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Foreword

This publication contains key data series selected from the OECD Main Science and Technology Indicators Database (MSTI) accessible at *https://oe.cd/msti*. This publication consists of standard tables of data series regarding the resources devoted to research and experimental development (R&D) as well as some indicators of R&D output, and the impact of scientific and technological activities. Also presented are the underlying economic series used to calculate these indicators. It is complemented by a description of the general methodology used as well as national specifications available at *www.oecd.org/sti/inno/MSTI_documentation_e.pdf*.

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Conventional signs and abbreviations

Signs and abbreviations

R&D terminology

BERD	Business enterprise Expenditure on R&D (intramural)
FTE	Full Time Equivalent (on R&D)
GBARD	Government Budget Allocations for R&D
GERD	Gross Domestic Expenditure on R&D (intramural)
GOVERD	Government Expenditure on R&D (intramural)
GUF	General University Funds
HERD	Higher Education Expenditure on R&D (intramural)
NSE	Natural Sciences and Engineering
PNP	Private Non Profit Institutions
R&D	Research and Experimental Development
SSH	Social Sciences and Humanities

For further explanations of the above terms, please see the OECD Frascati Manual 2015, which includes a glossary of key terms: *http://oe.cd/frascati*

Other

GDP	Gross Domestic Product
ISIC	International Standard Industrial Classification
PCT	Patent Co-operation Treaty
PPP	Purchasing Power Parity

Sources and methods

Detailed methodological information: *www.oecd.org/sti/inno/MSTI_documentation_e.pdf*

Standard footnotes

The OECD zone includes all Member countries of the OECD except Costa Rica, that is, Australia, Austria, Belgium, Canada, Chile, Colombia, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Türkiye, the United Kingdom, and the United States.

The latest data for European countries, as well as Iceland, Norway, the Russian Federation, Switzerland and Türkiye, were collected by Eurostat.

b	Time series break.
c	Confidential statistical information.
d	Definition differs.
e	Estimated value.
k	Data included in another category.
l	Overestimated or based on overestimated data.
m	Underestimated or based on underestimated data.
p	Provisional value.
s	Unrevised breakdown not adding to the revised total.
v	The sum of the breakdown does not add to the total.
w	Includes data from another category.

From 2017, Eurostat follows slightly different, but generally compatible, conventions with regard to footnotes:

Countries only use flags 'b', 'c', 'd', 'e' and 'p'.

Only one flag may be submitted per data item (cell).

The flags follow a hierarchy: p > b > d > e. As an example, an estimated (e) and provisional (p) data will be annotated with a 'p'.

Estimated (e), overestimated (l) and underestimated (m) data are all annotated with an 'e' flag.

'd', 'k', 's', 'v' and 'w' flags are grouped as 'd' (definition differs).

In this publication, flags for these countries are published as they were received by the OECD from Eurostat, except in the following cases:

The single-flag rule is not applied when this would lead to supress 'b' flags indicating breaks in series.

's' flags are not replaced with 'd'.

Contact details

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International Comparisons

Table 1. Gross domestic expenditure on R&D (GERD) at current prices and PPP

Million USD

	2005	2015	2016	2017	2018	2019	2020
Australia	..	21 157.1 e	..	22 376.2 e	..	24 011.8 e	..
Austria	6 837.0 e	13 143.4	14 344.9 e	14 567.3	15 563.1 e	16 140.4	15 968.9 e
Belgium	6 225.2	12 647.8	13 895.7	15 301.0	17 168.8	19 702.7	20 691.5 e
Canada	23 090.0	27 004.7	29 014.6	29 788.7	32 190.0	32 357.6	32 628.5 p
Chile	..	1 552.9	1 576.3 b	1 608.7	1 764.9 e	1 641.0 e	1 615.2 e
Colombia	582.0	2 280.7	1 800.0	1 809.6	2 333.4	2 540.6 e	2 188.9 e
Czech Republic	2 619.5	6 853.0	6 369.8	7 274.5	8 305.7	8 814.7	8 862.8
Denmark	4 429.5	8 515.7	9 208.0	9 354.5	9 877.9	9 857.1	10 401.7
Estonia	206.7	563.3	512.2	568.9	678.7	820.3	896.9
Finland	5 588.7	6 687.9	6 727.4	7 147.7	7 540.5	7 779.1	8 204.6
France	39 530.1	60 541.3	63 651.4	65 592.8	68 654.0	72 330.4	74 563.3 e p
Germany	64 028.3	114 097.6	122 472.2	133 668.0	142 320.2	146 486.1	144 352.7 e
Greece	1 627.0	2 797.4	2 980.4	3 544.8	3 858.2	4 151.9	4 511.9
Hungary	1 586.8	3 533.6	3 235.5	3 802.3	4 703.1 b	4 838.1	5 184.6
Iceland	296.8	355.1	378.5 e	398.2	403.6 e	488.3	485.7
Ireland	2 006.5	3 839.4 e	3 997.4 e	4 692.3 e	4 812.4 e	5 285.5 e	5 015.9 e
Israel	6 966.3 d	12 666.9 d	14 588.5 d	15 873.8 d	17 003.0 d	18 616.3 d e	19 780.1 d
Italy	18 241.2	29 994.8	33 076.6 b	34 488.8	37 039.9	38 740.5	37 704.2
Japan	128 694.6	168 514.0	160 269.3	166 621.7	172 035.8 b	172 137.1	174 065.4
Korea	30 618.3 d	76 922.0	80 816.0	90 289.9	100 282.6	102 988.6	112 868.2
Latvia	164.2	305.9	227.8	284.6	380.1	388.6	422.2
Lithuania	361	874	747	856	955	1 071	1 269
Luxembourg	498.8	769.4	835.9	849.6	829.9	856.0	795.9 e p
Mexico	5 346.2	9 577.0	9 241.7	8 079.1 e	7 788.1 e	7 192.6 e	7 157.1 e
Netherlands	10 892.4	18 282.0	19 152.7	20 560.0	21 312.0	22 355.2	23 893.8
New Zealand	1 189.3	2 121.8	..	2 740.8	..	3 185.0 p	..
Norway	3 275.8	6 061.8	6 308.0	7 095.1	7 593.6	7 702.2	7 676.9
Poland	2 984.9	10 232.0	10 354.7	11 807.2	14 669.1	16 945.7	18 096.7
Portugal	1 808.2	3 819.8	4 179.9	4 490.5	4 847.6	5 192.8	5 692.0
Slovak Republic	441.0	1 886.4	1 273.5	1 450.2	1 427.7	1 439.7	1 559.5
Slovenia	676.5	1 433.0	1 406.9	1 407.2	1 572.8	1 738.7	1 793.4
Spain	13 251.1	19 815.3	20 633.5	22 293.2	23 656.3	24 593.5	25 132.6
Sweden	10 388.2 b	15 489.1 v	16 250.6 e	17 569.8 v	18 086.3 e	19 011.6 v	20 099.2
Switzerland	..	16 639.9	..	17 720.9	..	19 438.5	..
Türkiye	4 595.6	17 734.3	19 855.1	21 572.2	23 602.5	23 856.5	25 012.7
United Kingdom	30 639.7	45 451.0	48 184.7 e	50 793.1	54 185.4 e	55 983.7	..
United States	326 231.0 d	507 401.0 b d	533 465.0 b d	565 929.0 d	618 531.0 d	678 603.0 d	720 880.0 p
EU27 (from 01/02/2020)	196 273.8 e	340 526.2 e	360 092.7 e	386 613.2 e	413 809.3 e	434 660.3 e	441 367.3 e
OECD-Total	**778 162.2 e**	**1 251 562.1 e**	**1 303 062.1 e**	**1 384 268.3 e**	**1 491 016.7 e**	**1 579 282.6 e**	**1 645 786.2 e**
Argentina	2 221.5	5 363.8	4 693.4	5 782.0	5 123.0	4 724.3	..
China	86 219.6	366 080.9	393 015.5	420 815.6	465 287.5	526 183.2	583 754.5
Romania	844.7	2 090.9	2 301.4	2 675.5	2 863.4	2 952.8	2 907.4
Russian Federation	18 120.5	38 818.6	39 013.0	42 246.1	41 895.9	45 687.0	47 954.2
Singapore	5 389.3	10 467.9	10 402.4	10 160.6	10 270.5	11 013.6	..
South Africa	3 979.4	5 551.1	5 795.2	6 025.6	5 637.3	5 147.9	..
Chinese Taipei	15 291.5	33 058.8	34 340.6	36 522.7	40 334.3	44 089.9	47 935.4

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 2. Gross domestic expenditure on R&D (GERD) as a percentage of GDP

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	1.88 e	..	1.79 e	..	1.80 e	..
Austria	2.37 e	3.05	3.12 e	3.06	3.09 e	3.13	3.22 e
Belgium	1.79	2.43	2.52	2.67	2.86	3.16	3.38 e
Canada	1.97	1.69	1.73	1.69	1.74	1.75	1.84 p
Chile	..	0.38	0.37 b	0.36	0.37 e	0.34 e	0.34 e
Colombia	0.17	0.37	0.27	0.26	0.31	0.32 e	0.29 e
Czech Republic	1.16	1.92	1.67	1.77	1.90	1.93	1.99
Denmark	2.39	3.05	3.09	2.93	2.97	2.90	2.97
Estonia	0.92	1.47	1.24	1.28	1.41	1.63	1.75
Finland	3.32	2.87	2.72	2.73	2.76	2.80	2.91
France	2.05	2.23	2.22	2.20	2.20	2.19	2.35 e p
Germany	2.44	2.93	2.94	3.05	3.11	3.17	3.13 e
Greece	0.58	0.97	1.01	1.15	1.21	1.28	1.51
Hungary	0.92	1.34	1.18	1.32	1.51 b	1.48	1.60
Iceland	2.68	2.18	2.11 e	2.08	2.00 e	2.33	2.47
Ireland	1.19	1.18 e	1.18 e	1.25 e	1.17 e	1.23 e	1.08 e
Israel	4.04 d	4.26 d	4.51 d	4.66 d	4.80 d	5.14 d e	5.44 d
Italy	1.04	1.34	1.37 b	1.37	1.42	1.46	1.51
Japan	3.13	3.24	3.11	3.17	3.22 b	3.21	3.27
Korea	2.52 d	3.98	3.99	4.29	4.52	4.63	4.81
Latvia	0.53	0.62	0.44	0.51	0.64	0.64	0.71
Lithuania	1	1	1	1	1	1	1
Luxembourg	1.56	1.25	1.27	1.24	1.17	1.18	1.07 e p
Mexico	0.40	0.43	0.39	0.33 e	0.31 e	0.28 e	0.30 e
Netherlands	1.77	2.15	2.15	2.18	2.14	2.18	2.32
New Zealand	1.12	1.23	..	1.35	..	1.40 p	..
Norway	1.48	1.94	2.04	2.10	2.05	2.16	2.28
Poland	0.56	1.00	0.96	1.03	1.21	1.32	1.39
Portugal	0.76	1.24	1.28	1.32	1.35	1.40	1.62
Slovak Republic	0.49	1.16	0.79	0.89	0.84	0.83	0.91
Slovenia	1.42	2.20	2.01	1.87	1.95	2.04	2.14
Spain	1.10	1.22	1.19	1.21	1.24	1.25	1.41
Sweden	3.36 b	3.22 v	3.25 e	3.36 v	3.32 e	3.39 v	3.49
Switzerland	..	3.04	..	3.03	..	3.15	..
Türkiye	0.56	0.88	0.94	0.95	1.03	1.07	1.09
United Kingdom	1.55	1.63	1.65 e	1.66	1.71 e	1.71	..
United States	2.50 d	2.79 b d	2.85 b d	2.91 d	3.01 d	3.18 d	3.45 p
EU27 (from 01/02/2020)	1.68 e	2.00 e	1.99 e	2.03 e	2.07 e	2.11 e	2.19 e
OECD-Total	**2.10 e**	**2.33 e**	**2.33 e**	**2.37 e**	**2.44 e**	**2.52 e**	**2.67 e**
Argentina	0.42	0.62	0.53	0.56	0.49	0.46	..
China	1.31	2.06	2.10	2.12	2.14	2.23	2.40
Romania	0.41	0.49	0.48	0.50	0.50	0.48	0.47
Russian Federation	0.99	1.10	1.10	1.11	0.99	1.04	1.10
Singapore	2.15	2.17	2.07	1.90	1.81	1.89	..
South Africa	0.86	0.80	0.82	0.83	0.75	0.68	..
Chinese Taipei	2.33	3.00	3.09	3.19	3.35	3.49	3.63

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 3. Gross domestic expenditure on R&D (GERD) at 2015 prices and PPP

Million 2015 USD

	2005	2015	2016	2017	2018	2019	2020
Australia	..	21 157.1 e	..	21 236.3 e	..	21 724.3 e	..
Austria	9 095.0 e	13 143.4	13 698.8 e	13 738.6	14 239.2 e	14 634.3	14 025.1 e
Belgium	8 122.8	12 647.8	13 310.2	14 293.8	15 612.4	17 611.9	17 756.9 e
Canada	26 694.8	27 004.7	27 851.5	28 000.9	29 593.9	30 236.5	30 335.8 p
Chile	..	1 552.9	1 530.9 b	1 492.1	1 605.5 e	1 498.5 e	1 387.7 e
Colombia	661.1	2 280.7	1 723.6	1 686.1	2 068.8	2 200.9 e	1 838.1 e
Czech Republic	3 376.1	6 853.0	6 121.9	6 818.1	7 557.1	7 902.0	7 694.3
Denmark	6 192.0	8 515.7	8 901.1	8 674.1	8 951.6	8 873.4	8 912.2
Estonia	304.8	563.3	492.1	534.8	612.9	735.7	785.2
Finland	7 363.1	6 687.9	6 522.7	6 739.4	6 890.2	7 081.2	7 204.0
France	50 868.1	60 541.3	61 077.2	61 816.0	62 905.3	63 922.6	63 125.5 e p
Germany	82 366.3	114 097.6	116 904.2	124 393.9	128 211.8	131 969.4	125 566.6 e
Greece	2 088.4	2 797.4	2 896.9	3 356.7	3 594.6	3 846.2	4 138.5
Hungary	2 204.8	3 533.6	3 180.8	3 702.2	4 465.7 b	4 575.5	4 728.5
Iceland	360.9	355.1	365.0 e	375.7	378.3 e	450.5	446.4
Ireland	2 757.1	3 839.4 e	3 893.1 e	4 521.0 e	4 574.7 e	5 063.6 e	4 729.7 e
Israel	7 998.7 d	12 666.9 d	14 006.5 d	15 092.4 d	16 165.0 d	17 975.3 d e	18 600.4 d
Italy	24 566.5	29 994.8	31 016.5 b	31 619.5	33 176.9	34 213.0	32 166.1
Japan	154 899.9	168 514.0	162 761.3	168 668.2	172 588.8 b	171 839.9	167 142.9
Korea	33 986.3 d	76 922.0	79 364.7	88 135.8	95 437.7	99 970.9	103 135.2
Latvia	225.0	305.9	220.0	266.9	346.9	354.5	378.6
Lithuania	491	874	723	803	872	969	1 136
Luxembourg	750.6	769.4	817.1	809.6	777.9	810.0	724.4 e p
Mexico	7 136.1	9 577.0	8 875.6	7 673.5 e	7 335.4 e	6 767.2 e	6 509.2 e
Netherlands	13 594.6	18 282.0	18 724.0	19 517.7	19 613.8	20 423.3	20 865.0
New Zealand	1 545.2	2 121.8	..	2 521.7	..	2 801.8 p	..
Norway	4 057.3	6 061.8	6 258.0	6 682.9	6 813.5	7 006.7	6 907.9
Poland	3 930.7	10 232.0	10 133.8	11 410.0	14 051.9	16 078.9	16 503.5
Portugal	2 356.9	3 819.8	4 014.3	4 280.1	4 503.0	4 781.7	5 073.7
Slovak Republic	555.3	1 886.4	1 310.4	1 513.1	1 486.9	1 500.3	1 583.2
Slovenia	826.2	1 433.0	1 352.1	1 316.8	1 434.9	1 557.1	1 563.8
Spain	17 016.1	19 815.3	19 883.4	20 817.7	21 852.0	22 474.0	22 508.4
Sweden	13 290.4 b	15 489.1 v	15 948.9 e	16 939.9 v	17 055.9 e	17 743.1 v	17 880.8
Switzerland	..	16 639.9	..	17 198.4	..	18 580.0	..
Türkiye	6 932.3	17 734.3	19 603.8	21 401.6	23 715.2	24 848.0	25 873.2
United Kingdom	38 145.9	45 451.0	47 016.1 e	48 393.2	50 843.5 e	51 519.1	..
United States	390 306.5 d	507 401.0 b d	528 171.7 b d	549 877.5 d	586 964.9 d	632 654.6 d	664 065.7 p
EU27 (from 01/02/2020)	255 104.4 e	340 526.2 e	345 456.7 e	362 498.9 e	377 730.8 e	392 439.6 e	384 307.8 e
OECD-Total	**953 597.4 e**	**1 251 562.1 e**	**1 279 064.4 e**	**1 336 318.8 e**	**1 408 292.0 e**	**1 477 194.6 e**	**1 499 127.9 e**
Argentina	2 670.4	5 363.8	4 502.1	4 857.0	4 203.1	3 807.8	..
China	93 020.7	366 080.9	399 390.2	430 329.7	464 705.2	514 797.7	564 102.7 e
Romania	1 334.9	2 090.9	2 157.3	2 420.9	2 518.6	2 504.8	2 363.0
Russian Federation	27 032.1	38 818.6	38 947.8	39 921.0	36 616.4	39 201.3	40 322.3 e
Singapore	5 975.9	10 467.9	10 320.3	9 871.8	9 760.7	10 310.4	..
South Africa	4 620.0	5 551.1	5 715.4	5 890.6	5 384.5	4 852.8	..
Chinese Taipei	18 040.6	33 058.8	34 745.1	37 159.2	40 079.7	43 043.6	46 238.7

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 4. Gross domestic expenditure on R&D (GERD) per capita at current prices and PPP

USD

	2005	2015	2016	2017	2018	2019	2020
Australia	..	888.4 e	..	909.5 e	..	946.6 e	..
Austria	831.2 e	1 523.1	1 641.3 e	1 656.3	1 761.0 e	1 818.1	1 790.9 e
Belgium	594.1	1 121.9	1 226.3	1 345.1	1 502.5	1 714.9	1 792.4 e
Canada	716.1	756.4	803.5	815.1	868.5	860.5	857.8 p
Chile	..	86.4	86.8 b	87.3	94.1 e	85.9 e	83.0 e
Colombia	14.0	48.7	38.0	37.8	48.2	51.9 e	44.3 e
Czech Republic	256.0	650.0	602.9	687.0	781.6	826.2	828.3
Denmark	817.4	1 498.7	1 607.3	1 622.6	1 704.9	1 694.5	1 784.2
Estonia	147.0	402.0	365.5	406.0	484.3	589.0	644.0
Finland	1 065.3	1 220.3	1 224.2	1 297.7	1 367.0	1 408.8	1 483.5
France	625.8	909.3	952.4	977.3	1 017.9	1 067.4	1 096.5 e p
Germany	787.2	1 396.8	1 487.2	1 617.1	1 716.6	1 762.9	1 735.8 e
Greece	148.1	258.5	276.6	329.6	359.5	387.2	421.3
Hungary	157.3	359.0	329.7	388.5	481.1 b	495.1	531.7
Iceland	1 003.0	1 073.3	1 128.5 e	1 159.6	1 144.4 e	1 354.1	1 325.1
Ireland	482.3	817.6 e	841.7 e	977.1 e	990.1 e	1 072.7 e	1 007.1 e
Israel	1 000.7 d	1 512.1 d	1 707.6 d	1 822.5 d	1 914.5 d	2 057.0 d e	2 146.7 d
Italy	313.6	498.0	550.2 b	574.8	618.6	648.6	634.3
Japan	1 007.4	1 325.7	1 262.6	1 315.0	1 360.6 b	1 364.4	1 384.7
Korea	635.4 d	1 507.8	1 577.9	1 757.9	1 943.2	1 991.7	2 179.7
Latvia	73.3	154.7	116.3	146.6	197.3	203.1	222.1
Lithuania	109	301	261	303	341	383	454
Luxembourg	1 071.0	1 351.2	1 431.0	1 423.1	1 363.2	1 377.4	1 261.1 e p
Mexico	50.0	79.2	75.7	65.5 e	62.5 e	57.2 e	56.4 e
Netherlands	667.4	1 079.2	1 124.6	1 200.2	1 236.8	1 288.9	1 369.9
New Zealand	286.7	457.5	..	566.6	..	635.4 p	..
Norway	708.6	1 168.0	1 204.7	1 344.5	1 429.5	1 440.2	1 427.2
Poland	78.2	266.1	269.5	307.3	381.9	441.5	471.8
Portugal	172.2	368.8	404.8	436.0	471.4	504.8	552.8
Slovak Republic	81.9	347.9	234.5	266.7	262.1	264.0	285.6
Slovenia	338.1	694.5	681.4	681.2	759.1	832.3	852.9
Spain	303.5	427.0	444.2	479.1	506.2	522.1	530.7
Sweden	1 150.5 b	1 580.6 v	1 637.7 e	1 746.9 v	1 777.5 e	1 849.6 v	1 941.3
Switzerland	..	2 009.1	..	2 096.7	..	2 266.8	..
Türkiye	67.2	226.7	250.4	268.6	289.9	288.9	300.0
United Kingdom	507.2	698.1	734.0 e	769.1	815.6 e	838.1	..
United States	1 102.2 d	1 581.1 b d	1 650.6 b d	1 740.1 d	1 891.8 d	2 065.6 d	2 183.5 p
EU27 (from 01/02/2020)	451.7 e	766.5 e	808.7 e	866.9 e	926.1 e	970.6 e	984.5 e
OECD-Total	**626.7 e**	**943.8 e**	**976.5 e**	**1 031.6 e**	**1 104.9 e**	**1 163.9 e**	**1 207.5 e**
Argentina	57.6	124.4	107.7	131.3	115.1	105.1	..
China	65.9	264.7	282.3	300.6	331.1	373.2	413.4
Romania	39.6	105.5	116.8	136.6	147.0	152.4	150.9
Russian Federation	126.3	265.1	266.0	287.7	285.3	311.3	327.4
Singapore	1 263.3	1 891.2	1 855.2	1 810.5	1 821.3	1 930.9	..
South Africa	83.6	102.0	105.0	107.8	99.6	89.8	..
Chinese Taipei	671.6	1 407.2	1 458.8	1 549.5	1 709.9	1 868.0	2 034.5

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 5. Estimated civil GERD (Gross domestic expenditure on R&D) as a percentage of GDP

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	..	..	..	..	..	..	..
Belgium	1.79	..	..	..	..	..	..
Canada	..	..	..	..	..	..	..
Chile	..	0.38	0.37 b	0.36	0.37 e s	..	..
Colombia	0.17	0.36	0.27	0.26	0.31	0.32 e	0.29 e
Czech Republic	1.15	..	..	..	..	..	..
Denmark	..	..	..	..	..	..	..
Estonia	0.91 e	..	..	1.27	..	..	..
Finland	3.30	..	..	..	..	..	..
France	1.88	..	..	..	..	..	..
Germany	2.41 e	..	..	..	..	..	..
Greece	..	..	..	..	..	..	..
Hungary	0.91	1.33	1.18	1.31	..	..	..
Iceland	2.68	2.18	2.11 e	2.08	2.00 e	2.33	2.47
Ireland	1.19	1.18 e	1.18 e	1.25 e	1.17 e	1.23 e	1.08 e
Israel	4.04	4.26	4.51	4.66	4.80	5.14 e	5.44
Italy	..	..	..	..	..	..	..
Japan	3.10 e	3.21 e	..	..	..	..	..
Korea	2.46 d	3.84	3.86	4.11	4.36	4.45	4.61
Latvia	..	..	.. c	.. c	.. c	.. c	..
Lithuania	1	1	1	1	1	1	..
Luxembourg	1.56	1.25	1.27	1.24	1.17	1.18	1.07 e p
Mexico	..	..	..	..	..	..	..
Netherlands	..	..	..	..	..	..	..
New Zealand	..	1.22	..	1.34	..	1.40 p	..
Norway	..	..	..	..	..	..	..
Poland	..	..	..	..	..	..	..
Portugal	0.75	1.23	1.27	1.31	..	..	..
Slovak Republic	0.49	1.16	0.79	0.88	..	..	..
Slovenia	1.42	2.20	..	..	..	..	..
Spain	..	1.19	1.16	1.17	..	..	..
Sweden	3.24 b	..	..	..	..	..	..
Switzerland	..	..	..	..	..	..	..
Türkiye	..	0.86	0.92	..	..	..	..
United Kingdom	1.36	..	..	..	..	..	..
United States	2.08 d	..	..	..	..	..	..
EU27 (from 01/02/2020)	..	..	..	..	..	..	..
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	0.42	..	..	..	..	..	..
China	..	..	..	..	..	..	..
Romania	0.41	..	..	..	..	..	..
Russian Federation	..	..	..	..	..	..	..
Singapore	..	..	..	..	..	..	..
South Africa	0.81	0.75	0.78	0.79	0.72	0.64	..
Chinese Taipei	2.26	2.98	3.05	3.15	3.31	3.43	3.58

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 6. Basic research expenditure as a percentage of GDP

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	..	0.54 d	..	0.54 d	..	0.55 d	..
Belgium	..	0.38	..	0.29	..	0.40	..
Canada	..	..	..	..	..	..	..
Chile	..	0.13 m	0.11 b m	0.11 m	0.12 s	..	..
Colombia	..	..	..	..	..	..	..
Czech Republic	0.36	0.61	0.48	0.48	0.49	0.51	0.54
Denmark	0.45 e	0.58	..	0.53	..	0.54	..
Estonia	0.27	0.39	0.34	0.35	0.38	0.39	0.34
Finland	..	..	..	..	..	..	..
France	0.49	0.54	0.50 e	0.50 s	0.50 e s	0.50 e	..
Germany	..	..	..	..	..	..	..
Greece	..	0.35	..	0.36	..	0.41	0.52
Hungary	0.25	0.25 e	0.22 e	0.25 e	0.28 b e	0.30 e	0.33 e
Iceland	0.50	0.45	0.45	0.44	0.42 e	0.43	0.45
Ireland	0.28	0.22 e	..	0.20 e	..	..	..
Israel	0.65 d e	0.52 d e	0.52 d e	0.49 d e	0.50 d e	0.49 d e	..
Italy	0.29	0.33	0.32 b	0.30	0.31	0.31	0.34
Japan	0.38	0.39	0.39	0.42	0.41 b	0.40	0.40
Korea	0.39 d	0.69	0.64	0.62	0.64	0.68	0.70
Latvia	0.11	0.21	0.13	0.16	0.23	0.22	0.22
Lithuania	0	0	0	0	0	0	0
Luxembourg	..	0.47	..	0.45	..	0.48	..
Mexico	..	0.14	0.12	0.10 e	0.09 e	0.09 e	0.09 e
Netherlands	..	0.55	0.55	0.54	0.55	0.55	..
New Zealand	0.34	0.28	..	0.34	..	0.31	..
Norway	0.29	0.36	..	0.38	..	0.40	..
Poland	0.17	0.32	0.29	0.30	0.39	0.53	0.46
Portugal	0.19	0.29	0.29	0.29	0.29	0.30	0.31
Slovak Republic	0.23	0.50	0.32	0.33	0.34	0.33	0.36
Slovenia	0.20	0.39	0.35	0.33	0.37	0.40	0.47
Spain	0.19 m	0.27 e	0.26 e	0.26	0.26	0.29	0.33
Sweden	..	..	..	..	..	..	..
Switzerland	..	1.24	..	1.34	..	1.32	..
Türkiye	..	..	..	..	..	..	..
United Kingdom	..	0.27 e	0.29 e	0.29 e	0.31 e	0.31 e	..
United States	0.46 d	0.47 d	0.46 d	0.46 d	0.47 d	0.48 d e	0.52 d e p
EU27 (from 01/02/2020)	..	..	..	..	..	..	..
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	0.11	0.21 b	0.15	0.14	0.13	0.10	..
China	0.07	0.10	0.11	0.12	0.12	0.13	0.14
Romania	0.09 m	0.15	0.12	0.10	0.10	0.09	0.09
Russian Federation	0.13 m	0.16 d	0.15 d	0.15 d	0.16 d	0.17 d	0.19 d
Singapore	0.44	0.48	0.47	0.44	0.43	0.43	..
South Africa	0.16	0.20	0.22	0.22	0.21	0.22	..
Chinese Taipei	0.24	0.28	0.27	0.26	0.25	0.25	0.26

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 7. Total researchers in full-time equivalent

FTE

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	28 470 d e	43 562 d	46 993 d e	47 521 d	50 139 e	52 794 d	51 892 e
Belgium	33 146	53 178 b	54 280 e	54 010	57 456	60 619	64 053 e
Canada	136 700	162 960	158 980	162 270	175 020	182 760	..
Chile	..	8 175 d	8 985 d	9 099 d	9 804 d e	9 671 d e	9 962 e
Colombia	..	..	..	..	..	..	..
Czech Republic	24 169 b	38 081	37 338	39 181	41 198	42 500	44 206
Denmark	28 179	42 826	44 815	43 966	43 924	44 671 p	44 553 p
Estonia	3 331	4 187	4 338	4 674	4 968	4 995	5 098
Finland	39 582	37 516	35 908	37 047	37 891	39 984	41 707
France	202 507	279 470	285 488	296 324	305 439	313 374	321 550 e p
Germany	272 148	387 982	399 605	419 617	433 685	450 697	450 796
Greece	19 593 d	34 708 d	29 403 d	35 000 d	36 688 d	39 077 d	42 949 d
Hungary	15 878	25 316	25 804	28 426	37 606 d	39 295 d	42 099 d
Iceland	2 155	1 944 b	..	2 050	..	..	..
Ireland	11 587	24 521 e	24 316 e	24 445 e	22 808 e	23 537	23 929 e
Israel	..	..	..	..	..	..	..
Italy	82 489 d	125 875 d	133 706 b d	140 378 d	152 307 d	160 824 d	156 989 d
Japan	680 631 d	662 071 d	665 566 d	676 292 d	678 134 b d	681 821 d	689 889 d
Korea	179 812 d	356 447	361 292	383 100	408 370	430 690	446 739
Latvia	3 282 d	3 613 d	3 152 d	3 482 d	3 456 d	3 632 d	4 072
Lithuania	7 637	8 167	8 525	8 741	8 938	9 630	10 183
Luxembourg	2 227	2 610	2 767	2 936	2 863	3 126	2 937 e p
Mexico	43 922	34 282	38 883	39 125 e	39 189 e	41 745 e	44 966 e
Netherlands	47 854	83 488	87 612	91 023	95 475	97 713	102 077
New Zealand	12 986	25 000	..	24 000	..	28 000	..
Norway	21 200	30 632	31 913	33 632	34 337	35 898	36 316
Poland	62 162	82 594	88 165	114 585 d	117 789 d	120 780 d	124 600 d
Portugal	21 126	38 672	41 349	44 938	47 652	50 166	53 174
Slovak Republic	10 921 d	14 406 d	14 149 d	15 226 d	16 337 d	16 977 d	17 276
Slovenia	5 253	7 900	8 119	9 301 d	10 068 d	10 507 d	10 845
Spain	109 720	122 437 d	126 633 d	133 213 d	140 120 d	143 974 d	145 372 d
Sweden	55 001 b e	66 734 e	70 372 e	73 132	75 151 e	78 629	80 089
Switzerland	..	43 740	..	44 273	..	47 699	..
Türkiye	39 139	95 161	100 158	111 893	126 249	135 515	149 731
United Kingdom	248 599 b e	285 855	291 103 e	295 842	306 578 e	316 296	..
United States	1 103 198 e	1 370 110 e	1 373 194 e	1 434 176 e	1 553 328 e	1 586 497 e	..
EU27 (from 01/02/2020)	1 126 163 e	1 567 585 e	1 616 030 e	1 709 668 e	1 785 801 e	1 853 060 e	1 887 167 e
OECD-Total	**3 711 957 e**	**4 789 352 e**	**4 863 504 e**	**5 080 896 e**	**5 352 295 e**	**5 521 922 e**	**..**
Argentina	31 868	52 970	54 805	53 184	54 307	55 114	..
China	1 118 698 d	1 619 028	1 692 176	1 740 442	1 866 109	2 109 460	2 281 134
Romania	22 958	17 459	18 046	17 518	17 213	17 350	18 331
Russian Federation	464 577	449 180	428 884	410 617	405 772	400 663	397 187
Singapore	23 789	39 182	39 207	38 898	39 293	42 295	..
South Africa	17 303	26 159	27 656	29 515	29 111	28 358	..
Chinese Taipei	88 859	144 836	147 141	149 886	153 998	159 160	163 536

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 8. Total researchers in full-time equivalent per thousand total employment

Per thousand

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	7.4 d e	10.2 d	10.8 d e	10.8 d	11.2 e	11.6 d e	11.6 e
Belgium	7.8	11.5 b	11.6 e	11.4	11.9	12.4 e	13.1 e
Canada	8.3	9.0	8.7	8.7	9.2	9.4	..
Chile	..	1.0 d	1.1 d	1.1 d	1.2 d e	1.1 d e	1.3 e
Colombia	..	..	..	..	..	..	..
Czech Republic	4.9 b	7.3	7.1	7.3	7.6	7.8	8.3 e
Denmark	10.1	15.1	15.6	15.0	14.8	14.9 e p	15.0 e p
Estonia	5.4	6.7	6.9	7.3	7.6	7.7 e	8.0 e
Finland	16.4	14.9	14.2	14.5	14.4	15.0 e	15.9 e
France	7.7	10.2	10.4	10.6	10.8	11.0	11.4 e p
Germany	6.9	9.0	9.2	9.5	9.7	10.0	10.0 e
Greece	4.2 d	8.0 d	6.6 d	7.9 d	8.1 d	8.6 d	9.5 d e
Hungary	3.9	5.9	5.8	6.2	8.1 d	8.3 d e	9.0 d e
Iceland	13.3	10.8 b	..	10.4	..	..	..
Ireland	5.9	12.2 e	11.7 e	11.4 e	10.3 e	10.3	10.7 e
Israel	..	..	..	..	..	..	..
Italy	3.4 d	5.1 d	5.4 b d	5.6 d	6.0 d	6.3 d	6.3 d e
Japan	10.4 d	10.1 d	10.1 d	10.1 d	10.0 b d	9.9 d	10.1 d e
Korea	7.9 d	13.6	13.7	14.3	15.2	15.9 e	16.6 e
Latvia	3.4 d	4.1 d	3.6 d	3.9 d	3.8 d	4.0 d e	4.6 e
Lithuania	5	6	6	6	6	7 e	7 e
Luxembourg	7.2	6.4	6.6	6.8	6.4	6.7 e	6.2 e p
Mexico	1.3	0.9	1.0	1.0 e	1.0 e	1.1 e	1.2 e
Netherlands	5.7	9.5	9.8	9.9	10.2	10.2 e	10.7 e
New Zealand	6.3	10.6	..	9.5	..	10.6 e	..
Norway	9.1	11.3	11.8	12.2	12.3	12.7 e	13.0 e
Poland	4.4	5.2	5.5	7.0 d	7.2 d	7.4 d e	7.6 d e
Portugal	4.2	8.5	8.9	9.4	9.7	10.1 e	10.9 e
Slovak Republic	5.2 d	6.4 d	6.1 d	6.4 d	6.8 d	6.9 d	7.2 e
Slovenia	5.6	8.4	8.4	9.4 d	9.9 d	10.0 d e	10.4 e
Spain	5.6	6.6 d	6.7 d	6.9 d	7.1 d	7.1 d e	7.4 d e
Sweden	12.7 b e	13.9 e	14.4 e	14.6	14.7 e	15.3	15.8 e
Switzerland	..	8.9	..	8.8	..	9.4 e	..
Türkiye	2.0	3.6	3.7	4.0	4.4	4.9	5.7 e
United Kingdom	8.6 b e	9.1	9.2 e	9.2	9.4 e	9.6	..
United States	7.7 e	9.1 e	8.9 e	9.2 e	9.8 e	9.9 e	..
EU27 (from 01/02/2020)	5.9 e	7.9 e	8.0 e	8.4 e	8.6 e	8.9 e	9.1 e
OECD-Total	**6.9 e**	**8.3 e**	**8.3 e**	**8.6 e**	**8.9 e**	**9.1 e**	**..**
Argentina	2.1	3.0	3.0	2.9	2.9	2.9	..
China	1.5 d	2.1	2.2	2.3	2.5	2.8	3.0
Romania	2.5	2.0	2.1	2.0	2.0	2.0	2.2
Russian Federation	6.8	6.2	5.9	5.7	5.6	5.6	5.6
Singapore	10.3	10.7	10.7	10.6	10.6	11.2	..
South Africa	1.4	1.7	1.8	1.8	1.8	1.7	..
Chinese Taipei	8.9	12.9	13.1	13.2	13.5	13.8	14.2

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 9. Total R&D personnel in full-time equivalent

