

# Survey on Planned Capital Spending for Fiscal Year 2022

Substantial Growth to Regain Pre-pandemic Level:

Buoyed by Resumed Investment and Spending on Carbon Neutrality, Digitization and  
Enhancement of Resilience

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August 4, 2022

 **DBJ** Development Bank of Japan

Chief Research Office

# Outline of the Survey

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## 1. Survey subjects

### (1) Planned capital spending

- Carried out since 1956
- Designed to provide an overview of capital spending in Japan by analyzing capital spending activity on a domestic non-consolidated basis, and on a domestic and overseas consolidated basis (in terms of trends by industry and by prefecture), as well as motivating factors
- Also covers subjects related to profit/loss, R&D expenditures and information technology investment

### (2) Survey of attitudes on corporate activities (special survey)

- Conducted to identify the attitudes and perspectives of firms on key current issues.
- This year's survey focuses on the business impact of the novel coronavirus (Covid-19) and geopolitical risks, efforts to achieve carbon neutrality, as well as innovation and investment in human resources.

## 2. Survey period

- Up to Friday, June 24, 2022

## 3. Companies surveyed

- Private corporations (excluding those in the finance/insurance industries)
- 2,924 major firms capitalized at 1 billion yen or more
- 6,562 medium-sized firms with capital of 100 million up to 1 billion yen (for regional breakdowns)

## 4. Responding companies and response rates

- Domestic capital spending: 1,758 major firms (60.1%)  
3,735 medium-sized firms (56.9%)
- Overseas capital spending: 655 firms (22.4%)
- Capital spending by region: 4,621 firms (48.7%)
- Special survey: 1,151 major firms (39.4%)  
3,080 medium-sized firms (46.9%)

## 5. Detailed results

Please visit <https://www.dbj.jp/investigate/equip/index.html> (Japanese only).

# Executive Summary

## **1. Overview of Domestic Capital Spending**

Domestic capital spending by major firms (capitalized at 1 billion yen or more) fell 3.8% overall in FY2021, the second consecutive year of decline following substantial downward revisions as major investment projects were postponed largely in view of the protracted Covid-19 pandemic.

Planned capital spending for FY2022 shows a sizable increase (up 26.8% overall) to recover the post-pandemic level of FY2019 on the back of the resumption of postponed projects and the acceleration of investment in preparation for a carbon-neutral, digitalized society and for enhanced resilience.

## **2. Covid-19, Geopolitical Risks and Supply Chains**

Investment for improving resilience is expected to rise, including in supply chain enhancement for economic security such as the maintenance of strategic inventories, in the face of mounting risks arising from the reorganization of the international order triggered by the Ukrainian crisis, price inflation and yen depreciation, in addition to the Covid-19 pandemic.

## **3. Investment for Carbon Neutrality**

Carbon-neutral investment will still be led by renewable energy, energy conservation and electric vehicles. The share of such investment will rise to up to 13% in overall planned capital spending and 24% in planned R&D investment this year. Some firms are planning concrete actions, including collaboration with suppliers and internal carbon pricing.

## **4. Investment in Innovation and Human Resources**

R&D spending will increase for CASE and carbon neutrality in transport equipment while continuing to grow substantially in chemicals and electric machinery. Human resource investment will target various objectives, including health management as well as the enhancement of training. Investment in information technology will increase for data utilization and labor-saving actions.

## **5. Characteristics of Capital Spending, by Region and by Medium-Sized Firms**

Double-digit increases in investment are expected in most regions, driven by the expansion of production capacity in the manufacturing sector, including for carbon neutrality. Meanwhile, most medium-sized firms are still struggling to find appropriate carbon-neutral actions, with high expectations for support measures.

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# **1. Overview of Domestic Capital Spending**

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# Changes in Domestic Capital Spending (Major Firms)

Domestic capital spending in FY2022 will increase substantially, driven by the resumption of postponed projects and investment for carbon neutrality and digitization.

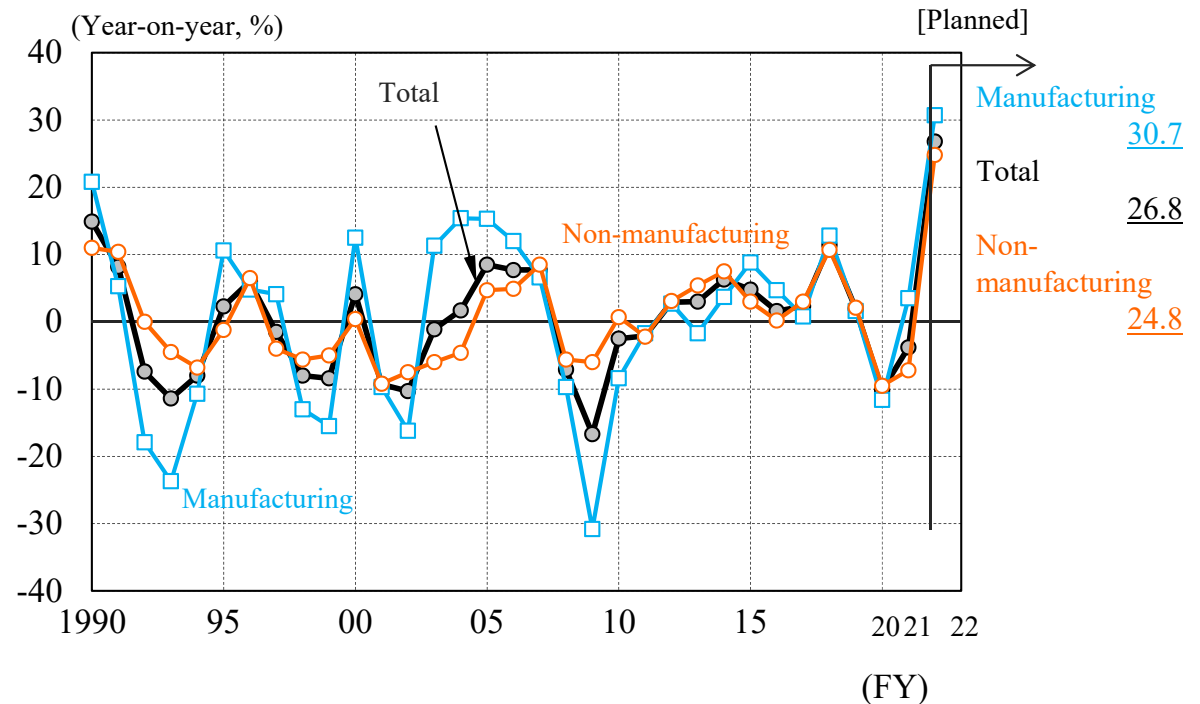
- Capital spending fell 3.8% compared with the previous year in FY2021, the second consecutive year of decline as major investment projects were postponed largely due to the protracted Covid-19 pandemic. Spending recovered slightly in the manufacturing sector, but declined in the non-manufacturing sector, particularly in real estate.
- Planned capital spending for FY2022 shows a sizable increase (up 26.8%) on the previous year. Increased spending is planned in both the manufacturing and non-manufacturing sectors on the back of the resumption of projects postponed last year and increased investment to meet the growing demand for electric vehicles and digitization.

## Changes in domestic capital spending in FY2021 and FY2022

(Year-on-year, %)

	FY2021 Actual (1,650 firms)	FY2022 Planned (1,758 firms)
Total (excluding electric power)	-3.8 [-2.7]	26.8 [25.2]
Manufacturing	3.5	30.7
Non-manufacturing (excluding electric power)	-7.2 [-6.3]	24.8 [21.9]

## Long-term trends in capital spending



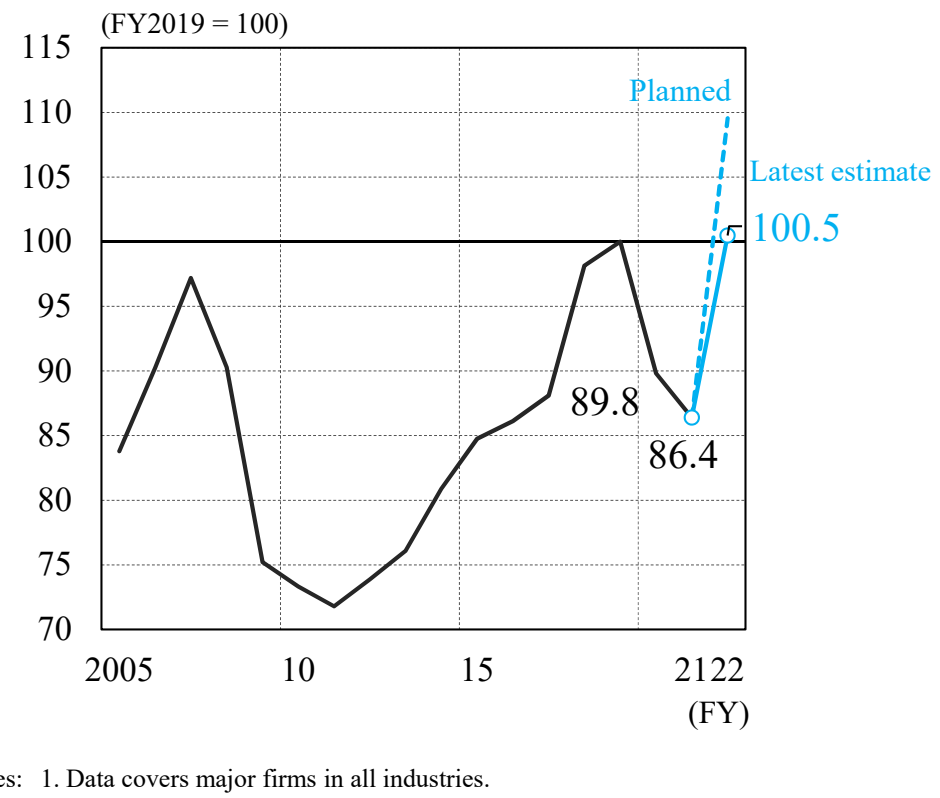
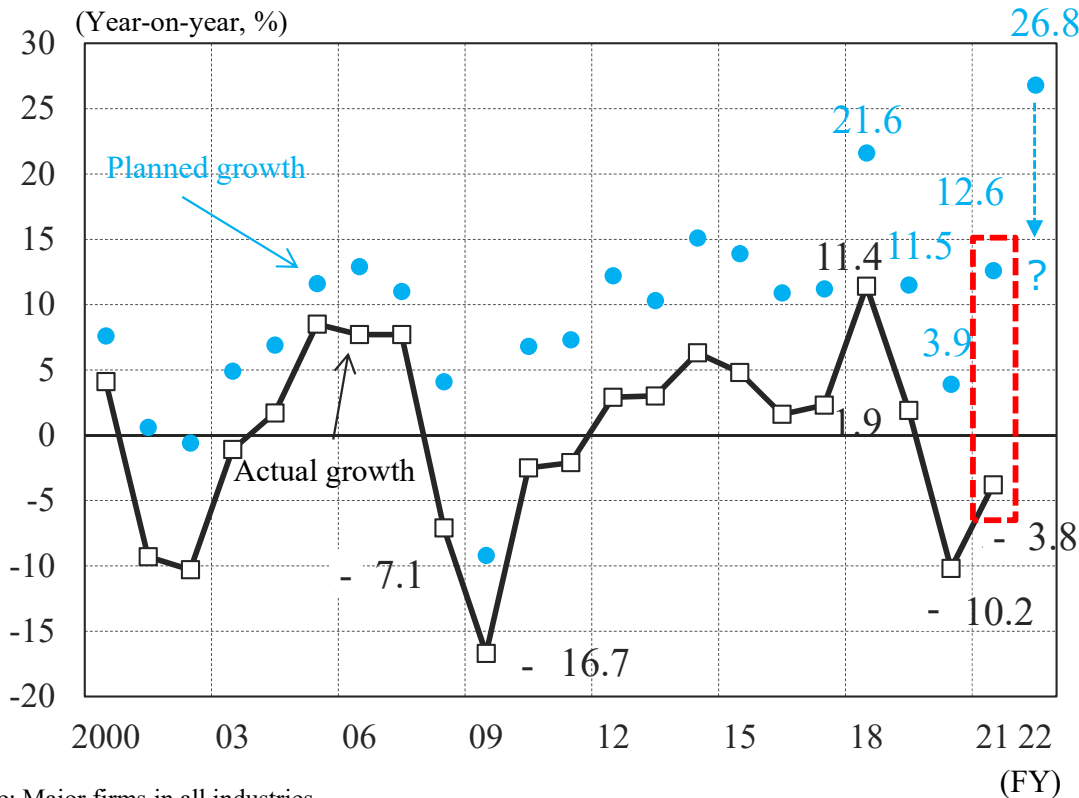
# Latest Estimate for This Year

Investment in FY2022 is expected to regain the pre-Covid level, albeit with substantial uncertainties.

- Recent surveys have seen a common trend of downward revision in actual spending versus planned figures for the current fiscal year. The downward revision for FY2021 was greater than for an average year due to the simultaneous occurrence of downside factors.
- Despite **considerable uncertainties**, including **concerns about the US economy** and **geopolitical risks**, the pattern of revisions in recent years indicates that capital spending in **FY2022** will increase in the mid-teen percentage range, thus regaining the **pre-Covid level** of FY2019.

**Capital spending growth: planned vs. actual**

**Capital spending levels and latest estimate**



Note: Major firms in all industries.

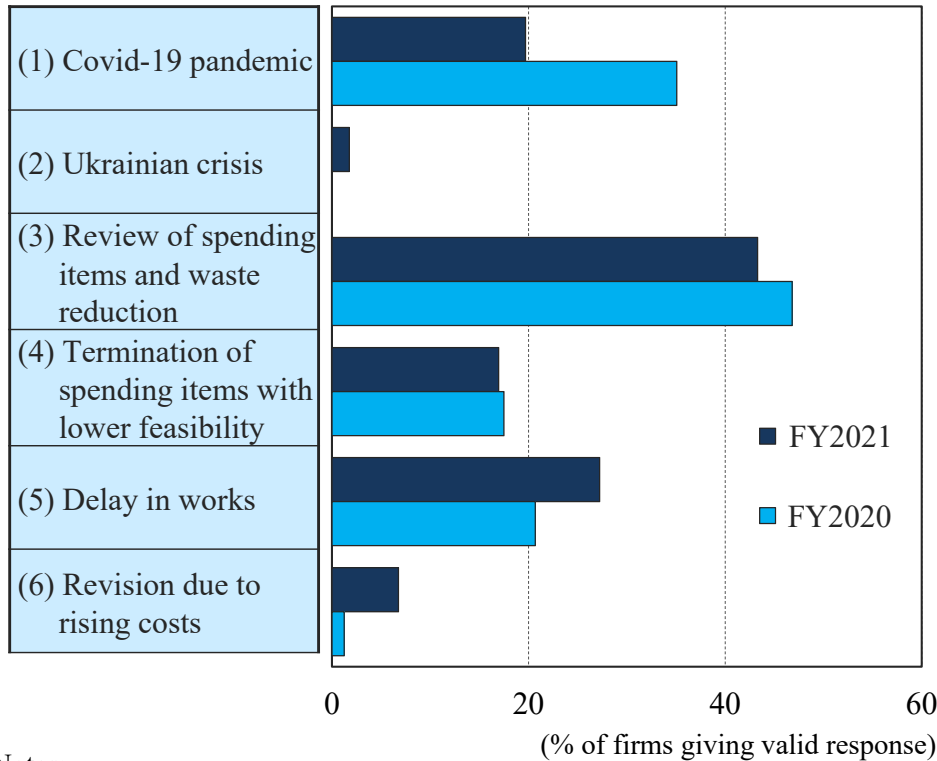
Notes: 1. Data covers major firms in all industries.  
2. Latest estimate reflects the five-year average of realization rate from FY2015 to 2019.

# Downward Revision of Spending Last Year and Resumption of Projects This Year

**Delays in works mainly due to constraints on supply have a negative impact, more than offsetting the positive impact of the respite from the pandemic.**

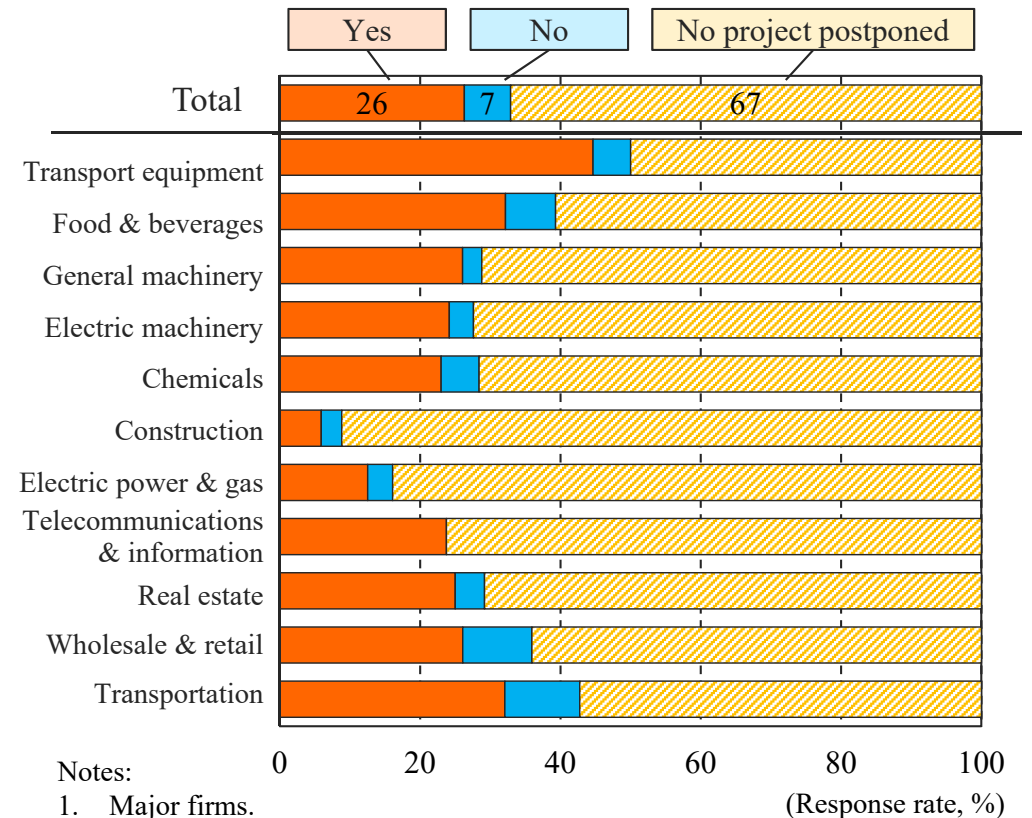
- Capital spending in FY2021 was **substantially revised downward from the planned double-digit increase**. Indeed, investment was halved from the previous year, with 20% of the reduction attributable to the Covid-19 pandemic. At the same time, an **increasing** number of firms were forced to revise planned investment amid **delayed works** and surging costs largely due to **constraints on supply**.
- Many of the projects postponed due to the pandemic will be resumed, particularly in the manufacturing sector. Industries such as wholesale & retail and transportation are expected to suffer from a prolonged negative impact.

## Reasons why last year's actual figures did not reach the initial plan



- Notes:
1. Data only covers major firms.
  2. Respondents may choose up to three answers.

## Does this year's plan include projects postponed last year due to the Covid-19 pandemic?



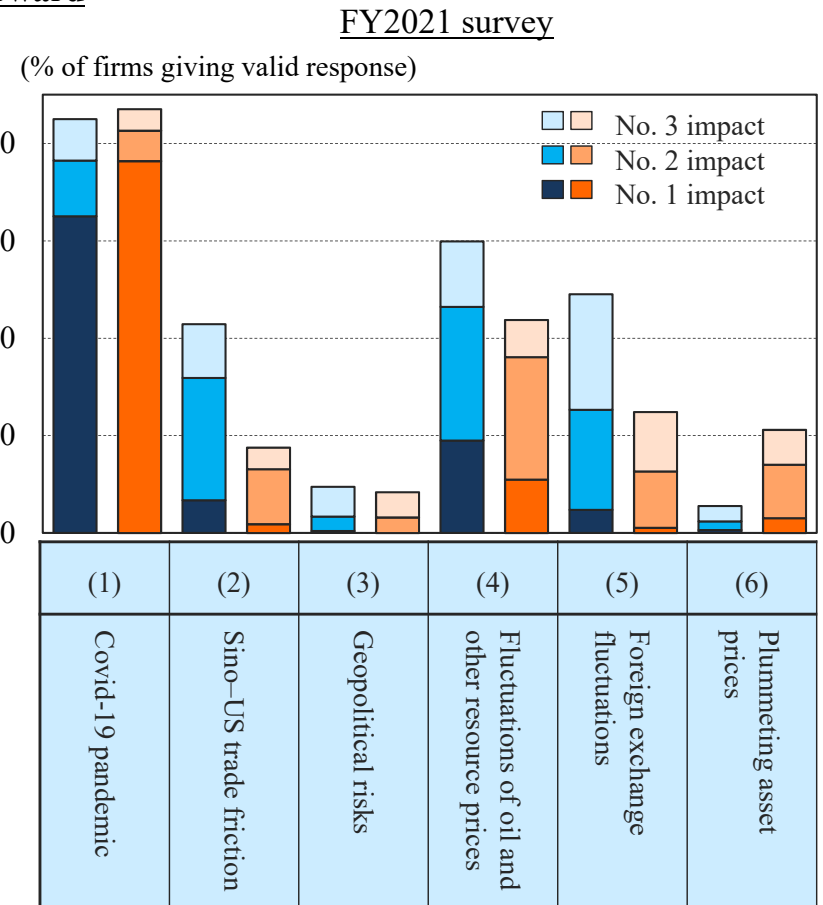
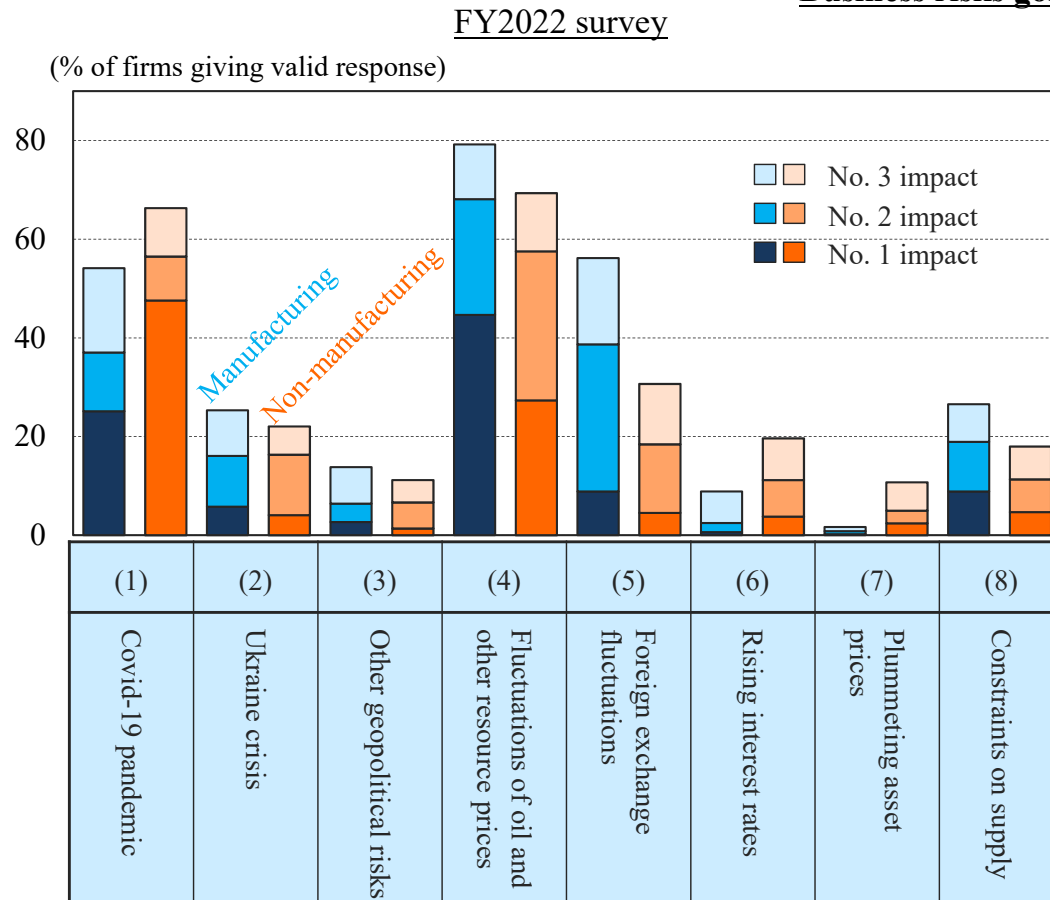
- Notes:
1. Major firms.
  2. Data only covers firms reporting less-than-planned capital spending.

