Nippon Steel's Business Strategies and Coming Measures

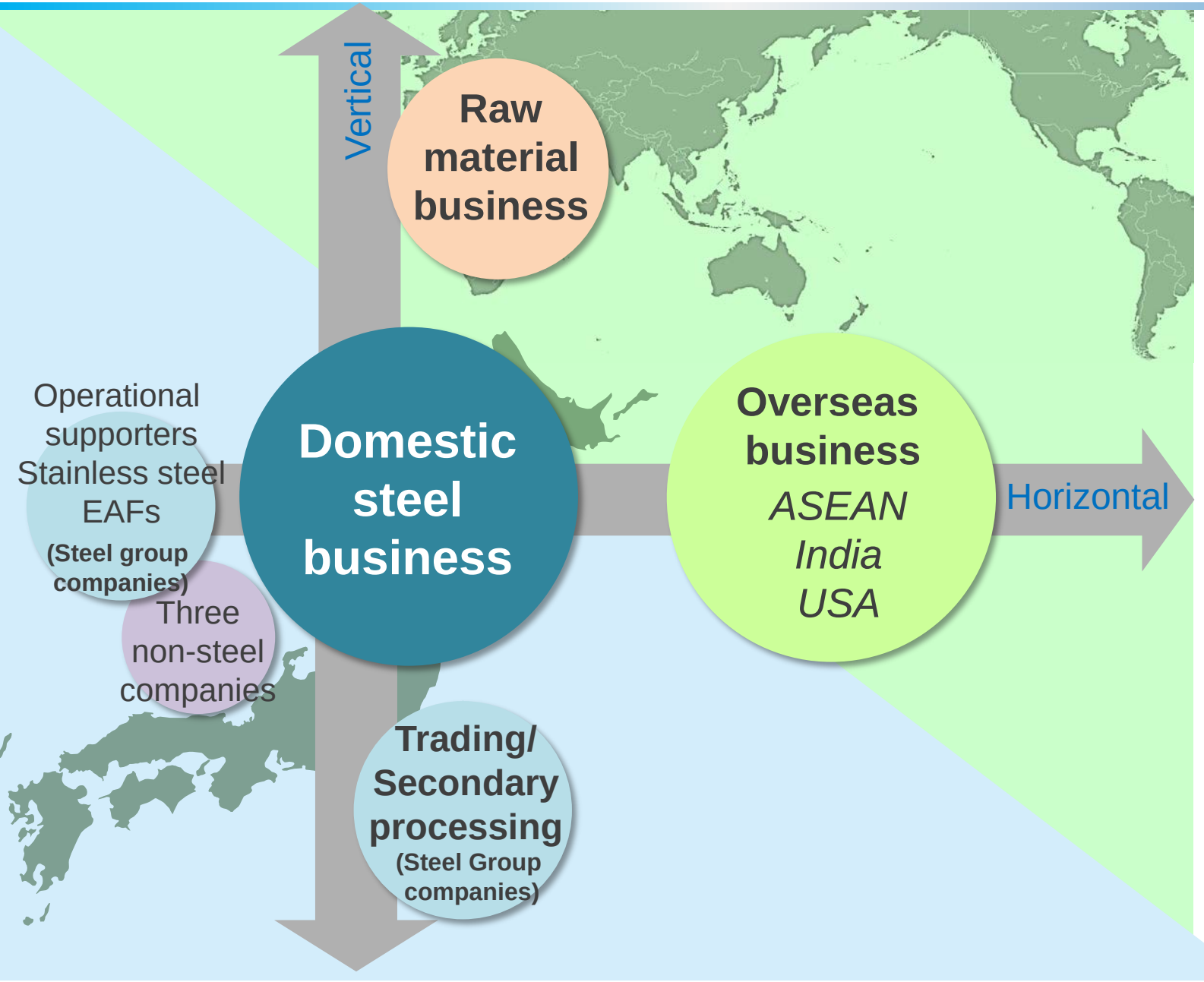
NIPPON STEEL

Business strategy

Performance summary

Decarboni-zation strategy

Overview: Developing a robust business structure with vertical and horizontal



Rebuild domestic steel business

Deepen and expand overseas business

Procure and earn profit in raw materials business

Make steel distribution to own business domain

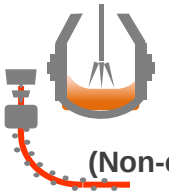
Domestic steel business: Rebuilding

Production facility structural measures

Blast furnace

End of FY2019 → **End of FY2024**

15 → **10** Units ▼33%



Crude steel Production Capacity
(Non-consol. + Nippon Steel Stainless Steel)

