



Federal Ministry
for Economic Affairs
and Climate Action



METI
Ministry of Economy, Trade and Industry



日独エネルギーパートナーシップ
Energiepartnerschaft
DEUTSCHLAND - JAPAN



Summary

Expert Workshop on Hydrogen Imports: Overseas Shipping and Port Infrastructure

Japanese-German Energy Partnership
(WG2: Hydrogen)

Wednesday, 27th September 2023

Venue: 4F, Akasaka Intercity AIR, 1-8-1 Akasaka, Minato-ku, Tokyo 107-0052

Language: Japanese-English simultaneous translation

Fee, Capacity: Free of Charge, 50 participants

JST (11:30 – 17:15)

Moderator: Heiwa Hasegawa, Head of Secretariat of the Japanese German Energy Partnership in Japan, AHK Japan

On September 27 – as part of the German delegation trip to Japan in the context of the Tokyo GX Week – an expert workshop on H2 import infrastructure with a focus on overseas shipping of hydrogen and port infrastructure for hydrogen imports took place. The workshop was organized by the German Chamber of Commerce and Industry (AHK Japan) in Japan and adelphi within the framework of Working Group 2 on Hydrogen (WG2) of the Japanese-German Energy Partnership.

In their introductory and opening remarks, **Marcus Schürmann (AHK Japan)** and **Shikibu Oishi (German Embassy Tokyo)** emphasized the importance of German-Japanese cooperation in the energy sector for achieving climate neutrality, the growing interest in participating in the respective markets and promoting the global market ramp-up, especially of green hydrogen.

The two co-chairs of the working group, **Dr. Christine Falken-Großer (BMWK)** and **Tomohiko Adachi (METI)** presented the current developments in hydrogen policy in Germany and Japan, in particular the updated national hydrogen strategies. The Japanese government considers hydrogen and respective derivatives as key for achieving the goals established under the GX Basic Policy. The updated hydrogen strategy aims for a hydrogen supply of 3 Mt by 2030, 12 Mt by 2040 and 20 Mt by 2050. The scope of the strategy includes hydrogen and its derivatives such as ammonia, synthetic methane and synthetic fuels. To expand the supply, Japan plans to promote domestic production and supply chains for hydrogen. For 2030, the objective is set at 15 GW of electrolysis capacity (domestic and overseas) that involves Japanese components (including parts and materials). Furthermore, relationships with exporting countries, the development of transportation technologies and expansion of financing capabilities are to be strengthened. Additionally, Japan plans to stimulate demand in the power, fuel cells, industrial and home

use sector. Further priorities include the assistance for innovative R&D, the promotion of cross-border cooperation for standardization and to raise public awareness and acceptance for hydrogen use. Under the updated national hydrogen strategy, the German government identified four fields of action. To ensure the availability of sufficient hydrogen, Germany has increased the domestic electrolysis target from 5 GW to 10 GW by 2030 and expects an annual demand of 95 to 130 TWh by 2030. Moreover, diversified import channels are being developed to complement domestic hydrogen production. Around 50-70% of the hydrogen supply are to be covered by imports by 2030. A separate detailed import strategy will be published later this year. The majority of H2 imports will be in the form of derivatives and ship-based until at least 2030. From 2030, the pipeline-based import of green hydrogen from Europe and possibly adjacent regions is to be increasingly expanded. The second field of action focuses on the development of an efficient hydrogen infrastructure. By 2032, the German H2 core network will connect major generation, import and storage centers with key off-takers. The first H2 core network with approx. 1,800 km of converted and new pipelines will be built by 2030. For the import of derivatives from third countries, the government plans to promote the construction of derivative-ready import terminals on the German coasts and establish safe, sustainable shipping routes. The third and fourth field of action promote the implementation of hydrogen applications in sectors like industry, transport, power and buildings and create the necessary framework conditions, including simplified approval procedures and clear standards to accelerate the market ramp-up.