# Business Risks Going Forward

Concerns about Covid-19 decline amid diverse risks such as resource price inflation and FX.

- The share of firms citing Covid-19 as a business risk declined on the previous year while resource prices emerged as the greatest risk, particularly in the manufacturing sector. Diversification of risks can also be observed, including foreign exchange fluctuations, constraints on supply and the Ukraine crisis.

## Business risks going forward



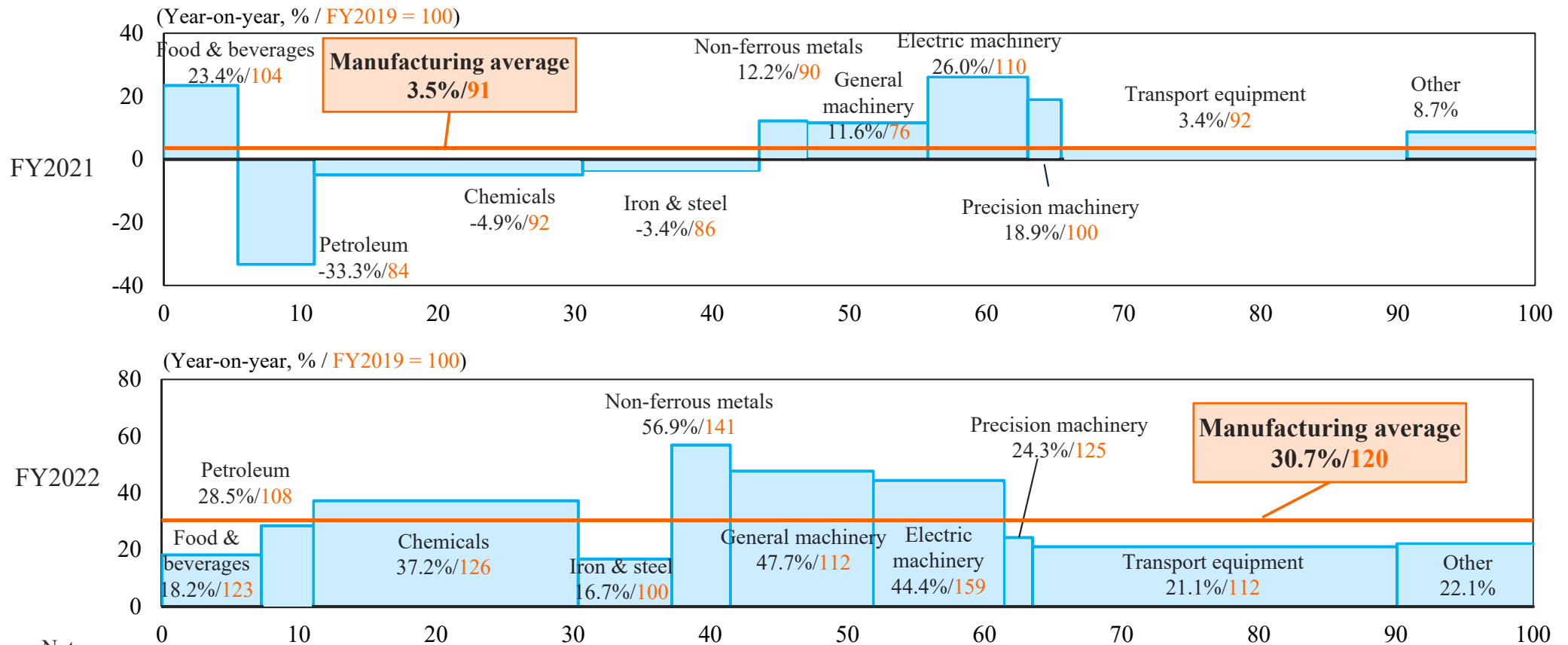
Notes:

- Major firms.
- Respondents may choose up to three answers in order of impact.

# Skyline Chart of Composition and Growth of Capital Spending, by Major Industry (Manufacturing)

After postponements in FY2021, FY2022 will see robust growth in spending for carbon neutrality and digitization in electric machinery and chemicals.

- In FY2021, spending turned slightly upward, driven by increased investment in electric machinery and transport equipment for carbon neutrality and digitization, despite the postponement of projects in petroleum and chemicals.
- In FY2022, spending will increase substantially in a wide range of industries to surpass the pre-Covid level by far, with the resumption of postponed projects. The growth will be driven by chemicals, mainly in electronic materials for digitization, by electric machinery, mainly in electric vehicles and power semiconductors, including for carbon neutrality, and by transport equipment, mainly for response to electrification.



Notes:

1. Data only covers major firms.
2. The larger the area, the greater the contribution to total spending.

(Composition rate in FY2021, %)

## Changes in Capital Spending, by Industry: Manufacturing

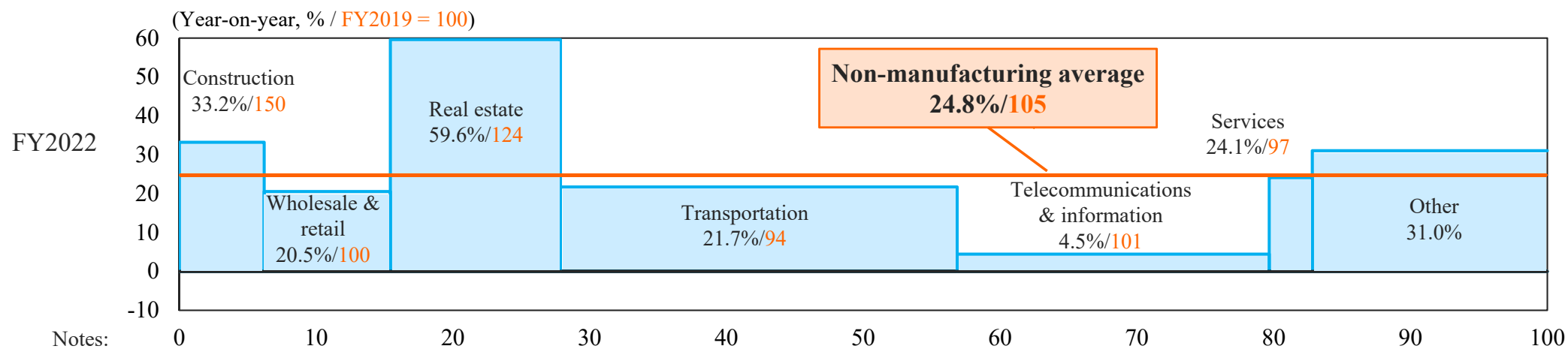
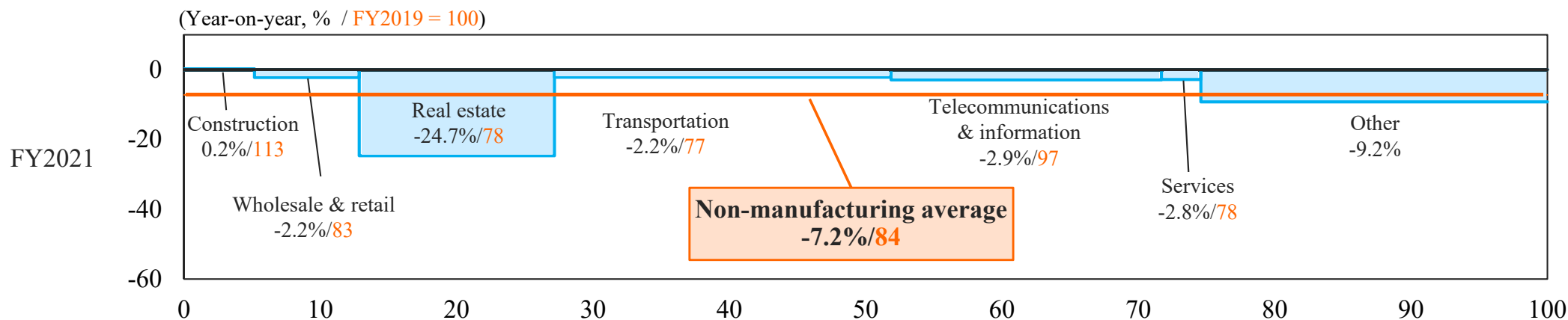
	FY2021		FY2022	
	YoY (%)	Characteristics	YoY (%)	Characteristics
<b>Chemicals</b>	-4.9	Spending declined for the second straight year with the completion of large projects in FMCGs and the termination of maintenance/repair investment in petrochemicals.	37.2	Spending will increase substantially with active investment in electronic materials for semiconductors and batteries as well as in healthcare.
<b>Automobiles</b>	4.7	Spending rose for the first time in three years with investment in new models for the post-pandemic era.	20.1	Spending will increase for the second consecutive year, driven by investment in new models in anticipation of market recovery and for electrification.
<b>General machinery</b>	11.6	Spending turned to double-digit growth with investment in capacity enhancement and in streamlining and labor-saving, including for digitization.	47.7	Spending will increase substantially with widespread investment in capacity enhancement, including for industrial robots to meet automation needs.
<b>Electric machinery</b>	26.0	Spending turned to a substantial increase with capacity investment in power semiconductors and in electronic parts and components for vehicle electrification.	44.4	Spending will increase for the second straight year with substantial acceleration, driven by capacity investment in semiconductors, for vehicle electrification and for production line sophistication.
<b>Non-ferrous metals</b>	12.2	Spending increased as demand rose for semiconductor and automobile materials.	56.9	Spending will accelerate with the further increase in demand for semiconductor and automobile materials.
<b>Food &amp; beverages</b>	23.4	Spending increased with capacity investment on the back of recovery in demand.	18.2	A second straight increase is planned for health-conscious product development and capacity enhancement.
<b>Iron &amp; steel</b>	-3.4	Spending declined for the second straight year as production capacity was adjusted to the dwindling demand.	16.7	Spending will rise with increased, albeit focused, investment for equipment renewal and carbon neutrality.
<b>Petroleum</b>	-33.3	Spending fell substantially due to reduced investment for refineries and the postponement or delay in projects.	28.5	Spending will turn up mainly for carbon neutral fuels and renewable energy, despite continued decline in investment for the maintenance/renewal of refineries.
<b>Precision machinery</b>	18.9	Spending turned to double-digit growth, driven by capacity investment in semiconductor equipment.	24.3	Spending will increase for the second straight year, with investment in semiconductor equipment in response to rising production and for measuring instrument sophistication.

Note: Industries are listed in order of contribution in FY2022.

# Skyline Chart of Composition and Growth of Capital Spending, by Major Industry (Non-manufacturing)

After the termination of major projects in real estate and project postponement in transportation, spending will increase substantially in FY2022 with resumed investment to enhance resilience.

- Spending in FY2021 was revised substantially downward, resulting in the **second consecutive year of decline**. The drop was particularly significant in real estate, due to the **termination of large-scale investment projects**.
- Planned spending for FY2022 shows a **substantial increase across a wide range of industries** with the **resumption of postponed projects** for **resilience** enhancement. A particularly rapid growth is expected in real estate for continued **development of the Tokyo metropolitan area** and in transportation for the scaling of **safety measures**.



Notes:  
 1. Data only covers major firms.  
 2. The larger the area, the greater the contribution to total spending.

(Composition rate in FY2021, %)

## Changes in Capital Spending, by Industry: Non-manufacturing

	FY2021		FY2022	
	YoY (%)	Characteristics	YoY (%)	Characteristics
<b>Real estate</b>	-24.7	Spending suffered a double-digit drop as nothing emerged to replace terminated large-scale projects.	59.6	Spending will increase substantially with successive development of international business hubs in urban centers.
<b>Transportation</b>	-2.2	Spending declined for the second straight year as investment was postponed due to the pandemic, particularly in railways.	21.7	Spending will turn up thanks to the acceleration of safety measures in railways, capacity expansion in logistics and investment in automation and other DX measures.
<b>Construction</b>	0.2	Spending rose slightly, led by investment in R&D and training facilities, despite the termination of some projects for business facility development.	33.2	Spending will increase substantially for five years in a row, driven by the development of e-commerce distribution facilities in addition to business facilities.
<b>Wholesale &amp; retail</b>	-2.2	Spending declined for the second straight year due to reduced new convenience store outlets, despite increased investment in supermarkets for refurbishment and e-commerce development.	20.5	Spending will turn up with increased new convenience store outlets and supermarkets and investment in self-serve lanes and home cooking ingredients.
<b>Telecom &amp; information</b>	-2.9	Spending declined mainly on 4G facilities despite the expansion of 5G base station/network development projects.	4.5	Spending will rise with the peaking of 5G investment, accompanied by the development of networks and data centers.
<b>Services</b>	-2.8	Spending declined for the second consecutive year, particularly in hotels, affected by the pandemic.	24.1	Substantial growth is planned as demand recovers, resulting in active investment in hotels and theme park construction.

Note: Industries are listed in order of contribution in FY2022.

# Characteristics of Capital Spending in FY2022

**Investment is driven by net-zero actions; digitization, including vehicle electrification; and resilience enhancement, including redevelopment and safety measures.**

- As net-zero actions, **renewable energy power generation equipment** and **energy-saving devices** are introduced in a wide range of industries. Active capacity investment is also observed in **components** for next-generation cars, including **electric vehicles**, and in material-based manufacturing industries.
- Accelerated digitization is driving up investment in **semiconductors and semiconductor materials**.
- The **uptrend** of domestic capital investment is **propped up** by investment in redevelopment and safety measures to **enhance urban resilience**.

	Carbon neutrality			Digitization		Enhanced resilience
	Renewable energy	Energy conservation	Materials recycling & hydrogen	Next-generation cars	Remote/noncontact technology & e-commerce	Highly-functional factories, cities & stores
Petroleum	Biomass Wind power			Reduced spending on refinery maintenance/replacement		
Transport equipment		Replaced with energy-saving electric equipment		R&D sites for electrification	Capacity investment in semiconductors & materials thereof	IoT-powered equipment
Iron & steel		Efficient blast & electric furnaces	Electric furnace capacity enhancement	Magnetic steel sheets	Silicon wafers	Investment for manufacturing process automation
Chemicals			Recycling plants	EV-related capacity enhancement	Batteries	
Electric machinery		Power semiconductors			Electronic parts	Introduction of automated equipment
General machinery	Widespread investment, including small-scale projects		Demonstration of hydrogen power generation	Production of robots for automation of factories and logistics		
Telecom & information				5G		
Electric power & gas	Biomass Wind power		Hydrogen production		Resumed or continued investment in urban function enhancement	Investment in safety measures Power plants Railways
Transportation	Photovoltaic			Introduction of EVs	Labor-saving at stores, including with self-serve lanes	
Retail	Biomass				Logistics facilities	
Real estate	Photovoltaic Biomass	ZEB/ZEH				Redevelopment of Tokyo metropolitan area
Services						Hotels

## **2. Covid-19, Geopolitical Risks and Supply Chains**

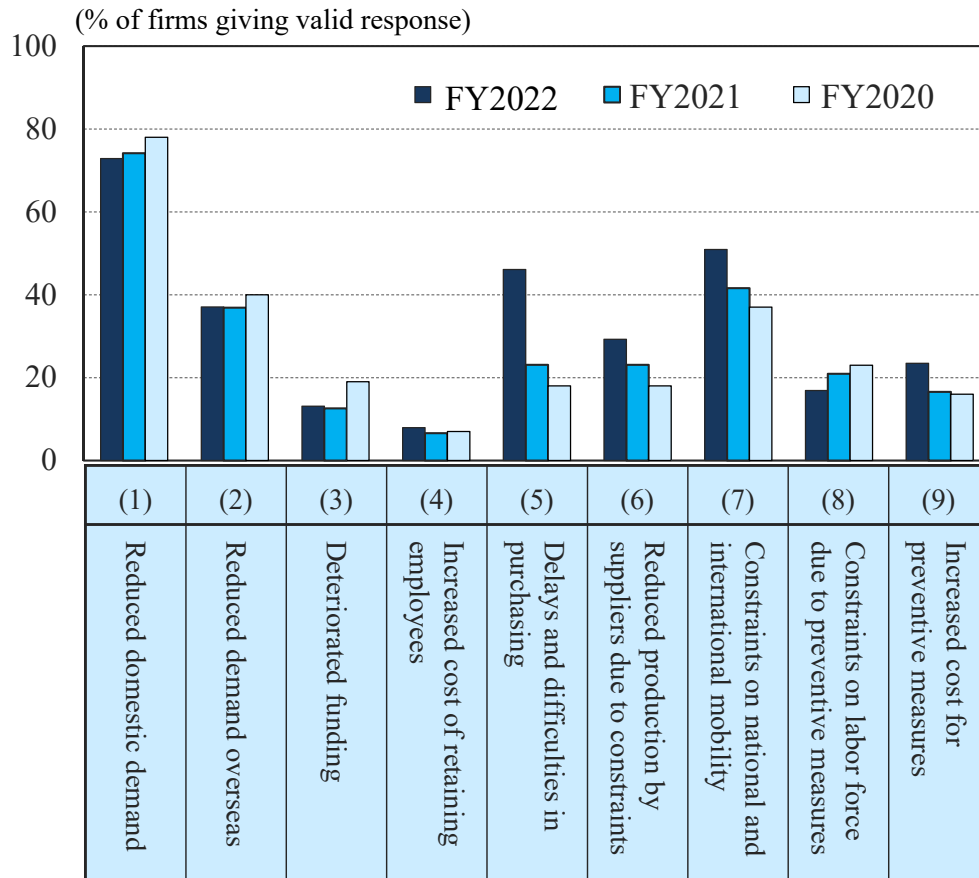
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# Impacts of Covid-19 and Geopolitical Risks

Faced with rising costs and difficulties in procurement, some firms have reviewed their objectives for carbon neutrality.

- Asked about the negative impacts of Covid-19, fewer companies now cite reduced demand or deteriorated funding, but an **increasing number** of firms complain about **challenges related to supply chains**, including **constraints on national and international mobility**, as the pandemic recedes, as well as **delays and difficulties in purchasing** and **reduced production by suppliers**.
- In addition, geopolitical risks have exacerbated procurement challenges, including through **rising costs**. Some firms even responded that they had **reviewed their objectives for carbon neutrality**.

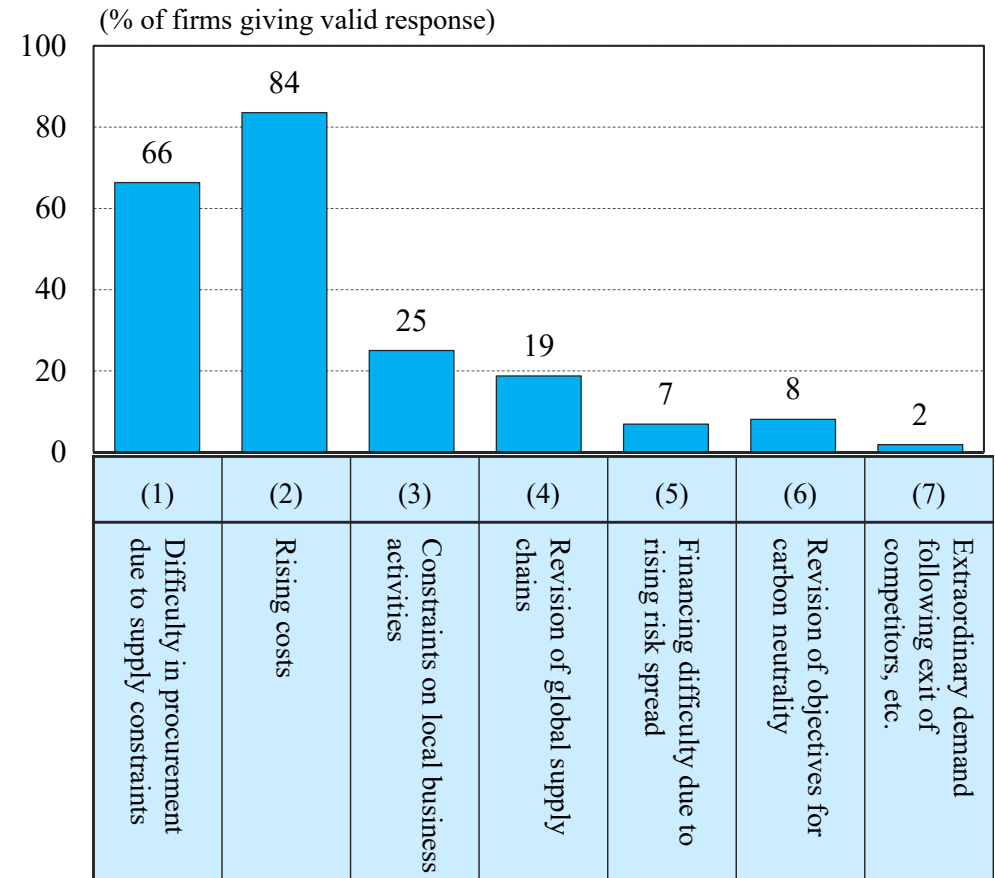
**Negative business impacts of Covid-19**



Notes:

1. Data covers major firms in all industries.
2. Respondents may choose up to three answers.

**Negative business impacts of geopolitical risks**



Notes:

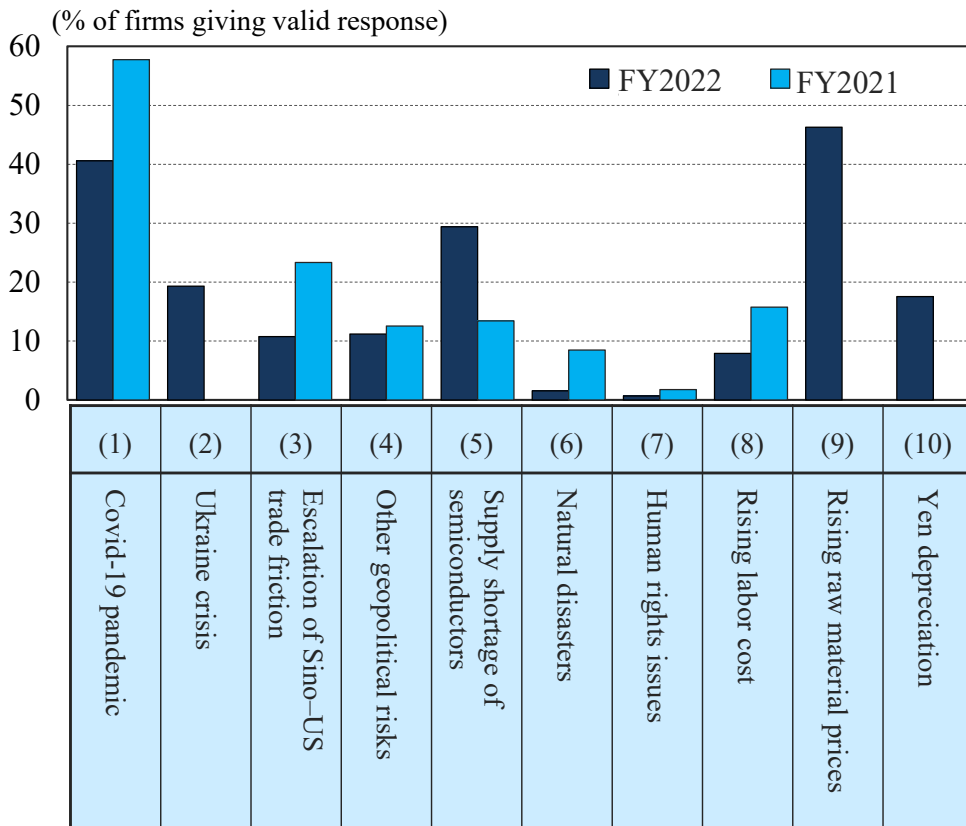
1. Data covers major firms in all industries.
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# Revision of Supply Chains