FTE

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	47 625 d e	71 396 d	75 165 d e	76 010 d	80 198 e	83 660 d	82 053 e
Belgium	53 517	77 520 b	79 109 e	82 686	88 594	93 524	96 828 e
Canada	218 590	244 880	228 590	231 850	250 760	256 120	..
Chile	..	15 261 d	16 626 d	16 608 d	16 848 d e	16 422 d e	16 348 e
Colombia	..	..	..	..	..	..	..
Czech Republic	43 370 b	66 433	65 783	69 736	74 969	79 245	80 958
Denmark	43 499	60 243	62 859	60 240	59 778	62 229 p	62 049 p
Estonia	4 362	5 636	5 772	6 048	6 183	6 394	6 449
Finland	57 471	50 367	47 429	48 999	50 011	51 494	53 519
France	349 681	426 428	432 245	442 222	453 387	461 891	470 586 e p
Germany	475 278	640 516	657 894	686 349	707 704	735 584	733 831
Greece	33 603 d	49 658 d	41 790 d	47 585 d	51 279 d	53 932 d	58 103 d
Hungary	23 239	36 847	35 757	40 432	54 654 d	56 943 d	59 628 d
Iceland	3 226	2 941	..	3 172	..	..	..
Ireland	16 690	34 346 e	34 373 e	33 803 e	31 396 e	32 170	32 757 e
Israel	..	..	..	..	..	..	..
Italy	175 248 d	259 167 d	290 040 b d	317 628 d	345 625 d	355 854 d	342 286 d
Japan	896 855 d	875 005 d	872 340 d	890 749 d	896 901 b d	903 367 d	911 620 d
Korea	215 345 d	442 027	447 408	471 201	501 175	525 675	545 435
Latvia	5 483 d	5 570 d	5 120 d	5 378 d	5 806 d	5 924 d	6 559
Lithuania	11 002	10 607	10 924	11 577	11 956	12 998	14 456
Luxembourg	4 392	5 260	5 403	5 545	5 468	5 790	5 562 e p
Mexico	83 685	57 016	65 828	65 412 e	64 602 e	66 889 e	69 988 e
Netherlands	93 599	139 382	144 482	150 399	156 875	160 422	166 422
New Zealand	18 929	33 000	..	34 000	..	39 000	..
Norway	29 966	42 409	43 918	46 234	46 601	48 723	48 947
Poland	76 761	109 249	111 789	144 103 d	161 993 d	164 006 d	173 392 d
Portugal	25 728	47 999	50 406	54 995	58 154	61 455	66 044
Slovak Republic	14 404 d	17 591 d	17 768 d	19 011 d	20 268 d	21 196 d	22 405
Slovenia	8 994	14 225	14 403	14 713 d	15 686 d	16 983 d	16 833
Spain	174 773	200 866 d	205 873 d	215 744 d	225 696 d	231 413 d	231 769 d
Sweden	77 557 b e	83 551 e	90 690 e	88 928 v	92 011 e	92 172 e v	95 463
Switzerland	..	81 451	..	78 908	..	85 853	..
Türkiye	49 251 e	122 288 e	136 953	153 552	172 119	182 847	199 371
United Kingdom	324 917 b e	414 539	423 815 e	444 619	465 681 e	475 093	..
United States	..	..	..	..	..	..	..
EU27 (from 01/02/2020)	1 876 603 e	2 480 000 e	2 556 322 e	2 692 860 e	2 831 818 e	2 921 548 e	2 956 756 e
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	45 361	78 713	81 030	80 009	83 856	84 953	..
China	1 364 799 d	3 758 848	3 878 057	4 033 597	4 381 444	4 800 768	5 234 508
Romania	33 222	31 331	32 232	32 586	31 933	31 665	33 189
Russian Federation	919 716	833 654	802 317	778 155	758 462	753 796	748 721
Singapore	28 586	45 454	45 096	44 515	44 816	48 513	..
South Africa	28 798	41 055	42 533	44 259	43 774	41 856	..
Chinese Taipei	149 154	245 401	250 495	255 229	262 307	271 579	279 647

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 10. Total R&D personnel in full-time equivalent per thousand total employment

Per thousand

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	12.3 d e	16.7 d	17.3 d e	17.2 d	17.9 e	18.4 d e	18.4 e
Belgium	12.5	16.8 b	16.9 e	17.4	18.4	19.1 e	19.8 e
Canada	13.3	13.5	12.5	12.4	13.2	13.2	..
Chile	..	1.9 d	2.0 d	2.0 d	2.0 d e	1.9 d e	2.2 e
Colombia	..	..	..	..	..	..	..
Czech Republic	8.8 b	12.8	12.5	13.0	13.8	14.6	15.2 e
Denmark	15.6	21.3	21.9	20.6	20.2	20.7 e p	20.9 e p
Estonia	7.1	9.0	9.2	9.4	9.5	9.9 e	10.2 e
Finland	23.8	20.0	18.7	19.1	19.0	19.3 e	20.4 e
France	13.3	15.6	15.7	15.9	16.1	16.2	16.6 e p
Germany	12.1	14.9	15.1	15.5	15.8	16.2	16.3 e
Greece	7.2 d	11.5 d	9.4 d	10.7 d	11.4 d	11.8 d	12.9 d e
Hungary	5.6	8.5	8.0	8.9	11.7 d	12.1 d e	12.8 d e
Iceland	19.9	16.3	..	16.1	..	..	..
Ireland	8.5	17.1 e	16.5 e	15.8 e	14.2 e	14.1	14.6 e
Israel	..	..	..	..	..	..	..
Italy	7.1 d	10.6 d	11.7 b d	12.6 d	13.6 d	14.0 d	13.7 d e
Japan	13.7 d	13.4 d	13.2 d	13.3 d	13.2 b d	13.2 d	13.4 d e
Korea	9.4 d	16.9	16.9	17.6	18.7	19.4 e	20.3 e
Latvia	5.7 d	6.3 d	5.8 d	6.1 d	6.4 d	6.6 d e	7.5 e
Lithuania	8	8	8	9	9	9 e	11 e
Luxembourg	14.3	13.0	12.9	12.8	12.2	12.5 e	11.8 e p
Mexico	2.6	1.5	1.7	1.7 e	1.6 e	1.7 e	1.9 e
Netherlands	11.2	15.8	16.2	16.4	16.7	16.7 e	17.4 e
New Zealand	9.2	14.1	..	13.4	..	14.8 e	..
Norway	12.9	15.7	16.2	16.8	16.7	17.2 e	17.5 e
Poland	5.5	6.8	6.9	8.8 d	9.9 d	10.0 d e	10.6 d e
Portugal	5.1	10.5	10.8	11.5	11.8	12.4 e	13.6 e
Slovak Republic	6.9 d	7.8 d	7.7 d	8.0 d	8.4 d	8.7 d	9.3 e
Slovenia	9.7	15.1	15.0	14.9 d	15.4 d	16.2 d e	16.2 e
Spain	8.9	10.9 d	10.9 d	11.1 d	11.4 d	11.4 d e	11.9 d e
Sweden	17.9 b e	17.4 e	18.5 e	17.7 v	18.0 e	18.0 e v	18.9 e
Switzerland	..	16.6	..	15.8	..	16.9 e	..
Türkiye	2.5 e	4.6 e	5.1	5.5	6.0	6.6	7.5 e
United Kingdom	11.3 b e	13.3	13.4 e	13.9	14.4 e	14.5	..
United States	..	..	..	..	..	..	..
EU27 (from 01/02/2020)	9.8 e	12.5 e	12.7 e	13.2 e	13.7 e	14.0 e	14.3 e
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	2.9	4.4	4.5	4.4	4.5	4.5	..
China	1.8 d	4.9	5.1	5.3	5.8	6.4	7.0
Romania	3.6	3.7	3.8	3.8	3.7	3.7	3.9
Russian Federation	13.5	11.5	11.1	10.8	10.5	10.5	10.6
Singapore	12.3	12.4	12.3	12.1	12.1	12.8	..
South Africa	2.3	2.6	2.7	2.7	2.7	2.6	..
Chinese Taipei	15.0	21.9	22.2	22.5	22.9	23.6	24.3

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 11. Business-financed GERD (Gross domestic expenditure on R&D) as a percentage of GDP

As a percentage of GDP

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	1.08 e	1.52	1.65 e	1.67	1.64 e	1.72	1.60 e
Belgium	1.07	1.42	..	1.69	..	2.03	..
Canada	0.97	0.74	0.74	0.73	0.77	0.78	0.79 p
Chile	..	0.13	0.13 b	0.11	0.11 e	0.11 e	0.12 e
Colombia	0.04	0.18	0.11	0.10	0.14	0.16 e	0.15 e
Czech Republic	0.56	0.66	0.66	0.70	0.76	0.74	0.71
Denmark	1.42	1.81	..	1.67	..	1.72	..
Estonia	0.35	0.60	0.60	0.56	0.58	0.80	0.88
Finland	2.22	1.57	1.55	1.58	1.54	1.52	1.63
France	1.07	1.23 s	1.24	1.24 s	1.24 s	1.24	..
Germany	1.65 d	1.93 d	1.92 d	2.02 d	2.05 d	2.04 d	1.96 e
Greece	0.18	0.30	0.40	0.52	0.52	0.53	0.60
Hungary	0.36 d	0.67	0.67	0.69	0.79 b	0.78	0.80
Iceland	1.29	0.78	0.79 e	0.76	0.80 e	0.90	0.96
Ireland	0.68	0.58 e	0.58 e	0.64 e	0.59 e	0.77 e	..
Israel	2.27 d	1.41 d	1.73 d	1.65 d	1.78 d	1.96 d e	..
Italy	0.41	0.67	0.71 b	0.74	0.78	0.82	0.80
Japan	2.38	2.53	2.43	2.48	2.55 b	2.54	2.56
Korea	1.89 d	2.97	3.01	3.27	3.46	3.56	3.69
Latvia	0.18	0.12	0.09	0.12	0.14	0.15	0.19
Lithuania	0	0	0	0	0	0	0
Luxembourg	1.24	0.60	..	0.61	..	0.60	..
Mexico	0.17	0.07	0.07	0.06 e	0.05 e	0.05 e	0.05 e
Netherlands	0.82	1.17	1.20	1.23	1.21	1.26	1.32
New Zealand	0.46	0.54	..	0.62	..	0.70 p	..
Norway	0.69	0.86	0.88	0.90	0.86	0.93	1.01
Poland	0.19	0.39	0.51	0.54	0.64	0.67	0.70
Portugal	0.27	0.53	0.57	0.61	0.64	0.67	0.84
Slovak Republic	0.18	0.29	0.37	0.43	0.41	0.39	0.40
Slovenia	0.78	1.52	1.39	1.18	1.22	1.26	1.06
Spain	0.51	0.56	0.56	0.58	0.61	0.61	0.69
Sweden	2.15 b	1.84	..	2.04	..	2.11	..
Switzerland	..	1.88	..	1.96	..	2.04	..
Türkiye	0.24 d	0.39	0.44	0.47	0.55	0.60	0.62
United Kingdom	0.65	0.81	0.87 e	0.89	0.93 e	0.92	..
United States	1.59 d	1.76 b	1.83	1.84	1.93	2.08	2.29 e
EU27 (from 01/02/2020)	0.93 e	1.12 e	1.15 e	1.19 e	1.22 e	1.23 e	..
OECD-Total	**1.31 e**	**1.44 e**	**1.46 e**	**1.49 e**	**1.54 e**	**1.61 e**	**1.71 e**
Argentina	0.13	0.11	0.10	0.10	0.11	0.12	..
China	0.88	1.54	1.60	1.62	1.64	1.70	1.86
Romania	0.15	0.18	0.24	0.27	0.29	0.26	0.26
Russian Federation	0.30	0.29	0.31	0.33	0.29	0.31	0.32
Singapore	1.26	1.14	1.07	0.98	0.95	1.05	..
South Africa	0.38	0.31	0.32	0.35	0.30	0.18	..
Chinese Taipei	1.56	2.33	2.40	2.53	2.69	2.83	2.99

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 12. Government-financed GERD (Gross domestic expenditure on R&D) as a percentage of GDP

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	0.85 e	0.99	0.95 d e	0.84	0.93 d e	0.84	1.07 d e
Belgium	0.44	0.55	..	0.53	..	0.56	..
Canada	0.63 e	0.52 e	0.53 e	0.55 e	0.55 e	0.55 e	0.62 e p
Chile	..	0.16	0.17 b	0.17	0.18 e	0.15 e	0.13 e
Colombia	0.07	0.12	0.09	0.10	0.08	0.08 e	0.07 e
Czech Republic	0.52	0.62	0.59	0.61	0.65	0.65	0.68
Denmark	0.66	0.92 d	..	0.83 d	..	0.83 d	..
Estonia	0.40	0.68	0.47	0.51	0.60	0.61	0.65
Finland	0.85	0.83	0.79	0.79	0.78	0.78	0.81
France	0.79	0.79 s	0.72	0.71 s	0.69 s	0.69	..
Germany	0.69 d	0.82 d	0.84 d	0.84 d	0.87 d	0.88 d	0.93 e
Greece	0.27	0.51	0.43	0.43	0.49	0.52	0.64
Hungary	0.45 d	0.46	0.31	0.42	0.49 b	0.49	0.52
Iceland	1.09	0.67	0.69 e	0.72	0.72 e	0.69	0.75
Ireland	0.38	0.31 e	0.30 e	0.30 e	0.29 e	0.28 e	..
Israel	0.58 d	0.55 d	0.50 d	0.51 d	0.50 d	0.49 d e	..
Italy	0.53	0.51	0.48 b	0.44	0.47	0.47	0.51
Japan	0.52 e	0.50 e	0.47 e	0.47 e	0.47 b e	0.47 e	0.50 e
Korea	0.58 d	0.94	0.90	0.93	0.93	0.96	1.08
Latvia	0.24	0.20	0.21	0.22	0.22	0.23	0.27
Lithuania	0	0	0	0	0	0	0
Luxembourg	0.26	0.58	..	0.53	..	0.51	..
Mexico	0.20	0.34	0.30	0.25 e	0.24 e	0.22 e	0.23 e
Netherlands	0.69	0.68	0.65	0.64	0.63	0.64	0.70
New Zealand	0.48	0.46	..	0.49	..	0.44 p	..
Norway	0.65	0.87	0.93	0.98	0.98	1.01	1.05
Poland	0.32	0.42	0.37	0.40	0.43	0.51	0.54
Portugal	0.42	0.55	0.55	0.54	0.55	0.56	0.60
Slovak Republic	0.28 e	0.37	0.32	0.31	0.32	0.33	0.36
Slovenia	0.53	0.44	0.41	0.43	0.46	0.50	0.54
Spain	0.47	0.50	0.48	0.47	0.47	0.47	0.54
Sweden	0.82 b	.. c	..	0.84	..	0.82	..
Switzerland	..	0.82	..	0.84	..	0.86	..
Türkiye	0.28 d	0.34	0.33	0.32	0.33	0.31	0.31
United Kingdom	0.51	0.45	0.43 e	0.43	0.45 e	0.46	..
United States	0.76 d	0.69 d	0.66 d	0.65 d	0.66 d	0.66 d	0.69 p
EU27 (from 01/02/2020)	0.60 e	0.64 e	0.62 e	0.61 e	0.62 e	0.63 e	..
OECD-Total	**0.62 e**	**0.62 e**	**0.59 e**	**0.59 e**	**0.60 e**	**0.60 e**	**0.64 e**
Argentina	0.27	0.47	0.39	0.39	0.32	0.28	..
China	0.34	0.44	0.42	0.42	0.43	0.46	0.47
Romania	0.22	0.20	0.19	0.18	0.17	0.16	0.15
Russian Federation	0.62	0.77	0.75	0.73	0.66	0.69	0.74
Singapore	0.77	0.83	0.82	0.72	0.69	0.69	..
South Africa	0.33	0.36	0.38	0.39	0.36	0.38	..
Chinese Taipei	0.74	0.64	0.66	0.63	0.63	0.63	0.61

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 13. Percentage of Gross domestic expenditure on R&D (GERD) financed by the business enterprise sector

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	45.6 e	49.7	53.0 e	54.7	53.1 e	54.8	49.8 e
Belgium	59.7	58.6	..	63.5	..	64.3	..
Canada	49.3	44.0	42.7	43.1	44.3	44.5	42.8 p
Chile	..	32.8	35.1 b	31.4	30.7 e	31.0 e	34.7 e
Colombia	23.8	48.4	41.0	38.1	45.0	49.3 e	53.4 e
Czech Republic	48.2	34.5	39.5	39.3	39.9	38.2	35.6
Denmark	59.5	59.1	..	57.1	..	59.2	..
Estonia	38.5	41.0	48.2	43.6	40.8	49.1	50.1
Finland	66.9	54.8	57.0	58.0	55.8	54.3	56.0
France	51.9	55.0 s	56.0	56.2 s	56.6 s	56.7	..
Germany	67.5 d	65.7 d	65.2 d	66.2 d	66.0 d	64.5 d	62.6 e
Greece	31.1	31.4	40.2	44.8	42.5	41.4	39.9
Hungary	39.4 d	49.7	56.4	52.7	52.4 b	52.9	50.2
Iceland	48.0	35.8	37.7 e	36.4	40.2 e	38.9	38.6
Ireland	57.4	48.7 e	49.0 e	51.3 e	50.5 e	62.8 e	..
Israel	56.2 d	33.2 d	38.3 d	35.3 d	37.2 d	38.1 d e	..
Italy	39.7	50.0	52.1 b	53.7	54.5	55.9	52.8
Japan	76.1	78.0	78.1	78.3	79.1 b	78.9	78.3
Korea	75.0 d	74.5	75.4	76.2	76.6	76.9	76.6
Latvia	34.3	20.0	21.6	24.1	22.3	24.3	27.0
Lithuania	21	29	39	35	38	34	39
Luxembourg	79.7	48.3	..	49.6	..	51.3	..
Mexico	41.5	17.4	18.8	19.1 e	17.5 e	18.2 e	17.8 e
Netherlands	46.3	54.4	55.8	56.4	56.7	57.6	56.9
New Zealand	41.1	43.8	..	46.0	..	49.9 p	..
Norway	46.8	44.2	43.2	42.8	42.0	43.2	44.5
Poland	33.4	39.0	53.1	52.5	53.2	50.7	50.6
Portugal	36.3	42.7	44.4	46.5	47.3	48.3	52.2
Slovak Republic	36.6	25.1	46.2	49.0	48.8	46.8	43.7
Slovenia	54.8	69.2	69.2	63.1	62.6	61.5	49.5
Spain	46.3	45.8	46.7	47.8	49.5	49.1	49.2
Sweden	63.9 b	57.3 v	..	60.8 v	..	62.4 v	..
Switzerland	..	61.9	..	64.5	..	64.7	..
Türkiye	43.3 d	44.6	46.7	49.4	53.6	56.3	57.2
United Kingdom	42.1	49.6	52.8 e	53.7	54.4 e	53.6	..
United States	63.7 d	63.3 b d	64.0 b d	63.4 d	64.0 d	65.5 d	66.2 e p
EU27 (from 01/02/2020)	55.5 e	55.9 e	57.6 e	58.5 e	58.6 e	58.3 e	..
OECD-Total	**62.4 e**	**61.8 e**	**62.6 e**	**62.8 e**	**63.3 e**	**63.9 e**	**63.8 e**
Argentina	31.0	17.2	18.2	17.8	21.3	26.5	..
China	67.0	74.7	76.1	76.5	76.6	76.3	77.5
Romania	37.2	37.3	49.4	54.4	57.1	54.6	55.6
Russian Federation	30.0	26.5	28.1	30.2	29.5	30.2	29.2
Singapore	58.6	52.6	51.4	51.8	52.2	55.3	..
South Africa	43.9	38.9	39.4	41.5	39.5	27.1	..
Chinese Taipei	66.9	77.7	77.6	79.2	80.3	81.0	82.5

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 14. Percentage of Gross domestic expenditure on R&D (GERD) financed by government

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	35.9 e	32.6	30.3 d e	27.6	30.3 d e	27.0	33.3 d e
Belgium	24.7	22.5	..	20.0	..	17.8	..
Canada	31.8 e	30.8 e	30.9 e	32.4 e	31.3 e	31.5 e	33.5 e p
Chile	..	42.6	45.5 b	47.1	47.7 e	45.3 e	39.3 e
Colombia	43.0	32.1	35.0	36.9	26.8	23.8 e	25.0 e
Czech Republic	45.2	32.2	35.6	34.6	34.1	33.7	34.0
Denmark	27.6	30.2 d	..	28.3 d	..	28.7 d	..
Estonia	43.5	46.4	37.6	40.2	42.8	37.2	37.0
Finland	25.7	28.9	28.9	29.0	28.3	27.8	27.7
France	38.6	35.4 s	32.4	32.5 s	31.5 s	31.4	..
Germany	28.5 d	27.9 d	28.5 d	27.7 d	27.8 d	27.8 d	29.7 e
Greece	46.8	53.1	42.6	37.6	40.6	41.1	42.7
Hungary	49.4 d	34.6	26.2	31.9	32.3 b	33.3	32.5
Iceland	40.5	30.8	32.9 e	34.5	36.0 e	29.8	30.4
Ireland	32.0	26.1 e	25.8 e	23.8 e	24.7 e	22.6 e	..
Israel	14.5 d	12.8 d	11.1 d	11.0 d	10.5 d	9.6 d e	..
Italy	50.7	38.0	35.2 b	32.3	32.8	32.3	33.7
Japan	16.8 e	15.4 e	15.0 e	15.0 e	14.6 b e	14.7 e	15.2 e
Korea	23.0 d	23.7	22.7	21.6	20.6	20.7	22.4
Latvia	46.0	32.7	47.7	43.6	34.3	35.4	38.1
Lithuania	63	35	39	36	32	32	28
Luxembourg	16.6	46.6	..	43.1	..	43.2	..
Mexico	49.2	79.7	77.6	76.8 e	78.2 e	76.7 e	76.9 e
Netherlands	38.8	31.6	30.2	29.4	29.6	29.4	30.3
New Zealand	43.2	37.1	..	36.3	..	31.1 p	..
Norway	43.6	44.9	45.7	46.7	48.0	47.0	46.1
Poland	57.7	41.8	38.9	38.3	35.4	38.8	39.0
Portugal	55.2	44.3	42.6	41.0	40.6	40.2	37.3
Slovak Republic	57.0 e	31.9	41.0	35.5	38.0	40.5	39.6
Slovenia	37.2	19.9	20.2	22.9	23.7	24.7	25.1
Spain	43.0	40.9	40.0	38.9	37.6	37.9	38.5
Sweden	24.4 b	.. c	..	25.0 v	..	24.2 v	..
Switzerland	..	27.1	..	27.7	..	27.4	..
Türkiye	50.1 d	38.5	35.1	33.6	32.3	29.4	28.4
United Kingdom	32.7	27.9	26.1 e	25.9	26.1 e	27.1	..
United States	30.4 d	24.7 b d	23.2 b d	22.5 d	21.9 d	20.7 d	20.1 p
EU27 (from 01/02/2020)	35.6 e	32.1 e	31.2 e	30.1 e	30.0 e	29.8 e	..
OECD-Total	**29.5 e**	**26.6 e**	**25.6 e**	**24.9 e**	**24.5 e**	**23.8 e**	**23.9 e**
Argentina	65.3	76.4	73.1	70.7	65.1	60.8	..
China	26.3	21.3	20.0	19.8	20.2	20.5	19.8
Romania	53.5	41.7	39.6	35.9	33.3	34.4	32.9
Russian Federation	61.9	69.5	68.2	66.2	67.0	66.3	67.8
Singapore	35.7	38.3	39.3	37.8	37.9	36.6	..
South Africa	38.2	44.6	46.0	46.7	47.5	56.3	..
Chinese Taipei	31.5	21.2	21.4	19.8	18.8	18.1	16.8

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 15. Percentage of Gross domestic expenditure on R&D (GERD) financed by the Higher Education and PNP sectors

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	0.4 e	1.1	0.5 d e	1.1	0.3 d e	1.2	0.3 d e
Belgium	3.3	2.4	..	3.5	..	3.2	..
Canada	10.1 e	15.5 e	15.7 e	15.7 e	15.3 e	14.4 e	14.5 e p
Chile	..	11.8	15.5 b	17.1	17.0 e	18.2 e	23.9 e
Colombia	29.0	15.1	18.2	19.9	23.9	21.0 e	16.4 e
Czech Republic	1.2	0.8	0.9	1.1	1.1	1.1	1.3
Denmark	2.8 d	4.4 d	..	5.4 d	..	6.5 d	..
Estonia	1.0	0.5	0.6	1.3	1.7	0.4	0.5
Finland	1.2	1.8	2.0	2.2	2.0	2.4	2.3
France	1.9	3.6 s	3.8	3.7 s	4.0 s	3.8	..
Germany	0.3 d	0.3 d	0.3 d	0.3 d	0.3 d	0.4 d	0.4 e
Greece	3.1	2.9	2.7	2.6	2.5	2.8	3.0
Hungary	0.3 d	0.7	0.7	0.5	0.5 b	0.7	0.7
Iceland	0.3	8.1	8.1 e	4.6	5.2 e	0.8 m	0.1
Ireland	1.9	1.6 e	1.5 e	1.5 e	1.6 e	1.3 e	..
Israel	4.6 d	1.5 d	1.4 d	1.1 d	1.0 d	0.9 d e	..
Italy	1.7	3.7	2.9 b	2.3	2.2	2.1	2.2
Japan	6.8 e	6.1 e	6.2 e	6.1 e	5.8 b e	5.8 e	6.0 e
Korea	1.3 d	1.0	1.0	0.9	0.9	0.8	0.8
Latvia	1.2	2.2	2.9	2.5	1.8	1.7	1.7
Lithuania	6	2	3	4	3	3	3
Luxembourg	0.1	1.8	..	1.6	..	1.6	..
Mexico	8.2	2.3	2.9	3.3 e	3.5 e	4.0 e	4.1 e
Netherlands	2.8	2.5	2.5	2.3	2.5	2.6	2.5
New Zealand	10.6	11.4	..	10.0	..	9.8 p	..
Norway	1.6	1.6	1.7	1.7	1.7	1.6	1.5
Poland	3.2	2.4	2.6	3.2	4.4	3.5	3.2
Portugal	3.8	5.7	4.9	5.1	4.9	4.7	4.0
Slovak Republic	0.3	3.6	2.1	1.7	1.9	2.1	2.4
Slovenia	0.7	0.3	0.4	0.9	0.6	0.5	0.8
Spain	5.0	5.2	5.2	5.1	5.0	4.8	4.6
Sweden	3.6 b	4.3 v	..	4.0 v	..	4.2 v	..
Switzerland	..	2.1	..	2.0	..	1.9	..
Türkiye	5.8 d	15.0	14.5	13.5	12.1	12.8	12.4
United Kingdom	5.9	5.5	5.5 e	5.3 b	5.1 e	4.8	..
United States	5.9 d	7.1 b d	7.1 b d	7.2 d	7.0 d	6.7 d	6.5 p
EU27 (from 01/02/2020)	1.7 e	2.2 e	..	2.2 e	..	2.2 e	..
OECD-Total	**4.9 e**	**5.3 e**	**5.3 e**	**5.2 e**	**5.1 e**	**5.0 e**	**4.9 e**
Argentina	2.9	3.1	2.4	2.3	2.5	2.5	..
China	..	..	..	..	..	..	..
Romania	4.0	1.8	1.2	1.7	0.6	0.5	0.6
Russian Federation	0.5	1.4	1.0	1.0	1.1	1.1	1.2
Singapore	1.3	2.2	3.0	3.3	3.0	3.0	..
South Africa	4.4	3.5	2.9	1.6	2.1	3.0	..
Chinese Taipei	1.4	0.9	0.8	0.8	0.7	0.7	0.6

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 16. Percentage of Gross domestic expenditure on R&D (GERD) financed by the rest of the world

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	18.0 e	16.6	16.2 e	16.6	16.3 e	17.0	16.6 e
Belgium	12.4	16.5	..	13.0	..	14.7	..
Canada	8.8	9.8	10.8	8.8	9.1	9.6	9.2 p
Chile	..	12.9	3.9 b	4.5	4.7 e	5.5 e	2.1 e
Colombia	4.2	4.5	5.8	5.2	4.2	5.9 e	5.2 e
Czech Republic	5.4	32.5	24.0	25.0	24.9	27.0	29.1
Denmark	10.1	6.3	..	9.2	..	5.6	..
Estonia	17.1	12.2	13.6	15.0	14.7	13.3	12.4
Finland	6.3 b	14.5	12.1	10.8	13.9	15.5	14.1
France	7.5	7.8 s	7.8	7.8 s	7.7 s	8.1	..
Germany	3.7 d	6.2 d	5.9 d	5.8 d	5.8 d	7.4 d	7.3 e
Greece	19.0	12.7	14.6	15.0	14.3	14.6	14.4
Hungary	10.7 d	15.0	16.6	14.9	14.8 b	13.1	16.6
Iceland	11.2	25.4	21.4 e	24.5	18.6 e	30.5	30.9
Ireland	8.6	23.6 e	23.6 e	23.3 e	23.2 e	13.3 e	..
Israel	24.7 d	52.5 d	49.2 d	52.6 d	51.2 d	51.4 d e	..
Italy	8.0	8.3	9.8 b	11.7	10.5	9.6	11.3
Japan	0.3	0.5	0.7	0.6	0.6 b	0.6	0.5
Korea	0.7 d	0.8	0.9	1.3	1.9	1.6	0.2
Latvia	18.5	45.0	27.8	29.8	41.5	38.6	33.2
Lithuania	10.5	34.3	19.2	24.4	26.2	30.6	30.3
Luxembourg	3.6	3.3	..	5.7	..	3.9	..
Mexico	1.1	0.6	0.7	0.9 e	0.9 e	1.1 e	1.3 e
Netherlands	12.0	11.5	11.5	11.9	11.2	10.4	10.4
New Zealand	5.2	7.7	..	7.0	..	9.1 p	..
Norway	8.1	9.2	9.5	8.8	8.2	8.2	7.8
Poland	5.7	16.7	5.5	6.0	7.0	7.0	7.2
Portugal	4.7	7.4	8.0	7.3	7.2	6.8	6.5
Slovak Republic	6.0	39.4	10.7	13.7	11.2	10.7	14.3
Slovenia	7.3	10.6	10.2	13.1	13.1	13.3	24.6
Spain	5.7	8.0	8.1	8.2	7.9	8.2	7.7
Sweden	8.1 b	.. c	..	10.1 v	..	8.8 v	..
Switzerland	..	8.9	..	5.8	..	6.0	..
Türkiye	0.8	1.9	3.7	3.5	2.0	1.5	2.0
United Kingdom	19.3	17.1	15.6 e	15.1	14.4 e	14.5	..
United States	.. k	4.9 b d	5.7 b d	7.0 d	7.1 d	7.1 d	7.2 e p
EU27 (from 01/02/2020)	7.1 e	9.9 e	9.0 e	9.2 e	9.1 e	9.6 e	..
OECD-Total	**..**	**6.3 e**	**6.6 e**	**7.1 e**	**7.1 e**	**7.3 e**	**7.3 e**
Argentina	0.8	3.3	6.3	9.2	11.1	10.2	..
China	0.9	0.7	0.7	0.6	0.4	0.1	0.4
Romania	5.3	19.2	9.9	7.9	9.0	10.6	10.9
Russian Federation	7.6	2.6	2.7	2.6	2.3	2.4	1.8
Singapore	4.4	6.8	6.3	7.1	6.9	5.1	..
South Africa	13.6	13.0	11.7	10.2	10.9	13.5	..
Chinese Taipei	0.2	0.2	0.2	0.2	0.1	0.1	0.1

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 17. Percentage of Gross domestic expenditure on R&D (GERD) performed by the business enterprise sector

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	53.4 e	..	52.7 e	..	51.0 e	..
Austria	69.8 e	71.4	70.2 b e	69.9	69.9 e	70.3	69.5 e
Belgium	68.0	69.9	68.6	70.2	71.7	73.7	73.9 e
Canada	55.8 d	53.3	53.5	52.7	53.7	53.7	51.6 p
Chile	..	34.3	37.7 b	34.2	33.5 e	33.6 e	35.6 e
Colombia	18.8	47.8	39.8	35.1	42.1	47.5 e	51.6 e
Czech Republic	58.2 b	54.3	61.1	62.9	61.9	61.6	61.0
Denmark	68.3	63.5	65.1	63.4	63.1	62.1	61.6
Estonia	45.1	46.1	51.5	47.2	42.3	53.3	55.0
Finland	70.8	66.7	65.8	65.3	65.7	65.6	67.0
France	62.1	64.7	65.1	65.4	65.5	65.9	66.2 e p
Germany	69.2	68.7	68.2	69.1	68.9	68.9	66.6 e
Greece	31.0	33.0	42.2	48.8	48.2	46.1	46.1
Hungary	43.2 d	73.4 d	74.1 d	73.1 d	75.6 b d	75.1 d	76.5 d
Iceland	51.5	66.0 d	64.4 d e	64.3 d	64.3 d e	68.7 d	67.9 d
Ireland	65.5	71.8 e	72.2 e	74.3 e	72.9 e	74.5 e	70.0 e
Israel	81.5 d	85.2 d	86.6 d	87.9 d	88.3 d	89.7 d e	90.3 d
Italy	50.4	58.2	60.8 b	62.4	63.1	63.2	61.8
Japan	76.4	78.5	78.8	78.8	79.4 b	79.2	78.7
Korea	76.9 d	77.5	77.7	79.4	80.3	80.3	79.1
Latvia	40.7	24.7	24.5	27.2	24.9	26.3	30.9
Lithuania	20.4	27.4	35.0	36.8	41.8	43.2	48.2
Luxembourg	86.4	52.7	55.5	55.8	53.2	54.3	51.3 e p
Mexico	46.9	18.6	22.2	22.5 e	21.1 e	21.8 e	21.5 e
Netherlands	52.9	64.3	65.7	66.3	66.4	66.7	66.6
New Zealand	41.6	51.1	..	54.4	..	59.6 p	..
Norway	53.5	53.9	53.3	52.6	51.5	53.0	54.3
Poland	31.8	46.6	65.7 b	64.5	66.1	62.8	62.8
Portugal	38.5	46.4	48.4	50.4	51.4	52.5	57.0
Slovak Republic	49.8	28.0	50.4	54.1	54.1	54.8	54.1
Slovenia	58.8	76.3	75.7	74.8	74.2	73.8	73.3
Spain	53.8	52.5	53.7	55.0	56.5	56.1	55.6
Sweden	72.8 b	69.7 v	69.6 e	71.3 v	71.0 e	71.7 v	72.3
Switzerland	..	67.9	..	67.1	..	67.5	..
Türkiye	33.8	50.0	54.2	56.9	60.4	64.2	64.8
United Kingdom	61.4	66.8	68.1 e	68.1	67.4 e	67.4	..
United States	69.3 d	72.4 b d	73.2 b d	73.6 d	74.0 d	74.9 d	75.3 e p
EU27 (from 01/02/2020)	62.3 e	63.9 e	65.2 e	66.0 e	66.2 e	66.2 e	65.4 e
OECD-Total	**67.8 e**	**69.5 e**	**70.2 e**	**70.8 e**	**71.3 e**	**71.8 e**	**71.7 e**
Argentina	32.2	21.2 b	23.9	27.1	31.3	36.1	..
China	68.3	76.8	77.5	77.6	77.4	76.4	76.6
Romania	49.7	44.0	55.2	56.7	59.3	57.8	59.0
Russian Federation	68.0	59.2	58.7	60.1	55.6	60.7	56.6
Singapore	66.1	59.4	58.0	59.2	59.6	60.9	..
South Africa	58.3	42.7	41.4	41.0	39.3	31.0	..
Chinese Taipei	67.0	77.6	77.5	79.0	80.3	80.9	82.5

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 18. Percentage of Gross domestic expenditure on R&D (GERD) performed by the higher education sector

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	30.6 e	..	34.0 e	..	35.7 e	..
Austria	24.7 e	23.5	22.2 b e	22.4	22.4 e	21.8	22.4 e
Belgium	22.3	20.3	21.2	19.8	18.4	16.7	16.9 e
Canada	34.0	39.3	39.4	39.8	38.9	39.2	39.3 p
Chile	..	38.5	43.1 b p	45.9	47.0 e	49.1 e	47.6 e
Colombia	48.3	27.9	29.0	29.1	29.1	24.1 e	21.3 e
Czech Republic	18.6	24.9	20.4	19.6	21.5	21.8	21.6
Denmark	24.6	33.9	32.4	33.2	33.6	34.5	34.6
Estonia	41.4	41.4	35.5	39.6	44.5	35.3	33.6
Finland	19.0	24.4	25.1	25.4	25.2	25.4	24.6
France	18.8	20.8	20.5	20.6	20.4	20.1	20.2 e p
Germany	16.8	17.3	18.0 b	17.4	17.6	17.4	18.7 e
Greece	47.5	37.8	31.9	28.3	28.4	30.6	31.8
Hungary	25.1 d	12.1 d	11.1 d	13.3 d	12.7 b d	14.2 d	13.0 d
Iceland	22.0	29.4	30.8 e	31.5	31.5 e	28.1	28.7
Ireland	27.1	23.8 e	23.6 e	21.9 e	23.0 e	21.7 e	25.9 e
Israel	14.9 d	12.1 d	10.9 d	9.6 d	9.2 d	8.1 d e	7.6 d
Italy	30.2 b	25.5 e	24.2 b e	23.6 e	22.8 e	22.5 e	23.1 e
Japan	13.4	12.3	12.3	12.0	11.6 b	11.7	11.7
Korea	9.9 d	9.1	9.1	8.5	8.2	8.3	9.0
Latvia	40.6	49.7	43.8	46.7	52.4	54.8	50.2
Lithuania	54.6	55.5	38.9	35.3	35.9	36.4	36.3
Luxembourg	1.5	18.2	19.1	20.4	20.7	21.9	23.3 e p
Mexico	28.7	50.3	50.4	50.2 e	51.2 e	50.8 e	50.9 e
Netherlands	34.7	29.7	28.3	28.0	27.7	27.6	27.8
New Zealand	32.5	28.0	..	24.5	..	23.8 p	..
Norway	30.8	31.1	32.6	33.7	34.6	34.3	33.2
Poland	31.6	28.9	31.4	32.9	31.7	35.6	34.9
Portugal	35.4	45.5	44.7	42.5	41.6	40.5	36.0
Slovak Republic	20.4	43.8	27.7	24.7	24.3	25.2	26.2
Slovenia	16.7	10.2	10.8	11.2	11.9	11.8	12.2
Spain	29.0	28.1	27.5	27.1	26.4	26.6	26.6
Sweden	22.0 b	26.7 v	26.8 e	24.9 v	25.3 e	23.7 b v	23.1
Switzerland	..	28.6	..	29.5	..	28.9	..
Türkiye	54.6	39.7	36.3	33.5	30.3	29.2	28.4
United Kingdom	25.7	24.4	23.2 e	23.4	23.5 e	23.5	..
United States	13.9 d	12.7 b d	12.7 b d	12.6 d	12.1 d	11.5 d	11.3 d p
EU27 (from 01/02/2020)	22.2 e	22.6 e	22.2 e	21.8 e	21.7 e	21.6 e	22.2 e
OECD-Total	**17.6 e**	**17.5 e**	**17.4 e**	**17.0 e**	**16.7 e**	**16.3 e**	**16.2 e**
Argentina	25.8	26.0	25.8	25.2	26.4	23.7	..
China	9.9	7.0	6.8	7.2	7.4	8.1	7.7
Romania	13.7	17.4	11.3	10.6	9.8	10.2	8.8
Russian Federation	5.8	9.6	9.1	9.0	9.7	10.6	9.8
Singapore	24.2	29.4	30.8	29.6	28.8	27.6	..
South Africa	19.3	30.5	32.7	33.6	35.8	41.1	..
Chinese Taipei	11.4	9.9	9.4	9.0	8.9	8.4	7.8