In the following panel discussion, the experts discussed support mechanisms and regulatory frameworks for establishing global hydrogen supply chains. **Elisabeth Sterner (H2Global Foundation)** explained the H2Global funding mechanism, the different market phases, and referred to the European Hydrogen Bank envisaged by the EU Commission, which is to become an important institution for the financing of hydrogen projects. **Keisuke Kawamura (Japan Hydrogen Association)** stressed the need to build both import and export infrastructure worldwide during the market ramp-up phase and that international cooperation and the involvement of the private sector are important for the introduction of the necessary regulatory framework. **Dr. Falken-Großer (BMWK)** pointed out that Germany is pursuing a lighthouse chain approach, which analyzes projects along the entire hydrogen value chain in order to identify regulatory challenges and gaps. The biggest challenge at the moment is the high costs and the resulting lack of funding. It is therefore important to create investment certainty and to stimulate investments through targeted measures. **Tomohiko Adachi (METI)** explained that first movers and risk bearers for imports of hydrogen and its derivatives will be supported by the Japanese government on the way to establishing robust supply chains and overcoming the current early market phase. Nonetheless, the receiving side also needs clear regulations and laws, e.g. for hydrogen storage and pipelines, which are also important topics for future exchanges between Germany and Japan. From the overall discussion it became clear that imports via ships will be of utmost relevance for supply in the current global market ramp-up. At the same time, the demand side has to be strengthened alongside the supply. Both require clear and comprehensive regulatory frameworks for a market to be self-sustaining in the long term.

The afternoon was divided into two sessions, one on hydrogen overseas transport and the other on projects to develop port infrastructure for hydrogen imports. In the first session, various inputs and perspectives on hydrogen transport were shared and discussed by **Takahiro Rokuroda (NYK Line)**, **Runa Jörgens (German Maritime Centre)**, **Shigeru Yamamoto (Kawasaki Heavy Industries)** and **Hannes Thiede (Reederei F. Laeisz)**. In the second session, **Hartmut Beyer (HPC Hamburg Port Consulting GmbH)**, **Jannes Elfgen (Hamburg Port Authority)** and **Keisuke Oyama (Kawasaki City)** offered insights into ongoing projects related to hydrogen port infrastructure. Discussions and inputs among other topics centered on future hydrogen carriers (such as LH2, MCH, LOHC and NH3) and their advantages and disadvantages. Other findings were that the maritime sector itself will be a strong future off-taker of low-carbon fuels on the way to achieve the decarbonization of the shipping sector.

The following expert discussion on the role of port infrastructure for the hydrogen economy, moderated by **Junichi Hirata (Greenhouse Gas Assurance Association of Japan)**, provided further insights on related policy instruments, support mechanisms, cooperation potentials and future requirements for

ports. **Jannes Elfgen (Hamburg Port Authority)** explained that the port of Hamburg will not exclude any derivatives or carriers. The future will become much more complex for ports in regard to shipping fuels. To stay competitive, ports have to prepare for different use cases, e.g. methanol for cruise ships and ammonia for cargo ships, which will result in the need for more tanks and space compared to conventional fuels. To become carbon-neutral themselves, ports additionally should re-consider their own power supply. Heat from cracking ammonia or the coldness from liquified hydrogen offer sector coupling potentials for the transformation into truly sustainable energy ports. **Keisuke Oyama (Kawasaki City)** stressed the need to increase demand for hydrogen to foster the market ramp-up and highlighted the initiatives of Kawasaki City together with other regions and entities in Tokyo in this regard, underlining the importance of cooperation between ports and neighbouring industrial areas. A lack of standards, e.g. safety issues regarding the handling of hydrogen, would be an additional hindering factor for the market ramp-up of hydrogen and the establishment of the necessary port ecosystem for receiving and using hydrogen and related derivatives. **Shigeru Yamamoto (Kawasaki Heavy Industries)** added that transportation, loading and unloading of hydrogen is generally similar to LNG in port facilities, and that ports have ample experience in dealing with energy carriers like ammonia. However, liquified hydrogen poses new challenges, e.g. by having a much lower temperature. Insulation is another key, e.g. for piping, which needs to be more sophisticated. Manufacturers like Kawasaki Heavy Industries want to communicate and cooperate more with industrial plants and other entities such as ports, to understand their needs better and facilitate the overall transition. **Runa Jörgens (German Maritime Centre)** mapped out the relevance of governmental financial support for the global market ramp-up and transitions in the maritime industry. However, a business case and off-takers are equally important for industry to make the necessary investments. Governments could step in and provide, e.g. guarantees for the offtake of hydrogen. Another support instrument could be tax measures or guarantee programs for financing infrastructure. The decarbonization targets of the shipping industry are ambitious, but the industry is ready to achieve it alongside the necessary market ramp-up of low-carbon fuel alternatives. All speakers agreed, that the exchange between Germany and Japan on this highly relevant topic should continue. The existing experience of the different stakeholders in handling different carriers for hydrogen offers a good basis for knowledge exchange, mutual learnings and discussions on necessary international standards as well as new technologies.

Organized by:



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