

Chapter 3

Trends in the ICT Market

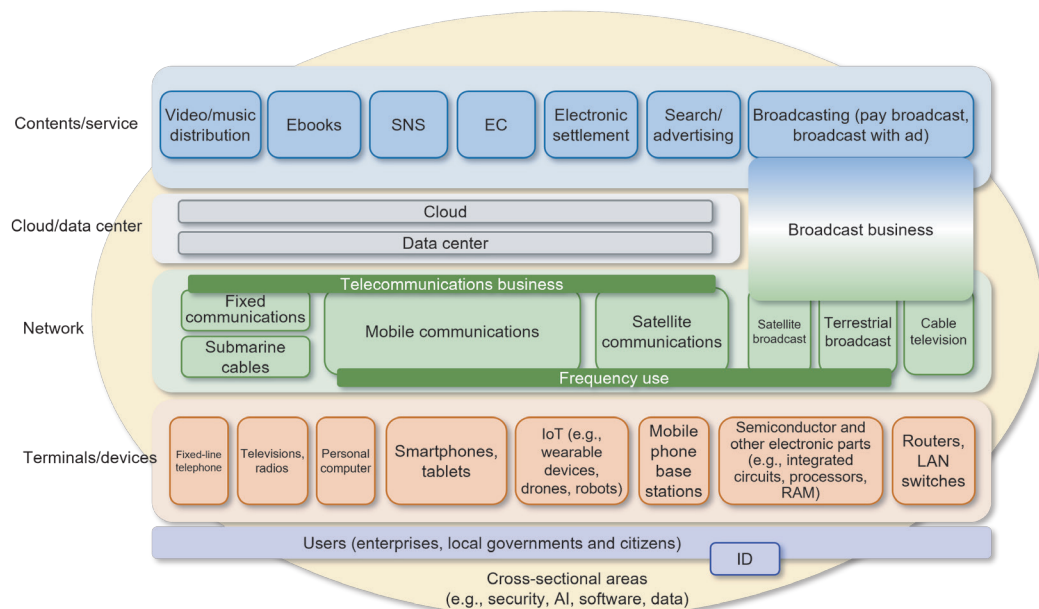
Section 1 Trends in ICT Industry

1. Size of the ICT market

ICT market includes: equipment/terminals that are interfaced with users; networks provided by telecommunication carriers, broadcasters, etc.; cloud/data centers;

content services including video/music distribution; security, and; AI.

Figure 3-1-1-1 Layered market structure around ICT



(Source) MIC

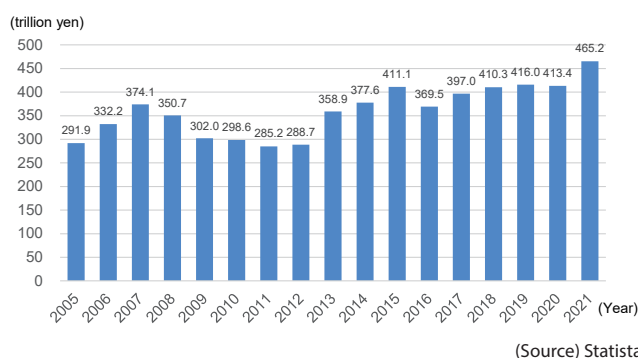
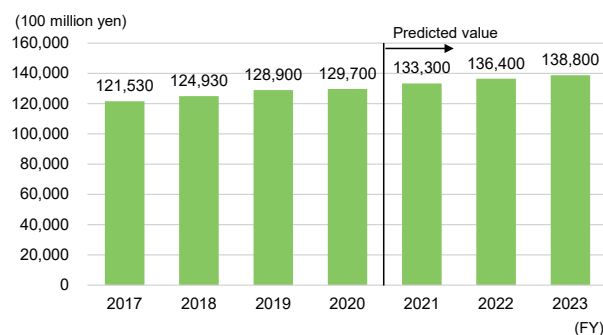
Due to the spread of smartphones, cloud service and other factors, the global ICT market (in terms of expenditure) has been on the increase since 2016: it was valued at 465.2 trillion yen¹ (12.5% increase from the previous year) in 2021² (Figure 3-1-1-2).

