

## Mizuho Industry Research No.68

# Medium-term Outlook for Japanese Industry

Industry Research Department,  
Mizuho Bank, Ltd.

Research & Consulting Unit,  
Mizuho Financial Group, Inc.

- I. Medium-term Outlook for Overall Japanese Industries p.2**
- II. Medium-term Outlook for Major Industries p.7**

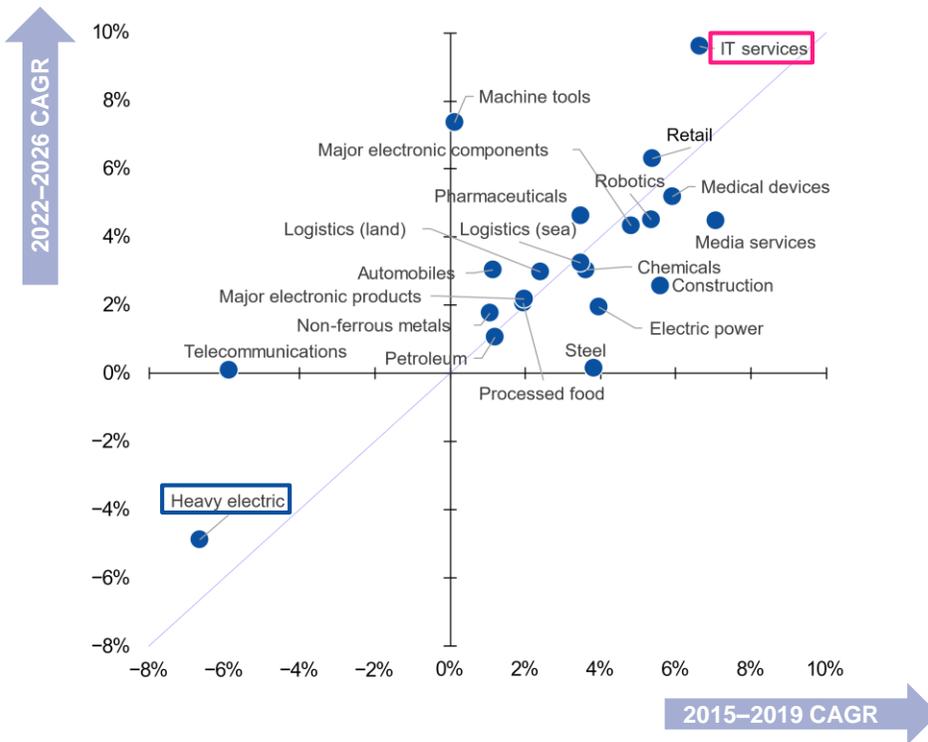
# I. Medium-term Outlook for Overall Japanese Industry

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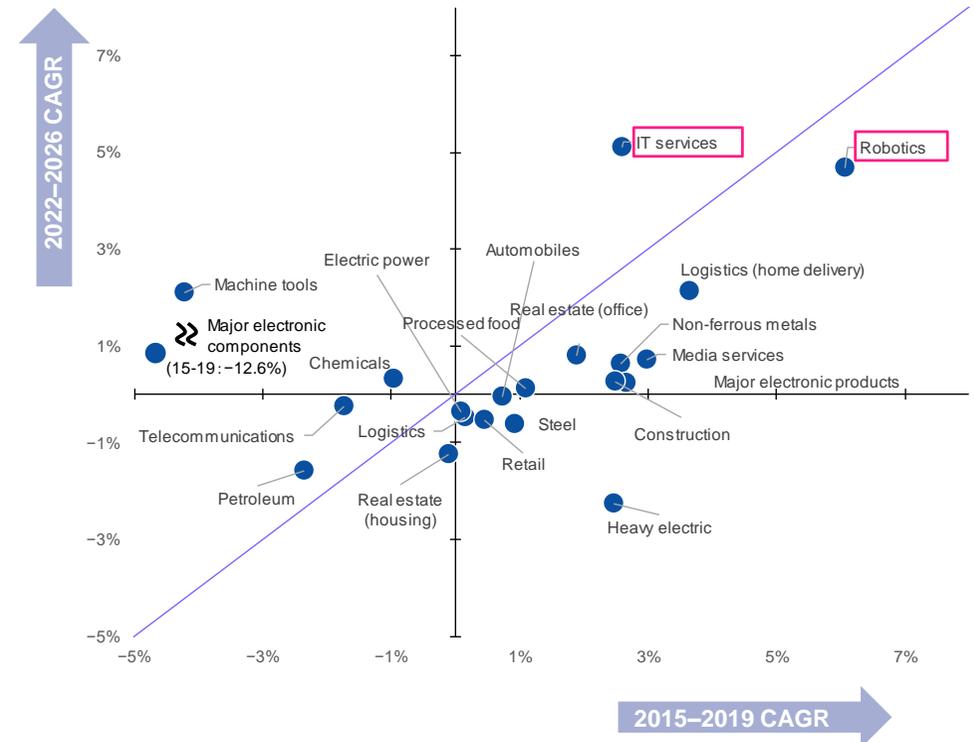
## Domestic and global demand will bounce back across a wide range of sectors on the global economic recovery

- Global demand will bounce back in many sectors on the global economic recovery. IT services will grow at a particularly fast clip on rising demand related to digitization. However, the heavy electric machinery sector will face downward pressure as the world focuses on the threat of climate change.
- As with global demand, the IT services sector will see a rise in domestic demand, with robotics and other sectors also likely to grow on renewed demand for automobiles.

### Global demand outlook by industry



### Domestic demand outlook by industry

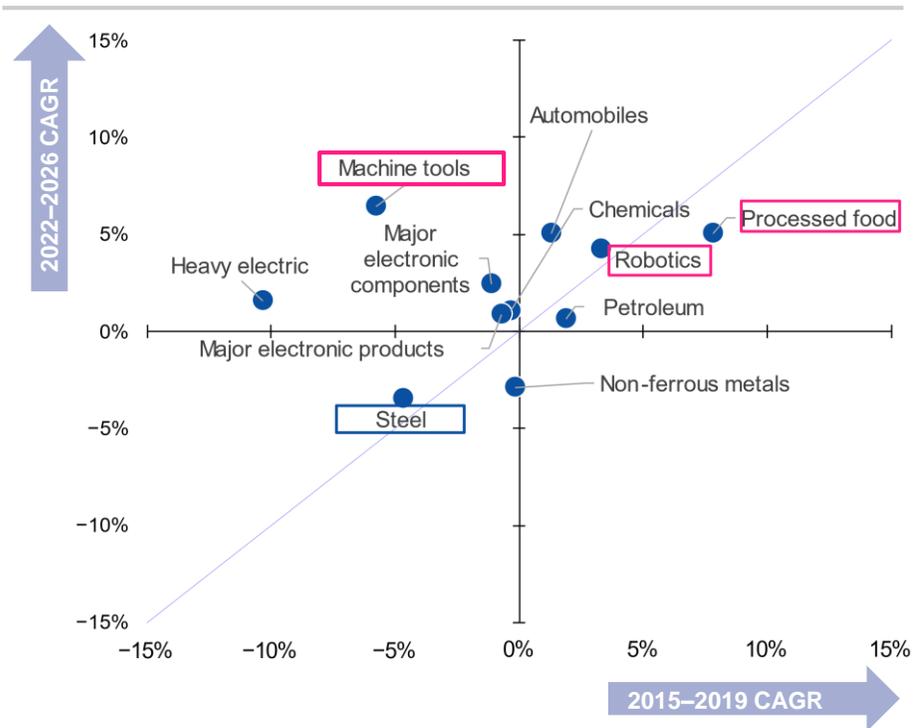


Note: Many sectors have seen a slump in demand in 2020 and 2021 on the impact of COVID-19, so the graphs use the 2015–2019 CAGR and the 2022–2026 CAGR.  
 Source: Compiled by Mizuho Bank's Industry Research Department (IRD)

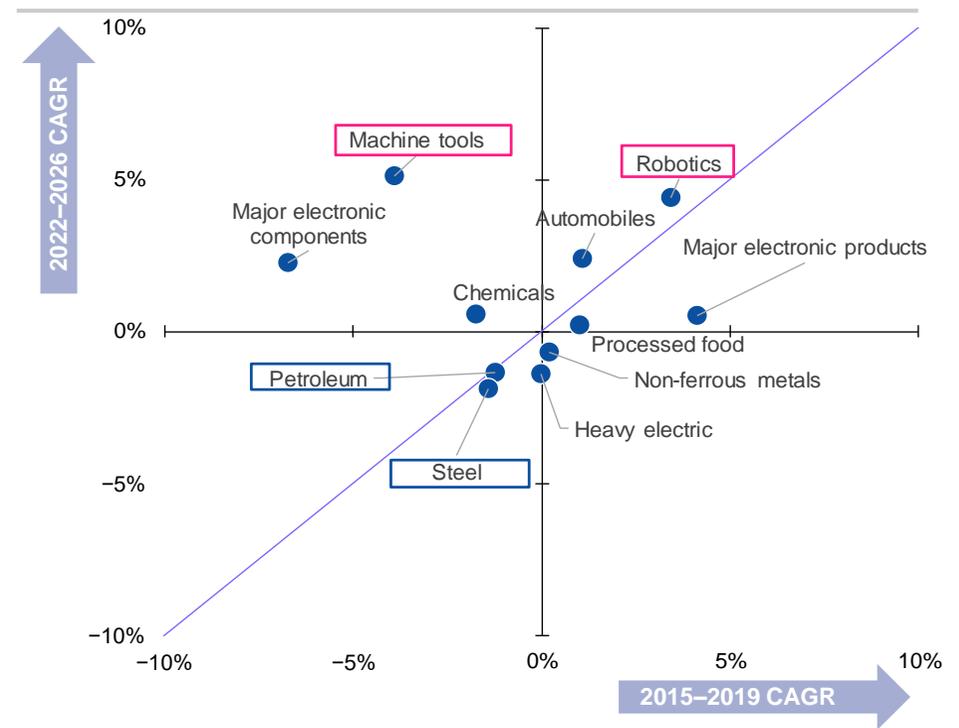
## Exports and domestic output will increase in some sectors on a recovery in domestic and global demand

- Exports will increase across many sectors as global demand bounces back, with sectors like machine tools, robotics and processed food set to grow firmly. However, steel exports will slide as exports of general-purpose items fall on increased competition from China.
- Domestic petroleum and steel output will fall slightly on a structural dip in domestic demand and moves to shift production overseas, for example, though domestic machine tools and robotics output will rise as firms keep production in Japan.

### Export outlook by industry



### Domestic production outlook by industry

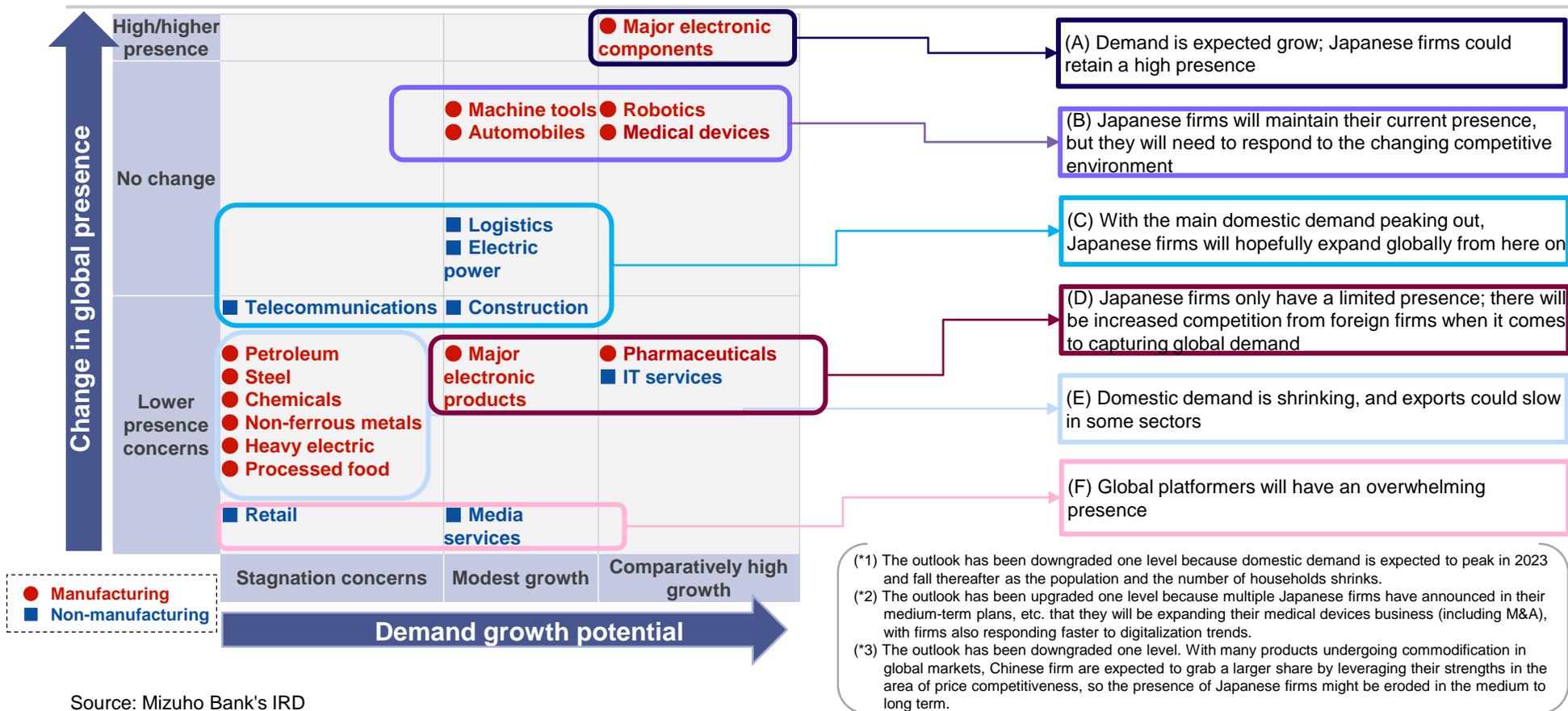


Note: Many sectors have seen a slump in demand in 2020 and 2021 on the impact of COVID-19, so the graphs use the 2015–2019 CAGR and the 2022–2026 CAGR.  
 Source: Mizuho Bank's IRD

## The competitiveness of Japanese industry might ‘remain unchanged’ or ‘fall’ over the next five years

- As with last year, many sectors will see ‘a modest growth in demand’ or ‘stagnation concerns’ when it comes to ‘demand growth potential’ and ‘no change’ or ‘lower presence concerns’ when it comes to the ‘change in global presence.’
- The outlook for the processed food sector has been downgraded when it comes to ‘demand growth potential.’<sup>(\*)</sup> With regards to ‘change in global presence,’ the outlook has been upgraded for medical devices<sup>(\*\*)</sup> and downgraded for major electronic products.<sup>(\*\*\*)</sup>

### Map of projected industry competitiveness over the next five years



Source: Mizuho Bank's IRD

## The strategic direction Japanese firms should take to respond to changing business conditions

- The business environment surrounding Japanese firms is changing rapidly on the spread of COVID-19, the progress of digital transformation, a focus on economic security in the face of US/China tensions, and growing moves toward carbon neutrality.
- Japanese firms should adopt a three-pronged approach: (1) 'selection and concentration' to reconstruct business portfolios; (2) 'invest in post-pandemic growth' by undertaking forward-looking capital investment, R&D, and M&A, etc.; (3) 'strengthen risk resilience' by diversifying profit bases, strengthening supply chains, capturing upstream resources, etc.

### The changing business environment surrounding Japanese firms and strategic directions that Japanese firms should take

The changing business environment and the main impact on Japanese firms		Strategic directions Japanese firms should take
Acceleration of pre-pandemic trends	<b>Impact of COVID-19</b> <b>The spread of COVID-19</b> <ul style="list-style-type: none"> <li>■ <b>Changing consumer behavior</b> <ul style="list-style-type: none"> <li>— The shift from analog to digital and the spread of online consumption</li> </ul> </li> <li>■ <b>Changing working patterns and office styles</b> <ul style="list-style-type: none"> <li>— The penetration of remote working and technology utilization</li> </ul> </li> <li>■ <b>The tough situation facing firms in the mobility sector</b> <ul style="list-style-type: none"> <li>— Loss of business and leisure demand (commuting, business trips, etc.) due to restrictions on the movement of people</li> </ul> </li> </ul>	<b>(1) Selection and concentration</b> <ul style="list-style-type: none"> <li>■ Reconstruct business portfolios based on policy trends</li> <li>■ Secure investment capabilities</li> </ul>
	<b>The digital transformation</b> <ul style="list-style-type: none"> <li>■ <b>Legacy systems are weighing down business operations</b> <ul style="list-style-type: none"> <li>— IT systems could become bottlenecks, with maintenance costs, etc. soaring</li> </ul> </li> <li>■ <b>A shift from traditional industries to digital industries</b> <ul style="list-style-type: none"> <li>— Value will be generated as firms reform their corporate cultures by fully pursuing DX and boosting digital capabilities</li> </ul> </li> </ul>	<b>(2) Invest in post-pandemic growth</b> <ul style="list-style-type: none"> <li>■ Strategic investment based on regional competition conditions and own-company capabilities</li> <li>■ Strengthen human resource investment</li> </ul>
	<b>A focus on economic security</b> <ul style="list-style-type: none"> <li>■ <b>Intensified US/China frictions</b> <ul style="list-style-type: none"> <li>— The US and its allies are partially decoupling from China</li> </ul> </li> <li>■ <b>Restructured supply chains</b> <ul style="list-style-type: none"> <li>— The fragility of Japan's supply chains is becoming more apparent</li> </ul> </li> </ul>	
<b>Growing moves toward carbon neutrality</b> <ul style="list-style-type: none"> <li>■ <b>International competitiveness will be swayed by the success or failure of moves towards carbon neutrality</b> <ul style="list-style-type: none"> <li>— Global firms are pursuing cutting-edge decarbonization initiatives</li> </ul> </li> <li>■ <b>Firms are examining a variety of fundraising methods</b> <ul style="list-style-type: none"> <li>— Firms are utilizing green bonds and other forms of green financing</li> </ul> </li> <li>■ <b>Appropriate communication with investors</b> <ul style="list-style-type: none"> <li>— Firms will revise disclosure rules faster in the face of growing investor demands</li> </ul> </li> </ul>	<b>(3) Strengthen risk resilience</b> <ul style="list-style-type: none"> <li>■ Diversify profit bases</li> <li>■ Strengthen supply chains and capture upstream resources</li> </ul>	

Source: Compiled by Mizuho Bank's IRD

## II. Medium-term Outlook for Major Industries

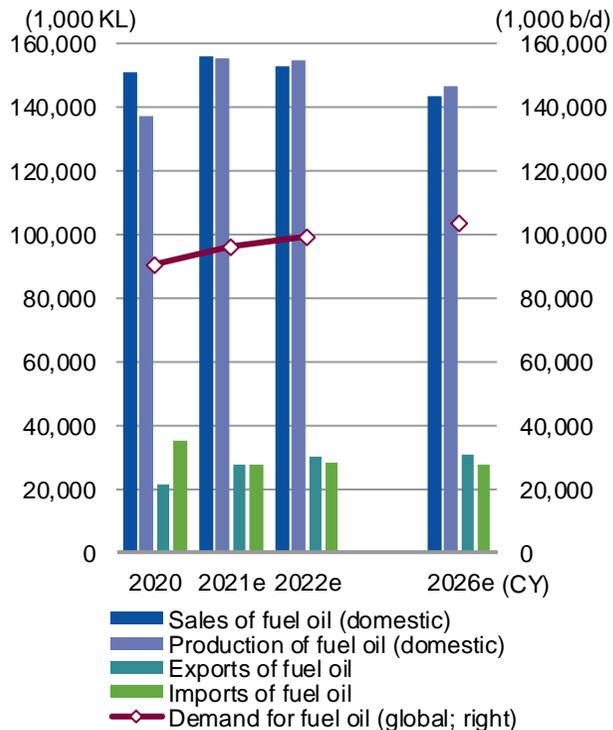
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Note: The growth rate shown in this part indicates an average annual growth rate (CAGR) for the upcoming five years, calculated by using the values for 2021 and 2026 (either calendar year or fiscal year), unless otherwise indicated.