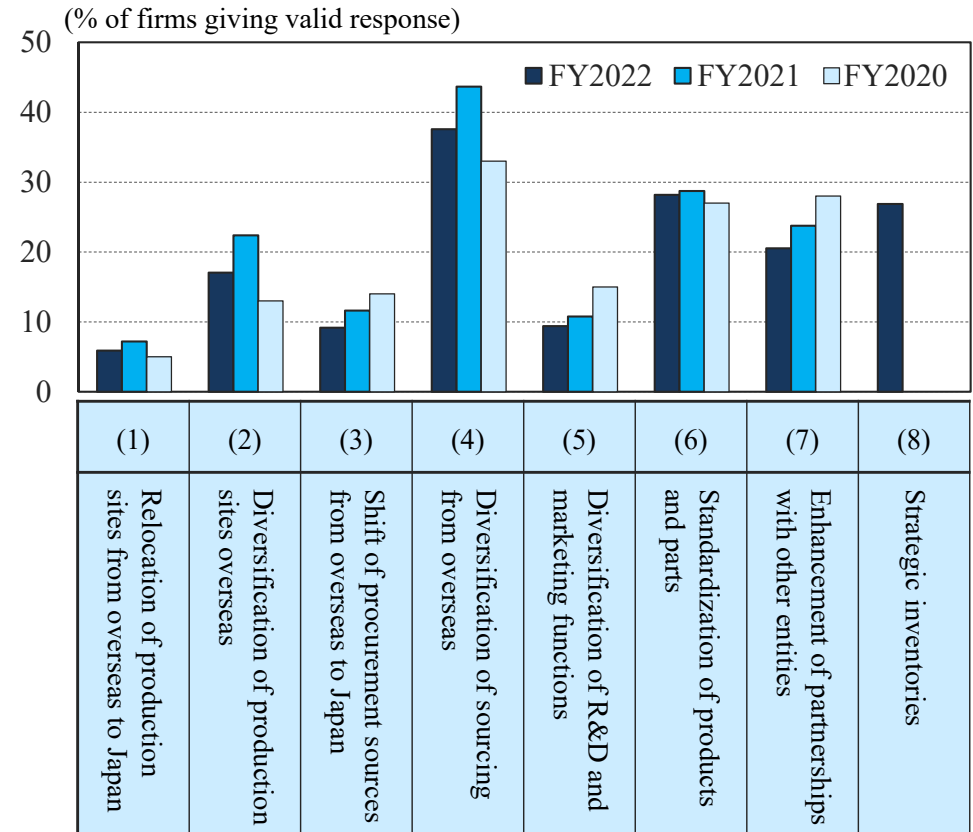
**Firms are moving to diversify sourcing and secure strategic inventories to cope with resource price inflation, with limited reshoring.**

- The Covid-19 pandemic is now less often cited as an **opportunity to revise supply chains**, as companies are more concerned about **rising raw material prices, supply shortages in semiconductors, the Ukraine crisis and the yen depreciation**, among others.
- Asked about how they will revise their supply chains, most firms cited the **diversification of sourcing from overseas** and the standardization of products and parts, but almost **30%** of the respondents said they would **secure strategic inventories**. Meanwhile, the share of respondents citing reshoring remains at about 5%, almost unchanged from the previous two years, with fewer firms intending to shift suppliers back to Japan.

**Opportunities for revision of supply chains**



**Actions to revise supply chains**



Notes:

1. Data covers major firms in all industries.
2. Respondents may choose up to three answers.

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1. Data covers major firms in all industries.
2. Respondents may choose up to three answers.

# Capital Spending Overseas

Despite the slowdown in China, capital spending overseas will grow rapidly, driven by investment in Asia excluding China.

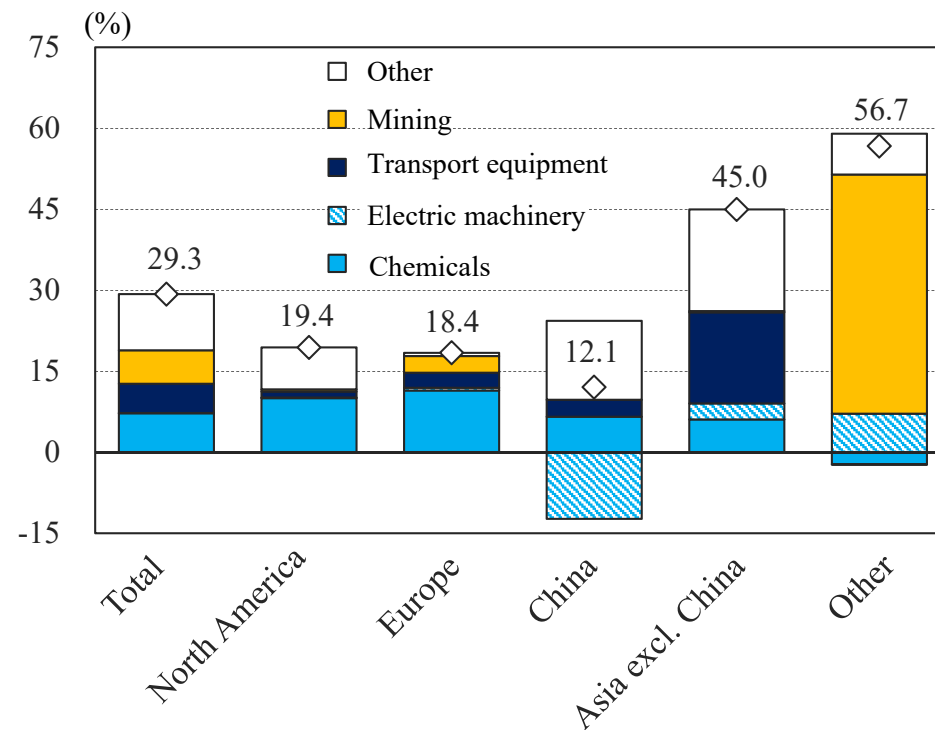
- In **FY2021**, capital spending overseas turned to an increase of 11.6% overall, led by chemicals, electric machinery and non-ferrous metals in the manufacturing sector, and by real estate in the non-manufacturing sector. By country, investment in China increased for the fifth straight year while spending increased in Europe and America.
- Planned spending for **FY2022** shows an increase of 29.3% overall, particularly in Asia excluding China with **accelerated** investment in many industries on the back of expectations for **rising local demand** and **supply chain building**, as well as in **other** regions, led by a rapid growth of investment to **secure energy sources** such as oil and gas, in spite of the **slowdown in China** due to the reduction in large-scale projects out of concern for the adverse impact of the country's zero-Covid policy.

## Changes in capital spending overseas in FY2021 and FY2022

(Year-on-year, %)	FY2021 Actual (545 firms)	FY2022 Planned (655 firms)
Total	11.6	29.3
North America	18.5	19.4
Europe	20.5	18.4
China	23.3	12.1
Asia excl. China	0.7	45.0
Other	-3.1	56.7

Note: Major firms in all industries.

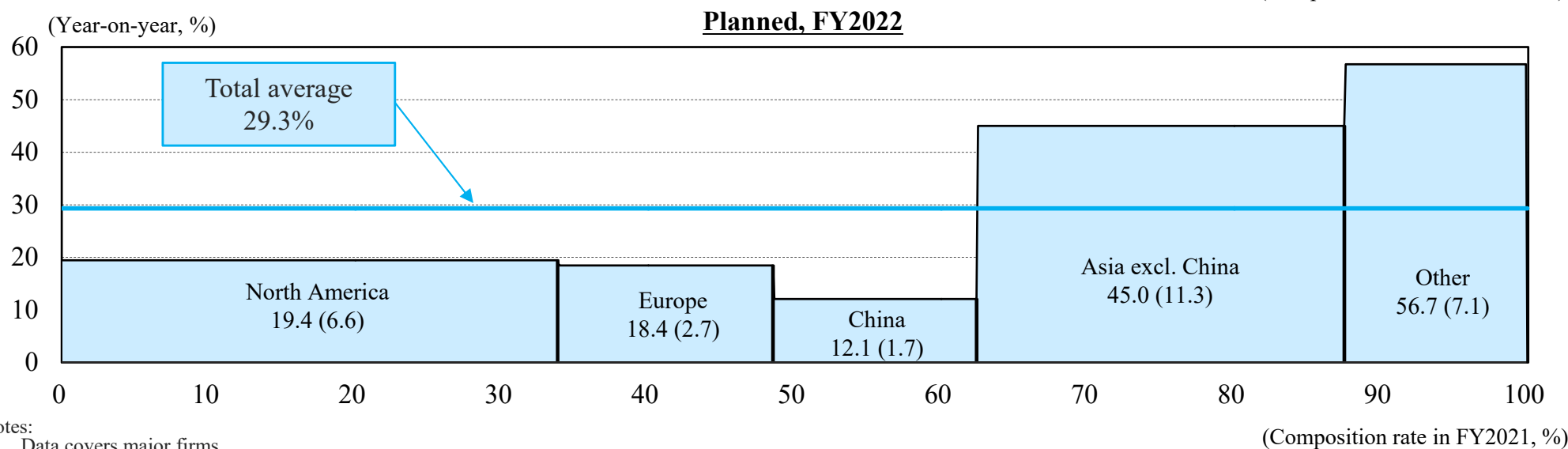
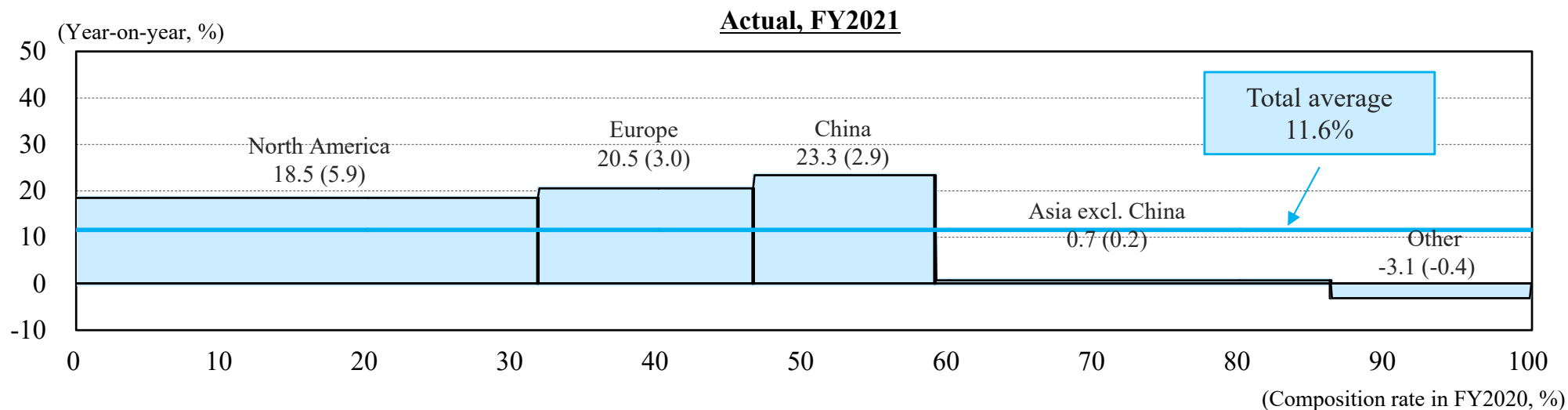
## Changes in FY2022, by region and by industry



Note: Major firms.

# Skyline Chart of Overseas Capital Spending, by Region

Spending in FY2022 will increase substantially, driven by investment in Asia excluding China, despite slower spending in China.



Notes:

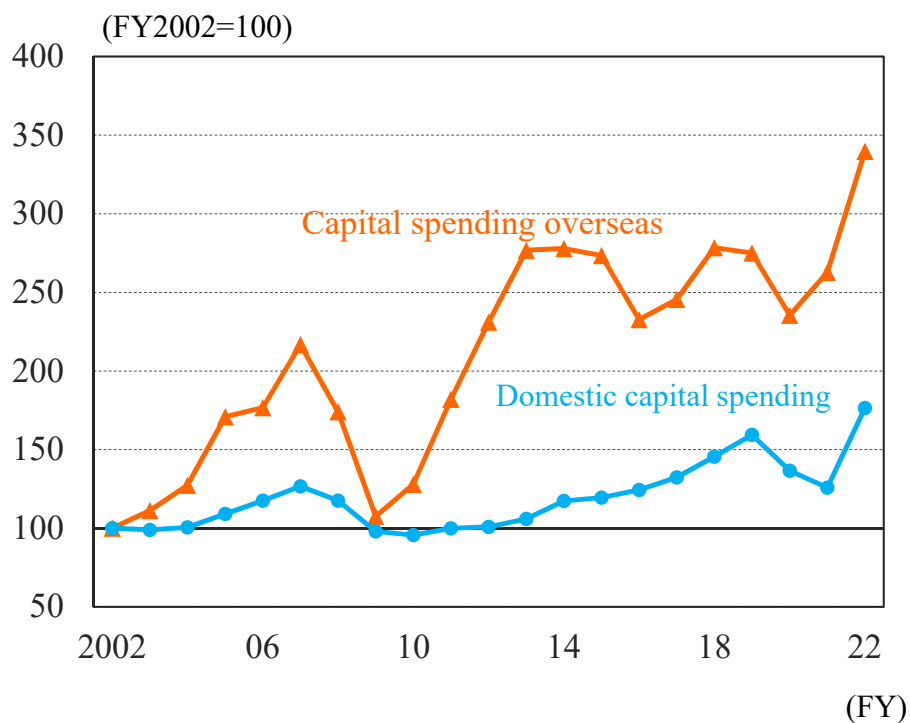
1. Data covers major firms.
2. Figures indicate change in FY2022 planned spending versus FY2021 actual spending. Figures in parentheses indicate the contribution to total spending.
3. The larger the area, the greater the contribution to total spending.

# Overseas Capital Spending Ratio

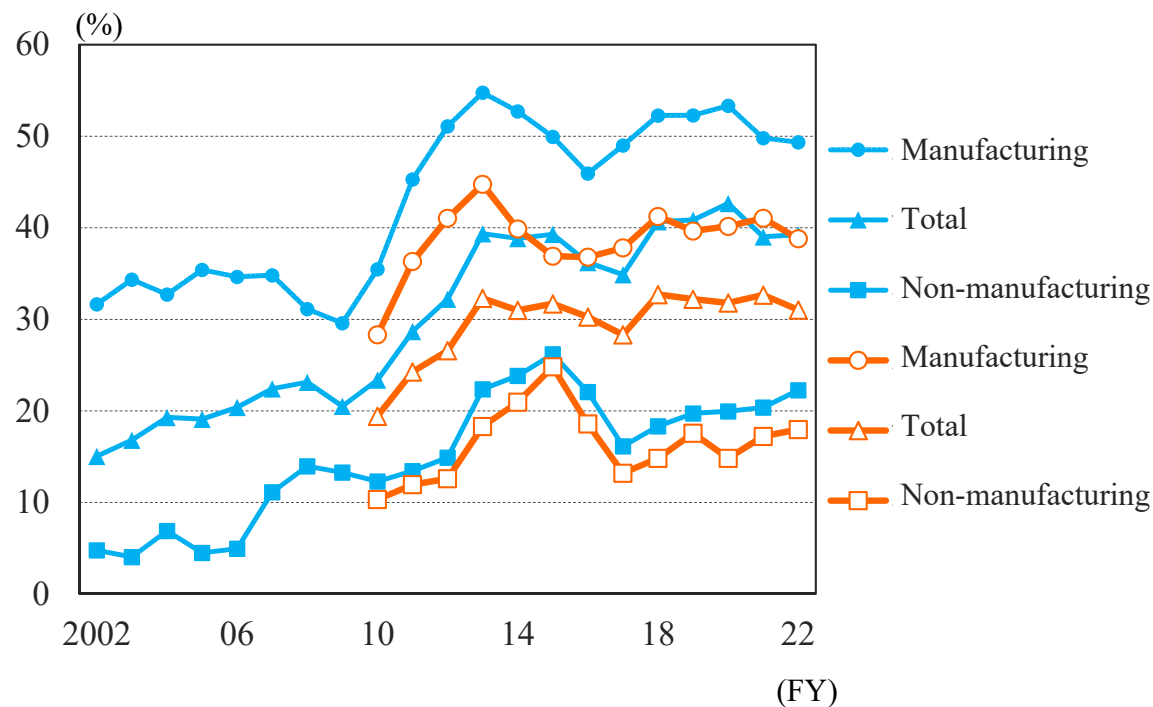
The ratio will decline slightly in FY2022 as planned domestic investment shows a faster increase than overseas capital spending in the manufacturing sector.

- Capital spending overseas had grown substantially until 2013, driven by the yen appreciation in the aftermath of the Great Recession, but then stagnated due to the yen depreciation and the slower growth of the Chinese economy. Although investment started to decline both in Japan and overseas in 2019 against the backdrop of the Sino-US conflict and the Covid-19 pandemic, overseas capital spending was the first to show signs of recovery in FY2021, with substantial growth planned for FY2022.
- The share of capital spending overseas in total investment (domestic and overseas) has been rising in the non-manufacturing sector since 2018 but has almost leveled off in the manufacturing sector. Planned spending for FY2022 points to a decline in the ratio from 32.7% in FY2021 to 31.0% as domestic investment shows a faster increase than capital spending overseas, particularly in the manufacturing sector.

**Trend of capital spending in Japan and overseas**



**Trend of capital spending overseas**



Notes:

Blue: consolidated overseas/(non-consolidated domestic + consolidated overseas).

Orange: consolidated overseas/(consolidated domestic + consolidated overseas).

Note: Consolidated basis, except for domestic spending up to 2009, shown on a non-consolidated basis.

### **3. Investment for Carbon Neutrality**

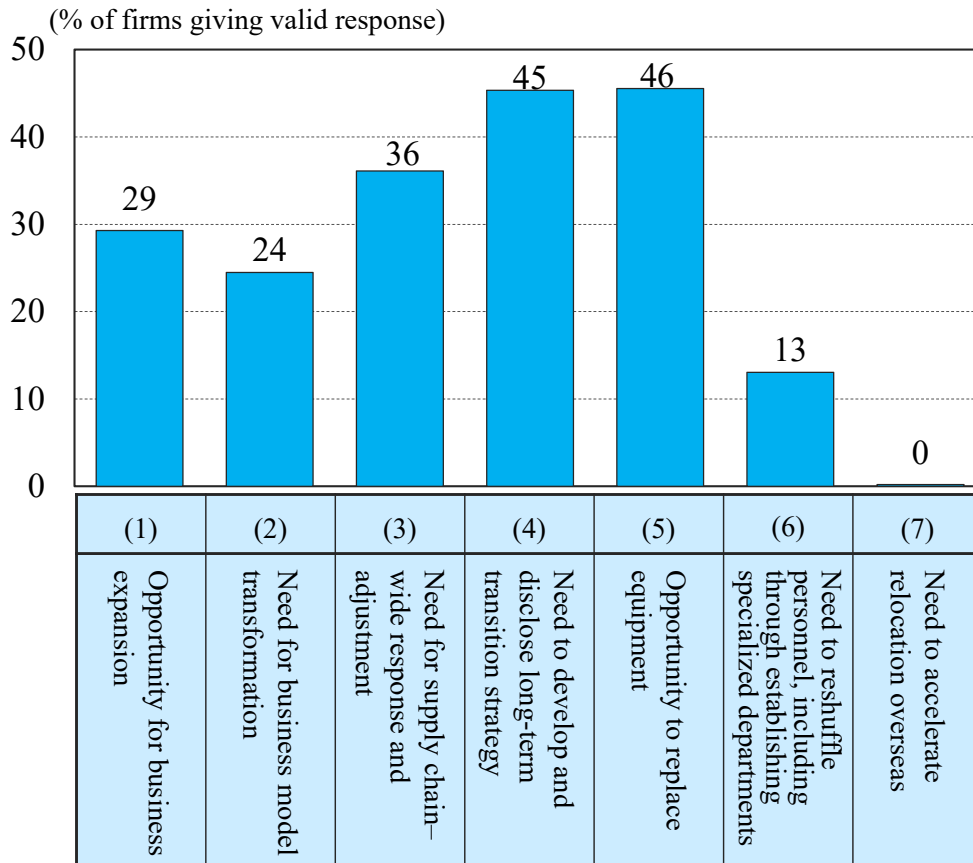
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# Impact and Timing of Achieving Carbon Neutrality

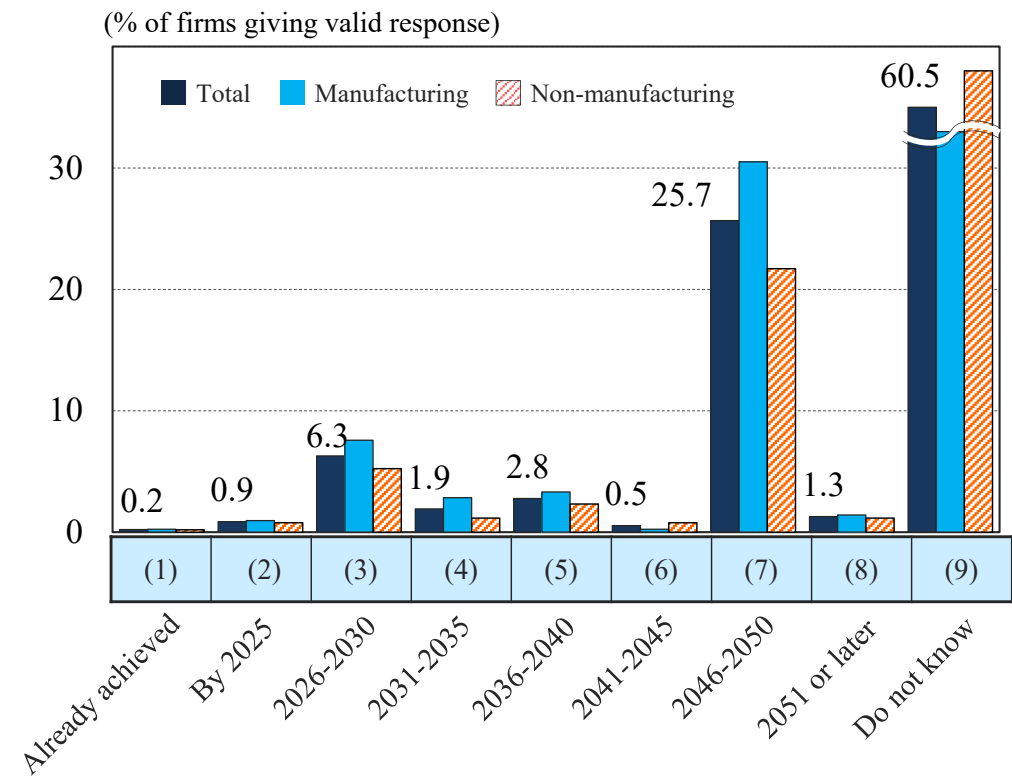
Carbon neutrality provides an opportunity for equipment replacement—to be achieved by 2050 in many cases, but 60% of the firms are still unsure of the timing of achievement.

- Carbon neutrality is expected to stimulate investment as almost half of the firms responded that it would provide an opportunity to replace equipment. About the same number of respondents said that the development and disclosure of a long-term strategy would be needed. The cost of achieving net zero differs by country, and only a handful of firms responded that they would accelerate relocation overseas.
- Many companies intend to achieve carbon neutrality by 2050, but 60% of the respondents remain unsure of the timing.

## Business impact from the acceleration of international efforts to achieve carbon neutrality



## Timing to achieve carbon neutrality



Note: Major firms.

