

February 15, 2021

Japan Iron and Steel Federation (JISF)

Basic Policy of the Japan steel industry on 2050 Carbon Neutrality aimed by the Japanese government

1. The Japanese steel industry supports Japan's ambitious policy of achieving carbon neutrality by 2050 and it will aggressively take on the challenge to realize zero-carbon steel with the aim of contributing to the Japanese government policy. Our challenge includes (1) contribution through our technologies and products and (2) initiatives to reduce CO₂ emissions in steel production process (i.e., zero-carbon steel).

2. Realization of zero-carbon steel is an extremely difficult challenge and that is unlikely to be realized in a straight line. Therefore, the Japanese steel industry will explore multiple pathways to the challenge by employing every possible means including, our actively ongoing efforts for the drastic reduction of CO₂ emissions from blast furnace through COURSE 50 and ferro coke technologies plus CCUS (carbon capture, utilization, and storage), development of super innovative technologies such as hydrogen-based iron making, expanded use of scrap, recovery of low- to medium-temperature waste heat, and use of biomass.

3. Challenges to develop super innovative technologies

- To realize decarbonization in iron making process and zero-carbon steel, it is necessary to endeavor to develop advanced technologies, such as CCUS, under a blast furnace (reduction with carbon) method with an improved reduction ratio with hydrogen. In addition, we need to spend additional huge costs to neutralize unavoidable remaining CO₂ emissions or implement the hydrogen-based iron making which does not generate CO₂. There is no other solution.

- Hydrogen-based iron making is an iron making process that is totally different from the existing blast furnace process which we have reached over several thousand years in history. The detail of hydrogen-based iron making is still unknown, and it is a major hurdle for us. Some countries have just begun to develop such new technologies, thus this is an extremely ambitious and challenging project.

- Furthermore, replacing the existing process with the new one at the stage of implementation will require a huge amount of capital investment, resulting in large capital and operating costs. But these additional costs are only for decarbonization and

contribute neither to improving the performance of steel nor to increasing productivity of the steel.

4. The following external conditions are required for the realization of zero-carbon steel:

- Low-cost and stable supply of large quantities of carbon-free hydrogen and carbon-free electricity
- Research and development of economically rational CCUS and its implementation in society

5. We request the government to adopt the following policies to support the realization of zero-carbon steel:

- Strong and continuous national support by the Japanese government for medium- to long-term technological development of extremely difficult hurdle, and establishment of a national strategy for decarbonization, including the development of social infrastructure for the stable supply of large quantities of carbon-free hydrogen and carbon-free electricity at low cost and social implementation of CCUS in an economically rational manner
- Design and development of a promotion system and institutional design to encourage the spirit of challenges in companies in the operation of the Green Innovation Fund
- Financial support for the practical application and implementation of the results of technological development
- Fostering public understanding that the realization of zero-carbon steel requires a large amount of costs, including research and development, capital investment, and operational costs as well as establishing a society as a whole to bear these costs
- Ensuring equal footing where Japan's industries are not disadvantaged in international competition—including an urgent resolution of electricity prices, which remain high by international standards
- Introducing additional carbon pricing measures, such as carbon taxes and emissions trading schemes, which take away resources for technological development and capital investment, will hinder technological innovation and result in preventing the realization of zero-carbon steel.