

## Translation



*The following document, issued by three PRC ministries, provides statistics on Chinese technical R&D spending in 2019, broken down by industry and by region. Although China's R&D expenditures increased significantly across the board in 2019, product development—as opposed to basic research or applied research—still accounts for over 80% of the country's R&D spending.*

### Title

2019 Nationwide Statistical Communiqué on Science and Technology Spending and Investment  
2019年全国科技经费投入统计公报

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### Source

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*The Chinese source text is available online at:*

[http://www.stats.gov.cn/tjsj/zxfb/202008/t20200827\\_1786198.html](http://www.stats.gov.cn/tjsj/zxfb/202008/t20200827_1786198.html)

*The notes translated below on p. 3 and pp. 5-6 all appear in the Chinese source text; they are not additions by the translator.*

*US \$1 ≈ 7 Chinese Yuan Renminbi (RMB), as of October 23, 2020.*

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## 2019 Nationwide Statistical Communiqué on Science and Technology Spending and Investment<sup>[1]</sup>

In 2019, China's investment in science and technology (S&T) further increased, research and development (R&D; 研究与试验发展) investment maintained rapid growth, national fiscal expenditures on S&T steadily increased, and the intensity of R&D investment continued to increase.

### I. R&D funding

In 2019, a total of 2.21436 trillion yuan Renminbi (RMB) was invested in R&D funding nationwide, an increase of RMB 246.57 billion, or 12.5%, over the previous year; the intensity of investment (as a ratio of GDP<sup>[2]</sup>) in R&D was 2.23%, an increase of 0.09 percentage points<sup>[3]</sup> over the previous year. Based on the full-time workload of R&D personnel, per capita expenditures amounted to RMB 461,000, an increase of RMB 12,000 over the previous year.

In terms of activity types, national basic research funding amounted to RMB 133.56 billion, an increase of 22.5% over the previous year; applied research funding amounted to RMB 249.85 billion, an increase of 14.0%; and product development (试验发展) funding amounted

to RMB 1.83095 trillion, an increase of 11.7%. Basic research, applied research, and product development accounted for 6.0%, 11.3%, and 82.7%, respectively.

In terms of activity entities, R&D funding expenditures by various enterprises amounted to RMB 1.69218 trillion, an increase of 11.1% over the previous year; funding expenditures by research institutions affiliated with the government amounted to RMB 308.08 billion, an increase of 14.5%; and funding expenditures by institutions of higher education amounted to RMB 179.66 billion, an increase of 23.2%. The funding expenditures of enterprises, research institutions affiliated with the government, and institutions of higher education accounted for 76.4%, 13.9%, and 8.1%, respectively.

In terms of industry sectors, the R&D funding of high-tech manufacturing industries amounted to RMB 380.40 billion, and investment intensity (ratio of operating income) was 2.41%, an increase of 0.14 percentage points from the previous year; equipment manufacturing R&D funding amounted to RMB 786.80 billion, and investment intensity was 2.07%, an increase of 0.16 percentage points over the previous year. Among sizable industrial enterprises [i.e. that have RMB 20 million or more in annual operating income], there are nine industry categories that invested more than RMB 50 billion in R&D funding, and the funding of these nine industries accounted for 69.3% of the R&D funding of all sizable industrial enterprises (see Table 1 for details).

In terms of regions, there were six provinces (or municipalities) that invested more than RMB 100 billion in R&D funding, namely, Guangdong (RMB 309.85 billion), Jiangsu (RMB 277.95 billion), Beijing (RMB 223.36 billion), Zhejiang (RMB 166.98 billion), Shanghai (RMB 152.46 billion) and Shandong (RMB 149.47 billion). There were seven provinces (or municipalities) where the intensity of investment (ratio of regional GDP <sup>[4]</sup>) in R&D funding exceeded the national average, namely, Beijing, Shanghai, Tianjin, Guangdong, Jiangsu, Zhejiang, and Shaanxi (see Table 2 for details).