### Notes:

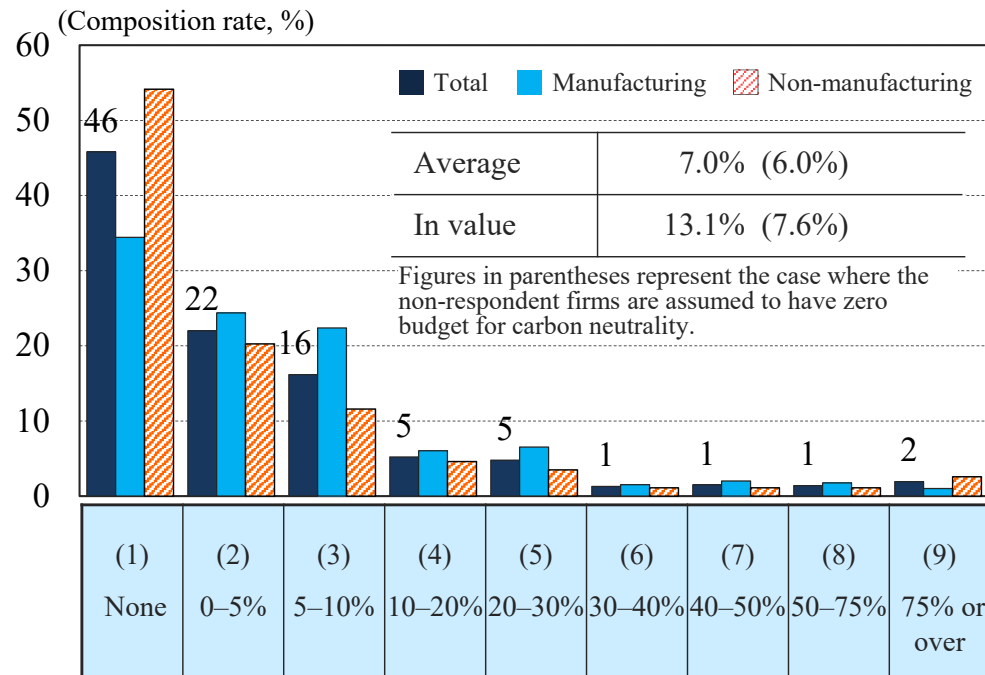
1. Data covers major firms in all industries.
2. Respondents may choose up to three answers.

# Capital Spending for Carbon Neutrality Planned for FY2022

8–13% of capital spending is related to carbon neutrality, mainly for energy efficiency, renewable energy and electric vehicles.

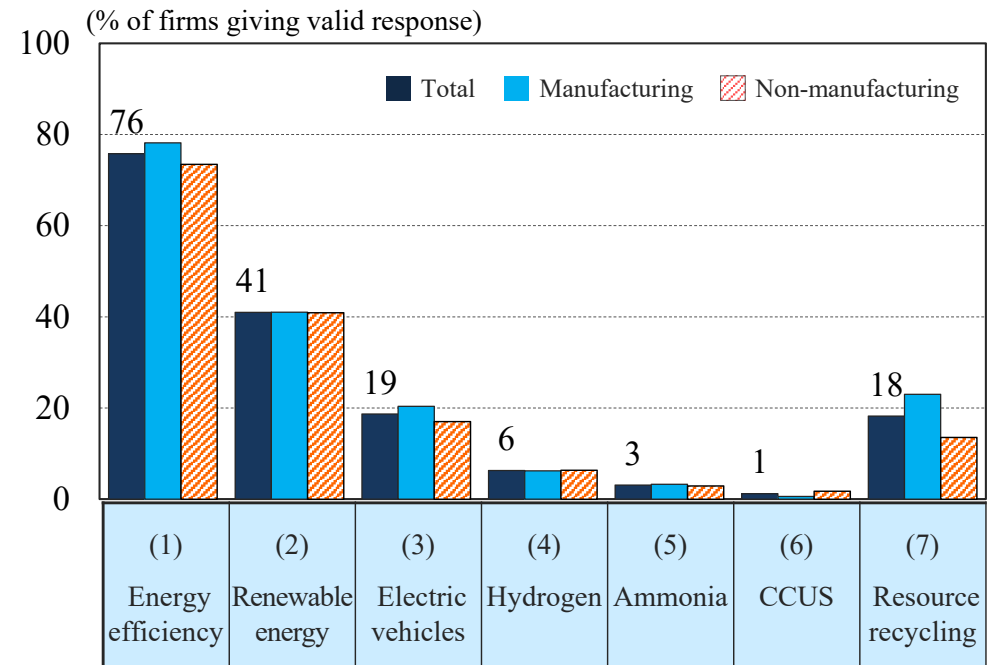
- Many firms reported that less than 10% of their planned capital spending for FY2022 was related to carbon neutrality. Firms with greater amounts of total investment tend to allocate larger parts of their budget to net-zero actions, which account for 13% of total capital spending, and 8% if the non-respondent firms are assumed to have zero budget for net-zero actions.
- Most of the spending on carbon neutrality is related to energy efficiency or renewable energy, but 20% of the firms also plan to invest in electric vehicles.

**Share of investment in carbon neutrality in planned capital spending for FY2022**



Note: Major firms.

**Components of investment related to carbon neutrality**



Notes:

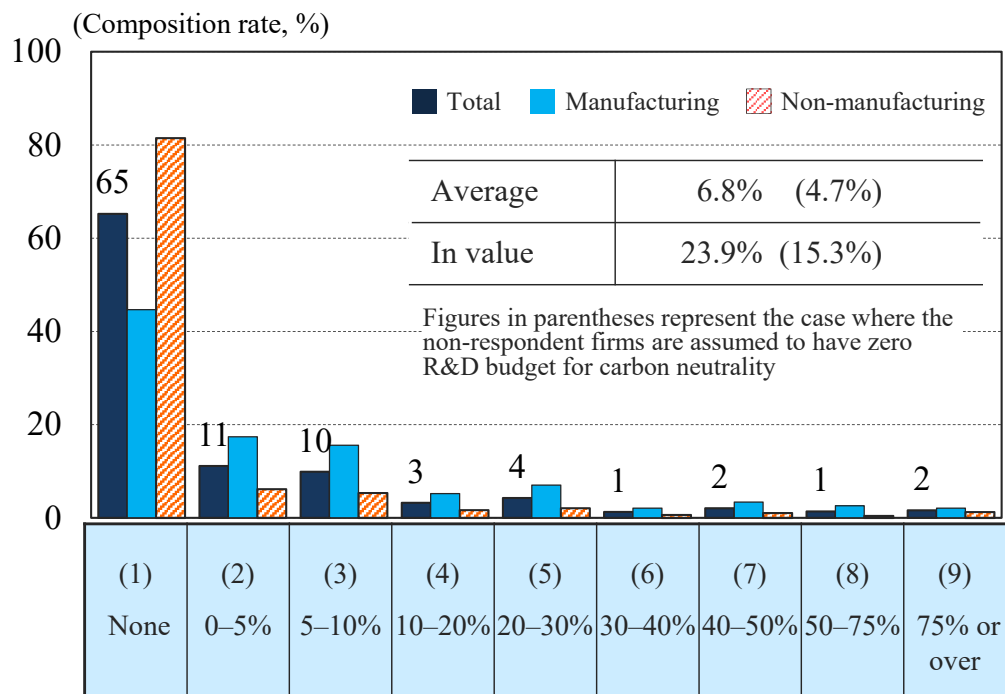
1. Data covers major firms in all industries.
2. Respondents may choose up to three answers.

# R&D on Carbon Neutrality in FY2022

15–24% of R&D expenditure concerns carbon neutrality, mainly for energy efficiency and electric vehicles, as well as resource recycling and hydrogen.

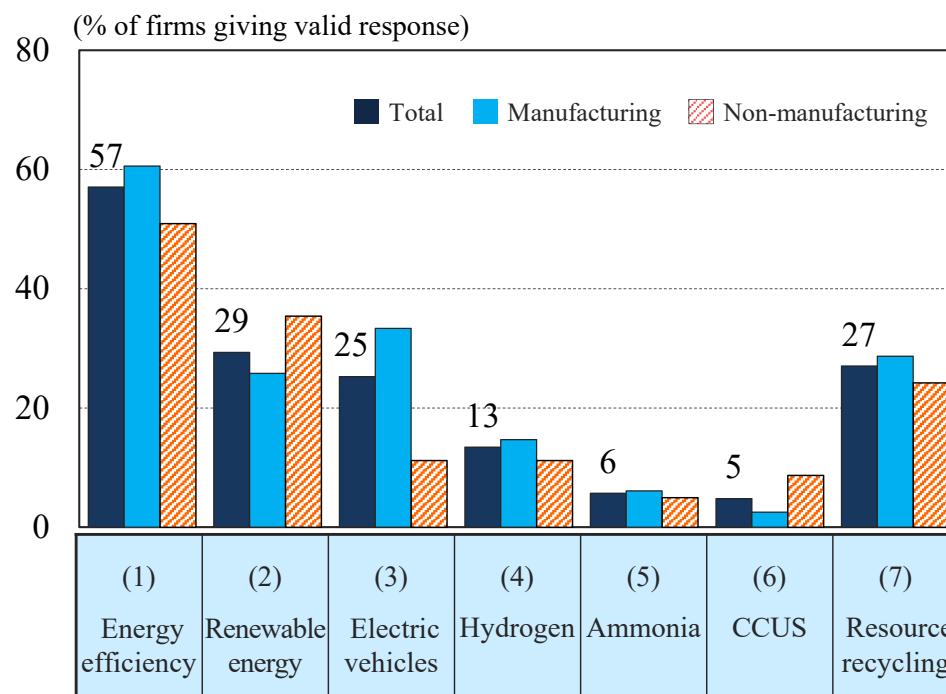
- Most of the firms plan to spend less than 10% of their R&D budget on carbon neutrality in FY2022. The share is larger in general machinery, the driver of carbon-neutral infrastructure, and in automobiles, for development related to electric vehicles. In value terms, carbon neutrality represents up to 24% of R&D expenditure, exceeding its share in total capital spending.
- Most R&D expenditure is related to energy efficiency, renewable energy, electric vehicles and resource recycling, but 20% of the firms also plan spending on hydrogen, particularly in the general machinery industry.

**Share of investment in carbon neutrality in planned R&D expenditure for FY2022**



- Notes:
1. Major firms.
  2. Non-consolidated basis.

**Components of R&D expenditure related to carbon neutrality**



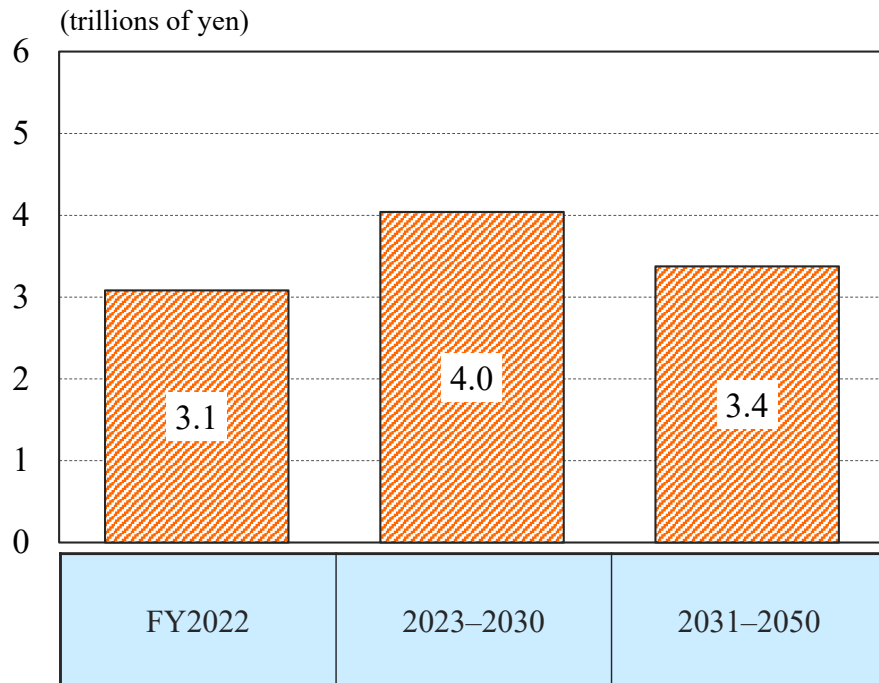
- Notes:
1. Data covers major firms in all industries.
  2. Respondents may choose up to three answers.

# Total Funds Required to Achieve Carbon Neutrality

Annual capital spending of some 6 trillion yen will be required by 2050.

- The responses to the question on the total amount of funds required to achieve carbon neutrality indicate that major firms as a whole will **have to spend some 4 trillion yen** on R&D per year by 2030. **Capital spending on carbon neutrality** for technology implementation needs to be **augmented to some 6 trillion yen** per year by 2050.
- In cumulative terms, relevant R&D expenditure and capital spending need to reach some 100 trillion yen and 160 trillion yen by 2050, respectively.

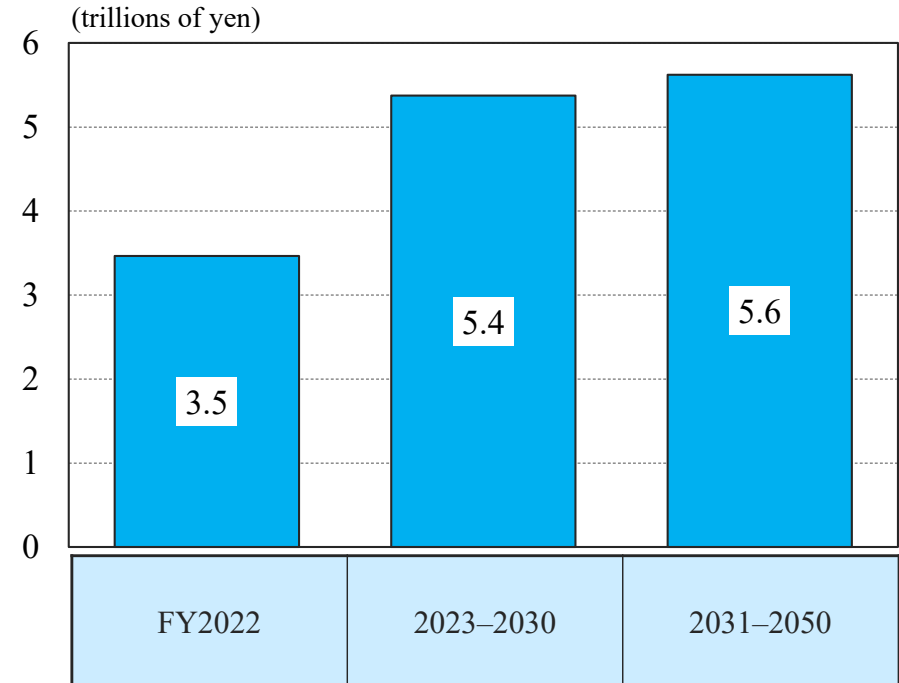
**R&D expenditure required to achieve carbon neutrality (per year)**



Notes:

1. Major firms.
2. Non-consolidated basis.
3. Only 210 firms responded to the question.
4. The figure for FY2022 represents the total estimate of R&D expenditure multiplied by the share of investment for carbon neutrality.

**Capital spending required to achieve carbon neutrality (per year)**



Notes:

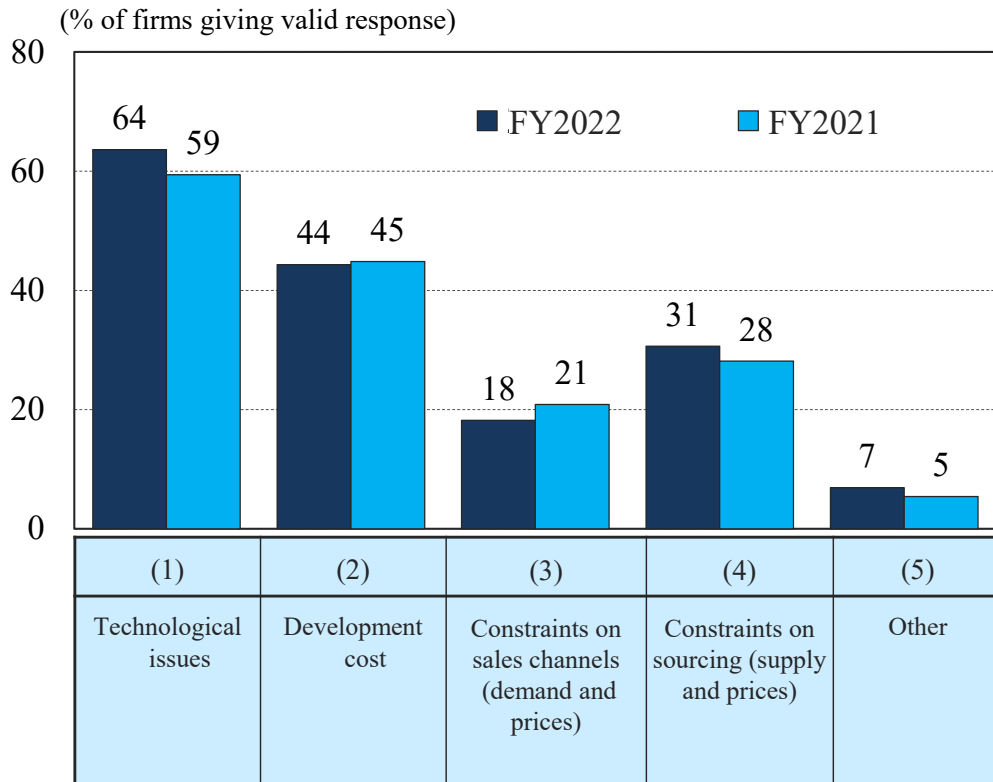
1. Major firms.
2. Non-consolidated basis.
3. Only 237 firms responded to the question.
4. The figure for FY2022 represents the total estimate of capital spending multiplied by the share of investment for carbon neutrality.

# Challenges and Necessary Support for Achieving Carbon Neutrality

Challenges related to technology and cost warrant standard-setting and collaboration across industries as well as financing.

- As with the previous survey, key challenges for net-zero actions include technological issues and development cost, particularly in the manufacturing sector.
- Asked about necessary support, most firms cited financing measures such as subsidies and tax breaks, followed by standard-setting and collaboration within and across industries. A certain number of respondents also cited human resource development for enhancing environmental education and innovation.

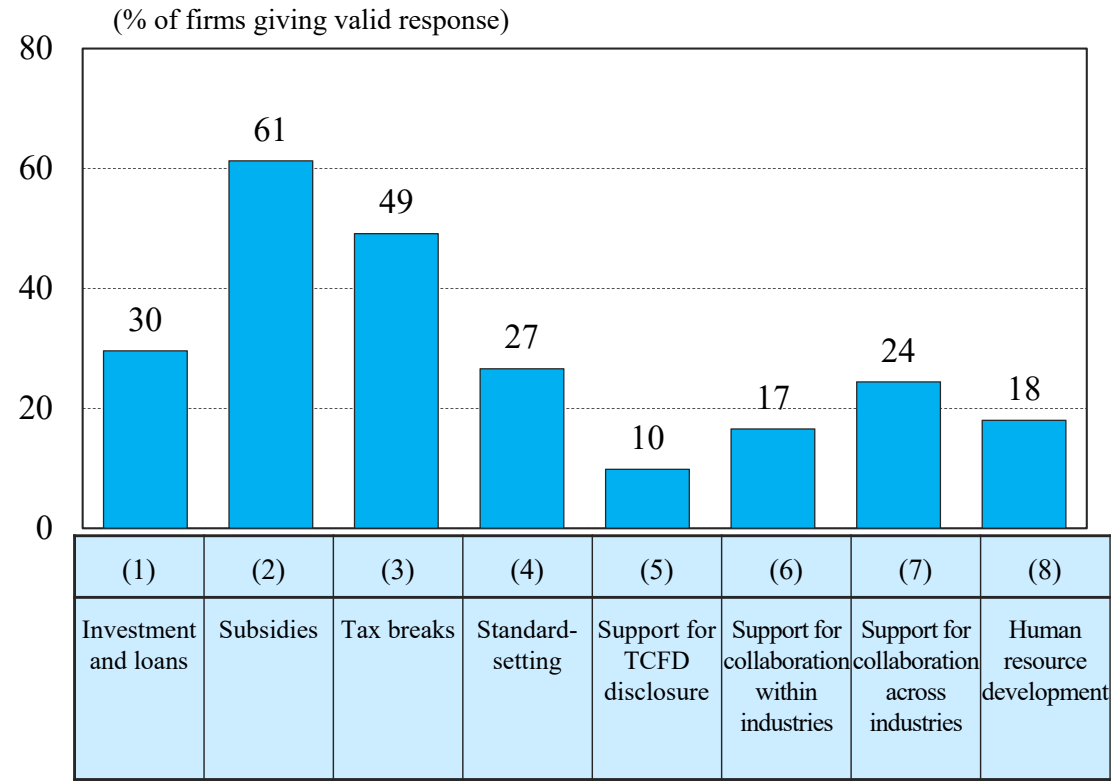
**Challenges for achieving carbon neutrality**



Notes:

- Data covers major firms in all industries.
- Respondents may choose up to two answers.

**Support required to achieve carbon neutrality**



Notes:

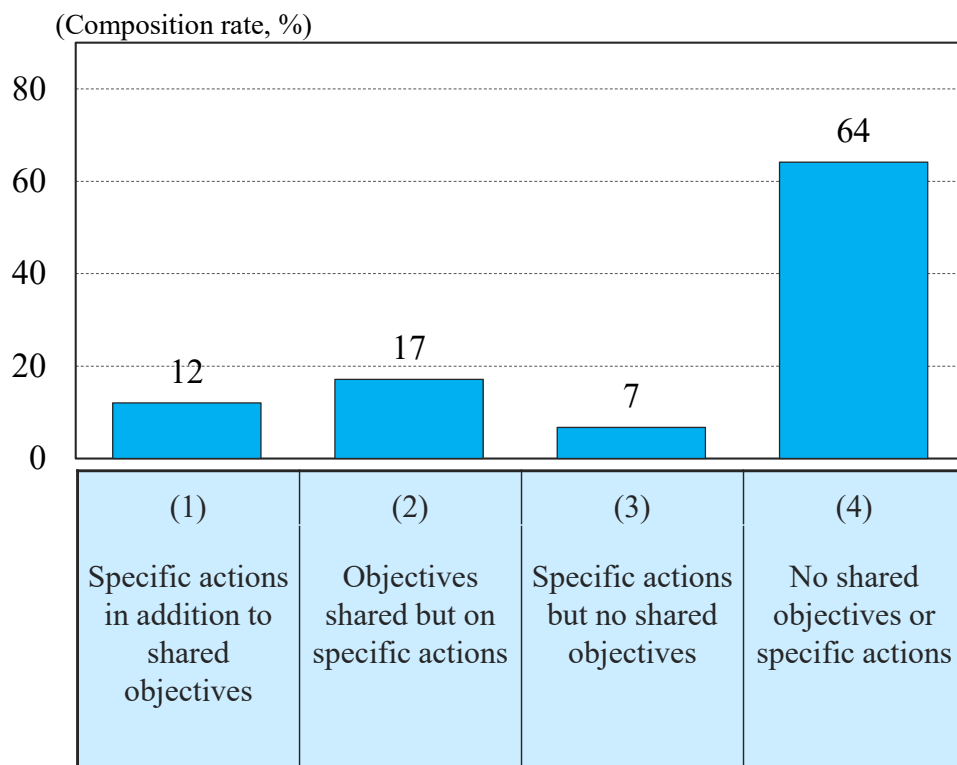
- Data covers major firms in all industries.
- Respondents may choose up to three answers.

# Collaboration with Suppliers and Internal Carbon Pricing

**One-third of firms collaborate with suppliers, while internal carbon pricing has been mainly introduced in materials-based industries.**

- About 30% of the firms share objectives for carbon neutrality with suppliers. In addition, some 10% of the respondents are engaged in specific collaborative actions.
- Although only about 5% of the firms overall have introduced internal carbon pricing, this percentage rises to some 15% in materials-based industries. The carbon price is set at 5,000 yen/t-CO<sub>2</sub> on average.