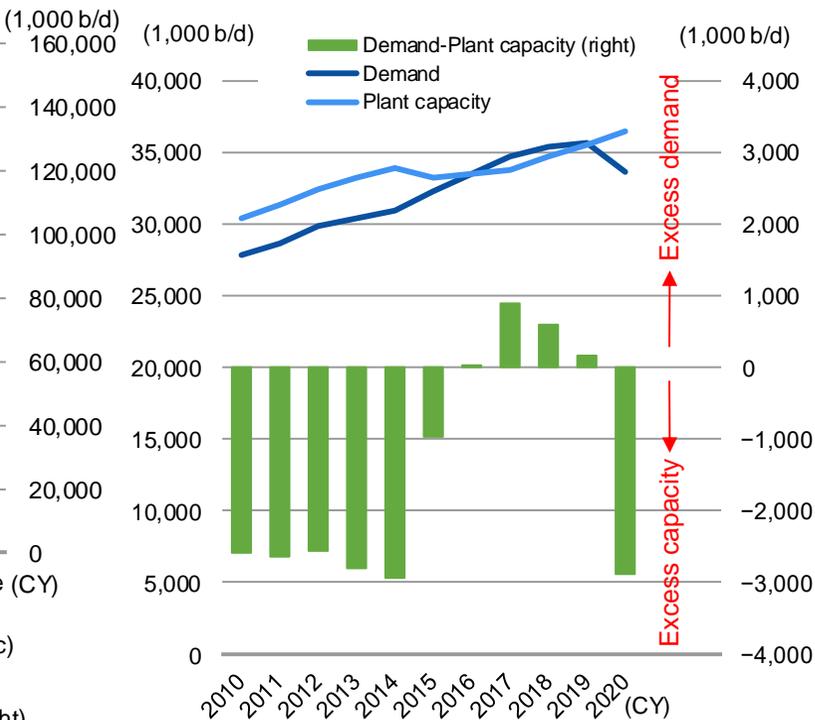
## Global demand will continue increasing in the medium term, domestic demand will decline

- Global demand will grow firmly in the medium term (annualized +1.5%) due to growth in Asia.
  - Plant capacity in Asia far outstrips demand, but plant capacity will be expanded further from here on, with supply/demand conditions set to ease.
- Domestic demand will fall in the medium term (annualized -1.6%) due to structural.
  - Domestic demand will recover in 2021, and operating rate of refineries is expected to return to 80% level. After that, Some refining equipment will be shut down, but operating rate is expected to fall again in the medium term as demand declines.

### Supply/demand outlook

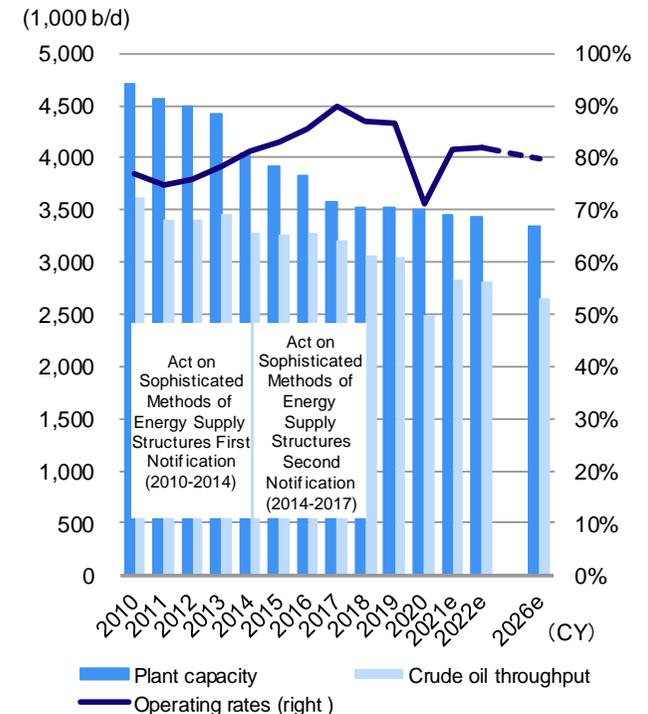


### Asian petroleum demand and plant capacity



Note: 'Asia' denotes the total of all the countries in the Asia-Pacific region (China, India, Japan, South Korea, ASEAN, etc.).  
Source: Compiled by Mizuho Bank's IRD based on BP statistics

### Operating rates at Japanese refineries

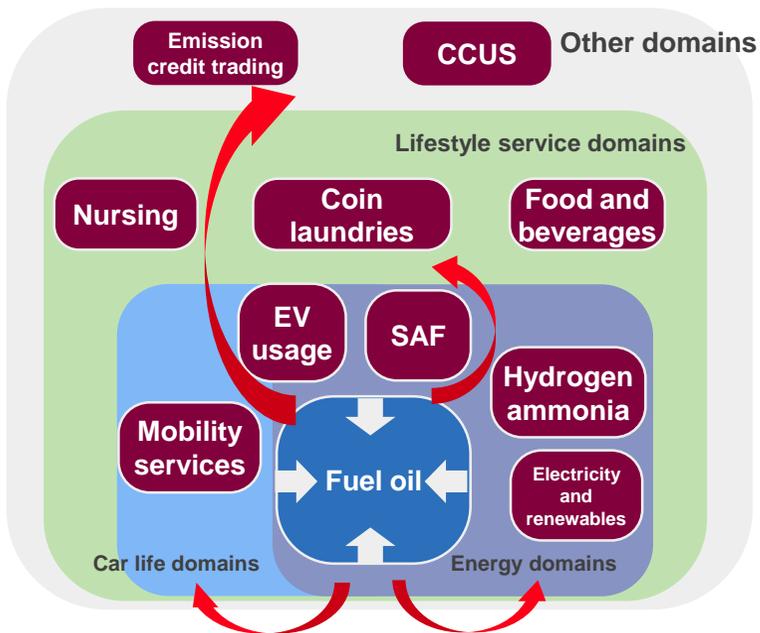


Note: The figures for 2021 onwards are IRD forecasts.  
Source: Compiled by Mizuho Bank's IRD based on data from the Ministry of Economy, Trade and Industry, etc.

## Firms will need to establish zero-emission energy business while moving to maximize petroleum business profitability

- Domestic demand will continue declining, therefore oil refiner-distributors are moving to reduce their dependence on the petroleum business.
  - From here on, competitive domains will shift to include the wider energy domain and the consumer service domain in addition to the traditional fuel oil domain.
- Oil refiner-distributors will need to strengthen profitability and streamline operations in their petroleum business while capturing new demand related to decarbonization.
  - Firms should shift to high-value-added products, optimize refinery capabilities, and supply zero-emission energy.

### Changing competitive domains



Note 1: Examples of specific businesses

Note 2: CCUS: Carbon dioxide Capture, Utilization and Storage

Note 3: SAF: Sustainable Aviation Fuel

Source: Compiled by Mizuho Bank's IRD

### The changing business environment and the actions needed by Japanese petroleum sellers

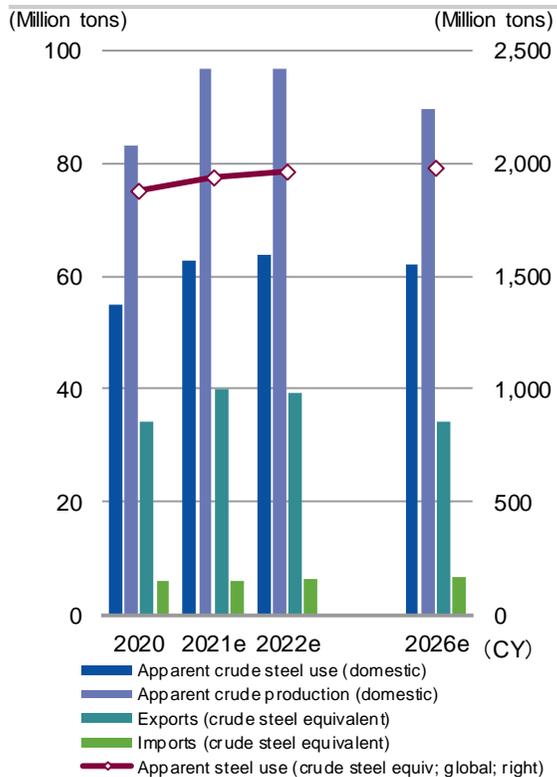
Business environment	Strategic direction	Actions
Falling petroleum demand; Stable petroleum refining margins	Strengthen petroleum business profitability	Shift to high-value-added products
	Streamline petroleum business operations	Optimize refinery capabilities
Accelerated decarbonization	Capture new demand related to decarbonization	Supply zero-emission energy

Source: Compiled by Mizuho Bank's IRD

## Domestic production will fall as firms implement structural measures (suspending blast furnaces, etc.)

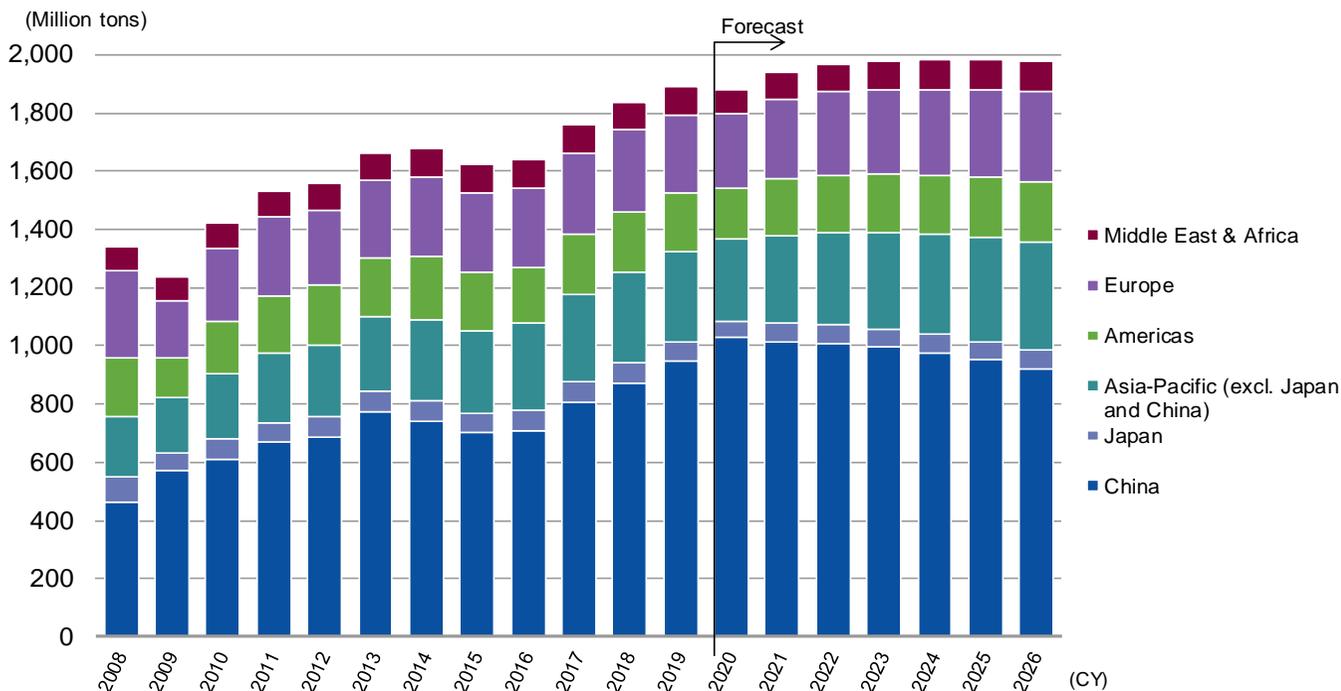
- After peaking out in 2021 on a decline in infrastructure and property investment in China (the country that accounts for the lion's share of demand), global steel demand will essentially move flatly in the medium term, despite expanded demand in the emerging economies.
- Domestic steel demand is unlikely to recover to 2019 levels given the structural slide in new housing starts and automobile production on the back of a fall in the number of households. Crude steel output is expected to drop below 90 million tons in 2026 on structural measures by each firm.

### Supply/demand outlook



Note: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on data from the Japan Iron and Steel Federation, etc.

### Global steel demand outlook



Source: Compiled by Mizuho Bank's IRD based on the World Steel Association's *Steel Statistical Yearbook*

## Growth strategies compatible with carbon neutrality

- Achieving carbon neutrality by 2050 will be an extremely challenging issue for Japan's steelmakers, but the road ahead has become clearer as each firm develops cutting-edge technologies, so firms will need to develop growth strategies that are compatible with this goal.
- Carbon neutrality moves could lead to the emergence of new players. Japanese firms should prepare for this eventuality by rolling out energy-saving solutions in Asia with an eye on the expanded use of innovative low-carbon technologies while carrying out appropriate replacement investment with an eye on future production systems or by establishing new business models such as making design proposals that utilize accumulated materials knowledge.

### The strategies that Japanese steel firms should take right now

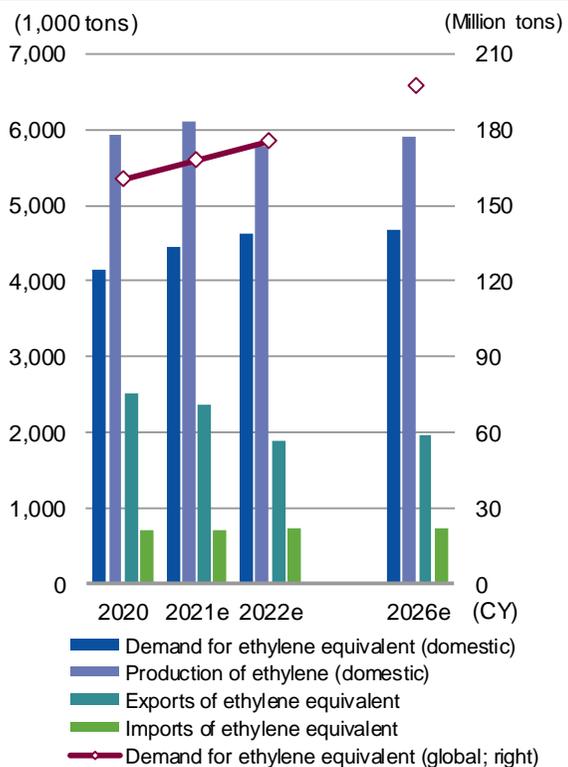
	The background business environment surrounding Japanese firms		Specific measures (proposals)
	Internal environment	External environment	
(1) Carry out appropriate replacement investment with an eye on future production systems	<b>Issue:</b> <ul style="list-style-type: none"> <li>• Domestic large-scale facilities will need to be renewed soon</li> </ul>	<b>Threats:</b> <ul style="list-style-type: none"> <li>• Intensified competition in export markets</li> <li>• The shift to low-carbon technologies ahead of the transition to carbon neutrality</li> </ul>	<ul style="list-style-type: none"> <li>• Examine optimal solutions for selecting the best manufacturing methods for each steel plant ahead of 2050</li> <li>• Pursue tie-ups between blast furnace and electric furnace manufacturers</li> </ul>
(2) Roll out energy-saving blast furnaces across the Asian region	<b>Strengths:</b> <ul style="list-style-type: none"> <li>• World-leading low-energy technologies in blast furnace processes</li> <li>• The use of hydrogen in blast furnaces is a technological development unique to Japan</li> </ul>	<b>Opportunities:</b> <ul style="list-style-type: none"> <li>• High potential in Asia, an area with high blast furnace usage (existing energy-saving technologies and future hydrogen-use technologies)</li> </ul>	<ul style="list-style-type: none"> <li>• Create future customers for innovative technologies by providing existing energy-saving technologies to Asian blast furnace manufacturers</li> <li>• Build a framework to compete with European firms by making allies in Asia</li> </ul>
(3) Become a supplier of design solutions	<b>Strengths:</b> <ul style="list-style-type: none"> <li>• Technologies/knowhow in structural design (backed by materials knowledge) and performance evaluation</li> </ul>	<b>Threats:</b> <ul style="list-style-type: none"> <li>• Shift to other materials against the backdrop of carbon neutrality</li> </ul> <b>Opportunities</b> <ul style="list-style-type: none"> <li>• Demand for advanced structural design technology (including other materials)</li> </ul>	<ul style="list-style-type: none"> <li>• Establish business models that contribute to the automobile industry (regardless of which materials are selected) by becoming partners in the design and development of automobile structure materials</li> </ul>

Source: Compiled by Mizuho Bank's IRD

## Once extraordinary factors wane, structural loosening of supply and demand will become more apparent

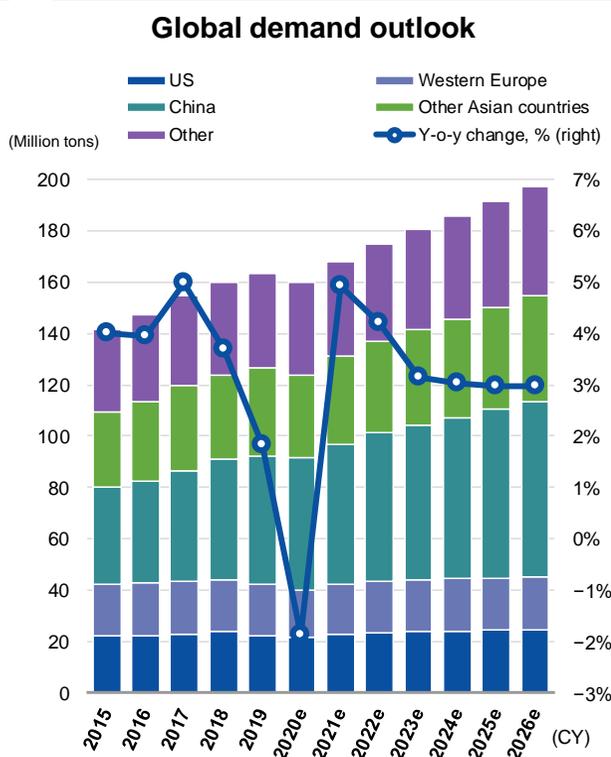
- Global demand will return to annualized growth around 3% on demand in China (the largest market) and other Asian countries.
  - There is likely be growing demand for recycled materials and falling demand for unused materials in Europe and elsewhere, but this is unlikely to have much impact within the timeframe of the outlook.
- Although the balance will remain tight for now on extraordinary factors, such as plant suspensions due to weather disasters, the global supply and demand balance (demand / productive capacity) is structurally eased as new large-scale plants are built in China, etc. and the impact of the above will inevitably emerge going forwards.