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 19. Percentage of Gross domestic expenditure on R&D (GERD) performed by the government sector

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	12.7 e	..	10.1 e	..	9.5 e	..
Austria	5.2 e	4.6	7.1 b e	7.1	7.1 e	7.3	7.5 e
Belgium	8.4	9.2	9.6	9.4	9.2	8.8	8.3 e
Canada	9.7	7.0	6.6	7.0	7.0	6.7	8.8 p
Chile	..	7.8	12.9 b	13.1	12.6 e	11.3 e	11.1 e
Colombia	5.7	2.2	8.1	9.6	7.6	7.8 e	6.2 e
Czech Republic	22.8 b	20.4	18.2	17.2	16.4	16.3	17.1
Denmark	6.5	2.2	2.2	3.1	2.9	3.0	3.4
Estonia	11.3	10.8	11.4	11.8	11.4	10.2	9.8
Finland	9.6	8.2	8.2	8.5	8.3	8.1	7.6
France	17.8	13.0	12.7	12.4	12.4	12.3	11.9 e p
Germany	14.1 d	14.1 d	13.8 d	13.5 d	13.5 d	13.7 d	14.6 d e
Greece	20.3	28.1	25.0	22.1	22.4	22.4	21.5
Hungary	28.0 d	13.3 d	13.4 d	12.6 d	10.9 b d	10.0 d	9.9 d
Iceland	23.5	4.7	4.7 e	4.2	4.2 e	3.2	3.4
Ireland	7.4	4.4 e	4.2 e	3.8 e	4.2 e	3.8 e	4.1 e
Israel	2.7 d	1.7 d	1.6 d	1.6 d	1.6 d	1.4 d e	1.3 d
Italy	17.3	13.1	12.6 b	12.4	12.5	12.6	13.2
Japan	8.3	7.9	7.5	7.8	7.8 b	7.8	8.3
Korea	11.9 d	11.7	11.5	10.7	10.1	10.0	10.1
Latvia	18.7	25.6	31.8	26.1	22.8	18.9	18.8
Lithuania	25.0	17.1	26.1	27.9	22.2	20.4	15.5
Luxembourg	12.1 d	29.1 d	25.5 d	23.9 d	26.0 d	23.8 d	25.4 e p
Mexico	23.2	30.1	26.4	26.2 e	26.6 e	26.2 e	26.3 e
Netherlands	12.4 d	6.1 d	6.1 d	5.6 d	5.9 d	5.7 d	5.6 d
New Zealand	25.9	21.0	..	21.1	..	16.7 p	..
Norway	15.7	15.0	14.2	13.7	13.9	12.7	12.4
Poland	36.4	24.4	2.5 b	2.3	1.9	1.3	2.0
Portugal	14.6	6.5	5.3	5.5	5.3	5.1	4.9
Slovak Republic	29.7 d	27.9	21.4	20.8	21.2	20.0	19.7
Slovenia	24.2	13.5	13.4	13.8	13.5	13.8	13.8
Spain	17.0	19.1	18.5	17.7	16.8	17.0	17.5
Sweden	4.9 b	3.4 v	3.4 e	3.6 v	3.6 e	4.5 b v	4.4
Switzerland	..	0.9 d	..	0.9 d	..	0.9	..
Türkiye	11.6	10.3	9.5 d	9.6 d	9.2 d	6.6 d	6.8 d
United Kingdom	10.6	6.6	6.5 e	6.3	7.0 e	6.9	..
United States	12.4 d	10.8 b d	9.8 b d	9.6 d	9.7 d	9.5 d	9.5 d p
EU27 (from 01/02/2020)	14.7 e	12.7 e	11.8 e	11.6 e	11.4 e	11.4 e	11.6 e
OECD-Total	**12.0 e**	**10.6 e**	**9.9 e**	**9.7 e**	**9.7 e**	**9.5 e**	**9.7 e**
Argentina	39.7	51.2	49.5	46.8	41.1	39.1	..
China	21.8	16.2	15.7	15.2	15.2	15.5	15.7
Romania	34.2	38.3	33.3	32.4	30.6	31.8	31.9
Russian Federation	26.1	31.1	32.0	30.4	34.4	28.3	32.8
Singapore	9.7	11.2	11.2	11.2	11.6	11.5	..
South Africa	20.8	24.0	23.1	22.3	20.8	23.5	..
Chinese Taipei	21.0	12.1	12.8	11.7	10.7	10.6	9.6

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 20. Percentage of Gross domestic expenditure on R&D (GERD) performed by the private non-profit sector

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	3.24 e	..	3.21 e	..	3.74 e	..
Austria	0.30 e	0.49	0.49 e	0.55	0.55 e	0.54	0.56 e
Belgium	1.31	0.55	0.61	0.56	0.72	0.75	0.89 e
Canada	0.53	0.47	0.45	0.48	0.44	0.46	0.34 p
Chile	..	19.35	6.36 b	6.83	6.86 e	6.00 e	5.79 e
Colombia	27.25	22.04	23.05	26.23	21.11	20.58 e	20.85 e
Czech Republic	0.51	0.39	0.25	0.28	0.22	0.28	0.29
Denmark	0.67	0.35	0.35	0.31	0.35	0.41	0.36
Estonia	2.20	1.80	1.54	1.41	1.68	1.16	1.64
Finland	0.58	0.77	0.86	0.82	0.81	0.89	0.82
France	1.29	1.57	1.64	1.58	1.58	1.65	1.74 e p
Germany	..	..	..	..	..	..	..
Greece	1.26	1.12	0.89	0.80	1.06	0.84	0.58
Hungary	..	..	..	..	..	..	..
Iceland	2.99	..	..	..	..	..	..
Ireland	..	..	..	..	..	..	..
Israel	0.97 d	1.02 d	0.96 d	0.96 d	0.94 d	0.84 d e	0.74 d
Italy	2.12	3.19	2.48 b	1.71	1.58	1.78	1.90
Japan	1.86	1.33	1.38	1.38	1.27 b	1.34	1.37
Korea	1.36 d	1.64	1.59	1.41	1.41	1.43	1.84
Latvia	0.00	..	..	..	..	..	..
Lithuania	..	..	..	..	..	..	..
Luxembourg	..	..	..	..	..	..	..
Mexico	1.13	0.93	0.99	1.10 e	1.12 e	1.23 e	1.30 e
Netherlands	..	..	..	..	..	..	..
New Zealand	..	..	..	..	..	..	..
Norway	..	..	..	..	..	..	..
Poland	0.31	0.16	0.44	0.35	0.30	0.30	0.25
Portugal	11.52	1.58	1.60	1.56	1.62	1.91	2.08
Slovak Republic	0.08	0.40	0.49	0.41	0.42	0.03	0.03
Slovenia	0.22	0.04	0.02	0.22	0.33	0.61	0.70
Spain	0.14	0.20	0.24	0.21	0.26	0.27	0.29
Sweden	0.31 b	0.19 v	0.19 e	0.12 v	0.11 e	0.12 e v	0.12 e
Switzerland	..	2.55	..	2.50	..	2.67	..
Türkiye	..	..	..	..	..	..	..
United Kingdom	2.32	2.22	2.18 e	2.17	2.13 e	2.19	..
United States	4.35 d e	4.10 b d e	4.28 b d e	4.26 d e	4.13 d e	4.01 d e	3.98 d e p
EU27 (from 01/02/2020)	0.89 e	0.86 e	0.82 e	0.72 e	0.71 e	0.75 e	0.78 e
OECD-Total	**2.64 e**	**2.44 e**	**2.49 e**	**2.43 e**	**2.39 e**	**2.40 e**	**2.45 e**
Argentina	2.23	1.61	0.77 b	0.90	1.14	1.14	..
China	..	..	..	..	..	..	..
Romania	2.44	0.30	0.23	0.29	0.22	0.21	0.31
Russian Federation	0.18	0.14	0.21	0.41	0.30	0.43	0.73
Singapore	..	..	..	..	..	..	..
South Africa	1.60	2.76	2.85	3.14	4.04	4.38	..
Chinese Taipei	0.48	0.31	0.30	0.24	0.13	0.13	0.13

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 21. Total researchers in headcount

Headcount

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	..	78 051 d	..	83 648 d	..	93 179 d	..
Belgium	48 757	73 709 b	..	78 867	..	91 757	..
Canada	..	..	..	..	..	..	..
Chile	..	13 015 d	14 181 d	14 392 d	15 467 d e	15 438 d e	15 751 e
Colombia	..	..	..	..	..	..	..
Czech Republic	37 542	56 605	56 178	59 789	61 966	63 690	65 193
Denmark	43 460	60 492	60 782	60 085	60 389	61 573 p	61 481 p
Estonia	5 734	7 181	6 845	7 344	7 281	7 734	8 659
Finland	50 773	55 728	53 752	54 139	55 415	58 291	61 292
France	251 599	383 843	396 594	416 217 p	429 959 p	..	..
Germany	406 253	586 030	..	623 125	..	667 394	..
Greece	33 396 d	60 736 d	..	61 616 d	..	66 451 d	72 234 d
Hungary	31 407	38 418	38 915	42 729	54 970 d	58 091 d	62 177 d
Iceland	3 821	3 722 b	..	3 783	..	..	..
Ireland	17 653	33 117 e	..	34 721 e	..	37 003	..
Israel	..	..	..	..	..	..	..
Italy	125 534 d	174 327 d	185 916 b d	195 560 d	210 419 d	222 165 d	217 052 d
Japan	861 901 d	907 455 d	917 725 d	930 720 d	935 658 d	942 180 d	951 726 d
Korea	234 702 d	453 262	460 769	482 796	514 170	538 136	558 045
Latvia	5 748 d	7 827 d	7 400 d	7 504 d	7 439 d	7 724 d	8 394
Lithuania	11 918.00	17 293.00	17 746.00	18 767.00	19 198.00	18 811.00	19 431.00
Luxembourg	2 443	3 207	..	3 540	..	3 722	..
Mexico	..	48 812	54 357	54 578 e	54 539 e	58 013 e	62 356 e
Netherlands	57 782	118 902	124 568	124 834	130 153	136 034	139 928
New Zealand	22 186	39 000	..	40 000	..	44 000	..
Norway	36 555	52 181	54 601	57 934	59 629	61 657	63 103
Poland	97 875	118 494	132 547	187 905 d	192 833 d	194 607 d	196 420 d
Portugal	37 769	81 005	85 780	89 659	96 123	100 823	104 681
Slovak Republic	17 526 d	24 396 d	26 720 d	26 861 d	28 755 d	28 851 d	28 696
Slovenia	7 644	11 308	11 282	14 079 d	15 388 d	15 925 d	16 328
Spain	181 023	214 227 d	218 680 d	225 995 d	234 798 d	241 372 d	244 187 d
Sweden	82 459 d	108 761 e	..	107 042 b	..	111 179	..
Switzerland	..	70 834	..	71 657	..	77 492	..
Türkiye	83 856	190 784	191 769	210 769	230 030	243 773	257 930
United Kingdom	364 807 e	496 953 e	510 980 e	520 936 e	535 477 e	548 498 e	..
United States	..	..	..	..	..	..	..
EU27 (from 01/02/2020)	..	..	..	..	..	..	..
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	49 050	82 407	86 562	84 284	88 872	90 747	..
China	..	..	..	..	..	..	..
Romania	29 608	27 253	27 801	27 367	27 471	27 168	28 090
Russian Federation	391 121 e	379 411 e	370 379 e	359 793 e	347 854 e	348 221	346 497
Singapore	27 969	43 159	43 177	42 838	43 329	46 125	..
South Africa	39 266	51 877	56 761	61 840	62 166	62 002	..
Chinese Taipei	115 954	183 022	184 898	187 971	193 035	199 144	203 970

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 22. Women researchers as a percentage of total researchers

Based on headcount

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	..	29.5 d	..	30.1 d	..	30.4 d	..
Belgium	29.6	34.1 b	..	34.8	..	32.6	..
Canada	..	..	..	..	..	..	..
Chile	..	33.0 d	33.1 d	34.4 d	32.4 d e	34.8 d e	34.9 e
Colombia	..	..	..	..	..	..	..
Czech Republic	28.8	26.9	26.7	26.8	26.6	27.2	27.6
Denmark	29.7	33.8	..	35.7	..	35.3 p	..
Estonia	40.8	43.9	43.6	42.2	43.9	42.4	42.5
Finland	30.2	32.3	32.5	33.2	33.7	33.7	33.4
France	28.0	27.0 e	28.0	28.3 p	..	..	..
Germany	21.3	28.0	..	27.9	..	28.1	..
Greece	36.4 d	38.0 d	..	37.8 d	..	39.0 d	38.8 d
Hungary	34.2	30.8	30.8	30.5	28.0 d	30.0 d	28.5 d
Iceland	39.3	45.6 b	..	46.4	..	..	..
Ireland	30.3	36.1 e	..	36.3 e	..	38.1 e	..
Israel	..	..	..	..	..	..	..
Italy	32.3 d	36.0 d	35.2 b d	34.3 d	33.8 d	34.2 d	34.9 d
Japan	11.9 d	15.3 d	15.7 d	16.2 d	16.6 d	16.9 d	17.5 d
Korea	12.9 d	18.9	19.7	20.1	20.4	21.0	21.4
Latvia	51.5 d	51.0 d	52.2 d	52.2 d	50.7 d	50.6 d	50.0
Lithuania	48.65	50.74	51.57	49.51	49.00	49.08	49.07
Luxembourg	18.2	28.4	..	28.1	..	27.4	..
Mexico	..	34.7	33.7	33.5 e	33.2 e	32.8 e	32.3 e
Netherlands	21.0	25.2	26.1	26.1	27.0	27.9	28.6
New Zealand	..	..	..	..	..	..	..
Norway	31.6	37.4	37.6	38.1	38.8	38.6	38.7
Poland	39.3	37.0	36.4	38.1 d	37.9 d	37.6 d	36.6 d
Portugal	44.4	44.1	43.5	43.7	43.3	42.8	42.5
Slovak Republic	41.5 d	42.2 d	41.4 d	41.9 d	41.2 d	41.0 d	41.1
Slovenia	34.8	36.5	34.5	32.3 d	32.5 d	33.3 d	33.6
Spain	36.7	40.0 d	40.2 d	40.5 d	40.8 d	41.3 d	41.5 d
Sweden	35.7 d	33.7 e	..	32.6 b	..	33.3	..
Switzerland	..	33.5	..	35.2	..	35.8	..
Türkiye	36.1	37.3	36.7	37.0	36.8	37.0	36.7
United Kingdom	35.7 e	38.6 e	38.7 e	38.7 e	38.6 e	39.0 e	..
United States	..	..	..	..	..	..	..
EU27 (from 01/02/2020)	..	..	..	..	..	..	..
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	50.5	52.6	53.0	53.8	53.3	53.0	..
China	..	..	..	..	..	..	..
Romania	45.3	46.2	45.8	46.7	46.2	46.9	47.3
Russian Federation	42.4 e	40.3 e	40.0 e	39.5 e	39.2 e	39.1	38.8
Singapore	26.3	30.2	30.7	30.7	30.8	30.8	..
South Africa	39.7	45.0	45.1	44.9	45.7	46.2	..
Chinese Taipei	19.6	22.2	22.3	22.6	22.6	22.7	22.9

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 23. Business enterprise expenditure on R&D (BERD) at current prices and PPP

Million USD

	2005	2015	2016	2017	2018	2019	2020
Australia	7 515.5	11 304.5	..	11 801.7	..	12 255.5	..
Austria	4 770.9 e	9 387.0	10 071.0 b e	10 178.5	10 874.3 e	11 350.5	11 105.1 e
Belgium	4 233.8	8 845.5	9 532.2	10 744.3	12 307.6	14 530.6	15 287.4 e
Canada	12 886.0 d	14 385.7	15 511.4	15 699.0	17 286.0	17 366.2	16 823.2 p
Chile	..	532.7	594.1	550.2	591.3 e	551.2 e	574.5 e
Colombia	109.5	1 090.4	716.7	635.0	982.7	1 207.7 e	1 130.4 e
Czech Republic	1 523.5 b	3 721.4	3 894.6	4 572.2	5 145.2	5 433.7	5 402.4
Denmark	3 023.3	5 405.2	5 991.4	5 931.2	6 235.1	6 121.0	6 406.8
Estonia	93.2	259.4	263.7	268.5	287.4	437.4	492.9
Finland	3 958.3	4 458.6	4 429.2	4 664.2	4 951.0	5 106.3	5 496.4
France	24 554.5	39 155.1	41 440.8	42 875.9	44 994.1	47 681.3	49 343.9 e p
Germany	44 288.0	78 332.2	83 477.7	92 358.9	98 037.3	100 959.4	96 203.5 e
Greece	504.0	922.0	1 257.9	1 728.6	1 858.0	1 914.4	2 080.1
Hungary	685.1 d	2 595.1 d	2 398.7 d	2 779.9 d	3 555.5 b d	3 633.0 d	3 963.7 d
Iceland	152.9	234.3 d	243.9 d e	256.1 d	259.7 d e	335.6 d	330.0 d
Ireland	1 314.6	2 758.0	2 886.6 e	3 487.2	3 506.3 e	3 938.0	3 512.9 e
Israel	5 677.4 d	10 792.5 d	12 629.5 d	13 953.2 d	15 012.9 d	16 690.3 d e	17 859.9 d
Italy	9 186.6	17 444.9	20 110.4 b	21 510.6	23 390.5	24 473.8	23 300.8
Japan	98 384.0	132 268.5	126 216.4	131 290.7	136 634.0	136 253.9	136 910.0
Korea	23 531.2 d	59 635.5	62 822.4	71 695.7	80 520.2	82 702.0	89 254.6
Latvia	66.9	75.6	55.7	77.4	94.5	102.1	130.6
Lithuania	73.54	239.40	261.29	315.02	399.26	463.24	611.94
Luxembourg	431.1	405.7	463.7	473.9	441.9	465.0	408.1
Mexico	2 510.0	1 782.4	2 053.8	1 818.8 e	1 645.3 e	1 568.5 e	1 542.2 e
Netherlands	5 761.6	11 747.2	12 581.6	13 638.0	14 159.1	14 911.0	15 909.4
New Zealand	495.1	1 083.9	..	1 491.3	1 637.3	1 896.7	1 979.3
Norway	1 752.6	3 266.6	3 360.3	3 732.6	3 912.1	4 081.6	4 170.5
Poland	947.8	4 765.4	6 799.5 b	7 614.9	9 694.9	10 648.6	11 370.6
Portugal	695.5	1 772.0	2 023.9	2 264.2	2 493.9	2 725.8	3 242.5
Slovak Republic	219.8	527.3	641.3	784.8	772.0	789.4	843.3
Slovenia	398.0	1 092.9	1 065.1	1 052.3	1 167.1	1 283.4	1 314.8
Spain	7 128.0	10 410.1	11 088.6	12 252.3	13 366.6	13 805.0	13 973.7
Sweden	7 564.0 b	10 794.2	11 307.5 e	12 531.6	12 832.5 e	13 631.4	14 541.5
Switzerland	..	11 297.5	..	11 888.1	..	13 127.0	..
Türkiye	1 554.8	8 868.1	10 764.3	12 269.6	14 265.1	15 315.0	16 213.4
United Kingdom	18 809.0	30 349.1	32 790.5	34 573.6	36 535.6	37 712.4	39 096.4 b
United States	226 159.0 d	367 312.0 b	390 336.0 b	416 601.0	457 861.0	508 420.0	542 948.0 e
EU27 (from 01/02/2020)	122 200.5 e	217 477.1 e	234 666.0 e	255 018.5 e	273 860.5 e	287 929.2 e	288 574.1 e
OECD-Total	**527 240.1 e**	**869 335.8 e**	**914 826.9 e**	**980 352.5 e**	**1 062 371.7 e**	**1 133 894.7 e**	**1 179 806.8 e**
Argentina	716.1	1 139.6 b	1 121.6	1 565.2	1 604.0	1 705.2	..
China	58 904.9	281 121.2	304 448.6	326 502.0	360 203.6	402 101.3	446 883.9
Romania	420.0	920.0	1 270.1	1 517.5	1 699.2	1 706.7	1 715.4
Russian Federation	12 317.7	22 982.7	22 903.7	25 408.6	23 291.2	27 713.3	27 141.5
Singapore	3 560.1	6 218.0	6 029.3	6 010.5	6 123.2	6 709.3	..
South Africa	2 318.5	2 371.6	2 399.9	2 467.7	2 214.2	1 598.0	..
Chinese Taipei	10 252.5	25 663.2	26 622.0	28 869.4	32 393.0	35 684.3	39 570.2

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 24. Business enterprise expenditure on R&D (BERD) as a percentage of GDP

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	1.05	1.00	..	0.95	..	0.92	..
Austria	1.66 e	2.18	2.19 b e	2.14	2.16 e	2.20	2.24 e
Belgium	1.22	1.70	1.73	1.87	2.05	2.33	2.50 e
Canada	1.10 d	0.90	0.92	0.89	0.93	0.94	0.95 p
Chile	..	0.13	0.14	0.12	0.12 e	0.11 e	0.12 e
Colombia	0.03	0.17	0.11	0.09	0.13	0.15 e	0.15 e
Czech Republic	0.68 b	1.04	1.02	1.11	1.18	1.19	1.21
Denmark	1.63	1.94	2.01	1.86	1.87	1.80	1.83
Estonia	0.41	0.68	0.64	0.60	0.60	0.87	0.96
Finland	2.35	1.91	1.79	1.78	1.81	1.84	1.95
France	1.27	1.44	1.45	1.44	1.44	1.44	1.55 e p
Germany	1.69	2.01	2.00	2.11	2.14	2.18	2.09 e
Greece	0.18	0.32	0.42	0.56	0.58	0.59	0.70
Hungary	0.40 d	0.98 d	0.87 d	0.96 d	1.14 b d	1.11 d	1.22 d
Iceland	1.38	1.44 d	1.36 d e	1.34 d	1.29 d e	1.60 d	1.68 d
Ireland	0.78	0.85	0.85 e	0.93	0.85 e	0.91	0.75 e
Israel	3.30 d	3.63 d	3.91 d	4.09 d	4.24 d	4.61 d e	4.91 d
Italy	0.53	0.78	0.83 b	0.85	0.90	0.92	0.93
Japan	2.39	2.54	2.45	2.49	2.56	2.54	2.58
Korea	1.94 d	3.08	3.10	3.41	3.63	3.72	3.81
Latvia	0.21	0.15	0.11	0.14	0.16	0.17	0.22
Lithuania	0.2	0.3	0.3	0.3	0.4	0.4	0.6
Luxembourg	1.35	0.66	0.70	0.69	0.62	0.64	0.55
Mexico	0.19	0.08	0.09	0.07 e	0.06 e	0.06 e	0.06 e
Netherlands	0.94	1.38	1.41	1.45	1.42	1.46	1.55
New Zealand	0.47	0.63	..	0.73	0.79	0.84	0.87
Norway	0.79	1.04	1.09	1.10	1.05	1.14	1.24
Poland	0.18	0.47	0.63 b	0.67	0.80	0.83	0.87
Portugal	0.29	0.58	0.62	0.67	0.69	0.73	0.92
Slovak Republic	0.25	0.32	0.40	0.48	0.45	0.45	0.49
Slovenia	0.83	1.67	1.52	1.39	1.44	1.51	1.57
Spain	0.59	0.64	0.64	0.67	0.70	0.70	0.78
Sweden	2.45 b	2.24	2.26 e	2.40	2.36 e	2.43	2.52
Switzerland	..	2.07	..	2.04	..	2.13	..
Türkiye	0.19	0.44	0.51	0.54	0.62	0.68	0.71
United Kingdom	0.95	1.09	1.12	1.13	1.16	1.15	1.25 b
United States	1.73 d	2.02 b	2.09 b	2.14	2.23	2.38	2.60 e
EU27 (from 01/02/2020)	1.05 e	1.28 e	1.30 e	1.34 e	1.37 e	1.40 e	1.43 e
OECD-Total	**1.42 e**	**1.62 e**	**1.63 e**	**1.68 e**	**1.74 e**	**1.81 e**	**1.92 e**
Argentina	0.14	0.13 b	0.13	0.15	0.15	0.16	..
China	0.89	1.58	1.63	1.64	1.66	1.71	1.84
Romania	0.21	0.21	0.27	0.29	0.30	0.28	0.28
Russian Federation	0.68	0.65	0.65	0.67	0.55	0.63	0.62
Singapore	1.42	1.29	1.20	1.12	1.08	1.15	..
South Africa	0.50	0.34	0.34	0.34	0.30	0.21	..
Chinese Taipei	1.57	2.33	2.39	2.53	2.69	2.83	3.00

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 25. Business enterprise expenditure on R&D (BERD) at 2010 prices and PPP

Million 2015 USD

	2005	2015	2016	2017	2018	2019	2020
Australia	8 934.1	11 304.5	..	11 200.5	..	11 088.0	..
Austria	6 346.6 e	9 387.0	9 617.4 b e	9 599.5	9 949.2 e	10 291.4	9 753.4 e
Belgium	5 524.4	8 845.5	9 130.5	10 037.0	11 191.9	12 988.7	13 119.2 e
Canada	14 897.8 d	14 385.7	14 889.6	14 756.8	15 891.9	16 227.8	15 641.1 p
Chile	..	532.7	577.0	510.3	537.8 e	503.3 e	493.5 e
Colombia	124.5	1 090.4	686.3	591.7	871.2	1 046.2 e	949.2 e
Czech Republic	1 963.6 b	3 721.4	3 743.0	4 285.4	4 681.4	4 871.1	4 690.1
Denmark	4 226.3	5 405.2	5 791.7	5 499.7	5 650.4	5 510.1	5 489.3
Estonia	137.4	259.4	253.4	252.4	259.5	392.2	431.5
Finland	5 215.1	4 458.6	4 294.5	4 397.8	4 524.0	4 648.2	4 826.0
France	31 597.2	39 155.1	39 764.8	40 407.1	41 226.6	42 138.7	41 774.7 e p
Germany	56 972.2	78 332.2	79 682.6	85 950.8	88 318.7	90 954.4	83 683.6 e
Greece	647.0	922.0	1 222.7	1 636.9	1 731.1	1 773.5	1 907.9
Hungary	952.0 d	2 595.1 d	2 358.2 d	2 706.7 d	3 376.1 b d	3 435.8 d	3 615.0 d
Iceland	185.9	234.3 d	235.2 d e	241.7 d	243.3 d e	309.6 d	303.3 d
Ireland	1 806.4	2 758.0	2 811.3 e	3 359.8	3 333.1 e	3 772.6	3 312.4 e
Israel	6 518.8 d	10 792.5 d	12 125.7 d	13 266.4 d	14 272.9 d	16 115.6 d e	16 794.7 d
Italy	12 372.1	17 444.9	18 857.9 b	19 721.0	20 951.0	21 613.6	19 878.3
Japan	118 417.4	132 268.5	128 178.9	132 903.2	137 073.2	136 018.6	131 465.2
Korea	26 119.6 d	59 635.5	61 694.3	69 985.3	76 630.1	80 278.7	81 557.8
Latvia	91.7	75.6	53.8	72.6	86.3	93.2	117.2
Lithuania	100.1	239.4	253.0	295.4	364.8	418.9	547.7
Luxembourg	648.8	405.7	453.2	451.6	414.2	440.0	371.5
Mexico	3 350.3	1 782.4	1 972.4	1 727.5 e	1 549.6 e	1 475.8 e	1 402.6 e
Netherlands	7 191.0	11 747.2	12 300.0	12 946.7	13 030.8	13 622.4	13 892.7
New Zealand	643.3	1 083.9	..	1 372.1	1 528.2	1 668.5	1 728.1
Norway	2 170.7	3 266.6	3 333.6	3 515.7	3 510.2	3 713.1	3 752.7
Poland	1 248.1	4 765.4	6 654.5 b	7 358.8	9 287.0	10 103.9	10 369.6
Portugal	906.6	1 772.0	1 943.7	2 158.1	2 316.6	2 510.0	2 890.3
Slovak Republic	276.8	527.3	659.9	818.9	804.0	822.6	856.1
Slovenia	486.1	1 092.9	1 023.6	984.7	1 064.7	1 149.3	1 146.4
Spain	9 153.2	10 410.1	10 685.5	11 441.4	12 347.1	12 615.3	12 514.7
Sweden	9 677.2 b	10 794.2	11 097.5 e	12 082.4	12 101.4 e	12 721.9	12 936.5
Switzerland	..	11 297.5	..	11 537.6	..	12 547.2	..
Türkiye	2 345.3	8 868.1	10 628.0	12 172.5	14 333.2	15 951.6	16 771.2
United Kingdom	23 416.9	30 349.1	31 995.3	32 940.0	34 282.3	34 704.8	34 281.9 b
United States	270 579.2 d	367 312.0 b	386 462.9 b	404 784.9	434 494.5	473 994.8	500 156.9 e
EU27 (from 01/02/2020)	158 700.8 e	217 477.1 e	225 135.3 e	239 132.1 e	249 942.5 e	259 947.7 e	251 169.2 e
OECD-Total	**644 219.3 e**	**869 335.8 e**	**899 257.4 e**	**947 963.3 e**	**1 005 292.1 e**	**1 062 538.2 e**	**1 076 737.5 e**
Argentina	860.8	1 139.6 b	1 075.8	1 314.8	1 316.0	1 374.4	..
China	63 551.4	281 121.2	309 386.7	333 883.8	359 752.9	393 400.7	431 839.8 e
Romania	663.7	920.0	1 190.6	1 373.0	1 494.6	1 447.7	1 394.2
Russian Federation	18 375.5	22 982.7	22 865.4	24 010.2	20 356.1	23 779.1	22 822.0 e
Singapore	3 947.7	6 218.0	5 981.7	5 839.6	5 819.2	6 281.0	..
South Africa	2 691.7	2 371.6	2 366.9	2 412.4	2 114.9	1 506.4	..
Chinese Taipei	12 095.8	25 663.2	26 935.6	29 372.6	32 188.5	34 837.4	38 169.6

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 26. Business enterprise expenditure on R&D (BERD) as a percentage of value added in industry

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	1.55	1.55	..	1.43	..	1.39 e	..
Austria	2.52 e	3.36	3.38 b e	3.29	3.32 e	3.38 e	3.52 e
Belgium	1.92	2.74	2.80	3.03	3.33	3.77 e	4.09 e
Canada	1.65 d	1.43	1.49	1.42	1.48	1.49	1.51 e p
Chile	..	0.19	0.21	0.18	0.18 e	0.17 e	0.18 e
Colombia	0.05	0.26	0.16	0.14	0.20	0.23 e	0.23 e
Czech Republic	0.97 b	1.50	1.48	1.61	1.73	1.75	1.81 e
Denmark	2.83	3.33	3.43	3.17	3.17	3.04 e	3.13 e
Estonia	0.61	1.05	1.02	0.95	0.93	1.37 e	1.55 e
Finland	3.84	3.38	3.16	3.07	3.13	3.17 e	3.41 e
France	2.15	2.49	2.51	2.50	2.50	2.49	2.67 e p
Germany	2.62	3.17	3.14	3.30	3.36	3.46	3.39 e
Greece	0.29	0.59	0.79	1.03	1.07	1.07	1.27 e
Hungary	0.63 d	1.57 d	1.40 d	1.54 d	1.83 b d	1.79 d e	2.00 d e
Iceland	2.29	2.31 d	2.19 d e	2.21 d	2.11 d e	2.62 d	2.90 d e
Ireland	1.14	1.11	1.11 e	1.20	1.09 e	1.17	0.98 e
Israel	5.45 d e	6.10 d	6.58 d	6.95 d e	7.17 d e	7.80 d e	8.31 d e
Italy	0.83	1.27	1.35 b	1.38	1.45	1.49	1.54 e
Japan	3.19	3.55	3.42	3.47	3.57	3.58	3.63 e
Korea	2.74 d e	4.42	4.46	4.91	5.26	5.44 e	5.58 e
Latvia	0.32	0.25	0.17	0.23	0.26	0.27 e	0.35 e
Lithuania	0.2	0.4	0.4	0.5	0.6	0.6 e	0.8 e
Luxembourg	2.04	1.00	1.04	1.02	0.91	0.94 e	0.81 e
Mexico	0.25	0.11	0.12	0.10 e	0.09 e	0.08 e	0.09 e
Netherlands	1.44	2.12	2.19	2.24	2.22	2.28 e	2.45 e
New Zealand	0.69	0.98	..	1.14	1.22	1.31 e	1.36 e
Norway	1.19	1.68	1.81	1.81	1.72	1.90 e	2.15 e
Poland	0.26	0.66	0.90 b	0.94	1.13	1.18 e	1.26 e
Portugal	0.49	0.98	1.06	1.14	1.19	1.25 e	1.63 e
Slovak Republic	0.36	0.46	0.59	0.71	0.68	0.68	0.77 e
Slovenia	1.26	2.56	2.33	2.11	2.17	2.26 e	2.39 e
Spain	0.88	1.03	1.02	1.06	1.12	1.11 e	1.30 e
Sweden	3.92 b	3.55	3.63 e	3.85	3.80 e	3.90	4.16 e
Switzerland	..	3.01	..	3.00	..	3.14 e	..
Türkiye	0.28	0.63	0.74	0.77	0.87	0.96	1.00 e
United Kingdom	1.54	1.79	1.85	1.84	1.89	1.88	2.05 b e
United States	2.69 d	3.20 b	3.31 b	3.38	3.51	3.74	3.99 e
EU27 (from 01/02/2020)	1.64 e	2.04 e	2.06 e	2.12 e	2.18 e	2.22 e	2.32 e
OECD-Total	**2.15 e**	**2.50 e**	**2.53 e**	**2.58 e**	**2.68 e**	**2.79 e**	**2.96 e**
Argentina	0.20	0.21 b e	0.20 e	0.24 e	0.25 e	0.26 e	..
China	1.03 e	1.89 e	1.97 e	2.00 e	2.03 e	2.10 e	2.26 e
Romania	0.29	0.31	0.38	0.41	0.43	0.40	0.41
Russian Federation	1.01 e	0.96	0.96	0.98	0.81	0.93	0.94
Singapore	1.69 e	1.60 e	1.49 e	1.39 e	1.32 e	1.40 e	..
South Africa	0.69 e	0.50 e	0.50 e	0.50 e	0.44 e	0.31 e	..
Chinese Taipei	2.11 e	3.08	3.15	3.29	3.52	3.73	3.95

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 27. Business enterprise researchers in full-time equivalent

FTE

	2005	2015	2016	2017	2018	2019	2020
Australia	23 794	33 016	..	34 576	..	35 048	..
Austria	18 155 d e	27 872 d	29 615 d e	29 948 d	31 598 e	33 868 d	32 849 e
Belgium	16 769	28 474 b	29 532 e	29 358	31 288	33 885	36 316 e
Canada	84 410	95 580	91 750	93 560	105 610	110 490	..
Chile	..	2 237 d	2 651 d	2 627 d	2 739 d e	2 680 d e	2 647 e
Colombia	..	..	..	..	..	..	..
Czech Republic	9 716 b	19 161	19 185	20 206	21 150	21 707	22 527
Denmark	17 624	25 011	26 976	26 095	25 666	26 132 p	25 912 p
Estonia	883	1 152	1 318	1 585	1 652	1 950	2 108
Finland	21 967	21 296	20 257	20 544	21 328	22 865	24 649
France	106 837	166 814	170 571	180 642	189 012	195 503	202 218 e p
Germany	166 874	230 823	235 758 e	252 759	261 634 e	276 964	272 171
Greece	6 033 d	5 035 d	5 608 d	9 660 d	10 041 d	10 286 d	11 672 d
Hungary	5 008	15 026	15 247	17 527	21 467 d	22 801 d	24 648 d
Iceland	1 012	813 b	..	876	..	..	..
Ireland	6 768	11 296	11 185 e	12 569	12 192 e	12 938	13 324 e
Israel	..	..	..	..	..	..	..
Italy	27 939 d	50 500 d	56 197 b d	62 478 d	73 335 d	78 111 d	73 694 d
Japan	481 496 d	486 198 d	488 828 d	498 732 d	504 746 d	507 473 d	515 469 d
Korea	137 706 d	284 136	287 869	311 566	334 810	354 381	365 559
Latvia	468 d	604 d	582 d	647 d	684 d	758 d	846
Lithuania	716.0	1 888.0	1 956.0	2 554.0	2 832.0	3 147.0	2 930.0
Luxembourg	1 696	1 048	1 194	1 275	1 134	1 282	1 105
Mexico	19 888	10 107	14 500	15 268 e	15 971 e	18 242 e	21 239 e
Netherlands	22 898	55 608	59 700	62 672	66 601	67 824	70 569
New Zealand	3 700	7 400	..	8 000	9 000	10 000	11 000
Norway	10 239 d	14 921 d	15 330 d	16 342 d	16 679 d	17 540 d	18 525 d
Poland	9 412	28 746	40 838 b	53 947 d	56 727 d	57 913 d	63 339 d
Portugal	4 014	11 785	13 426	15 407	16 746	19 220	21 979
Slovak Republic	1 947 d	2 789 d	2 846 d	3 333 d	3 918 d	4 216 d	4 243
Slovenia	1 936	4 191	4 489	5 757 d	6 270 d	6 383 d	6 664
Spain	35 034	45 151 d	47 222 d	49 571 d	54 360 d	54 888 d	55 299 d
Sweden	36 697 b d	45 067	47 127 e	51 843	54 720 e	55 498	57 538
Switzerland	..	21 893	..	21 094	..	23 030	..
Türkiye	9 456	45 313	52 463	62 305	75 308	83 706	97 205
United Kingdom	93 717	106 946	112 087	113 864	123 805	132 141	..
United States	..	981 000	973 000	1 023 000	1 127 000	1 147 000	..
EU27 (from 01/02/2020)	531 938 e	810 790 e	854 348 e	923 884 e	979 744 e	1 024 423 e	1 043 150 e
OECD-Total	**2 198 025 e**	**2 948 643 e**	**3 007 701 e**	**3 182 819 e**	**3 413 769 e**	**3 536 795 e**	**..**
Argentina	3 763	4 554 b	4 614	5 155	6 309	6 198	..
China	696 413 d	1 014 614	1 048 147	1 055 746	1 143 157	1 216 670	1 334 285
Romania	10 319	4 234	4 857	4 467	4 643	4 606	4 989
Russian Federation	237 959	208 604	198 561	193 425	179 312	192 210	184 864
Singapore	14 238	19 706	19 333	19 311	20 190	22 072	..
South Africa	5 896	4 627	4 777	5 482	4 535	3 228	..
Chinese Taipei	51 202	100 106	102 721	105 558	109 276	113 300	118 174