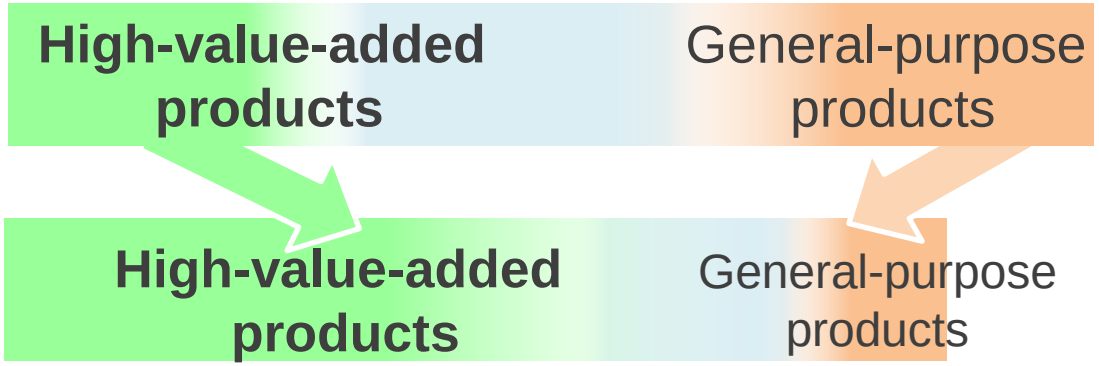
50 → 40 Mt/Y ▼**20%**

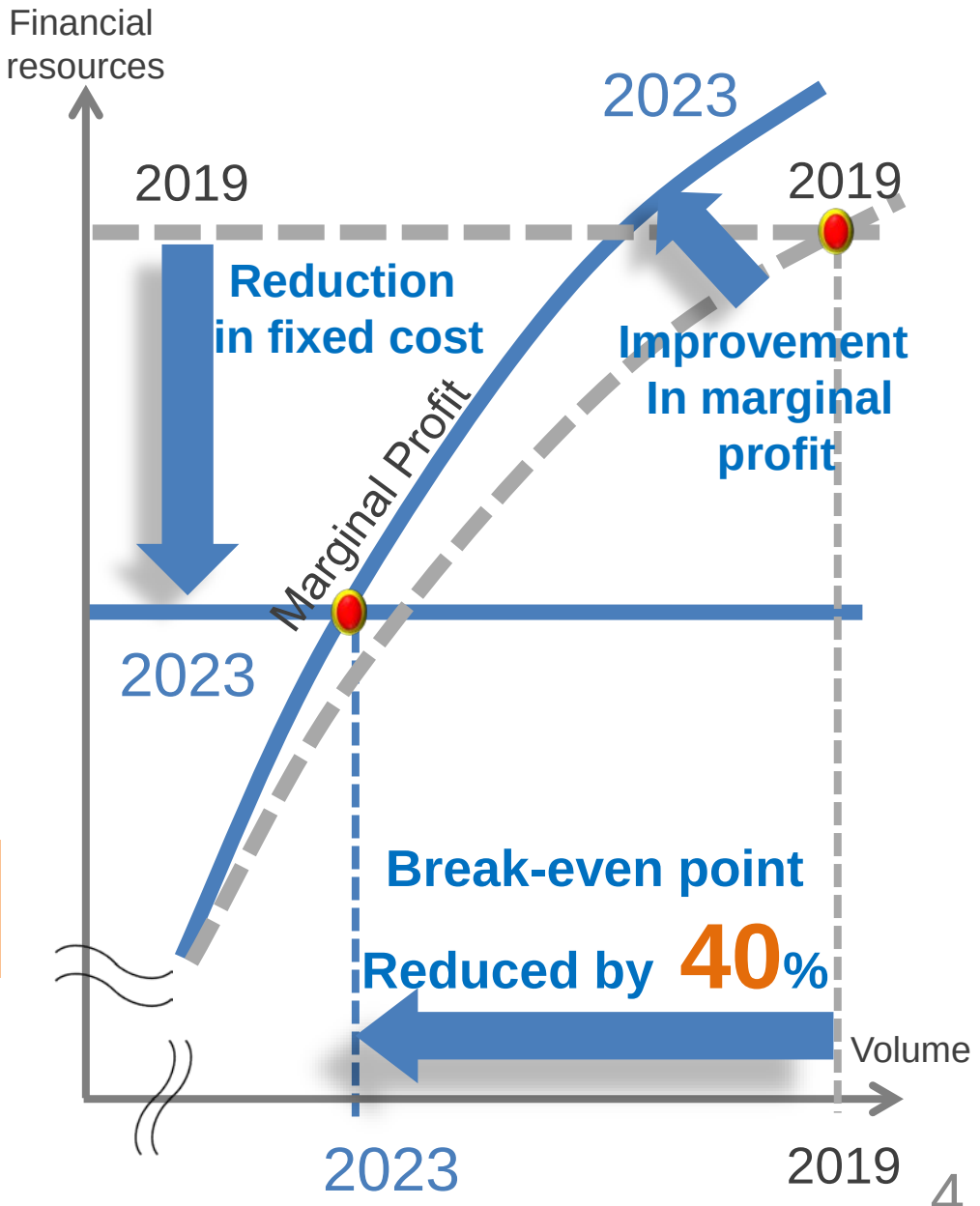
Spread improvement in direct contract sales

- **Fair price** based on the value of the products and solutions
- **Fair allocation** of external costs **throughout the supply chain**

Sophistication of order mix

Equipment modernization





New business opportunities capturing social changes

Response to Climate Change (GX)

- Energy structural reform
- Electrification of automobiles
- Decarbonization in industrial complexes
- National resilience

Social structural change

- Declining workforce

Tech innovation

- IT (AI) development

Business opportunities

Utilize NS' advanced technologies for **development of new steel products and solutions needs**

Utilize the NS Group's latest technologies in **Improving productivity; Accelerating DX**

Overseas: Deepening and expanding in 3 key bases

- Markets where **steel demand growth is promising**
- Markets where Nippon Steel's **technologies and products are highly valued**

Expansion of **integrated steel production bases**

M&A, acquisition of **brownfield** production bases

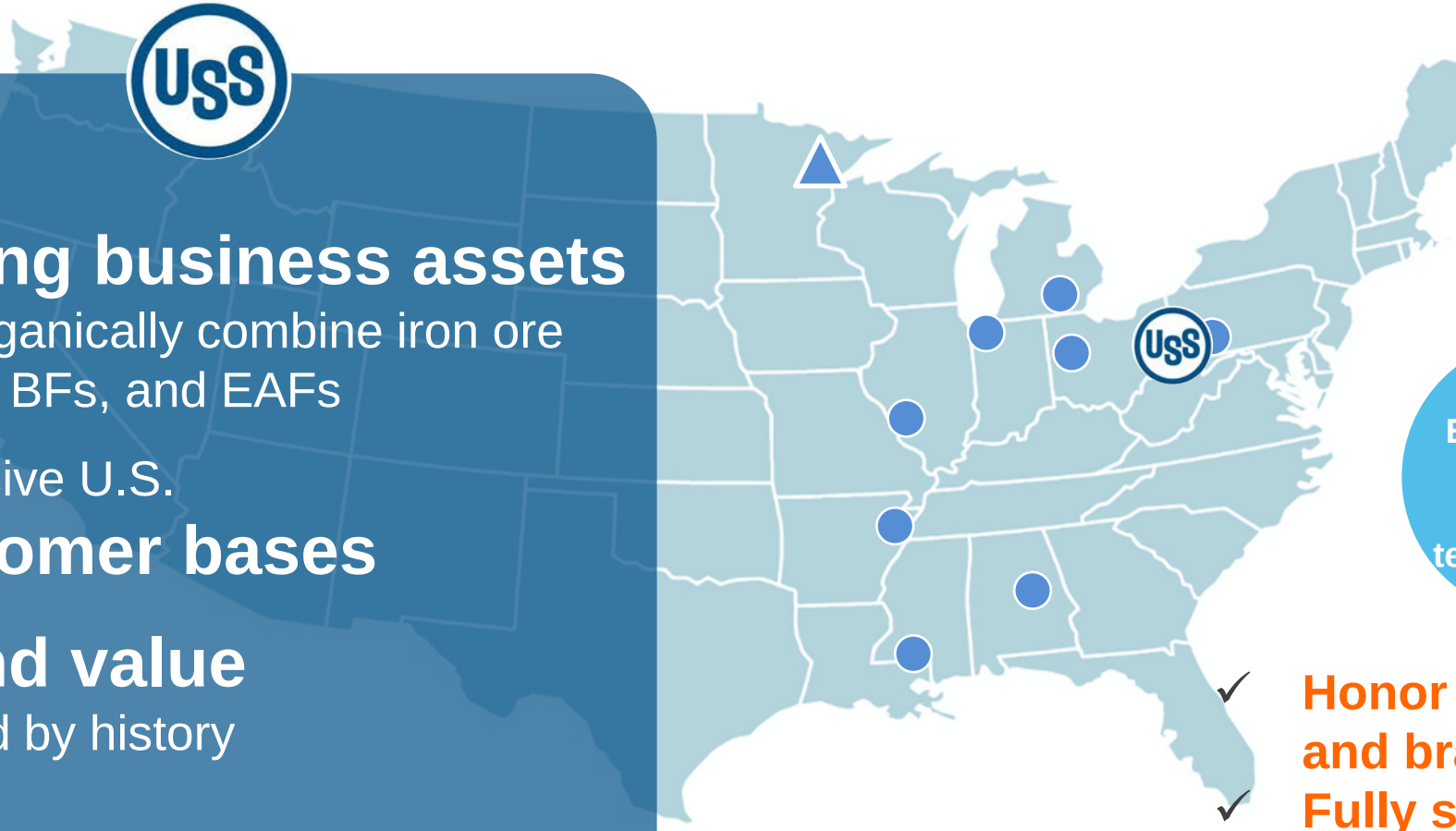
- Growing **India**
- Home market **ASEAN**
- The largest market of high-grade steel **USA**

