

Table 18. Summary of R&D expenditure

Million NT\$

| Year | R&D expenditure | Growth rate (%) | R&D expenditure as a % of GNI (%) | R&D expenditure as a % of GDP (%) | Gov. sector R&D expenditure as a % of R&D expenditure (%) | Manufacturing industry R&D expenditure as a % of sales (1) (%) | Basic research expenditure as a % of R&D expenditure (%) | Business enterprise R&D expenditure as a % of value-added in industry (2) (%) | |
|------|---------------------|-----------------|-----------------------------------|-----------------------------------|---|--|--|---|--------------------|
| | | | | | | | | | 1991 |
| 1996 | 137 955 | 10.3 | 1.76 | 1.79 | 41.6 | - | - | - | |
| 2001 | 204 974 | 3.7 | 1.98 | 2.02 | 33.3 | 1.26 | 10.8 | 1.68 | |
| 2006 | 307 037 | 9.3 | 2.37 | 2.43 | 31.4 | 1.34 | 10.2 | 2.22 | |
| 2010 | 395 879 | 7.9 | 2.73 | 2.82 | 27.5 | 1.60 | 10.5 | 2.74 | |
| 2011 | 415 357 | 4.9 | 2.84 | 2.91 | 26.4 | 1.60 | 10.5 | 2.88 | |
| 2012 | 433 997 | 4.5 | 2.87 | 2.96 | 24.7 | 1.75 | 10.2 | 3.02 | |
| 2013 | 458 433 | 5.6 | 2.92 | 3.00 | 23.5 | 1.85 | 9.8 | 3.06 | |
| 2014 | 484 541 | 5.7 | 2.90 | 2.98 | 21.9 | 1.91 | 9.5 | 3.03 | |
| 2015 | 511 618 | 5.6 | 2.92 | 3.00 | 21.2 | 2.23 | 9.2 | 3.08 | |
| 2016 | 541 757 | 5.9 | 3.01 | 3.09 | 21.4 | 2.33 | 8.7 | 3.15 | |
| 2017 | 574 502 | 6.0 | 3.12 | 3.19 | 19.8 | 2.48 | 8.2 | 3.29 | |
| 2018 | 615 986 | 7.2 | 3.28 | 3.35 | 18.8 | 2.58 | 7.5 | 3.52 | |
| 2019 | 660 511 | 7.2 | 3.41 | 3.49 | 18.1 | 2.92 | 7.1 | 3.73 | |
| 2020 | 718 791 | 8.8 | 3.53 | 3.63 | 16.8 | 3.23 | 7.0 | 3.95 | |
| Year | R&D expenditure | | | | | | | | |
| | By source of funds | | | | | By sector of performance | | | |
| | Business enterprise | Government | Higher education | Private non-profit | Abroad | Business enterprise | Government | Higher education | Private non-profit |
| 1991 | - | - | - | - | - | - | - | - | - |
| 1996 | - | - | - | - | - | - | - | - | - |
| 2001 | 132 950 | 68 339 | 2 719 | 931 | 35 | 130 296 | 47 732 | 25 521 | 1 425 |
| 2006 | 206 177 | 96 443 | 3 257 | 1 071 | 91 | 207 238 | 60 965 | 37 565 | 1 270 |
| 2010 | 282 066 | 108 916 | 3 654 | 681 | 563 | 283 421 | 62 258 | 48 777 | 1 424 |
| 2011 | 300 741 | 109 467 | 4 002 | 656 | 491 | 301 477 | 61 679 | 50 790 | 1 410 |
| 2012 | 321 236 | 107 286 | 4 131 | 454 | 891 | 322 111 | 60 207 | 50 358 | 1 321 |
| 2013 | 345 369 | 107 612 | 4 049 | 427 | 976 | 346 206 | 59 877 | 50 895 | 1 455 |
| 2014 | 373 177 | 105 915 | 4 032 | 410 | 1 008 | 373 019 | 59 606 | 50 308 | 1 608 |
| 2015 | 397 673 | 108 694 | 3 964 | 429 | 859 | 397 163 | 62 125 | 50 761 | 1 569 |
| 2016 | 420 639 | 115 722 | 3 953 | 451 | 991 | 419 989 | 69 252 | 50 904 | 1 612 |
| 2017 | 455 260 | 113 571 | 4 248 | 527 | 895 | 454 116 | 67 420 | 51 560 | 1 406 |
| 2018 | 494 932 | 115 749 | 4 159 | 384 | 763 | 494 706 | 65 740 | 54 758 | 781 |
| 2019 | 535 313 | 119 793 | 4 114 | 419 | 873 | 534 586 | 69 754 | 55 302 | 869 |
| 2020 | 592 916 | 120 606 | 4 080 | 392 | 797 | 593 355 | 68 692 | 55 830 | 915 |