Note: Detailed metadata:*http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 28. Business enterprise researchers as a percentage of national total

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	63.8 d e	64.0 d	63.0 d e	63.0 d	63.0 e	64.2 d	63.3 e
Belgium	50.6	53.5 b	54.4 e	54.4	54.5	55.9	56.7 e
Canada	61.7	58.7	57.7	57.7	60.3	60.5	..
Chile	..	27.4 d	29.5 d	28.9 d	27.9 d e	27.7 d e	26.6 e
Colombia	..	..	..	..	..	..	..
Czech Republic	40.2 b	50.3	51.4	51.6	51.3	51.1	51.0
Denmark	62.5	58.4	60.2	59.4	58.4	58.5 p	58.2 p
Estonia	26.5	27.5	30.4	33.9	33.3	39.0	41.3
Finland	55.5	56.8	56.4	55.5	56.3	57.2	59.1
France	52.8	59.7	59.7	61.0	61.9	62.4	62.9 e p
Germany	61.3	59.5	59.0 e	60.2	60.3 e	61.5	60.4
Greece	30.8 d	14.5 d	19.1 d	27.6 d	27.4 d	26.3 d	27.2 d
Hungary	31.5	59.4	59.1	61.7	57.1 d	58.0 d	58.5 d
Iceland	46.9	41.8 b	..	42.7	..	..	..
Ireland	58.4	46.1 e	46.0 e	51.4 e	53.5 e	55.0	55.7 e
Israel	..	..	..	..	..	..	..
Italy	33.9 d	40.1 d	42.0 b d	44.5 d	48.1 d	48.6 d	46.9 d
Japan	70.7 d	73.4 d	73.4 d	73.7 d	74.4 b d	74.4 d	74.7 d
Korea	76.6 d	79.7	79.7	81.3	82.0	82.3	81.8
Latvia	14.3 d	16.7 d	18.5 d	18.6 d	19.8 d	20.9 d	20.8
Lithuania	9.4	23.1	22.9	29.2	31.7	32.7	28.8
Luxembourg	76.1	40.2	43.1	43.4	39.6	41.0	37.6 e p
Mexico	45.3	29.5	37.3	39.0 e	40.8 e	43.7 e	47.2 e
Netherlands	47.8	66.6	68.1	68.9	69.8	69.4	69.1
New Zealand	28.5	29.6	..	33.3	..	35.7	..
Norway	48.3 d	48.7 d	48.0 d	48.6 d	48.6 d	48.9 d	51.0 d
Poland	15.1	34.8	46.3 b	47.1 d	48.2 d	47.9 d	50.8 d
Portugal	19.0	30.5	32.5	34.3	35.1	38.3	41.3
Slovak Republic	17.8 d	19.4 d	20.1 d	21.9 d	24.0 d	24.8 d	24.6
Slovenia	36.9	53.1	55.3	61.9 d	62.3 d	60.7 d	61.4
Spain	31.9	36.9 d	37.3 d	37.2 d	38.8 d	38.1 d	38.0 d
Sweden	66.7 b d e	67.5 e	67.0 e	70.9	72.8 e	70.6	71.8
Switzerland	..	50.1	..	47.6	..	48.3	..
Türkiye	24.2	47.6	52.4	55.7	59.6	61.8	64.9
United Kingdom	37.7 b e	37.4	38.5 e	38.5	40.4 e	41.8	..
United States	..	71.6 e	70.9 e	71.3 e	72.6 e	72.3 e	..
EU27 (from 01/02/2020)	47.2 e	51.7 e	52.9 e	54.0 e	54.9 e	55.3 e	55.3 e
OECD-Total	**59.2 e**	**61.6 e**	**61.8 e**	**62.6 e**	**63.8 e**	**64.1 e**	**..**
Argentina	11.8	8.6 b	8.4	9.7	11.6	11.2	..
China	62.3 d	62.7	61.9	60.7	61.3	57.7	58.5
Romania	44.9	24.3	26.9	25.5	27.0	26.5	27.2
Russian Federation	51.2	46.4	46.3	47.1	44.2	48.0	46.5
Singapore	59.8	50.3	49.3	49.6	51.4	52.2	..
South Africa	34.1	17.7	17.3	18.6	15.6	11.4	..
Chinese Taipei	57.6	69.1	69.8	70.4	71.0	71.2	72.3

Note: Detailed metadata:*http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 29. Business enterprise researchers in full-time equivalent per thousand employment in industry

Per thousand

	2005	2015	2016	2017	2018	2019	2020
Australia	3.2	3.9	..	3.9	..	3.8 e	..
Austria	6.2 d e	8.7 d	9.1 d e	9.1 d	9.4 e	10.0 d e	9.9 e
Belgium	5.7	9.1 b	9.3 e	9.1	9.5	10.2 e	11.0 e
Canada	6.9	7.2	6.9	6.9	7.7	7.9	..
Chile	..	0.4 d	0.4 d	0.4 d	0.4 d e	0.4 d e	0.5 e
Colombia	..	..	..	..	..	..	..
Czech Republic	2.5 b	4.6	4.6	4.7	4.9	5.0	5.3 e
Denmark	9.5	13.4	14.1	13.3	12.9	12.9 e p	13.0 e p
Estonia	1.9	2.4	2.8	3.2	3.3	3.9 e	4.4 e
Finland	12.8	12.1	11.5	11.5	11.7	12.3 e	13.7 e
France	5.9	9.0	9.1	9.5	9.8	10.0	10.5 e p
Germany	5.8	7.4	7.5 e	7.9	8.1 e	8.5	8.5 e
Greece	1.7 d	1.5 d	1.6 d	2.8 d	2.9 d	2.9 d	3.4 d e
Hungary	1.6	4.7	4.5	5.1	6.0 d	6.3 d e	6.9 d e
Iceland	8.6	6.4 b	..	6.2	..	..	..
Ireland	4.4	7.6	7.2 e	7.9	7.5 e	7.7	8.2 e
Israel	..	..	..	..	..	..	..
Italy	1.5 d	2.8 d	3.1 b d	3.4 d	3.9 d	4.1 d	4.0 d e
Japan	8.8 d	9.3 d	9.3 d	9.3 d	9.3 d	9.3 d	9.5 d e
Korea	7.2 d	13.5	13.6	14.7	15.8	16.6 e	17.4 e
Latvia	0.6 d	0.9 d	0.9 d	1.0 d	1.0 d	1.1 d e	1.3 e
Lithuania	0.7	1.8	1.9	2.5	2.7	3.0 e	2.8 e
Luxembourg	6.9	3.4	3.7	3.8	3.3	3.6 e	3.0 e
Mexico	0.8	0.4	0.5	0.5 e	0.5 e	0.6 e	0.8 e
Netherlands	3.8	8.8	9.2	9.4	9.7	9.7 e	10.3 e
New Zealand	2.4	4.2	..	4.3	4.8	5.2 e	5.6 e
Norway	6.9 d	8.7 d	9.0 d	9.5 d	9.5 d	9.8 d e	10.7 d e
Poland	0.8	2.3	3.2 b	4.2 d	4.4 d	4.5 d e	4.9 d e
Portugal	1.0	3.4	3.8	4.2	4.5	5.1 e	6.0 e
Slovak Republic	1.2 d	1.6 d	1.6 d	1.8 d	2.1 d	2.2 d	2.3 e
Slovenia	2.5	5.5	5.8	7.2 d	7.6 d	7.6 d e	8.0 e
Spain	2.3	3.3 d	3.4 d	3.5 d	3.7 d	3.6 d e	3.9 d e
Sweden	12.9 b d	14.2	14.8 e	15.7	16.3 e	16.4	17.2 e
Switzerland	..	6.0	..	5.8	..	6.2 e	..
Türkiye	0.6	2.1	2.4	2.7	3.3	3.8	4.6 e
United Kingdom	4.4	4.7	4.8	4.8	5.2	5.5	..
United States	..	9.4	9.1	9.4	10.3	10.4	..
EU27 (from 01/02/2020)	3.7 e	5.6 e	5.8 e	6.1 e	6.4 e	6.6 e	6.9 e
OECD-Total	**5.4 e**	**7.0 e**	**7.0 e**	**7.3 e**	**7.7 e**	**7.9 e**	**..**
Argentina	..	..	..	..	..	..	..
China	..	..	..	..	..	..	..
Romania	1.3	0.6	0.7	0.6	0.6	0.6	0.7
Russian Federation	4.7	3.9	3.7	3.6	3.4	3.6	3.5
Singapore	7.0	6.2	6.1	6.1	6.3	6.7	..
South Africa	0.6 e	0.4	0.4	0.5	0.4	0.3	..
Chinese Taipei	5.9	10.3	10.5	10.7	11.0	11.3	11.8

Note: Detailed metadata:*http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 30. Total business enterprise R&D personnel in full-time equivalent

FTE

	2005	2015	2016	2017	2018	2019	2020
Australia	43 687	70 467	..	74 991	..	77 724	..
Austria	32 780 d e	50 534 d	51 895 d e	52 478 d	55 369 e	58 592 d	56 828 e
Belgium	31 613	44 508 b	46 564	50 106	53 503	57 661	61 531 e
Canada	142 030	155 350	140 150	141 200	158 460	160 230	..
Chile	..	4 398 d	4 946 d	4 525 d	4 474 d e	4 196 d e	3 937 e
Colombia	..	..	..	..	..	..	..
Czech Republic	21 116 b	36 365	37 263	39 968	42 349	44 792	46 234
Denmark	28 359	36 898	38 855	36 035	35 443	37 593 p	37 277 p
Estonia	1 398	1 694	1 855	2 086	2 150	2 639	2 750
Finland	32 109	29 770	27 634	28 148	28 720	29 713	31 480
France	194 991	251 915	255 805	265 701	276 547	283 545	290 720 e p
Germany	304 502	404 767	413 027 e	436 571	451 057 e	475 676	467 444
Greece	11 665 d	8 131 d	9 102 d	13 004 d	13 944 d	14 339 d	15 961 d
Hungary	7 393	21 030	20 825	24 719	31 027 d	33 124 d	34 941 d
Iceland	1 530	1 604 d	..	1 799 d	..	..	..
Ireland	10 338	18 383	18 203 e	19 542	18 956 e	19 733	20 322 e
Israel	43 049 d	72 733 d	83 663 d	90 039 d	95 054 d	108 086 d	..
Italy	70 725 d	136 725 d	164 471 b d	191 960 d	218 822 d	225 056 d	211 789 d
Japan	609 808 d	592 175 d	586 593 d	603 407 d	611 500 d	617 060 d	624 673 d
Korea	153 400 d	323 652	328 948	355 601	383 321	405 212	416 895
Latvia	1 370 d	1 145 d	896 d	956 d	1 221 d	1 175 d	1 381
Lithuania	1 190.0	2 714.0	2 630.0	3 783.0	4 304.0	4 813.0	5 581.0
Luxembourg	3 662	3 066	3 234	3 252	3 086	3 241	3 029
Mexico	42 331	18 895	26 313	26 506 e	26 529 e	28 471 e	31 280 e
Netherlands	48 588	97 443	102 614	107 496	112 807	115 124	118 355
New Zealand	6 100	11 000	..	14 000	15 000	18 000	19 000
Norway	15 399	21 637	22 171	23 766	23 766	25 154	26 141
Poland	13 966	42 054	55 758 b	72 966 d	85 981 d	86 742 d	96 129 d
Portugal	6 133	18 283	19 367	22 022	23 662	26 793	30 872
Slovak Republic	3 524 d	4 405 d	4 643 d	5 654 d	6 524 d	7 113 d	8 032
Slovenia	4 347	9 222	9 569	9 954 d	10 471 d	11 326 d	11 088
Spain	75 345	87 432 d	90 129 d	95 667 d	104 474 d	106 435 d	104 728 d
Sweden	56 106 b	57 691	64 276 e	63 729	67 554 e	64 641	68 303
Switzerland	..	50 825	..	46 510	..	51 623	..
Türkiye	14 992	66 667	72 579	87 918	104 376	114 931	130 279
United Kingdom	145 401	206 310	215 350	232 656	252 439	262 579	..
United States	..	1 399 000	1 393 000	1 475 000	1 619 000	1 677 000	..
EU27 (from 01/02/2020)	982 304 e	1 387 670 e	1 465 174 e	1 572 865 e	1 679 316 e	1 742 303 e	1 758 076 e
OECD-Total	**..**	**4 358 888 e**	**4 447 927 e**	**4 723 715 e**	**5 069 126 e**	**5 262 438 e**	**..**
Argentina	7 155	12 214 b	12 742	12 876	13 918	14 389	..
China	883 130 d	2 910 799	3 012 081	3 119 809	3 424 780	3 668 433	4 060 377
Romania	16 157	10 128	10 785	11 525	12 081	11 628	11 880
Russian Federation	524 049	426 372	402 097	389 191	359 385	390 817	369 430
Singapore	17 076	22 980	22 329	22 197	23 092	25 197	..
South Africa	12 236	12 458	12 549	12 953	11 691	9 301	..
Chinese Taipei	96 714	186 804	192 127	196 992	203 456	210 576	219 112

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 31. Total business enterprise R&D personnel as a percentage of national total

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	68.8 d e	70.8 d	69.0 d e	69.0 d	69.0 e	70.0 d	69.3 e
Belgium	59.1	57.4 b	58.9 e	60.6	60.4	61.7	63.5 e
Canada	65.0	63.4	61.3	60.9	63.2	62.6	..
Chile	..	28.8 d	29.8 d	27.2 d	26.6 d e	25.5 d e	24.1 e
Colombia	..	..	..	..	..	..	..
Czech Republic	48.7 b	54.7	56.6	57.3	56.5	56.5	57.1
Denmark	65.2	61.2	61.8	59.8	59.3	60.4 p	60.1 p
Estonia	32.0	30.1	32.1	34.5	34.8	41.3	42.6
Finland	55.9	59.1	58.3	57.4	57.4	57.7	58.8
France	55.8	59.1	59.2	60.1	61.0	61.4	61.8 e p
Germany	64.1	63.2	62.8 e	63.6	63.7 e	64.7	63.7
Greece	34.7 d	16.4 d	21.8 d	27.3 d	27.2 d	26.6 d	27.5 d
Hungary	31.8	57.1	58.2	61.1	56.8 d	58.2 d	58.6 d
Iceland	47.4	54.5 d	..	56.7 d	..	..	..
Ireland	61.9	53.5 e	53.0 e	57.8 e	60.4 e	61.3	62.0 e
Israel	..	..	..	..	..	..	..
Italy	40.4 d	52.8 d	56.7 b d	60.4 d	63.3 d	63.2 d	61.9 d
Japan	68.0 d	67.7 d	67.2 d	67.7 d	68.2 b d	68.3 d	68.5 d
Korea	71.2 d	73.2	73.5	75.5	76.5	77.1	76.4
Latvia	25.0 d	20.6 d	17.5 d	17.8 d	21.0 d	19.8 d	21.1
Lithuania	10.8	25.6	24.1	32.7	36.0	37.0	38.6
Luxembourg	83.4	58.3	59.9	58.6	56.4	56.0	54.5 e p
Mexico	50.6	33.1	40.0	40.5 e	41.1 e	42.6 e	44.7 e
Netherlands	51.9	69.9	71.0	71.5	71.9	71.8	71.1
New Zealand	32.2	33.3	..	41.2	..	46.2	..
Norway	51.4	51.0	50.5	51.4	51.0	51.6	53.4
Poland	18.2	38.5	49.9 b	50.6 d	53.1 d	52.9 d	55.4 d
Portugal	23.8	38.1	38.4	40.0	40.7	43.6	46.7
Slovak Republic	24.5 d	25.0 d	26.1 d	29.7 d	32.2 d	33.6 d	35.8
Slovenia	48.3	64.8	66.4	67.7 d	66.8 d	66.7 d	65.9
Spain	43.1	43.5 d	43.8 d	44.3 d	46.3 d	46.0 d	45.2 d
Sweden	72.3 b e	69.0 e	70.9 e	71.7 v	73.4 e	70.1 e v	71.5
Switzerland	..	62.4	..	58.9	..	60.1	..
Türkiye	30.4 e	54.5 e	53.0	57.3	60.6	62.9	65.3
United Kingdom	44.8 b e	49.8	50.8 e	52.3	54.2 e	55.3	..
United States	..	..	..	..	..	..	..
EU27 (from 01/02/2020)	52.3 e	56.0 e	57.3 e	58.4 e	59.3 e	59.6 e	59.5 e
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	15.8	15.5 b	15.7	16.1	16.6	16.9	..
China	64.7 d	77.4	77.7	77.3	78.2	76.4	77.6
Romania	48.6	32.3	33.5	35.4	37.8	36.7	35.8
Russian Federation	57.0	51.1	50.1	50.0	47.4	51.8	49.3
Singapore	59.7	50.6	49.5	49.9	51.5	51.9	..
South Africa	42.5	30.3	29.5	29.3	26.7	22.2	..
Chinese Taipei	64.8	76.1	76.7	77.2	77.6	77.5	78.4

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 32. Total business enterprise R&D personnel in full-time equivalent per thousand employment in industry

Per thousand

	2005	2015	2016	2017	2018	2019	2020
Australia	5.9	8.3	..	8.5	..	8.4 e	..
Austria	11.1 d e	15.7 d	16.0 d e	15.9 d	16.5 e	17.2 d e	17.1 e
Belgium	10.7	14.2 b	14.6	15.5	16.3	17.3 e	18.6 e
Canada	11.6	11.8	10.5	10.4	11.5	11.4	..
Chile	..	0.7 d	0.8 d	0.7 d	0.7 d e	0.7 d e	0.7 e
Colombia	..	..	..	..	..	..	..
Czech Republic	5.3 b	8.8	8.8	9.4	9.8	10.4	11.0 e
Denmark	15.3	19.7	20.3	18.4	17.7	18.5 e p	18.7 e p
Estonia	3.0	3.6	3.9	4.2	4.3	5.3 e	5.7 e
Finland	18.8	17.0	15.6	15.8	15.7	16.0 e	17.5 e
France	10.8	13.5	13.7	14.0	14.4	14.5	15.0 e p
Germany	10.6	12.9	13.1 e	13.6	13.9 e	14.6	14.6 e
Greece	3.2 d	2.5 d	2.7 d	3.8 d	4.0 d	4.1 d	4.7 d e
Hungary	2.3	6.5	6.2	7.1	8.7 d	9.1 d e	9.7 d e
Iceland	13.0	12.7 d	..	12.7 d	..	..	..
Ireland	6.7	12.4	11.8 e	12.3	11.6 e	11.8	12.5 e
Israel	22.9 d	29.1 d	32.5 d	34.1 d	35.7 d	39.6 d e	..
Italy	3.9 d	7.6 d	9.0 b d	10.3 d	11.6 d	11.9 d	11.5 d e
Japan	11.1 d	11.3 d	11.1 d	11.3 d	11.3 d	11.3 d	11.5 d e
Korea	8.0 d	15.4	15.6	16.8	18.1	19.0 e	19.8 e
Latvia	1.8 d	1.7 d	1.3 d	1.4 d	1.8 d	1.7 d e	2.1 e
Lithuania	1.1	2.7	2.5	3.7	4.1	4.6 e	5.4 e
Luxembourg	15.0	9.8	10.0	9.7	8.9	9.1 e	8.4 e
Mexico	1.7	0.7	0.9	0.9 e	0.9 e	0.9 e	1.1 e
Netherlands	8.0	15.3	15.8	16.2	16.5	16.5 e	17.3 e
New Zealand	3.9	6.3	..	7.5	7.9	9.3 e	9.7 e
Norway	10.3	12.7	13.1	13.8	13.6	14.1 e	15.0 e
Poland	1.3	3.4	4.4 b	5.7 d	6.7 d	6.7 d e	7.5 d e
Portugal	1.6	5.3	5.5	6.0	6.3	7.1 e	8.4 e
Slovak Republic	2.2 d	2.5 d	2.5 d	3.0 d	3.4 d	3.7 d	4.3 e
Slovenia	5.7	12.2	12.4	12.5 d	12.7 d	13.4 d e	13.3 e
Spain	4.9	6.5 d	6.5 d	6.7 d	7.2 d	7.1 d e	7.3 d e
Sweden	19.8 b	18.2	20.1 e	19.3	20.1 e	19.1	20.4 e
Switzerland	..	14.0	..	12.7	..	13.9 e	..
Türkiye	0.9	3.0	3.3	3.8	4.5	5.2	6.2 e
United Kingdom	6.8	9.0	9.3	9.9	10.6	10.9	..
United States	..	13.3	13.0	13.6	14.8	15.2	..
EU27 (from 01/02/2020)	6.8 e	9.5 e	9.9 e	10.4 e	11.0 e	11.3 e	11.6 e
OECD-Total	**..**	**10.3 e**	**10.4 e**	**10.8 e**	**11.5 e**	**11.8 e**	**..**
Argentina	..	..	..	..	..	..	..
China	..	..	..	..	..	..	..
Romania	2.0	1.4	1.5	1.6	1.6	1.6	1.6
Russian Federation	10.3	8.0	7.5	7.3	6.7	7.4	7.1
Singapore	8.4	7.2	7.0	7.0	7.2	7.7	..
South Africa	1.3 e	1.1	1.1	1.1	1.0	0.8	..
Chinese Taipei	11.1	19.2	19.6	19.9	20.4	21.0	21.9

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 33. Business-financed BERD (Business enterprise expenditure on R&D) at 2015 prices and PPP

Million 2015 USD

	2005	2015	2016	2017	2018	2019	2020
Australia	8 399.9	10 874.8	..	10 755.0	..	10 547.8	..
Austria	..	6 324.8	..	7 249.9 b	..	7 751.7	..
Belgium	4 571.5	7 006.5	..	8 665.5	..	10 856.7	..
Canada	12 287.6 d w	11 014.1	10 990.5	11 163.8	12 173.5	12 458.1	12 007.9 p
Chile	..	470.8	506.3	439.2	450.7 e	429.1 e	452.7 e
Colombia	122.1	1 053.4	670.3	583.1	857.4	1 035.2 e	937.7 e
Czech Republic	1 547.7 b	2 250.5	2 314.6	2 567.0	2 889.8	2 900.3	2 637.8
Denmark	3 634.9	4 955.8	..	4 867.7	..	5 177.5	..
Estonia	110.4	216.7	222.2	219.1	229.0	338.6	370.4
Finland	4 741.9	3 552.2	3 607.5	3 811.7	3 749.0	3 747.2	3 940.9
France	25 490.0	32 193.2 s	33 086.6	33 621.7 s	34 478.4 s	35 198.7	..
Germany	52 452.1 e	70 386.9	71 515.1 e	77 737.1	79 870.6 e	80 189.7	73 779.5 e
Greece	554.3	759.1	1 070.9	1 377.1	1 410.4	1 467.5	1 536.3
Hungary	740.9 d	1 681.0	1 735.1	1 896.5	2 275.0 b	2 388.3	2 350.8
Iceland	157.9	122.3	132.8 e	135.3	148.0 e	172.2	165.5
Ireland	1 555.1	1 841.6	1 877.2 e	2 283.0	2 264.9 e	3 130.9	..
Israel	4 381.6 d	4 038.6 d	5 178.2 d	5 179.8 d	5 865.5 d	6 716.3 d e	..
Italy	9 499.0	14 685.9	15 864.4 b	16 316.6	17 435.1	18 469.8	16 352.2
Japan	116 420.3	129 997.8	125 713.0	130 505.7	134 877.8	133 941.0	129 381.3
Korea	24 667.8 d	56 089.3	58 475.7	65 661.3	71 532.3	75 223.6	77 125.9
Latvia	56.6	36.2	35.3	50.3	61.5	69.4	82.0
Lithuania	83.9	173.4	221.9	238.3	290.6	289.5	397.7
Luxembourg	594.8	367.1	..	395.2	..	405.6	..
Mexico	2 908.8	1 549.3	1 559.8	1 367.8 e	1 198.2 e	1 149.6 e	1 083.3 e
Netherlands	5 684.3	9 436.1	9 951.3	10 459.8	10 551.0	11 197.2	11 315.9
New Zealand	518.0	826.8	..	1 040.3	1 157.4	1 248.5	1 297.8
Norway	1 772.0	2 555.2	2 569.8	2 742.2	2 743.9	2 912.0	2 953.4
Poland	1 036.2	3 801.3	5 266.8 b	5 847.6	7 289.6	7 949.4	8 179.3
Portugal	828.2	1 588.7	1 735.3	1 942.2	2 077.4	2 254.9	2 592.8
Slovak Republic	187.9	411.1	559.6	701.3	707.6	687.2	677.3
Slovenia	414.8	959.1	908.3	805.3	871.4	928.7	745.8
Spain	7 317.7	8 528.1	8 788.7	9 419.6	10 219.8	10 372.5	10 413.4
Sweden	8 334.8 b	8 681.7	..	10 097.4	..	10 914.8	..
Switzerland	..	9 797.9	..	10 564.8	..	11 424.8	..
Türkiye	2 129.5	7 770.0	9 026.8	10 450.9	12 534.6	13 833.1	14 589.6
United Kingdom	15 106.2	21 931.0	24 237.2	25 403.1	26 995.0	27 006.0	..
United States	244 367.0 d w	315 978.0 b	332 514.6	342 710.9	369 568.2	408 229.2	433 376.4 e
EU27 (from 01/02/2020)	134 227.8 e	181 232.3 e	189 919.3 e	202 659.4 e	211 556.3 e	218 959.3 e	..
OECD-Total	**574 771.4 e**	**753 812.9 e**	**781 525.7 e**	**819 259.5 e**	**870 927.1 e**	**923 012.8 e**	**935 998.7 e**
Argentina	813.8	904.2 b	804.7	856.2	887.4	988.6	..
China	57 984.8	263 460.9	292 918.7	317 317.5	343 852.0	377 954.5	417 188.3 e
Romania	381.8	639.5	919.8	1 194.5	1 330.8	1 257.4	1 191.0
Russian Federation	6 847.5	7 853.0	8 798.6	9 827.0	8 532.6	9 423.8	9 398.0 e
Singapore	3 466.0	5 289.5	5 075.0	4 906.7	4 928.2	5 514.4	..
South Africa	1 838.6	1 954.4	2 015.4	2 276.1	2 018.2	1 202.0	..
Chinese Taipei	11 822.6	25 275.1	26 536.3	28 959.5	31 713.7	34 349.2	37 586.9

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 34. Business-financed BERD (Business enterprise expenditure on R&D) as a percentage of value added in industry

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	1.46	1.49	..	1.38	..	1.32 e	..
Austria	..	2.26	..	2.48 b	..	2.55 e	..
Belgium	1.59	2.17	..	2.61	..	3.15 e	..
Canada	1.36 d w	1.10	1.10	1.07	1.13	1.15	1.16 e p
Chile	..	0.17	0.18	0.16	0.15 e	0.15 e	0.16 e
Colombia	0.05	0.25	0.16	0.14	0.19	0.23 e	0.23 e
Czech Republic	0.76 b	0.91	0.92	0.97	1.07	1.04	1.02 e
Denmark	2.43	3.05	..	2.80	..	2.85 e	..
Estonia	0.49	0.88	0.89	0.82	0.82	1.18 e	1.33 e
Finland	3.49	2.69	2.65	2.66	2.59	2.56 e	2.79 e
France	1.73	2.05 s	2.09	2.08 s	2.09 s	2.08	..
Germany	2.41 e	2.84	2.82 e	2.98	3.04 e	3.05	2.99 e
Greece	0.25	0.49	0.69	0.86	0.87	0.88	1.03 e
Hungary	0.49 d	1.01	1.03	1.08	1.23 b	1.24 e	1.30 e
Iceland	1.94	1.21	1.24 e	1.24	1.28 e	1.46	1.58 e
Ireland	0.98	0.74	0.74 e	0.81	0.74 e	0.98	..
Israel	3.66 d e	2.28 d	2.81 d	2.71 d e	2.95 d e	3.25 d e	..
Italy	0.64	1.07	1.14 b	1.15	1.21	1.27	1.26 e
Japan	3.13	3.49	3.35	3.41	3.51	3.53	3.57 e
Korea	2.59 d e	4.16	4.23	4.61	4.91	5.10 e	5.28 e
Latvia	0.20	0.12	0.11	0.16	0.18	0.20 e	0.25 e
Lithuania	0.2	0.3	0.4	0.4	0.4	0.4 e	0.6 e
Luxembourg	1.87	0.90	..	0.89	..	0.87 e	..
Mexico	0.22	0.10	0.09	0.08 e	0.07 e	0.06 e	0.07 e
Netherlands	1.14	1.70	1.77	1.81	1.80	1.88 e	2.00 e
New Zealand	0.56	0.75	..	0.86	0.92	0.98 e	1.02 e
Norway	0.97	1.31	1.39	1.41	1.34	1.49 e	1.69 e
Poland	0.22	0.52	0.71 b	0.75	0.89	0.93 e	1.00 e
Portugal	0.45	0.88	0.95	1.02	1.07	1.13 e	1.46 e
Slovak Republic	0.24	0.36	0.50	0.61	0.60	0.57	0.61 e
Slovenia	1.07	2.24	2.06	1.73	1.78	1.83 e	1.56 e
Spain	0.71	0.84	0.84	0.87	0.92	0.92 e	1.08 e
Sweden	3.38 b	2.86	..	3.22	..	3.35	..
Switzerland	..	2.61	..	2.74	..	2.86 e	..
Türkiye	0.25	0.55	0.63	0.66	0.76	0.83	0.87 e
United Kingdom	0.99	1.29	1.40	1.42	1.49	1.46	..
United States	2.43 d w	2.75 b	2.85	2.86	2.99	3.22	3.46 e
EU27 (from 01/02/2020)	1.39 e	1.70 e	1.74 e	1.80 e	1.84 e	1.87 e	..
OECD-Total	**1.92 e**	**2.17 e**	**2.20 e**	**2.23 e**	**2.32 e**	**2.42 e**	**2.57 e**
Argentina	0.19	0.17 b e	0.15 e	0.16 e	0.17 e	0.19 e	..
China	0.94 e	1.77 e	1.87 e	1.90 e	1.94 e	2.02 e	2.18 e
Romania	0.17	0.22	0.29	0.35	0.38	0.35	0.35
Russian Federation	0.38 e	0.33	0.37	0.40	0.34	0.37	0.39
Singapore	1.48 e	1.36 e	1.27 e	1.17 e	1.11 e	1.23 e	..
South Africa	0.47 e	0.41 e	0.43 e	0.48 e	0.42 e	0.25 e	..
Chinese Taipei	2.07 e	3.03	3.10	3.25	3.47	3.67	3.89

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 35. Percentage of Business enterprise expenditure on R&D (BERD) financed by the business enterprise sector

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	94.0	96.2	..	96.0	..	95.1	..
Austria	..	67.4	..	75.5 b	..	75.3	..
Belgium	82.8	79.2	..	86.3	..	83.6	..
Canada	82.5 d w	76.6	73.8	75.7	76.6	76.8	76.8 p
Chile	..	88.4	87.8	86.1	83.8 e	85.3 e	91.7 e
Colombia	98.1	96.6	97.7	98.5	98.4	99.0 e	98.8 e
Czech Republic	78.8 b	60.5	61.8	59.9	61.7	59.5	56.2
Denmark	86.0	91.7	..	88.5	..	94.0	..
Estonia	80.3	83.5	87.7	86.8	88.2	86.3	85.8
Finland	90.9	79.7	84.0	86.7	82.9	80.6	81.7
France	80.7	82.2 s	83.2	83.2 s	83.6 s	83.5	..
Germany	92.1 e	89.9	89.7 e	90.4	90.4 e	88.2	88.2 e
Greece	85.7	82.3	87.6	84.1	81.5	82.7	80.5
Hungary	77.8 d	64.8 d	73.6 d	70.1 d	67.4 b d	69.5 d	65.0 d
Iceland	84.9	52.2 d	56.4 d e	56.0 d	60.8 d e	55.6 d	54.6 d
Ireland	86.1	66.8	66.8 e	68.0	68.0 e	83.0	..
Israel	67.2 d	37.4 d	42.7 d	39.0 d	41.1 d	41.7 d e	..
Italy	76.8	84.2	84.1 b	82.7	83.2	85.5	82.3
Japan	98.3	98.3	98.1	98.2	98.4	98.5	98.4
Korea	94.4 d	94.1	94.8	93.8	93.3	93.7	94.6
Latvia	61.7	47.9	65.6	69.3	71.3	74.5	70.0
Lithuania	83.9	72.4	87.7	80.7	79.6	69.1	72.6
Luxembourg	91.7	90.5	..	87.5	..	92.2	..
Mexico	86.8	86.9	79.1	79.2 e	77.3 e	77.9 e	77.2 e
Netherlands	79.0	80.3	80.9	80.8	81.0	82.2	81.5
New Zealand	80.5	76.3	..	75.8	75.7	74.8	75.1
Norway	81.6	78.2	77.1	78.0	78.2	78.4	78.7
Poland	83.0	79.8	79.1 b	79.5	78.5	78.7	78.9
Portugal	91.4	89.7	89.3	90.0	89.7	89.8	89.7
Slovak Republic	67.9	78.0	84.8	85.6	88.0	83.5	79.1
Slovenia	85.3	87.8	88.7	81.8	81.8	80.8	65.1
Spain	79.9	81.9	82.2	82.3	82.8	82.2	83.2
Sweden	86.1 b	80.4	..	83.6	..	85.8	..
Switzerland	..	86.7	..	91.6	..	91.1	..
Türkiye	90.8	87.6	84.9	85.9	87.5	86.7	87.0
United Kingdom	64.5	72.3	75.8	77.1	78.7	77.8	..
United States	90.3 d w	86.0 b	86.0 b	84.7	85.1	86.1	86.6 e
EU27 (from 01/02/2020)	84.6 e	83.3 e	84.4 e	84.8 e	84.7 e	84.3 e	..
OECD-Total	**89.3 e**	**86.7 e**	**86.8 e**	**86.3 e**	**86.5 e**	**86.8 e**	**86.8 e**
Argentina	94.5	79.3 b	74.8	65.1	67.4	71.9	..
China	91.2	93.7	94.7	95.0	95.6	96.1	96.6
Romania	57.5	69.5	77.3	87.0	89.0	86.9	85.4
Russian Federation	37.3	34.2	38.5	40.9	41.9	39.6	41.2
Singapore	87.8	85.1	84.8	84.0	84.7	87.8	..
South Africa	68.3	82.4	85.1	94.4	95.4	79.8	..
Chinese Taipei	97.7	98.5	98.5	98.6	98.5	98.6	98.5

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 36. Percentage of Business enterprise expenditure on R&D (BERD) financed by government

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	4.0	2.2	..	2.4	..	2.9	..
Austria	..	12.0	..	3.7 b	..	3.7	..
Belgium	6.2	5.5	..	3.4	..	3.7	..
Canada	2.6 d	4.6	5.4	6.8	6.0	5.7	5.7 p
Chile	..	9.7	11.7	13.0	15.7 e	10.1 e	7.9 e
Colombia	1.9	3.4	2.3	1.5	1.6	1.0 e	1.2 e
Czech Republic	15.6 b	7.6	6.1	7.0	7.0	6.8	6.8
Denmark	2.4 d	2.7 d	..	2.1 d	..	2.5 d	..
Estonia	6.9	8.4	4.7	4.4	5.7	5.4	5.7
Finland	3.8	3.6	3.6	3.1	2.8	2.5	3.7
France	10.1	8.9 s	7.7	8.0 s	7.5 s	7.7	..
Germany	4.5 e	3.3	3.4 e	3.2	3.1 e	3.2	3.2 e
Greece	5.6	8.8	3.3	4.1	6.0	6.3	7.5
Hungary	3.9 d	19.4 d	8.3 d	13.6 d	16.3 b d	16.4 d	15.7 d
Iceland	2.8	7.8 d	8.4 d e	9.2 d	11.4 d e	7.8 d	9.1 d
Ireland	4.1	5.0	5.0 e	4.6	4.6 e	3.5	..
Israel	4.8 d	3.2 d	2.8 d	2.8 d	2.4 d	1.9 d e	..
Italy	11.0	5.5	3.5 b	3.5	4.9	4.2	4.7
Japan	1.2	1.0	0.9	0.9	0.8	0.8	0.9
Korea	4.6 d	5.1	4.2	4.7	4.4	4.4	5.3
Latvia	12.7	1.6	2.6	6.1	3.7	3.7	5.9
Lithuania	1.8	2.2	1.5	1.2	1.6	1.3	1.0
Luxembourg	5.2	6.9	..	6.5	..	5.7	..
Mexico	11.0	11.3	18.8	18.4 e	19.9 e	18.9 e	19.2 e
Netherlands	3.4	6.3	6.0	5.7	6.4	6.1	6.7
New Zealand	11.4	11.0	..	11.9	11.7	10.9	11.7
Norway	7.9	8.6	9.4	9.4	9.9	10.0	10.6
Poland	13.7	10.0	16.3 b	13.9	13.5	13.4	13.6
Portugal	4.2	5.5	3.8	4.2	5.6	5.8	6.4
Slovak Republic	26.7	6.5	3.7	2.5	2.5	3.4	3.6
Slovenia	7.0	4.3	3.1	5.3	6.2	7.7	7.2
Spain	13.6	9.4	8.9	8.7	9.0	9.6	9.6
Sweden	4.5 b	.. c	..	4.7	..	4.3	..
Switzerland	..	1.6	..	1.1	..	1.6	..
Türkiye	6.9	10.6	9.9	9.0	10.0	11.7	10.9
United Kingdom	8.3	8.6	7.5	7.4	6.8	7.1	..
United States	9.7 d	7.4 b	6.2 b	6.0	5.5	4.5	3.9 e
EU27 (from 01/02/2020)	7.3 e	6.2 e	5.4 e	5.1 e	5.3 e	5.2 e	..
OECD-Total	**6.8 e**	**5.8 e**	**5.1 e**	**5.0 e**	**4.8 e**	**4.4 e**	**4.3 e**
Argentina	4.5	7.1 b	2.0	3.4	1.9	1.3	..
China	4.6	4.3	3.7	3.4	3.2	3.8	2.8
Romania	36.8	13.7	12.2	7.2	4.9	4.9	5.2
Russian Federation	53.6	63.4	59.0	56.6	56.2	57.3	56.4
Singapore	6.3	4.6	5.0	4.6	4.4	4.5	..
South Africa	16.2	3.8	3.1	2.3	1.5	6.1	..
Chinese Taipei	2.2	1.4	1.4	1.3	1.4	1.3	1.5