## **II. Government fiscal S&T expenditures**

In 2019, state fiscal (国家财政) S&T expenditures amounted to RMB 1.07174 trillion, an increase of RMB 119.92 billion, or 12.6%, over the previous year. Specifically, the central government's (中央) fiscal S&T expenditures amounted to RMB 417.32 billion, an increase of 11.6%, accounting for 38.9% of government fiscal S&T expenditures; local government fiscal S&T expenditures amounted to RMB 654.42 billion, an increase of 13.2%, accounting for 61.1%.

### 2019 Government Fiscal S&T Expenditures

	Government fiscal S&T expenditures (RMB 100 million)	Increase over previous year (%)	Proportion of government fiscal S&T expenditures (%)
Total	10,717.40	12.6	—
S&T expenditures	9,470.80	13.7	88.4
S&T expenditures made as part of expenditures on other categories	1,246.60	4.6	11.6
Central government	4,173.20	11.6	38.9
Local government	6,544.20	13.2	61.1

Notes:

(1) None of the statistical data in this communiqué cover Hong Kong Special Administrative Region, Macau Special Administrative Region, or Taiwan Province. Due to rounding errors, the overall total and the total of sub-items are not equal.

(2) The 2019 gross domestic product figure uses preliminary accounting data.

(3) According to the final verification data of GDP in 2018 revised by the Fourth National Economic Census, the investment intensity of R&D funding in 2018 was 2.14%.

(4) The gross regional product uses preliminary accounting data.

**Table 1 R&D Expenditures by Sizable Industrial Enterprises, by Industry, in 2019**

Industry	R&D funding (RMB 100 million)	R&D funding investment intensity (%)
<b>Total</b>	<b>13,971.10</b>	<b>1.32</b>
<b>Mining industry</b>	288.10	0.62
Coal mining and dressing industry	109.20	0.44
Petroleum and natural gas extraction industry	93.80	1.08
Ferrous metal mining and dressing industry	13.40	0.39
Non-ferrous metal mining and dressing industry	21.80	0.65
Non-metallic mining and dressing industry	18.60	0.54
Mining professional and auxiliary activities	31.20	1.31
<b>Manufacturing</b>	13,538.50	1.45
Agricultural and sideline food processing industry	262.00	0.56
Food manufacturing	156.20	0.82
Liquor, beverage, and refined tea manufacturing	107.60	0.70
Tobacco products industry	30.40	0.27
Textile industry	265.90	1.11

Textile garments and apparel industry	105.60	0.66
Leather, fur, feathers and their products, and footwear industry	80.30	0.69
Wood processing and wood, bamboo, rattan, palm, and grass products industry	63.20	0.74
Furniture manufacturing	73.60	1.03
Paper and paper products industry	157.70	1.18
Printing and recording media reproduction industry	79.60	1.20
Culture, education, arts and crafts, sports, and entertainment products manufacturing	118.20	0.92
Petroleum, coal, and other fuel processing industries	184.70	0.38
Chemical raw materials and chemical products manufacturing	923.40	1.40
Medical and pharmaceutical manufacturing	609.60	2.55
Chemical fiber manufacturing	123.70	1.44
Rubber and plastic products industry	357.60	1.41
Non-metallic mineral products industry	520.10	0.97
Ferrous metal smelting and rolling processing industry	886.30	1.25
Non-ferrous metal smelting and rolling processing industry	479.80	0.85
Metal products industry	466.40	1.36
General equipment manufacturing	822.90	2.15
Special equipment manufacturing	776.70	2.64
Automotive manufacturing	1,289.60	1.60
Railway, shipbuilding, aerospace, and other transportation equipment manufacturing	429.10	3.81
Electrical machinery and equipment manufacturing	1,406.20	2.15
Computer, communications, and other electronic equipment manufacturing	2,448.10	2.15
Instrumentation manufacturing	229.10	3.16
Other manufacturing	39.80	2.44
Comprehensive waste resources utilization industry	28.20	0.62
Metal products, machinery, and equipment repair industry	17.10	1.28
<b>Electricity, heat, gas, and water production and supply industry</b>	144.50	0.18
Electricity and heat production and supply industry	113.00	0.17
Gas production and supply industry	17.00	0.19
Water production and supply industry	14.40	0.48

