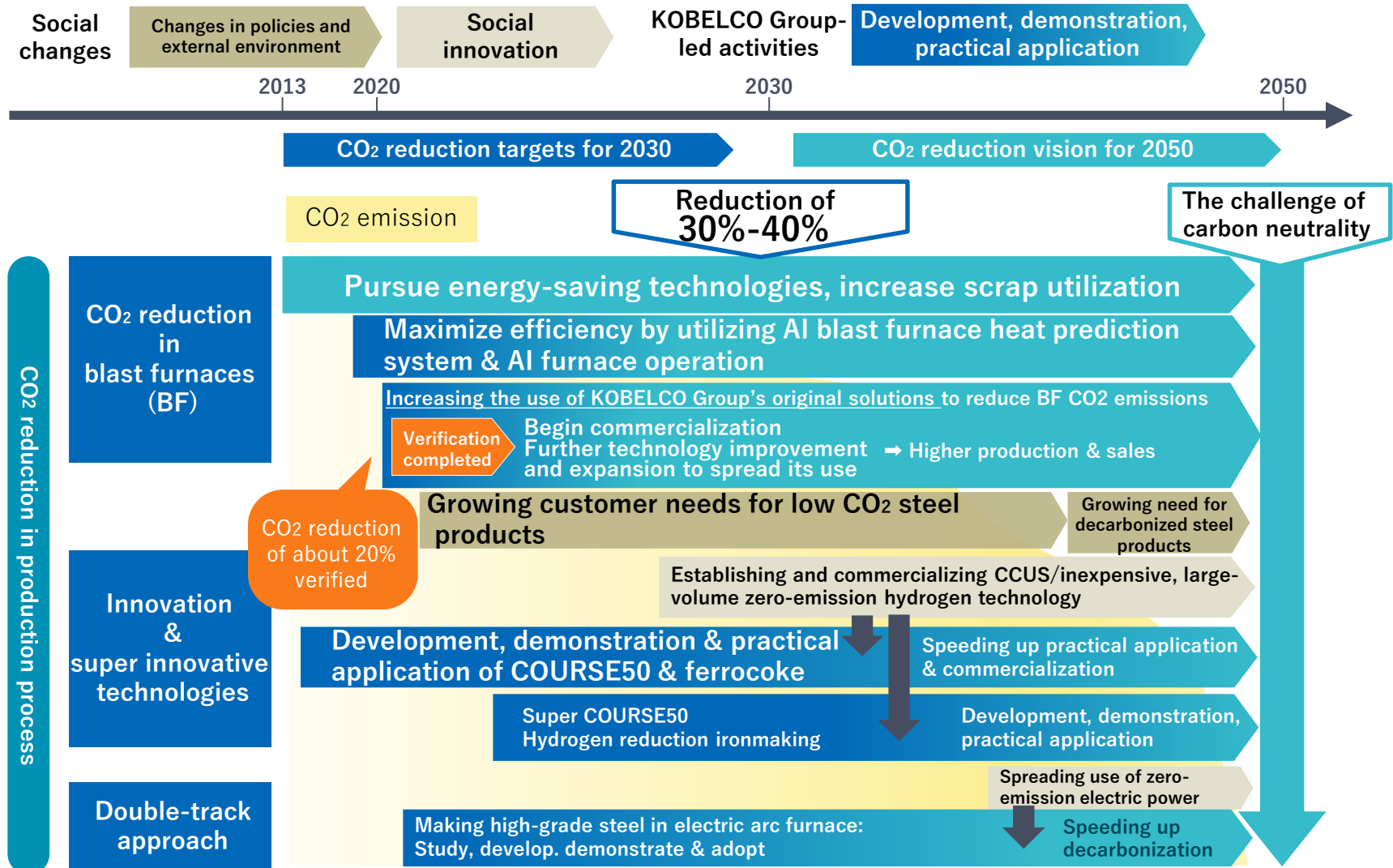


The challenge of carbon neutrality

Ironmaking Process: Roadmap toward Carbon Neutrality

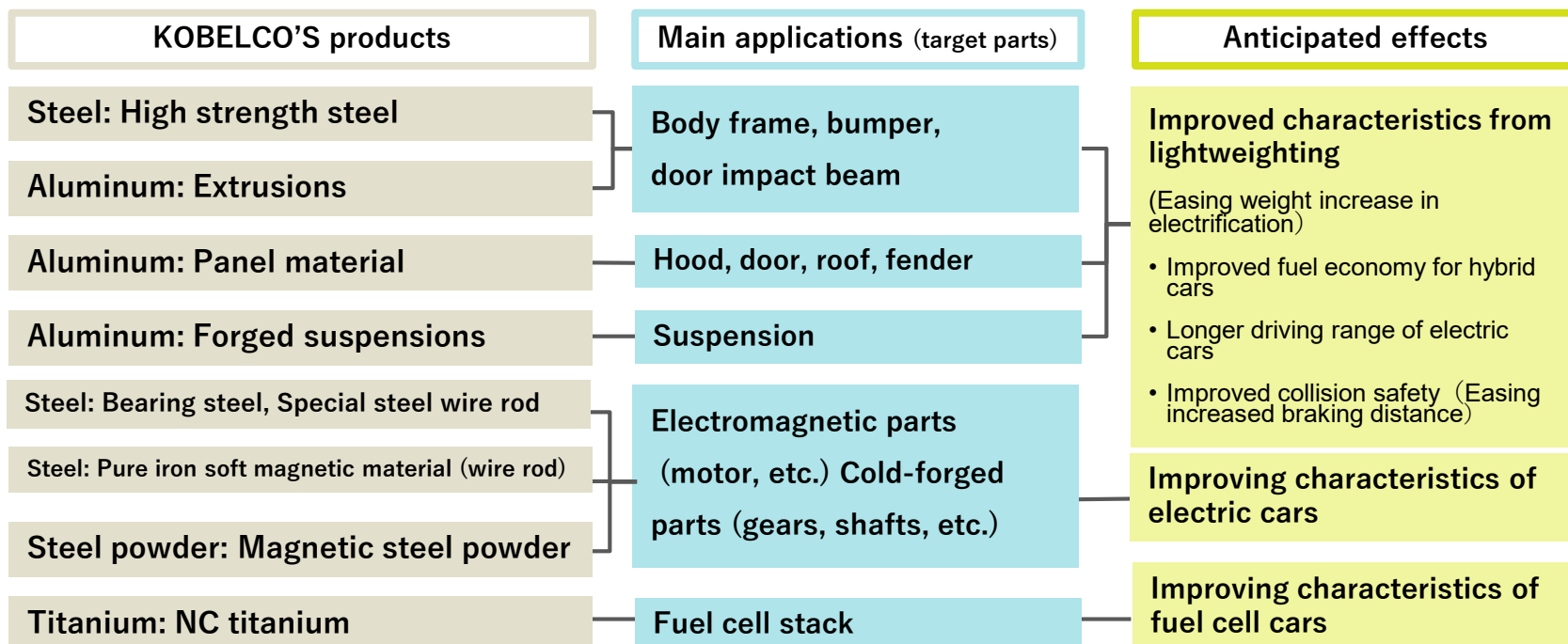


The challenge of carbon neutrality

Initiatives in the automotive field

- ❖ Many countries have set goals for electrification as an initiative for carbon neutrality. Automakers' initiatives for electrification will further accelerate in the future.
- ❖ Automotive weight reduction is not only about improving the fuel economy of gasoline cars, but it also plays an important role in improving the fuel economy of hybrid cars and extends the driving range of electric cars. Responding to the need for lighter materials, the KOBELCO Group contributes to accelerating electrification.
- ❖ We contribute to automakers' initiatives for carbon neutrality with a variety of products for electric cars, including wire rods/bars (bearing steel, special steel, pure iron soft magnetic steel), magnetic steel powder, titanium for fuel cell stacks.