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 37. Percentage of Business enterprise expenditure on R&D (BERD) financed by the Higher Education and PNP sectors

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	0.33	0.05	..	0.02	..	0.04	..
Austria	..	0.06	..	0.12	..	0.04	..
Belgium	0.04	0.02	..	0.05	..	0.62	..
Canada	.. k	1.18	1.34	1.48	1.21	0.36	0.35 p
Chile	..	0.08	0.08	0.10	0.17 e	0.15 e	0.15 e
Colombia	0.00	0.00	0.00	0.00	0.00	0.00 e	0.00 e
Czech Republic	0.10 b	0.05	0.07	0.08	0.07	0.07	0.06
Denmark	0.16 d	0.31 d	..	0.79 d	..	0.46 d	..
Estonia	0.01	0.03	0.07	0.04	0.12	0.05	0.05
Finland	0.01	0.02	0.02	0.03	0.02	0.05	0.04
France	0.05	0.08 s	0.07	0.08 s	0.09 s	0.12	..
Germany	0.17 d	0.15 d	0.19 d e	0.13 d	0.13 d e	0.15 d	0.15 e
Greece	0.37	0.01	0.02	0.05	0.03	0.09	0.10
Hungary	0.06 d	0.04 d	0.05 d	0.04 d	0.03 b d	0.06 d	0.09 d
Iceland	0.00	6.18 d	6.70 d e	2.12 d	2.93 d e	0.08 d	0.10 d
Ireland	0.00	0.03	0.03 e	0.14	0.14 e	0.00	..
Israel	0.61 d	0.57 d	0.53 d	0.49 d	0.48 d	0.43 d e	..
Italy	0.11	0.34	0.14 b	0.14	0.14	0.15	0.16
Japan	0.10	0.12	0.09	0.10	0.07	0.03	0.10
Korea	0.06 d	0.06	0.04	0.05	0.06	0.05	0.06
Latvia	..	..	..	..	..	..	..
Lithuania	0.2	0.5	0.1	0.1	0.1	0.2	0.2
Luxembourg	0.02	..	..	..	..	..	..
Mexico	0.02	0.66	0.84	0.95 e	1.06 e	1.17 e	1.22 e
Netherlands	0.33	0.68	0.65	0.73	0.92	0.97	1.04
New Zealand	1.05	.. c	..	.. c	1.70	1.62	1.48
Norway	0.01	0.05	0.04	0.00	0.02	0.02	0.01
Poland	0.08	0.14	0.10 b	0.11	0.06	0.08	0.24
Portugal	0.00	0.02	0.03	0.03	0.02	0.04	0.05
Slovak Republic	0.03	0.01	0.00	0.00	0.00	0.00	0.00
Slovenia	0.48	0.00	0.00	0.53	.. c	0.05	.. c
Spain	0.68	0.85	0.24	0.22	0.18	0.21	0.15
Sweden	0.20 b	0.38	..	0.17	..	0.21	..
Switzerland	..	0.58	..	0.50	..	0.38	..
Türkiye	2.02 d	0.14	0.12	0.27	0.16	0.03	0.12
United Kingdom	0.02 d	0.62 d	0.80 d	0.49	0.42	0.40	..
United States	.. k	0.13 b d	0.26 b	0.15	0.10	0.14	0.15 e
EU27 (from 01/02/2020)	0.16 e	0.21 e	0.18 e	0.17 e	..	0.21 e	..
OECD-Total	**..**	**0.20 e**	**0.25 e**	**0.19 e**	**0.16 e**	**0.16 e**	**..**
Argentina	0.00	0.00 b	0.03	0.03	0.01	0.04	..
China	..	..	..	..	..	..	..
Romania	0.16	0.28	0.32	0.34	0.08	0.00	0.12
Russian Federation	0.04	0.18	0.05	0.05	0.05	0.05	0.11
Singapore	0.08	0.01	0.01	0.05	0.01	0.01	..
South Africa	1.02	2.71	2.72	0.32	0.31	3.23	..
Chinese Taipei	0.04	0.01	0.01	0.02	0.01	0.01	0.01

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 38. Percentage of Business enterprise expenditure on R&D (BERD) financed by the rest of the world

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	1.6	1.6	..	1.6	..	1.9	..
Austria	..	20.6	..	20.7	..	21.0	..
Belgium	11.0	15.3	..	10.2	..	12.1	..
Canada	14.9 d	17.6	19.5	16.1	16.2	17.2	17.2 p
Chile	..	1.9	0.5	0.8	0.4 e	4.5 e	0.3 e
Colombia	0.0	0.0	0.0	0.0	0.0	0.0 e	0.0 e
Czech Republic	5.4 b	31.9	32.0	33.0	31.2	33.6	36.9
Denmark	11.4	5.3	..	8.6	..	3.1	..
Estonia	12.7	8.1	7.5	8.7	5.9	8.3	8.4
Finland	5.3 b	16.7	12.4	10.2	14.3	16.8	14.6
France	9.2	9.1 s	9.0	8.8 s	8.6 s	8.7	..
Germany	3.3	6.7	6.7 e	6.3	6.3 e	8.5	8.5 e
Greece	8.3	8.9	9.1	11.7	12.5	10.9	11.9
Hungary	18.1 d	15.8 d	18.0 d	16.3 d	16.3 b d	14.1 d	19.1 d
Iceland	12.2	33.8 d	28.4 d e	32.8 d	24.8 d e	36.5 d	36.2 d
Ireland	9.8	28.2	28.2 e	27.3	27.3 e	13.5	..
Israel	27.4 d	58.8 d	53.9 d	57.7 d	56.0 d	56.0 d e	..
Italy	12.1	10.0	12.2 b	13.6	11.7	10.2	12.9
Japan	0.4	0.6	0.9	0.8	0.7	0.7	0.6
Korea	0.9 d	0.8	1.0	1.4	2.2	1.8	0.1
Latvia	25.6	50.5	31.9	24.5	25.1	21.8	24.1
Lithuania	14.1	24.9	10.7	18.0	18.7	29.4	26.2
Luxembourg	3.1	2.6	..	5.9	..	2.1	..
Mexico	2.1	1.2	1.3	1.5 e	1.7 e	2.0 e	2.4 e
Netherlands	17.2	12.7	12.5	12.8	11.7	10.7	10.8
New Zealand	7.0	10.5	..	11.1	10.8	12.7	11.7
Norway	10.5	13.1	13.5	12.6	11.9	11.5	10.7
Poland	3.2	10.1	4.4 b	6.5	7.9	7.8	7.3
Portugal	4.5	4.9	6.9	5.7	4.7	4.4	3.8
Slovak Republic	5.3	15.5	11.5	11.9	9.4	13.1	17.3
Slovenia	7.2	8.0	8.2	12.4	11.9	11.5	27.7
Spain	5.8	7.9	8.6	8.7	8.0	8.0	7.1
Sweden	9.1 b	.. c	..	11.6	..	9.6	..
Switzerland	..	11.1	..	6.8	..	7.0	..
Türkiye	0.3	1.6	5.0	4.9	2.4	1.5	2.0
United Kingdom	27.1	18.5	15.9	15.0	14.0	14.7	..
United States	.. k	6.5 b	7.5 b	9.2	9.3	9.2	9.3 e
EU27 (from 01/02/2020)	7.9 e	10.2 e	10.0 e	10.0 e	9.8 e	10.3 e	..
OECD-Total	**..**	**7.3 e**	**7.8 e**	**8.5 e**	**8.5 e**	**8.7 e**	**..**
Argentina	1.0	13.6 b	23.2	31.4	30.6	26.7	..
China	1.0	0.9	0.8	0.8	0.4	0.1	0.4
Romania	5.5	16.5	10.3	5.5	5.9	8.2	9.3
Russian Federation	9.1	2.2	2.5	2.4	1.8	3.1	2.3
Singapore	5.9	10.3	10.2	11.3	10.9	7.7	..
South Africa	14.5	11.1	9.1	3.0	2.8	10.9	..
Chinese Taipei	0.0	0.1	0.1	0.1	0.1	0.1	0.0

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 39. Business enterprise expenditure on R&D (BERD) performed in the pharmaceutical industry at current prices and PPP

Million USD

	2005	2015	2016	2017	2018	2019	2020
Australia	178.0 e	..	..	..	..	..	..
Austria	269.7 e	368.0	396.0 e	400.8	397.7 e	366.8	..
Belgium	814.5 e	1 989.3	2 617.4	2 871.3	3 456.5	3 764.3	..
Canada	878.1 d e	400.6 d	410.9 d	452.9 d	455.0 d	387.4 d	..
Chile	..	28.8	39.7 e	40.0	48.7	..	..
Colombia	..	..	..	..	..	..	..
Czech Republic	55.1	86.9	90.5	89.6	111.4	98.7	102.9
Denmark	..	1 238.7	1 484.8	1 407.4	1 376.2 e	1 283.2	..
Estonia	..	1.6	0.8	1.4	1.1	1.2	..
Finland	..	143.2	162.9	170.9	174.8	186.6 e	..
France	..	1 099.9 e	1 087.7	1 078.7	..	..	..
Germany	3 891.4 e	5 084.0	6 003.0	6 217.8	7 106.4	7 234.6	..
Greece	..	69.3	69.5 e	88.1	107.2 e	134.6	..
Hungary	279.2 e	406.8	414.5	400.1	554.8	480.5	..
Iceland	..	1.0	1.4	1.1	1.4	0.3	0.4
Ireland	..	179.1	280.6 e	430.2	387.8 e	392.5	..
Israel	..	349.6 d	341.7 d	263.3 d	194.4 d	182.7 d	..
Italy	452.2 e	729.4	841.7	868.5	895.4	968.3	..
Japan	8 087.5	14 088.5	12 808.7	13 941.7	13 485.8	12 838.7	13 054.5
Korea	444.0	1 576.2	1 511.3	1 629.6	1 848.3	2 047.5	..
Latvia	..	5.4	5.7	8.5	9.3	9.5	..
Lithuania	..	5.0	1.2 e	1.6 e	1.8	7.6	..
Luxembourg	..	..	..	..	..	..	..
Mexico	216.8	129.9	126.7	112.2	101.5	96.8	..
Netherlands	..	318.5	296.2	319.6	..	..	..
New Zealand	..	..	..	..	..	..	..
Norway	52.1 e	33.2	35.5	41.5	44.7	43.1	..
Poland	71.0	215.9	179.9	262.8	303.4	260.5	..
Portugal	63.8 e	127.4	154.1	173.6	204.5	157.9	..
Slovak Republic	..	6.3	10.7	5.8	5.0	4.5	3.9
Slovenia	124.1 e	308.0	311.6	..	..	..	..
Spain	711.1 e	892.6	982.4	1 106.1	1 195.0	1 242.9	..
Sweden	..	856.5 e	828.0 e	851.5 e	797.7 e	776.1 e	..
Switzerland	2 310.1 e	3 346.0	3 821.4 e	4 180.4	4 451.0 e	4 386.2	..
Türkiye	..	201.5	176.8	226.9	357.5	220.0	..
United Kingdom	..	560.2	554.5	710.3	659.7	875.8	..
United States	34 839.0	59 293.0	64 781.0	67 374.0	75 624.0	88 644.0	..
EU27 (from 01/02/2020)	..	..	..	..	..	..	..
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	..	..	..	..	..	..	..
China	..	11 405.1	12 246.0	12 767.7	13 735.1	14 484.6	18 776.3
Romania	19.2 e	27.9	37.0	20.9	20.8	22.7	..
Russian Federation	..	..	..	..	..	..	..
Singapore	76.9 e	..	..	..	..	..	..
South Africa	..	..	..	..	..	..	..
Chinese Taipei	118.1	447.8	535.3	530.3	504.6	491.8	569.5

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, ANBERD database: Research and Development Expenditure in Industry

Table 40. Business enterprise expenditure on R&D (BERD) performed in the computer, electronic and optical industry at current prices and PPP

Million USD

	2005	2015	2016	2017	2018	2019	2020
Australia	182.7 e	..	..	..	..	..	..
Austria	1 234.0 e	909.6	1 008.5 e	1 065.6	1 203.4 e	1 328.0	..
Belgium	556.1 e	578.5	625.0	682.3	596.6	730.2	..
Canada	2 398.6 d e	877.4 d	951.9 d	965.1 d	964.8 d	975.3 d	..
Chile	..	1.0	1.3 e	1.3	2.1	..	..
Colombia	..	..	..	..	..	..	..
Czech Republic	105.2	152.7	185.6	206.7	236.5	280.3	260.6
Denmark	..	438.3	492.1	518.7	545.0 e	547.3	..
Estonia	..	12.4	17.0	26.2	29.0	51.8	..
Finland	2 111.4 e	1 506.6	1 318.1	1 292.3	1 278.4	1 257.0	..
France	..	4 675.6 e	4 929.3	4 885.6	..	..	..
Germany	6 607.9 e	9 691.3	10 147.5	10 391.5	11 259.3	11 611.4	..
Greece	..	19.6	24.7 e	34.6	33.6 e	32.7	..
Hungary	57.2 e	37.8	45.8	44.7	67.1	79.7	..
Iceland	..	2.4	2.9	3.6	4.2	7.3	6.6
Ireland	..	339.6	313.4 e	338.2	398.0 e	502.0	..
Israel	1 486.5 d e	1 460.6 d	1 545.3 d	1 691.0 d	2 160.2 d	1 874.2 d	..
Italy	1 518.7 e	1 856.5	1 391.9	1 494.9	1 583.7	1 609.1	..
Japan	..	27 878.6	24 901.7	25 398.4	26 591.7	25 451.7	28 488.7
Korea	11 753.5	29 888.6	31 758.2	36 759.2	41 596.4	41 989.5	..
Latvia	..	6.6	7.4	6.6	11.1	6.4	..
Lithuania	..	18.2	18.9	35.2	36.3	41.2	..
Luxembourg	..	..	..	..	..	..	..
Mexico	73.0	89.1	82.2	72.8	65.8	62.8	..
Netherlands	..	760.7	814.3	868.1	..	..	..
New Zealand	..	..	..	..	..	..	..
Norway	178.9 e	196.7	188.6	196.0	219.8	214.6	..
Poland	29.3	115.3	125.7	174.7	411.1	460.4	..
Portugal	121.8 e	53.1	64.1	63.7	62.6	64.4	..
Slovak Republic	12.4	9.0	12.2	11.8	13.5	11.9	13.5
Slovenia	66.7 e	66.5	57.1	59.7	49.6	60.9	..
Spain	319.2 e	246.1	263.8	304.9	321.3	333.2	..
Sweden	..	2 220.3	1 200.2 e	255.4	260.3 e	275.3	..
Switzerland	794.3 e	1 776.7	1 678.8 e	1 558.6	1 630.3 e	1 726.7	..
Türkiye	279.2 e	292.7	1 408.3	1 888.1	2 273.8	2 345.7	..
United Kingdom	..	1 426.0	1 577.7	1 505.4	1 682.1	1 832.5	..
United States	49 725.0 e	74 032.0	78 693.0	78 930.0	85 489.0	87 128.0	..
EU27 (from 01/02/2020)	..	..	..	..	..	..	..
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	..	..	..	..	..	..	..
China	..	46 312.1	50 056.7	52 894.3	59 186.6	63 615.8	76 791.8
Romania	8.3 e	37.7	44.9	15.1	5.3	12.4	..
Russian Federation	..	..	..	..	..	..	..
Singapore	1 453.2 e	..	..	..	..	..	..
South Africa	..	..	..	..	..	..	..
Chinese Taipei	7 233.9	18 859.2	19 437.5	21 282.3	23 853.4	26 748.8	30 246.6

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, ANBERD database: Research and Development Expenditure in Industry

Table 41. Business enterprise expenditure on R&D (BERD) performed in the aerospace industry at current prices and PPP

Million USD

	2005	2015	2016	2017	2018	2019	2020
Australia	39.3 e	..	..	..	..	..	..
Austria	5.7 e	73.1	80.1 e	75.5	72.5 e	67.3	..
Belgium	77.9 e	..	..	..	..	..	..
Canada	708.6 d e	1 293.2 d e	1 256.8 d	1 118.5 d	866.1 d	669.7 d	..
Chile	..	..	..	..	..	..	..
Colombia	..	..	..	..	..	..	..
Czech Republic	37.6	47.5	61.5	92.8	84.2	135.4	96.3
Denmark	..	..	..	2.8	3.3 e	3.7	..
Estonia	0.0	0.0	0.0	0.0	0.0	0.0	..
Finland	..	8.4	6.8	8.0 e	8.4 e	3.6 e	..
France	..	3 857.4 e	3 657.1	3 412.2	..	..	..
Germany	2 285.8 e	2 193.7	2 300.7	2 002.3	2 321.2	1 990.0	..
Greece	..	..	..	..	..	..	..
Hungary	..	..	..	..	..	..	..
Iceland	..	0.1	0.0	0.0	0.0	0.0	0.0
Ireland	..	..	..	..	..	..	..
Israel	..	..	..	..	..	..	..
Italy	924.0 e	991.1	1 727.2	1 837.6	1 742.2	1 755.3	..
Japan	12.4	657.1	733.3	834.3	788.6	627.3	1 089.2
Korea	165.5	275.1	440.2	391.2	419.7	511.6	..
Latvia	..	..	..	..	..	..	..
Lithuania	..	..	..	..	..	..	..
Luxembourg	..	..	..	..	..	..	..
Mexico	0.4	27.1	34.3	30.3	27.4	26.2	..
Netherlands	..	..	..	..	..	..	..
New Zealand	..	..	..	..	..	..	..
Norway	..	1.1	1.0 e	0.9 e	1.7 e	..	..
Poland	30.4	104.7	100.5	116.8	128.4	150.9	..
Portugal	..	2.3	0.9	4.4	5.6	5.7	..
Slovak Republic	..	..	..	..	..	..	..
Slovenia	0.0 e	1.8	1.7	..	..	..	..
Spain	386.8 e	597.9	631.6	656.7	723.3	750.2	..
Sweden	..	..	..	..	..	..	..
Switzerland	..	..	..	..	..	..	..
Türkiye	..	..	..	..	..	..	..
United Kingdom	..	2 107.4	2 403.0	1 942.9	2 287.4	2 616.1	..
United States	15 005.0	27 840.0	27 326.0	26 661.0	24 619.0	18 708.0 e	..
EU27 (from 01/02/2020)	..	..	..	..	..	..	..
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	..	..	..	..	..	..	..
China	..	..	..	..	..	..	..
Romania	..	0.7	2.1	4.3	7.6	11.0	..
Russian Federation	..	..	..	..	..	..	..
Singapore	22.0 e	..	..	..	..	..	..
South Africa	..	..	..	..	..	..	..
Chinese Taipei	..	..	..	..	..	..	..

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, ANBERD database: Research and Development Expenditure in Industry

Table 42. Business enterprise expenditure on R&D (BERD) performed in service industries at current prices and PPP

Million USD

	2005	2015	2016	2017	2018	2019	2020
Australia	3 085.1 e	6 672.0	7 197.8 e	7 260.3	7 730.4 e	7 874.6	..
Austria	1 306.3 e	3 463.6	3 506.3 e	3 341.0	3 510.6 e	3 706.0	..
Belgium	1 253.5 e	3 818.5	3 896.8	4 546.0	5 356.0	6 752.3	..
Canada	5 189.8 d e	7 869.1 d e	8 701.0 d e	9 076.9 d	10 358.7 d	10 970.1 d	..
Chile	..	202.5	245.5	245.1	289.4	..	..
Colombia	..	..	..	..	..	..	..
Czech Republic	556.0	1 685.3	1 738.6	2 036.3	2 250.9	2 402.5	2 547.0
Denmark	..	2 306.9	2 787.4	2 505.2	2 872.0 e	3 114.9	..
Estonia	50.4	173.3	175.4	170.1	188.0	272.4	..
Finland	737.2 e	1 301.8	1 381.7	1 514.3	1 669.3	1 787.6	..
France	..	18 148.6 e	19 279.4	20 823.2	..	..	..
Germany	4 682.3 e	11 093.4	12 029.1	13 210.7	13 723.1	14 593.2	..
Greece	..	649.5	825.6 e	1 074.1	1 150.0 e	1 210.9	..
Hungary	162.6 e	1 477.3	1 200.9	1 404.7	1 720.0	1 825.7	..
Iceland	..	174.3	179.8	184.3	180.0	257.8	257.5
Ireland	..	1 663.6	1 646.5 e	1 896.1	2 028.0 e	2 392.5	..
Israel	3 497.4 d e	8 391.7 d	10 156.9 d	11 324.6 d	11 893.2 d	13 759.5 d	..
Italy	2 584.7 e	4 865.9	5 738.9	6 341.3	7 140.0	7 732.9	..
Japan	9 828.6	16 041.7	14 892.8	15 493.8	16 376.3	15 533.4	11 664.8
Korea	1 611.2	4 801.7	5 432.5	5 982.8	7 293.3	8 769.4	..
Latvia	..	39.6	..	33.5	..	..	..
Lithuania	..	152.8	173.3 e	204.5	223.3	296.0	..
Luxembourg	..	143.4	..	185.5	..	165.0	..
Mexico	457.5	651.3	735.8	651.6	589.5	562.0	..
Netherlands	..	3 626.1	4 045.2	4 182.1	..	..	..
New Zealand	202.2	564.9	743.9 e	944.8	1 037.4	1 214.8	1 345.1
Norway	886.3 e	1 943.2	2 028.7	2 287.8	2 370.8	2 513.1	..
Poland	461.3	2 472.5	4 371.9 e	4 425.8	5 317.8 e	5 911.7 e	..
Portugal	314.5 e	1 010.5	1 117.9	1 299.2	1 387.2	1 537.7	..
Slovak Republic	117.1 e	169.7	187.9	226.8	231.2	279.0 e	440.4
Slovenia	71.0 e	310.5	255.3	262.0	294.9	321.4	..
Spain	2 975.2 e	5 179.2	5 428.2	6 000.6	6 741.1	7 056.5	..
Sweden	..	3 177.4	4 237.1 e	5 563.4	5 901.2 e	6 464.8 e	..
Switzerland	1 238.9 e	3 825.1	3 672.1 e	3 491.6	3 813.1 e	4 226.9	..
Türkiye	343.3 e	4 276.6	4 473.9	4 888.1	5 625.8	5 743.4	..
United Kingdom	..	17 831.0	18 685.3	20 485.9	21 520.7	22 818.2	..
United States	65 828.5 e	118 894.0 e	125 384.5 e	144 589.5 e	169 118.0 e	207 880.5 e	..
EU27 (from 01/02/2020)	..	..	..	..	..	..	..
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	..	315.4	323.6	530.8	598.3	696.3	..
China	..	..	..	..	..	..	..
Romania	47.1 e	506.7	774.7	954.7	1 103.8	1 105.7	..
Russian Federation	..	..	..	..	..	..	..
Singapore	1 243.2 e	..	..	..	..	..	..
South Africa	844.2	..	..	..	..	..	..
Chinese Taipei	734.0	2 088.3	2 171.0	2 397.7	2 653.7	2 764.6	3 011.3

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, ANBERD database: Research and Development Expenditure in Industry

Table 43. Higher education expenditure on R&D (HERD) at current prices and PPP

Million USD

	2005	2015	2016	2017	2018	2019	2020
Australia	..	6 479.6 e	7 500.9	7 603.8 e	8 268.3	8 575.0 e	8 760.4
Austria	1 689.8 e	3 089.8	3 187.4 b e	3 268.6	3 492.0 e	3 517.6	3 569.3 e
Belgium	1 389.2	2 571.1	2 939.9	3 034.7	3 162.2	3 290.5	3 491.6 e
Canada	7 841.7	10 612.6	11 446.1	11 849.3	12 519.4	12 672.8	12 828.7 p
Chile	..	598.4	678.7 b p	737.7	830.0 e	806.0 e	768.7 e
Colombia	280.9	637.4	522.6	526.7	680.1	611.4	466.4
Czech Republic	486.2	1 706.8	1 302.6	1 427.9	1 784.1	1 921.0	1 915.3
Denmark	1 090.8	2 890.3	2 980.3	3 107.5	3 321.3	3 404.4	3 598.7
Estonia	85.6	232.9	182.0	225.5	302.3	289.4	301.2
Finland	1 064.0	1 631.0	1 691.2	1 814.6	1 902.0	1 974.7	2 015.2
France	7 442.5	12 585.0	13 074.9	13 535.4	14 039.1	14 542.5	15 064.7 e p
Germany	10 726.2	19 719.5	22 092.1 b	23 204.5	25 018.4	25 526.4	27 035.8
Greece	772.6	1 057.0	950.3	1 003.1	1 095.1	1 271.8	1 433.8
Hungary	399.0 d	428.1 d	360.6 d	505.4 d	597.7 b d	686.9 d	672.1 d
Iceland	65.2	104.2	116.8	125.4	127.2	137.1	139.3
Ireland	543.6	913.2 e	942.7	1 025.9 e	1 105.9	1 148.5 e	1 296.7 e
Israel	1 035.2 d	1 534.7 d	1 590.9 d	1 520.7 d	1 565.6 d	1 514.1 d e	1 512.0 d
Italy	5 509.9 b	7 652.7 e	7 989.4 e	8 129.6 e	8 445.8 e	8 700.5 e	8 704.2 e
Japan	17 250.4	20 690.3	19 741.3	20 015.6	19 886.8 b	20 127.0	20 366.8
Korea	3 040.0 d	6 995.9	7 382.2	7 658.0	8 247.3	8 525.8	10 130.1
Latvia	66.6	151.9	99.7	132.9	199.0	213.0	212.1
Lithuania	197.1	485.3	290.9	301.9	343.0	389.6	461.1
Luxembourg	7.5	139.8	159.3	173.0	171.9	187.1	185.6 e p
Mexico	1 536.9	4 820.9	4 658.3	4 057.4 e	3 986.7 e	3 652.6 e	3 642.6 e
Netherlands	3 775.3	5 423.6	5 410.8	5 761.0	5 902.8	6 167.8	6 643.3
New Zealand	386.3	593.4	..	670.9	..	757.6 p	..
Norway	1 010.1	1 883.6	2 055.0	2 392.0	2 629.5	2 640.0	2 551.0
Poland	942.5	2 954.6	3 249.2	3 881.5	4 645.2	6 031.6	6 324.7
Portugal	640.1	1 739.7	1 869.3	1 910.1	2 018.0	2 101.2	2 049.3
Slovak Republic	90.1	826.1	353.0	357.8	346.6	362.6	408.3
Slovenia	113.3	146.0	152.4	157.7	187.4	204.9	219.4
Spain	3 846.5	5 572.1	5 678.1	6 037.9	6 245.7	6 540.1	6 697.6
Sweden	2 284.9	4 136.8	4 358.4 e	4 380.9	4 579.4 e	4 500.2 b	4 650.7
Switzerland	..	4 761.8	..	5 234.7	..	5 611.4	..
Türkiye	2 509.8	7 033.2	7 206.7	7 237.2	7 157.3	6 960.9	7 107.7
United Kingdom	7 885.7	11 075.3	11 192.2	11 895.8	12 708.8	13 177.9	..
United States	45 490.0 d	64 635.0 d	67 792.0 d	71 115.0 d	74 914.0 d	78 176.0 d	81 111.0 d p
EU27 (from 01/02/2020)	43 579.1 e	76 795.1 e	80 038.1 e	84 115.5 e	89 757.9 e	93 964.8 e	97 934.9 e
OECD-Total	**137 152.9 e**	**218 500.6 e**	**226 905.1 e**	**236 014.0 e**	**248 593.7 e**	**256 917.2 e**	**266 855.8 e**
Argentina	573.8	1 393.4	1 211.2	1 458.4	1 354.7	1 119.8	..
China	8 527.2	25 798.7	26 881.0	30 258.6	34 471.8	42 691.8	45 050.0
Romania	115.5	364.7	260.4	284.6	280.8	301.3	254.6
Russian Federation	1 047.3	3 723.3	3 552.1	3 810.9	4 054.0	4 854.8	4 722.5
Singapore	1 306.9	3 081.3	3 205.4	3 010.6	2 954.4	3 037.2	..
South Africa	768.4	1 695.5	1 893.0	2 024.3	2 020.4	2 116.6	..
Chinese Taipei	1 746.5	3 280.0	3 226.7	3 277.8	3 585.5	3 691.5	3 723.2

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 44. Higher education expenditure on R&D (HERD) as a percentage of GDP

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	0.58 e	0.62	0.61 e	0.62	0.64 e	0.61
Austria	0.59 e	0.72	0.69 b e	0.69	0.69 e	0.68	0.72 e
Belgium	0.40	0.49	0.53	0.53	0.53	0.53	0.57 e
Canada	0.67	0.67	0.68	0.67	0.68	0.68	0.72 p
Chile	..	0.15	0.16 b p	0.16	0.17 e	0.17 e	0.16 e
Colombia	0.08	0.10	0.08	0.08	0.09	0.08	0.06
Czech Republic	0.22	0.48	0.34	0.35	0.41	0.42	0.43
Denmark	0.59	1.04	1.00	0.97	1.00	1.00	1.03
Estonia	0.38	0.61	0.44	0.51	0.63	0.58	0.59
Finland	0.63	0.70	0.68	0.69	0.70	0.71	0.72
France	0.39	0.46	0.46	0.45	0.45	0.44	0.47 e p
Germany	0.41	0.51	0.53 b	0.53	0.55	0.55	0.59
Greece	0.27	0.37	0.32	0.33	0.34	0.39	0.48
Hungary	0.23 d	0.16 d	0.13 d	0.18 d	0.19 b d	0.21 d	0.21 d
Iceland	0.59	0.64	0.65	0.66	0.63	0.65	0.71
Ireland	0.32	0.28 e	0.28	0.27 e	0.27	0.27 e	0.28 e
Israel	0.60 d	0.52 d	0.49 d	0.45 d	0.44 d	0.42 d e	0.42 d
Italy	0.32 b	0.34 e	0.33 e	0.32 e	0.32 e	0.33 e	0.35 e
Japan	0.42	0.40	0.38	0.38	0.37 b	0.38	0.38
Korea	0.25 d	0.36	0.36	0.36	0.37	0.38	0.43
Latvia	0.21	0.31	0.19	0.24	0.33	0.35	0.36
Lithuania	0.4	0.6	0.3	0.3	0.3	0.4	0.4
Luxembourg	0.02	0.23	0.24	0.25	0.24	0.26	0.25 e p
Mexico	0.11	0.22	0.20	0.16 e	0.16 e	0.14 e	0.15 e
Netherlands	0.61	0.64	0.61	0.61	0.59	0.60	0.65
New Zealand	0.36	0.34	..	0.33	..	0.33 p	..
Norway	0.46	0.60	0.67	0.71	0.71	0.74	0.76
Poland	0.18	0.29	0.30	0.34	0.38	0.47	0.48
Portugal	0.27	0.57	0.57	0.56	0.56	0.56	0.58
Slovak Republic	0.10	0.51	0.22	0.22	0.20	0.21	0.24
Slovenia	0.24	0.22	0.22	0.21	0.23	0.24	0.26
Spain	0.32	0.34	0.33	0.33	0.33	0.33	0.37
Sweden	0.74	0.86	0.87 e	0.84	0.84 e	0.80 b	0.81
Switzerland	..	0.87	..	0.90	..	0.91	..
Türkiye	0.31	0.35	0.34	0.32	0.31	0.31	0.31
United Kingdom	0.40	0.40	0.38	0.39	0.40	0.40	..
United States	0.35 d	0.36 d	0.36 d	0.37 d	0.36 d	0.37 d	0.39 d p
EU27 (from 01/02/2020)	0.37 e	0.45 e	0.44 e	0.44 e	0.45 e	0.46 e	0.49 e
OECD-Total	**0.37 e**	**0.41 e**	**0.41 e**	**0.40 e**	**0.41 e**	**0.41 e**	**0.43 e**
Argentina	0.11	0.16	0.14	0.14	0.13	0.11	..
China	0.13	0.14	0.14	0.15	0.16	0.18	0.19
Romania	0.06	0.09	0.05	0.05	0.05	0.05	0.04
Russian Federation	0.06	0.11	0.10	0.10	0.10	0.11	0.11
Singapore	0.52	0.64	0.64	0.56	0.52	0.52	..
South Africa	0.17	0.24	0.27	0.28	0.27	0.28	..
Chinese Taipei	0.27	0.30	0.29	0.29	0.30	0.29	0.28

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 45. Higher education expenditure on R&D (HERD) at 2015 prices and PPP

Million 2015 USD

	2005	2015	2016	2017	2018	2019	2020
Australia	..	6 479.6 e	7 114.7	7 216.4 e	7 551.0	7 758.1 e	7 516.9
Austria	2 247.9 e	3 089.8	3 043.8 b e	3 082.6	3 195.0 e	3 189.4	3 134.9 e
Belgium	1 812.6	2 571.1	2 816.1	2 835.0	2 875.5	2 941.4	2 996.4 e
Canada	9 065.9	10 612.6	10 987.3	11 138.2	11 509.8	11 842.0	11 927.3 p
Chile	..	598.4	659.2 b p	684.2	755.0 e	736.1 e	660.4 e
Colombia	319.2	637.4	500.4	490.8	602.9	529.7	391.6
Czech Republic	626.7	1 706.8	1 251.9	1 338.3	1 623.3	1 722.1	1 662.8
Denmark	1 524.9	2 890.3	2 881.0	2 881.5	3 009.9	3 064.6	3 083.4
Estonia	126.3	232.9	174.8	211.9	273.0	259.5	263.6
Finland	1 401.8	1 631.0	1 639.8	1 710.9	1 737.9	1 797.5	1 769.4
France	9 577.1	12 585.0	12 546.1	12 756.1	12 863.6	12 852.1	12 753.8 e p
Germany	13 798.2	19 719.5	21 087.7 b	21 594.5	22 538.3	22 996.7	23 517.4
Greece	991.6	1 057.0	923.7	949.9	1 020.3	1 178.2	1 315.1
Hungary	554.4 d	428.1 d	354.5 d	492.1 d	567.5 b d	649.6 d	612.9 d
Iceland	79.3	104.2	112.6	118.3	119.2	126.5	128.0
Ireland	747.0	913.2 e	918.1	988.4 e	1 051.2	1 100.2 e	1 222.7 e
Israel	1 188.6 d	1 534.7 d	1 527.4 d	1 445.9 d	1 488.5 d	1 461.9 d e	1 421.8 d
Italy	7 420.4 b	7 652.7 e	7 491.8 e	7 453.3 e	7 565.0 e	7 683.7 e	7 425.7 e
Japan	20 762.9	20 690.3	20 048.3	20 261.4	19 950.7 b	20 092.2	19 556.8
Korea	3 374.4 d	6 995.9	7 249.6	7 475.3	7 848.9	8 276.0	9 256.6
Latvia	91.3	151.9	96.2	124.6	181.6	194.3	190.2
Lithuania	268.1	485.3	281.6	283.1	313.4	352.3	412.7
Luxembourg	11.3	139.8	155.7	164.9	161.1	177.1	168.9 e p
Mexico	2 051.5	4 820.9	4 473.8	3 853.7 e	3 755.0 e	3 436.5 e	3 312.9 e
Netherlands	4 711.9	5 423.6	5 289.7	5 469.0	5 432.5	5 634.8	5 801.2
New Zealand	501.8	593.4	..	617.2	..	666.4 p	..
Norway	1 251.1	1 883.6	2 038.7	2 253.1	2 359.4	2 401.6	2 295.5
Poland	1 241.2	2 954.6	3 179.9	3 750.9	4 449.7	5 723.0	5 767.9
Portugal	834.3	1 739.7	1 795.2	1 820.7	1 874.5	1 934.9	1 826.6
Slovak Republic	113.4	826.1	363.2	373.3	361.0	377.9	414.5
Slovenia	138.4	146.0	146.5	147.5	171.0	183.5	191.3
Spain	4 939.4	5 572.1	5 471.7	5 638.3	5 769.3	5 976.4	5 998.2
Sweden	2 923.2	4 136.8	4 277.5 e	4 223.9	4 318.5 e	4 199.9 b	4 137.4
Switzerland	..	4 761.8	..	5 080.3	..	5 363.5	..
Türkiye	3 786.0	7 033.2	7 115.4	7 180.0	7 191.5	7 250.2	7 352.3
United Kingdom	9 817.6	11 075.3	10 920.8	11 333.7	11 925.0	12 127.0	..
United States	54 424.8 d	64 635.0 d	67 119.3 d	69 098.0 d	71 090.8 d	72 882.7 d	74 718.4 d p
EU27 (from 01/02/2020)	56 703.0 e	76 795.1 e	76 874.9 e	78 971.0 e	82 121.9 e	85 064.6 e	85 516.8 e
OECD-Total	**169 945.6 e**	**218 500.6 e**	**221 620.5 e**	**226 533.7 e**	**233 381.6 e**	**239 139.3 e**	**241 525.2 e**
Argentina	689.8	1 393.4	1 161.8	1 225.1	1 111.5	902.6	..
China	9 199.8	25 798.7	27 317.0	30 942.7	34 428.7	41 768.0	43 533.4 e
Romania	182.5	364.7	244.1	257.5	247.0	255.6	207.0
Russian Federation	1 562.3	3 723.3	3 546.1	3 601.2	3 543.2	4 165.6	3 970.9 e
Singapore	1 449.1	3 081.3	3 180.1	2 925.0	2 807.8	2 843.3	..
South Africa	892.1	1 695.5	1 867.0	1 979.0	1 929.8	1 995.3	..
Chinese Taipei	2 060.5	3 280.0	3 264.7	3 334.9	3 562.9	3 603.9	3 591.4