Strengthen the strategic management functions of Japan as the **global HQ** and also focus on **developing global personnel** for global development

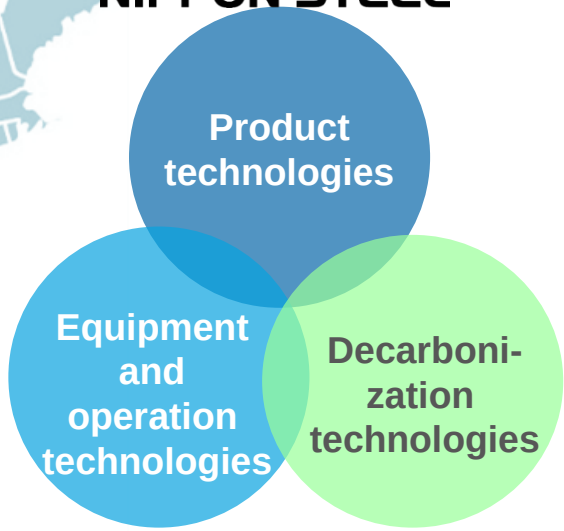
Acquisition of U. S. Steel

Combining the strengths of both companies to help U.S. Steel grow further

- ✓ **Strong business assets** that organically combine iron ore mines, BFs, and EAFs
- ✓ Extensive U.S. **customer bases**
- ✓ **Brand value** backed by history



NIPPON STEEL

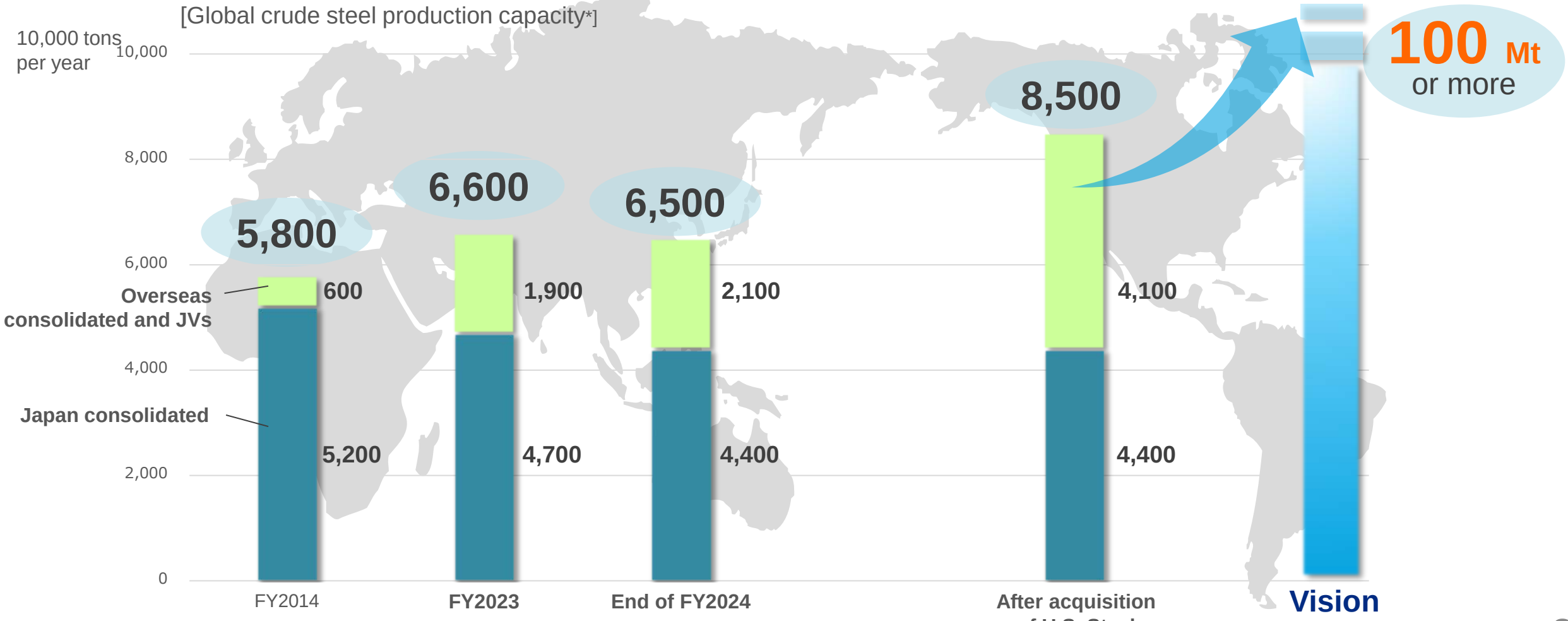


- ✓ **Honor** U. S. Steel's **history and brand**
- ✓ **Fully share** Nippon Steel's latest technologies

