



2 (1) Hydrogen (hydrogen/fuel ammonia industries)

<Main future efforts>

- Aiming for the level competitive enough against fossil fuels by increasing introduction.
 - In 2030, domestic introduction of up to 3 million tons
In 2050, approx. 20 million tons
 - In 2050, supply cost of about 20 yen or less per Nm³ (less than gas-fired power)
- Strengthening international competitiveness by focusing on technologies in which Japan has strengths.
 - Accelerating the commercialization of hydrogen power generation turbines in Japan by supporting the early demonstration with actual equipment, with a view to capturing the global market in the future.
 - Promoting research and development to improve the power generation efficiency and durability of stationary fuel cells in order to promote market expansion.
 - Accelerating the commercialization of FC trucks through demonstrations.
- Aiming for early commercialization (cost reduction) of transportation and storage technologies.
 - Achieving the commercialization of large-scale transportation-related equipment by 2030 by conducting research and development and demonstrations with the use of funds.
 - Promoting international standardization of hydrogen transportation-related equipment.
- Aiming to expand the global adoption of water electrolyzers by lowering their cost.
 - Supporting the development of technology to increase the size of water electrolyzers, and aiming to maintain and strengthen international competitiveness by further reducing the cost of the equipment (1/3 to 1/6) and increasing durability.
 - Lowering entry barriers to overseas markets by preparing an environment where the performance of water electrolyzers can be evaluated under the same conditions as in Europe.

Benefits to people's lives in 2050

- Future hydrogen-fired power generation with a stable supply chain will have a price stabilizing effect. Under the assumption that cost reduction is achieved, the effect of preventing the impact of sudden price hikes, if converted to household electricity rates, would be an expenditure control effect equivalent to about 8,600 yen/year.
 - Compared to fossil fuels, hydrogen has a lower dependency on specific regions, and if a stable supply chain can be established and achieve a sufficiently competitive price level at the same time, it is expected that the price of hydrogen-fired power generation will become stable.
 - Assuming that the price of the 100% hydrogen-derived electricity retail menu and the price of the 100% natural gas-derived electricity retail menu are the same, and assuming that only the latter retail menu has a price hike of about 1.8 yen/kWh (based on the time when the cost of LNG-fired power generation was at its highest), a standard household would be able to save about 8,600 yen/year.
(It should be noted that actual expenditures will depend on the combination of power generation sources in 2050, the sales price of each power company, and other factors.)



2 (2) Fuel ammonia (hydrogen/fuel ammonia industries)

<Main future efforts>

- Promoting the development of technology for power generation burners for co-firing
 - Aiming to introduce and spread the use of 20% co-firing in power generation by 2030 (short-term target).
 - Aiming to increase the co-firing rate (50%) and commercialize the technology for fuel ammonia power generation by 2050 (long-term target).
- Strengthening technology development for cost reduction and financial support in order to realize inexpensive supply of fuel ammonia.
 - Strengthening the supply of risk money and financial support for individual projects at NEXI, JBIC and JOGMEC.
- Promoting exports to the Southeast Asian market through international standardization and development of co-firing technology.
 - Considering international standardization concerning specifications of ammonia as a fuel and emission standards of nitrogen oxides during combustion.
 - Accelerating the study of standards and criteria in cooperation with METI by establishing a dedicated WG within the Clean Fuel Ammonia Association (CFAA).
 - Aiming to capture the fuel ammonia market, which is expected to be worth about 500 billion yen, by introducing co-firing technology to power plants in Southeast Asia.

Benefits to people's lives in 2050

- Future ammonia-fired power generation with a stable supply chain will have a price stabilizing effect. Under the assumption that cost reduction is achieved, the effect of preventing the impact of sudden price hikes, if converted to household electricity rates, would be an expenditure control effect equivalent to about 8,600 yen/year.
 - Compared to fossil fuels, ammonia has a lower dependency on specific regions, and if a stable supply chain can be established and achieve a sufficiently competitive price level at the same time, it is expected that the price of fuel ammonia power generation will become stable.
 - Assuming that the price of the 100% ammonia-derived electricity retail menu and the price of the 100% natural gas-derived electricity retail menu are the same, and assuming that only the latter retail menu has a price hike of about 1.8 yen/kWh (based on the time when the cost of LNG-fired power generation was at its highest), a standard household would be able to save about 8,600 yen/year.
(It should be noted that actual expenditures will depend on the combination of power generation sources in 2050, the sales price of each power company, and other factors.)