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 46. Percentage of Higher education expenditure on R&D (HERD) financed by the business sector

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	5.1	..	4.9	..	5.5
Austria	..	5.3	..	5.1	..	5.0	..
Belgium	10.9	12.9	12.1	11.7	11.1	11.7	..
Canada	8.4	7.9	7.8	7.8	7.9	8.0	8.0 p
Chile	..	3.0	2.8 b p	2.6	3.3 e	3.4 e	3.4 e
Colombia	7.6	5.2	4.8	9.7	10.1	7.1	8.5
Czech Republic	0.8	4.0	4.7	5.1	4.6	3.8	3.7
Denmark	2.4	2.5	2.6	2.6	2.6	2.4	2.5
Estonia	5.2	5.4	7.4	5.8	6.9	7.9	7.8
Finland	6.5	3.7	3.7	3.2	2.9	3.1	3.1
France	1.6	3.0 s	2.6	2.7 s	2.8	3.0	..
Germany	14.6 d	13.9 d	13.8 b d	13.3 d	13.5 d	13.6 d	12.9 d
Greece	8.9	7.6	7.3	8.4	8.5	7.9	6.5
Hungary	11.8 d	8.0 d	9.6 d	6.1 d	5.4 b d	2.6 d	2.7 d
Iceland	11.3	2.0	2.3	0.8	0.5	1.8	2.8
Ireland	2.7	2.9 e	3.2	3.2 e	3.6	3.9 e	..
Israel	7.3 d	8.6 d	9.5 d	7.2 d	6.9 d	5.6 d e	..
Italy	1.4 b	1.3 e	1.3 e	6.0 e	6.0 e	6.0 e	6.0 e
Japan	2.8	2.6	2.8	2.9	3.2 b	3.4	3.3
Korea	15.2 d	12.3	12.6	13.7	14.3	14.3	13.8
Latvia	15.4	7.8	5.6	5.9	4.2	4.6	6.4
Lithuania	3.8	11.6	12.2	6.8	6.4	5.7	5.4
Luxembourg	1.4	1.1	1.2	1.3	0.9	0.9	0.9 e p
Mexico	1.2 e	0.3	0.4	0.4 e	0.3 e	0.3 e	0.3 e
Netherlands	7.8	7.9	7.8	8.3	8.7	8.3	7.8
New Zealand	8.0	3.5	..	4.5	..	4.5 p	..
Norway	4.7	3.1	3.1	2.3	2.3 e	2.3	2.3 e
Poland	5.4	2.6	3.0	3.5	3.9	3.3	2.8
Portugal	1.2	1.9	1.8	1.9	2.0	2.1	2.2
Slovak Republic	0.7	1.6	1.9	2.1	0.7	0.8	0.6
Slovenia	9.0	11.4	10.6	8.7	8.5	8.6	7.1
Spain	6.9	5.7	5.1	5.2	5.5	5.6	5.2
Sweden	5.1	4.0	..	3.6	..	3.3 b	..
Switzerland	..	9.8	..	9.7	..	10.4	..
Türkiye	22.7 d	1.2	1.2	1.3	1.9	1.7	2.1
United Kingdom	4.6	4.5	4.5	4.4	4.4	4.0	..
United States	5.0 d	5.3 d	5.2 d	5.3 d	5.4 d	5.4 d	5.4 d p
EU27 (from 01/02/2020)	6.9 e	6.8 e	6.9 e	7.2 e	7.3 e	7.2 e	6.9 e
OECD-Total	**6.1 e**	**5.7 e**	**5.8 e**	**6.0 e**	**6.2 e**	**6.1 e**	**6.1 e**
Argentina	0.6	0.1	0.3	0.3	0.2	1.7	..
China	36.7	30.2	29.0	28.5	26.6	26.2	35.4
Romania	7.5	5.1	6.2	6.6	5.7	4.8	5.0
Russian Federation	29.3	27.4	27.7	28.2	29.1	32.2	29.7
Singapore	1.7	5.5	5.8	6.0	4.6	5.1	..
South Africa	11.6	7.8	7.8	5.2	3.5	3.7	..
Chinese Taipei	5.8	9.3	9.7	10.0	9.9	11.3	11.7

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 47. Higher education researchers in full-time equivalent

FTE

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	69 287	..	70 441	..	69 247
Austria	8 962 d e	13 658 d	13 363 d e	13 513 d	14 258 e	14 669 d	14 750 e
Belgium	13 853	20 362 b	19 601	19 705	19 934	20 272	20 961 e
Canada	43 400	58 850	59 240	60 140	61 070	63 450	..
Chile	..	4 004 d	4 357 d	4 520 d	4 862 d e	4 982 d e	5 114 e
Colombia	..	..	..	..	..	..	..
Czech Republic	7 762 b	11 357	10 511	10 875	12 001	12 663	13 331
Denmark	8 242	16 193	16 233	16 046	16 496	16 747 p	16 839 p
Estonia	1 905	2 431	2 426	2 452	2 718	2 442	2 364
Finland	12 879	12 240	11 987	12 731	12 824	13 411	13 257
France	66 290	80 491	81 565	82 396	82 633	83 772	84 811 e p
Germany	65 363	103 148	109 877 b	112 143	114 868	114 512	117 638
Greece	11 356 d	22 149 d	17 241 d	17 853 d	18 588 d	20 347 d	22 641 d
Hungary	5 911	5 610	5 592	6 032	9 547 d	9 999 d	10 603 d
Iceland	585	892 b	1 151	927	..	..	..
Ireland	4 400	12 731 e	12 627	11 295 e	9 964	9 964 e	9 964 e
Israel	..	9 590 d e	9 524 d e	9 802 d e	9 981 d e	..	..
Italy	37 073 b d	48 841 d e	50 816 d e	51 362 d e	51 989 d e	54 501 d e	54 956 d e
Japan	156 176 d	137 078 d	138 095 d	138 697 d	134 740 b d	135 509 d	136 190 d
Korea	27 416 d	40 866	40 759	38 813	40 736	41 448	44 895
Latvia	2 224 d	2 318 d	1 944 d	2 264 d	2 200 d	2 308 d	2 607
Lithuania	5 116.0	4 830.0	4 992.7	4 574.5	4 521.4	4 947.0	5 709.9
Luxembourg	157	945	972	1 048	1 085	1 182	1 175 e p
Mexico	16 691 e	16 677	17 008	16 746 e	16 414 e	16 886 e	17 335 e
Netherlands	17 928	22 342	22 244	22 788	23 029	23 806	25 222
New Zealand	7 481	16 000	..	13 000	..	16 000 p	..
Norway	7 512	10 976	11 795	12 538	13 051	13 836	13 235
Poland	40 449	40 126	44 414	56 397 d	57 049 d	59 947 d	57 532 d
Portugal	10 956	25 043	26 106	27 562	28 831	28 812	28 740
Slovak Republic	6 458 d	8 508 d	8 154 d	8 745 d	9 279 d	9 664 d	9 895
Slovenia	1 695	2 069	1 951	2 020 d	2 104 d	2 277 d	2 274
Spain	54 028	57 107 d	58 413 d	62 542 d	64 007 d	66 630 d	67 212 d
Sweden	15 125 b	18 215	19 726 e	17 501	16 676 e	19 217	18 571
Switzerland	..	21 375	..	22 724	..	24 024	..
Türkiye	25 434	43 293	40 996	42 916	44 240	46 055	46 540
United Kingdom	141 762 b e	167 463	167 519	170 971	171 527	172 489	..
United States	..	..	..	..	..	..	..
EU27 (from 01/02/2020)	409 884 e	545 456 e	557 373 e	577 397 e	589 648 e	607 399 e	616 957 e
OECD-Total	**..**	**..**	**1 460 154 e**	**..**	**..**	**..**	**..**
Argentina	14 200	21 701	22 781	20 720	20 933	22 075	..
China	221 908 d	298 728	307 923	327 891	352 836	502 611	547 387
Romania	5 386	6 480	6 314	6 413	5 832	5 773	6 375
Russian Federation	70 494	92 503	83 024	75 977	80 678	82 749	78 864
Singapore	8 187	17 330	17 468	17 165	16 606	17 620	..
South Africa	9 235	18 367	19 629	20 996	21 591	22 153	..
Chinese Taipei	23 180	29 828	29 099	28 810	28 767	28 793	28 996

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 48. Higher education researchers as a percentage of national total

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	31.5 d e	31.4 d	28.4 d e	28.4 d	28.4 e	27.8 d	28.4 e
Belgium	41.8	38.3 b	36.1 e	36.5	34.7	33.4	32.7 e
Canada	31.7	36.1	37.3	37.1	34.9	34.7	..
Chile	..	49.0 d	48.5 d	49.7 d	49.6 d e	51.5 d e	51.3 e
Colombia	..	..	..	..	..	..	..
Czech Republic	32.1 b	29.8	28.2	27.8	29.1	29.8	30.2
Denmark	29.2	37.8	36.2	36.5	37.6	37.5 p	37.8 p
Estonia	57.2	58.1	55.9	52.5	54.7	48.9	46.4
Finland	32.5	32.6	33.4	34.4	33.8	33.5	31.8
France	32.7	28.8	28.6	27.8	27.1	26.7	26.4 e p
Germany	24.0	26.6	27.5 b	26.7	26.5	25.4	26.1
Greece	58.0 d	63.8 d	58.6 d	51.0 d	50.7 d	52.1 d	52.7 d
Hungary	37.2	22.2	21.7	21.2	25.4 d	25.4 d	25.2 d
Iceland	27.2	45.9 b	..	45.2	..	..	..
Ireland	38.0	51.9 e	51.9 e	46.2 e	43.7 e	42.3 e	41.6 e
Israel	..	..	..	..	..	..	..
Italy	44.9 b d	38.8 d e	38.0 b d e	36.6 d e	34.1 d e	33.9 d e	35.0 d e
Japan	22.9 d	20.7 d	20.7 d	20.5 d	19.9 b d	19.9 d	19.7 d
Korea	15.2 d	11.5	11.3	10.1	10.0	9.6	10.0
Latvia	67.8 d	64.2 d	61.7 d	65.0 d	63.7 d	63.5 d	64.0
Lithuania	67.0	59.1	58.6	52.3	50.6	51.4	56.1
Luxembourg	7.1	36.2	35.1	35.7	37.9	37.8	40.0 e p
Mexico	38.0 e	48.6	43.7	42.8 e	41.9 e	40.4 e	38.6 e
Netherlands	37.5	26.8	25.4	25.0	24.1	24.4	24.7
New Zealand	57.6	64.0	..	54.2	..	57.1 p	..
Norway	35.4	35.8	37.0	37.3	38.0	38.5	36.4
Poland	65.1	48.6	50.4	49.2 d	48.4 d	49.6 d	46.2 d
Portugal	51.9	64.8	63.1	61.3	60.5	57.4	54.0
Slovak Republic	59.1 d	59.1 d	57.6 d	57.4 d	56.8 d	56.9 d	57.3
Slovenia	32.3	26.2	24.0	21.7 d	20.9 d	21.7 d	21.0
Spain	49.2	46.6 d	46.1 d	46.9 d	45.7 d	46.3 d	46.2 d
Sweden	27.5 b e	27.3 e	28.0 e	23.9	22.2 e	24.4	23.2
Switzerland	..	48.9	..	51.3	..	50.4	..
Türkiye	65.0	45.5	40.9	38.4	35.0	34.0	31.1
United Kingdom	57.0 b e	58.6	57.5 e	57.8	55.9 e	54.5	..
United States	..	..	..	..	..	..	..
EU27 (from 01/02/2020)	36.4 e	34.8 e	34.5 e	33.8 e	33.0 e	32.8 e	32.7 e
OECD-Total	**..**	**..**	**30.0 e**	**..**	**..**	**..**	**..**
Argentina	44.6	41.0	41.6	39.0	38.5	40.1	..
China	19.8 d	18.5	18.2	18.8	18.9	23.8	24.0
Romania	23.5	37.1	35.0	36.6	33.9	33.3	34.8
Russian Federation	15.2	20.6	19.4	18.5	19.9	20.7	19.9
Singapore	34.4	44.2	44.6	44.1	42.3	41.7	..
South Africa	53.4	70.2	71.0	71.1	74.2	78.1	..
Chinese Taipei	26.1	20.6	19.8	19.2	18.7	18.1	17.7

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 49. Higher education Total R&D personnel in full-time equivalent

FTE

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	79 008	..	81 717	..	81 090
Austria	12 353 d e	17 682 d	17 484 d e	17 680 d	18 655 e	18 971 d	19 077 e
Belgium	17 767	26 156 b	24 953	25 060	25 363	25 872	26 030 e
Canada	56 950	72 720	73 210	74 330	75 380	78 030	..
Chile	..	7 190 d	8 058 d	8 233 d	8 514 d e	8 990 d e	8 999 e
Colombia	..	..	..	..	..	..	..
Czech Republic	10 972 b	16 868	15 201	15 803	18 226	19 647	20 007
Denmark	11 561	21 258	21 969	21 751	21 891	22 185 p	22 307 p
Estonia	2 176	3 062	2 969	3 015	3 233	2 957	2 856
Finland	17 453	15 515	15 157	16 007	16 418	17 002	17 061
France	98 743	117 794	119 367	119 788	119 932	120 973	122 003 e p
Germany	94 522	134 032	141 661 b	143 753	147 160	147 316	151 692
Greece	17 401 d	27 383 d	20 404 d	21 986 d	23 431 d	25 240 d	27 613 d
Hungary	8 194	7 706	7 476	8 442	12 994 d	14 111 d	14 703 d
Iceland	742	1 062	1 360	1 096	..	..	..
Ireland	5 220	15 012 e	15 178	13 211 e	11 243	11 243 e	11 243 e
Israel	9 011 d	11 283 d e	11 205 d e	11 532 d e	11 743 d e	..	..
Italy	66 976 b d	76 858 d e	80 226 d e	80 358 d e	81 233 d e	83 776 d e	82 671 d e
Japan	209 734 d	208 579 d	210 683 d	212 212 d	210 100 b d	211 602 d	212 150 d
Korea	42 157 d	72 745	72 482	70 037	71 333	71 727	77 674
Latvia	2 856 d	3 241 d	3 147 d	3 448 d	3 553 d	3 721 d	4 063
Lithuania	6 699.0	5 737.0	5 895.3	5 386.6	5 318.9	5 876.0	6 605.8
Luxembourg	169	1 057	1 097	1 164	1 210	1 343	1 335 e p
Mexico	25 218 e	23 998	25 130	25 136 e	24 999 e	26 023 e	27 086 e
Netherlands	32 305	33 604	33 300	34 350	34 742	35 963	38 433
New Zealand	9 660	18 000	..	16 000	..	18 000 p	..
Norway	9 420	13 952	14 937	15 675	16 237	16 957	16 126
Poland	44 763	44 961	51 652	65 325 d	70 172 d	73 196 d	72 159 d
Portugal	11 680	27 001	28 265	30 078	31 451	31 556	31 505
Slovak Republic	7 146 d	8 815 d	8 623 d	9 056 d	9 620 d	9 996 d	10 234
Slovenia	2 099	2 555	2 321	2 395 d	2 659 d	2 888 d	2 911
Spain	66 996	73 327 d	75 191 d	79 286 d	80 318 d	83 048 d	84 325 d
Sweden	17 686 b	21 435	21 918 e	20 196	19 453 e	22 080	21 555
Switzerland	..	29 717	..	31 523	..	33 190	..
Türkiye	25 434 e	43 293 e	52 576 b	54 289	56 364	59 031	59 653
United Kingdom	152 634 b e	186 724	186 770	190 078	190 526	189 278	..
United States	..	..	..	..	..	..	..
EU27 (from 01/02/2020)	570 624 e	720 308 e	734 201 e	756 878 e	776 960 e	798 124 e	810 928 e
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	15 507	26 015	27 434	28 128	31 872	33 060	..
China	227 163 d	354 861	360 049	382 160	410 893	565 478	614 763
Romania	6 803	9 008	8 627	8 416	7 695	7 600	8 862
Russian Federation	97 672	121 680	110 379	101 628	107 756	116 732	109 662
Singapore	9 337	18 596	18 692	18 309	17 656	18 949	..
South Africa	10 611	20 812	22 061	23 415	24 457	25 109	..
Chinese Taipei	25 752	33 177	32 349	31 866	31 896	31 871	32 107

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 50. Government intramural expenditure on R&D (GOVERD) at current prices and PPP

Million USD

	2005	2015	2016	2017	2018	2019	2020
Australia	..	2 686.5 e	2 261.0	2 253.0 e	2 264.5	2 282.3 e	2 502.1
Austria	355.9 e	602.3	1 016.3 b e	1 040.8	1 111.9 e	1 184.8	1 205.4 e
Belgium	520.6	1 161.7	1 339.0	1 436.5	1 574.6	1 733.5	1 727.4 e
Canada	2 238.7	1 878.9	1 927.8	2 096.0	2 242.8	2 168.7	2 864.2 p
Chile	..	121.3	203.3	211.0	222.7 e	185.3 e	178.5 e
Colombia	32.9	50.3	145.8	173.3	178.0	198.7	135.8
Czech Republic	596.5 b	1 398.3	1 156.9	1 254.1	1 358.0	1 434.9	1 519.3
Denmark	285.7	190.0	203.9	287.0	286.9	291.2	358.8
Estonia	23.3	60.8	58.5	66.9	77.6	84.0	88.1
Finland	534.0	546.6	548.8	610.3	626.6	629.2	625.7
France	7 024.1	7 851.7	8 089.8	8 144.9	8 539.0	8 916.2	8 857.9 e p
Germany	9 014.2 d	16 045.8 d	16 902.4 d	18 104.6 d	19 264.5 d	20 000.3 d	21 113.3 d
Greece	329.9	787.0	745.6	784.5	864.1	930.6	971.8
Hungary	444.3 d	469.6 d	434.0 d	477.5 d	511.4 b d	483.8 d	514.3 d
Iceland	69.8	16.5	17.9	16.6	16.8	15.6	16.4
Ireland	148.3	168.2	168.1	179.3	200.2	199.1	206.3
Israel	186.4 d	211.0 d	227.3 d	247.7 d	264.4 d	256.3 d e	261.3 d
Italy	3 158.8	3 940.2	4 155.8	4 259.5	4 619.5	4 878.4	4 981.5
Japan	10 669.1	13 310.5	12 098.2	13 019.4	13 336.7	13 446.0	14 407.4
Korea	3 631.6 d	9 032.6	9 329.8	9 660.2	10 102.3	10 291.2	11 408.7
Latvia	30.7	78.4	72.4	74.3	86.5	73.5	79.5
Lithuania	90.1	149.2	195.0	239.0	212.3	218.3	196.2
Luxembourg	60.1 d	224.0 d	212.9 d	202.6 d	216.2 d	203.9 d	202.2 e p
Mexico	1 238.8	2 884.6	2 438.1	2 114.2 e	2 069.2 e	1 883.1 e	1 879.1 e
Netherlands	1 355.4 d	1 111.1 d	1 160.4 d	1 159.6 d	1 250.1 d	1 276.4 d	1 341.1 d
New Zealand	308.1	445.2	..	578.6	..	530.7	..
Norway	513.1	911.7	892.8	970.4	1 052.1	980.5	955.4
Poland	1 085.2	2 496.0	260.3 b	269.8	285.2	215.0	356.9
Portugal	264.3	247.7	219.7	246.2	257.4	266.5	281.7
Slovak Republic	130.8 d	525.6	273.0	301.7	303.0	287.2	307.5
Slovenia	163.7	193.5	189.1	194.1	213.1	239.8	246.7
Spain	2 258.7	3 791.0	3 817.0	3 955.1	3 980.7	4 182.1	4 388.0
Sweden	506.9 b	529.3	553.2 e	636.3	654.1 e	857.9 b v	883.5
Switzerland	..	156.9 d	..	155.3 d	..	181.8	..
Türkiye	531.0	1 833.0	1 884.2 d	2 065.4 d	2 180.1 d	1 580.5 d	1 691.6 d
United Kingdom	3 234.9	3 019.7	3 153.1	3 221.9	3 786.4	3 868.7	..
United States	40 378.0 d	54 666.0 d	52 508.0 d	54 129.0 d	60 218.0 d	64 801.0 d	68 156.0 d p
EU27 (from 01/02/2020)	28 755.3 e	43 337.7 e	42 423.2 e	44 671.0 e	47 231.1 e	49 474.6 e	51 400.8 e
OECD-Total	**93 228.1 e**	**133 229.5 e**	**128 937.9 e**	**134 166.9 e**	**144 435.4 e**	**150 523.2 e**	**158 865.6 e**
Argentina	882.1	2 744.5	2 324.7	2 706.5	2 106.1	1 845.6	..
China	18 787.5	59 161.1	61 685.9	64 055.0	70 612.0	81 390.1	91 820.7
Romania	288.6	799.9	765.5	865.7	877.1	938.6	928.4
Russian Federation	4 723.4	12 059.5	12 474.0	12 851.4	14 425.3	12 923.3	15 741.4
Singapore	522.3	1 168.6	1 167.6	1 139.6	1 192.9	1 267.1	..
South Africa	828.8	1 331.1	1 337.0	1 344.3	1 175.1	1 208.0	..
Chinese Taipei	3 218.7	4 014.3	4 389.7	4 286.1	4 304.6	4 656.1	4 581.0

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 51. Government intramural expenditure on R&D (GOVERD) as a percentage of GDP

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	0.24 e	0.19	0.18 e	0.17	0.17 e	0.18
Austria	0.12 e	0.14	0.22 b e	0.22	0.22 e	0.23	0.24 e
Belgium	0.15	0.22	0.24	0.25	0.26	0.28	0.28 e
Canada	0.19	0.12	0.11	0.12	0.12	0.12	0.16 p
Chile	..	0.03	0.05	0.05	0.05 e	0.04 e	0.04 e
Colombia	0.01	0.01	0.02	0.03	0.02	0.03	0.02
Czech Republic	0.26 b	0.39	0.30	0.30	0.31	0.31	0.34
Denmark	0.15	0.07	0.07	0.09	0.09	0.09	0.10
Estonia	0.10	0.16	0.14	0.15	0.16	0.17	0.17
Finland	0.32	0.23	0.22	0.23	0.23	0.23	0.22
France	0.36	0.29	0.28	0.27	0.27	0.27	0.28 e p
Germany	0.34 d	0.41 d	0.41 d	0.41 d	0.42 d	0.43 d	0.46 d
Greece	0.12	0.27	0.25	0.26	0.27	0.29	0.32
Hungary	0.26 d	0.18 d	0.16 d	0.17 d	0.16 b d	0.15 d	0.16 d
Iceland	0.63	0.10	0.10	0.09	0.08	0.07	0.08
Ireland	0.09	0.05	0.05	0.05	0.05	0.05	0.04
Israel	0.11 d	0.07 d	0.07 d	0.07 d	0.07 d	0.07 d e	0.07 d
Italy	0.18	0.18	0.17	0.17	0.18	0.18	0.20
Japan	0.26	0.26	0.23	0.25	0.25	0.25	0.27
Korea	0.30 d	0.47	0.46	0.46	0.45	0.46	0.49
Latvia	0.10	0.16	0.14	0.13	0.15	0.12	0.13
Lithuania	0.2	0.2	0.2	0.3	0.2	0.2	0.2
Luxembourg	0.19 d	0.36 d	0.32 d	0.30 d	0.30 d	0.28 d	0.27 e p
Mexico	0.09	0.13	0.10	0.09 e	0.08 e	0.07 e	0.08 e
Netherlands	0.22 d	0.13 d	0.13 d	0.12 d	0.13 d	0.12 d	0.13 d
New Zealand	0.29	0.26	..	0.28	..	0.23	..
Norway	0.23	0.29	0.29	0.29	0.28	0.27	0.28
Poland	0.20	0.24	0.02 b	0.02	0.02	0.02	0.03
Portugal	0.11	0.08	0.07	0.07	0.07	0.07	0.08
Slovak Republic	0.15 d	0.32	0.17	0.18	0.18	0.16	0.18
Slovenia	0.34	0.30	0.27	0.26	0.26	0.28	0.29
Spain	0.19	0.23	0.22	0.21	0.21	0.21	0.25
Sweden	0.16 b	0.11	0.11 e	0.12	0.12 e	0.15 b v	0.15
Switzerland	..	0.03 d	..	0.03 d	..	0.03	..
Türkiye	0.07	0.09	0.09 d	0.09 d	0.09 d	0.07 d	0.07 d
United Kingdom	0.16	0.11	0.11	0.11	0.12	0.12	..
United States	0.31 d	0.30 d	0.28 d	0.28 d	0.29 d	0.30 d	0.33 d p
EU27 (from 01/02/2020)	0.25 e	0.26 e	0.23 e	0.23 e	0.24 e	0.24 e	0.26 e
OECD-Total	**0.25 e**	**0.25 e**	**0.23 e**	**0.23 e**	**0.24 e**	**0.24 e**	**0.26 e**
Argentina	0.17	0.32	0.26	0.26	0.20	0.18	..
China	0.28	0.33	0.33	0.32	0.32	0.35	0.38
Romania	0.14	0.19	0.16	0.16	0.15	0.15	0.15
Russian Federation	0.26	0.34	0.35	0.34	0.34	0.29	0.36
Singapore	0.21	0.24	0.23	0.21	0.21	0.22	..
South Africa	0.18	0.19	0.19	0.19	0.16	0.16	..
Chinese Taipei	0.49	0.36	0.39	0.37	0.36	0.37	0.35

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 52. Government intramural expenditure on R&D (GOVERD) at 2015 prices and PPP

Million 2015 USD

	2005	2015	2016	2017	2018	2019	2020
Australia	..	2 686.5 e	2 144.6	2 138.3 e	2 068.1	2 064.9 e	2 146.9
Austria	473.5 e	602.3	970.6 b e	981.6	1 017.3 e	1 074.3	1 058.7 e
Belgium	679.3	1 161.7	1 282.6	1 341.9	1 431.8	1 549.5	1 482.4 e
Canada	2 588.2	1 878.9	1 850.6	1 970.2	2 061.9	2 026.5	2 662.9 p
Chile	..	121.3	197.4	195.7	202.6 e	169.2 e	153.4 e
Colombia	37.4	50.3	139.6	161.5	157.8	172.1	114.1
Czech Republic	768.8 b	1 398.3	1 111.9	1 175.4	1 235.6	1 286.3	1 319.0
Denmark	399.4	190.0	197.1	266.1	260.0	262.2	307.4
Estonia	34.4	60.8	56.2	62.9	70.1	75.4	77.2
Finland	703.5	546.6	532.1	575.4	572.6	572.7	549.4
France	9 038.8	7 851.7	7 762.6	7 675.9	7 824.0	7 879.8	7 499.2 e p
Germany	11 595.9 d	16 045.8 d	16 133.9 d	16 848.5 d	17 354.8 d	18 018.3 d	18 365.6 d
Greece	423.5	787.0	724.7	742.9	805.1	862.1	891.4
Hungary	617.3 d	469.6 d	426.6 d	464.9 d	485.6 b d	457.5 d	469.0 d
Iceland	84.9	16.5	17.2	15.7	15.7	14.4	15.0
Ireland	203.7	168.2	163.7	172.7	190.3	190.8	194.6
Israel	214.1 d	211.0 d	218.2 d	235.6 d	251.3 d	247.5 d e	245.8 d
Italy	4 254.1	3 940.2	3 897.0	3 905.1	4 137.7	4 308.2	4 249.8
Japan	12 841.6	13 310.5	12 286.3	13 179.3	13 379.5	13 422.8	13 834.5
Korea	4 031.0 d	9 032.6	9 162.3	9 429.7	9 614.3	9 989.7	10 424.9
Latvia	42.1	78.4	69.9	69.7	79.0	67.0	71.3
Lithuania	122.6	149.2	188.8	224.1	194.0	197.4	175.6
Luxembourg	90.5 d	224.0 d	208.1 d	193.1 d	202.6 d	192.9 d	184.1 e p
Mexico	1 653.6	2 884.6	2 341.6	2 008.0 e	1 948.9 e	1 771.7 e	1 709.0 e
Netherlands	1 691.7 d	1 111.1 d	1 134.4 d	1 100.8 d	1 150.5 d	1 166.1 d	1 171.1 d
New Zealand	400.3	445.2	..	532.4	..	466.9	..
Norway	635.5	911.7	885.7	914.1	944.0	892.0	859.7
Poland	1 429.1	2 496.0	254.7 b	260.7	273.2	204.0	325.5
Portugal	344.5	247.7	211.0	234.7	239.1	245.4	251.1
Slovak Republic	164.7 d	525.6	281.0	314.8	315.6	299.3	312.2
Slovenia	199.9	193.5	181.7	181.7	194.4	214.8	215.1
Spain	2 900.4	3 791.0	3 678.3	3 693.3	3 677.1	3 821.7	3 929.8
Sweden	648.5 b	529.3	543.0 e	613.5	616.8 e	800.6 b v	786.0
Switzerland	..	156.9 d	..	150.7 d	..	173.8	..
Türkiye	801.0	1 833.0	1 860.3 d	2 049.0 d	2 190.5 d	1 646.2 d	1 749.8 d
United Kingdom	4 027.4	3 019.7	3 076.6	3 069.6	3 552.9	3 560.2	..
United States	48 308.7 d	54 666.0 d	51 987.0 d	52 593.7 d	57 144.8 d	60 413.3 d	62 784.5 d p
EU27 (from 01/02/2020)	37 425.9 e	43 337.7 e	40 618.0 e	41 769.8 e	42 972.5 e	44 486.5 e	44 649.0 e
OECD-Total	**114 609.8 e**	**133 229.5 e**	**126 251.6 e**	**129 118.7 e**	**135 894.1 e**	**140 115.3 e**	**144 066.6 e**
Argentina	1 060.3	2 744.5	2 229.9	2 273.5	1 727.9	1 487.6	..
China	20 269.5	59 161.1	62 686.4	65 503.2	70 523.7	79 628.9	88 729.6 e
Romania	456.1	799.9	717.6	783.3	771.5	796.2	754.6
Russian Federation	7 046.4	12 059.5	12 453.2	12 144.1	12 607.5	11 088.7	13 236.1 e
Singapore	579.1	1 168.6	1 158.4	1 107.2	1 133.7	1 186.2	..
South Africa	962.2	1 331.1	1 318.6	1 314.2	1 122.4	1 138.7	..
Chinese Taipei	3 797.4	4 014.3	4 441.4	4 360.7	4 277.4	4 545.6	4 418.8

Note: Detailed metadata:*http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 53. Percentage of Government intramural expenditure on R&D (GOVERD) financed by the business sector

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	10.3	..	10.0	..	12.3
Austria	..	6.0	..	8.7	..	9.0	..
Belgium	9.2	6.2	5.8	5.4	6.7	6.5	..
Canada	3.8	0.9	0.9	0.9	1.0	1.3	0.7 p
Chile	..	2.7	1.8	2.0	1.8 e	1.8 e	2.1 e
Colombia	0.0	0.9	0.3	0.2	0.0	0.0	0.0
Czech Republic	9.4 b	2.8	4.0	3.6	3.9	3.6	2.6
Denmark	2.1	1.2	2.1	3.9	3.8	2.7	3.4
Estonia	0.0	1.6	2.9	1.8	1.7	2.1	2.2
Finland	12.4	8.7	9.1	7.4	7.8	7.4	6.1
France	7.4	7.6 s	8.1	7.9 s	8.0	6.9	..
Germany	9.9 d	11.3 d	11.2 d	10.1 d	9.9 d	9.7 d	9.8 d
Greece	1.3	4.5	3.2	5.6	3.3	3.4	3.2
Hungary	10.3 d	8.8 d	6.0 d	5.2 d	6.6 b d	3.4 d	1.6 d
Iceland	7.4	15.5	12.2	3.8	21.7	4.9	22.1
Ireland	4.1	0.8	0.9	3.9	2.9	2.7	..
Israel	7.7 d	2.1 d	2.2 d	2.1 d	2.1 d	1.9 d e	..
Italy	2.4	4.2	3.8	4.3	3.8	3.9	3.8
Japan	0.7	2.3	2.4	2.8	2.7	2.5	2.3
Korea	4.3 d	2.3	3.0	3.4	3.0	3.0	3.4
Latvia	15.6	16.9	9.7	9.7	10.6	11.7	11.2
Lithuania	6.6	13.3	13.5	11.9	10.9	10.0	11.6
Luxembourg	3.9 d	1.3 d	1.1 d	2.1 d	3.2 d	4.2 d	4.2 e p
Mexico	1.2 e	2.7	3.1	3.2 e	2.9 e	3.1 e	3.0 e
Netherlands	14.6 d	7.8 d	7.8 d	8.6 d	9.2 d	8.3 d	8.5 d
New Zealand	19.0	18.2	..	17.3	..	26.0	..
Norway	10.6	7.4	8.0	7.5	7.0	6.8	7.6
Poland	14.3	4.5	5.3 b	4.8	3.9	4.4	3.7
Portugal	2.0	1.9	5.9	5.0	5.6	2.8	4.1
Slovak Republic	8.5 d	8.6	12.0	8.8	4.1	3.7	3.8
Slovenia	12.1	8.0	6.8	.. c	.. c	5.9	6.2
Spain	7.3	6.0	5.6	5.9	6.9	7.8	8.0
Sweden	1.3 b	3.9	..	6.8	..	2.9 b v	..
Switzerland	..	2.4 d	..	3.9 d	..	2.9	..
Türkiye	1.5	2.8	2.1 d	1.9 d	1.7 d	2.7 d	4.0 d
United Kingdom	9.9	2.2	1.8	1.6	2.7	3.0	..
United States	0.3 d	0.4 d	0.4 d	0.4 d	0.4 d	0.3 d	0.3 d p
EU27 (from 01/02/2020)	8.1 e	8.0 e	8.3 e	7.9 e	7.8 e	7.5 e	7.6 e
OECD-Total	**3.7 e**	**3.5 e**	**3.7 e**	**3.6 e**	**3.5 e**	**3.4 e**	**3.4 e**
Argentina	0.2	0.3	0.5	0.2	0.2	0.2	..
China	4.9	3.9	4.7	4.6	4.4	4.6	4.9
Romania	16.1	15.2	18.0	13.3	12.0	12.2	14.8
Russian Federation	11.4	11.6	9.1	9.7	9.6	9.4	8.9
Singapore	2.3	4.0	3.5	3.1	3.0	3.3	..
South Africa	7.9	4.7	5.9	4.1	2.8	2.9	..
Chinese Taipei	3.0	2.7	2.6	3.4	3.2	2.8	3.0

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 54. Government researchers in full-time equivalent

FTE

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	7 483	..	7 570	..	8 239
Austria	1 232 d e	1 682 d	3 624 d e	3 665 d	3 867 e	3 817 d	3 848 e
Belgium	2 274	4 041 b	4 290	4 486	5 283	5 490	5 991 e
Canada	8 360	7 930	7 400	7 940	7 770	8 270	..
Chile	..	863 d	1 296 d	1 163 d	1 385 d e	1 224 d e	1 359 e
Colombia	..	..	..	..	..	..	..
Czech Republic	6 564 b	7 393	7 500	7 908	7 879	7 968	8 169
Denmark	2 105	1 426	1 392	1 635	1 587	1 577 p	1 586 p
Estonia	474	514	504	549	489	524	542
Finland	4 374	3 550	3 209	3 318	3 236	3 260	3 338
France	25 889 d	28 445	28 890	28 821	29 207	29 276	29 639 e p
Germany	39 911	54 011 d	53 971 d	54 715 d	57 183 d	59 221 d	60 988 d
Greece	2 076 d	7 256 d	6 263 d	7 184 d	7 768 d	8 151 d	8 385 d
Hungary	4 959	4 680	4 965	4 867	6 592 d	6 495 d	6 848 d
Iceland	501	239 b	143	247	..	..	..
Ireland	419	494	504	580	652	635	641
Israel	..	..	..	..	..	..	..
Italy	14 454 d	21 592 d	21 711 d	22 118 d	22 694 d	23 276 d	23 429 d
Japan	34 035 d	30 242 d	30 238 d	30 610 d	30 585 d	30 532 d	30 152 d
Korea	12 791 d	26 431	27 170	27 185	27 364	28 686	27 891
Latvia	589 d	691 d	626 d	571 d	572 d	566 d	619
Lithuania	1 805.0	1 449.0	1 576.6	1 612.6	1 584.3	1 536.0	1 543.0
Luxembourg	374	617	601	612	644	662	657 e p
Mexico	6 589 e	6 798	6 670	6 450 e	6 189 e	6 034 e	5 849 e
Netherlands	7 028 d	5 538 d	5 668 d	5 563 d	5 845 d	6 083 d	6 285 d
New Zealand	1 800	1 900	..	1 900	..	1 900	..
Norway	3 449 d	4 735	4 788	4 752	4 607	4 522	4 556
Poland	12 175	13 618	2 369 b	3 392 d	3 110 d	2 220 d	3 178 d
Portugal	3 338	1 351	1 340	1 477	1 558	1 600	1 651
Slovak Republic	2 503 d	3 084 d	3 087 d	3 078 d	3 088 d	3 090 d	3 130
Slovenia	1 591	1 629	1 667	1 502 d	1 661 d	1 778 d	1 806
Spain	20 446	19 962 d	20 663 d	20 844 d	21 422 d	22 147 d	22 527 d
Sweden	2 929 b d e	3 322 b e	3 362 e	3 788	3 700 e	3 914	3 980
Switzerland	..	472 d	..	455 d	..	645	..
Türkiye	4 249	6 555	6 700 d	6 672 d	6 701 d	5 754 d	5 986
United Kingdom	9 311	7 057	7 047	6 876	6 882	7 356	..
United States	..	..	..	..	..	..	..
EU27 (from 01/02/2020)	170 209 e	196 533 e	187 963 e	192 219 e	199 463 e	203 406 e	209 066 e
OECD-Total	**295 373 e**	**340 315 e**	**329 506 e**	**335 126 e**	**347 036 e**	**355 253 e**	**364 821 e**
Argentina	13 285	26 266	27 168	26 975	26 724	26 504	..
China	200 377 d	305 686	336 106	356 805	370 116	390 179	399 462
Romania	7 082	6 659	6 755	6 526	6 597	6 801	6 781
Russian Federation	154 827	146 840	145 956	139 479	144 548	124 183	131 003
Singapore	1 364	2 146	2 407	2 423	2 498	2 604	..
South Africa	1 974	2 781	2 910	2 691	2 618	2 647	..
Chinese Taipei	13 789	14 343	14 797	15 044	15 688	16 824	16 144