The domestic ICT market (ICT investment by private sector) was valued at 12.970 trillion yen (0.6% increase from the previous year). Although many enterprises,

mostly mid-sized enterprises, suspended or postponed ICT investment due to poor business performance in the context of the COVID-19 pandemic, big companies invested in ICT largely as planned, and enterprises understanding the need of environmental improvement, digitalization and business reform for implementation of telework accelerated ICT investment (Figure 3-1-1-3).

¹ Converted to Japanese yen using the average exchange rate of each year (the same hereinafter)

² MIC (2022) "Survey Study on the Trends in the Market Environment Surrounding ICT" (the same hereinafter)

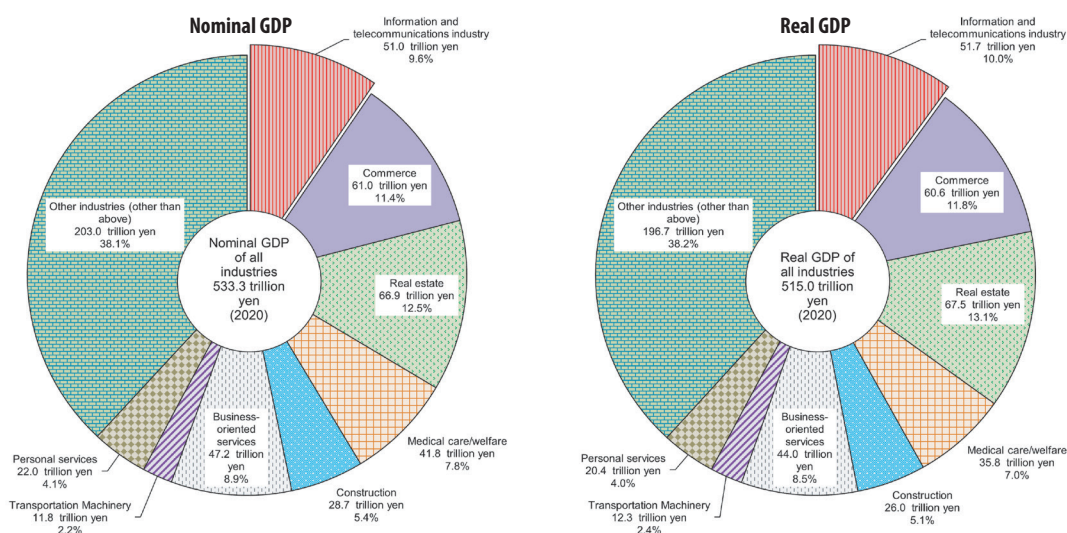
Figure 3-1-1-2 Changes in the size of the global ICT market (in terms of expenditure)³Figure 3-1-1-3 Changes and forecasts for the ICT market (ICT investment by private sector) in Japan⁵

2. Gross Domestic Product (GDP) of the information and telecommunications industry⁷

Nominal GDP of the information and telecommunications industry in 2020 was 51 trillion yen decreasing 2.5%

from 52.3 trillion yen in the previous year (Figure 3-1-2-1 and Figure 3-1-2-2).

Figure 3-1-2-1 GDP of major industries (nominal and real)



³ ICT market includes data center systems, enterprise software, devices, ICT service and communications service.