Toward the “Global Crude Steel Capacity 100 Mt” Vision

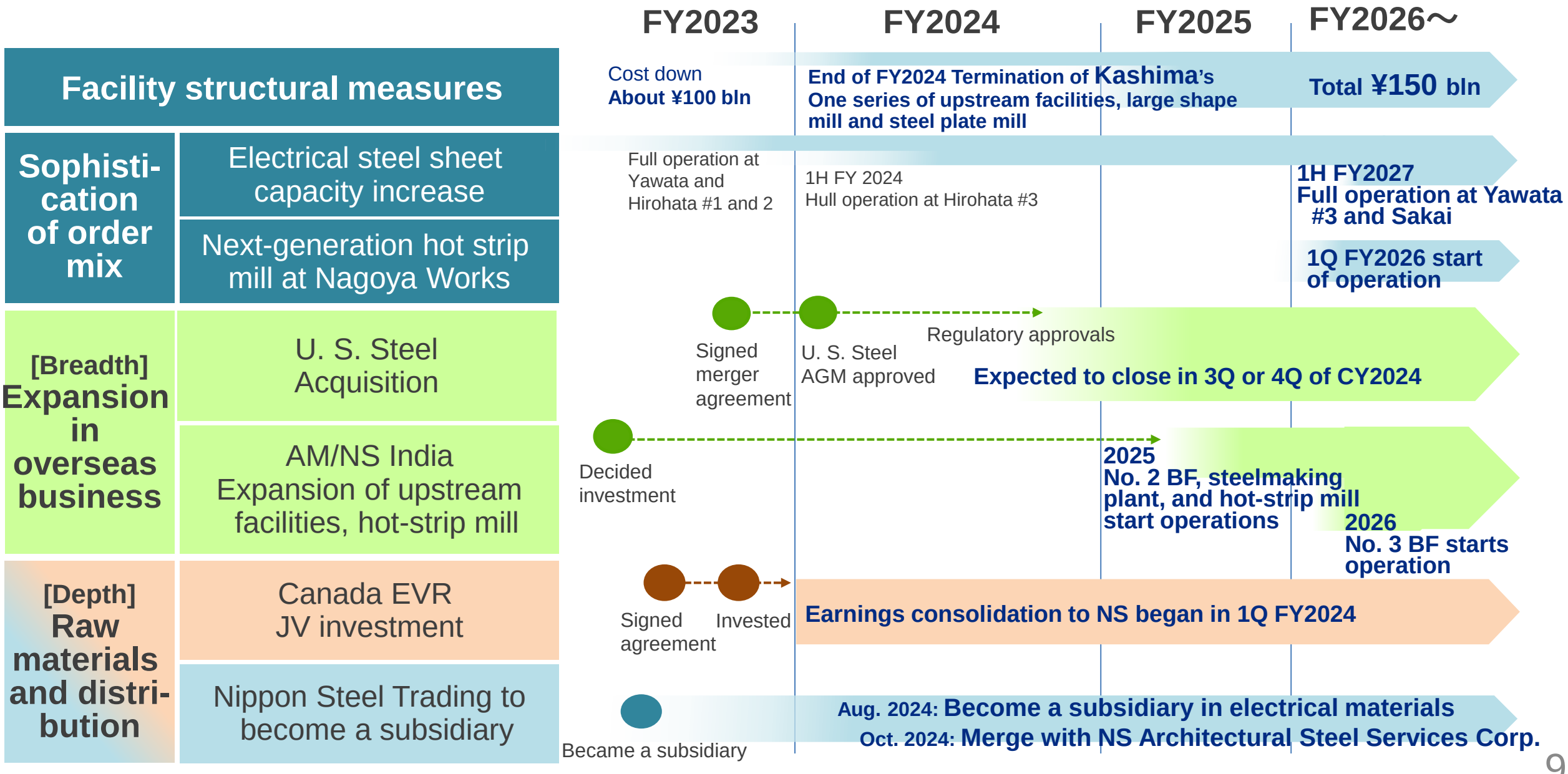
Domestic facility structural measures → **Decrease in domestic crude steel production capacity**

Overseas business expansion → **Global crude steel production capacity to 100 mln tons**



* Simple sum of the production capacity of companies with share ownership of 30% or more

Roadmap for growth strategy



Securing/promoting human resources (Human capital management)

Social situation: Declining working population and increasing mobility of workers