## Collaboration with suppliers pertaining to carbon neutrality



Notes:

1. Major firms in all industries.
2. Collaboration with suppliers.

## Internal carbon pricing

	Introduced (%)	Not introduced (%)	Average pricing (core business, yen/t-CO <sub>2</sub> )
Total	4.5	95.5	5,237
Manufacturing	7.2	92.8	5,710
Paper & pulp	15.4	84.6	8,450
Chemicals	13.2	86.8	6,144
Ceramics & glass	15.0	85.0	6,333
Non-ferrous metals	15.0	85.0	4,433
Non-manufacturing	2.4	97.6	4,191

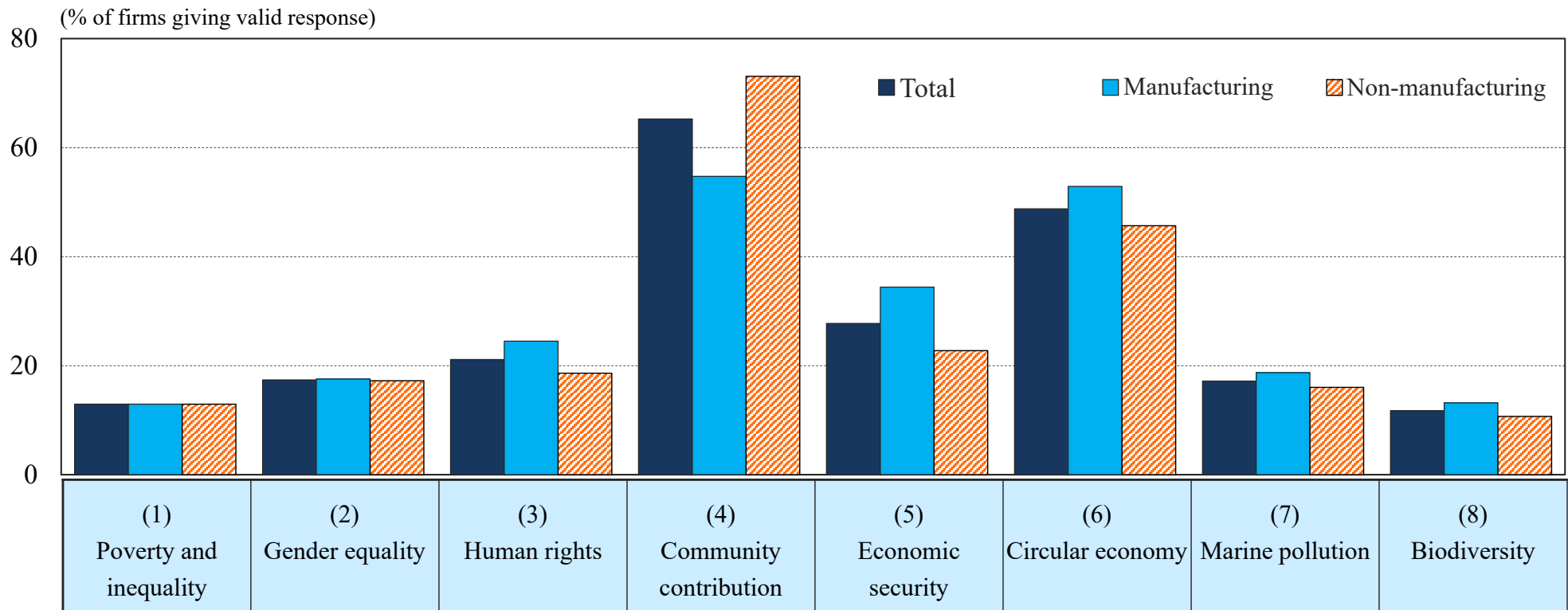
Note: Major firms.

# Non-climate Items of Sustainability Agenda

Interest is focused on community contribution, the circular economy and economic security. Human rights and biodiversity have yet to be addressed.

- Regarding their sustainability agenda, companies have been engaging in **community contribution**. Aside from climate change, their interest is focused on the **circular economy**. Also, they are increasingly interested in **economic security** against the backdrop of mounting geopolitical risks.
- Other topics, such as **human rights**, **gender equality** and **biodiversity**, only attract the interest of 10–20% of the firms.

**Interest in sustainability agenda items other than climate change**



Notes:

1. Data covers major firms in all industries.
2. Respondents may choose up to three answers.

## **4. Investment in Innovation and Human Resources**

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# Research and Development

**R&D expenditure will increase in transport equipment for new-model development, CASE and carbon neutrality, with continued uptrend in electric machinery and chemicals.**

- In FY2021, R&D expenditure rose 4.8% overall with growth recorded in four industries accounting for almost 90% of the expenditure, including chemicals and electric machinery.
- Planned R&D expenditure for FY2022 shows an increase of 7.9%. Spending will increase in electric machinery, mainly for **new-model development**, **CASE** and carbon neutrality in anticipation of market recovery, and in chemicals, led by investment in **new drug development** and **electronic materials**. The electric machinery industry plans a double-digit increase in its R&D expenditure, mainly for the sophistication and **energy efficiency** of **electronic parts** and for automobile components.

## Changes in R&D expenditure in FY2021 and FY2022

(Year-on-year, %)	FY2021 Actual (592 firms)	FY2022 Planned (657 firms)	Composition rate (FY2021)	Key R&D projects
Total	4.8	7.9	100.0	
Manufacturing	4.8	7.9	96.6	
Transport equipment	2.1	6.1	42.0	New-model development, CASE and carbon neutrality
Chemicals	8.8	8.6	23.7	Development of high-performing products, including electronic materials and pharmaceuticals
Electric machinery	8.3	12.3	14.8	High performance and energy efficiency of capacitors, etc. Power semiconductors, 5G
General machinery	5.3	7.7	7.7	Ammonia co-combustion, hydrogen gas turbines/engines, electric vehicles and auto parts-related equipment, AI-powered image processing
Non-manufacturing	2.9	9.2	3.4	

Notes:

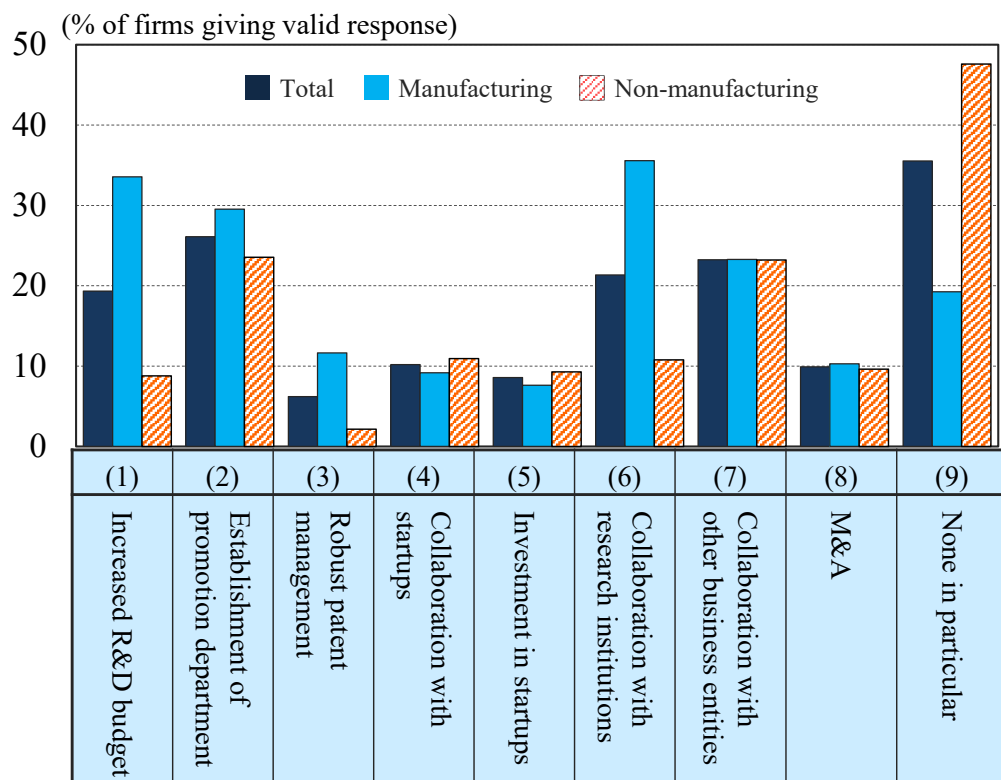
1. Data covers major firms.
2. R&D expenditure (consolidated basis) comprises all costs related to R&D, including personnel cost, raw materials cost, depreciation cost and allocated overhead.

# Actions to Promote Innovation and Utilization of IP

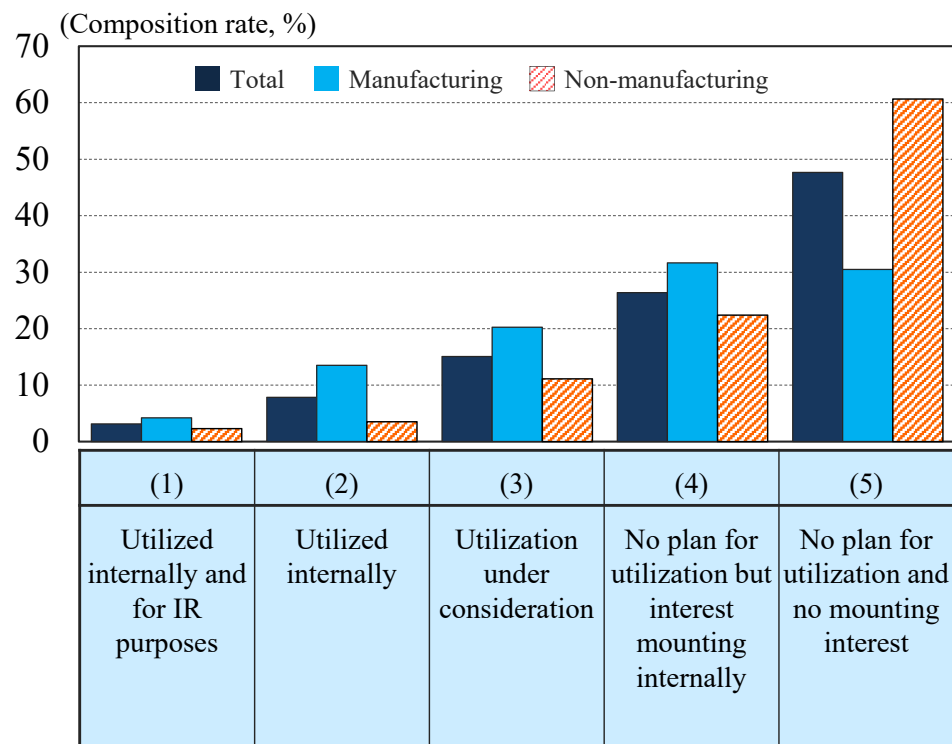
Firms are taking action to enhance internal structure and collaboration with research institutions, but rarely utilize IP data.

- Actions to promote **innovation** include the establishment of a **promotion department** and **increased budget**, as well as **collaboration with research institutions**, mainly in the manufacturing sector. About 10% of both manufacturers and non-manufacturers are working with, or investing in, startups.
- **About 10%** of the firms utilize **data analyses** on patents and other **intellectual capital** in business management or planning. Particularly in the non-manufacturing sector, only a **handful of firms** are interested in enhancing IP **management**.

**Actions to promote innovation**



**Utilization of intellectual capital data analyses**



Notes:

1. Data covers major firms.
2. Respondents may choose up to three answers.

Note: Major firms.

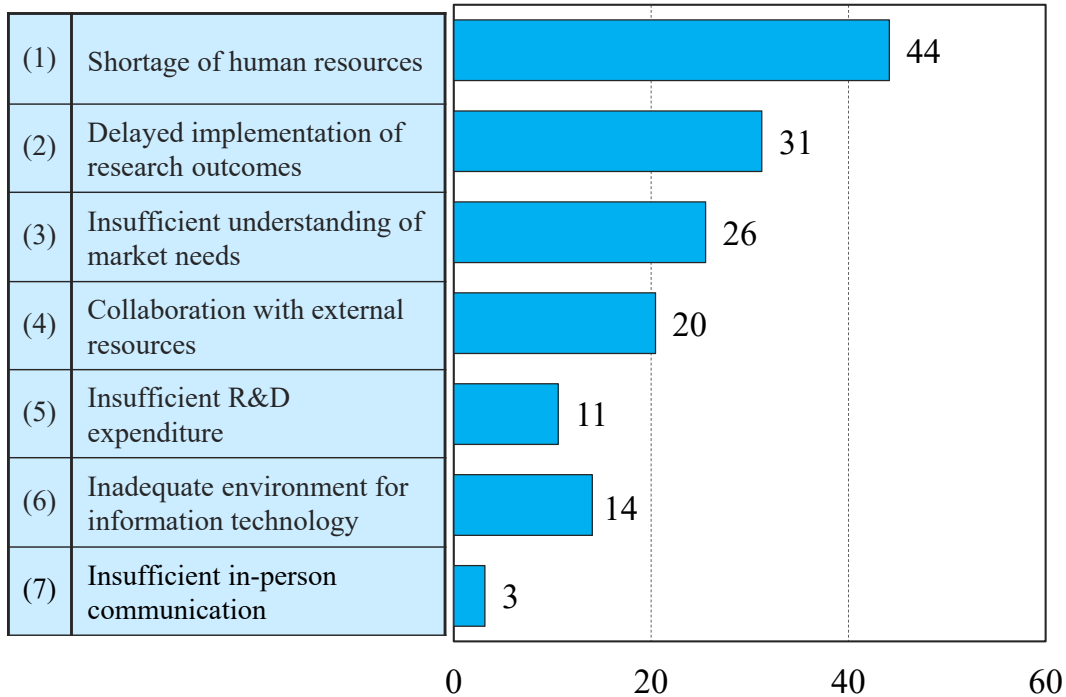
# Challenges for Innovation

## Shortage of human resources is the biggest challenge.

- Most firms cited the **shortage of human resources** as a **challenge** for R&D, followed by delayed implementation of research outcomes and insufficient understanding of market needs.
- The containment of the Covid-19 pandemic may have helped improve the environment for R&D as fewer firms cited delays in implementation of research results, insufficient understanding of market needs or insufficient in-person communication compared with the previous year.

### Challenges for research and development

FY2022 survey

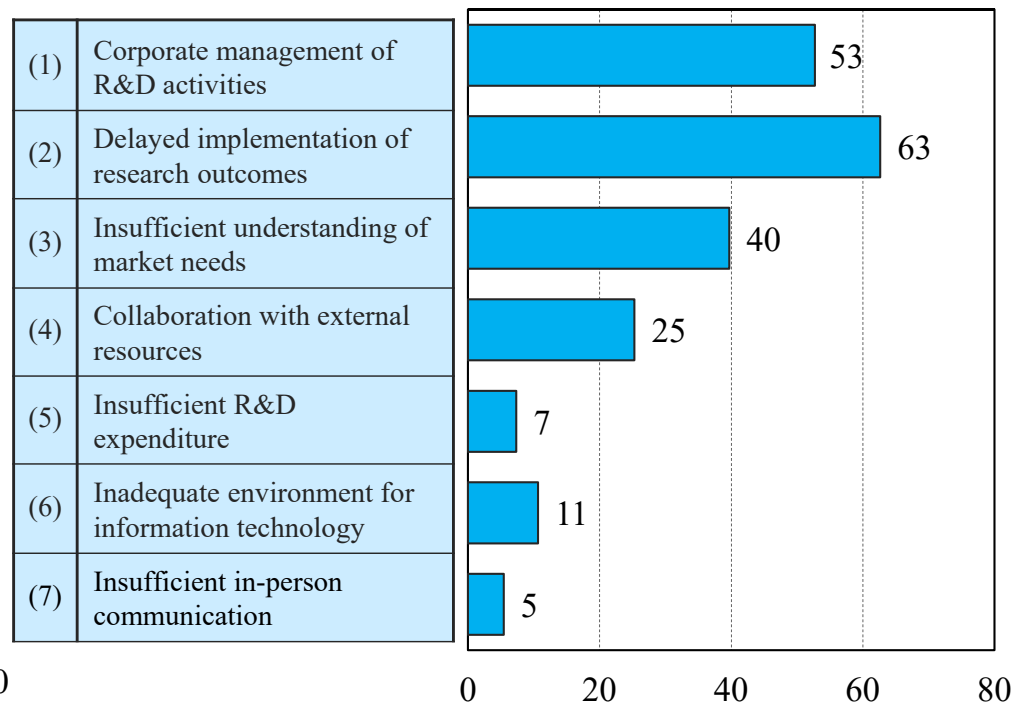


(% of firms giving valid response)

Notes:

1. Data covers major firms in all industries.
2. Respondents may choose up to three answers.

FY2021 survey



(% of firms giving valid response)

Notes:

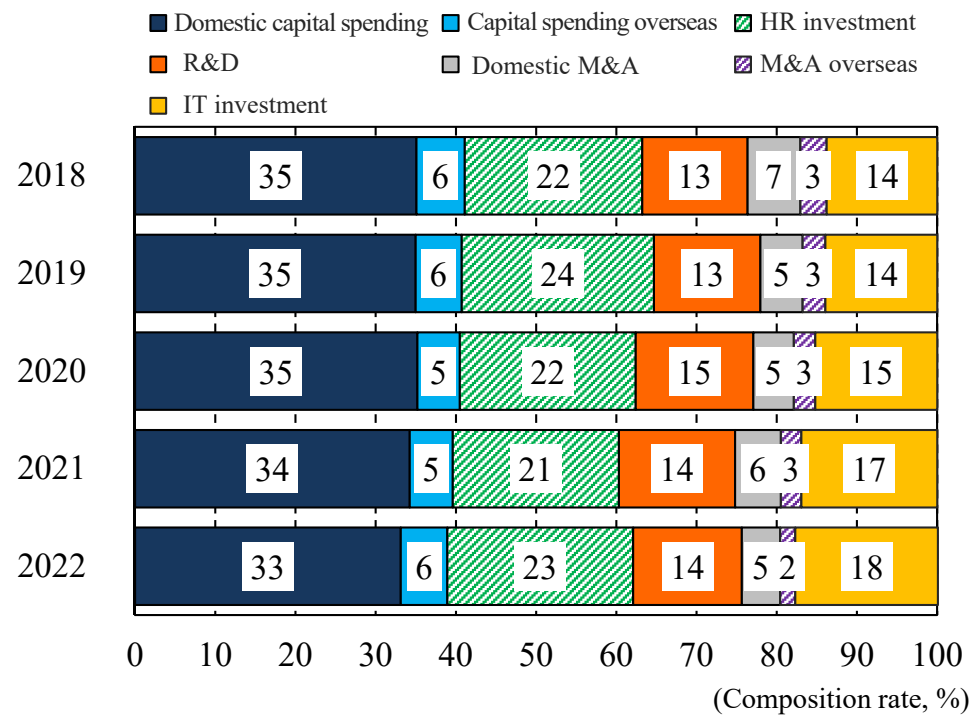
1. Data covers major firms in all industries.
2. Respondents may choose up to three answers.

# Priorities in Investment in a Broad Sense and HR Investment

Higher priority given to IT investment raises the importance of HR investment, thus making the enhancement of training the top priority.

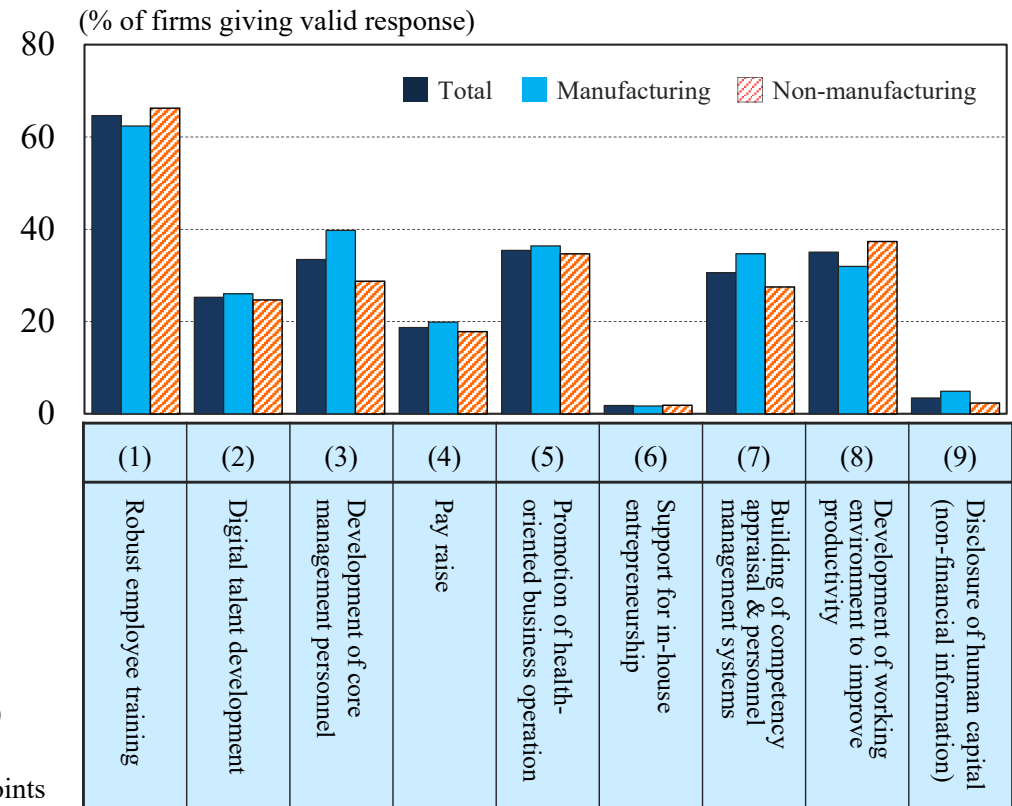
- Investment in information technology has consistently been given higher priority over the years in investment in a broad sense. Investment in human resources is given the second highest priority to domestic capital spending. This may be attributable not only to the labor shortage but also its inclusion in the government’s policy as a focus area. The priority of M&A declined slightly.
- Most firms allocate their HR investment to robust training. Among other investment items, about 30% of the firms are planning actions for workstyle reform such as the promotion of health-oriented business operation and improvement of the working environment, as well as for the building of competency appraisal systems, the development of core personnel and the development of digital talent.

**Priorities in investment in a broad sense**



- Notes:
- Data covers major firms in all industries.
  - Figures represent percentages calculated based on a scoring mechanism giving three points to the top priority, two points to the second priority, and one point to the third priority.

**Composition of HR investment**



- Notes:
- Data covers major firms.
  - Respondents may choose up to three answers.

# Investment in Information Technology

## Increased spending is planned for data utilization and labor-saving actions.

- Investment in information technology rose 10.1% in FY2021. The 3.8% decline in the non-manufacturing sector mainly due to project postponement was more than offset by the 26.8% growth in the manufacturing sector, driven by large-scale mission-critical system replacements in electric machinery.
- Planned investment for FY2022 shows an increase of 27.9%. The growth is led in the manufacturing sector by **data utilization** projects, including for IoT platform building in general machinery and for connectedness in transport equipment, and in the non-manufacturing sector by **labor-saving** projects, including automated ordering systems in retail.