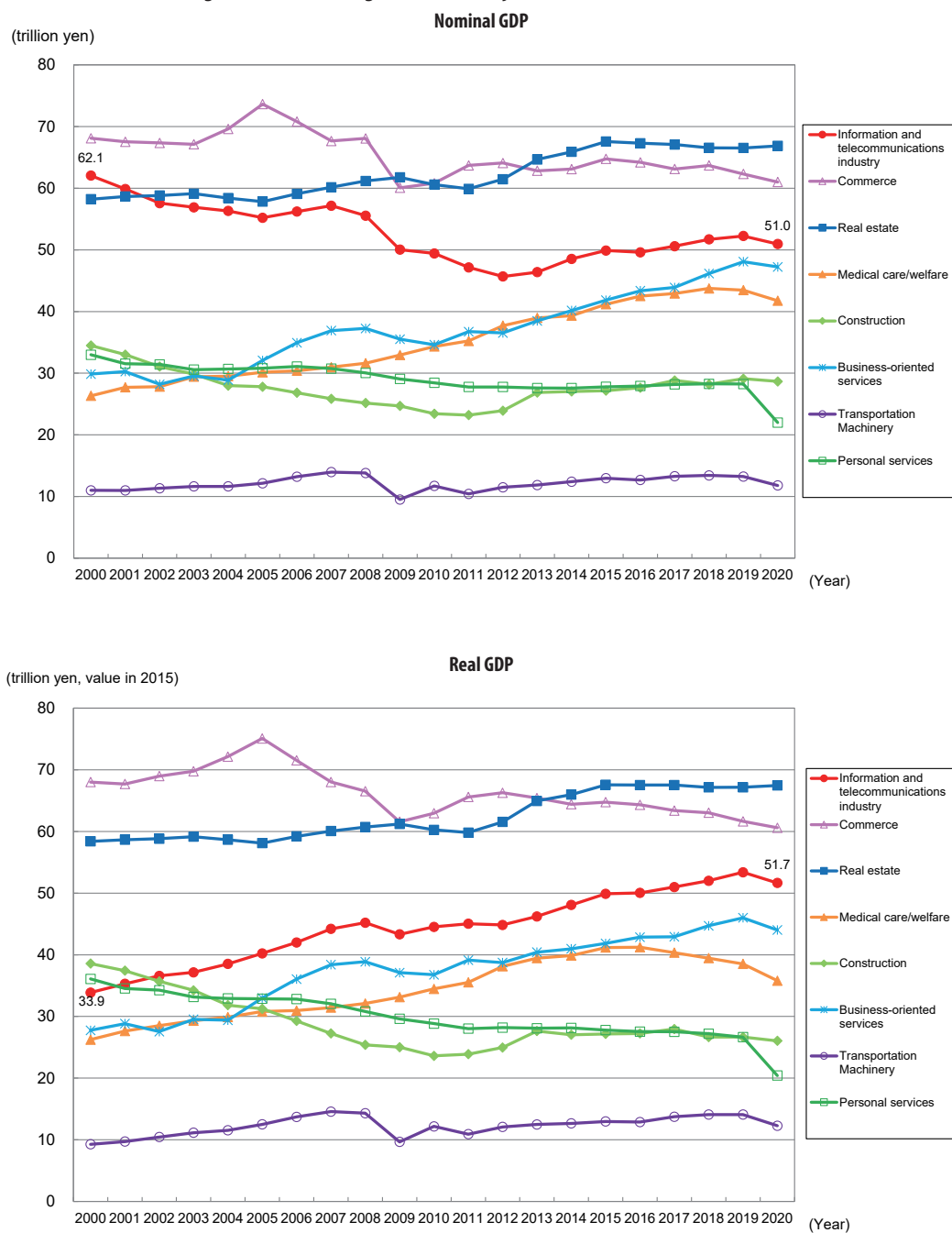
⁴ <https://www.statista.com/statistics/203935/overall-it-spending-worldwide/>

⁵ ICT market includes ICT investment by domestic private enterprises (e.g. hardware, software including scratch development and package (including customized packages) introduction, services including maintenance, operations management and outsourcing, ASP, cloud and other online services, access fees and consulting)

⁶ https://www.yano.co.jp/press-release/show/press_id/2856

⁷ Information and telecommunications industry includes 9 sectors: "telecommunications," "broadcasting," "information service," "services incidental to the Internet," "video/sound/character information production," "manufacturing related to information and telecommunication," "services related to information and telecommunication," "construction related to information and telecommunications" and "research."