NS: Promote diverse management strategies

Raise NS' profile

Implement various PR measures

Recruit experienced personnel

Diversify hiring

Revise benefits, compensation

Top class in Japan's manufacturing industry

Increase engagement

Internal recruitment; In-house entrepreneurship; Promoting dialogue

Enhance and maximize the abilities of every employee

Promote multifaceted productivity improvement measures

Business strategy

Performance summary

Decarboni-zation strategy

Business environment: Harsh overseas market conditions

China

Decrease in domestic steel demand
Continued high-level production

↓

Increase in steel exports

India

Growth in domestic steel demand

↓

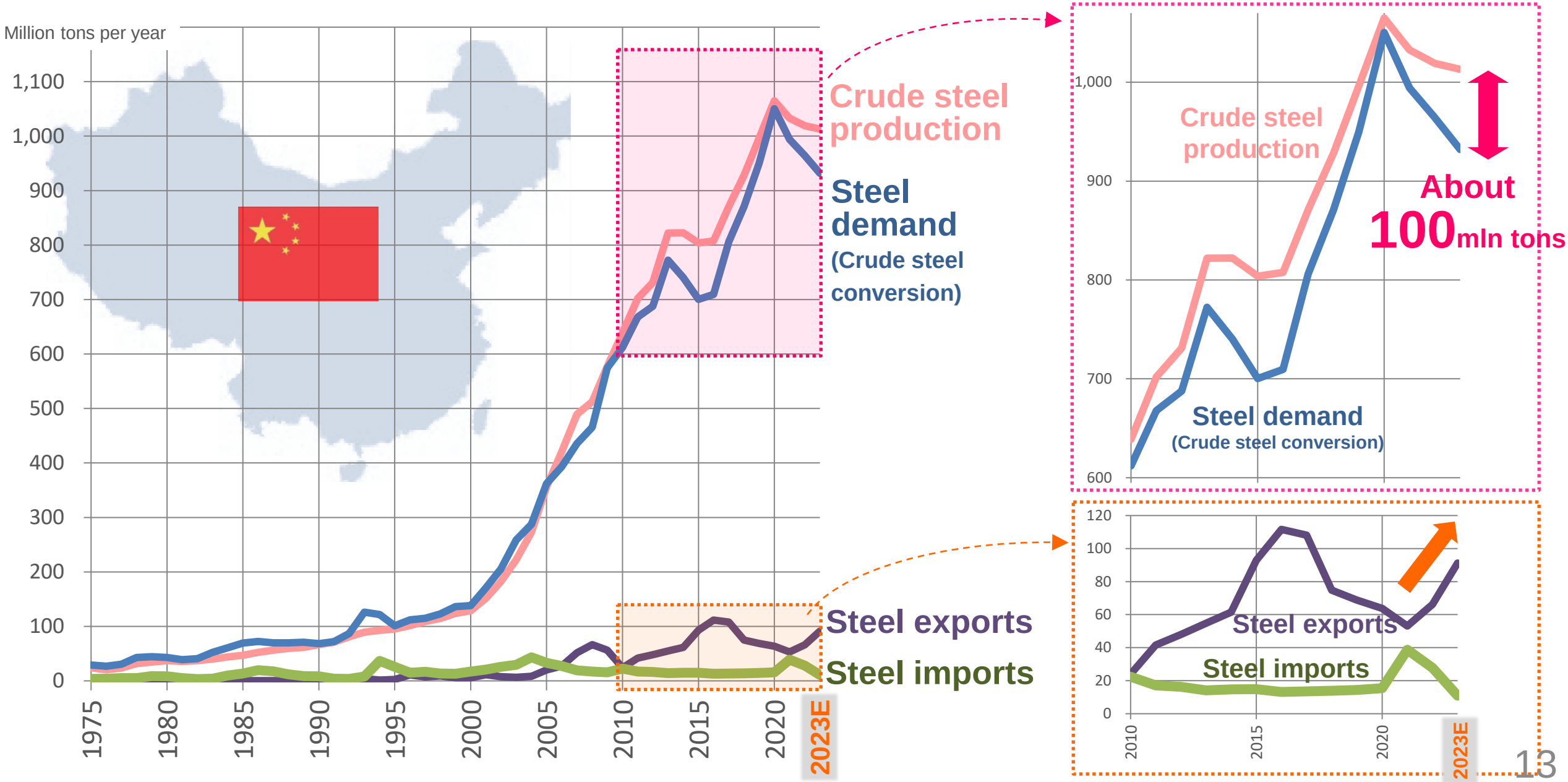
Increase in steel production

Sluggish overseas steel market

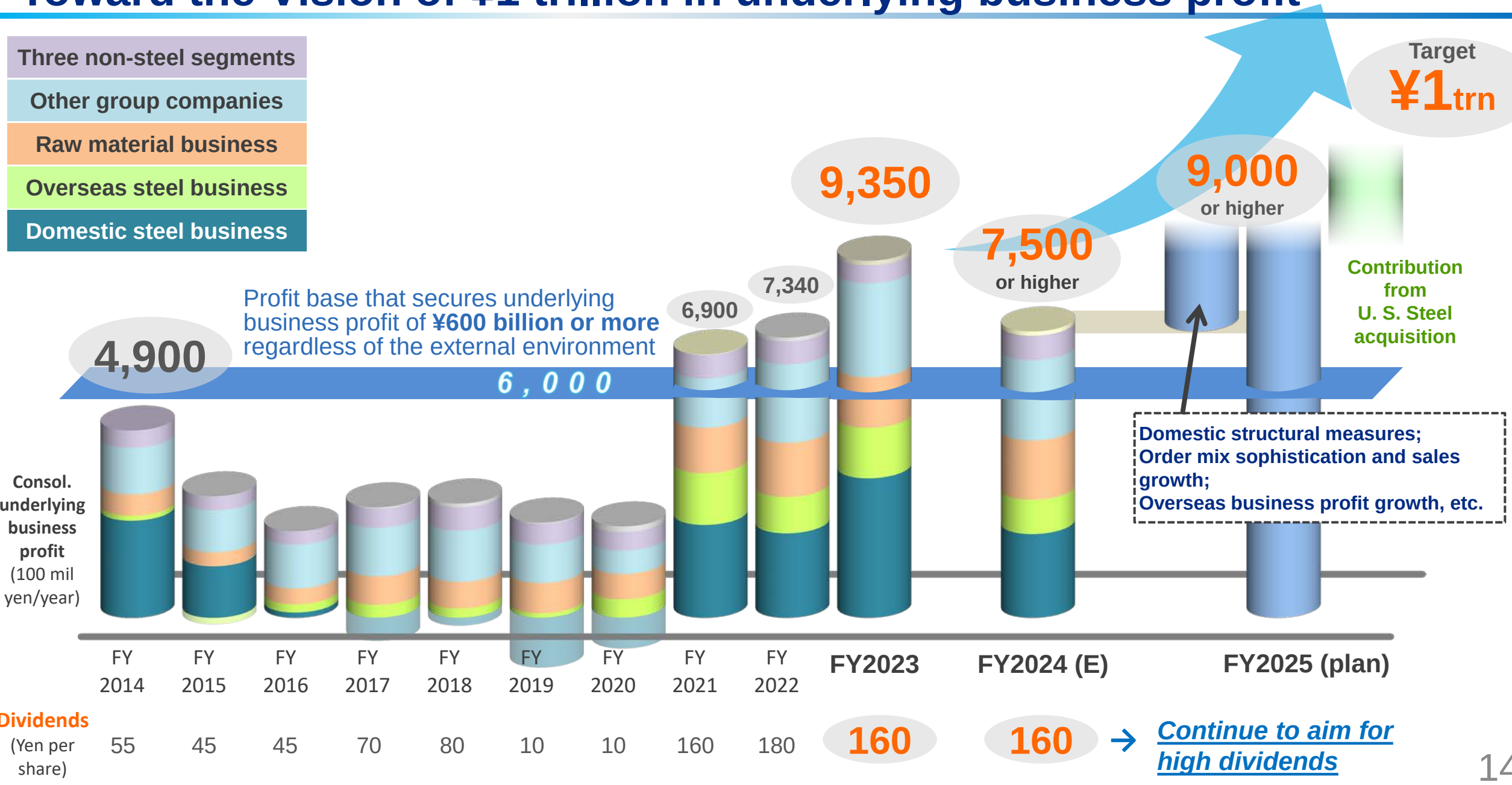
Persistently high raw material prices

Serious decoupled pricing mechanism of high raw materials prices and low product prices