### Changes in IT investment in FY2021 and FY2022

(Year-on-year, %)	FY2021 Actual (596 firms)	FY2022 Planned (714 firms)	Major information technology investment projects
Total	10.1	27.9	
Manufacturing	26.8	20.6	
Of which: Electric machinery	30.9	48.5	IoT platform capable of providing customer support
Of which: Transport equipment	8.4	32.5	Connectedness of vehicles, including Internet connection and data utilization, model-based development (MBD) system
Non-manufacturing	-3.8	37.2	
Of which: Wholesale & retail	18.2	33.5	Automated ordering system, self-service lanes
Of which: Transportation	-18.0	110.3	DX in cargo inspection, introduction of ticketless & cashless services

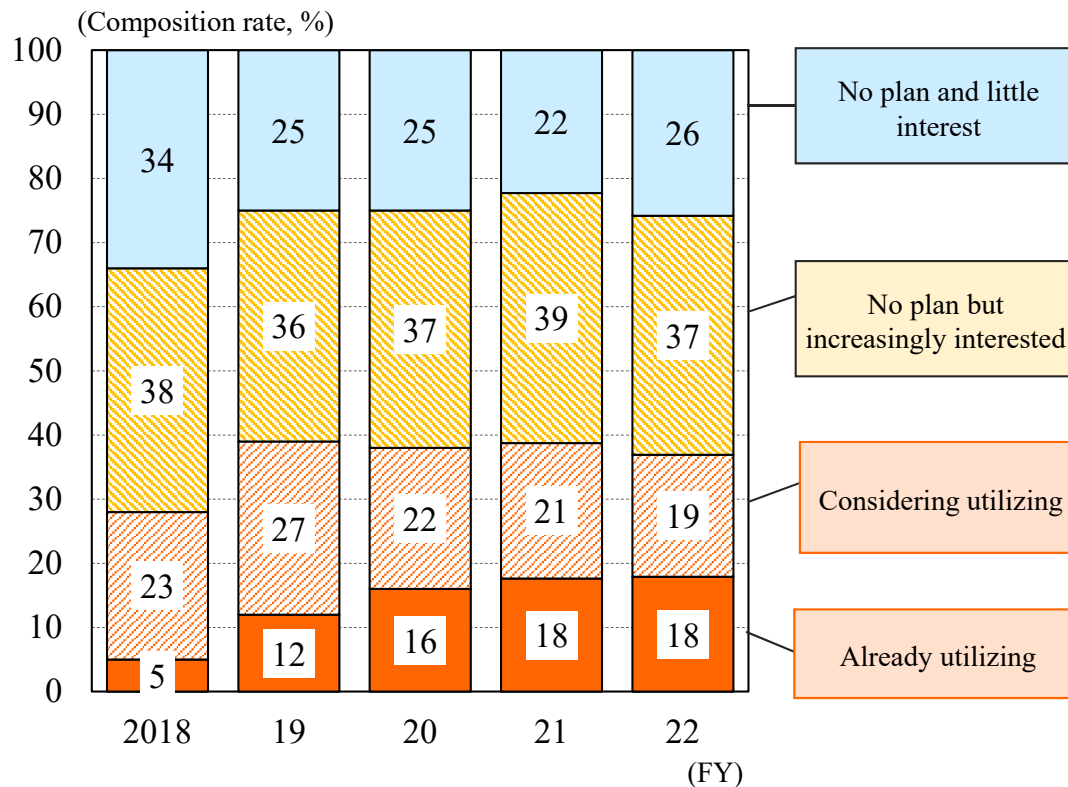
Note: Major firms.

# Utilization of, and Interest in, AI and IoT, and Actions for Digitization

**Most firms have limited their efforts to system replacement and process improvement. Only 20% have proceeded with DX.**

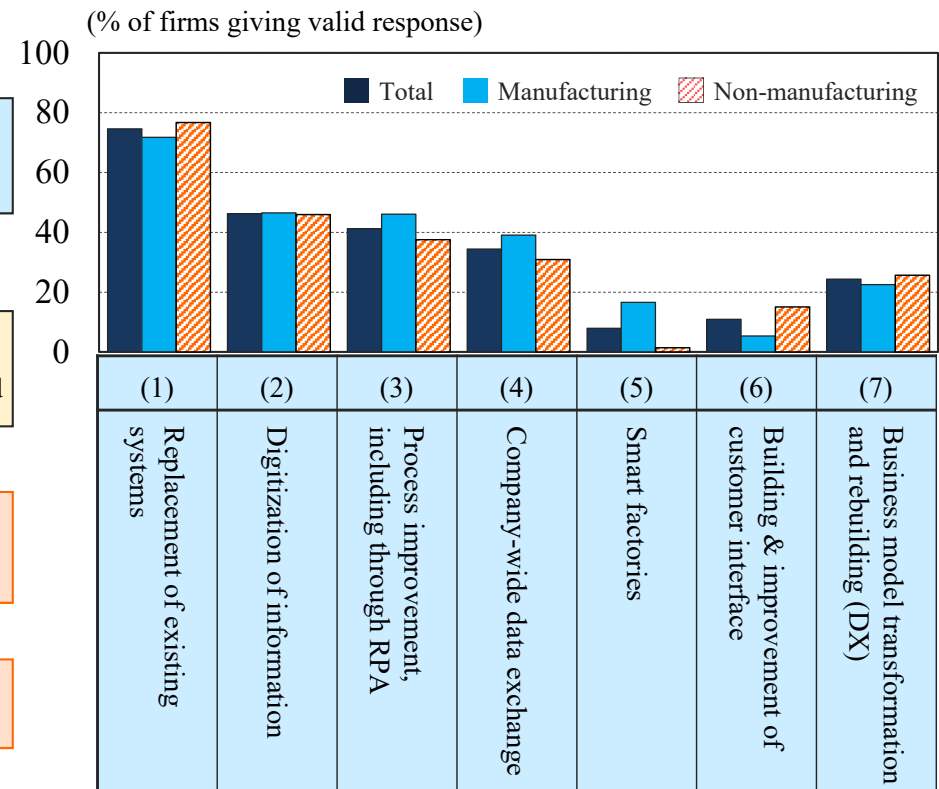
- The share of firms utilizing, or increasingly interested in, AI and IoT has remained almost unchanged from the previous year.
- Actions for digitization include the **replacement of existing systems in most cases**. Although almost 40% of the firms are preparing for DX, including through company-wide data exchange, only **about 20%** have launched the process of **DX**, or business model transformation and rebuilding.

## Utilization of AI, IoT and other advanced technologies



Note: Major firms.

## Actions for digitization



Notes:

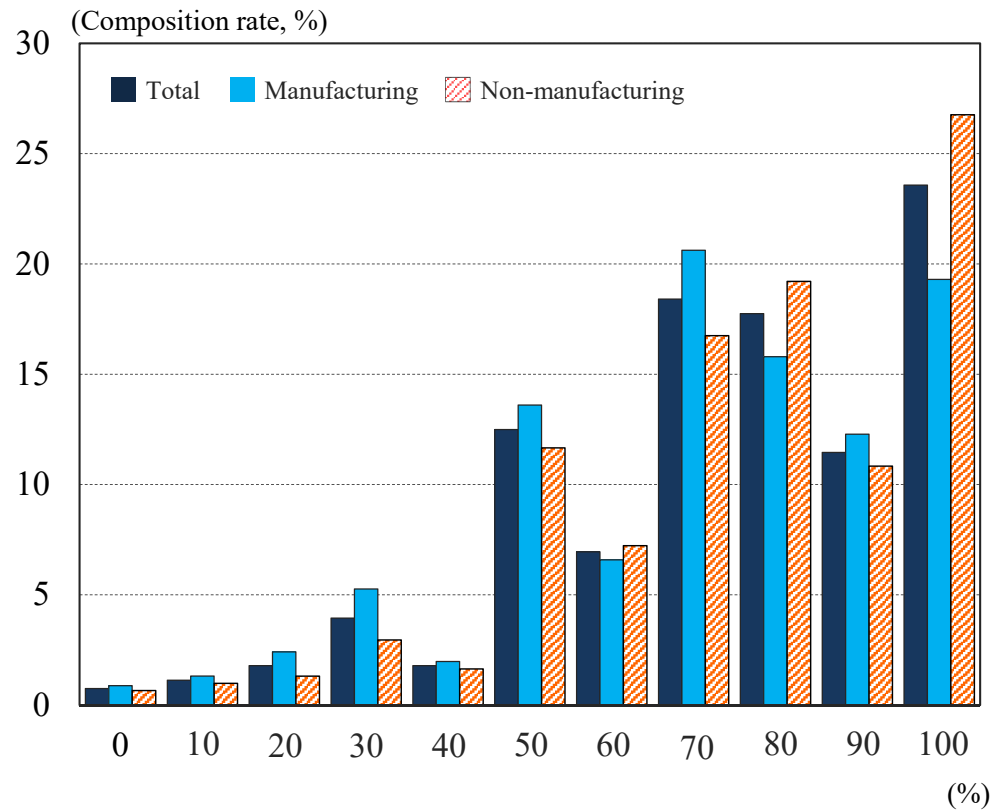
1. Data covers major firms.
2. Respondents may choose up to three answers.

# Teleworking and Office Space

**One-quarter of the firms ideally prefer 100% presence at the workplace, despite a 3% planned reduction of office space.**

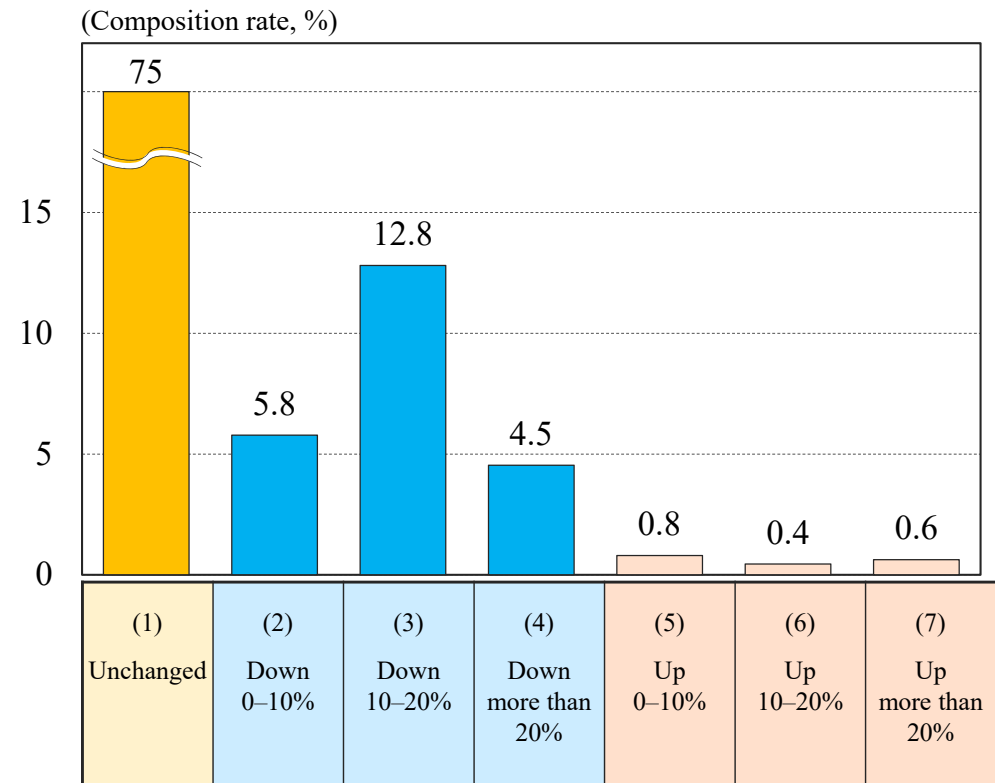
- **One-quarter** of the firms **ideally** prefer **100% presence at the workplace**, particularly among the person-to-person service providers in the non-manufacturing sector. Although the remaining three-quarters of firms assume some teleworking in the longer term, over half of them still prefer more than 70% of their employees to be present at the workplace.
- Now that teleworking is here to stay, almost 13% of the firms are planning to reduce their **office space** by about 10–20%. A simple arithmetic average of the responses suggests a **reduction of some 3%** in the demand for office space.

**Ideal percentage of employees present at the workplace**



Note: Major firms.

**Longer-term perspective for office space**



Note: Major firms in all industries.

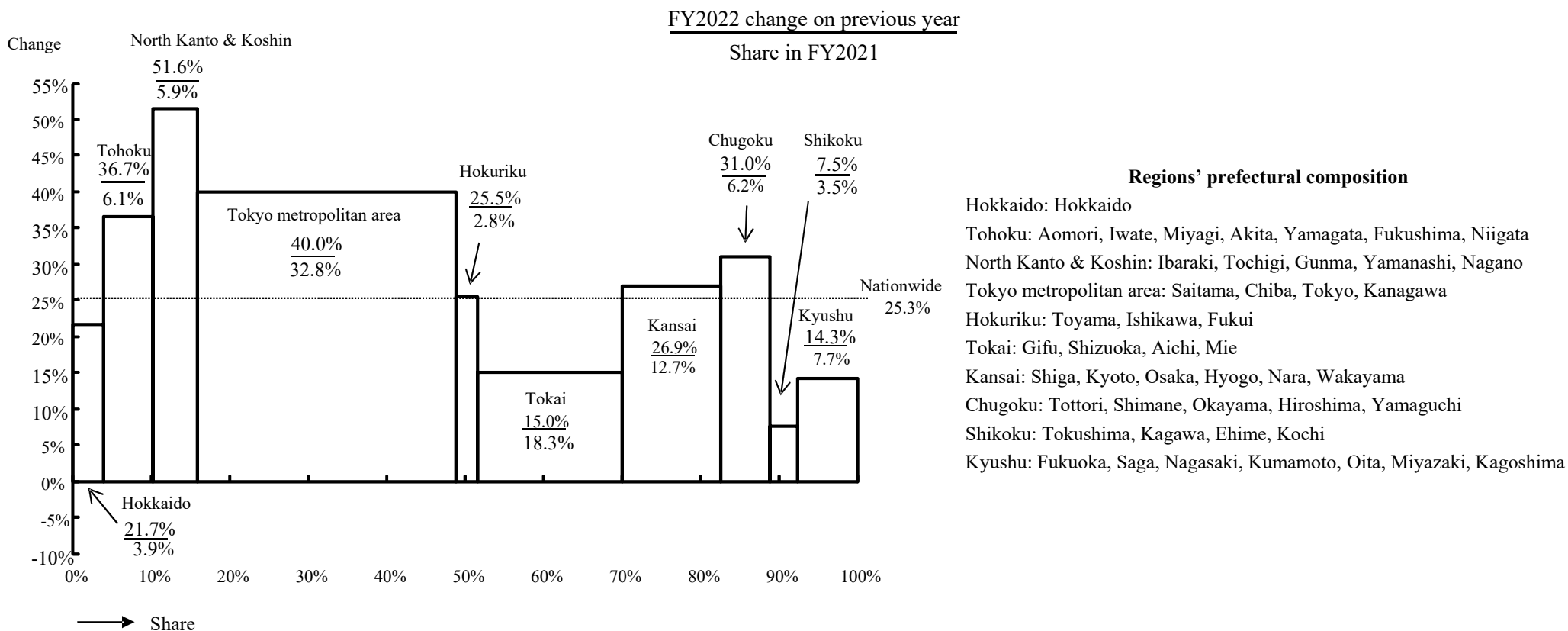
## **5. Characteristics of Capital Spending, by Region and by Medium-Sized Firms**

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# Planned Capital Spending for FY2022, by Region

Increased spending is planned across the board, with substantial contribution from the Tokyo metropolitan area.

- Planned capital spending of major and medium-sized firms shows a substantial increase of 25.3% nationwide. Increased spending is expected in all regions, led by North Kanto & Koshin, the Tokyo metropolitan area and Tohoku.
- The Tokyo metropolitan area has the largest share in total spending with over 30%, followed by Tokai and Kansai. The largest contribution to the spending growth comes from the Tokyo metropolitan area, Kansai and North Kanto & Koshin.



- Notes: 1. Nationwide change on previous year includes data on unlocated firms and Okinawa Prefecture.  
 2. The share of each region reflects the prefectural composition of the respondents. The regional shares do not add up to 100%, due to rounding.  
 3. Areas in the skyline chart reflect contribution to the nationwide change.

# Planned Capital Spending for FY2022, by Region

Double-digit increases are planned almost across the board, driven by capacity investment in the manufacturing sector.

	Change on previous year (%)				Overview of capital spending, by region
	FY2021 Actual Total	Planned for FY2022			
		Total	Manufacturing	Non-manufacturing	
Hokkaido	-17.9	21.7	-2.4	30.0	Negative growth for the third straight year in the manufacturing sector will be more than offset by a substantial increase in the non-manufacturing sector, led by electric power.
Tohoku	24.6	36.7	60.3	10.7	Capital spending will be driven by <u>electric machinery</u> and <u>chemicals</u> (pharmaceuticals) for new factories and capacity enhancement.
North Kanto & Koshin	4.9	51.6	51.8	51.3	A sizable increase is expected overall as spending will turn to a substantial growth—particularly in <u>transport equipment</u> and <u>chemicals</u> for capacity enhancement, coupled with large-scale upgrading projects planned in electric power.
Tokyo metropolitan area	-5.1	40.0	41.3	39.7	Spending will grow substantially, propped up by increased investment in <u>petroleum</u> , <u>chemicals</u> and <u>transport equipment</u> . Contributions will also come from the non-manufacturing sector as increased investment is planned in <u>real estate</u> with continued downtown redevelopment projects and in <u>transportation</u> with spending on safety measures.
Hokuriku	-34.3	25.5	34.1	-1.8	Spending will increase in the manufacturing sector, led by <u>electric machinery</u> and <u>general machinery</u> , whereas the non-manufacturers continue to plan to reduce spending.
Tokai	7.4	15.0	17.5	6.2	Robust growth is planned by manufacturers, led by the core <u>transport equipment</u> industry, mainly for electrification. Spending growth in the non-manufacturing sector will also be positive, despite the termination of large-scale products in <u>real estate</u> and other industries.
Kansai	-4.7	26.9	45.9	15.7	Spending will rise substantially as a whole as spending will turn up in the manufacturing sector, driven by <u>chemicals</u> and <u>general machinery</u> , while non-manufacturers are regaining willingness to invest particularly in <u>real estate</u> .
Chugoku	-5.1	31.0	32.6	26.5	Continued active investment is planned in the manufacturing sector, led by <u>iron &amp; steel</u> , <u>chemicals</u> and <u>transport equipment</u> . Non-manufacturers are also regaining confidence as spending will turn up in <u>services</u> .
Shikoku	-0.3	7.5	14.0	-11.9	Whereas capacity enhancement projects will be terminated, mainly in <u>paper &amp; pulp</u> and <u>electric machinery</u> , a sizable increase in spending is planned in <u>non-ferrous metals</u> , including on capacity enhancement for components of in-car products.
Kyushu	11.9	14.3	18.9	10.9	Positive growth in spending is planned in the manufacturing sector, driven by <u>electric machinery</u> and <u>transport equipment</u> . Investment will also surge in the non-manufacturing sector, led by <u>transportation</u> .
Nationwide	-4.2	25.3	30.5	22.5	Spending will turn to a substantial increase in both the manufacturing and non-manufacturing sectors from negative growth in FY2021.

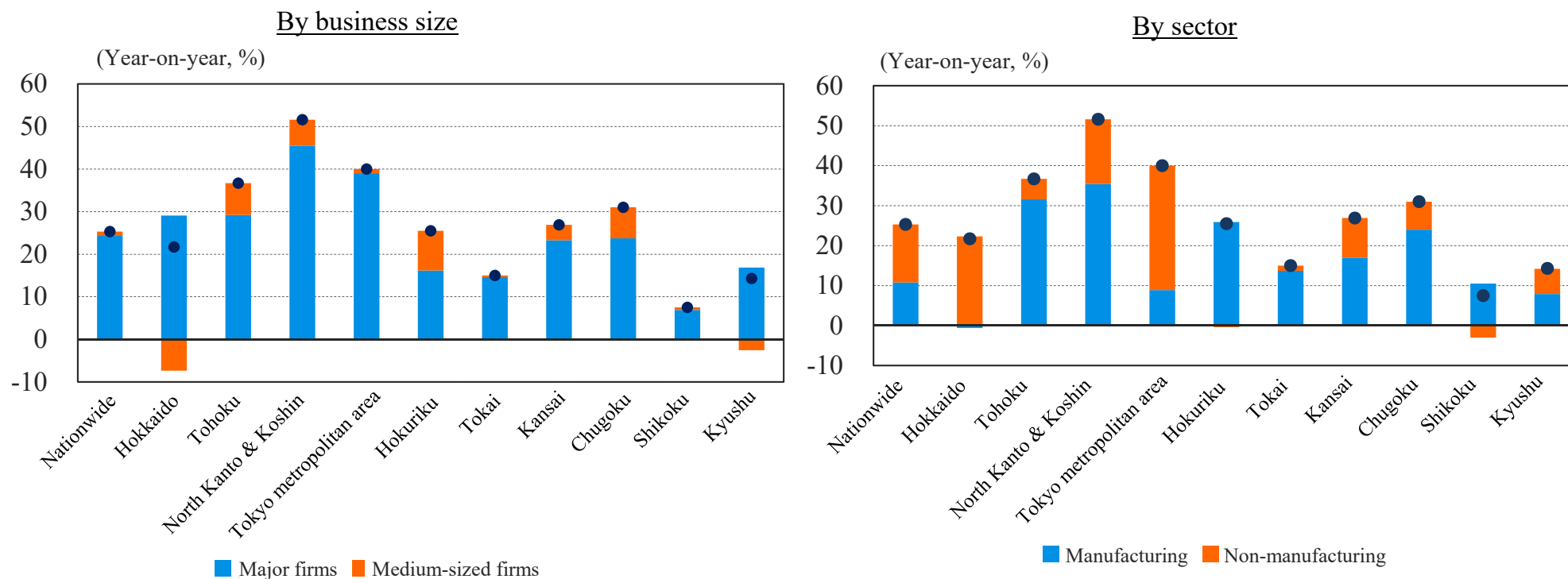
Note: Nationwide change on previous year includes data on unlocated firms and Okinawa Prefecture.

# Capital Spending, by Region, by Business Size and by Sector

Increased capital spending by medium-sized firms contributes to overall growth in eight out of the ten regions.

- By business size, major firms are making the greatest contribution to overall spending, but the **contribution of medium-sized firms is relatively important**, particularly in the **Hokuriku, Chugoku and Tohoku** regions.
- By sector, **manufacturing** is making a larger contribution in eight out of the ten regions. Hokkaido and the Tokyo metropolitan area are the two exceptions, where the **non-manufacturing** sector has the upper hand.

## Trend of capital spending, by region



# Characteristics, by Region

Investment related to renewable energy and semiconductors is observed nationwide, along with spending for decentralization.

- On a national scale, investment for carbon neutrality is generally focused on renewable energy. Investment in electric machinery and transport equipment for transition to electric and hybrid vehicles can be observed over a wide area, including North Kanto & Koshin and Tokai. Spending on hydrogen is also planned in North Kanto & Koshin, the Tokyo metropolitan area, Tokai and Kansai. Along with spending on semiconductors, a wide range of industries are planning to decentralize production, supply and logistics.

	Hokkaido	Tohoku	North Kanto & Koshin	Tokyo metropolitan area	Hokuriku	Tokai	Kansai	Chugoku	Shikoku	Kyushu
Capital spending growth in FY2022 (YoY, %)	21.7	36.7	51.6	40.0	25.5	15.0	26.9	31.0	7.5	14.3
Green/Transition	Renewable energy power generation	Renewable energy power generation	Renewable energy power generation		Renewable energy power generation	Renewable energy power generation	Renewable energy power generation	Renewable energy power generation	Renewable energy power generation	Renewable energy power generation
	Electric vehicles		Electric vehicles		Electric vehicles	Electric vehicles	Electric vehicles	Electric vehicles	Electric vehicles	
		Hydrogen	Hydrogen	Hydrogen		Hydrogen	Hydrogen			
	Byproduct reuse	Resource recycling	Resource recycling	Resource recycling	Power semiconductors	Energy-efficient equipment	Resource recycling		Batteries	Power semiconductors
				Fuel shift	Carbon-neutral equipment		Large electric furnaces	Fuel shift	Fuel shift	Fuel shift
Innovation	Line automation				Line automation			Line automation	Line automation	Line automation
	Automated warehousing								Automated warehousing	
				DX systems	DX in production		DX in production	DX in production	DX systems	DX systems
			Solid-state batteries	Electric machinery components		Semiconductor research			5G	5G
			Industrial robots	Materials research		Automobiles	Industrial robots			
Wooden buildings	Guest rooms for workcation	Healthcare	Net-zero research	Carbon neutrality		Housing	AI-powered demand forecast		Online diagnostics	Artificial farms
Resilience			Diversification of semiconductor production sites		Diversification of factories & distribution sites	Diversification of semiconductor production sites			Diversification of factories and distribution sites	Diversification of semiconductor production sites
	Seismic strengthening	BCP	Safety measures for power stations	Earthquake control	Seismic strengthening		Seismic strengthening			Seismic strengthening
	Tsunami protection	Facility maintenance		Remote island transport			Urban/district disaster control functions		Tsunami protection	
	Emergency supply warehouses	Emergency power generators		Production site enhancement	Emergency power generators	Emergency power generators		Distribution site enhancement		Emergency power generators

Notes:

- The table lists key initiatives identified in Surveys on Planned Capital Spending and corporate press releases.
- Coloration depends on the amount identified or the number of initiatives: Darker colors indicate particularly active industries and regions.