### Supply/demand outlook



Note: The figures for 2021 onwards are IRD forecasts.  
Source: Compiled by Mizuho Bank's IRD based on various materials

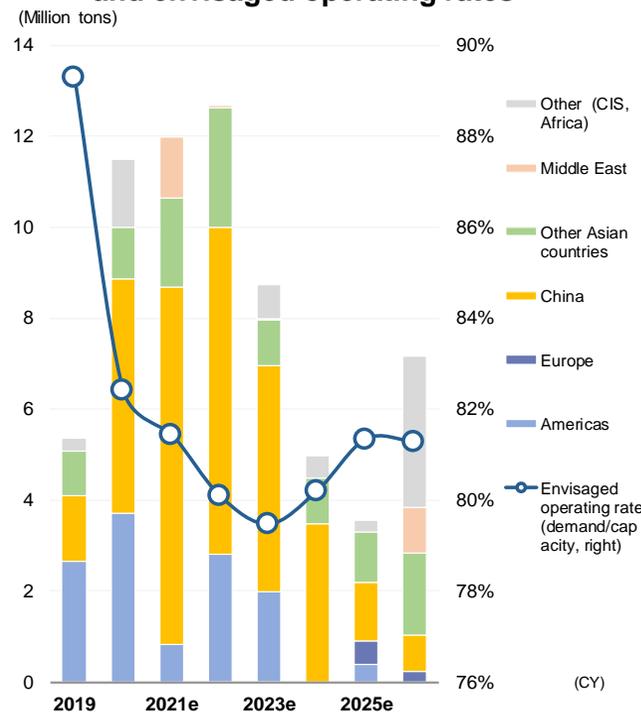
### Global supply/demand outlook



Note: The figures for 2020 onwards are IRD forecasts. The envisaged operating rate is an estimate obtained by dividing ethylene equivalent demand with ethylene productive capacity.

Source: Compiled by Mizuho Bank's IRD based on data from the Ministry of Economy, Trade and Industry and IHS Markit

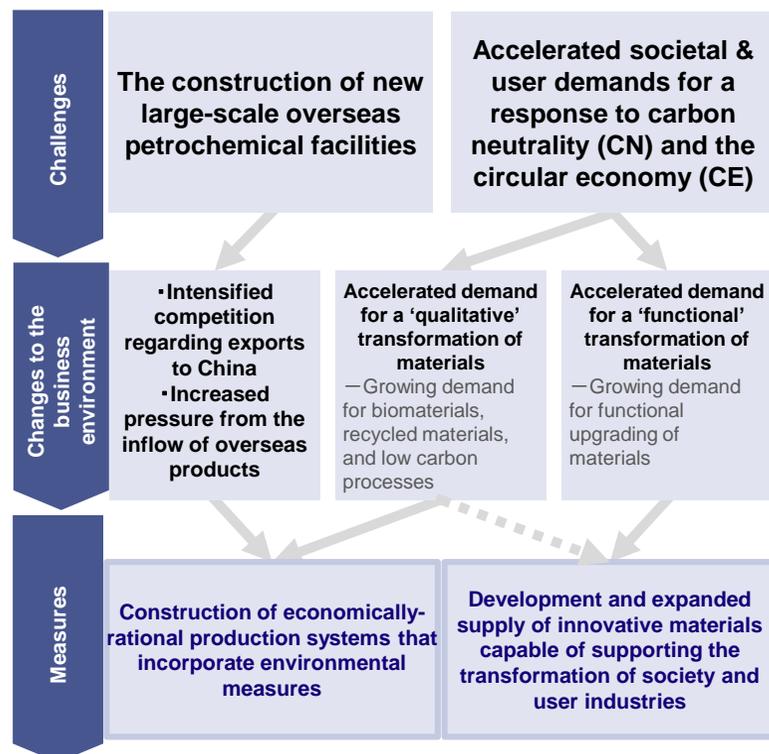
### The outlook for new plants (y-o-y change) and envisaged operating rates<sup>(Note)</sup>



## Firms need to pursue strategies that respond to CN/CE needs and looser global supply and demand conditions

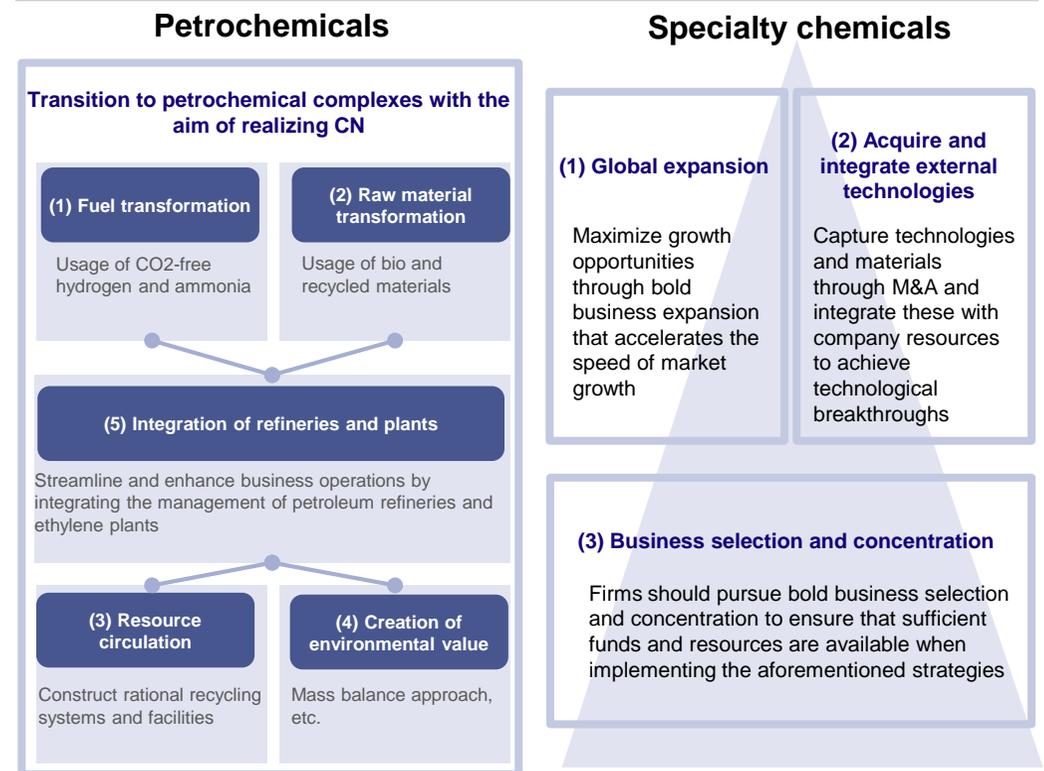
- Japan's chemicals industry faces challenges from the construction of new large-scale overseas petrochemical facilities and demands from society and user industries for a response to CN/CE.
  - While building rational production systems that incorporate environmental measures, firms should develop and expand the supply of innovative materials capable of supporting structural changes.
- In the petrochemicals sector petrochemical complexes should be transformed to realize CN. Firms in the specialty chemicals sector should expand globally through selection and concentration while acquiring and integrating external technologies.

### Challenges for chemical industry and measures



Source: Compiled by Mizuho Bank's IRD

### Strategic directions

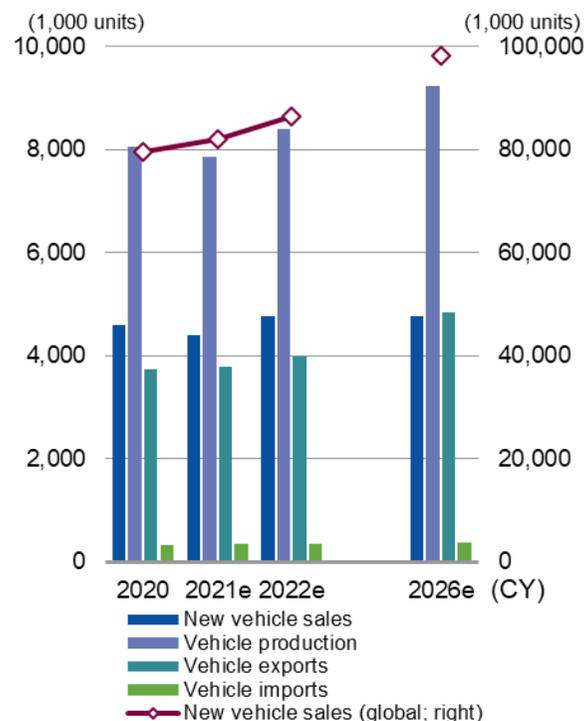


Source: Compiled by Mizuho Bank's IRD

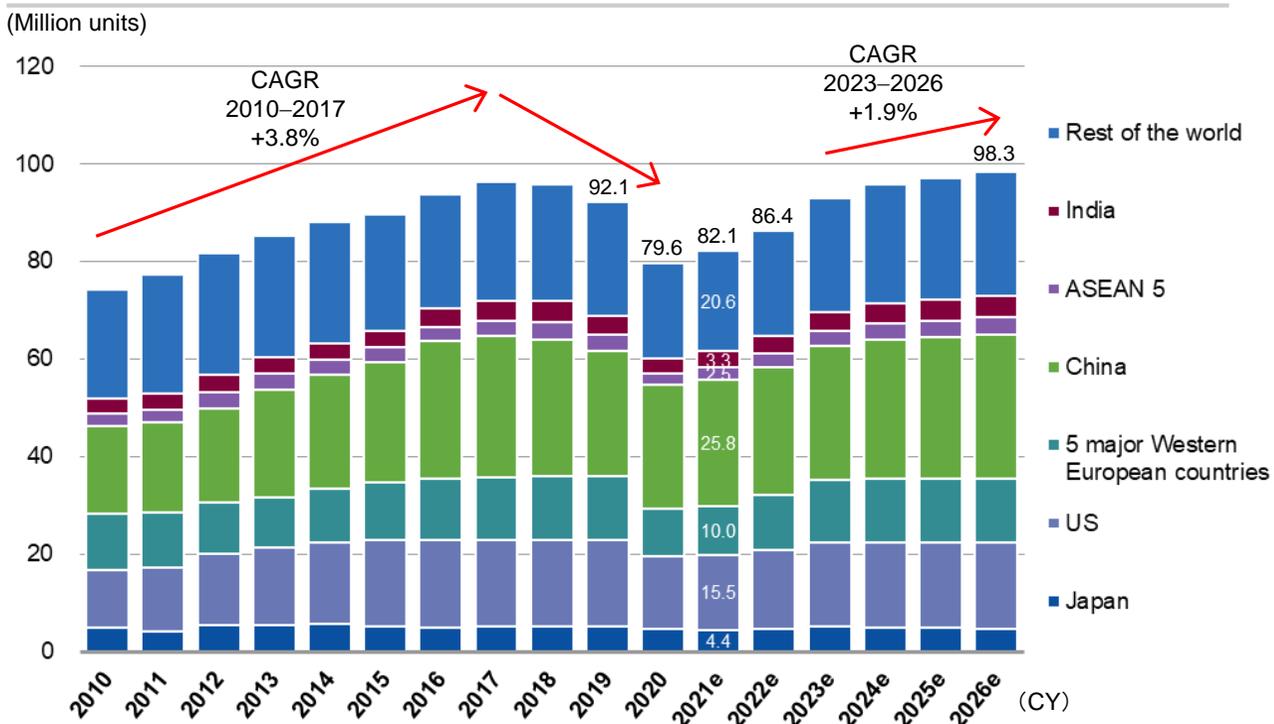
## The global new vehicle unit sales will recover to 2019 levels in 2023

- Given the impact of COVID-19 and supply constraints due to semiconductor shortages, etc., the global new vehicle unit sales are expected to undergo a shallow recovery in 2021, with the situation still below 2019 levels.
  - After recovering to 2019 levels in 2023, these will grow again, albeit at a gentle pace.
- In 2021, the Japanese market will undergo a y-o-y fall for the third straight year on the impact of COVID-19 and supply constraints.
  - After recovering to the 5-million mark in 2023, new vehicle sales will begin to taper on structural market pressures such as the falling population and household numbers.

### Sales/production forecast in Japan



### Global new vehicle sales forecast (by region)



Note 1: The figures for 2021 onwards are IRD forecasts.

Note 2: '5 major Western European countries' refers to Germany, France, Italy, Spain and the UK.; 'ASEAN 5' refers to Thailand, Indonesia, Malaysia, the Philippines, and Vietnam.

Source: Compiled by Mizuho Bank's IRD based on data from automobile manufacturers associations in the relevant countries and regions, etc.

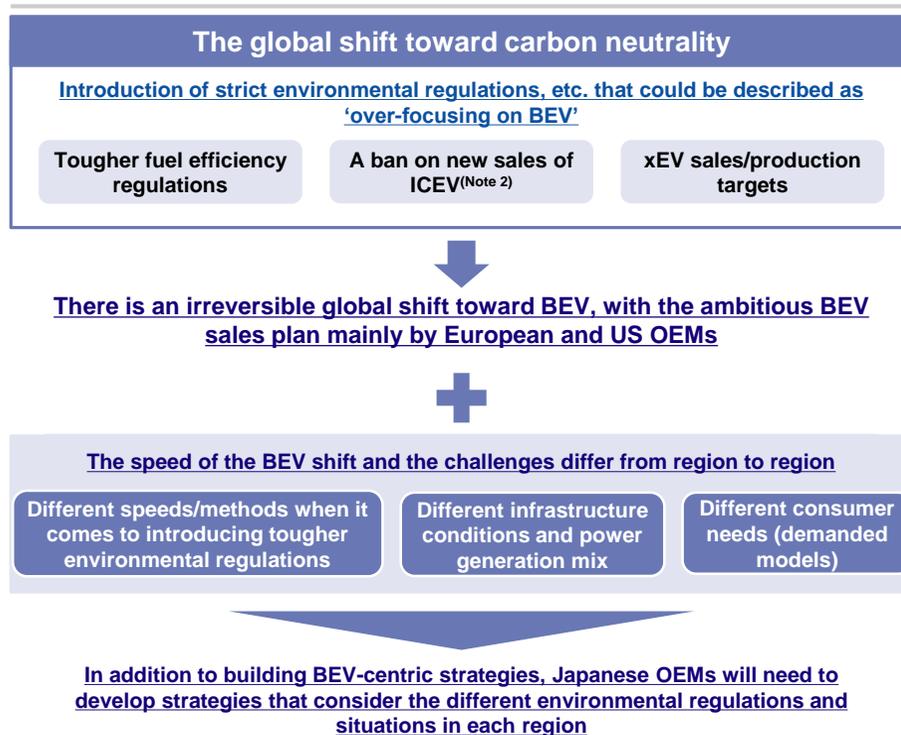
Note: The figures for 2021 onwards are IRD forecasts.

Source: Compiled by Mizuho Bank's IRD based on data from the Japan Automobile Manufacturers Association, etc.

## Japanese OEMs need to adopt transitional strategies that ascertain optimal powertrain mix based on the different policies and situations in each region

- Amid the accelerating shift toward carbon neutrality, there will be an irreversible global shift toward BEV.
  - This shift will take place at different speeds and will face different challenges in each region as a result of differences in consumer needs and the varying pace at which environmental regulations are tightened.
- After gaining a picture of policy trends, consumer needs, etc. in each region, Japanese OEMs should strike an appropriate balance between maintaining/expanding ICEV/HEV business and shifting toward BEV.