Figure 3-1-2-2 Changes in GDP of major industries (nominal and real)



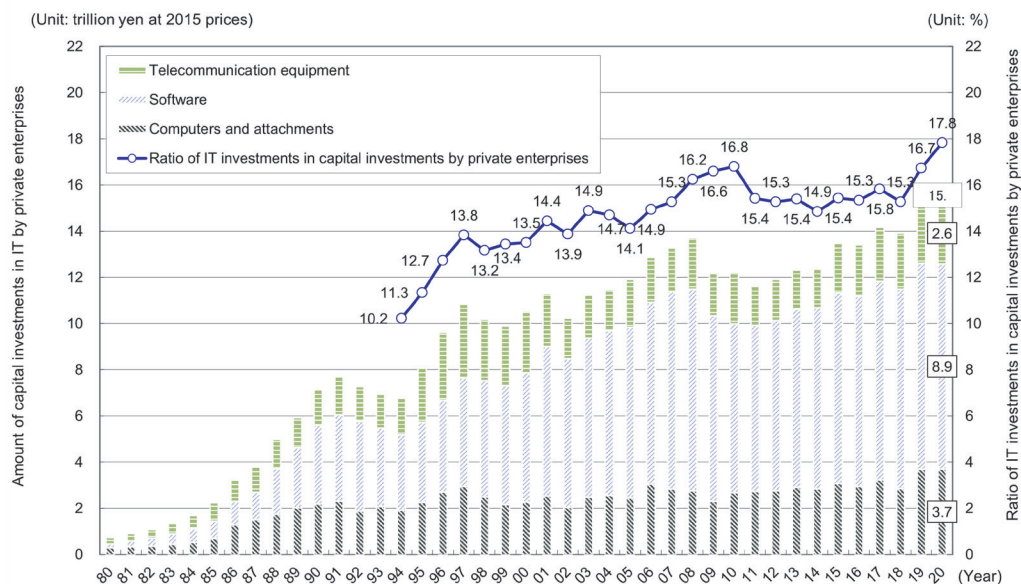
(Source) MIC (2022), "2021 Survey on economic analysis of ICT"

3. IT investments⁸

In 2020, IT investments by private companies were 15.2 trillion yen (0.4 % decrease year-on-year) in terms of 2015 prices. In breakdown, investments in software (entrusted development and packaged software) accounted for about 60% at 8.9 trillion yen. The ratio of IT invest-

ments to capital investment by private companies in 2020 was 17.8% (1.1 point increase from the previous year). IT investments account for a certain part of the capital investment (**Figure 3-1-3-1**).

Figure 3-1-3-1 Changes in IT investments in Japan



(Source) MIC (2022), "2021 Survey on economic analysis of ICT"