China’s steel supply and demand: High production and increased exports amid a decline in domestic demand



Earnings growth in a challenging environment: Toward the Vision of ¥1 trillion in underlying business profit



Business strategy

Performance Summary

Decarboni-zation strategy

Steel industry's challenges to achieving carbon neutrality (CN)

Technical challenges	✓ Most of the CO_2 emissions (Scope 1 to 3) in the entire supply chain of the steel industry is generated by the production process (Scope 1), particularly the key process for reducing iron ore in blast furnaces. → **Need for innovative production process** ✓ There are **no existing, proven decarbonization technologies** such as use of renewable energy and nuclear power for electric power, and EVs for automobiles
Predictability of investment recovery	✓ Innovation in production processes inevitably entails **significant investment** and **rising operating costs** ✓ But **steel products are the same before and after CN conversion.** → **The challenge is to promote awareness of environmental value (CO_2 reduction) among consumers (price pass-through)**
Infrastructure	✓ **Need of a government policy to develop social infrastructure (stable supply of green electricity and hydrogen, CCUS)**

It is essential to overcome the 3 difficult challenges inherent in the transition to CN in the steel industry and improve the predictability of investment

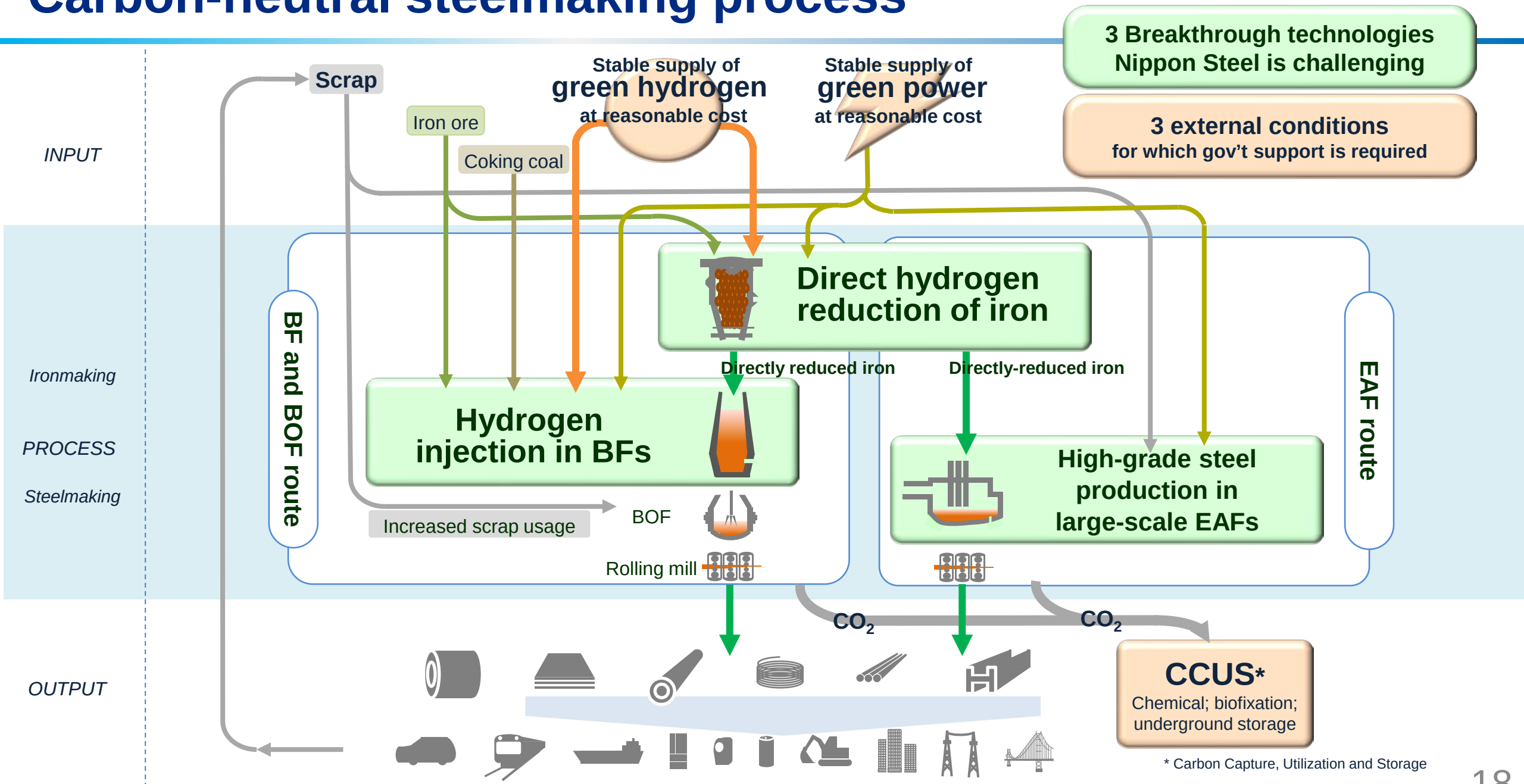
Steelmaking processes toward carbon neutrality: Technology options

- Scrap steel alone is not enough to meet global steel demand, and **iron ore reduction is essential**
- There are two types of mass steelmaking processes: **the blast furnace (BF) method (reduction + melting)** and **the electric arc furnace (EAF) method (melting)**
- Technical options for carbon neutrality are **(1) decarbonization of the BF method** and **(2) melting of pre-reduced iron (reduced iron) in an EAF**

	← Current situation →					
	Produc-tivity	**Quality**	**Main raw materials**	**Energy**	**Technical development Items** **Target for implementation**	**Other issues**
BF method 	○	○	Iron ore Coking coal	Self-sufficient (Use of by-product gas)	• Reduction in the furnace by heated hydrogen • In-furnace reaction design; Development of operational technology; Scale-up verification Implementation possible: **Around 2040**	• Green hydrogen /ammonia • Social implementation of CCUs
EAF method 	△	△	Scrap Reduced iron	Externally dependent	• Larger size (improved productivity) • Development of operational and quality control technologies Implementation possible: **Around 2030**	• Green power • Procurement of high-grade raw materials • Reduced iron production technology using hydrogen