### The shift toward BEV<sup>(Note 1)</sup>



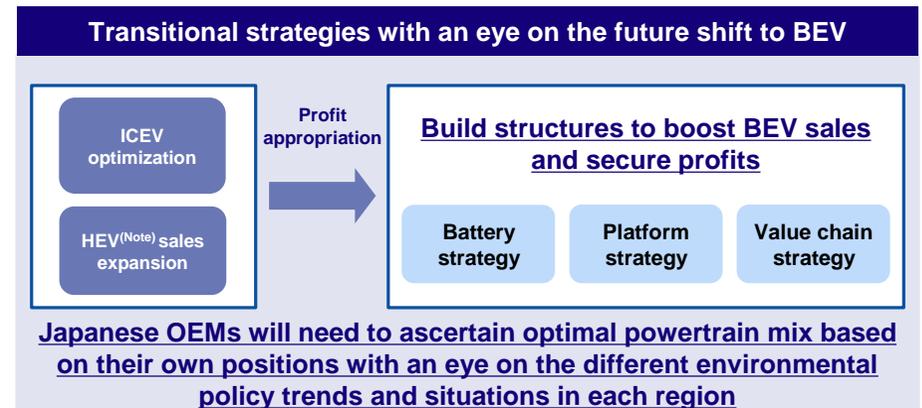
Note 1: Battery Electric Vehicle

Note 2: Internal Combustion Engine Vehicle

Source: Compiled by Mizuho Bank's IRD

### Strategic direction of Japanese OEMs

- A fully-fledged shift to BEV will require a certain time and the profit environment will remain tough
- The speed of the BEV shift and challenges to be addressed will differ from region to region



**Japanese OEMs should strike an appropriate balance between maintaining/expanding ICEV/HEV business and shifting toward BEV**

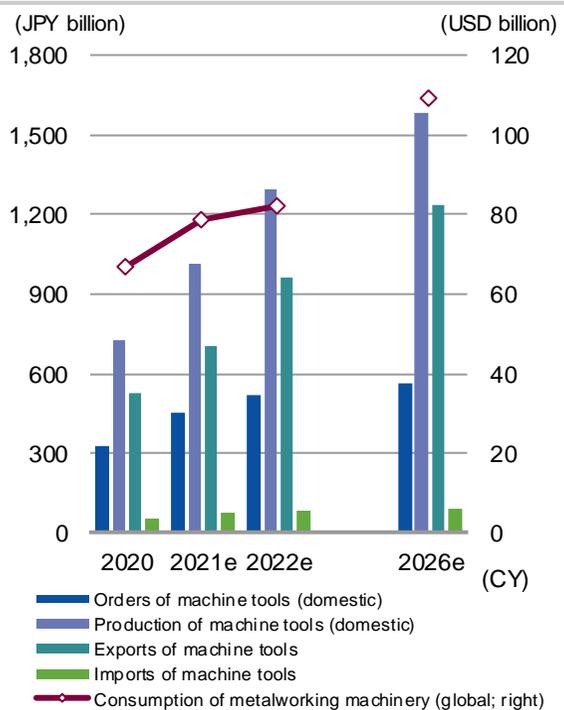
Note: Hybrid Electric Vehicle

Source: Compiled by Mizuho Bank's IRD

## Machine tools: Though the global market will undergo strong growth, the domestic market will grow at a moderate rate

- The major markets of China, North America and Europe will continue to play leading roles, with the overseas market set to grow firmly in the medium term.
  - After recovering from the pandemic, India and other emerging markets will grow too.
- The Japanese market will recover strongly from the pandemic, but with domestic automobile production (the major machine tool user industry) unlikely to grow, demand is only expected to increase at a moderate rate.

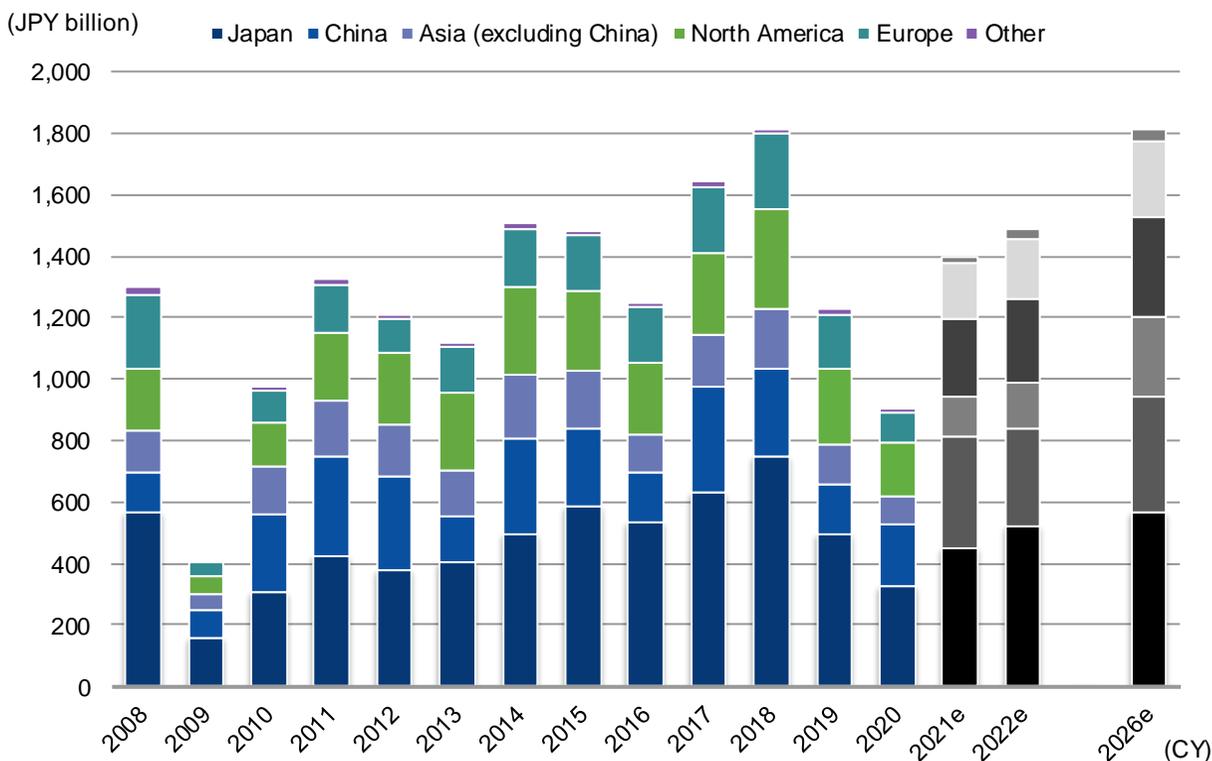
### Supply/demand outlook



Note: The figures for 2021 onwards are IRD forecasts.

Source: Compiled by Mizuho Bank's IRD based on the Japan Machine Tool Builders' Association's *Machine Tool Statistics Handbook 2021*, the Ministry of Finance's *Trade Statistics*, and the Ministry of Economy, Trade and Industry's *Current Production Statistics*

### Orders outlook by region for Japanese machine tool manufacturers



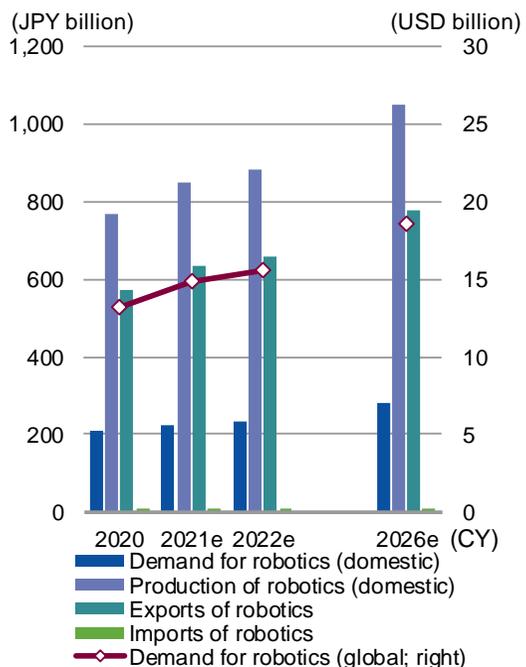
Note: The figures for 2021 onwards are IRD forecasts.

Source: Compiled by Mizuho Bank's IRD based on the Japan Machine Tool Builder's Association's *Machine Tool Statistics Handbook 2021*

## Robotics: The global market will expand on growing automation needs in each industry

- The global market for industrial-use robotics is forecast to grow to \$18.5 billion (annualized +4.5%) in 2026.
  - Demand will increase as the need for automation and labor-saving spreads in the automobiles, electric/electronic, and other industries in the wake of the pandemic.
- Japanese robotics manufacturers' share of overseas demand trended lower, but it rallied sharply to 58% in 2020 as exports to China significantly increased on demand for automation in the wake of the pandemic.

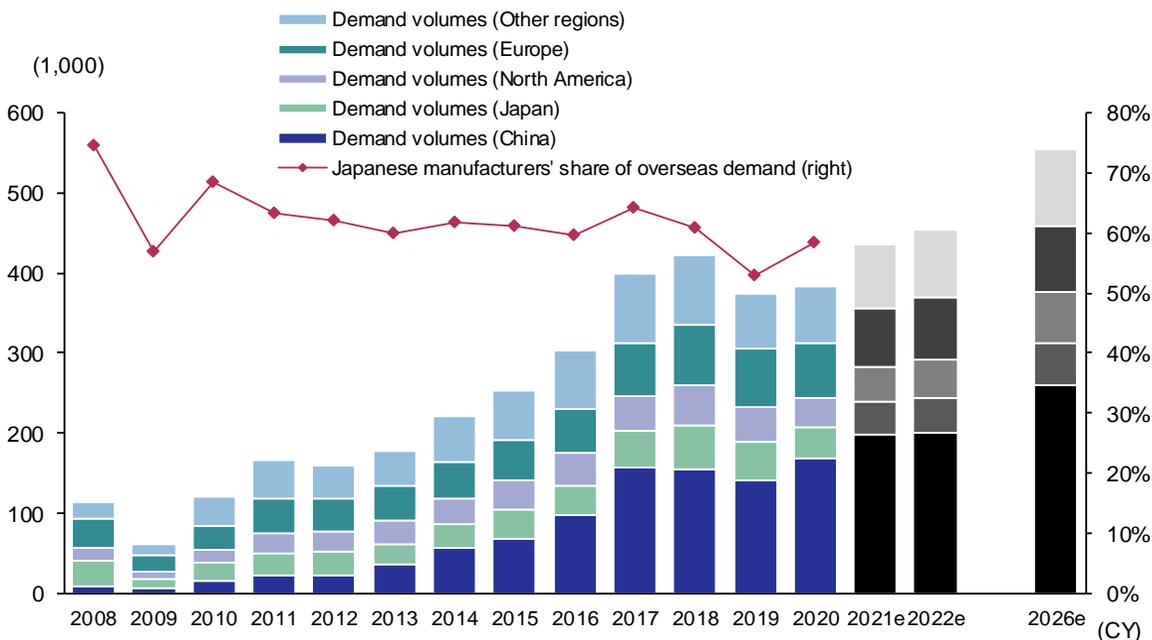
### Supply/demand outlook



Note: The figures for 2021 onwards are IRD forecasts.

Source: Compiled by Mizuho Bank's IRD based on the Ministry of Finance's *Trade Statistics* and the IFR's *World Robotics Industrial Robot 2021*

### Industrial-use robotics demand volumes by region and Japanese manufacturers' share of overseas demand



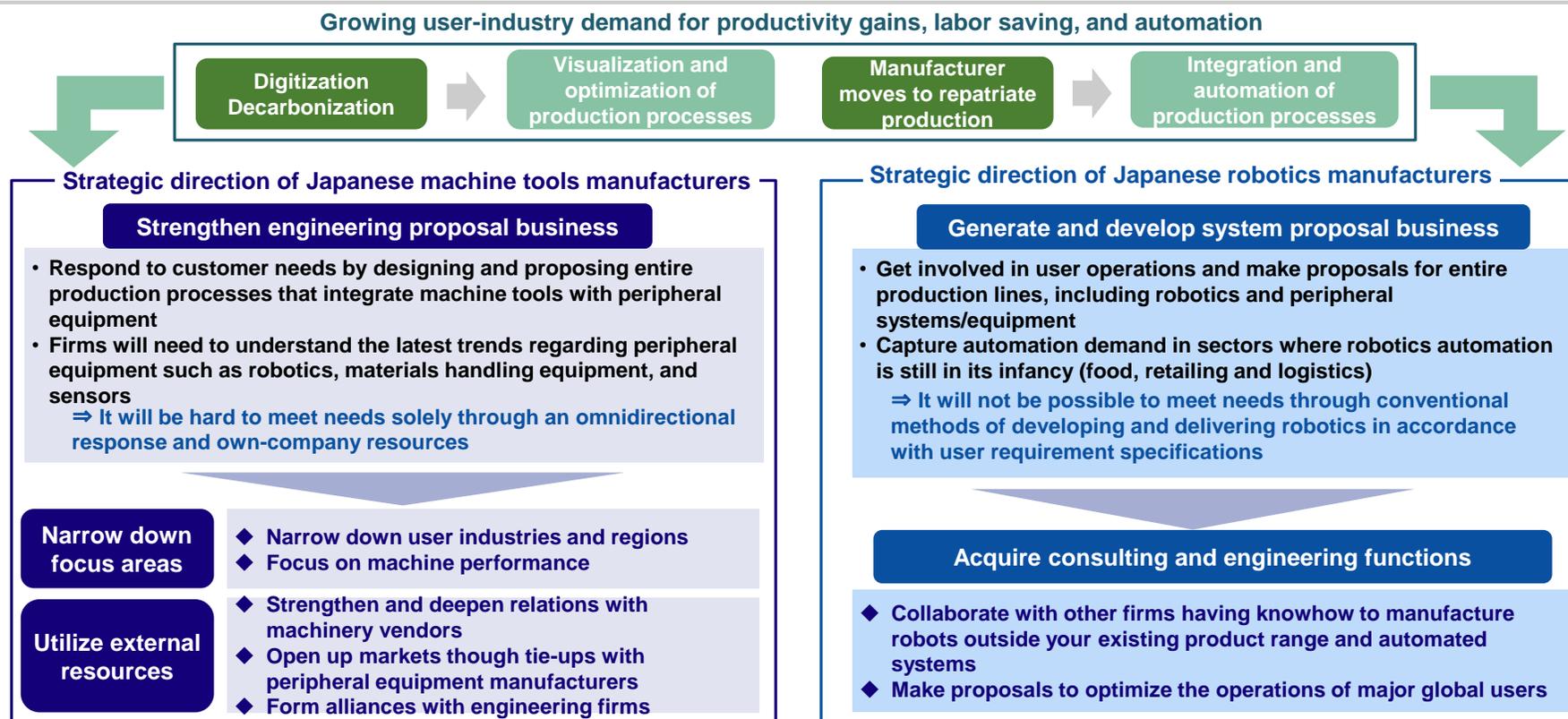
Note: The figures for 2021 onwards are IRD forecasts; Japanese manufacturers' share of overseas demand = (exports + overseas production) / overseas demand; overseas demand denotes total demand volume by region (excluding Japan).

Source: Demand volumes by region (excluding Japan): Compiled by Mizuho Bank's IRD based on the IFR's *World Robotics Industrial Robot 2021*; Demand volumes (Japan) and Japanese manufacturer production volumes: Compiled by Mizuho Bank's IRD based on Japan Robot Association statistics

## Firms will need to meet user-industry demands for productivity gains, labor saving, and automation

- Japanese machine tools and robotics manufacturers have a strong global presence. From here on, user-industry demands for productivity gains, labor saving, and automation will grow in future on the shift to digital, decarbonization, and moves by manufacturers to repatriate production.
- In order to maintain or boost their presence under these circumstances, Japanese machine tools manufacturers will need to strengthen their engineering proposal business while Japanese robotics manufacturers will need to generate and develop system proposal business.

### The strategic direction of Japanese machine tools and robotics manufacturers

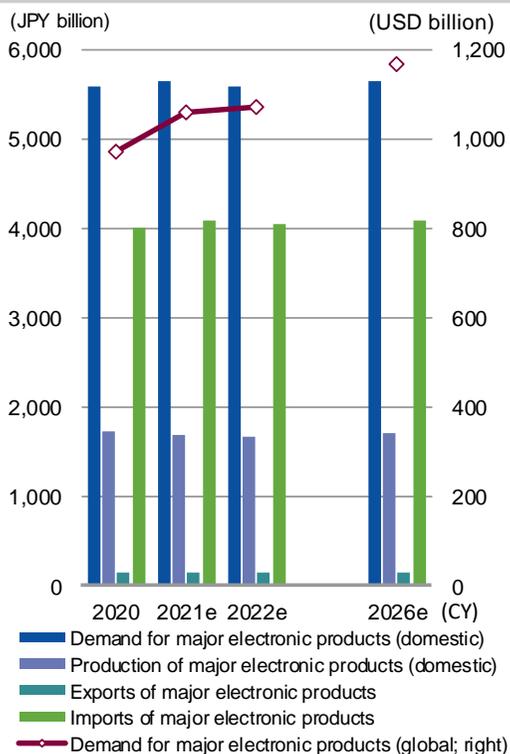


Source: Compiled by Mizuho Bank's IRD

## Major electronic products: Global demand will grow stably in the medium term

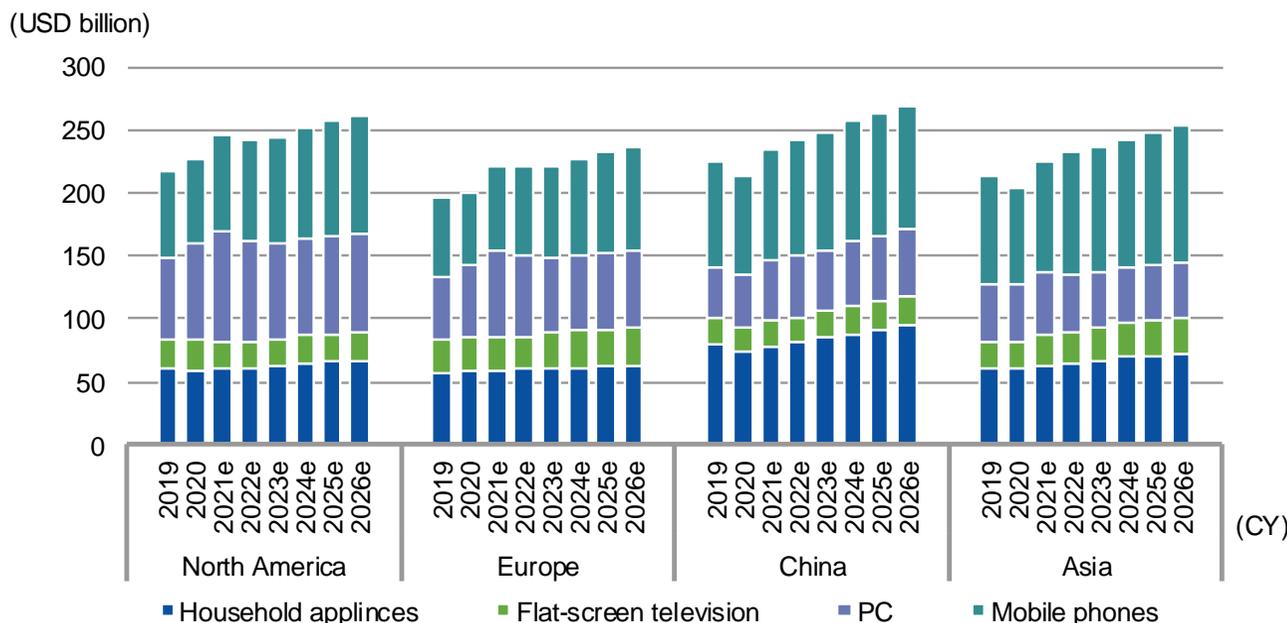
- In 2021, global demand will grow for the first time in 3 years as it bounces back from the impact of COVID-19 in 2020.
  - Though particular demand may represent reactionary drop in some regions in 2022, demand will grow stably thereafter.
- Domestic demand will also bounce back from COVID-19 in 2021. Demand will set to grow again, with recoil increase particularly in mobile phones.
  - Demand will move flatly or fall slightly in the medium term on the structural reasons such as the shrinking population and the declining number of households.