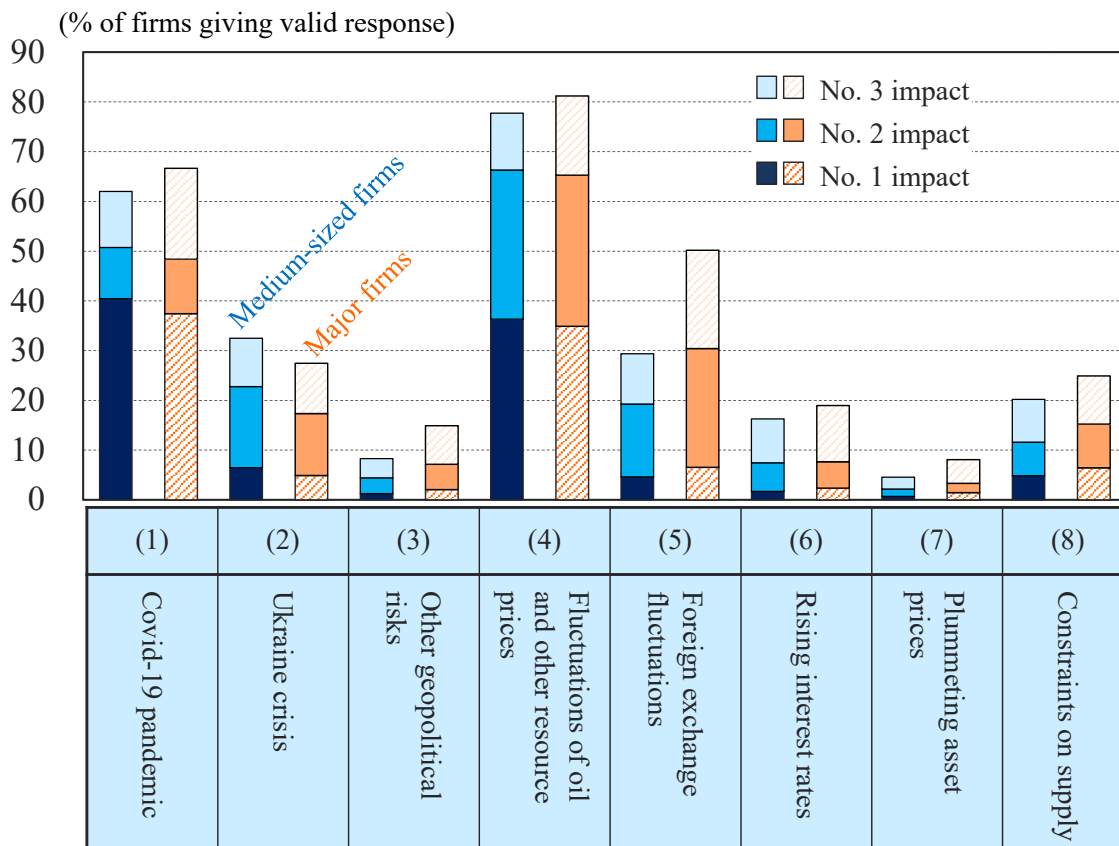
# (Medium-Sized Firms) Business Risks Going Forward

Medium-sized firms also face diverse risks, including resource price inflation and foreign exchange fluctuations, in addition to the Covid-19 pandemic.

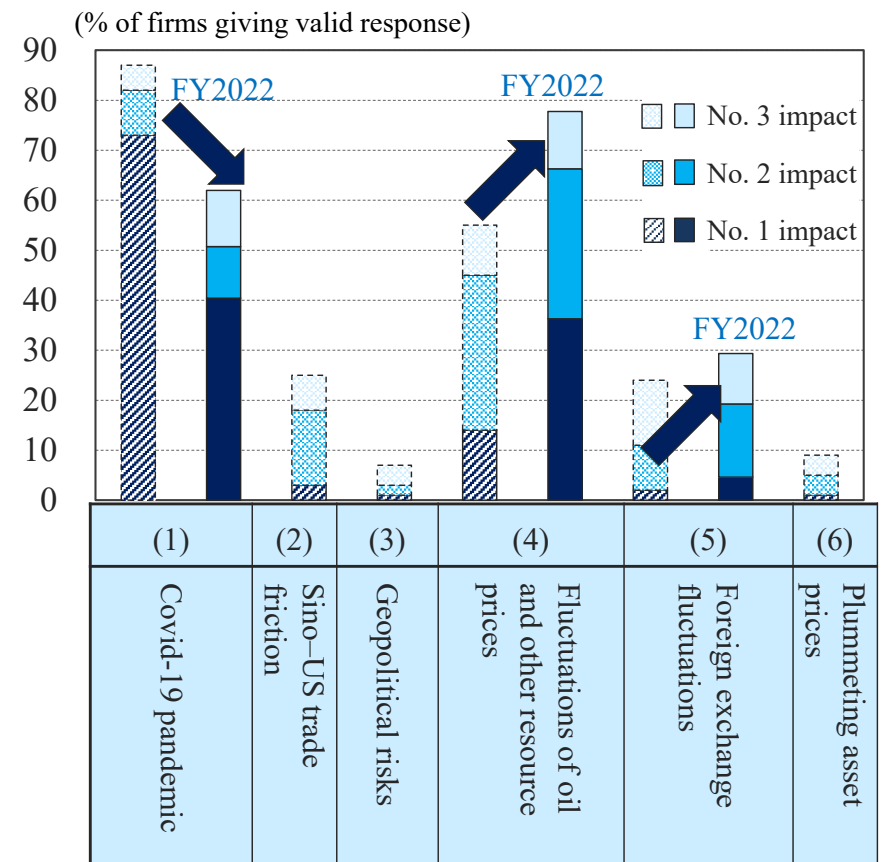
- Fewer companies now cite the Covid-19 pandemic as a business risk compared with the previous year, as resource price inflation has emerged as the greatest risk. Business risks have also diversified to include foreign exchange fluctuations, constraints on supply and the Ukraine crisis.

## Business risks going forward

FY2022 survey (comparison between medium-sized and major firms)



Comparison of results between FY2021 and FY2022 surveys



Notes:

- Data covers major and medium-sized firms.
- Respondents may choose up to three answers in order of impact.

Notes:

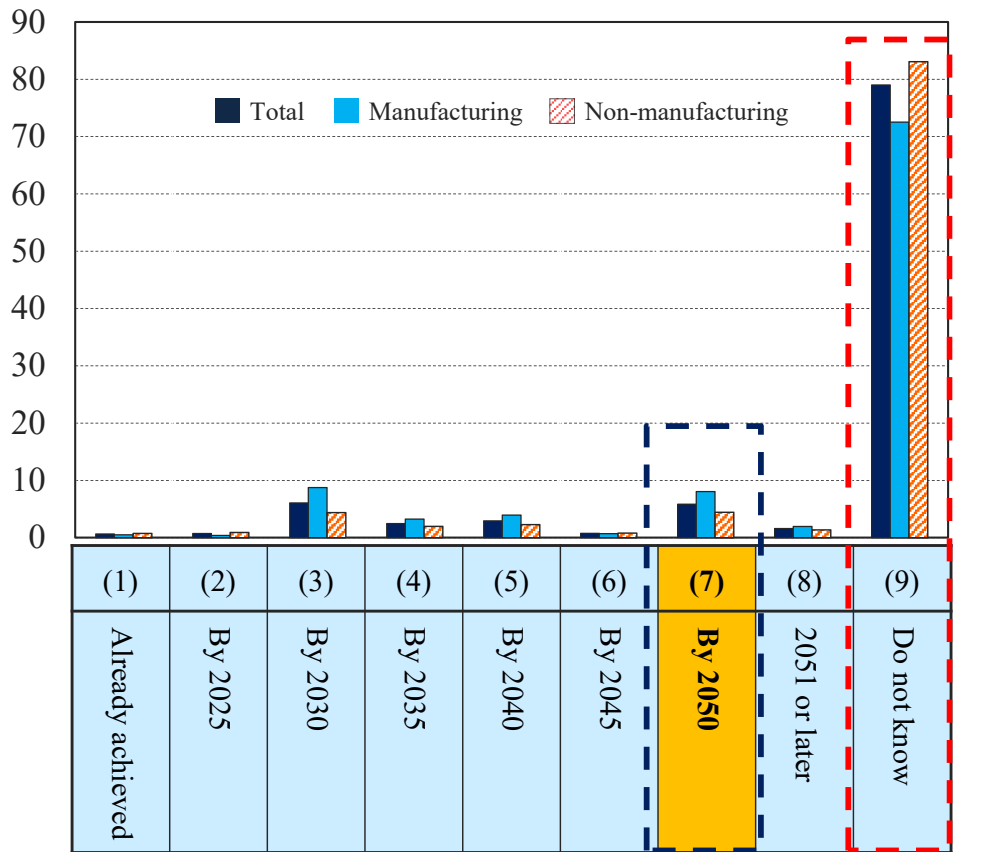
- Data covers medium-sized firms.
- Respondents may choose up to three answers in order of impact.

# (Medium-Sized Firms) Timing for Achieving Carbon Neutrality

Many medium-sized firms do not know when they will achieve carbon neutrality.

- Almost 80% of the medium-sized firms do not know when they will achieve carbon neutrality. The percentage is higher than among major firms, which means that **most medium-sized firms are not sure if they can** achieve net zero.
- That said, about 10% of the medium-sized manufacturers expect to achieve the target by 2030.

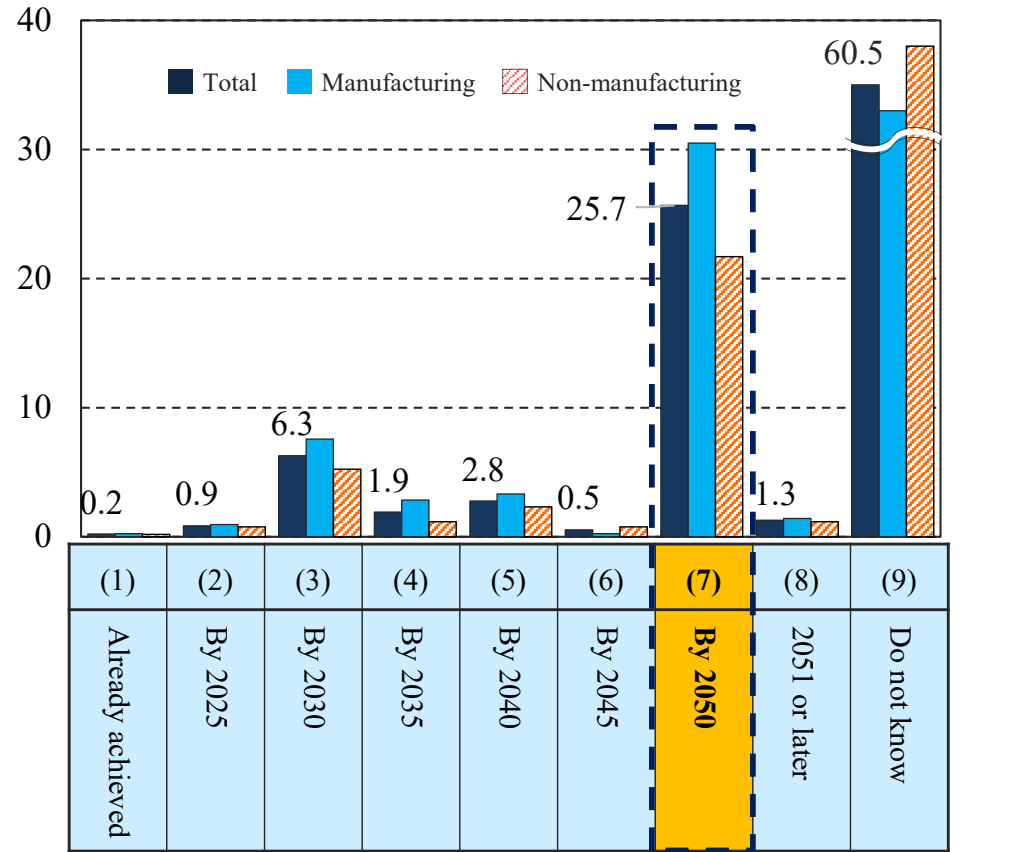
**Timing to achieve carbon neutrality (target year)**



Note: Medium-sized firms.

(Composition rate, %)

**Major firms (in comparison)**



Note: Major firms.

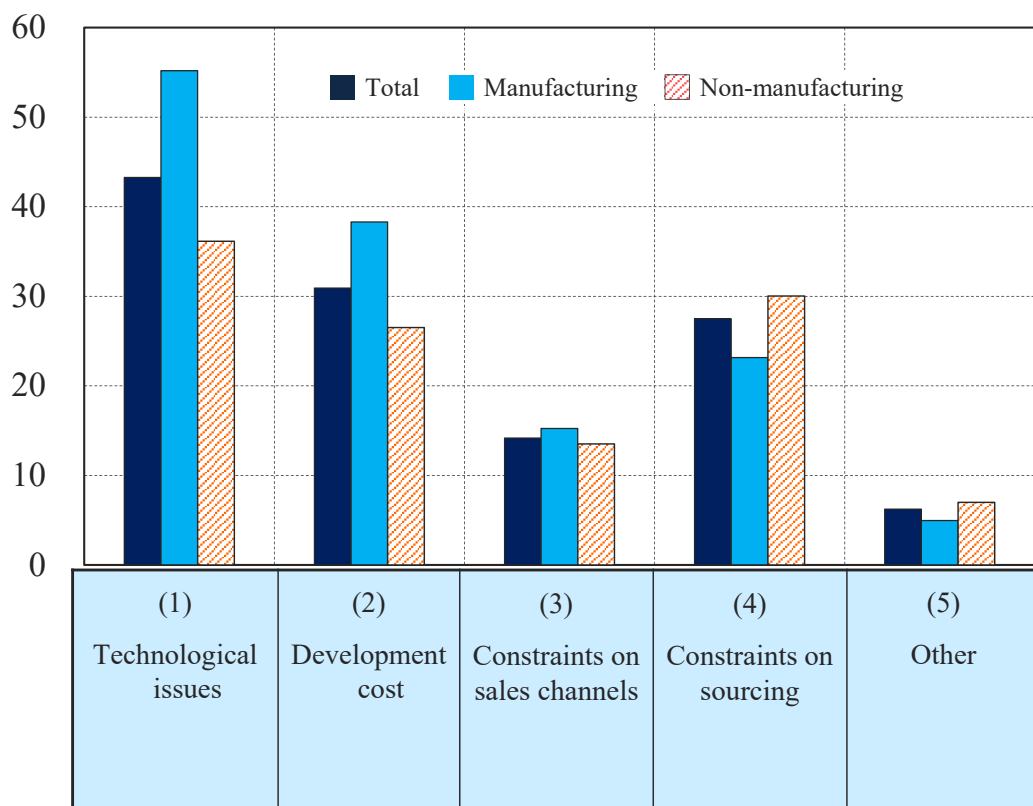
(Composition rate, %)

# (Medium-Sized Firms) Challenges and Necessary Support for Achieving Carbon Neutrality

Faced with technology and procurement issues, companies also expect “soft” support.

- Many companies cite “technological issues” as a major obstacle to carbon neutrality; a certain number of firms also cite “development cost,” in the manufacturing sector, and “constraints on sourcing,” in the non-manufacturing sector.
- As with major firms, support measures required by medium-sized firms to achieve carbon neutrality include **economic support**, such as subsidies and tax breaks, but expectations are also high for **“soft” measures**, such as standard-setting and support for collaboration.

### Challenges for achieving carbon neutrality

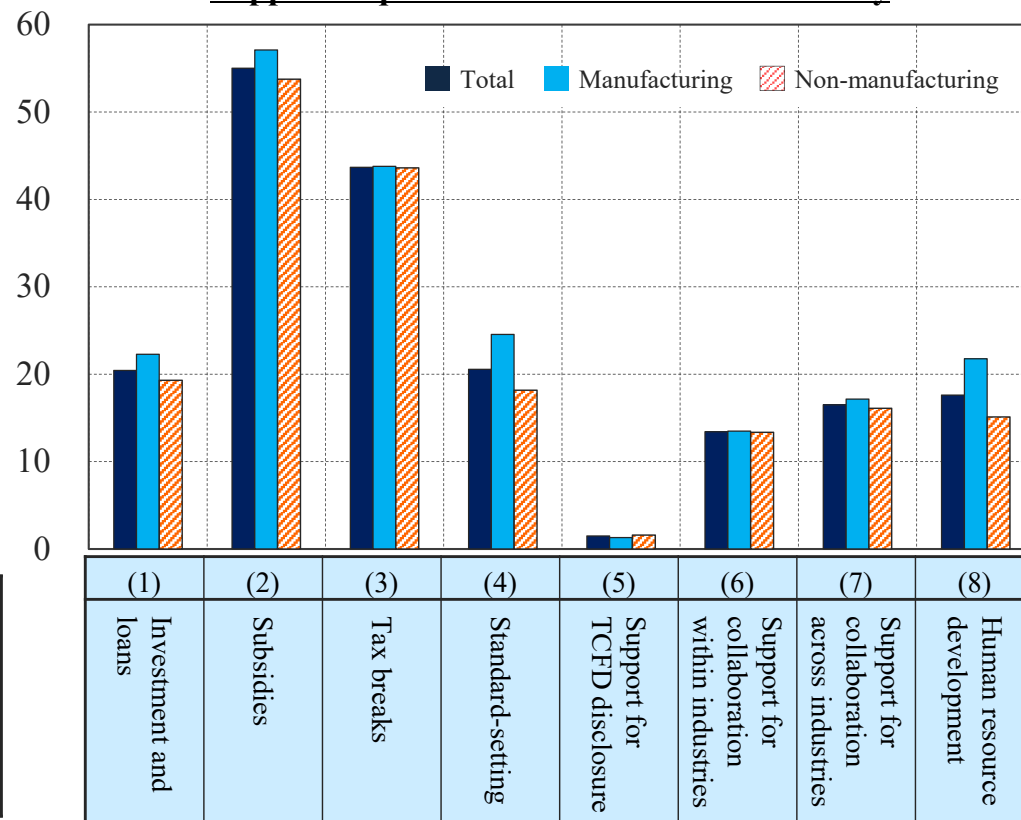


(Composition rate, %)

Notes:

1. Data covers medium-sized firms.
2. Respondents may choose up to two answers.

### Support required to achieve carbon neutrality



(Composition rate, %)

Notes:

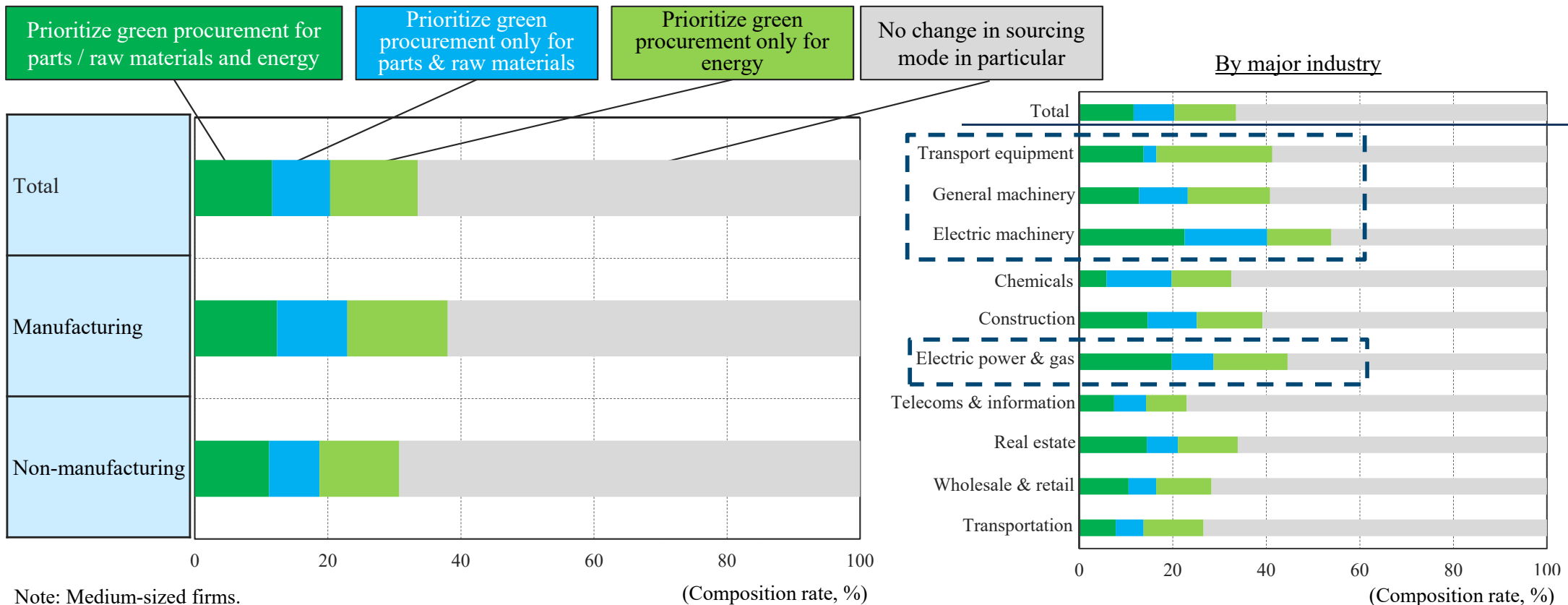
1. Data covers medium-sized firms.
2. Respondents may choose up to three answers.

# (Medium-Sized Firms) Sourcing Actions to Achieve Carbon Neutrality

Many firms prioritize green procurement in the manufacturing sector and in other industries, including electric power & gas.

- Some 30% of the firms, and 40% of the manufacturers, **prioritize zero-carbon or low-carbon products in the procurement** of parts / raw materials and energy (electric power & gas).
- Among major industries, large numbers of firms in transport equipment, general machinery, electric machinery and electric power & gas prioritize green procurement, as they are required to take **actions across their supply chains**.

