

Japan's NEDO to unlock the Green Innovation Fund for hydrogen investors

Speed Read

- Japan has set up a 2tn yen (USD18bn equivalent) fund to support projects promoting decarbonisation
- Applications for funding are now open for projects to (a) establish a large-scale hydrogen supply chain and (b) generate green hydrogen
- Selected projects will receive an aggregate of 340bn yen (USD3bn equivalent) in financial support
- The application deadline is 1 July 2021

Japan started well as a leader in hydrogen-related technologies and was the first country in the world to set up a national hydrogen strategy in its “Basic Hydrogen Strategy” in December 2017.

However, as other countries began accelerating decarbonisation and introducing various measures to support hydrogen deployment, Japan appeared to be falling behind in the decarbonisation and hydrogen promotion race in recent years.

In response to this, in late 2020, the Suga administration set a target of net zero GHG emissions by 2050 and announced multiple policy measures to achieve that target. One of those measures is the establishment of the “Green Innovation Fund” in an amount of 2tn yen (USD18bn equivalent). The fund was established as a supplemental budget to the New Energy and Industrial Technology Development Organisation (NEDO), a government institution described as the “innovation accelerator”, established to promote the research, development and introduction of new energy technologies. NEDO's objective is to be the “enabler” for the commercialisation of new technologies, through assessing technical proposals and directly engaging in project planning and management.

NEDO has, for some time, been supporting new energy demonstration projects, including hydrogen projects, within its

annual budget allocated by the government. In the hydrogen space, NEDO has been involved in a number of pilot and research projects around the world, partnering with cutting edge private investors, including projects involving green and blue hydrogen production, hydrogen transport and hydrogen usage. The Green Innovation Fund aims to provide ten years' continuous support to enterprises that commit to a target of net zero GHG emissions by 2050 for their research, development and introduction of technologies for decarbonisation. This fund stands out for its sizable amount (2tn yen) and the long-term support (ten years) being offered in comparison with the previous support provided by NEDO.

In March 2021, the Japanese government issued the “Basic Principle of the Operation of Green Innovation Fund”, which sets out the general principles of eligibility for support from the fund. Importantly, the fund is not limited to purely domestic projects. The Basic Principle states that as long as a project is expected to have a “ripple effect” on the Japanese economy, the fund can be used to incorporate advanced technologies from overseas and for international joint research and demonstration projects. However, the places where the project is implemented and where the benefits are enjoyed must include Japan. Also, if a foreign company is the project implementer, the company must agree that NEDO holds more than a 50% share in the IP

obtained through the supported project. Following this, in April 2021, the Japanese government identified 18 business areas to be supported by the fund.

On 18 May 2021, NEDO published application guidelines to start soliciting projects relating to the (a) establishment of a large-scale hydrogen supply chain and (b) generation of green hydrogen, as the first two of the 18 business areas to be supported by the fund. The deadline for applications is 1 July 2021, which requires potential applicants to act quickly. The projects will be selected in late July with the aim of commencing those projects in late August 2021.

The fund supports the **establishment of a large-scale hydrogen supply chain** with the following two objectives aiming to promote both supply and demand of hydrogen:

- (i) achieving a hydrogen supply cost of 30 yen / Nm³ (FOB) in 2030 and 20 yen / Nm³ (FOB) (about the same level as fossil fuels) or less in 2050; and
- (ii) developing hydrogen gas turbine power generation technologies so as to create large-scale demand.

To achieve these objectives, the support is provided in the following four sub-areas:

- (A) development and demonstration of large-scale, high-efficiency hydrogen transport technologies using liquefied hydrogen or methylcyclohexane (MCH) as hydrogen carriers. The goal is to achieve hydrogen production, conversion to carriers and transportation to Japan on a commercial scale (200,000 tons / year or more). Eligible projects are expected (I) for liquefied hydrogen, to develop a 40,000 m³ tank mounted on a hydrogen carrier vessel and a 50,000 m³ hydrogen storage tank at the receiving terminal, and (II) for MCH, to develop equipment that further improves the durability and performance of the catalyst in the dehydrogenation process, together with a system that makes maximum use of and is optimally integrated with an existing refinery. The duration of support is a maximum of ten years. The allocated budget is 225bn yen (USD2bn equivalent);
- (B) establishment of a materials database to enable appropriate materials to be selected to meet the needs of liquefied hydrogen at each phase of production, transportation, storage and utilisation. The duration of support is a maximum of five years. The allocated budget is 3bn yen (USD27m equivalent);
- (C) improvement in efficiency in the liquefaction process, MCH production and the dehydrogenation process. The duration of support is a maximum of ten years. The allocated budget is 15bn yen (USD140m equivalent); and
- (D) demonstration of hydrogen power generation technologies (more than 30% co-firing or exclusive firing). The duration of support is a maximum of ten years. The allocated budget is 26bn yen (USD240m equivalent).

The fund further supports the **generation of green hydrogen** with the following two objectives:

- (i) to realise technologies that can achieve an equipment cost for alkaline water electrolyzers of 52,000 yen / kW and an equipment cost for PEM type water electrolyzers of 65,000 yen / kW by 2030; and
- (ii) to establish a performance evaluation platform for water electrolyzers by 2025.

To achieve these objectives, the support is provided in the following two sub-areas:

- (A) development of technologies to increase the size of water electrolyzers and large-scale demonstration of Power-to-X including (i) developing methods for enlarging or modularising technologies for water electrolyzers, (ii) developing technologies for installing materials that lead to cost reduction and efficiency improvement in water electrolyzers, and (iii) demonstrating the replacement of fossil fuels with hydrogen in heat demand or industrial processes. The duration of support is a maximum of ten years. The allocated budget is 67bn yen (USD610m equivalent); and
- (B) development of technologies to evaluate performance (efficiency and durability, etc.) under various operating conditions (output fluctuation simulating renewable energy and high-pressure operation) with a stack of about 500 kW for alkaline water electrolyzers and PEM water electrolyzers. The duration of support is a maximum of five years. The allocated budget is 3bn yen (USD27m equivalent).

The application and project proposal must be submitted in Japanese in the form designated by NEDO. The projects will be selected based on the proposal documents submitted and the presentation to be made by the applicant enterprise.

The support offered by the Green Innovation Fund is unprecedented in terms of the size of the support (approximately 270bn yen (USD2.4bn equivalent) for hydrogen supply chain projects and 70bn yen (USD640m equivalent) for green hydrogen generation projects) and the duration of the support (five to ten years). As the application deadline is very tight, enterprises that are interested in applying for the fund need to act quickly.

For details or inquiries about applications or the Green Innovation Fund generally, please contact Matthias Voss, Akira Takahashi or Hitomi Komachi.



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