### Supply/demand outlook



Note: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on various materials

### Global demand trends (major electronic products)

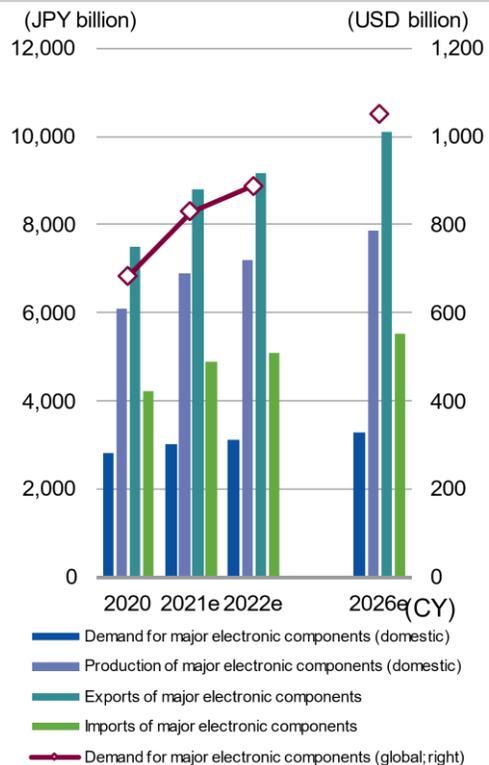


Note 1: The figures for 2021 onwards are IRD forecasts.  
 Note 2: The data for Asia includes Oceania but excludes China; North America refers to the US and Canada.  
 Source: Compiled by Mizuho Bank's IRD based on various materials

## Major electronic components: Demand grows as usage extends and number of installation increases

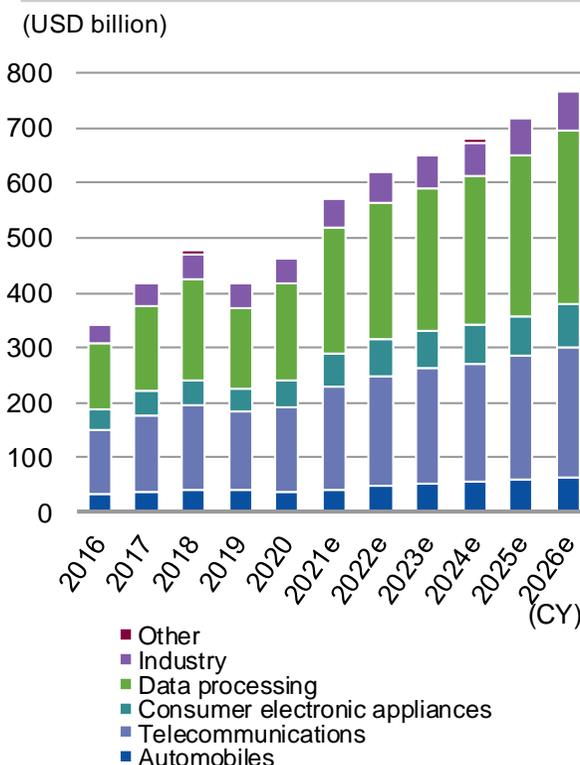
- Global demand will expand sharply in 2021 as production recovers from the impact of COVID-19.
  - Though semiconductors shortage is expected to be unresolved in 2022, the demand for major electronic components will grow stably as a whole.
- In 2021, thanks to the rising demand for semiconductors, domestic demand shifts to show positive growth.
  - Demand continues to grow from 2022 as usage expands and more electronic components are installed in end products to match their extended functions and required performances.

### Supply/demand outlook



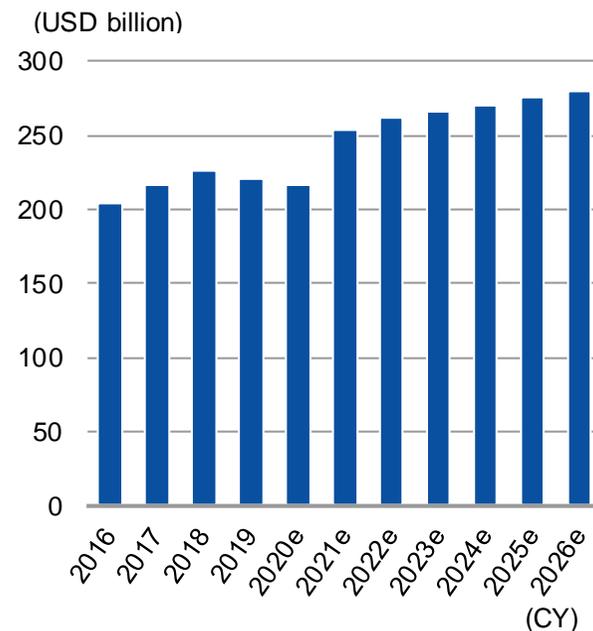
Note: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on various materials

### Global demand (semiconductors)



Note: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on various materials

### Global demand (electronic components)



Note: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on JEITA's *Production Forecasts for the Global Electronics and Information Technology Industries*

## Firms should develop strategies based on the impact of COVID-19 and strategies in the discontinuous worlds

- In the medium term, both final product manufacturers and semiconductor/electronic parts manufacturers will need to formulate strategies based on changes to supply and demand structures and trends in the wake of COVID-19.
- In the longer term, manufacturers will need to adopt strategies considering discontinuous worlds too.
  - Firms should shift their business model by, such as, moving away from selling out only final products.
  - Firms should also develop products with an eye on the spread of the metaverse (a cyberspace, different from the conventional one, based around the provision of various services and content).

### The strategic direction Japanese firms should take

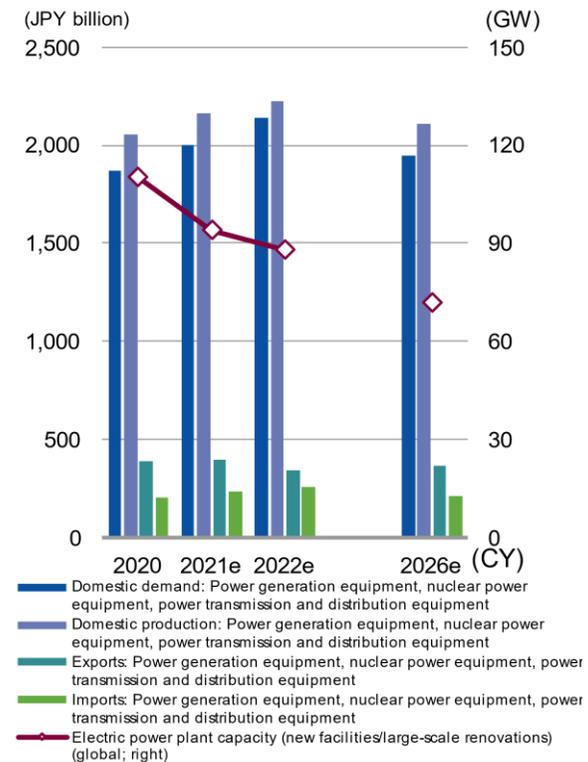
	Medium-term response	Longer-term response			
	Formulate strategies based on changes to supply and demand structures and trends in the wake of COVID-19	Move away from selling out final products		Respond to the spread of the metaverse	
		Connection to IoT ecosystems	Peripheral domain services	Extension of product life cycles	
Final products	<ul style="list-style-type: none"> <li>■ PC: Pursue high functionality, including enhanced camera and audio performance for telecommuting and distance learning</li> <li>■ Household appliances: Develop products that appeal to heightened hygiene awareness (disinfectant, antibacterial, sterilization, ventilation, etc.) and designs that harmonize with interiors</li> </ul>	<ul style="list-style-type: none"> <li>■ Remote control from outside</li> <li>■ Customization for each user</li> </ul>	<ul style="list-style-type: none"> <li>■ Services that reduce the housework burden</li> <li>■ Services that improve quality</li> </ul>	<ul style="list-style-type: none"> <li>■ Extension of product lifetimes</li> <li>■ Retrieval, resale and maintenance of used products</li> </ul>	<ul style="list-style-type: none"> <li>■ Develop hi-spec PCs, wearables that pick up on senses and emotions, and highly immersive VR, etc.</li> </ul>
Semiconductor/electronic parts	<ul style="list-style-type: none"> <li>■ Review supply chains (including the production of the same products at multiple locations) and invest in facilities after assessing real demand and the investment trends of other firms</li> <li>■ Construct global production structures in response to the battle to attract semiconductor plants</li> <li>■ Strengthen the development of advanced package technology</li> </ul>	<ul style="list-style-type: none"> <li>■ Respond to growing demand for communications semiconductors</li> <li>■ Respond to growing demand for image sensors</li> <li>■ Provide solutions that help final product manufacturers realize advanced quality</li> </ul>		<ul style="list-style-type: none"> <li>■ Respond to the increase in the number of semiconductors and parts needed for maintenance</li> </ul>	<ul style="list-style-type: none"> <li>■ Respond to rising demand for semiconductors and electronic parts in domains connected to the aforementioned final products (such as communications, logic, memory and sensors)</li> </ul>

Source: Compiled by Mizuho Bank's IRD

## Overall domestic and global demand for thermal power plant will shrink

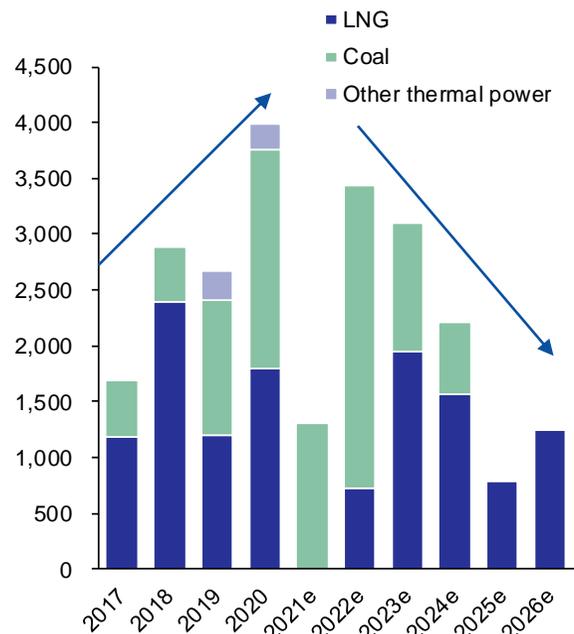
- Though domestic demand will trend upwards until 2022, it will begin falling thereafter.
  - Demand for power transmission and distribution equipment is expected to grow as systems are reinforced and renewed on the increased usage of renewable energy, but demand for power generation equipment will begin falling from 2022 on a fall in the number of new thermal power plants. Demand for nuclear power equipment will gradually decrease as actions on plant restart progress.
- Japanese firms are internationally competitive with regards to coal or gas-fired power plants, but this market will shrink globally.

### Supply/demand outlook



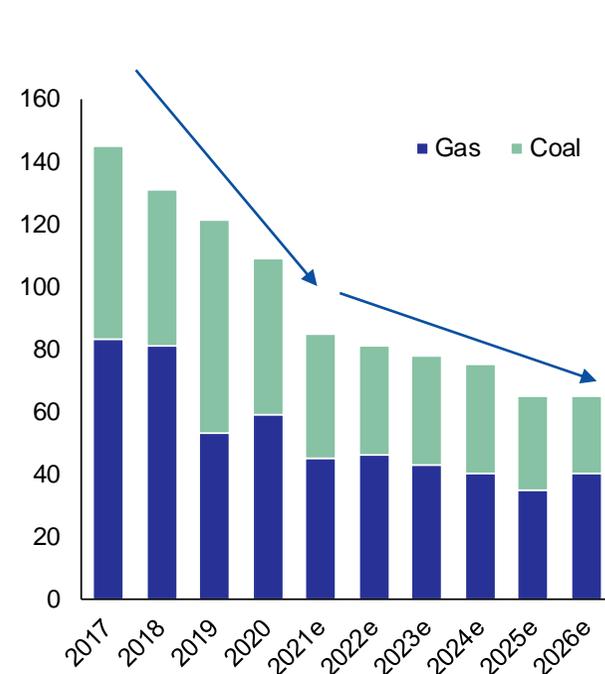
Note: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on various materials

### The domestic market for thermal power plant construction/renewal



Note 1: Projects for which environmental assessments have been submitted  
 Note 2: Commencement-of-operations basis  
 Source: Compiled by Mizuho Bank's IRD based on various materials

### The global market for thermal power plant construction/renewal

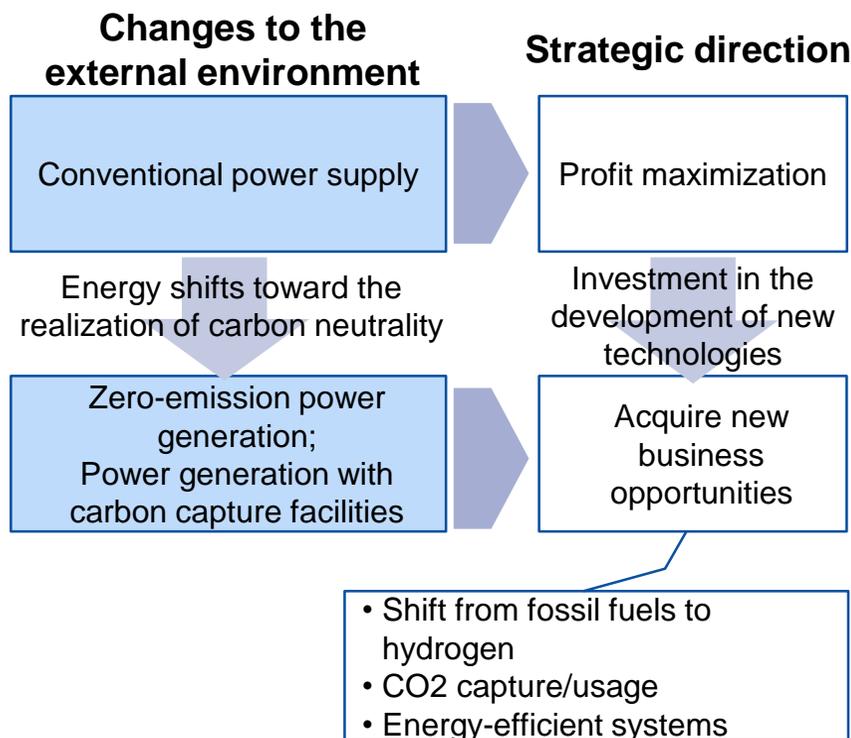


Source: Compiled by Mizuho Bank's IRD based on various materials

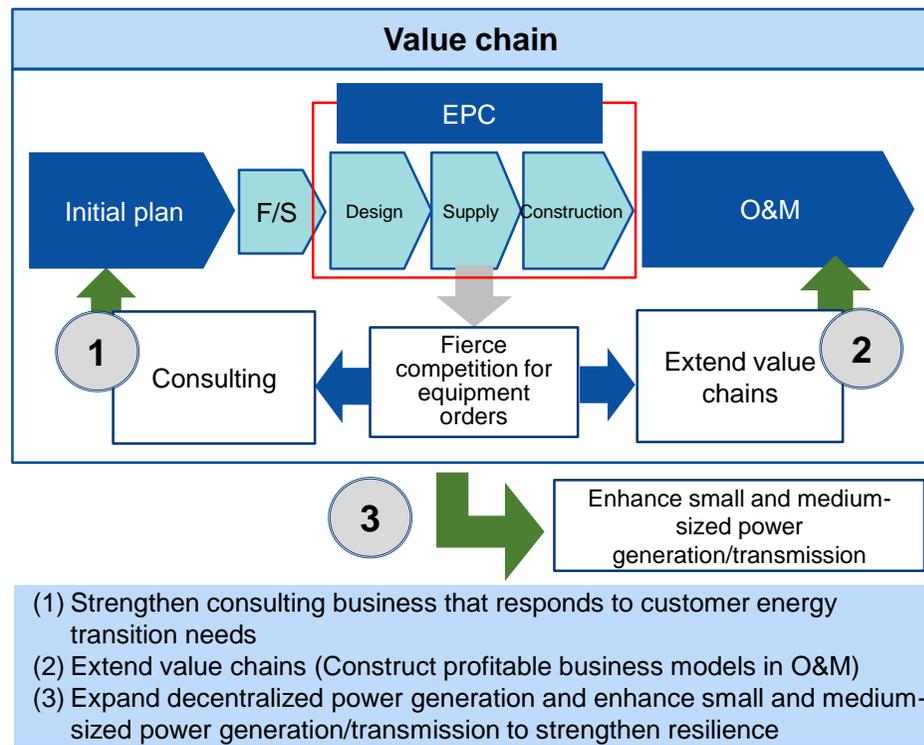
## The key lies in combining conventional power generation with new energy business

- To achieve carbon neutrality, firms need to shift from conventional thermal power generation to low carbon or decarbonized power generation or fit thermal power plants with carbon capture facilities.
- Japanese firms have a strong presence in the thermal power generation equipment market, but this market is expected to shrink, so Japanese firms should take measures, using their existing business bases, to maximize profits from traditional power supply business while acquiring profit opportunities in the next-generation energy business.