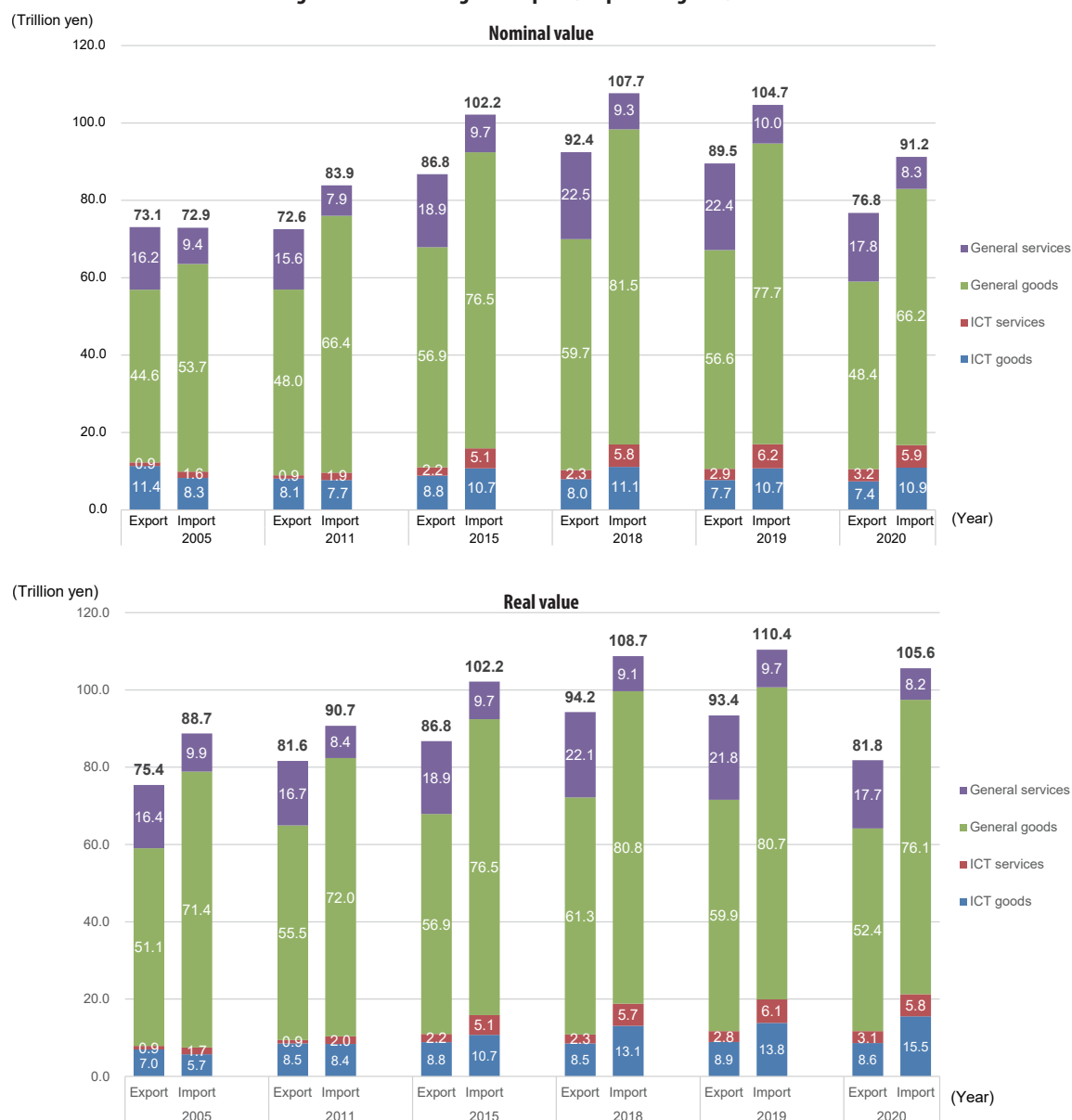
⁸ Here, the term refers to investment in information and telecommunications capital goods (computers and attachments, telecommunication equipment, software). Use of cloud services that have spread drastically in recent years is not purchase of capital goods and therefore not included in IT investment here.

4. Exports and imports in the ICT field

In 2020, exports of goods/services (nominal) were 76.8 trillion yen, while imports were 91.2 trillion yen. Of the above, exports of ICT goods/services were 10.6 trillion yen (13.7% of all exports), while imports were 16.8 trillion yen (18.4% of all imports). Import surplus of ICT

goods was 3.5 trillion yen (16.6% increase year-on-year) and import surplus of ICT services was 2.7 trillion yen (20.0% decrease year-on-year). The increase in the import surplus of ICT goods is significant (**Figure 3-1-4-1**).

Figure 3-1-4-1 Changes in exports/imports of goods/services



(Source) MIC annual "Input-Output Table of the Information Communications Industry"
https://www.soumu.go.jp/johotsusintokei/link/link03_01.html

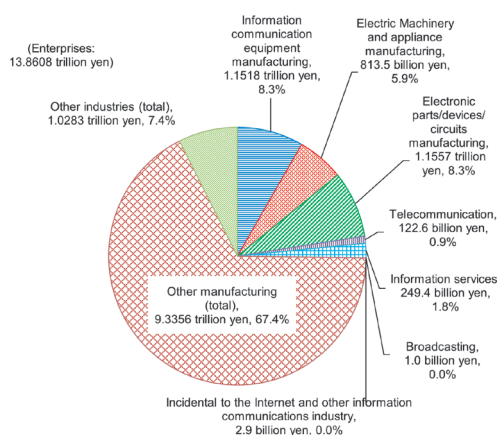
5. Trend of R&D in the ICT field

(1) State of research and development expenses

In fiscal 2020, total expenses for science and technology R&D in Japan (hereinafter “research expenses”) were 19.2365 trillion yen (sum of the research expenses of enterprises, NGOs, public institutions, universities, etc.) which include 13.8608 trillion yen expenses by en-