Note: 1. R&D expenditure include defense R&D expenditure from 2002.

2. About the data of source of funds and sector of performance, they couldn't link up before 1999 because their classifications are different.

(1) MOEA's *Factory Adjustment and Operation Survey* was not conducted in 1991, 1996, 2001, 2006, 2011, and 2016, so sales for these years are estimates.

(2) Value added in industry are calculated from *National Accounts* by DGBAS, and in accordance with the industrial scope of OECD definition.

Source: 1. Ministry of Science and Technology

2. Directorate-General of Budget, Accounting and Statistics

Table 18. Summary of R&D expenditure (continued)

Million NT\$

| Year | R&D expenditure | | | | | | | | | | |
|------|-----------------|------------------|--------------------------|-------------------------|-------------|---------------------|-------------------------|--------------------|---------------------------|-------------------------------|--------------------------------------|
| | By type of R&D | | | By type of costs | | | | | | | |
| | Basic research | Applied research | Experimental development | R&D current expenditure | | | R&D capital expenditure | | | | |
| | | | | Sub-total | Labor costs | Other current costs | Sub-total | Land and buildings | Instruments and equipment | Capitalized computer software | Other intellectual property products |
| 1991 | 8 275 | 33 320 | 40 170 | - | - | - | - | - | - | - | - |
| 1996 | 15 223 | 41 463 | 81 269 | - | - | - | - | - | - | - | - |
| 2001 | 22 143 | 59 914 | 122 917 | 175 730 | 89 634 | 86 096 | 29 244 | 5 755 | 23 489 | - | - |
| 2006 | 31 229 | 81 270 | 194 539 | 269 860 | 143 957 | 125 903 | 37 177 | 2 898 | 34 279 | - | - |
| 2010 | 41 731 | 97 484 | 256 664 | 361 227 | 207 899 | 153 328 | 34 652 | 2 221 | 32 432 | - | - |
| 2011 | 43 716 | 98 807 | 272 834 | 379 035 | 216 458 | 162 578 | 36 322 | 2 639 | 33 682 | - | - |
| 2012 | 44 342 | 102 122 | 287 533 | 395 996 | 228 827 | 167 169 | 38 001 | 1 890 | 36 111 | - | - |
| 2013 | 44 796 | 106 795 | 306 843 | 417 795 | 242 066 | 175 729 | 40 638 | 3 885 | 36 753 | - | - |
| 2014 | 45 838 | 111 762 | 326 941 | 441 944 | 263 519 | 178 425 | 42 597 | 5 047 | 37 551 | - | - |
| 2015 | 47 232 | 118 117 | 346 269 | 464 948 | 280 622 | 184 326 | 46 671 | 6 368 | 40 303 | - | - |
| 2016 | 47 025 | 124 012 | 370 720 | 492 964 | 294 964 | 198 000 | 48 793 | 5 900 | 39 941 | 1 531 | 1 420 |
| 2017 | 47 133 | 130 408 | 396 961 | 517 161 | 312 520 | 204 641 | 57 340 | 5 394 | 46 200 | 3 598 | 2 148 |
| 2018 | 45 933 | 140 419 | 429 634 | 555 930 | 336 797 | 219 133 | 60 056 | 3 267 | 51 003 | 3 813 | 1 974 |
| 2019 | 46 756 | 149 017 | 464 738 | 595 949 | 363 256 | 232 693 | 64 562 | 2 746 | 55 299 | 4 810 | 1 708 |
| 2020 | 50 525 | 156 088 | 512 178 | 651 387 | 402 860 | 248 527 | 67 404 | 2 797 | 56 136 | 6 372 | 2 099 |