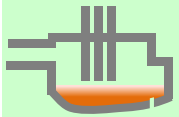
- ✓ To achieve carbon neutrality by 2050, we **aim to optimize the production process composition according to economic conditions such as energy and raw materials** by making the most of the features of both the BF and EAF methods
- ✓ While promoting the development of decarbonization of **the BF method, which is superior in productivity and quality and can utilize existing infrastructure,** we are considering **the EAF method that can be implemented at an early stage** to ensure the achievement of the 2030 CO_2 reduction target

Carbon-neutral steelmaking process



Developing & implementing breakthrough technologies

High-grade steel production in large-sized EAFs



Hydrogen injection into BFs

Electric melting furnace

Hydrogen injection into BFs

2022

Hirohata EAF started commercial operation

2023

Accumulated knowledge of **high-grade steelmaking** in EAF

Started **full-scale study** on shift to EAF

2024

Constructed and started testing at **a pilot EAF** (10t/ch)

Hasaki R&D Center became a CN process development base

Hydreams

2025

Constructed and started testing at **a pilot DRI furnace**

2008～

COURSE50 started research

2023

33% CO_2 reduction

～2030

Hirohata EAF expanded production

Convert Yawata BF to EAF

～Around 2040

Establish implementation technology

Establish implementation technology

2026

COURSE50 **Demonstration test**
Constructed (Kimitsu #2 BF) and started testing

Super COURSE50 Kimitsu test furnace started testing

Super COURSE 50
Establish implementation technology

50% or more CO_2 reduction

～2050

Achieve carbon neutral production processes

3 challenges for achieving a carbon-neutral society

Technology development

- Discovery of technology development seeds and securing of budget (completed)
- A development project is underway

Predictability of investment recovery

- Technical review for implementation (in progress)
- **Determine the predictability of investment recovery and strategic significance**, including government support and green steel market formation
  - Green steel market formation
  - Turning the **environmental value** (CO_2 reduction) to the **economic value**

Infrastructure

- **Electric Power System Reform (7th Strategic Energy Plan)**
  - Comprehensive power supply and demand measures and safe utilization of nuclear technology
- **Social implementation of hydrogen, ammonia, and CCUS**

Efforts to surmount the 3 challenges

Technology development	**Gov't support in development planning and testing**	**Green Innovation (GI) Fund** "Utilization of hydrogen in the steelmaking process" ¥193.5 bln ➡ Raised to **¥449.9** bln	…	**Budgeting completed**
Predictability of investment recovery	**Gov't support for capital expenditures**	**One-third** of the total investment borne by the government by use of **GX Transition Bonds**	…	**Institutionalization completed**
	Gov't support for operating costs	Establishment of **a strategic materials and production base tax system** (Green Steel)	…	**Institutionalization completed**
	International standardization	**Adoption of the mass balance method** at Worldsteel **and development of guidelines**	…	**High-level agreement in principle**
		Lobbying for revision of ISO, GHG protocol, etc.	…	**Implementing and preparing**
	Creation of economic value from the environmental value (CO_2 reduction)	**GX League** [Ministry of Economy, Trade and Industry] ➡ Growth-oriented carbon pricing **GX Product Market Study Group** [Ministry of Economy, Trade and Industry] and the Government **GX Implementation Committee** Exchange of opinions with **the automobile industry** and others	…	**Start of discussion on GX market creation**
Infrastructure	**Energy infrastructure development**	Safe use of nuclear and other energy sources for the **7th Strategic Energy Plan**	…	**Committee recommendations**
		Hydrogen and Ammonia: Revised Basic Hydrogen Strategy, **Hydrogen Society Promotion Law**	…	**Bill passed**
		CCS: **JOGMEC/Advanced CCS Support Program**	…	**Project participation**

Lobbying to the entire society, with a focus on making policy and institutional proposals to the government and industry

Thank you, our shareholders,
for your continued understanding and support

P1. Nippon Steel's business challenges and measures to be taken

I am Imai, President and COO. I would like to explain our business strategy and the planned measures.

P2. Business strategy

First, on business strategy.

P3. Overall view: Developing a robust business structure with vertical and horizontal

This slide shows the overall view of our strategy. The main focus is on rebuilding the domestic steelmaking business.

The horizontal axis expresses our aim to expand the scale of the steelmaking business by deepening and expanding overseas business.

The vertical axis indicates how we are taking measures to expand our business domain, both upwards and downwards in the supply chain. As the specific measures, we are investing in mines, trading companies, and secondary processing companies..

By taking these actions, we aim to build a robust business structure.

P4. Rebuilding of the domestic steelmaking business

Next is the rebuilding of the domestic steelmaking business.

With regard to the production facility structural measures, by the end of this fiscal year we will complete our plan to reduce production capacity by 20%. After the execution of all structural measures, we will have 10 blast furnaces and a crude steel production capacity of approximately 40 million tons.

Concerning direct contract sales, we have improved the margins by thoroughly optimizing the price based on the value of our products. We have successfully secured a profitable position for such high-value products, and to differentiate from commoditized products which its price fluctuates depending on the market condition.

In order to sophisticate our order mix, we are upgrading the production facilities and expanding sales of high-value-added products.

P. 5. New business opportunities that capture the era of social change

In the area of high-value-added products, we have newly developedsteel products and solutions that will meet the new needs deriving from climate change issues including energy structural reform, decarbonization in industrial complexes, electrification of automobiles, and national resilience.

Responding to changes in the social structure such as a declining workforce and the development of AI and other IT fields, we will utilize the latest technologies of the Nippon Steel Group to improve productivity and accelerate DX.

P. 6. Overseas business

As for overseas business, we plan to acquire integrated steelmaking bases through M&A in markets where steel demand growth is promising and where Nippon Steel's technologies and products will have a strong competitive advantage. In growing India, we are expanding AM/NS India, and in the home market of ASEAN, we are strengthening G/GJ Steel. In the United States, the largest market for high-grade steel, we are in the process of acquiring U. S. Steel. We will strengthen the strategic management functions of Japan as the global HQ and also focus on the development of human resources that will be leading and managing our global operations.

P7. Acquisition of U. S. Steel

U. S. Steel has strong business assets, including mines, blast furnaces, and electric arc furnaces, an extensive customer base in the U.S., and strong brand value. I am confident that we can grow in the U.S. market by fully sharing Nippon Steel's various leading technologies with U. S. Steel.

P8. Toward the "Global crude steel capacity 100 million tons" Vision

We aim to increase global production capacity from 65 million tons in 2024 to 85 million tons after the acquisition of U. S. Steel, and further to over 100 million tons by expanding production in India.