### Changes to the external environment and strategic direction



### Strategic direction of Japanese firms



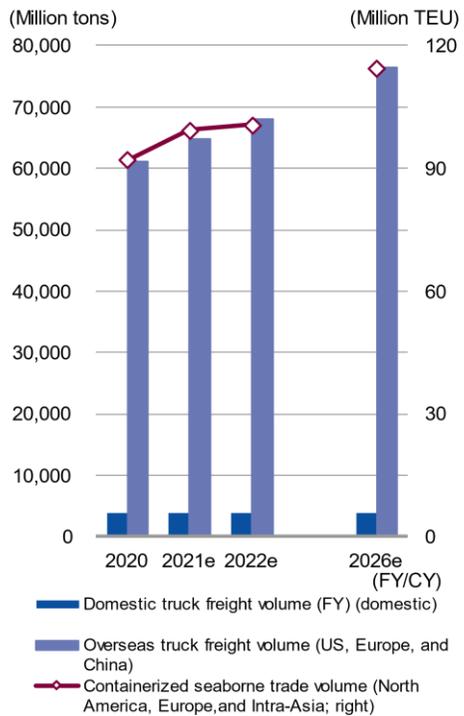
Note: O&M = "Operation & Maintenance"  
Source: Compiled by Mizuho Bank's IRD

Source: Compiled by Mizuho Bank's IRD

## Global demand is expected to grow, but domestic demand looks set to fall from fiscal 2022

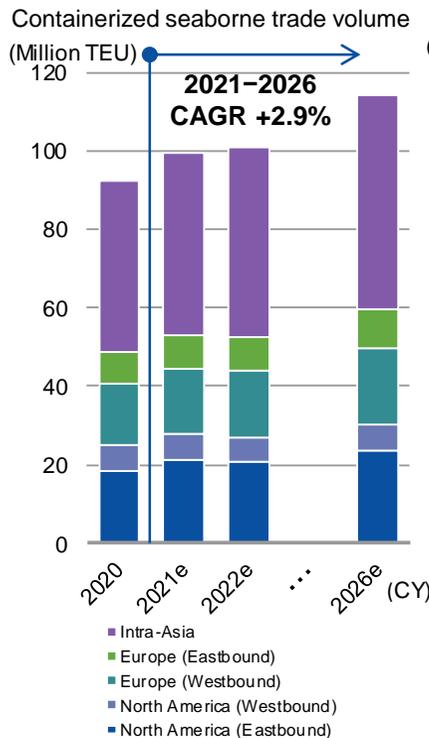
- Global demand looks set to rise in the medium term when it comes to containerized seaborne trade volumes and overseas truck freight volumes.
  - Containerized seaborne trade volumes are expected to grow by an annualized +2.9% (2021–2026) on economic growth in each country.
  - Overseas truck freight volumes are expected to grow by an annualized +3.4% (2021–2026) due mainly to steady infrastructure investment in each country.
- Domestic truck freight volumes look set to be from fiscal 2024 on a downward trade in consumption- and construction-related cargo, etc.

### Supply/demand outlook



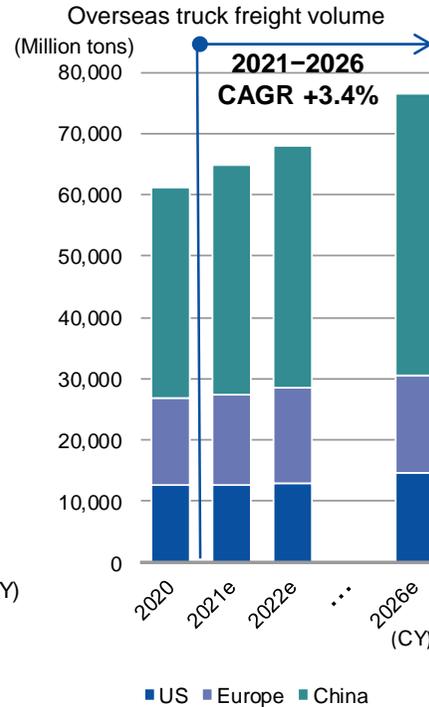
Note: The US and Europe figures included in the 2020 overseas truck freight volume data are Mizuho Bank's IRD estimates. The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on various publicly-available materials

### Global demand: Seaborne transportation

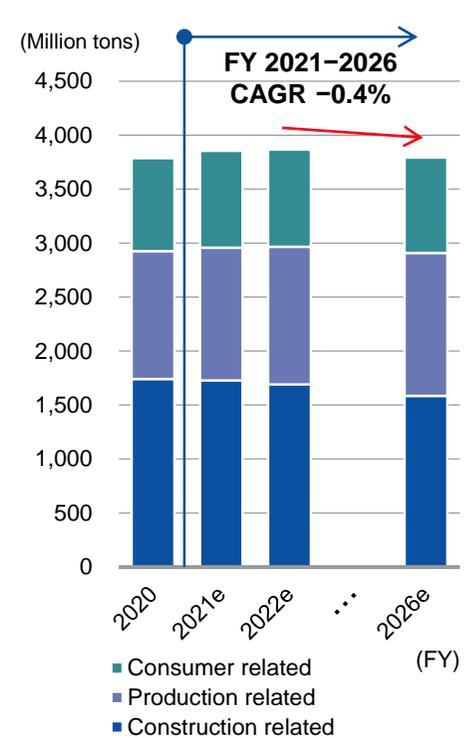


Note: The US and Europe figures included in the 2020 truck freight volume data are Mizuho Bank's IRD estimates. The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on Japan Maritime Center data, statistical data from each relevant country or area, and the Ministry of Land, Infrastructure, Transport and Tourism's *Yearbook of Survey on Motor Vehicle Transport*

### Global demand: Trucking



### Domestic demand: Domestic truck freight volume



## The time is coming when 3PL providers should consider changing business models

- In order to drive growth, Japanese logistics providers should expand overseas and capture demand from non-Japanese shippers as well as Japanese shippers.
- One effective way particularly for 3PL providers to enhance their global presence would be to shift from business models customized for individual companies to business models that propose logistics strategies.

### Strategies required by Japanese logistics companies – Mainly for forwarders and 3PL providers

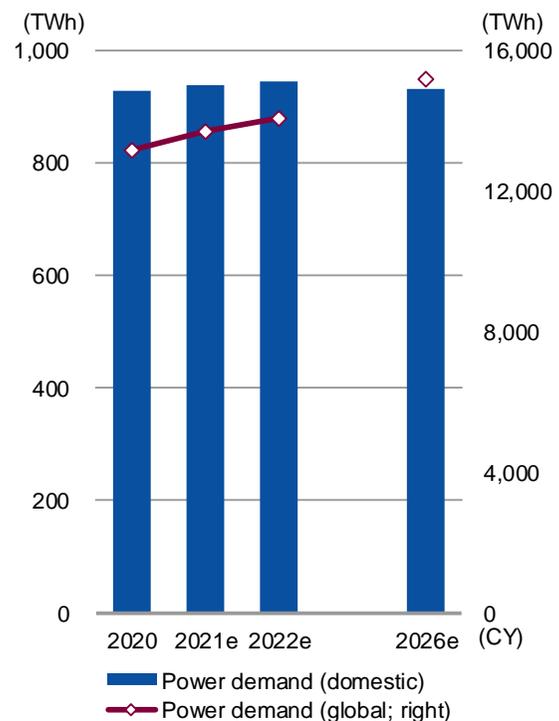
Business type	Strategic direction	Main methods	Points to consider
Forwarders	Utilize economies of scale by expanding business size and responding to digitization	<ul style="list-style-type: none"> <li>• Inorganic methods (target-industry M&amp;A, etc.)</li> <li>• Investment in digitization (including own-company development and M&amp;A)</li> </ul>	<ul style="list-style-type: none"> <li>• Considerable investment will be needed to expand business and respond to digitization</li> </ul>
3PL providers	Business models that have strengths in customizing to individual companies For a shipper, they are just partners that perform logistics operations	<ul style="list-style-type: none"> <li>• Sound out customer wishes and provide logistics services customized to each firm</li> </ul>	<ul style="list-style-type: none"> <li>• It requires time and cost to provide services that are only applicable to individual shippers</li> <li>• There is a trend of commoditizing logistics operations in Japan and overseas</li> </ul>
	Necessity of changing business models Business models that also have an advantage when it comes to improving logistics operations and proposing logistics strategies For a shipper, they are important partners in formulating logistics strategies which are the basis of whole business strategies	<ul style="list-style-type: none"> <li>• Construct a base for visualizing entire supply chains</li> <li>• Utilize the aforementioned base and train personnel with the high-level logistical knowledge needed to propose logistics strategies</li> </ul>	<ul style="list-style-type: none"> <li>• 3PL providers will need to construct systems for providing solutions for the visualization of entire supply chains</li> <li>• Investment costs will be needed for the RFID, sensors and IT systems required for visualizing logistics operations</li> <li>• 3PL providers will need to develop logistics experts with the ability to analyze logistics data from the aforementioned base and use this data to make strategic proposals</li> </ul>

Source: Compiled by Mizuho Bank's IRD

## Power demand will increase globally, though it will fall in Japan toward 2026

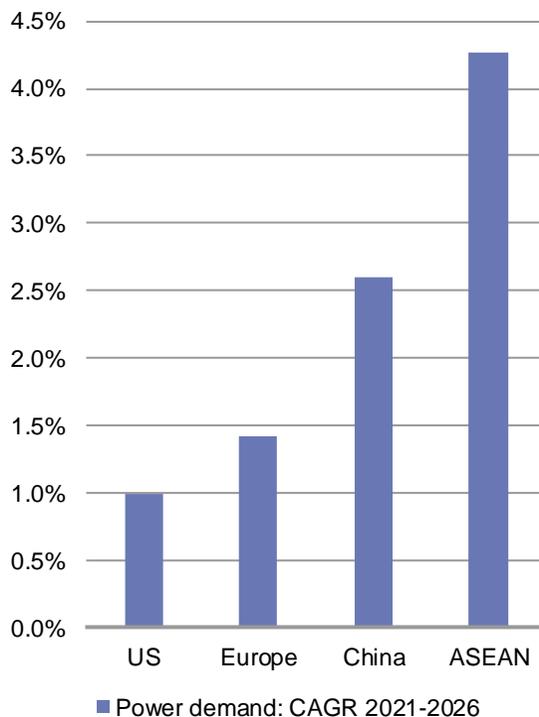
- Global power demand will increase towards 2026 as the Chinese and ASEAN economies continue to grow, but domestic demand will fall from 2023 on moves of energy-saving policies.
- Renewable energy and nuclear energy will account for a larger share of domestic power generation, with the share of thermal power set to fall.

### Supply/demand outlook



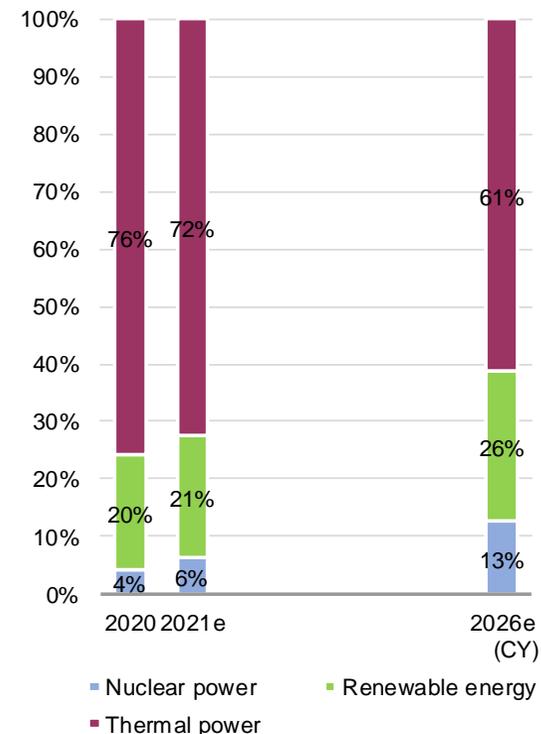
Note: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on data from the Agency for Natural Resources and Energy, etc.

### Global power demand growth



Note: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on data from the IEA, BP, etc.

### The outlook for the domestic power generation mix



Note: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on data from the Agency for Natural Resources and Energy, etc.

## Japanese utilities should boost their future presence by responding to decarbonization in Japan and capturing ASEAN demand

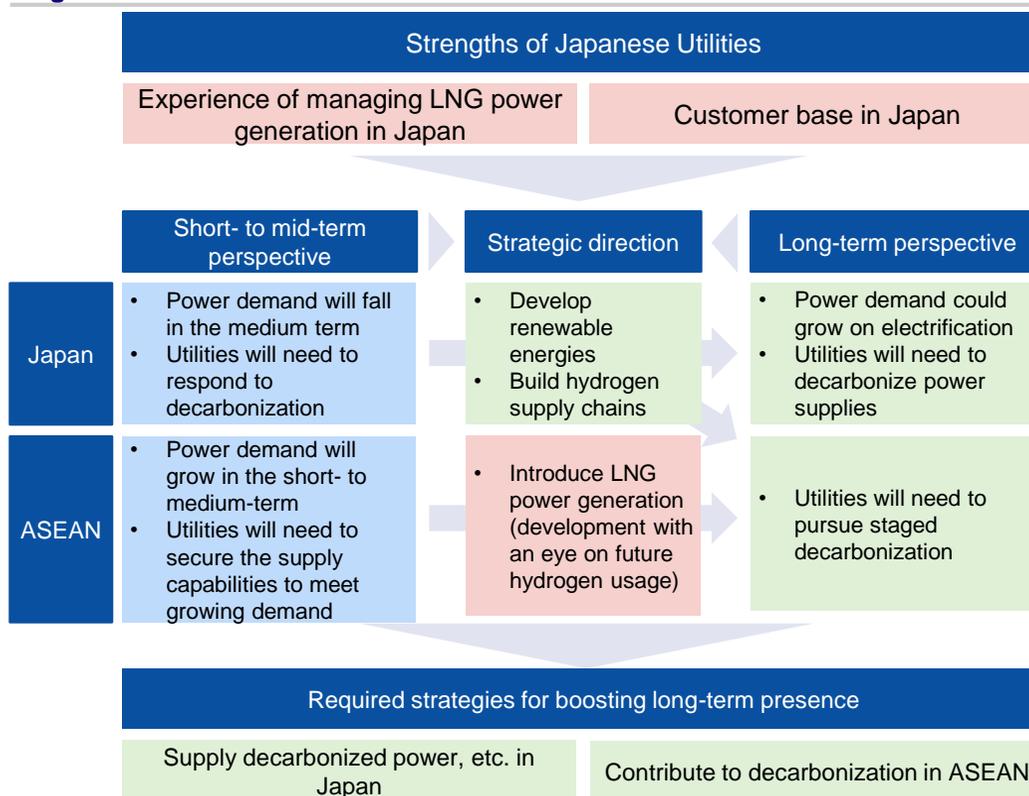
- In Japan, firms will need to move toward decarbonization based on the goal of realizing carbon neutrality by 2050 as outlined in the 6th Strategic Energy Plan.
- In the medium to long term, Japanese utilities should boost their global presence through strategies that take into account the different timeframes in Japan and the ASEAN region.
  - In the short to medium term, utilities should respond to decarbonization moves in Japan while introducing LNG power generation, etc. to ASEAN, a region with rising demand for power.
  - In the long term, utilities should capture rising power demand in Japan while pursuing staged decarbonization in ASEAN.

### Outline of the 6th Strategic Energy Plan

Countermeasures to climate change issues	<ul style="list-style-type: none"> <li>• Carbon neutrality by 2050</li> <li>• Reduce greenhouse gas emissions by 46% in FY2030 on FY2013 levels</li> </ul>
Overcoming challenges of Japan's energy supply and demand structure	<ul style="list-style-type: none"> <li>• Pursue the major principle of S+3E</li> </ul>
Challenges and responses to realize carbon neutrality by 2050	
<ul style="list-style-type: none"> <li>• Steadily pursue decarbonization using <b>decarbonized power sources already under practical use (such as renewable energy and nuclear power)</b></li> <li>• <b>Pursue innovation</b> in thermal power generation, etc. by means of <b>hydrogen/ammonia-fired power generation</b> and carbon storage/utilization based on <b>CCUS/carbon recycling</b>.</li> </ul>	
Policy responses toward 2030	
<ul style="list-style-type: none"> <li>• <b>Further pursuit</b> through <b>energy efficiency improvements</b></li> <li>• The maximum introduction of <b>renewable energy</b></li> <li>• Promote <b>the stable use of nuclear power</b> on the major premise that safety should be secured</li> <li>• <b>Lower the thermal power ratio in the power generation mix</b> while assuring installed capacity</li> <li>• Configuration of the electric system for achievement of <b>a stable power supply compatible with decarbonization</b></li> <li>• <b>Position hydrogen as a new resource</b> and accelerate its societal implementation</li> </ul>	

Note: S+3E = Safety + Energy Security + Economic Efficiency + Environment  
 Source: Compiled by Mizuho Bank's IRD based on *the 6th Strategic Energy Plan*

### The strategic direction of Japanese utilities based on short – to mid-term and long-term timeframes

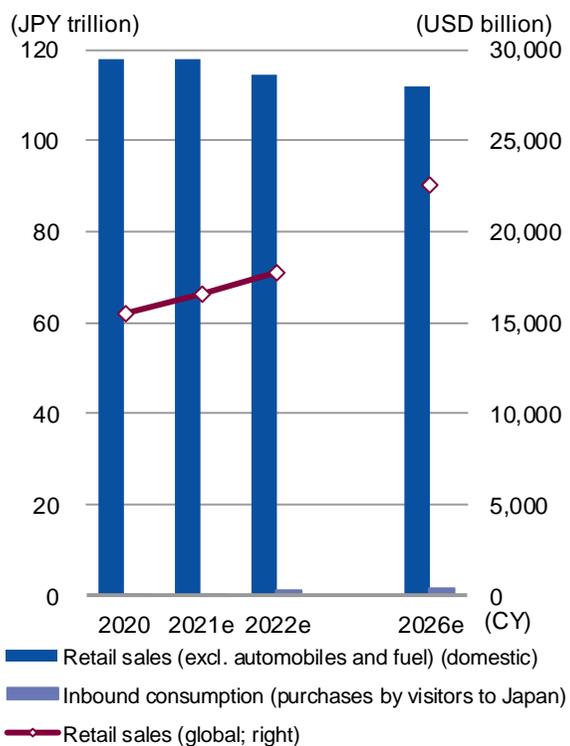


Source: Compiled by Mizuho Bank's IRD

## The global market will continue to grow, but the domestic market will shrink slightly in the medium term

- Global retail sales are expected to grow toward 2022 on the ongoing pandemic-led shift from the consumption of services to the consumption of goods. Sales will continue growing in the medium term on global population growth and economic expansion.
- Domestic retail sales (omitting inbound sales) will fall slightly on the structural population decline.
  - Drugstores will continue to see growth and the EC market will continue to grow on changing consumer purchasing behavior.