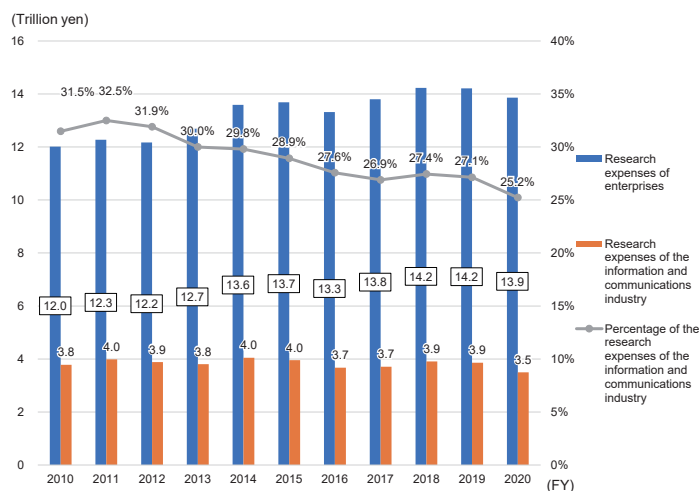
terprises. Research expenses of the ICT industry⁹ were 3.497 trillion yen (25.2% of research expenses of all enterprises) (**Figure 3-1-5-1**). Research expenses of the ICT industry have been declining or flat in recent years (**Figure 3-1-5-2**).

Figure 3-1-5-1 Enterprise research expenses by industry (fiscal 2020)



(Source) Prepared based on MIC, “2021 Survey of Science and Technology Research”
<https://www.stat.go.jp/data/kagaku/kekka/index.html>

Figure 3-1-5-2 Changes in research expenses of enterprises



(Source) Prepared based on MIC “Survey of Science and Technology Research” (annual)
<https://www.stat.go.jp/data/kagaku/kekka/index.html>

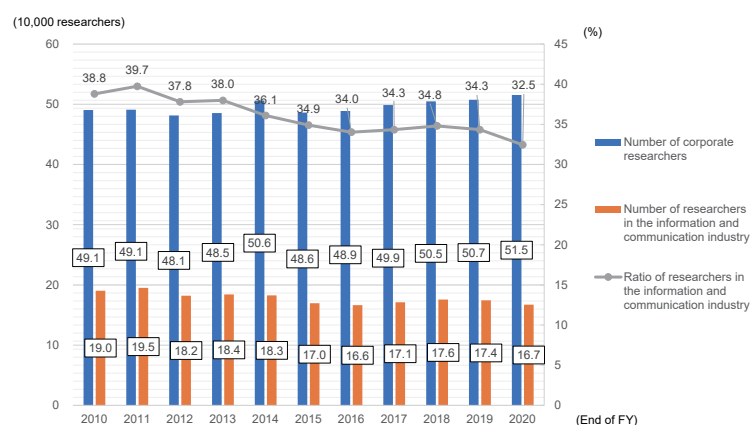
(2) State of R&D human resources

At the end of fiscal 2020, the number of researchers in Japan (total of the researchers in enterprises, NGOs, public institutions, universities, etc.) was 890,548, of which 515,469 were in enterprises. Among the corporate

researchers, the number of researchers in the ICT sector was 167,283 (32.5%) in fiscal 2020. The number has remained almost unchanged in recent years (**Figure 3-1-5-3**).

⁹ Here, the term refers to information communication equipment manufacturing, electric machinery and appliance manufacturing, electronic parts/devices/circuits manufacturing, information communication (information services, telecommunications, broadcasting, incidental to the Internet and other information communication industries).

Figure 3-1-5-3 Changes in the number of corporate researchers



(Source) Prepared based on MIC, "Survey of Science and Technology Research" (each year)
<https://www.stat.go.jp/data/kagaku/kekka/index.html>



Related data

Percentage of corporate researchers by industry (as of March 31, 2021)

Source: Prepared from MIC, "2021 Survey of Science and Technology Research"

URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/eng/WP2022/data_collection.pdf#3-1-38 (Data Collection)