P9. Roadmap for growth strategy

This slide is the roadmap based on what I have explained so far. In Japan, we will shut down one series of blast furnaces at Kashima at the end of fiscal 2024. To expand the high-value product portfolio, we will continuously increase the production capacity of electrical steel sheets up to 2027.

Overseas, we plan to acquire U. S. Steel by the end of calendar year 2024. AM/NS India plans to operate two new blast furnaces in the period from 2025 to 2026.

P10. Securing and promoting human resources

Next, I would like to explain about securing our workforce and promoting their strong engagement.

Even under a social environemnt such as a declining workforce andincreasing mobility in the labor market, we need to execute the diverse business strategies we have mentioned. Needless to say, the key to success is our people. To improve our productivity as a whole, we will maximize the capabilities of each and every employee through various measures, which start with measures to raise our profile, expand the hiring of experienced personnel, revise benefits and compensation, and implement measures to increase the engagement of our employees.

P11. Performance summary

Let us move on to our performance.

P12. Business environment

The business environment has been unprecedently challenging, particularly in the overseas market.

This is due to the continued market sluggishness caused by the increase in China's steel exports, and the high level of production in India and other countries, which has kept raw material prices at a high level. As a result, the decoupled price mechanism of the so-called "high raw material prices and low product prices" relationship is becoming more serious.

P13. China's supply and demand of steel

These graphs show the supply and demand of steel in China. Despite the decline in domestic demand due to the effects of the real estate recession, steel production remains high, and approximately 100 million tons of steel products are exported. Since this is a structural situation, it is difficult to predict an early recovery.

P14. Earnings growth in a challenging environment

Nippon Steel has been working to establish a profit base that ensures a stable consolidated underlying business profit of 600 billion yen or higher, regardless of the external environment. As a result, we achieved 935 billion yen in actual business profit in fiscal 2023, renewing a record high. For fiscal 2024, based on the assumption that the harsh environment will continue throughout the fiscal year, we expect the level to be 750 billion yen, but we will be able to maintain a level that significantly exceeds 600 billion yen.

In fiscal 2025, we will again aim to achieve 900 billion yen or higher, as we did in fiscal 2023. This will be helped by the effects of implementing the remaining management reforms. If the acquisition of U. S. Steel is completed as planned, we are looking at a business profit of over 1 trillion yen.

As for dividends, we are proposing a resolution today to set a dividend of 160 yen per share for fiscal 2023. For fiscal 2024 as well, we plan to maintain a dividend of 160 yen, in order to maintain a high level of shareholder returns despite the anticipated temporary decline in profits.

P15. Decarbonization strategy

From here on, I will explain our decarbonization measures.

P16. Challenges to achieving carbon neutrality in the steel industry

We are confronting three major challenges to achieving carbon neutrality in the steel industry.
The first is the technological challenge. Throughout the entire supply chain, CO2 emission mainly comes from the blast furnace where iron ore is reduced. However, because there is no proven decarbonization technology for blast furnace operation, it is necessary to newly develop the technology to innovate the current production process.
Second is the challenge of investment recovery. Becoming carbon neutral will require large investment and will increase operating costs. However, as steel products will be the same as they are at present, how to make the environmental value properly perceived by customers will be a challenge.
Third, in terms of infrastructure, it is necessary to develop a stable, low-cost supply of green electricity and green hydrogen as a matter of national policy.
To improve the predictability of investments required to become carbon neutral, it is essential to overcome these three difficult challenges, which are unique to the steel industry.

P17. Steelmaking processes toward carbon neutrality: Technology options

Concerning technology options, first of all, production of steel from steel scrap alone cannot suffice the global steel demand. Therefore, iron ore reduction is essential. Since there are only two types of mass steelmaking processes: the blast furnace (BF) method and the electric arc furnace (EAF) method, the technological options for carbon neutralization are limited to "decarbonization of the BF method" and "melting of pre-reduced iron in an EAF."
As shown in this table, the BF method and the EAF method each have their advantages and disadvantages. We aim to optimize the composition of the production process in terms of economic conditions such as energy and raw materials by making the most of the features of both methods.
While promoting the decarbonization development of the BF method, which is superior in productivity and quality compared to EAF, and also having the benefit that we can utilize our existing infrastructure, we continue to anticipate that the improvement of the EAF method will

be the rather feasible approach when targeting 2030.

P18. Carbon-neutral steelmaking process

With the above considerations in mind, we present here our carbon-neutral steelmaking process. Hydrogen injection in BFs, direct hydrogen reduction of iron, and high-grade steel production in large-scale EAFs are three innovative technologies that are of ongoing and strong interest to us. Because of this, we need (1) a stable supply of green hydrogen at a reasonable cost, (2) also a stable supply of green energy at a reasonable cost, plus (3) the implementation of CCUS in society in response to the three external conditions that should be established according to national policies.

P19. Developing and implementing breakthrough technologies

This slide shows the progress of technology development and the outlook. The orange parts indicate what we have completed. As for EAFs, Hirohata #1 EAF started production of high-grade steel in 2022 and has been compiling a record of accomplishment. A pilot EAF for development will be completed at the Hasaki R&D Center within this fiscal year. Concerning hydrogen injection into BFs, at the end of last year, Kimitsu's test blast furnace succeeded in reducing CO_2 emissions by 33%, which is the world's highest level of improvement.

P20. Three challenges for achieving a carbon-neutral society

This slide summarizes our efforts to address the three challenges mentioned at the beginning. As I explained, we have finished planning and budgeting for technology development and are hard at work.

With regard to the predictability of investment, the time for investment decisions is approaching especially for EAFs, which we intend to implement by 2030, and we are looking forward to predicting the prospects of investment recovery and confirming the strategic significance of our accomplishments in the near future. In order to establish a market for green steel, it is necessary for industry and society as a whole to share a common perception that the environmental value of reducing CO_2 emissions is linked to appropriate economic value. As for infrastructure development, national policies are indispensable to reform electric power systems following discussions on the 7th Strategic Energy Plan and socially implement hydrogen and ammonia supply chain and CCUS.

P21. Efforts to surmount the three challenges

In order to succeed in confronting the three challenges, we are working to reach out to society at large, focusing on proposals to the government and industry on the specific issues

described here. We will continue our efforts to provide appropriate disclosure on these criteria.

P22. Concluding

I have explained our management strategy and the actions to be taken.

We are grateful to you, our shareholders, for your continued understanding and support. Thank you for your attention to my presentation.

End