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 55. Government researchers as a percentage of national total

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	..	..	..	..	..
Austria	4.3 d e	3.9 d	7.7 d e	7.7 d	7.7 e	7.2 d	7.4 e
Belgium	6.9	7.6 b	7.9 e	8.3	9.2	9.1	9.4 e
Canada	6.1	4.9	4.7	4.9	4.4	4.5	..
Chile	..	10.6 d	14.4 d	12.8 d	14.1 d e	12.7 d e	13.6 e
Colombia	..	..	..	..	..	..	..
Czech Republic	27.2 b	19.4	20.1	20.2	19.1	18.7	18.5
Denmark	7.5	3.3	3.1	3.7	3.6	3.5 p	3.6 p
Estonia	14.2	12.3	11.6	11.7	9.8	10.5	10.6
Finland	11.1	9.5	8.9	9.0	8.5	8.2	8.0
France	12.8 d	10.2	10.1	9.7	9.6	9.3	9.2 e p
Germany	14.7	13.9 d	13.5 d	13.0 d	13.2 d	13.1 d	13.5 d
Greece	10.6 d	20.9 d	21.3 d	20.5 d	21.2 d	20.9 d	19.5 d
Hungary	31.2	18.5	19.2	17.1	17.5 d	16.5 d	16.3 d
Iceland	23.3	12.3 b	..	12.0	..	..	..
Ireland	3.6	2.0 e	2.1 e	2.4 e	2.9 e	2.7	2.7 e
Israel	..	..	..	..	..	..	..
Italy	17.5 d	17.2 d	16.2 b d	15.8 d	14.9 d	14.5 d	14.9 d
Japan	5.0 d	4.6 d	4.5 d	4.5 d	4.5 b d	4.5 d	4.4 d
Korea	7.1 d	7.4	7.5	7.1	6.7	6.7	6.2
Latvia	17.9 d	19.1 d	19.9 d	16.4 d	16.6 d	15.6 d	15.2
Lithuania	23.6	17.7	18.5	18.4	17.7	16.0	15.2
Luxembourg	16.8	23.6	21.7	20.8	22.5	21.2	22.4 e p
Mexico	15.0 e	19.8	17.2	16.5 e	15.8 e	14.5 e	13.0 e
Netherlands	14.7 d	6.6 d	6.5 d	6.1 d	6.1 d	6.2 d	6.2 d
New Zealand	13.9	7.6	..	7.9	..	6.8	..
Norway	16.3 d	15.5	15.0	14.1	13.4	12.6	12.5
Poland	19.6	16.5	2.7 b	3.0 d	2.6 d	1.8 d	2.6 d
Portugal	15.8	3.5	3.2	3.3	3.3	3.2	3.1
Slovak Republic	22.9 d	21.4 d	21.8 d	20.2 d	18.9 d	18.2 d	18.1
Slovenia	30.3	20.6	20.5	16.1 d	16.5 d	16.9 d	16.7
Spain	18.6	16.3 d	16.3 d	15.6 d	15.3 d	15.4 d	15.5 d
Sweden	5.3 b d e	5.0 b e	4.8 e	5.2	4.9 e	5.0	5.0
Switzerland	..	1.1 d	..	1.0 d	..	1.4	..
Türkiye	10.9	6.9	6.7 d	6.0 d	5.3 d	4.2 d	4.0
United Kingdom	3.7 b e	2.5	2.4 e	2.3	2.2 e	2.3	..
United States	..	..	..	..	..	..	..
EU27 (from 01/02/2020)	15.1 e	12.5 e	11.6 e	11.2 e	11.2 e	11.0 e	11.1 e
OECD-Total	**8.0 e**	**7.1 e**	**6.8 e**	**6.6 e**	**6.5 e**	**6.4 e**	**..**
Argentina	41.7	49.6	49.6	50.7	49.2	48.1	..
China	17.9 d	18.9	19.9	20.5	19.8	18.5	17.5
Romania	30.8	38.1	37.4	37.3	38.3	39.2	37.0
Russian Federation	33.3	32.7	34.0	34.0	35.6	31.0	33.0
Singapore	5.7	5.5	6.1	6.2	6.4	6.2	..
South Africa	11.4	10.6	10.5	9.1	9.0	9.3	..
Chinese Taipei	15.5	9.9	10.1	10.0	10.2	10.6	9.9

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 56. Government Total R&D personnel in full-time equivalent

FTE

	2005	2015	2016	2017	2018	2019	2020
Australia	..	..	14 773	..	14 521	..	15 047
Austria	2 318 d e	2 674 d	5 208 d e	5 266 d	5 557 e	5 472 d	5 517 e
Belgium	3 589	6 470 b	6 653	6 946	7 530	7 770	8 214 e
Canada	17 860	15 410	14 300	15 140	15 770	16 630	..
Chile	..	1 495 d	2 223 d	2 295 d	2 415 d e	1 952 d e	2 043 e
Colombia	..	..	..	..	..	..	..
Czech Republic	11 054 b	12 953	13 099	13 689	14 163	14 530	14 438
Denmark	3 240	1 792	1 720	2 185	2 212	2 187 p	2 199 p
Estonia	696	782	841	847	680	705	747
Finland	7 422	4 519	4 039	4 240	4 217	4 177	4 367
France	49 645 d	49 413	49 409	49 195	49 261	49 378	49 799 e p
Germany	76 254 d	101 717 d	103 206 d	106 025 d	109 487 d	112 592 d	114 695 d
Greece	4 345 d	13 628 d	11 750 d	12 074 d	13 350 d	13 896 d	14 154 d
Hungary	7 652	8 111	7 456	7 271	10 633 d	9 708 d	9 984 d
Iceland	849	275	185	277	..	..	..
Ireland	1 132	951	993	1 051	1 196	1 194	1 192
Israel	..	..	..	..	..	..	..
Italy	32 684 d	38 669 d	38 490 d	38 756 d	39 495 d	39 973 d	40 898 d
Japan	62 975 d	60 299 d	61 615 d	62 046 d	62 470 d	61 717 d	62 089 d
Korea	16 847 d	38 174	38 119	37 578	38 738	40 364	39 919
Latvia	1 256 d	1 184 d	1 077 d	974 d	1 032 d	1 028 d	1 115
Lithuania	3 113.0	2 156.0	2 398.5	2 407.5	2 332.9	2 309.0	2 269.6
Luxembourg	560 d	1 136 d	1 072 d	1 129 d	1 172 d	1 206	1 198 e p
Mexico	14 837 e	12 959	13 183	12 674 e	12 091 e	11 494 e	10 813 e
Netherlands	12 706 d	8 335 d	8 568 d	8 553 d	9 326 d	9 336 d	9 635 d
New Zealand	3 100	3 500	..	3 500	..	3 600	..
Norway	5 147	6 820	6 810	6 793	6 598	6 612	6 680
Poland	17 877	22 073	3 733 b	4 596 d	4 377 d	3 235 d	4 391 d
Portugal	4 533	2 066	2 098	2 212	2 283	2 315	2 571
Slovak Republic	3 717 d	4 335 d	4 414 d	4 213 d	4 060 d	4 079 d	4 127
Slovenia	2 517	2 437	2 501	2 323 d	2 497 d	2 664 d	2 691
Spain	32 077	39 678 d	39 972 d	40 283 d	40 332 d	41 372 d	42 160 d
Sweden	3 444 b e	4 234 b e	4 269 e	4 894	4 918 e	5 344	5 498
Switzerland	..	909 d	..	875 d	..	1 041	..
Türkiye	8 825	12 328	11 799 d	11 345 d	11 379 d	8 886 d	9 439
United Kingdom	20 415	14 615	14 531	14 439	14 644	15 474	..
United States	..	..	..	..	..	..	..
EU27 (from 01/02/2020)	300 979 e	347 622 e	331 241 e	337 094 e	347 625 e	352 223 e	359 753 e
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	21 688	39 271	40 248	38 245	37 304	36 774	..
China	254 506 d	493 200	505 927	531 629	545 771	566 858	559 367
Romania	10 055	12 080	12 663	12 500	11 986	12 220	12 218
Russian Federation	296 428	283 968	287 129	283 620	289 612	244 022	265 699
Singapore	2 173	3 879	4 075	4 009	4 067	4 367	..
South Africa	5 586	6 417	6 453	6 295	5 941	5 736	..
Chinese Taipei	25 673	24 408	25 031	25 460	26 411	28 612	27 928

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 57. Total GBARD (Government budget allocations for R&D) at current prices and PPP

Million USD

	2005	2017	2018	2019	2020	2021	2022
Australia	3 729.1 d	5 266.7 d	5 121.1 d	5 147.6 d	6 428.2 d p	6 193.9 d p	..
Austria	1 836.6 d	3 728.7 d	3 806.3 d	3 904.5 d	4 302.9 d	4 620.2 p	..
Belgium	2 004.6	3 787.7	3 834.7	4 319.6	4 563.2	4 634.2 p	..
Canada	6 777.1 d	9 111.6 d	9 010.2 d	9 183.2 d	..	..	..
Chile	..	976.5	1 045.4	1 001.9	..	..	..
Colombia	171.2	618.4	559.7	548.0	482.2	..	..
Czech Republic	1 129.0	2 467.1	2 698.3	2 828.1	2 977.4	2 900.1 p	..
Denmark	1 329.3	2 829.1 e	2 954.6 e	3 039.9 p	3 397.8 e	3 491.5 e	..
Estonia	89.9 e	267.6	338.5	317.7	349.1	394.6 p	..
Finland	1 648.0	2 183.6	2 285.2	2 327.2	2 706.1	2 671.6 p	..
France	18 220.2	19 150.4	20 577.9	21 907.0	23 385.9	24 347.6 p	..
Germany	19 732.0	40 496.1	43 184.5	45 260.4	50 343.4	52 810.6 p	..
Greece	895.8	1 538.4	1 979.3	2 288.4	2 646.9	2 963.4 p	..
Hungary	696.1	1 001.3	930.7	889.8	1 723.4	1 347.9 p	..
Iceland	94.0	180.7	193.0	191.7	..	..	..
Ireland	710.7	930.6	966.5	970.1	1 081.9	1 204.7	..
Israel	1 044.9 d	2 062.3 d	2 173.3 d	2 210.8 d	2 446.2 d	..	..
Italy	11 199.3	12 743.8	13 224.4	14 510.4	16 601.3	17 580.8 p	..
Japan	27 617.8 d	42 399.7 b d p	45 814.1 d p	54 961.4 d p	90 877.3 d p	81 463.0 d p	..
Korea	9 886.5 b d	22 348.5	23 100.9	24 118.0	29 415.1	32 332.6 p	..
Latvia	57.4	123.8	130.4	137.4	160.6	166.6	..
Lithuania	169.8	298.7	299.2	335.9 p	358.4	376.4 p	..
Luxembourg	81.5	410.3	420.8	446.2	440.7	513.8	..
Mexico	2 963.4	5 669.5	5 520.0	4 999.8	5 069.0	5 217.2	..
Netherlands	4 391.9	6 338.9	7 107.7	7 092.9	7 834.0	8 840.4 p	..
New Zealand	..	1 054.0	..	..	..	..	..
Norway	1 535.9	3 477.9	3 651.1	3 660.9	3 890.6	4 005.1	..
Poland	1 548.8	4 122.7	3 462.0	5 697.5 b	5 689.1	5 807.5 p	..
Portugal	1 045.6	1 270.4	1 303.7	1 296.9	1 303.3	1 362.8 p	..
Slovak Republic	244.6	593.6	623.9	667.6	713.7	724.2 p	..
Slovenia	273.3	299.1	337.7	385.7	433.5	475.9 p	..
Spain	6 440.7	9 505.6	9 922.0	10 238.3	11 098.5	11 562.3 p	..
Sweden	2 508.0	4 034.1	4 084.4	4 114.1	4 397.2	4 902.2 p	..
Switzerland	..	5 760.7 b	5 668.7	5 881.1	6 374.1	6 674.4 p	..
Türkiye	..	7 738.7	7 977.7	7 747.5	6 522.6	6 592.3 p	..
United Kingdom	12 116.1	16 000.0	17 162.8	17 677.9	18 209.0 p	..	..
United States	111 332.0	127 306.0	144 459.0	149 971.0	169 901.0	165 560.0	..
EU27 (from 01/02/2020)	77 493.5 e	120 369.8 e	126 823.6 e	135 665.2 e	149 198.1 e	156 344.6 e	..
OECD-Total	**258 613.6 e**	**368 092.7 e**	**396 981.6 e**	**421 326.5 e**	**498 083.8 e**	**495 925.7 e**	**..**
Argentina	1 190.8 d	..	..	..	..	..	..
China	..	..	..	..	..	..	..
Romania	448.5	997.9	983.4	1 184.6	1 124.5	1 026.2 p	..
Russian Federation	6 038.6 b	15 664.0	17 132.1	19 693.7	22 439.3	..	..
Singapore	..	..	..	..	..	..	..
South Africa	..	..	..	..	..	..	..
Chinese Taipei	4 884.0	7 817.0	7 643.1	8 115.7	8 190.8	8 190.5	..

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 58. Defence Budget R&D

As a percentage of total GBARD (Government budget allocations for R&D)

Percentage

	2005	2017	2018	2019	2020	2021	2022
Australia	6.9 d	7.4 d	7.2 d	6.2 d	6.2 d p	6.4 d p	..
Austria	0.0 d	0.2 d	0.2 d	0.2 d	0.1 d	0.2 p	0.2 p
Belgium	0.3	0.1	0.1	0.1	0.7	0.8 p	..
Canada	4.1 d	..	..	..	..	..	..
Chile	..	0.0	0.0	0.0	..	..	..
Colombia	1.3	1.7	1.9	0.9	0.9	..	..
Czech Republic	2.5	1.3	1.2	1.1	1.0	0.8 p	..
Denmark	0.7	0.3 e	0.3 e	0.3 e p	0.3 e	0.4 e	0.4 e p
Estonia	1.0 e	1.9	3.4	1.7	2.4	2.2 p	..
Finland	3.3	2.2	2.4	2.5	2.0	2.1 p	..
France	20.8	8.0 e	6.7 e	7.5 e	8.6 e	10.7 e p	..
Germany	5.8 s	3.8	3.3	4.4	4.2	4.3 p	..
Greece	0.5	1.8	1.7	1.5	1.6	1.4 p	..
Hungary	0.1	0.4	0.0	0.0	0.3	1.2 p	..
Iceland	0.0	0.0	0.0	0.0	..	..	..
Ireland	0.0	0.0	0.0	0.0	0.0	0.0	..
Israel	..	..	..	..	..	..	..
Italy	3.6	0.6	0.6	0.6	0.5	0.5 p	..
Japan	4.0 d m	2.7 b d p	2.2 d p	2.3 d p	1.4 d p	1.4 d p	..
Korea	12.4 b d	15.0	15.8	16.3	16.6	..	..
Latvia	1.1	.. c	.. c	.. c	..	1.6	..
Lithuania	0.2	0.1	0.2	0.3 p	7.0	2.2 p	..
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	..
Mexico	0.0	0.2 p	0.1	0.2	0.2	0.2	0.2 p
Netherlands	2.0	1.1	1.2	1.2	1.9	1.6 p	1.6 p
New Zealand	..	0.0	..	..	..	..	..
Norway	6.4	3.5	3.5	3.0 b	2.9	3.1	3.1
Poland	1.3	9.2	5.8	4.7 b	3.5	5.0 p	..
Portugal	0.1	0.3	0.4	0.3	0.2	0.2 p	..
Slovak Republic	8.3 d	1.7	1.8	2.4	2.0	1.9 p	..
Slovenia	4.9	0.3	0.3	0.6	0.6	1.1 p	..
Spain	3.9	1.1	0.9	1.5	1.4	1.0 p	..
Sweden	17.4	2.2 e	2.4 e	2.8 e	2.5 e	2.2 e p	..
Switzerland	..	0.3 b	0.4	0.4	0.4	0.6 p	..
Türkiye	..	17.3	20.0	18.7	13.4	28.4 p	..
United Kingdom	23.5	15.0	14.0	8.4	8.4 p	..	..
United States	49.1	43.5	46.7	46.9	47.1	47.1	43.9 p
EU27 (from 01/02/2020)	8.1 e	3.3 e	2.8 e	3.4 e	3.4 e	3.8 e	..
OECD-Total	**26.0 e**	**18.6 e**	**20.3 e**	**19.9 e**	**19.0 e**	**19.1 e**	**..**
Argentina	0.4 d	..	..	..	..	..	..
China	..	..	..	..	..	..	..
Romania	1.7	4.5	7.7	8.3	6.5	3.5 p	..
Russian Federation	..	..	..	..	..	..	..
Singapore	..	..	..	..	..	..	..
South Africa	..	..	..	..	..	..	..
Chinese Taipei	10.6	6.4	7.0	9.8	8.1	8.0	..

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 59. Civil Budget R&D

As a percentage of total GBARD (Government budget allocations for R&D)

Percentage

	2005	2017	2018	2019	2020	2021	2022
Australia	93.1 d	92.6 d	92.8 d	93.8 d	93.8 d p	93.6 d p	..
Austria	100.0 d	99.8 d	99.8 d	99.8 d	99.9 d	99.8 p	99.8 p
Belgium	99.7	99.9	99.9	99.9	99.3	99.2 p	..
Canada	95.9 d	..	..	..	..	..	..
Chile	..	100.0	100.0	100.0	..	..	..
Colombia	98.7	98.3	98.1	99.1	99.1	..	..
Czech Republic	97.5	98.7	98.8	98.9	99.0	99.2 p	..
Denmark	99.3	99.7 e	99.7 e	99.7 e p	99.7 e	99.6 e	99.6 e p
Estonia	99.0 e	98.1	96.6	98.3	97.6	97.8 p	..
Finland	96.7	97.8	97.6	97.5	98.0	97.9 p	..
France	79.2	92.0 e	93.3 e	92.5 e	91.4 e	89.3 e p	..
Germany	94.2 s	96.2	96.7	95.6	95.8	95.7 p	..
Greece	99.5	98.2	98.3	98.5	98.4	98.6 p	..
Hungary	99.9	99.6	100.0	100.0	99.7	98.8 p	..
Iceland	100.0	100.0	100.0	100.0	..	..	..
Ireland	100.0	100.0	100.0	100.0	100.0	100.0	..
Israel	..	..	..	..	..	..	..
Italy	96.4	99.4	99.4	99.4	99.5	99.5 p	..
Japan	96.0 d	97.3 b d p	97.8 d p	97.7 d p	98.6 d p	98.6 d p	..
Korea	87.6 b d	85.0	84.2	83.7	83.4	..	..
Latvia	98.9	.. c	.. c	.. c	..	98.4	..
Lithuania	99.8	99.9	99.8	99.7 p	93.0	97.8 p	..
Luxembourg	100.0	100.0	100.0	100.0	100.0	100.0	..
Mexico	100.0	99.8 p	99.9	99.8	99.8	99.8	99.8 p
Netherlands	98.0	98.9	98.8	98.8	98.1	98.4 p	98.4 p
New Zealand	..	100.0	..	..	..	..	..
Norway	93.6	96.5	96.5	97.0 b	97.1	96.9	96.9
Poland	98.7	90.8	94.2	95.3 b	96.5	95.0 p	..
Portugal	99.9	99.7	99.6	99.7	99.8	99.8 p	..
Slovak Republic	91.7 d	98.3	98.2	97.6	98.0	98.1 p	..
Slovenia	95.1	99.7	99.7	99.4	99.4	98.9 p	..
Spain	96.1	98.9	99.1	98.5	98.6	99.0 p	..
Sweden	82.6	97.8 e	97.6 e	97.2 e	97.5 e	97.8 e p	..
Switzerland	..	99.7 b	99.6	99.6	99.6	99.4 p	..
Türkiye	..	82.7	80.0	81.3	86.6	71.6 p	..
United Kingdom	76.5	85.0	86.0	91.6	91.6 p	..	..
United States	50.9	56.5	53.3	53.1	52.9	52.9	56.1 p
EU27 (from 01/02/2020)	91.9 e	96.7 e	97.2 e	96.6 e	96.6 e	96.2 e	..
OECD-Total	**74.0 e**	**81.4 e**	**79.7 e**	**80.1 e**	**81.0 e**	**80.9 e**	**..**
Argentina	99.6 d	..	..	..	..	..	..
China	..	..	..	..	..	..	..
Romania	98.3	95.5	92.3	91.7	93.5	96.5 p	..
Russian Federation	..	..	..	..	..	..	..
Singapore	..	..	..	..	..	..	..
South Africa	..	..	..	..	..	..	..
Chinese Taipei	89.4	93.6	93.0	90.2	91.9	92.0	..

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: *OECD, Main Science and Technology Indicators database*

Table 60. Triadic patent families

By priority year

Number

	2005	2015	2016	2017	2018	2019	2020
Australia	479	352	364	372	386	366 e	361 e
Austria	411	403	376	434	437	418 e	437 e
Belgium	543	425	425	409	411	393 e	401 e
Canada	720	590	654	625	668	664 e	662 e
Chile	6	13	10	13	14	14 e	14 e
Colombia	2	5	3	9	9	9 e	8 e
Czech Republic	25	53	56	37	49	47 e	45 e
Denmark	390	326	304	302	314	316 e	318 e
Estonia	3	4	4	4	4	4 e	4 e
Finland	391	268	280	307	301	296 e	295 e
France	3 048	2 305	2 140	2 018	1 924	1 851 e	1 880 e
Germany	7 145	4 761	4 913	4 700	4 593	4 355 e	4 381 e
Greece	24	10	15	26	30	30 e	29 e
Hungary	58	36	51	31	42	44 e	41 e
Iceland	7	4	2	3	3	3 e	3 e
Ireland	99	100	105	110	112	116 e	125 e
Israel	502	516	504	597	613	583 e	590 e
Italy	966	828	941	869	927	917 e	910 e
Japan	18 932	17 796	18 070	18 317	18 158	17 708 e	17 469 e
Korea	2 747	2 258	2 393	2 898	3 160	3 362 e	3 244 e
Latvia	10	4	5	4	3	4 e	5 e
Lithuania	1.0	3.6	6.7	4.8	4.8	5.7 e	6.4 e
Luxembourg	21	23	36	22	30	32 e	33 e
Mexico	19	30	25	21	21	20 e	18 e
Netherlands	1 762	1 139	962	907	893	856 e	855 e
New Zealand	73	70	58	58	58	58 e	59 e
Norway	141	101	142	113	135	129 e	128 e
Poland	18	81	77	73	73	70 e	75 e
Portugal	16	33	49	38	47	49 e	50 e
Slovak Republic	2	9	11	9	9	9 e	10 e
Slovenia	22	7	9	14	13	14 e	15 e
Spain	293	293	329	289	325	327 e	322 e
Sweden	970	731	780	810	886	867 e	864 e
Switzerland	1 083	1 225	1 208	1 273	1 293	1 298 e	1 304 e
Türkiye	16	50	65	55	67	63 e	65 e
United Kingdom	2 165	1 687	1 639	1 678	1 692	1 709 e	1 708 e
United States	17 372	13 703	13 411	13 096	13 366	13 057 e	13 040 e
EU27 (from 01/02/2020)	16 249	11 871	11 907	11 443	11 456	11 047 e	11 127 e
OECD-Total	**60 483**	**50 243**	**50 420**	**50 548**	**51 073**	**50 060 e**	**49 772 e**
Argentina	16	11	14	9	9	8 e	10 e
China	524	3 259	3 501	4 429	5 036	5 893 e	5 897 e
Romania	7	14	14	9	11	9 e	8 e
Russian Federation	91	90	115	126	138	133 e	136 e
Singapore	171	121	137	136	136	143 e	140 e
South Africa	49	25	28	21	24	24 e	22 e
Chinese Taipei	145	445	521	709	728	707 e	710 e

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, Patent database

Table 61. Share of countries in triadic patent families

By priority year

Percentage

	2005	2015	2016	2017	2018	2019	2020
Australia	0.77	0.64	0.66	0.65	0.67	0.63 e	0.63 e
Austria	0.66	0.73	0.68	0.76	0.75	0.72 e	0.76 e
Belgium	0.88	0.77	0.77	0.72	0.71	0.68 e	0.70 e
Canada	1.16	1.07	1.18	1.10	1.15	1.15 e	1.15 e
Chile	0.01	0.02	0.02	0.02	0.02	0.02 e	0.02 e
Colombia	0.00	0.01	0.01	0.02	0.02	0.02 e	0.01 e
Czech Republic	0.04	0.10	0.10	0.07	0.09	0.08 e	0.08 e
Denmark	0.63	0.59	0.55	0.53	0.54	0.55 e	0.55 e
Estonia	0.00	0.01	0.01	0.01	0.01	0.01 e	0.01 e
Finland	0.63	0.49	0.50	0.54	0.52	0.51 e	0.51 e
France	4.92	4.19	3.85	3.55	3.32	3.20 e	3.26 e
Germany	11.53	8.65	8.85	8.27	7.92	7.53 e	7.61 e
Greece	0.04	0.02	0.03	0.05	0.05	0.05 e	0.05 e
Hungary	0.09	0.07	0.09	0.06	0.07	0.08 e	0.07 e
Iceland	0.01	0.01	0.00	0.01	0.01	0.01 e	0.00 e
Ireland	0.16	0.18	0.19	0.19	0.19	0.20 e	0.22 e
Israel	0.81	0.94	0.91	1.05	1.06	1.01 e	1.02 e
Italy	1.56	1.50	1.69	1.53	1.60	1.59 e	1.58 e
Japan	30.54	32.35	32.55	32.25	31.30	30.61 e	30.33 e
Korea	4.43	4.11	4.31	5.10	5.45	5.81 e	5.63 e
Latvia	0.02	0.01	0.01	0.01	0.01	0.01 e	0.01 e
Lithuania	0.0	0.0	0.0	0.0	0.0	0.0 e	0.0 e
Luxembourg	0.03	0.04	0.07	0.04	0.05	0.05 e	0.06 e
Mexico	0.03	0.05	0.04	0.04	0.04	0.03 e	0.03 e
Netherlands	2.84	2.07	1.73	1.60	1.54	1.48 e	1.48 e
New Zealand	0.12	0.13	0.10	0.10	0.10	0.10 e	0.10 e
Norway	0.23	0.18	0.26	0.20	0.23	0.22 e	0.22 e
Poland	0.03	0.15	0.14	0.13	0.13	0.12 e	0.13 e
Portugal	0.03	0.06	0.09	0.07	0.08	0.08 e	0.09 e
Slovak Republic	0.00	0.02	0.02	0.02	0.02	0.02 e	0.02 e
Slovenia	0.04	0.01	0.02	0.02	0.02	0.02 e	0.03 e
Spain	0.47	0.53	0.59	0.51	0.56	0.56 e	0.56 e
Sweden	1.56	1.33	1.41	1.43	1.53	1.50 e	1.50 e
Switzerland	1.75	2.23	2.18	2.24	2.23	2.24 e	2.26 e
Türkiye	0.03	0.09	0.12	0.10	0.12	0.11 e	0.11 e
United Kingdom	3.49	3.07	2.95	2.95	2.92	2.95 e	2.97 e
United States	28.03	24.91	24.16	23.05	23.04	22.57 e	22.64 e
EU27 (from 01/02/2020)	26.21	21.58	21.45	20.14	19.75	19.10 e	19.32 e
OECD-Total	**97.57**	**91.33**	**90.82**	**88.99**	**88.03**	**86.53 e**	**86.42 e**
Argentina	0.03	0.02	0.02	0.02	0.02	0.01 e	0.02 e
China	0.84	5.93	6.31	7.80	8.68	10.19 e	10.24 e
Romania	0.01	0.02	0.03	0.02	0.02	0.02 e	0.01 e
Russian Federation	0.15	0.16	0.21	0.22	0.24	0.23 e	0.24 e
Singapore	0.28	0.22	0.25	0.24	0.23	0.25 e	0.24 e
South Africa	0.08	0.04	0.05	0.04	0.04	0.04 e	0.04 e
Chinese Taipei	0.23	0.81	0.94	1.25	1.25	1.22 e	1.23 e

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, Patent database

Table 62. Patents in the ICT sector - applications filed under the PCT

By priority year

Number

	2005	2015	2016	2017	2018	2019	2020
Australia	385	393	388	354	352	320	..
Austria	211	153	172	169	160	149	..
Belgium	143	213	196	187	155	155	..
Canada	819	912	912	827	871	911	..
Chile	2	19	10	4	11	8	..
Colombia	3.0	6.8	5.1	7.0	13.5	8.3	..
Czech Republic	18	21	21	29	18	28	..
Denmark	160	153	136	131	139	218	..
Estonia	6	7	10	10	12	17	..
Finland	752	500	487	575	581	525	..
France	1 502	1 350	1 283	1 306	1 345	1 202	..
Germany	2 289	2 522	2 635	2 933	3 074	3 069	..
Greece	14	12	22	20	19	33	..
Hungary	27	58	76	59	83	63	..
Iceland	5	2	0	3	0	2	..
Ireland	84	136	173	142	88	91	..
Israel	669	755	730	634	561	548	..
Italy	346	308	314	315	327	297	..
Japan	6 353	10 390	10 822	11 240	12 241	12 012	..
Korea	2 132	5 381	4 973	5 277	6 182	7 144	..
Latvia	4	7	1	4	4	0	..
Lithuania	2.1	4.0	4.3	5.5	3.0	5.4	..
Luxembourg	5	7	24	19	16	11	..
Mexico	14	50	43	42	21	19	..
Netherlands	1 268	592	535	483	468	514	..
New Zealand	43	37	31	32	28	28	..
Norway	100	73	77	101	115	75	..
Poland	13	103	79	65	71	81	..
Portugal	20	35	39	31	35	43	..
Slovak Republic	3	13	9	3	8	8	..
Slovenia	5	8	7	4	5	6	..
Spain	130	181	207	182	224	255	..
Sweden	688	1 420	1 446	1 522	1 481	1 551	..
Switzerland	219	264	340	320	322	319	..
Türkiye	11	153	170	188	227	189	..
United Kingdom	1 348	1 359	1 418	1 458	1 435	1 303	..
United States	14 913	16 895	16 955	16 764	16 729	17 730	..
EU27 (from 01/02/2020)	7 712	7 859	7 914	8 220	8 346	8 353	..
OECD-Total	**34 707**	**44 510**	**44 752**	**45 444**	**47 426**	**48 941**	**..**
Argentina	7	12	4	5	3	3	..
China	1 816	18 950	22 034	24 485	25 885	29 048	..
Romania	6	36	21	12	14	16	..
Russian Federation	153	261	271	231	248	244	..
Singapore	192	242	230	287	302	317	..
South Africa	54	52	48	43	69	37	..
Chinese Taipei	64	222	251	390	354	274	..

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, Patent database

Table 63. Patents in the biotechnology sector - applications filed under the PCT

By priority year

Number

	2005	2015	2016	2017	2018	2019	2020
Australia	219	166	162	174	177	182	..
Austria	61	78	63	69	76	67	..
Belgium	119	130	141	142	125	183	..
Canada	309	259	240	254	280	252	..
Chile	3	36	23	32	32	29	..
Colombia	1.0	10.4	6.8	11.6	8.7	7.6	..
Czech Republic	5	14	8	12	7	12	..
Denmark	193	167	167	189	174	160	..
Estonia	2	3	5	6	3	8	..
Finland	50	48	53	43	49	48	..
France	341	546	516	529	474	434	..
Germany	702	707	624	674	637	666	..
Greece	6	5	6	7	4	7	..
Hungary	10	16	13	14	13	11	..
Iceland	5	2	0	2	3	1	..
Ireland	27	30	37	27	33	38	..
Israel	171	198	185	214	214	222	..
Italy	169	148	169	160	184	169	..
Japan	1 449	1 459	1 649	1 581	1 721	1 639	..
Korea	219	738	883	937	1 013	1 067	..
Latvia	1	1	3	2	4	2	..
Lithuania	1.3	4.0	2.8	6.7	3.5	6.7	..
Luxembourg	1	8	4	6	2	5	..
Mexico	11	25	22	21	18	17	..
Netherlands	235	257	230	222	244	216	..
New Zealand	53	26	26	28	19	21	..
Norway	32	35	47	29	37	24	..
Poland	10	33	25	23	28	34	..
Portugal	10	17	15	18	24	23	..
Slovak Republic	0	2	5	3	4	8	..
Slovenia	4	6	3	6	7	10	..
Spain	123	172	134	168	160	182	..
Sweden	135	116	140	124	126	129	..
Switzerland	150	215	204	237	248	253	..
Türkiye	2	16	25	34	50	84	..
United Kingdom	518	537	496	505	578	597	..
United States	4 759	5 531	5 734	6 047	6 351	6 574	..
EU27 (from 01/02/2020)	2 210	2 514	2 370	2 460	2 388	2 432	..
OECD-Total	**10 104**	**11 761**	**12 063**	**12 556**	**13 133**	**13 389**	**..**
Argentina	10	6	5	2	9	11	..
China	122	846	1 123	1 535	1 868	2 078	..
Romania	1	2	0	1	1	0	..
Russian Federation	60	51	34	61	67	63	..
Singapore	64	90	107	105	88	126	..
South Africa	16	16	16	16	13	5	..
Chinese Taipei	11	92	87	89	78	63	..