## Net-zero actions in sourcing



# Appendices

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## Capital Spending in FY2021, FY2022 and FY2023

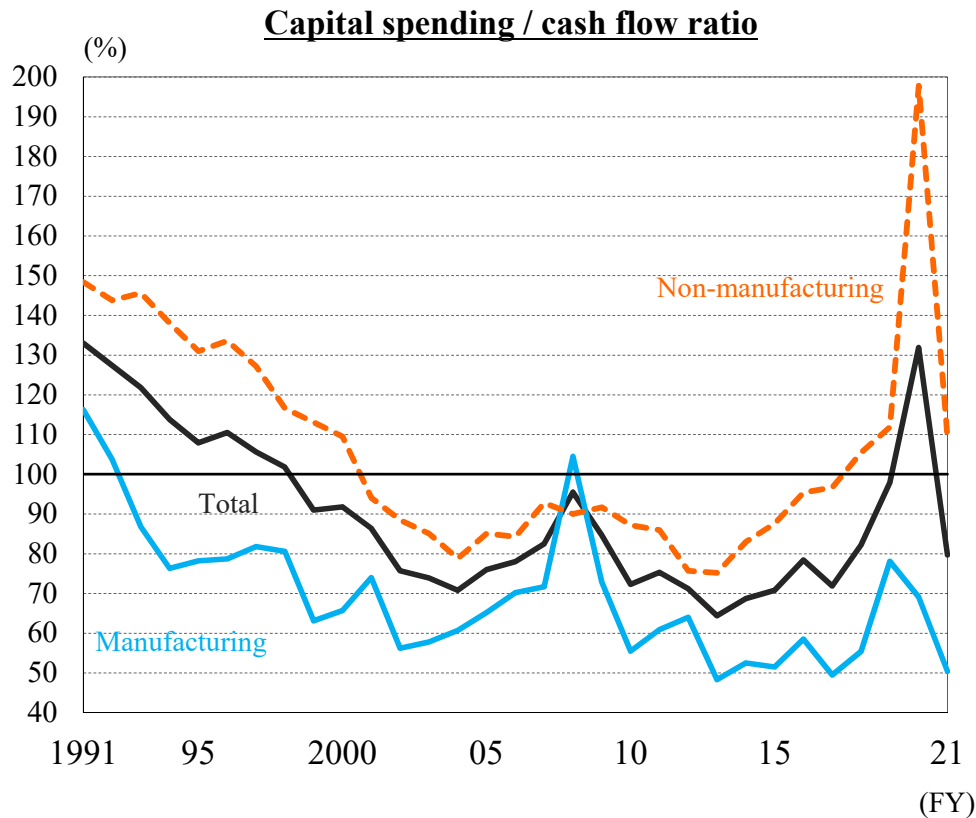
(unit: 100 million yen, %)

	FY2021 (actual) (1,650 firms)			FY2022 (planned) (1,758 firms)			FY2023 (planned) (794 firms)		
	FY2020 Actual	FY2021 Actual	Change	FY2021 Actual	FY2022 Planned	Change	FY2022 Planned	FY2023 Planned	Change
Total	173,557	166,951	-3.8	154,698	196,188	26.8	42,994	42,475	-1.2
(Excluding electric power)	150,106	146,066	-2.7	144,117	180,373	25.2	41,571	41,494	-0.2
Manufacturing	55,452	57,381	3.5	53,785	70,276	30.7	16,744	15,349	-8.3
Non-manufacturing	118,106	109,570	-7.2	100,913	125,912	24.8	26,250	27,126	3.3
(Excluding electric power)	94,655	88,684	-6.3	90,332	110,097	21.9	24,827	26,145	5.3

Note: Major firms.

# Capital Spending / Cash Flow Ratio

- Capital spending / cash flow ratio fell substantially in FY2021 due to improved profitability.
- The diffusion index (DI) on ordinary profit, which improved substantially in FY2021, is expected to keep recovering in FY2022.



- Notes:
1. Data covers major firms.
  2. Cash flow is calculated as ordinary profit/2 + depreciation expenses (simplified formula assuming an effective corporate tax rate of 50%).

**DI on ordinary profit**

(in % pts)

	DI on ordinary profit		
	FY2020 Actual 836 firms	FY2021 Actual 879 firms	FY2022 Planned 1,095 firms
Total	-8.9	34.9	8.0
Manufacturing	-6.1	39.8	6.0
Non-manufacturing	-10.8	31.4	9.5

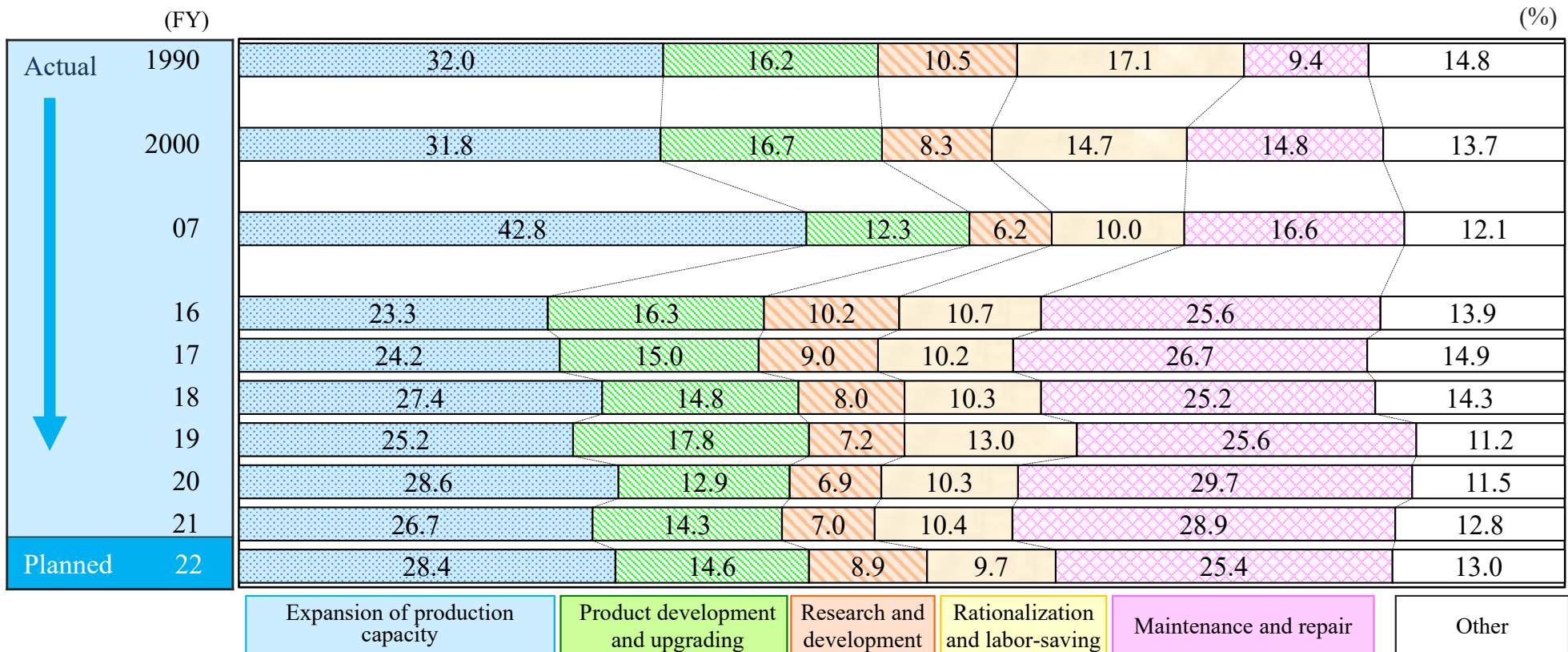
Notes:

1. Major firms.
2. DI on ordinary profit = 
$$\frac{\text{No. of responses: Profit increase} - \text{No. of responses: Profit decrease}}{\text{Total valid responses}}$$

# Composition of Investment Motives (Manufacturing)

- Among the investment motives for manufacturers in FY2022, the share of “expansion of production capacity” shows an increase mainly due to the resumption of investment projects postponed in the aftermath of the Covid-19 pandemic. The share of “research and development” will also increase, driven by spending for carbon neutrality. Meanwhile, the share of “maintenance and repair” shows a decline from the record level during the pandemic.

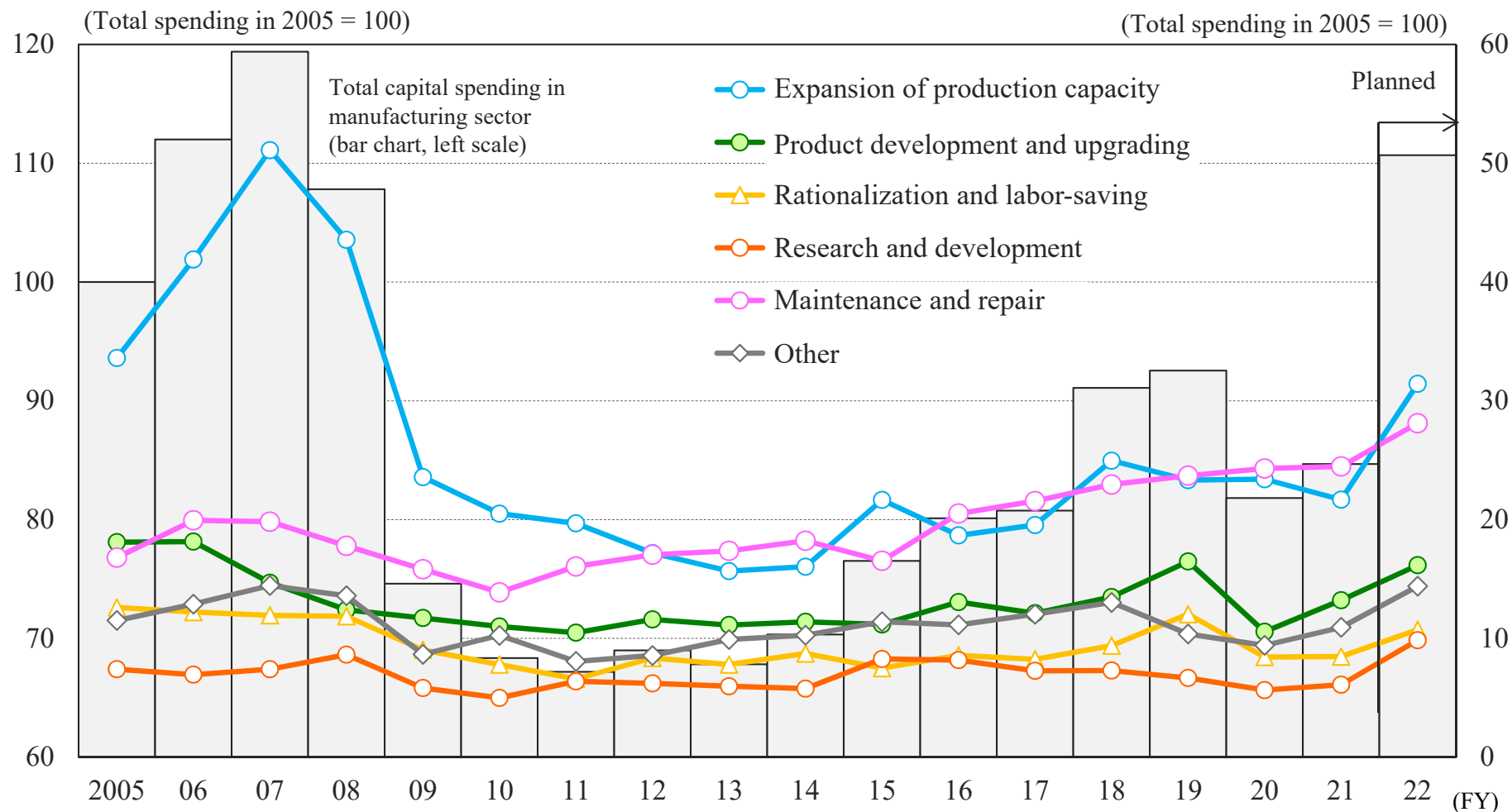
**Composition of investment motives (manufacturing)**



Notes:

- Major firms.
- Share of each investment motive in total capital spending, by value.

# Index of Investment Motives (Manufacturing)



Notes:

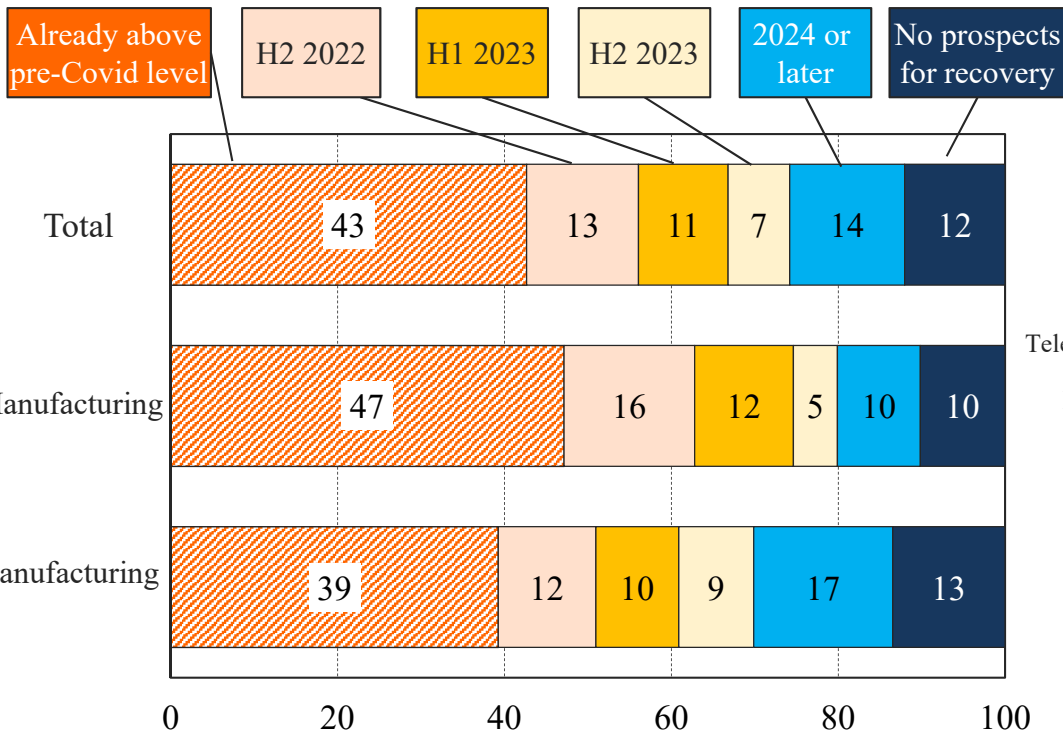
1. Data covers major firms.
2. The chart shows capital spending indexed on the total spending in FY2005 in the manufacturing sector. For each year, the capital spending indices (right scale) for individual investment motives add up to the capital spending index for the whole manufacturing sector.

# Prospects for Sales Recovery from the Covid-19 Pandemic

- About 40% of the firms report that their sales have already exceeded the pre-Covid level. If we add the number of respondents anticipating recovery in H2 of 2022, half of the firms expect recovery by the end of the year. However, the recovery is rather slow in the non-manufacturing sector, as 30% of the firms do not expect recovery by the end of 2023.
- By major industry, over 80% of the firms in electric machinery and over 70% in chemicals anticipate recovery by the end of the year, whereas almost 50% of the firms in the transportation industry do not expect recovery until 2024 or have no prospects for recovery at all, due to no signs of recovery in passenger demand.

## Prospects for sales recovery from the Covid-19 pandemic

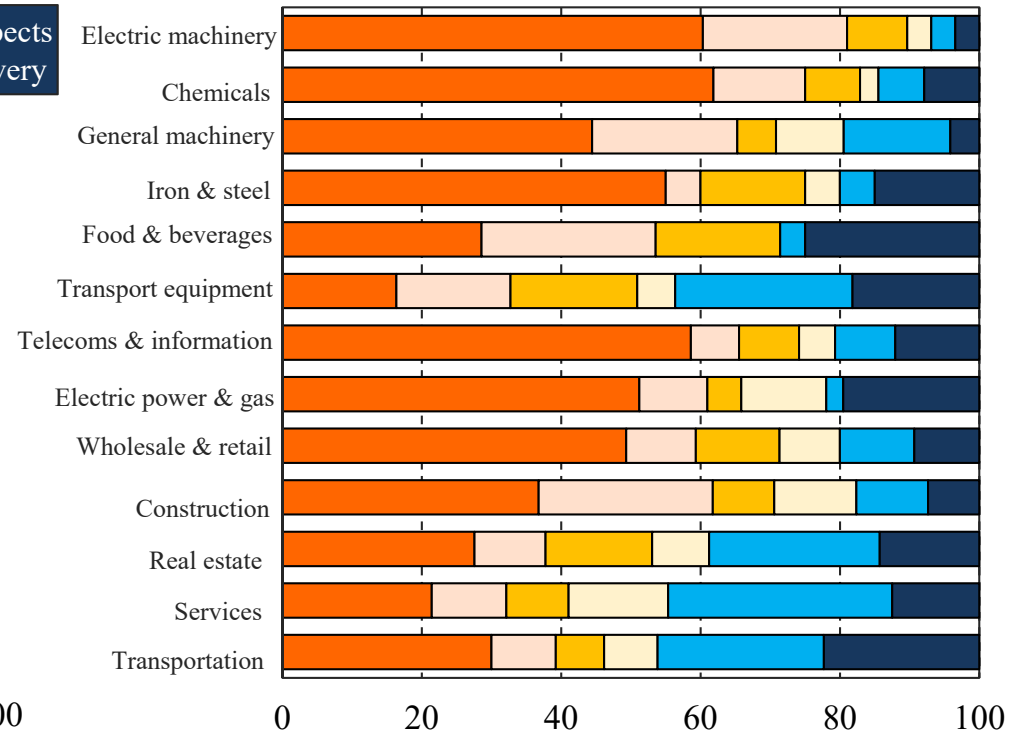
### Overview



Note: Major firms.

(Composition rate, %)

### By major industry

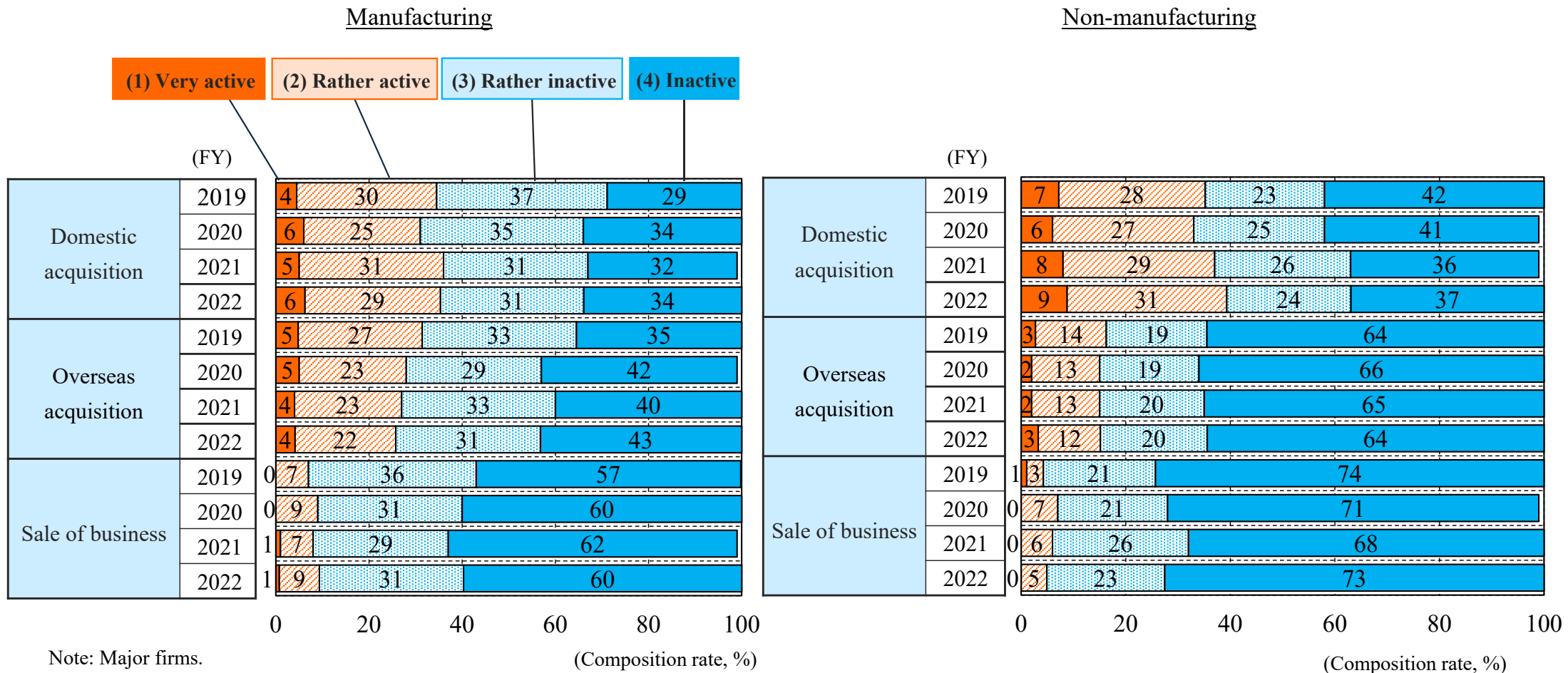


(Composition rate, %)

# Attitude toward M&A

- Although a slight recovery is observed in the number of firms claiming to be actively engaged in business acquisition in Japan, their appetite overseas continues to decline in the manufacturing sector amid the heightening global risks.

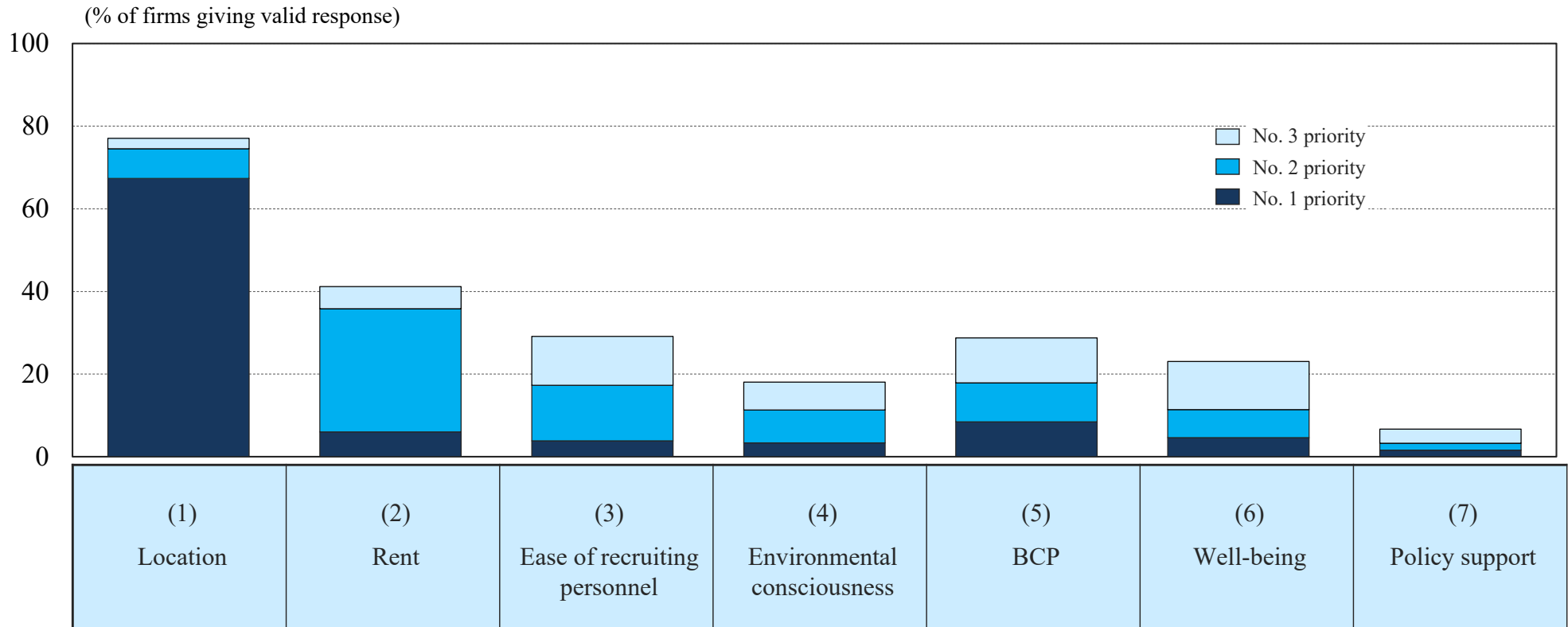
## Attitude toward M&A



# Priorities in Selecting Production Sites Going Forward

- Asked about key criteria in selecting production sites going forward, most companies cited location and rent. In addition, some 20% of the firms cited ease of recruiting personnel, BCP and well-being.

## Priorities in selecting production sites going forward



Notes:

1. Data covers major firms in all industries.
2. Respondents may choose up to three answers in order of priority.

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