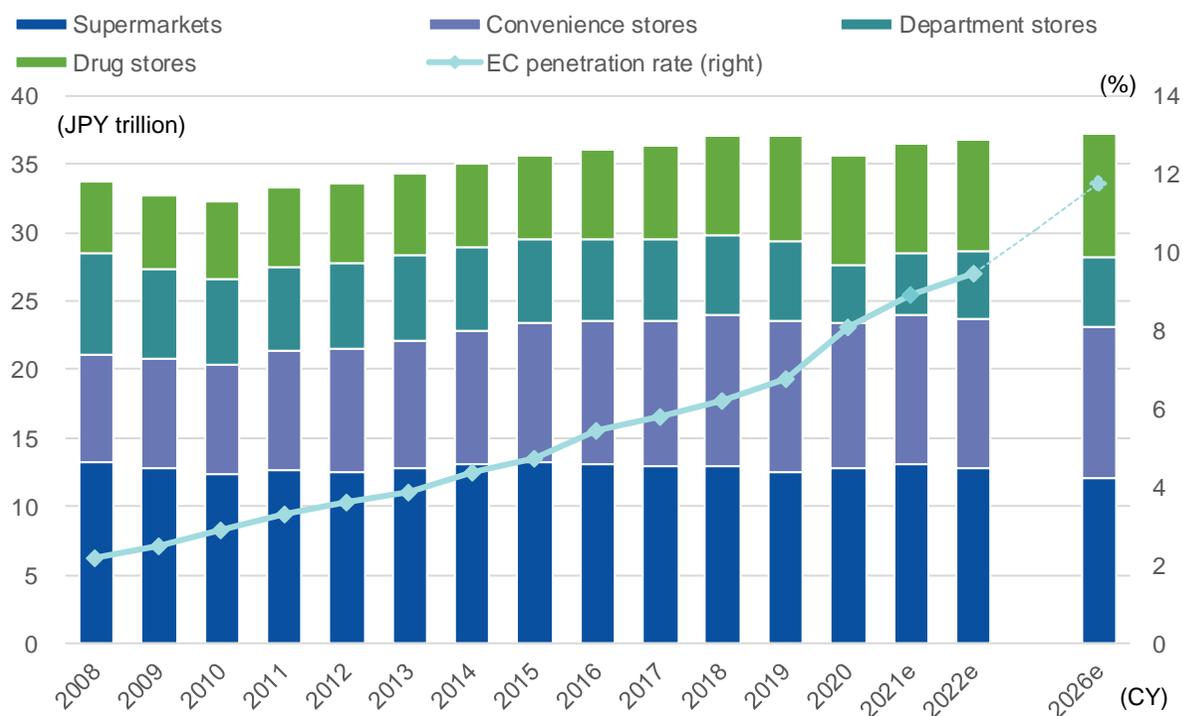
### Supply/demand outlook



Note: The figures for 2021 onwards are IRD forecasts.

Source: Compiled by Mizuho Bank's IRD based on data from the Ministry of Economy, Trade and Industry, the Ministry of Internal Affairs and Communications, the Cabinet Office, the Japan Tourism Agency, and MHRT

### Sales volumes/EC adoption rates of the 4 major retailer types

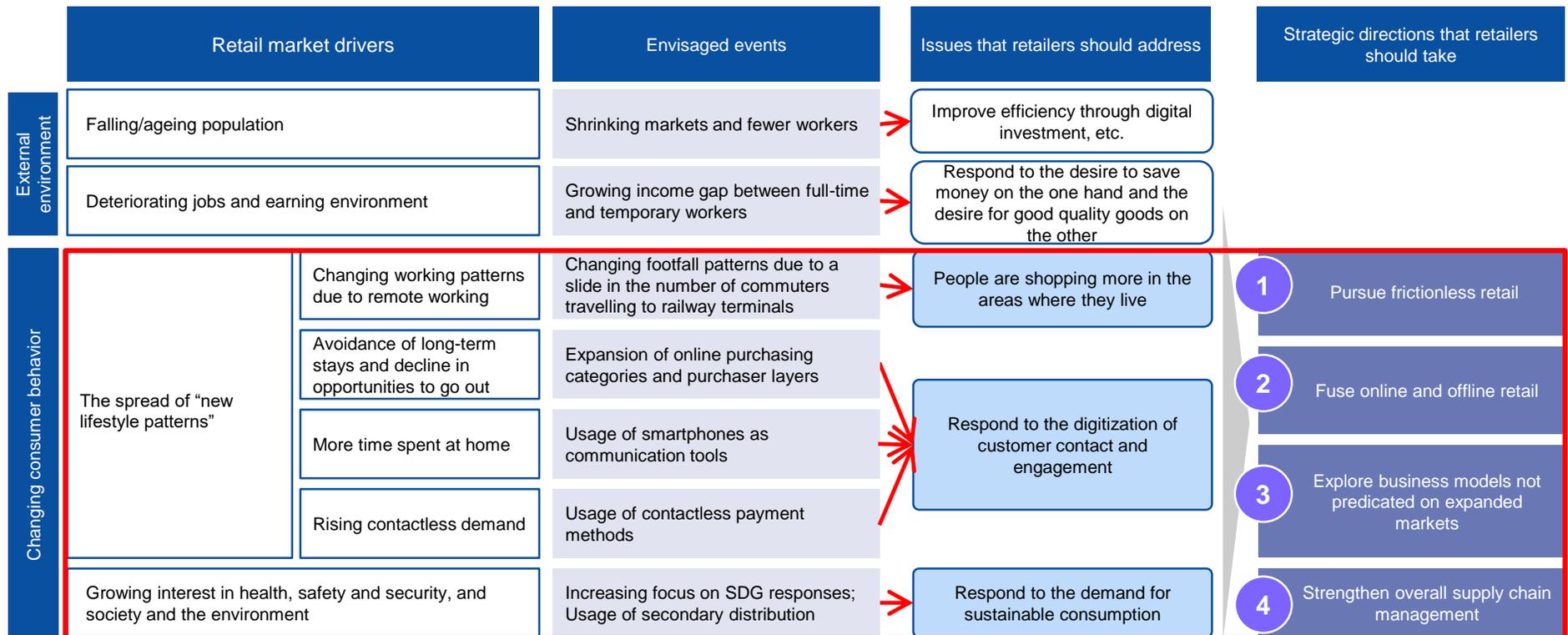


Note: The figures for 2021 onwards are IRD forecasts.

Source: Compiled by Mizuho Bank's IRD based on data from the Japan Chain Stores Association, the Japan Franchise Association, the Japan Department Stores Association, the Japan Association of Chain Drug Stores, and the Ministry of Economy, Trade and Industry's *Survey of Infrastructure Development Status for Data-driven Society in Japan (E-Commerce Market Survey)* and *Report on the Current Survey of Commerce*

## Structural issues are becoming entrenched on the spread of “new lifestyle patterns”

- New lifestyle patterns have led to changes in purchasing behavior. Some of these changes will become entrenched as structural factors.
- By swiftly incorporating changing consumer behavior into business models, retailers will be able to attain a business edge.
  - Firms should tackle challenges from 4 strategic directions. They should (1) pursue frictionless retail,<sup>(Note)</sup> (2) fuse online and offline retail, and, in the mid- to long-term, (3) explore business models not predicated on expanded markets.
    - Note: Frictionless retail = proving a stress and friction free shopping experience to consumers who shop in stores and online.
  - Firms also need to (4) strengthen overall supply chain management to respond to demands for sustainable consumption.

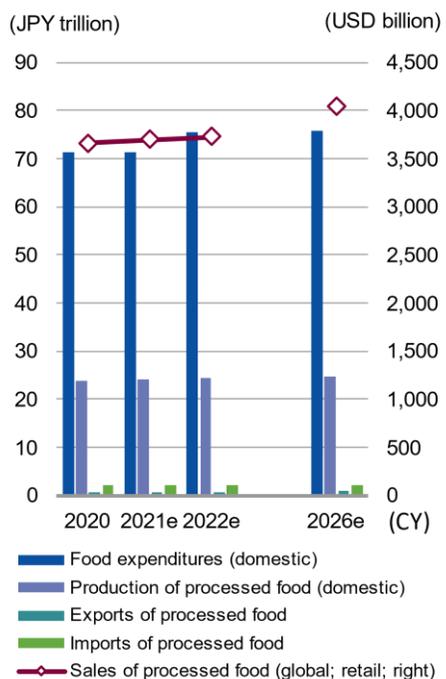


Source: Compiled by Mizuho Bank's IRD

## Domestic food spending will decrease on the shrinking population and a fall in the number of households

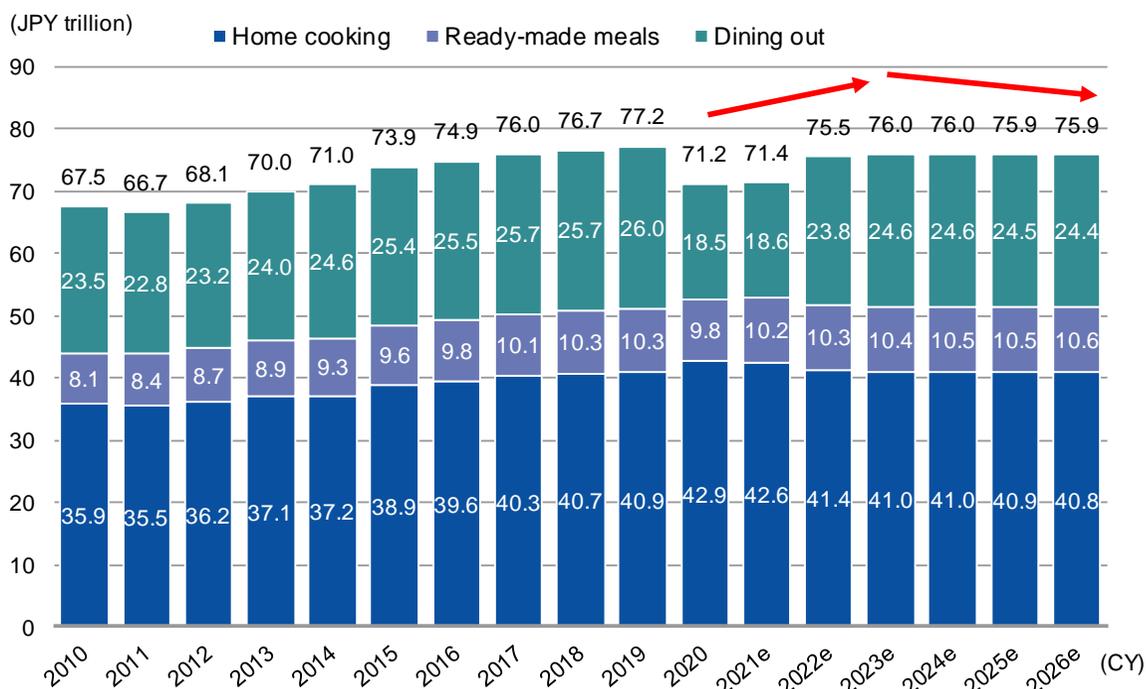
- Spending on food will move flatly y-o-y in 2021 on the muted recovery of dining out, though spending will bounce back in 2022 as economic restrictions are eased.
- The population is falling and the total number of households is set to peak out and start falling from 2023, with domestic demand set to fall for structural reasons toward 2026. The post-pandemic recovery will peak in 2023, with demand set to fall thereafter.

### Supply/demand outlook



Note: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on data from the Foodservice Industry Research Institute, the National Institute of Population and Social Security Research, the Ministry of Internal Affairs and Communications, Nikkan Keizai Tsushin, the Japan Ready-made Meal Association, and Euromonitor

### The medium-term outlook for domestic food spending



Note: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD based on data from the Foodservice Industry Research Institute, the National Institute of Population and Social Security Research, the Ministry of Internal Affairs and Communications, and the Japan Ready-made Meal Association

## Japanese firms should engage with both conventional and specialty markets

- The food industry faces three megatrends: falling demand in Japan and growing demand overseas, a diversification of consumer needs, and sustainability. These trends are leading to changes in the industry structure, with specialty markets<sup>(Note 1)</sup> starting to encroach on conventional markets.<sup>(Note 2)</sup>
- When it comes to strategic directions, the food industry should streamline and restructure the domestic conventional market while making inroads into overseas conventional markets and capturing domestic and international specialty markets with medium- to long-term growth potential.

### Megatrends facing the food industry; and the changing industrial structure

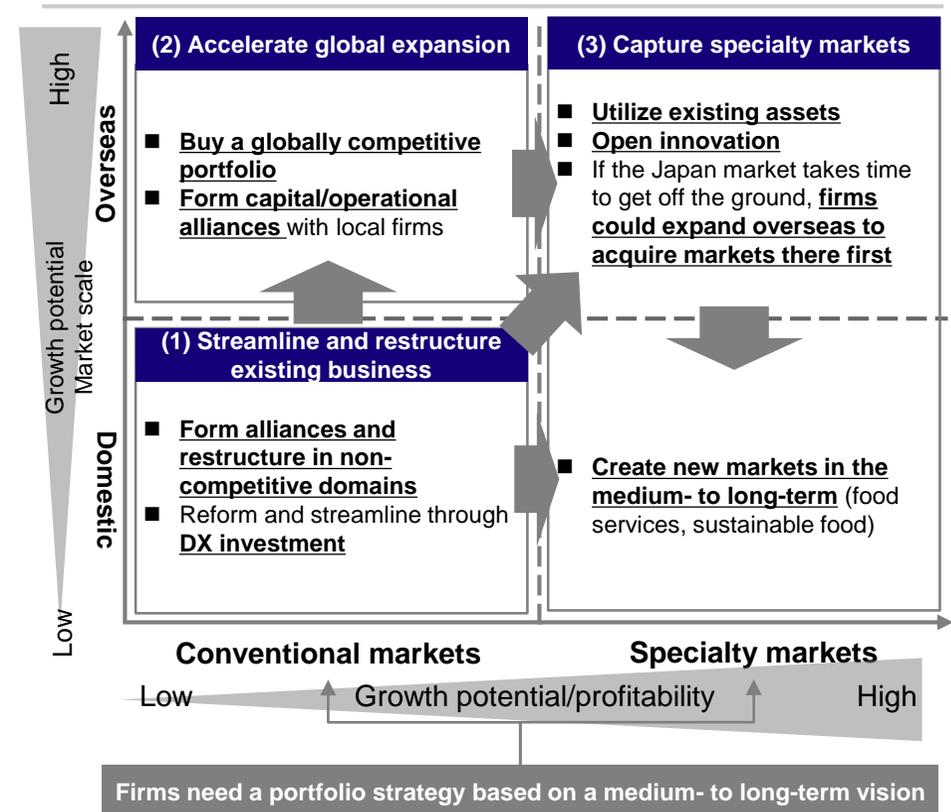


Note 1: Specialty markets = emerging categories that respond to diversified consumer needs, such as categories and keywords free-from, natural, organic or plant-based.

Note 2: Conventional markets = traditional mainstream categories

Source: Compiled by Mizuho Bank's IRD

### Food industry strategic directions

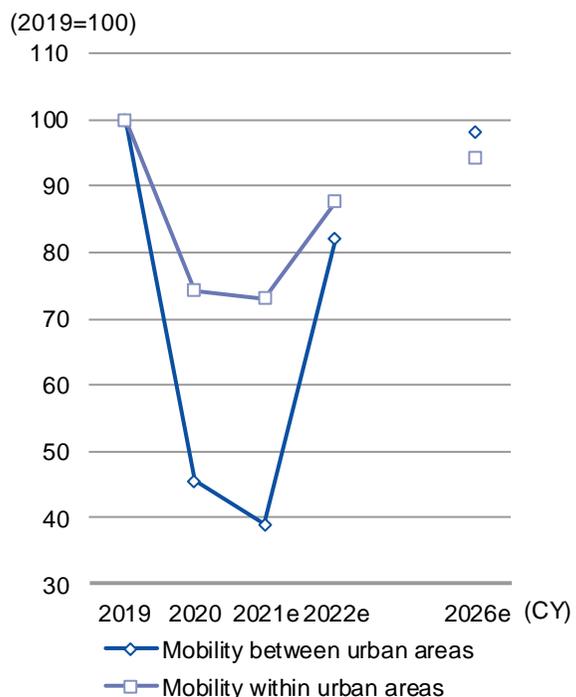


Source: Compiled by Mizuho Bank's IRD

## Mobility within and between urban areas is not expected to recover to pre-pandemic levels due to structural changes

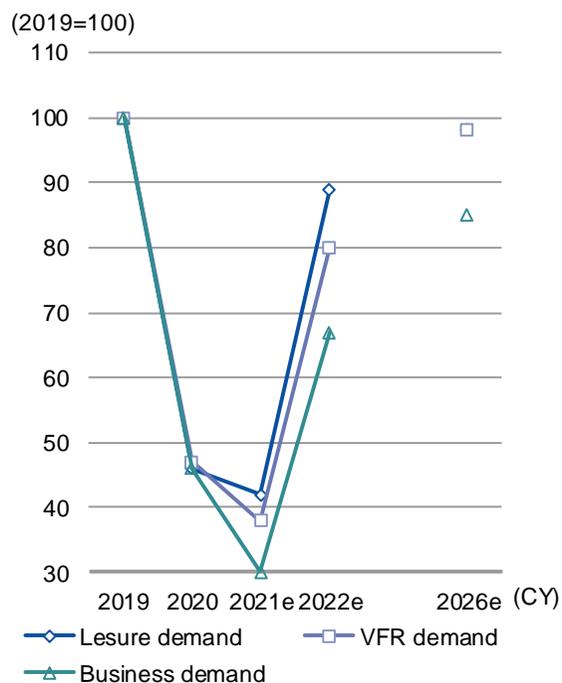
- Mobility between urban areas is expected to recover close to pre-pandemic levels on leisure demand.
  - However, business demand might not recover for structural reasons, such as the spread of web conferencing.
- Mobility within urban areas is not expected to recover in the medium term due to a structural change (the entrenchment of remote working).