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, Patent database

Table 64. Trade balance and export market share: Pharmaceutical industry

	Trade balance (Million current USD)			Export market share (Percentage)		
	2015	2018	2021	2014	2017	2020
Australia	-5 842.9	-5 293.45	-8 458.58	0.50	0.48	0.53
Austria	369.5	172.32	450.31	2.12	1.98	1.84
Belgium	3 209.5	5 020.24	17 281.75	3.83	5.32	6.64
Canada	-4 715.2	-5 920.33	-9 792.07	1.36	1.14	1.16
Chile	-1 114.3	-1 473.30	-2 316.44	0.04	0.03	0.02
Colombia	-1 966.3	-2 196.46	-3 687.09	0.10	0.06	0.05
Czech Republic	-1 666.1	-2 224.63	-3 437.91	0.52	0.46	0.47
Denmark	8 722.4	11 078.56	14 857.49	2.48	2.51	2.91
Estonia	-328.9	-478.11	-665.88	0.02	0.02	0.01
Finland	-1 254.7	-1 420.81	-1 420.28	0.22	0.15	0.13
France	4 665.7	5 367.80	3 587.63	6.83	5.80	5.41
Germany	28 328.1	37 259.45	36 665.54	15.35	15.19	13.96
Greece	-1 954.9	-2 019.85	-950.08	0.26	0.24	0.46
Hungary	749.4	676.62	892.66	0.92	0.92	0.93
Iceland	-47.7	-161.57	-237.37	0.02	0.00	0.00
Ireland	27 000.2	41 314.76	..	5.60	7.19	9.87
Israel	4 608.3	3 195.05	-1 525.85	1.19	1.32	0.24
Italy	-2 468.8	-681.77	4 506.71	5.08	4.85	5.26
Japan	-20 167.4	-20 652.17	-30 167.12	0.62	0.88	1.08
Korea	-2 862.6	-3 284.06	..	0.34	0.57	1.02
Latvia	-200.0	-181.36	-261.75	0.08	0.09	0.07
Lithuania	-369.7	-343.08	-602.23	0.13	0.14	0.13
Luxembourg	-314.2	-406.48	-480.41	0.02	0.02	0.02
Mexico	-3 319.8	-3 701.75	-4 533.73	0.35	0.25	0.20
Netherlands	8 353.9	11 596.94	11 418.35	5.08	4.68	4.74
New Zealand	-533.3	-673.10	-790.33	0.06	0.06	0.05
Norway	-1 080.0	-1 402.19	-2 186.99	0.18	0.14	0.11
Poland	-2 231.4	-3 904.15	-5 108.50	0.68	0.78	0.56
Portugal	-1 568.1	-2 088.06	-2 316.19	0.22	0.22	0.22
Slovak Republic	-1 284.3	-1 555.76	-2 047.66	0.11	0.07	0.08
Slovenia	1 474.2	1 591.65	3 098.11	0.60	0.55	1.11
Spain	-3 198.4	-4 258.02	-4 658.75	2.54	2.16	1.99
Sweden	4 527.4	4 743.49	5 640.09	1.64	1.53	1.73
Switzerland	41 235.8	47 548.07	62 843.96	12.72	13.40	12.97
Türkiye	-3 652.2	-3 532.01	-5 278.50	0.21	0.18	0.26
United Kingdom	2 059.0	-372.26	384.71	6.53	5.99	3.62
United States	-37 945.4	-67 899.73	-77 307.48	9.08	8.70	7.90
EU27 (from 01/02/2020)	..	..	..	..	..	..
OECD-Total	**35 216.8**	**33 440.50**	**..**	**87.60**	**88.08**	**87.77**
Argentina	-1 442.5	-1 822.75	-2 685.84	0.18	0.16	0.10
China	-6 522.2	-11 730.28	4 925.96	2.56	2.73	3.09
Romania	-1 931.0	-2 669.75	-3 712.07	0.22	0.15	0.14
Russian Federation	-8 444.6	-10 146.42	..	0.12	0.13	0.15
Singapore	4 841.0	6 164.81	..	1.56	1.22	1.33
South Africa	-1 830.8	-2 126.88	..	0.09	0.09	0.06
Chinese Taipei	-2 417.3	-3 361.85	-4 600.18	0.09	0.11	0.10

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, STAN Bilateral Trade in Goods by Industry and End-use Category database

Table 65. Trade balance and export market share: Computer, electronic and optical industry

	Trade balance (Million current USD)			Export market share (Percentage)		
	2015	2018	2021	2014	2017	2020
Australia	-20 565.2	-24 834.03	-26 815.78	0.17	0.16	0.15
Austria	-1 239.1	-2 697.98	-4 431.22	0.47	0.37	0.32
Belgium	-4 522.6	-5 622.88	-6 357.89	0.38	0.37	0.38
Canada	-24 465.0	-27 554.43	-31 542.83	0.58	0.54	0.42
Chile	-5 771.5	-6 554.77	-8 975.32	0.02	0.01	0.01
Colombia	-5 936.7	-5 801.17	-6 622.19	0.01	0.01	0.01
Czech Republic	-955.2	518.78	-219.19	1.05	1.08	1.33
Denmark	-1 675.4	-1 818.22	-2 547.65	0.29	0.27	0.26
Estonia	-95.7	-143.44	413.00	0.10	0.07	0.08
Finland	-2 182.0	-3 251.39	-3 157.57	0.16	0.14	0.13
France	-17 011.2	-17 626.39	-26 788.63	1.48	1.34	1.09
Germany	-7 936.1	-5 171.58	-12 529.89	4.86	5.01	4.54
Greece	-1 703.8	-1 945.58	-2 968.05	0.05	0.05	0.06
Hungary	455.7	336.28	-603.74	0.67	0.61	0.65
Iceland	-321.2	-478.16	-685.97	0.00	0.00	0.00
Ireland	3 958.4	7 221.88	..	0.49	0.62	0.73
Israel	3 766.5	2 590.97	2 658.66	0.45	0.39	0.41
Italy	-13 796.0	-14 990.52	-17 626.50	0.66	0.65	0.63
Japan	-10 609.1	-9 237.00	-11 853.86	3.84	3.71	3.32
Korea	63 978.4	96 756.98	..	5.82	6.41	5.68
Latvia	-176.5	-417.74	-487.69	0.06	0.05	0.06
Lithuania	-454.1	-563.20	-889.39	0.05	0.06	0.07
Luxembourg	-540.1	-633.90	-694.66	0.02	0.02	0.02
Mexico	-5 932.6	-3 954.19	-13 660.75	2.95	2.95	2.70
Netherlands	-2 994.3	-5 636.91	-5 972.88	3.01	2.64	2.66
New Zealand	-2 983.5	-3 311.33	-3 643.46	0.02	0.02	0.02
Norway	-4 206.6	-5 416.13	-6 096.70	0.14	0.09	0.09
Poland	-4 268.9	-5 416.74	-9 978.18	0.73	0.72	0.78
Portugal	-2 102.1	-2 696.76	-3 653.91	0.10	0.13	0.14
Slovak Republic	-558.0	-256.41	-1 357.84	0.63	0.56	0.42
Slovenia	-385.1	-587.15	-1 036.81	0.04	0.05	0.04
Spain	-14 660.6	-17 252.03	-19 233.79	0.26	0.29	0.28
Sweden	-3 627.8	-5 826.99	-6 994.92	0.59	0.48	0.47
Switzerland	16 353.4	15 207.40	18 228.06	1.44	1.21	1.05
Türkiye	-12 409.2	-10 397.97	-12 312.41	0.15	0.10	0.08
United Kingdom	-32 184.2	-35 777.25	-31 771.48	1.49	1.28	1.07
United States	-181 709.4	-212 256.69	-262 070.76	8.00	7.66	6.66
EU27 (from 01/02/2020)	..	..	..	..	..	..
OECD-Total	**-299 466.4**	**-315 496.63**	**..**	**41.23**	**40.13**	**36.80**
Argentina	-6 888.5	-6 025.61	-6 703.57	0.01	0.01	0.00
China	184 852.3	160 066.94	199 054.41	27.11	25.92	26.88
Romania	-3 270.4	-4 114.31	-5 453.26	0.14	0.17	0.17
Russian Federation	-16 133.3	-24 464.36	..	0.21	0.17	0.11
Singapore	36 350.8	27 757.50	..	5.46	5.18	5.02
South Africa	-7 414.5	-7 445.48	..	0.08	0.05	0.04
Chinese Taipei	68 266.9	75 984.40	116 515.17	5.43	5.91	6.93

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, STAN Bilateral Trade in Goods by Industry and End-use Category database

Table 66. Trade balance and export market share: Aerospace industry

	Trade balance (Million current USD)			Export market share (Percentage)		
	2015	2018	2021	2014	2017	2020
Australia	225.63	-445.95	-1 305.60	0.41	0.37	0.52
Austria	590.12	967.80	455.43	0.38	0.45	0.38
Belgium	791.27	368.78	-901.46	0.57	0.61	0.50
Canada	2 590.54	2 006.49	4 045.92	3.92	3.24	4.08
Chile	-906.06	-110.22	395.15	0.01	0.00	0.28
Colombia	-2 763.46	-1 259.21	-1 386.40	0.01	0.01	0.01
Czech Republic	348.15	-564.22	318.76	0.21	0.26	0.28
Denmark	-42.27	-286.43	-342.69	0.11	0.12	0.10
Estonia	-16.37	13.90	-35.65	0.00	0.01	0.01
Finland	-221.08	-356.97	351.93	0.10	0.10	0.15
France	24 609.74	32 112.52	22 862.96	17.38	14.86	12.86
Germany	16 376.39	22 288.41	9 873.13	12.52	11.68	11.65
Greece	-173.00	-95.22	-108.14	0.02	0.02	0.05
Hungary	-687.70	-235.19	-1 249.87	0.03	0.04	0.04
Iceland	-202.79	-205.61	-171.01	0.00	0.00	0.00
Ireland	-6 883.84	-18 595.77	..	0.94	1.73	1.44
Israel	2 071.53	172.84	1 689.74	0.50	0.77	0.78
Italy	2 713.69	3 318.70	-1 712.62	1.87	1.43	1.82
Japan	-2 323.27	-6 048.50	-5 829.15	2.00	1.79	1.79
Korea	-2 463.15	-988.26	..	0.53	0.72	0.77
Latvia	-156.59	-557.62	-776.44	0.00	0.05	0.03
Lithuania	-25.39	-17.61	-46.49	0.01	0.02	0.02
Luxembourg	-1 121.95	-278.90	-925.51	0.03	0.01	0.04
Mexico	829.96	1 166.20	769.22	0.52	0.63	0.64
Netherlands	-391.11	617.50	147.39	0.93	1.24	1.30
New Zealand	-1 685.28	-1 513.41	-570.49	0.02	0.03	0.14
Norway	-682.50	-1 365.44	-1 098.79	0.19	0.21	0.20
Poland	830.87	1 035.92	1 208.12	0.60	0.79	0.93
Portugal	-226.98	-1 006.57	-426.69	0.07	0.11	0.15
Slovak Republic	-14.56	-77.02	-8.46	0.01	0.00	0.01
Slovenia	41.05	-40.74	10.69	0.01	0.03	0.03
Spain	701.40	1 612.01	1 474.72	1.56	1.80	1.95
Sweden	-221.13	-371.95	151.31	0.21	0.19	0.26
Switzerland	518.64	-1 761.01	-636.88	0.67	0.54	0.56
Türkiye	-3 459.84	-2 642.89	-1 742.61	0.28	0.47	0.42
United Kingdom	7 080.98	13 088.26	14 929.50	9.13	9.98	10.32
United States	79 083.71	85 389.06	48 889.98	32.09	31.57	26.99
EU27 (from 01/02/2020)	..	..	..	..	..	..
OECD-Total	**114 735.35**	**125 333.71**	**..**	**87.86**	**85.91**	**81.49**
Argentina	-426.86	-45.39	-134.80	0.07	0.12	0.02
China	-23 633.48	-28 689.87	-13 703.52	1.30	1.72	1.55
Romania	113.85	66.71	182.70	0.08	0.09	0.12
Russian Federation	95.24	-2 435.08	..	0.74	0.93	0.65
Singapore	-2 052.85	-6 520.14	..	2.46	2.86	5.73
South Africa	-469.91	-511.69	..	0.17	0.11	0.10
Chinese Taipei	-1 806.92	-3 291.47	-2 854.99	0.23	0.64	0.25

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, STAN Bilateral Trade in Goods by Industry and End-use Category database

Annex. Background Economic Indicators

Table A. Gross domestic product at current prices and PPP

Million USD

	2005	2015	2016	2017	2018	2019	2020
Australia	719 150	1 124 892	1 213 189	1 247 296	1 323 602	1 335 998	1 429 459
Austria	288 087	430 976	460 283	476 591	503 557	515 713	496 544
Belgium	347 658	520 878	550 678	573 789	600 323	623 603	612 656
Canada	1 171 340	1 594 851	1 678 093	1 765 763	1 849 252	1 853 245	1 771 474
Chile	205 184	405 500	424 832	450 892	478 094	479 917	479 607
Colombia	351 495	624 119	665 398	693 117	747 104	788 975	756 551
Czech Republic	225 621	357 504	381 420	411 328	437 356	457 348	446 269
Denmark	185 074	278 748	297 719	319 130	333 035	340 269	350 374
Estonia	22 537	38 378	41 201	44 556	48 133	50 282	51 224
Finland	168 147	232 868	246 928	262 027	273 456	277 863	281 650
France	1 926 880	2 718 495	2 864 106	2 983 011	3 125 380	3 300 064	3 176 725
Germany	2 622 040	3 889 082	4 165 170	4 386 729	4 576 057	4 624 245	4 612 209
Greece	281 028	289 571	296 467	307 636	317 881	325 467	299 066
Hungary	172 612	263 858	274 279	288 756	311 968	327 479	324 430
Iceland	11 075	16 276	17 939	19 106	20 177	20 991	19 627
Ireland	168 336	324 787	340 185	374 826	412 302	431 377	465 373
Israel	172 239	297 242	323 408	340 876	354 478	362 197	363 898
Italy	1 746 658	2 240 922	2 420 672	2 517 184	2 600 327	2 650 549	2 496 157
Japan	4 110 440	5 199 915	5 158 900	5 262 255	5 340 832	5 354 366	5 315 621
Korea	1 213 618	1 933 589	2 026 968	2 103 651	2 220 442	2 225 804	2 344 338
Latvia	31 150	49 384	52 362	55 691	59 505	61 019	59 721
Lithuania	48 212	83 762	88 700	95 492	101 909	107 688	108 667
Luxembourg	31 997	61 437	65 980	68 570	71 109	72 752	74 292
Mexico	1 341 775	2 230 189	2 383 253	2 460 766	2 535 950	2 533 977	2 407 279
Netherlands	614 044	851 885	890 489	943 740	996 447	1 023 422	1 029 099
New Zealand	106 148	172 759	188 251	203 223	208 377	226 826	227 832
Norway	220 982	313 231	308 522	337 994	370 816	357 235	336 996
Poland	530 377	1 020 393	1 075 393	1 141 694	1 213 409	1 283 148	1 306 337
Portugal	238 691	307 230	326 364	340 370	359 199	372 076	351 924
Slovak Republic	89 400	162 523	161 000	163 512	170 019	174 350	171 169
Slovenia	47 717	65 266	70 079	75 439	80 823	85 176	83 702
Spain	1 205 129	1 621 070	1 733 214	1 841 780	1 904 500	1 965 293	1 788 269
Sweden	309 213	481 171	500 424	522 477	544 594	561 215	575 972
Switzerland	310 494	546 806	570 267	584 052	610 139	617 711	619 633
Türkiye	815 102	2 022 398	2 116 398	2 264 269	2 302 310	2 238 400	2 297 618
United Kingdom	1 977 980	2 794 324	2 928 594	3 063 307	3 161 748	3 277 751	3 121 070
United States	13 039 197	18 206 023	18 695 106	19 479 623	20 527 159	21 372 582	20 893 746
EU27 (from 01/02/2020)	11 680 193 e	16 991 922 e	18 078 140 e	19 043 193 e	19 949 806 e	20 604 020 e	20 126 395 e
OECD-Total	**37 066 829 e**	**53 772 301 e**	**56 002 233 e**	**58 470 518 e**	**61 091 772 e**	**62 676 372 e**	**61 546 578 e**
Argentina	527 986	867 177	885 228	1 039 331	1 036 307	1 033 473	942 431
China	6 592 136	17 796 747	18 712 097	19 887 035	21 736 535	23 545 273	24 313 685
Romania	204 715	428 131	478 204	531 676	571 410	617 320	620 133
Russian Federation	1 822 445	3 526 234	3 538 975	3 807 099	4 231 840	4 398 115	4 367 292
Singapore	250 890	481 405	501 388	535 131	566 206	582 534	558 073
South Africa	461 032	695 229	707 744	724 101	746 948	757 984	713 819
Chinese Taipei	655 057	1 102 034	1 112 783	1 143 252	1 203 184	1 262 174	1 320 347

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, Main Science and Technology Indicators database (underlying sources described in section 10 of the documentation, *http://www.oecd.org/sti/inno/MSTI_documentation_e.pdf*.)

Table B. Implicit GDP price indices

Year 2015 = 1.000

	2005	2015	2016	2017	2018	2019	2020
Australia	0.793	1.000	1.037	1.056	1.093	1.112	1.144
Austria	0.830	1.000	1.018	1.029	1.047	1.064	1.089
Belgium	0.854	1.000	1.019	1.038	1.054	1.072	1.086
Canada	0.841	1.000	1.008	1.033	1.052	1.069	1.074
Chile	0.634	1.000	1.046	1.096	1.114	1.142	1.243
Colombia	0.656	1.000	1.051	1.105	1.157	1.203	1.219
Czech Republic	0.873	1.000	1.011	1.025	1.051	1.092	1.139
Denmark	0.839	1.000	1.003	1.014	1.022	1.033	1.060
Estonia	1	1	1	1	1	1	1
Finland	0.819	1.000	1.001	1.009	1.029	1.045	1.060
France	0.881	1.000	1.005	1.010	1.020	1.034	1.062
Germany	0.872	1.000	1.013	1.029	1.049	1.071	1.091
Greece	0.907	1.000	0.994	0.997	0.995	0.998	0.990
Hungary	0.711	1.000	1.013	1.054	1.105	1.158	1.231
Iceland	0.555	1.000	1.023	1.032	1.059	1.107	1.147
Ireland	0.909	1.000	1.007	1.018	1.029	1.066	1.049
Israel	0.825	1.000	1.006	1.006	1.015	1.034	1.044
Italy	0.860	1.000	1.011	1.019	1.030	1.039	1.053
Japan	1.040	1.000	1.004	1.003	1.003	1.010	1.019
Korea	0.829	1.000	1.020	1.043	1.048	1.039	1.052
Latvia	0.6	1.0	1.0	1.0	1.1	1.1	1.1
Lithuania	1	1	1	1	1	1	1
Luxembourg	0.714	1.000	0.989	1.010	1.028	1.034	1.078
Mexico	0.641	1.000	1.056	1.127	1.183	1.232	1.281
Netherlands	0.887	1.000	1.005	1.017	1.042	1.074	1.094
New Zealand	0.799	1.000	1.024	1.052	1.066	1.098	1.113
Norway	0.732	1.000	1.019	1.042	1.075	1.104	1.132
Poland	0.803	1.000	1.003	1.022	1.034	1.067	1.112
Portugal	0.871	1.000	1.017	1.033	1.051	1.070	1.090
Slovak Republic	0.912	1.000	0.995	1.007	1.027	1.053	1.078
Slovenia	0.839	1.000	1.009	1.024	1.045	1.069	1.082
Spain	0.901	1.000	1.003	1.016	1.029	1.042	1.054
Sweden	0.837	1.000	1.015	1.037	1.062	1.089	1.111
Switzerland	0.953	1.000	0.994	0.990	0.998	0.997	0.992
Türkiye	0.476	1.000	1.081	1.200	1.398	1.591	1.827
United Kingdom	0.821	1.000	1.019	1.038	1.058	1.080	1.135
United States	0.836	1.000	1.010	1.029	1.054	1.073	1.086
EU27 (from 01/02/2020)	..	..	..	..	..	..	..
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	0.134	1.000	1.411	1.778	2.526	3.812	5.332
China	0.680	1.000	1.014	1.057	1.094	1.111	1.117 e
Romania	0.533	1.000	1.024	1.072	1.139	1.216	1.263
Russian Federation	0.362	1.000	1.028	1.083	1.192	1.229	1.236 e
Singapore	0.869	1.000	1.006	1.037	1.071	1.065	1.034
South Africa	0.526	1.000	1.072	1.129	1.173	1.220	1.284
Chinese Taipei	1.006	1.000	1.008	0.999	0.993	0.992	1.004

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, Main Science and Technology Indicators database (underlying sources described in section 10 of the documentation, *http://www.oecd.org/sti/inno/MSTI_documentation_e.pdf.*)

Table C. Purchasing power parities

National currency per USD

	2005	2015	2016	2017	2018	2019	2020
Australia	1.39	1.47	1.45	1.48	1.47	1.48	1.45
Austria	0.88	0.80	0.78	0.78	0.77	0.77	0.76
Belgium	0.89	0.80	0.78	0.78	0.77	0.77	0.75
Canada	1.21	1.25	1.21	1.21	1.21	1.25	1.25
Chile	333.69	391.18	397.25	397.69	396.23	408.02	417.72
Colombia	961.49	1 289.32	1 298.14	1 328.02	1 322.16	1 343.60	1 320.10
Czech Republic	14.56	12.94	12.58	12.42	12.37	12.66	12.79
Denmark	8.57	7.31	7.08	6.87	6.77	6.79	6.63
Estonia	1	1	1	1	1	1	1
Finland	0.98	0.91	0.88	0.86	0.85	0.86	0.84
France	0.92	0.81	0.78	0.77	0.76	0.74	0.73
Germany	0.87	0.78	0.75	0.74	0.74	0.75	0.74
Greece	0.71	0.61	0.59	0.58	0.56	0.56	0.55
Hungary	130.93	132.55	132.03	136.04	139.09	145.14	148.80
Iceland	95.84	141.97	140.03	138.28	140.97	145.01	149.69
Ireland	1.01	0.81	0.79	0.79	0.79	0.83	0.80
Israel	3.72	3.92	3.79	3.75	3.78	3.92	3.85
Italy	0.86	0.74	0.70	0.69	0.68	0.68	0.66
Japan	129.55	103.47	105.52	105.10	104.16	104.31	101.24
Korea	788.92	857.48	858.81	872.62	854.87	864.63	824.60
Latvia	0.4	0.5	0.5	0.5	0.5	0.5	0.5
Lithuania	0	0	0	0	0	0	0
Luxembourg	0.95	0.88	0.85	0.85	0.85	0.86	0.86
Mexico	7.13	8.33	8.45	8.91	9.28	9.65	9.70
Netherlands	0.90	0.81	0.80	0.78	0.78	0.79	0.77
New Zealand	1.54	1.48	1.44	1.43	1.47	1.43	1.44
Norway	9.01	9.93	10.04	9.75	9.58	9.98	10.12
Poland	1.87	1.77	1.73	1.74	1.75	1.79	1.79
Portugal	0.66	0.58	0.57	0.58	0.57	0.58	0.57
Slovak Republic	0.56	0.49	0.50	0.52	0.53	0.54	0.54
Slovenia	0.61	0.60	0.58	0.57	0.57	0.57	0.56
Spain	0.77	0.66	0.64	0.63	0.63	0.63	0.63
Sweden	9.48	8.85	8.82	8.85	8.87	9.00	8.75
Switzerland	1.69	1.24	1.20	1.19	1.18	1.18	1.14
Türkiye	0.83	1.16	1.24	1.38	1.63	1.93	2.20
United Kingdom	0.71	0.69	0.69	0.68	0.69	0.69	0.69
United States	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EU27 (from 01/02/2020)	..	..	..	..	..	..	..
OECD-Total	**..**	**..**	**..**	**..**	**..**	**..**	**..**
Argentina	1.10	6.87	9.29	10.26	14.23	21.10	29.16
China	2.84	3.87	3.99	4.18	4.23	4.21	4.18
Romania	1.40	1.66	1.60	1.61	1.67	1.72	1.71
Russian Federation	12.74	23.56	24.19	24.12	24.54	24.84	24.49
Singapore	0.85	0.88	0.88	0.89	0.90	0.88	0.84
South Africa	3.56	5.83	6.16	6.43	6.53	6.70	6.97
Chinese Taipei	18.38	15.48	15.78	15.73	15.27	14.98	15.00

Note: Detailed metadata: *http://metalinks.oecd.org/msti/20221019/8986*
Source: OECD, Main Science and Technology Indicators database (underlying sources described in section 10 of the documentation, *http://www.oecd.org/sti/inno/MSTI_documentation_e.pdf.*)

Table D. Value added in industry at current prices and PPP

Million USD

	2005	2015	2016	2017	2018	2019	2020
Australia	483 339	727 979	795 584	822 951	872 278	880 447 e	942 039 e
Austria	189 163	279 477	298 021	309 567	327 882	335 461 e	315 485 e
Belgium	220 965	322 702	340 848	355 122	369 750	385 265 e	374 162 e
Canada	780 788	1 004 821	1 044 078	1 107 884	1 167 409	1 164 057	1 112 695 e
Chile	150 597 e	278 517	288 811	303 706	321 521 e	322 747 e	322 539 e
Colombia	238 435	421 655	449 198	462 274	496 521	522 444	489 999 e
Czech Republic	157 565	247 827	263 137	283 519	298 162	310 758	297 807 e
Denmark	107 005	162 308	174 669	187 309	196 742	201 558 e	204 540 e
Estonia	15 380	24 735	25 870	28 349	30 887	32 004 e	31 866 e
Finland	103 138	131 847	140 184	151 749	158 199	160 885 e	161 057 e
France	1 144 059	1 570 322	1 648 926	1 711 940	1 803 075	1 916 398	1 844 773 e
Germany	1 691 833	2 474 622	2 656 825	2 801 135	2 916 522	2 915 403	2 835 772 e
Greece	172 823	156 452	159 130	168 362	173 854	179 398	163 388 e
Hungary	109 041	165 798	170 782	180 018	194 206	203 274 e	198 404 e
Iceland	6 689	10 138	11 137	11 581	12 295	12 817	11 378 e
Ireland	115 328	247 819	259 731	291 775	321 854	335 185	360 067 e
Israel	104 189 e	176 806	191 903	200 798 e	209 365 e	213 923 e	214 928 e
Italy	1 108 896	1 368 415	1 486 645	1 553 672	1 608 070	1 641 993	1 517 539 e
Japan	3 087 685	3 722 918	3 695 332	3 780 519	3 827 130	3 804 267	3 776 738 e
Korea	858 894 e	1 348 198	1 407 070	1 459 754	1 531 770	1 518 884 e	1 599 771 e
Latvia	20 716	30 812	31 972	34 274	36 961	37 912 e	37 106 e
Lithuania	34 584	59 396	62 669	67 896	71 843	75 619 e	74 960 e
Luxembourg	21 125	40 612	44 784	46 487	48 739	49 530 e	50 405 e
Mexico	995 958	1 622 508	1 743 779	1 837 161	1 901 367	1 890 515 e	1 746 552 e
Netherlands	399 997	554 537	574 772	608 491	638 422	652 671 e	648 726 e
New Zealand	71 276	110 624	120 209	131 167	134 101	144 642 e	145 282 e
Norway	147 023	194 471	185 802	206 413	227 957	214 327 e	193 676 e
Poland	365 400	725 567	758 808	806 105	854 839	899 272 e	900 969 e
Portugal	141 398	180 421	191 178	199 133	209 586	217 365 e	199 077 e
Slovak Republic	61 334	114 348	109 616	109 967	114 009	115 400	109 786 e
Slovenia	31 688	42 737	45 786	49 779	53 749	56 800 e	54 979 e
Spain	807 808	1 010 192	1 083 769	1 160 660	1 197 773	1 239 314 e	1 075 854 e
Sweden	192 853	303 743	311 176	325 261	337 634	349 441	349 420 e
Switzerland	216 809	374 964	388 256	396 869	414 783	417 506 e	418 805 e
Türkiye	560 357	1 407 714	1 460 484	1 603 343	1 645 324	1 596 131	1 618 849 e
United Kingdom	1 223 972	1 697 522	1 776 015	1 875 723	1 932 210	2 005 793	1 909 913 e
United States	8 404 271	11 495 084	11 786 312	12 332 276	13 028 776	13 580 051	13 616 010 e
EU27 (from 01/02/2020)	7 467 703 e	10 685 833 e	11 365 436 e	12 006 449 e	12 573 350 e	12 960 376 e	12 441 618 e
OECD-Total	**24 542 378 e**	**34 808 609 e**	**36 183 267 e**	**37 962 990 e**	**39 685 567 e**	**40 599 458 e**	**39 925 317 e**
Argentina	359 161	537 302 e	549 597 e	643 006 e	654 062 e	653 022 e	596 667 e
China	5 699 767 e	14 874 049 e	15 439 957 e	16 331 333 e	17 745 564 e	19 151 873 e	19 776 904 e
Romania	144 833	296 982	335 522	373 133	396 235	422 953	420 120
Russian Federation	1 222 530 e	2 382 232	2 384 606	2 588 076	2 870 635	2 979 586	2 885 860
Singapore	211 014 e	388 807 e	403 917 e	433 250 e	465 370 e	477 539 e	458 898 e
South Africa	333 784 e	471 189 e	478 730 e	489 571 e	504 489 e	512 370 e	527 697 e
Chinese Taipei	484 883 e	834 227	845 967	876 573	920 200	957 699	1 002 349

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Source: OECD, Main Science and Technology Indicators database (underlying sources described in section 10 of the documentation, *http://www.oecd.org/sti/inno/MSTI_documentation_e.pdf*.)

Table E. Total population

Thousands

	2005	2015	2016	2017	2018	2019	2020
Australia	20 177	23 816	24 191	24 602	24 983	25 366	25 693
Austria	8 225	8 630	8 740	8 795	8 838	8 878	8 917
Belgium	10 479	11 274	11 331	11 375	11 427	11 489	11 544
Canada	32 244	35 703	36 109	36 545	37 065	37 601	38 037
Chile	16 283	17 971	18 167	18 419	18 751	19 107	19 458
Colombia	41 686	46 819	47 343	47 868	48 391	48 911	49 427
Czech Republic	10 234	10 543	10 565	10 590	10 626	10 669	10 700
Denmark	5 419	5 682	5 729	5 765	5 794	5 817	5 830
Estonia	1 406	1 401	1 401	1 401	1 401	1 393	1 393
Finland	5 246	5 481	5 495	5 508	5 516	5 522	5 531
France	63 168	66 581	66 831	67 116	67 449	67 762	68 004
Germany	81 337	81 687	82 349	82 657	82 906	83 093	83 161
Greece	10 987	10 821	10 776	10 755	10 733	10 722	10 710
Hungary	10 087	9 843	9 814	9 788	9 776	9 771	9 750
Iceland	296	331	335	343	353	361	367
Ireland	4 160	4 696	4 749	4 802	4 861	4 927	4 980
Israel	6 961	8 377	8 543	8 710	8 881	9 050	9 214
Italy	58 167	60 230	60 115	60 002	59 877	59 729	59 439
Japan	127 755	127 110	126 933	126 706	126 443	126 167	125 708
Korea	48 185	51 015	51 218	51 362	51 607	51 709	51 781
Latvia	2 239	1 977	1 959	1 941	1 926	1 913	1 901
Lithuania	3 323	2 905	2 868	2 828	2 802	2 794	2 795
Luxembourg	466	569	584	597	609	622	631
Mexico	107 000	120 846	122 117	123 364	124 587	125 783	126 949
Netherlands	16 320	16 940	17 030	17 131	17 232	17 345	17 442
New Zealand	4 148	4 638	4 742	4 838	4 922	5 013	5 097
Norway	4 623	5 190	5 236	5 277	5 312	5 348	5 379
Poland	38 161	38 455	38 427	38 422	38 413	38 386	38 354
Portugal	10 503	10 358	10 326	10 300	10 284	10 286	10 297
Slovak Republic	5 387	5 422	5 431	5 438	5 446	5 453	5 461
Slovenia	2 001	2 063	2 065	2 066	2 072	2 089	2 103
Spain	43 663	46 410	46 450	46 533	46 729	47 105	47 354
Sweden	9 030	9 799	9 923	10 058	10 175	10 279	10 353
Switzerland	7 488	8 282	8 373	8 452	8 514	8 575	8 638
Türkiye	68 435	78 218	79 278	80 313	81 407	82 579	83 385
United Kingdom	60 413	65 110	65 648	66 040	66 436	66 797	67 081
United States	295 993	320 918	323 186	325 220	326 949	328 527	330 152
EU27 (from 01/02/2020)	434 520 e	444 269 e	445 272 e	445 996 e	446 839 e	447 849 e	448 308 e
OECD-Total	**1 241 694 e**	**1 326 112 e**	**1 334 380 e**	**1 341 928 e**	**1 349 492 e**	**1 356 938 e**	**1 363 017 e**
Argentina	38 592	43 132	43 590	44 045	44 495	44 939	45 377
China	1 307 560	1 383 260	1 392 320	1 400 110	1 405 410	1 410 080	1 412 120
Romania	21 320	19 822	19 706	19 593	19 477	19 376	19 269
Russian Federation	143 519	146 406	146 675	146 842	146 831	146 765	146 460
Singapore	4 266	5 535	5 607	5 612	5 639	5 704	5 686
South Africa	47 602	54 433	55 174	55 906	56 623	57 342	58 065
Chinese Taipei	22 770	23 492	23 540	23 571	23 589	23 603	23 561

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Table F. Total employment

Thousands

	2005	2015	2016	2017	2018	2019	2020
Australia	9 965	11 903	12 080	12 450	12 754	13 049 e	12 846 e
Austria	3 873	4 286	4 341	4 413	4 489	4 540 e	4 467 e
Belgium	4 273	4 617	4 675	4 752	4 817	4 894 e	4 893 e
Canada	16 426	18 125	18 298	18 688	18 986	19 385	17 562 e
Chile	6 079	8 028	8 115	8 276	8 390	8 569 e	7 516 e
Colombia	..	..	..	..	..	..	..
Czech Republic	4 923	5 182	5 264	5 346	5 417	5 430	5 337 e
Denmark	2 783	2 829	2 876	2 922	2 963	3 005 e	2 973 e
Estonia	618	623	625	642	650	647 e	633 e
Finland	2 419	2 524	2 535	2 562	2 626	2 674 e	2 624 e
France	26 321	27 391	27 567	27 881	28 158	28 495	28 298 e
Germany	39 311	43 122	43 661	44 262	44 868	45 269	44 899 e
Greece	4 647	4 323	4 470	4 447	4 509	4 565	4 509 e
Hungary	4 122	4 313	4 473	4 559	4 667	4 719 e	4 668 e
Iceland	162	181	189	197	203	202	193 e
Ireland	1 962	2 010	2 082	2 145	2 213	2 276	2 242 e
Israel	2 924	3 934	4 026	4 124	4 195	4 266 e	4 186 e
Italy	24 511	24 516	24 849	25 138	25 371	25 504	24 976 e
Japan	65 531	65 518	66 138	66 832	68 006	68 615	68 265 e
Korea	22 831	26 178	26 409	26 725	26 822	27 123 e	26 904 e
Latvia	969	889	886	886	900	899 e	878 e
Lithuania	1 421	1 341	1 372	1 362	1 381	1 389 e	1 367 e
Luxembourg	308	406	418	433	449	464 e	473 e
Mexico	32 801	37 562	38 201	38 645	39 240	39 366 e	36 326 e
Netherlands	8 340	8 808	8 943	9 157	9 396	9 611 e	9 559 e
New Zealand	2 059	2 348	2 449	2 537	2 572	2 638 e	2 672 e
Norway	2 319	2 707	2 715	2 747	2 793	2 837 e	2 793 e
Poland	14 057	15 970	16 100	16 315	16 404	16 398 e	16 398 e
Portugal	5 041	4 576	4 650	4 803	4 914	4 953 e	4 862 e
Slovak Republic	2 089	2 267	2 321	2 372	2 420	2 445	2 399 e
Slovenia	930	944	961	990	1 021	1 046 e	1 039 e
Spain	19 704	18 491	18 885	19 388	19 817	20 372 e	19 534 e
Sweden	4 342	4 808	4 896	5 017	5 098	5 128	5 061 e
Switzerland	4 145	4 895	4 963	5 008	5 055	5 092 e	5 067 e
Türkiye	19 489	26 330	26 907	27 919	28 483	27 791	26 484 e
United Kingdom	28 853	31 285	31 745	32 060	32 443	32 795	32 523 e
United States	143 979	151 000	153 586	155 491	157 921	159 721	149 984
EU27 (from 01/02/2020)	191 748 e	198 337 e	200 905 e	204 183 e	207 021 e	209 302 e	206 413 e
OECD-Total	**534 526 e**	**574 228 e**	**582 672 e**	**591 489 e**	**600 410 e**	**606 174 e**	**585 411 e**
Argentina	15 505	17 888	18 126	18 362	18 657	18 823	16 952
China	746 470	763 200	762 450	760 580	757 820	754 470	750 640
Romania	9 159	8 526	8 430	8 631	8 639	8 650	8 495
Russian Federation	68 339	72 324	72 393	72 316	72 532	71 933	70 601
Singapore	2 320	3 656	3 673	3 669	3 715	3 784	3 603
South Africa	12 769	15 741	15 780	16 169	16 394	16 350	15 061
Chinese Taipei	9 942	11 198	11 267	11 352	11 434	11 500	11 504

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Table G. Industrial employment

Thousands

	2005	2015	2016	2017	2018	2019	2020
Australia	7 453	8 506	8 583	8 835	9 020	9 229 e	9 086 e
Austria	2 951	3 212	3 245	3 299	3 360	3 403 e	3 319 e
Belgium	2 963	3 145	3 182	3 229	3 277	3 326 e	3 308 e
Canada	12 265	13 211	13 287	13 595	13 778	14 035	12 558 e
Chile	4 651 e	6 066	6 176	6 245	6 308	6 442 e	5 651 e
Colombia	..	..	..	..	..	..	..
Czech Republic	3 960	4 153	4 212	4 268	4 318	4 322	4 216 e
Denmark	1 858	1 871	1 917	1 961	1 997	2 029 e	1 990 e
Estonia	472	471	475	493	500	496 e	479 e
Finland	1 712	1 756	1 766	1 785	1 830	1 857 e	1 800 e
France	18 059	18 595	18 717	18 981	19 265	19 570	19 343 e
Germany	28 709	31 335	31 636	32 014	32 425	32 605	32 080 e
Greece	3 625	3 285	3 418	3 399	3 443	3 487	3 420 e
Hungary	3 178	3 231	3 359	3 467	3 563	3 632 e	3 593 e
Iceland	118	127	135	142	146	144	130 e
Ireland	1 534	1 478	1 547	1 590	1 635	1 673	1 620 e
Israel	1 882	2 497	2 573	2 639	2 662	2 731 e	2 615 e
Italy	18 313	18 022	18 350	18 629	18 840	18 963	18 481 e
Japan	54 940	52 496	52 818	53 412	54 325	54 765	54 486 e
Korea	19 193	21 051	21 113	21 223	21 236	21 314 e	21 026 e
Latvia	747	685	679	678	692	692 e	669 e
Lithuania	1 084	1 021	1 041	1 035	1 053	1 055 e	1 034 e
Luxembourg	245	313	323	334	346	358 e	362 e
Mexico	25 303	28 456	29 087	29 497	30 048	30 066 e	27 744 e
Netherlands	6 089	6 350	6 480	6 651	6 838	6 973 e	6 853 e
New Zealand	1 574	1 741	1 810	1 874	1 891	1 940 e	1 965 e
Norway	1 492	1 706	1 698	1 716	1 749	1 783 e	1 739 e
Poland	11 097	12 516	12 658	12 841	12 874	12 883 e	12 900 e
Portugal	3 922	3 469	3 528	3 664	3 756	3 779 e	3 680 e
Slovak Republic	1 624	1 776	1 822	1 866	1 908	1 925	1 876 e
Slovenia	765	759	772	795	823	844 e	833 e
Spain	15 266	13 521	13 841	14 265	14 579	15 096 e	14 258 e
Sweden	2 834	3 167	3 195	3 294	3 361	3 390	3 346 e
Switzerland	3 173	3 628	3 651	3 668	3 697	3 711 e	3 666 e
Türkiye	16 845	22 037	22 294	23 186	23 065	22 064	21 027 e
United Kingdom	21 280	22 824	23 253	23 550	23 826	24 103	23 677 e
United States	102 533	104 808	106 826	108 319	109 658	110 678	102 801
EU27 (from 01/02/2020)	143 530 e	145 978 e	147 983 e	150 644 e	152 883 e	154 596 e	151 440 e
OECD-Total	**403 706 e**	**423 283 e**	**429 468 e**	**436 439 e**	**442 091 e**	**445 364 e**	**427 632 e**
Argentina	..	..	..	..	..	..	..
China	..	..	..	..	..	..	..
Romania	7 918	7 334	7 257	7 424	7 462	7 445	7 288
Russian Federation	50 969	53 353	53 268	53 250	53 450	53 129	52 133
Singapore	2 040	3 182	3 192	3 179	3 218	3 277	3 089
South Africa	9 714 e	11 694	11 749	12 091	12 301	12 273	11 156
Chinese Taipei	8 727	9 735	9 797	9 876	9 958	10 014	9 999

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Main Science and Technology Indicators

This biannual publication provides a set of indicators that reflect the level and structure of the efforts undertaken by OECD member countries and selected non-member economies (Argentina, China, Romania, Russian Federation, Singapore, South Africa, Chinese Taipei) in the field of science and technology. These data include final or provisional results as well as forecasts established by government authorities. The indicators cover the resources devoted to research and development, patent families, technology balance of payments and international trade in R&D-intensive industries. Also presented are the underlying economic series used to calculate these indicators. Series are presented for a reference year and for the last six years for which data are available.

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