9	1,085.6	1,151.1	1,034.6	965.0
United States	19,583.5	22,662.8	27,171.3	27,178.2	28,771.0	27,853.8	28,610.4	29,009.1	29,652.6	28,608.5	28,776.4	27,854.9	28,526.3	26,117.3
Central America and Caribbean	56.4	63.4	93.8	90.6	106.9	132.9	119.7	152.8	134.3	169.3	183.2	200.8	201.7	146.0
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.0
Bahamas, The	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.5	0.5	0.7	1.0	0.0	0.0	0.0
Barbados	4.0	5.0	3.0	1.0	1.0	5.4	0.1	0.0	2.2	0.8	2.0	2.3	6.0	2.7
Belize	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.0
Costa Rica	1.5	9.3	6.9	10.3	8.1	10.6	6.1	8.3	8.0	30.7	30.5	32.9	43.1	41.3
Cuba	16.7	12.1	36.7	39.9	46.9	55.2	36.4	65.4	57.8	64.1	79.3	91.7	64.6	49.9
Dominica	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3
Dominican Republic	0.0	0.0	4.7	0.3	0.0	0.0	1.5	0.0	1.0	0.2	0.8	0.0	1.1	0.3
El Salvador	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.5	0.8



Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	0.5	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Guatemala	0.0	1.0	0.0	0.0	0.7	1.0	0.7	2.3	1.8	6.2	3.9	5.0	9.2	3.5
Haiti	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	1.0	0.3	0.0	0.0	0.4	0.0
Honduras	0.0	0.2	0.0	1.0	0.0	0.3	0.5	2.0	0.1	1.5	0.0	1.2	0.7	0.7
Jamaica	1.0	4.8	6.8	5.5	4.8	18.5	21.0	12.3	9.2	11.5	17.7	13.2	9.9	7.4
Nicaragua	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.7	0.0	1.0	0.0	0.0	0.6	1.0
Panama	0.0	0.7	1.0	3.5	0.5	2.0	5.2	7.5	5.5	11.9	9.7	12.5	7.2	5.1
Puerto Rico	27.4	23.0	28.7	25.7	31.4	21.8	25.8	33.0	18.7	25.1	25.4	29.0	41.1	23.0
Saint Kitts and Nevis	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Vincent and the Grenadines	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	5.3	5.6	5.6	3.4	12.8	15.6	22.0	19.5	27.9	14.5	12.5	13.1	16.8	10.1
South America	1,084.1	1,409.7	1,814.2	2,122.2	2,430.2	2,859.9	3,084.7	3,358.4	3,819.3	4,413.7	4,652.2	4,895.9	5,467.4	5,045.1
Argentina	44.3	67.9	127.8	143.0	179.1	203.3	213.9	238.5	254.9	276.5	338.1	286.2	296.3	256.6
Bolivia	0.0	1.0	0.3	1.8	0.3	1.8	0.7	1.5	0.9	0.4	1.8	0.5	2.5	2.2
Brazil	896.2	1,157.7	1,411.5	1,593.4	1,818.3	2,150.9	2,330.9	2,508.3	2,880.0	3,284.3	3,459.1	3,523.2	3,739.4	3,482.1
Chile	76.8	107.1	128.4	172.0	185.4	215.7	251.1	232.4	270.0	260.7	298.3	380.0	379.8	415.5
Colombia	32.6	31.7	51.4	76.4	109.8	158.5	166.8	222.0	284.9	421.2	369.8	464.4	676.8	464.9
Ecuador	1.0	0.0	1.2	6.4	7.3	7.8	8.5	16.0	10.7	12.2	18.2	38.5	162.6	210.0



Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.3	0.0	0.0
Paraguay	1.0	6.3	5.0	6.5	4.0	5.5	4.8	3.2	7.2	6.0	15.1	11.2	23.9	18.2
Peru	0.0	1.8	4.0	9.4	10.8	15.8	8.4	15.3	18.7	19.7	27.3	39.7	77.2	97.8
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Uruguay	7.6	10.1	18.9	27.6	27.8	19.5	36.1	39.9	47.6	61.6	62.2	80.7	71.2	71.5
Venezuela	24.6	26.1	65.7	85.6	87.4	80.4	63.5	81.4	44.5	70.8	61.6	71.2	37.7	26.3
Europe	24,164.3	28,033.6	37,909.7	41,786.4	47,790.5	51,875.5	57,607.5	61,486.9	61,496.0	61,332.9	64,564.5	66,316.9	66,570.1	62,445.0
EU	22,183.7	25,970.5	34,867.5	38,153.5	43,806.8	47,544.9	52,430.4	55,720.3	55,488.6	55,153.2	57,914.2	58,709.8	57,774.5	52,875.5
Austria	583.9	607.3	929.2	1,074.0	1,336.4	1,365.8	1,613.1	1,624.0	1,702.0	1,810.6	1,852.9	1,787.9	1,891.3	1,644.6
Belgium	537.2	597.1	859.3	955.6	991.9	1,101.2	1,114.4	1,158.5	1,212.7	1,267.8	1,261.5	1,214.7	1,206.6	1,126.1
Bulgaria	58.3	97.0	81.7	99.9	193.1	212.3	172.1	246.4	257.4	212.0	193.7	206.5	222.2	178.3
Croatia	183.6	140.3	262.0	243.1	360.8	360.6	490.3	464.7	480.8	313.8	435.0	389.8	426.4	378.8
Cyprus	34.2	45.2	75.5	86.3	81.9	113.1	123.7	121.8	131.8	194.7	179.5	172.2	151.7	200.2
Czech Republic	334.9	384.2	588.8	730.0	885.1	909.9	1,014.3	1,239.0	1,282.5	1,221.9	1,345.9	1,350.9	1,423.4	1,396.2
Denmark	310.4	370.8	457.1	537.2	589.2	592.2	701.6	796.5	774.7	839.9	894.3	991.3	952.5	875.8
Estonia	25.7	31.3	56.6	61.1	68.5	103.4	97.7	183.8	160.8	154.8	186.4	199.5	189.0	171.5
Finland	597.1	753.0	1,025.3	1,141.2	1,236.9	1,301.3	1,361.2	1,421.9	1,424.5	1,386.2	1,455.6	1,481.1	1,413.2	1,343.0
France	2,974.7	3,316.6	4,576.8	4,945.3	5,649.3	6,011.9	6,441.4	6,560.1	6,676.5	6,877.9	7,042.7	7,211.1	7,009.7	5,937.8
Germany	3,703.8	4,305.7	6,086.5	6,513.3	7,382.6	8,466.7	9,423.3	10,321.7	9,925.2	9,742.9	10,204.6	10,787.4	10,037.1	9,301.4



Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	695.4	832.0	1,194.8	1,330.7	1,435.8	1,627.1	1,801.1	1,676.7	1,668.4	1,795.6	1,695.3	1,867.3	1,803.9	1,580.8
Hungary	221.2	293.4	363.4	438.7	541.0	457.6	576.3	516.8	623.2	628.5	701.3	677.6	546.3	621.8
Ireland	270.3	434.3	622.9	721.4	788.7	780.2	922.7	1,019.2	881.8	842.8	825.5	797.7	750.3	774.3
Italy	2,421.9	2,778.2	3,624.2	3,696.6	4,273.0	4,421.8	5,001.3	5,178.5	5,221.2	5,080.8	5,895.3	5,981.2	5,777.1	5,612.3
Latvia	27.3	14.4	69.7	62.8	58.9	100.4	107.4	179.1	203.5	178.9	167.5	157.0	197.7	187.5
Lithuania	44.4	63.0	89.8	133.5	121.3	167.0	130.2	158.8	115.4	171.6	133.3	181.1	268.1	167.6
Luxembourg	13.0	19.1	30.4	54.6	62.4	106.3	129.5	156.6	181.7	185.2	227.1	274.2	249.3	200.3
Malta	3.0	5.3	6.9	13.2	17.1	18.6	23.9	26.0	33.4	31.9	39.0	40.9	48.2	48.7
Netherlands	1,108.1	1,375.6	1,781.5	1,904.9	2,206.0	2,369.1	2,613.1	2,563.9	2,552.2	2,421.5	2,406.2	2,434.8	2,235.7	1,971.2
Poland	498.3	961.2	955.2	1,256.5	1,255.5	1,660.8	1,447.7	1,854.9	1,888.4	2,288.3	2,347.6	2,474.2	2,915.4	2,871.5
Portugal	535.4	498.9	672.6	840.5	1,092.8	1,157.0	1,398.5	1,612.2	1,850.5	1,941.0	2,089.6	2,176.5	2,182.1	1,785.0
Romania	121.3	144.0	251.6	276.4	631.6	993.3	1,239.5	1,617.8	1,240.8	1,033.6	1,123.2	820.5	1,059.8	941.5
Slovakia	91.4	96.8	193.0	202.7	190.5	267.1	253.3	458.4	446.2	461.3	521.3	398.3	582.0	661.5
Slovenia	196.6	179.7	226.3	247.3	255.6	266.3	325.2	334.1	352.2	302.8	352.5	344.8	432.1	284.0
Spain	1,984.9	2,451.7	3,034.5	3,484.3	4,245.7	4,432.5	5,236.7	5,196.7	5,471.4	5,356.2	5,307.6	5,105.6	4,796.8	4,335.5
Sweden	789.9	803.2	1,048.1	1,103.3	1,177.2	1,141.5	1,248.1	1,363.7	1,495.0	1,512.0	1,611.5	1,713.6	1,705.4	1,534.6
United Kingdom	3,817.7	4,371.2	5,703.9	5,999.2	6,678.0	7,039.9	7,422.7	7,668.6	7,234.3	6,898.7	7,418.1	7,472.0	7,301.0	6,743.6
Other Europe	1,980.6	2,063.1	3,042.2	3,633.0	3,983.7	4,330.6	5,177.1	5,766.6	6,007.5	6,179.8	6,650.3	7,607.1	8,795.6	9,569.5
Albania	0.0	0.5	0.2	0.0	0.8	1.0	4.6	12.8	23.6	23.6	26.1	17.2	27.2	37.2



Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.0	0.0	0.0	1.0	1.7	1.0	0.0	0.0	0.0	1.5	0.0	0.5	1.1	0.5
Belarus	29.1	19.1	25.3	33.8	45.5	29.8	34.8	34.2	32.3	32.9	54.6	36.2	38.5	55.9
Bosnia and Herzegovina	5.2	7.3	16.8	16.0	37.4	67.4	75.6	95.4	112.8	72.6	62.9	64.0	60.5	58.4
Holy See (Vatican City)	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iceland	6.8	9.5	20.9	20.3	21.7	33.4	47.3	38.5	51.2	60.7	43.7	36.6	44.1	47.4
Kosovo	0.0	0.0	0.0	0.0	0.0	4.0	2.5	5.7	10.7	6.9	10.4	6.2	8.4	14.9
Liechtenstein	0.8	1.5	0.5	1.2	2.1	10.1	6.9	10.9	12.0	5.9	5.8	11.6	6.0	8.2
Macedonia	15.3	19.7	22.4	20.1	35.1	44.6	63.1	71.9	107.1	91.8	99.2	138.7	129.0	64.9
Moldova	4.1	3.6	5.5	6.7	4.0	4.7	5.1	7.8	4.8	8.7	15.6	12.8	13.1	5.8
Monaco	0.0	0.0	0.0	2.0	1.2	0.0	0.3	0.0	0.5	0.0	0.0	0.0	0.5	0.0
Montenegro ^a	na	na	na	na	5.2	4.1	3.5	15.1	12.0	11.1	29.3	23.2	20.7	40.2
Norway	254.2	306.6	471.7	577.8	599.8	673.1	803.5	882.0	792.6	896.0	846.3	936.5	922.8	947.6
Russia	330.6	268.4	547.3	512.2	662.6	580.2	710.5	838.5	910.9	871.0	1,586.4	1,807.0	2,850.5	3,280.6
San Marino	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.6	0.2	0.0	0.0	0.0
Serbia ^a	na	na	na	na	154.0	176.8	276.1	367.8	405.0	538.8	373.0	348.2	416.4	300.1
Serbia and Montenegro ^b	53.5	64.6	102.0	120.5	na	na	na	na	na	na	na	na	na	na
Switzerland	762.0	871.2	1,132.2	1,259.3	1,366.1	1,408.0	1,577.2	1,651.1	1,640.2	1,733.3	1,794.5	1,802.8	1,740.4	1,587.1
Turkey	285.6	367.5	487.5	691.3	802.8	927.4	1,242.7	1,484.4	1,653.9	1,252.9	1,325.5	2,051.5	2,043.6	2,100.4
Ukraine	233.4	123.1	209.9	370.9	243.2	364.5	323.4	250.7	237.9	571.5	376.8	314.1	472.8	1,020.6



Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	1,193.8	1,390.3	1,788.6	2,261.6	2,774.3	3,692.5	4,612.9	5,510.1	5,825.6	5,172.2	5,457.6	5,365.3	5,525.6	5,816.7
Armenia	4.8	10.1	6.3	9.0	8.8	6.8	10.5	17.8	20.7	9.4	44.5	12.0	24.9	14.2
Azerbaijan	10.0	10.1	21.8	15.4	21.8	28.3	81.8	45.5	80.7	179.0	54.4	46.7	38.2	62.6
Bahrain	5.0	3.6	9.3	11.5	16.8	23.3	18.1	33.4	26.3	24.2	40.1	21.4	15.8	23.4
Gaza Strip	0.0	2.0	1.0	2.0	3.0	4.3	4.3	5.7	5.1	13.2	10.2	6.7	4.2	6.2
Georgia	5.3	4.3	10.4	8.0	7.7	5.5	16.4	15.8	24.0	37.7	17.1	11.3	17.3	13.0
Iran	196.6	301.8	490.7	633.1	1,056.5	1,704.4	2,349.6	2,959.9	3,089.6	2,007.7	2,342.0	2,132.5	2,050.9	2,449.2
Iraq	17.8	0.0	1.0	18.8	9.0	13.3	29.5	45.8	74.8	68.3	59.2	77.9	82.1	93.5
Israel	715.2	822.3	899.8	1,062.9	1,087.4	1,141.0	1,110.3	1,117.9	1,146.0	1,392.5	1,188.1	1,282.6	1,160.2	1,118.2
Jordan	45.3	40.0	60.2	93.7	114.4	171.9	180.7	289.8	221.9	204.3	211.2	235.0	265.5	288.4
Kuwait	25.8	23.8	47.9	51.7	62.7	62.9	104.1	97.1	101.1	88.7	88.1	85.7	88.2	86.1
Lebanon	28.0	32.8	53.9	64.2	69.8	60.6	91.3	99.0	120.1	134.0	102.4	120.4	136.8	163.4
Oman	16.1	18.5	18.3	27.4	42.1	44.9	60.0	53.6	58.2	66.1	54.1	60.6	89.9	94.0
Qatar	4.2	5.5	5.3	8.6	12.0	32.5	24.7	47.2	61.4	94.3	140.2	163.8	201.9	181.8
Saudi Arabia	62.4	57.2	64.9	91.7	120.3	194.5	291.8	394.7	486.2	539.5	755.5	811.5	963.2	791.8
Syria	0.3	1.0	3.0	7.1	7.8	7.2	17.2	8.7	8.3	7.6	5.2	3.5	11.4	8.2
United Arab Emirates	55.7	55.6	91.7	147.0	128.1	181.7	209.6	256.5	279.6	287.8	318.2	271.4	352.6	390.4
West Bank	1.5	1.0	2.0	6.8	5.8	7.7	6.6	13.2	10.3	12.5	14.4	12.7	16.9	24.6
Yemen	0.0	0.7	1.3	2.8	0.3	1.7	6.4	8.7	11.4	5.4	12.8	9.4	6.0	7.6



Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	340.3	340.6	719.0	944.5	1,112.2	1,534.3	2,029.5	2,415.5	2,531.2	3,087.9	3,265.4	3,713.8	4,710.8	4,984.7
Algeria	56.7	55.9	112.0	201.5	210.4	221.4	338.0	349.7	458.7	553.6	557.1	648.3	1,003.5	656.4
Angola	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.2	0.0	0.3	0.6	1.0	1.2	2.7
Benin	0.0	0.0	0.5	0.3	0.0	0.3	1.5	3.3	0.4	2.5	2.8	2.4	3.5	3.7
Botswana	1.3	0.6	4.4	4.8	5.6	12.5	7.8	9.3	17.9	12.6	12.7	15.8	13.6	20.3
Burkina Faso	0.0	0.3	1.5	1.3	1.9	1.3	0.7	0.8	0.4	0.9	0.7	0.3	2.0	8.5
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cameroon	3.5	2.0	8.0	3.1	2.8	7.3	10.0	7.6	9.8	16.8	12.3	13.0	12.9	20.9
Cape Verde	0.0	0.0	0.0	1.2	1.0	0.0	1.5	0.0	0.7	0.0	0.5	1.5	0.2	0.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.2	0.0	2.0	0.0	0.0	0.3	0.3	0.2	0.0	0.2
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo, Democratic Republic of the	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.5	0.1
Congo, Republic of the	0.0	0.0	0.0	0.0	1.0	0.0	0.3	0.0	0.0	0.0	0.4	0.0	0.3	1.0
Côte d'Ivoire	0.5	0.7	0.7	0.0	1.0	3.0	0.5	1.8	2.0	3.6	1.0	1.0	1.3	0.0
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.0	0.4
Egypt	92.9	85.6	181.9	219.0	282.4	328.0	494.7	578.0	521.4	589.3	575.3	597.0	740.2	854.5
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Eritrea	0.3	0.0	1.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0



Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	1.2	0.3	4.0	3.1	1.8	3.3	10.7	20.2	8.1	38.8	23.2	29.7	35.6	28.2
Gabon	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.3	0.0	0.3	0.5	0.6
Gambia, The	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.8	0.3	0.3
Ghana	0.0	0.0	0.3	2.4	3.4	4.8	5.8	9.0	9.3	11.3	16.6	20.5	24.1	32.7
Guinea	0.0	0.0	0.3	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	1.0	0.0	2.7	0.7	5.8	1.4	15.4	13.8	15.1	12.5	33.6	35.7	28.1	36.6
Lesotho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.3	1.0	1.4
Liberia	0.0	0.0	0.0	0.3	0.3	0.0	0.5	0.5	0.7	1.1	0.0	0.0	0.3	0.0
Libya	1.3	1.3	1.0	4.1	5.2	15.0	33.5	54.0	14.6	16.2	34.8	31.2	32.5	11.8
Madagascar	0.0	0.0	0.5	0.5	0.3	2.0	1.3	0.3	1.9	4.5	7.1	7.2	2.2	1.5
Malawi	0.0	0.5	1.3	0.0	0.0	0.0	1.0	3.2	3.7	4.3	0.7	12.7	11.9	3.8
Mali	0.0	0.0	1.1	0.0	0.0	0.0	0.3	0.1	1.1	1.2	1.3	1.1	0.8	1.0
Mauritania	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.4	0.4	1.0
Mauritius	4.7	7.8	15.6	11.3	10.5	14.4	13.8	27.3	13.3	17.0	22.2	24.0	18.1	52.6
Morocco	21.9	16.1	29.5	44.1	36.6	80.8	167.5	167.2	286.8	374.8	367.5	504.8	730.0	859.5
Mozambique	2.0	0.3	0.0	0.7	0.0	2.1	0.9	2.6	2.8	0.6	1.7	0.4	0.0	1.7
Namibia	0.0	0.0	2.0	0.3	1.7	3.3	2.0	6.1	6.7	10.7	12.9	31.2	22.2	27.2
Niger	0.0	0.5	0.0	1.0	0.0	0.0	1.0	0.8	0.0	0.5	1.0	0.3	2.1	1.1



Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	10.8	10.1	24.6	13.1	21.4	36.9	51.3	86.6	107.8	92.9	131.6	152.3	181.4	233.7
Rwanda	0.5	0.0	0.2	2.0	1.0	3.3	1.5	5.7	1.5	1.5	2.9	2.0	2.6	2.0
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Senegal	0.2	0.2	2.3	2.0	4.8	3.2	7.8	6.9	13.5	16.7	7.8	13.4	30.7	23.7
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.5
South Africa	89.3	98.6	179.8	231.4	267.6	451.3	381.1	523.8	485.1	606.2	684.5	596.9	794.1	888.8
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Sudan	1.6	0.0	2.0	2.5	1.6	8.0	6.8	13.1	11.6	16.6	19.0	19.3	41.6	83.4
Swaziland	1.3	0.0	0.0	1.0	0.0	1.0	0.9	0.0	1.8	1.2	1.8	5.0	4.6	2.4
Tanzania	0.0	1.0	0.3	3.3	1.0	2.4	6.1	9.0	13.4	13.7	18.3	9.1	12.1	11.1
Togo	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.7	0.0	0.0	0.0	0.5	0.0	0.0
Tunisia	46.7	56.5	137.9	185.5	231.0	312.5	453.0	487.6	484.0	627.5	673.0	917.1	921.6	1,092.8
Uganda	0.8	2.0	0.8	3.0	9.5	13.3	8.0	19.0	28.5	27.7	24.7	10.6	21.1	9.7
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	1.0	0.3	0.0	0.5	0.6	0.0	0.0	4.9	1.8	0.6	5.2	0.5	2.5	2.4
Zimbabwe	1.0	0.1	2.3	0.3	2.3	0.5	0.0	0.8	3.3	9.6	4.7	5.7	5.9	3.8
Asia	16,141.4	23,650.8	33,208.9	37,696.7	44,047.5	56,111.9	75,199.7	93,985.4	86,646.8	83,172.5	72,283.2	76,204.3	79,886.7	77,866.3



Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	1.0	0.0	0.0	0.5	0.0	1.2	0.0	1.5	1.2	0.3	1.0	0.8	0.0	4.2
Bangladesh	96.8	33.3	35.0	35.0	123.0	160.9	193.4	169.1	205.1	347.8	143.9	395.8	387.5	352.0
Bhutan	0.0	0.0	0.5	1.0	1.0	0.8	0.7	0.0	0.5	2.0	0.0	3.8	3.5	3.5
Brunei	1.6	0.2	1.0	0.0	3.0	1.5	2.6	1.6	4.3	9.1	12.9	24.3	23.1	29.2
Burma	0.3	0.0	31.9	5.3	7.3	21.8	48.5	29.6	48.0	4.1	2.7	0.9	13.2	38.8
Cambodia	0.0	0.0	0.7	0.6	1.5	2.1	1.2	0.3	0.0	0.2	0.3	2.5	3.8	1.0
China	5,822.6	10,715.3	16,655.4	19,383.1	22,675.7	31,841.7	48,050.2	61,863.5	52,589.5	48,661.0	38,338.9	35,970.0	35,419.7	37,132.6
India	814.3	1,140.8	1,496.6	2,005.8	2,939.8	3,728.4	4,423.6	6,700.5	8,183.8	9,105.6	9,011.6	14,548.8	20,501.4	15,571.1
Indonesia	9.9	9.2	22.8	31.3	33.9	76.6	105.5	239.1	270.5	298.6	531.0	884.5	1,040.8	1,212.8
Japan	4,269.5	5,040.5	5,997.4	6,063.5	6,778.7	7,259.7	7,995.1	8,324.1	8,310.5	8,537.7	8,505.0	8,041.8	7,231.0	7,851.8
Kazakhstan	2.5	4.0	3.6	3.2	5.6	5.7	4.8	18.4	31.3	46.1	222.6	120.2	130.1	138.7
Kyrgyzstan	1.0	0.3	0.3	0.0	1.0	1.7	1.8	1.0	4.8	4.0	2.5	2.0	1.0	7.2
Laos	0.0	0.0	0.0	0.0	0.0	0.4	1.0	0.0	0.6	0.0	0.1	2.4	0.7	0.6
Malaysia	221.4	190.3	249.5	401.0	573.6	1,184.2	1,703.6	2,768.7	2,802.7	2,142.4	2,090.3	2,539.1	2,575.3	2,434.3
Maldives	0.7	0.0	0.0	0.0	1.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	0.0	0.0	1.3	1.3	54.1	6.6	6.6	2.9	6.0	4.5	7.3	15.7	1.4	6.0
Nepal	0.0	0.8	1.9	1.6	9.4	9.3	3.4	4.4	1.5	5.7	0.5	9.2	4.6	22.1
North Korea	1.0	8.0	9.7	13.9	6.1	12.3	8.8	0.1	0.8	1.8	0.4	3.0	8.9	1.3
Pakistan	99.3	172.6	269.5	225.9	296.2	400.0	599.4	762.6	527.8	554.2	762.7	721.7	655.9	925.1



Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	0.0	0.0	0.2	0.0	0.0	1.8	1.0	1.3	1.0	1.0	0.0	0.2	2.6	1.8
Philippines	9.2	5.5	18.2	13.0	15.9	32.4	29.3	63.6	70.1	40.2	58.8	154.4	75.0	137.7
Singapore	944.5	1,203.8	1,214.6	1,346.7	1,285.1	1,284.5	1,317.2	1,630.8	1,548.4	1,769.4	1,771.6	1,674.2	1,573.9	1,669.3
South Korea	2,038.2	2,850.9	3,836.0	4,348.2	4,551.4	4,340.5	4,323.5	4,558.3	5,109.6	5,243.4	5,043.1	5,386.2	5,012.5	4,920.9
Sri Lanka	2.7	2.7	16.4	43.1	22.9	97.4	29.2	95.1	60.2	92.1	199.3	107.1	66.6	170.6
Taiwan	1,646.1	2,086.8	3,091.9	3,414.2	4,248.9	5,051.4	5,578.2	5,647.5	5,936.2	5,350.1	4,590.1	4,374.2	3,949.8	3,766.5
Tajikistan	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0
Thailand	120.0	166.2	233.2	317.6	334.2	493.4	616.8	880.4	714.0	631.0	623.0	841.1	743.5	904.0
Timor-Leste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1
Turkmenistan	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.5	1.4	2.1	0.3	1.0	1.5	0.5
Uzbekistan	1.0	1.0	1.0	2.3	2.1	5.8	5.3	8.3	6.9	7.8	9.7	6.2	7.0	6.2
Vietnam	37.2	18.6	19.5	38.8	75.9	89.5	149.1	211.9	209.5	310.2	353.8	373.3	451.8	555.5
Australia and Oceania	2,009.3	2,388.2	3,752.0	3,605.0	4,236.9	4,143.4	4,263.0	4,686.4	4,218.4	4,217.8	4,648.3	4,519.9	4,116.6	4,046.2
Australia	1,754.1	2,052.4	3,311.9	3,106.3	3,707.4	3,492.6	3,650.0	4,056.9	3,584.5	3,558.4	3,943.3	3,775.9	3,554.9	3,395.4
Cook Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Fiji	0.3	3.3	1.8	4.3	9.6	7.0	4.5	8.5	3.2	6.9	16.6	33.7	22.1	45.9
Kiribati	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia, Federated States of	0.0	0.0	1.3	0.0	0.8	0.3	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0



Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	254.9	332.5	437.0	492.3	518.9	642.5	607.6	621.0	630.7	652.2	687.9	709.2	539.1	604.8
Niue	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.5	0.3	1.0	0.3	0.0	0.0	0.0	0.3	1.0	0.5	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Unassigned	270.4	192.5	347.5	503.9	797.5	766.0	460.2	361.4	283.2	282.3	167.4	126.7	100.1	147.2

na = not applicable; country data do not exist.

EU = European Union.

^a Beginning in 2006, Serbia and Montenegro represented individual countries.

^b Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings 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) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.



Science and Engineering Indicators 2018