**Table 2 R&D Funding in Various Regions in 2019**

Region	R&D funding (RMB 100 million)	R&D funding investment intensity (%)
<b>Nationwide</b>	<b>22,143.60</b>	<b>2.23</b>
Beijing	2,233.60	6.31
Tianjin	463.00	3.28
Hebei	566.70	1.61
Shanxi	191.20	1.12
Inner Mongolia	147.80	0.86
Liaoning	508.50	2.04
Jilin	148.40	1.27
Heilongjiang	146.60	1.08
Shanghai	1,524.60	4.00
Jiangsu	2,779.50	2.79
Zhejiang	1,669.80	2.68
Anhui	754.00	2.03
Fujian	753.70	1.78
Jiangxi	384.30	1.55
Shandong	1,494.70	2.10
Henan	793.00	1.46
Hubei	957.90	2.09
Hunan	787.20	1.98
Guangdong	3,098.50	2.88
Guangxi	167.10	0.79
Hainan	29.90	0.56
Chongqing	469.60	1.99
Sichuan	871.00	1.87
Guizhou	144.70	0.86
Yunnan	220.00	0.95
Tibet	4.30	0.26
Shaanxi	584.60	2.27
Gansu	110.20	1.26
Qinghai	20.60	0.69
Ningxia	54.50	1.45
Xinjiang	64.10	0.47

**Notes:****1. Explanation of main indicators**

**R&D funding** refers to all expenditures actually incurred during the reporting period for the implementation of R&D activities. R&D refers to creative and systematic work carried out to

increase the stock of knowledge (also including knowledge about humans, culture, and society) and to design new applications of existing knowledge. This includes the three categories of basic research, applied research, and product development. The scale and intensity of R&D activities are usually used internationally to reflect a country's S&T strength and core competitiveness.

**Basic research** refers to a kind of experimental or theoretical work that does not presuppose any specific application or purpose of use. Its main purpose is to obtain the basic principles, laws, and new knowledge of phenomena (that have occurred) and observable facts.

**Applied research** refers to the initial research carried out to acquire new knowledge and achieve a specific practical purpose or goal. Applied research is used to determine the possible uses of the outcomes of basic research or to determine new methods to achieve specific and predetermined goals.

**Product development** refers to the use of knowledge obtained from scientific research, practical experience, and other knowledge generated in the research process to develop new products or processes or to improve existing products and processes.

## 2. Statistical coverage

The coverage of R&D funding statistics covers enterprises and institutions with R&D activities across the whole of society, including research institutions affiliated with the government, institutions of higher education, and enterprises and institutions with relatively intensive R&D activities (including agriculture, forestry, animal husbandry, fishery, mining, manufacturing, electricity, heat, gas, and water production and supply, construction, transportation, warehousing and postal services, information transmission, software and information technology services, finance, leasing and business services, scientific research and technical services, water conservancy, environment and public facility management, health and social work, culture, sports, and entertainment, etc.).

## 3. Survey method

The survey method for R&D funds is as follows: Data for sizable industrial enterprises, special and first-class construction enterprises, sizable service enterprises [i.e. that have RMB 20 million or more in annual operating income] (including industries such as transportation, warehousing and postal services, information transmission, software and information technology services, leasing and business services, scientific research and technical services, water conservancy, environmental and public facilities management, health and social work, culture, sports, and entertainment, etc.), research institutions affiliated with the government, and institutions of higher education were obtained through comprehensive surveys. Data for small industrial enterprises [i.e. that have less than RMB 20 million in annual operating income] were obtained by sampling surveys. Data for enterprises and public institutions (事业单位) in other industries were obtained by means of key surveys and data calculations from the Second National R&D Resources Inventory (第二次全国R&D资源清查).