### Supply/demand outlook



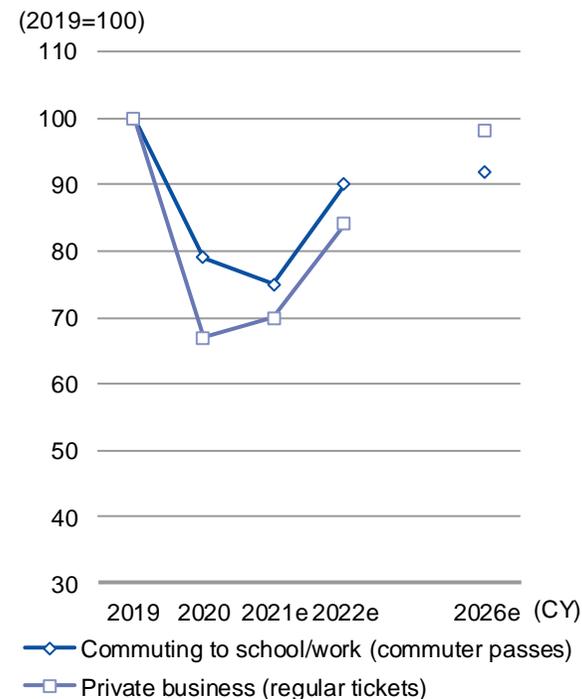
Note 1: A comparison of mean values with 2019 set as 100  
 Note 2: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD

### Paths to recovery for mobility between urban areas (by purpose)



Note 1: A comparison of mean values with 2019 set as 100  
 Note 2: The figures for 2021 onwards are IRD forecasts.  
 Note 3: Visiting Friends and Relatives (VFR)  
 Source: Compiled by Mizuho Bank's IRD

### Paths to recovery for mobility within urban areas (by purpose)

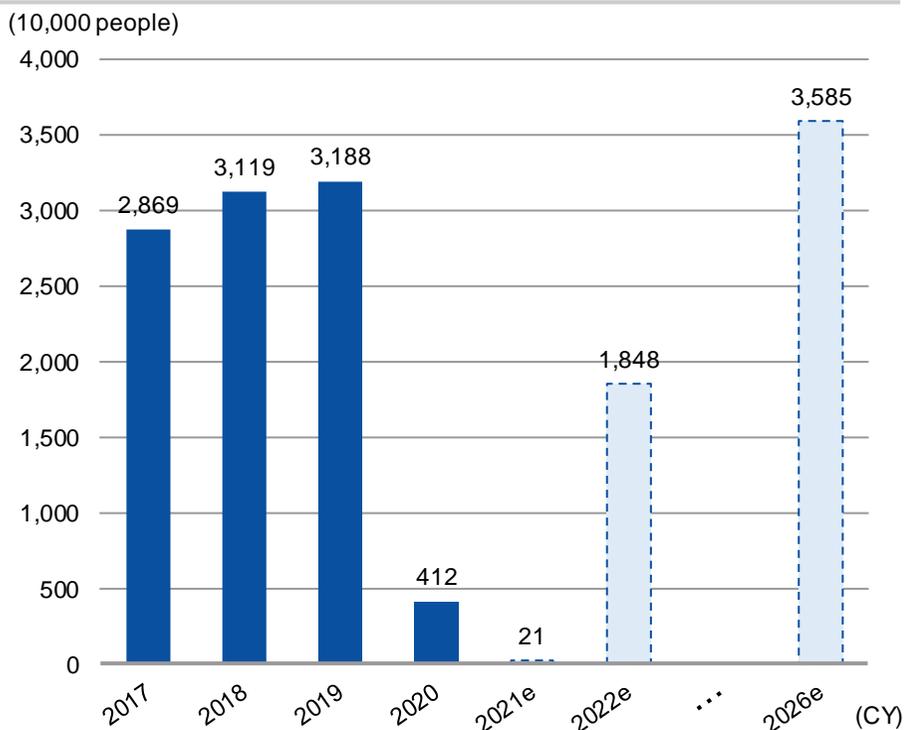


Note 1: A comparison of mean values with 2019 set as 100  
 Note 2: The figures for 2021 onwards are IRD forecasts.  
 Source: Compiled by Mizuho Bank's IRD

## It will take time for the number of foreign visitors to Japan to return to pre-pandemic levels

- Travel restrictions between developed nations will ease on high vaccination rates, but vaccination programs are lagging in Asia (Japan's hinterland), so the number of foreign visitors to Japan is unlikely to recover in the short term.
- The Japanese government set a goal of 40 million foreign visitors to Japan in 2020 and 60 million in 2030, but these goals look out of reach, so the government will need to revise its tourism policy.

### Outlook for the number of foreign visitors to Japan



Note: The figures for 2021 onwards are IRD forecasts.

Source: Compiled by Mizuho Bank's IRD

### Premises behind the outlook for the number of foreign visitors to Japan

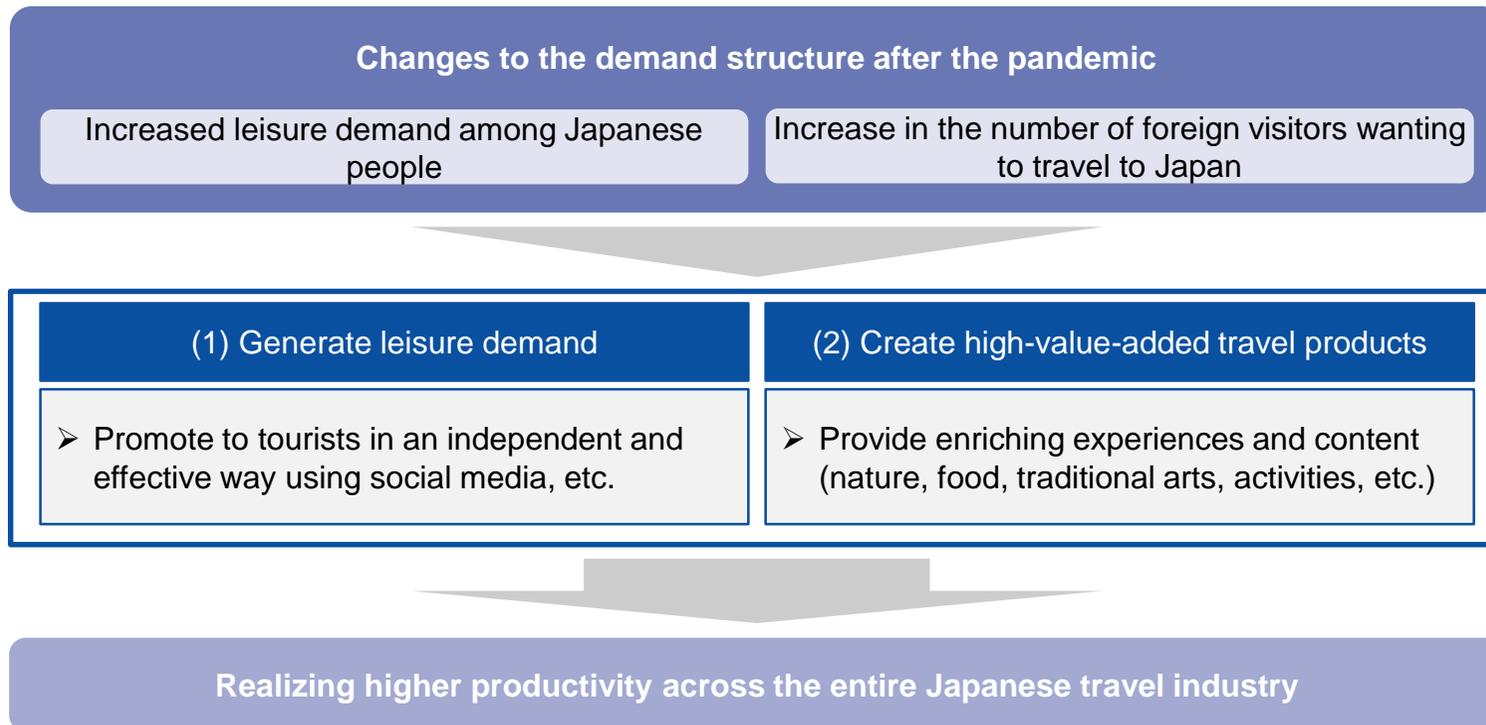
2021	<ul style="list-style-type: none"> <li>• Real figures were used until August 2021</li> <li>• The figures from September 2021 onwards are monthly estimates that take into account entry restrictions (excluding extraordinary factors in July and August, when the Olympics took place)</li> </ul>
2022 to 2023	<ul style="list-style-type: none"> <li>• Given the spread of vaccines, restrictions on economic activity will be lifted in developed nations, with entry restrictions to these nations also lifted</li> <li>• Recovery paths were projected for each travel purpose (leisure, business and other), with the data then aggregated to produce an estimate for the number of foreign visitors</li> </ul>
2024 onwards	<ul style="list-style-type: none"> <li>• The number of foreign visitors will converge on pre-pandemic level as economic activity is normalized across all countries</li> <li>• The calculation used a demand forecast based on the GDP growth rates, etc. of each nation</li> </ul>

Source: Compiled by Mizuho Bank's IRD

## Tourism and lodging: Operators need to generate leisure demand and create high-value-added travel products

- With Japanese leisure demand and the number of foreign visitors to Japan expected to rise in the post-pandemic period, operators will need to (1) generate leisure demand and (2) create high-value-added travel products.
  - (1) Operators should promote their products to tourists in an independent and effective way using social media (Instagram, YouTube, etc.)
  - (2) Operators should provide enriching content that leads to special experiences unique to each location.

### Changes to the demand structure after the pandemic; and the strategic direction tourism operators should take

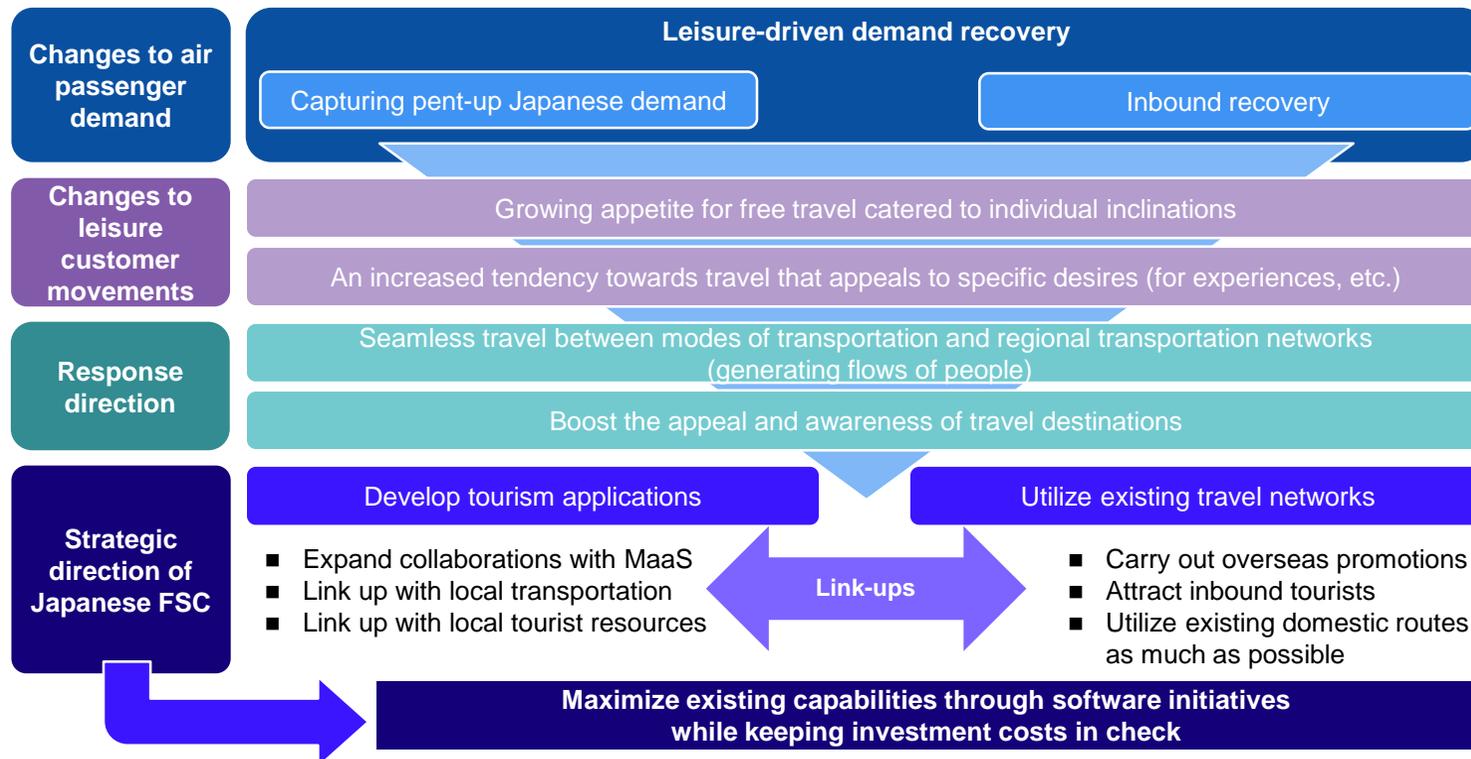


Source: Compiled by Mizuho Bank's IRD

## Aviation: Get maximal leisure demand through efforts focused on passenger service for seamless travel

- Airlines should maximize their existing strengths on the service for seamless travel and pursue a leisure-driven demand recovery as far as possible.
  - In the wake of the pandemic, airlines should move to capture growing demand while keeping investment costs in check.
- Airlines can maximize their existing strengths by realizing seamless travel to destinations while raising the appeal of each region.
  - Given the changes in demand, airlines will need to provide seamless travel while boosting the appeal of tourist destinations.

### The strategic directions airlines should take based on changing demand, etc.



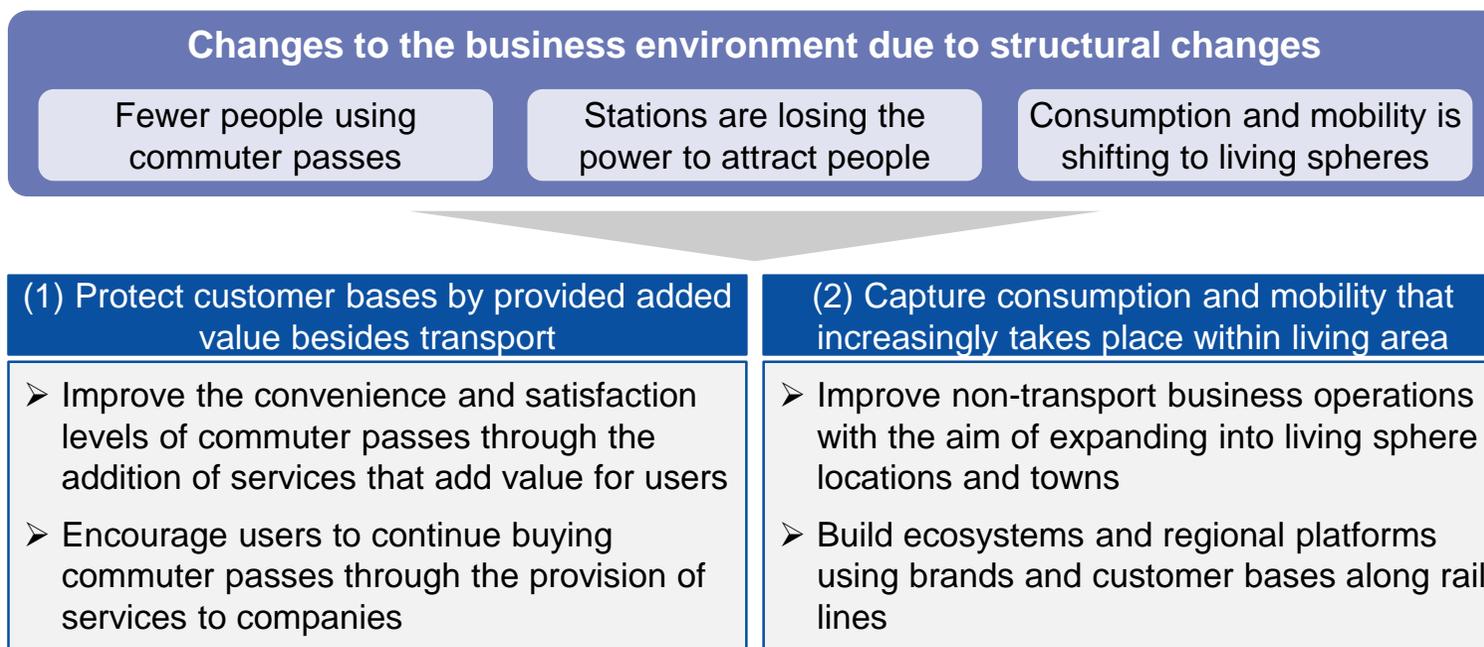
Note: FSC = Full Service Carriers (airlines that provide conventional traveler services)

Source: Compiled by Mizuho Bank's IRD

## Rail: Rail operators will need to adapt their business models to respond to structural changes in demand

- Pre-pandemic transport demand was bolstered by commuters who used passes, but commuter numbers are expected to fall on the entrenchment of remote working. Rail operators will need to (1) protect customer bases by providing added value besides transport and (2) capture consumption and mobility that increasingly takes place within living area.
  - (1) Encourage users to continue buying commuter passes by adding services that improve convenience for the user.
  - (2) Strengthen the competitiveness of non-transport business not dependent on location factors and create ecosystems along rail lines using brand strength.

### Changes to the demand structure and the strategic direction of rail operators



Source: Compiled by Mizuho Bank's IRD

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