KOBELCO Group's materials: Contributing to vehicle electrification

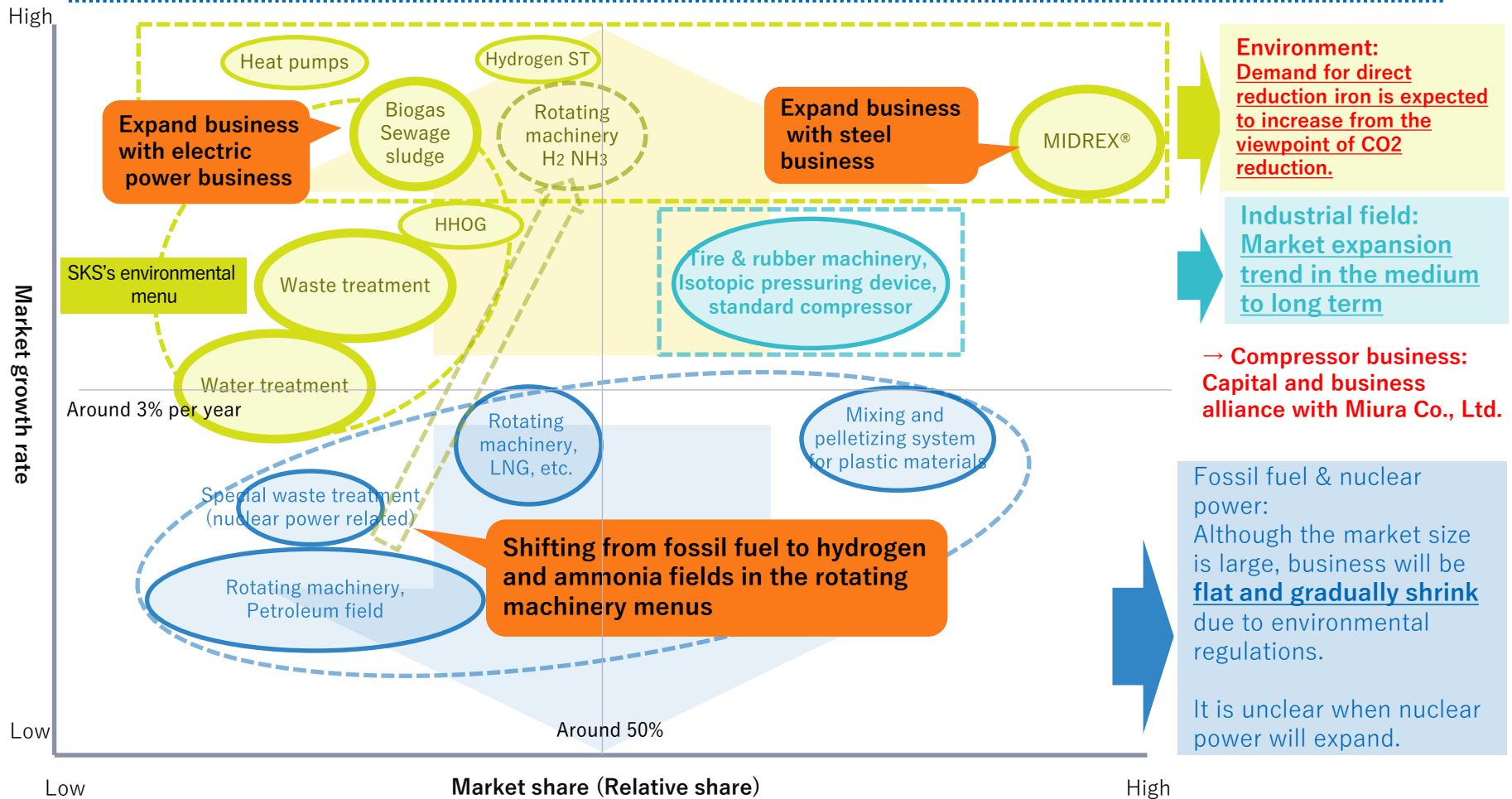


ICEV (Internal Combustion Engine Vehicle), HEV (Hybrid Electric Vehicle), PHEV (Plug-in Hybrid Vehicle), BEV (Battery Electric Vehicle), FCEV (Fuel Cell Electric Vehicle)

The challenge of carbon neutrality

Responding to Energy Conversion & Growing Markets

- ❖ Machinery Business: High dependence on the fossil fuel fields will be shifted to the hydrogen and ammonia fields
- ❖ Engineering Business: Extensive lineup of environmental contribution menus
- ❖ Demonstrating Group's collective strengths and creating value unique to our Group by promoting the mutual use of the management resources of the Machinery business and the Engineering business as well as collaboration among the Steel business, the Electric Power business and Kobelco Eco-Solutions Co., Ltd (called SKS below).



The challenge of carbon neutrality

Roadmap for CO₂ reduction through MIDREX®

❖ Providing CO₂ reduction solutions for various steelmaking processes through MIDREX® and increasing earnings

Expanding EAF business / Responding to shortage of iron

Providing CO₂ reduction solutions for blast furnace

Challenge of realizing hydrogen reduction steelmaking process (MIDREX H₂™)

Social changes

Social innovation

Changes in policies and external environment

KOBELCO Group-led activities

Development, demonstration and commercialization

2013 2020

2030

2050

CO₂ reduction targets for 2030

CO₂ reduction vision for 2050

Contribution to reduction of CO₂ emissions

Contribution to CO₂ reduction: 45 million tons or more/year

Contribution to CO₂ reduction: 100 million tons or more/year

Increasing production of MIDREX NG™ (natural gas-based direct reduction), which produces 60% of the direct reduced iron in the world

Increasing EAF production / increasing demand for reduced iron

Stricter CO₂-related restrictions

Switch from BFs to EAFs: Increasing demand for DRI
Shortage of high-grade iron ore suited for making DRI

Development, demonstration and practical application of technology to utilize low-grade iron ore

Increasing demand for HBI for BFs

Completing development and demonstration

Beginning to provide solutions
Further technological improvement

Expanding solutions

Approx. 20% CO₂ reduction

Gradual expansion from countries and regions with developed infrastructures

Establishment and commercialization of low-cost, high-volume zero-emission hydrogen technology worldwide

Development, demonstration and commercialization

The global steel industry's contribution to CO₂ emissions reduction

MIDREX NG™
(Natural gas-based direct reduction)

CO₂ reduction solutions for ironmaking process

MIDREX H₂™
(100% hydrogen direct reduction)

The challenge of carbon neutrality

Electric Power Business :

Roadmap toward carbon neutrality

