

Vietnam sets a development roadmap for hydrogen under national strategies and master plans

In brief

As part of the energy transition roadmap, Vietnam has acknowledged the importance of hydrogen and recently made initial steps in the regulatory formulation for the development of hydrogen.

Together with the recently approved national power development master plan (PDP8) and its implementation plan as well as the national overall master plan for energy, on 7 February 2024, the Prime Minister of Vietnam issued Decision No. 165/QĐ-TTg approving the national strategy for the development of hydrogen to 2030, with a vision to 2045 ("**Hydrogen Strategy**"). The Hydrogen Strategy lays the preliminary foundation for the development of hydrogen in the upcoming period by officially setting out the viewpoints, goals, directions, and the relevant implementation tasks and measures. Accordingly, this marks a significant step in Vietnam's transition to green energy, focusing on new and clean energy sources (including hydrogen).

Please find below the highlights and key takeaways of the Hydrogen Strategy.

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Key takeaways

- The development of the hydrogen ecosystem and value chain, including production, storage, transportation, distribution, and use, will be based on renewable energy, ensuring to have a well-connected and modern infrastructure system.
- The development of hydrogen is in accordance with the energy transition roadmap and follows the technology development trends worldwide.
- The formulation of appropriate policies and incentive mechanisms will be prioritized to promote the use of hydrogen in all sectors.
- To achieve the expected goals, the Hydrogen Strategy proposes a number of objectives and solutions covering policies and mechanisms, investment and finance, science and technology, environmental protection, and sustainable development.

The Hydrogen Strategy sets the broad directions and goals of the Vietnamese government in developing hydrogen as an energy source. With the overall direction and goals set, specific ministries (see below) are tasked to formulate the implementing regulations and mechanisms. Interested energy investors should stay close to upcoming regulatory developments and take the necessary steps to best position themselves to capture investment opportunities in hydrogen business in Vietnam.

In depth

Development viewpoints

The Hydrogen Strategy sets out the following key points:

- The development of the hydrogen value chain includes production, storage, transportation, distribution and use, to ensure energy security, reduce greenhouse gas emission and promote the development of the green economy;

- The development of hydrogen is associated with the energy transition roadmap and closely follows the technology development trends worldwide, especially technologies that use renewable energy to produce green hydrogen;
- The use of hydrogen in all sectors is highly promoted. The formulation of appropriate policies and incentive mechanisms is prioritized to encourage hydrogen use in industries with large greenhouse gas emissions, such as power generation, transportation and industry;
- Cooperation with other countries is highly promoted to take advantage of the experience, knowledge, and support of the international community in developing the hydrogen ecosystem (e.g., access to advanced technologies and funding).

Development goals and orientation

In general, the Hydrogen Strategy aims to promote the development of Vietnam's overall hydrogen ecosystem based on renewable energy, ensuring to have a well-connected and modern infrastructure system, in accordance with the national goals on climate change, green growth, and net-zero emissions under Vietnam's roadmap and commitments to energy transition.

In particular, the Hydrogen Strategy sets out the following key goals for the development of hydrogen for the period up to 2030, serving as the basis for the development of hydrogen in the subsequent period to 2050:

Hydrogen production

- Applying advanced technologies in green hydrogen production;
- Applying advanced technologies in carbon capture, utilization and storage (CCS/CCUS) associated with hydrogen production from other energy sources such as coal and gas;
- Hydrogen production capacity from the usage of renewable energy and other processes that capture carbon is to reach 100 to 500 thousand tons per year by 2030 and 10 to 20 million tons per year by 2050.

The national overall master plan for energy (approved under Decision No. 893/QĐ-TTg dated 26 July 2023) sets out the following high-level list of green hydrogen projects:

For the period of 2021 – 2030:

No.	Name of projects	Planned capacity (1,000 tons per year)
1.	Hydrogen production plants in the northern region of Vietnam	100 - 200
2.	Hydrogen production plants in the central region of Vietnam	200 - 400
3.	Hydrogen production plants in the southern region of Vietnam	200 - 400

For the period of 2031 – 2050:

No.	Name of projects	Planned capacity (1,000 tons per year)
1.	Hydrogen production plants in the northern region of Vietnam	1,000 – 6,000
2.	Hydrogen production plants in the central region of Vietnam	3,000 – 12,000
3.	Hydrogen production plants in the southern region of Vietnam	3,000 – 12,000

Note: Capacity and locations of specific projects are subject to consumption market demands which shall be determined at the stage of preparing for investment projects under applicable laws.

Hydrogen use

- Developing the hydrogen market in accordance with the fuel conversion roadmap in the energy sector, including power generation, transportation, industry and commerce;
- Testing hydrogen-derived energy in certain sectors that can exploit existing infrastructure. For example, for power generation, researching and piloting the co-firing of gas with hydrogen and coal with ammonia at gas and coal power plants to prepare for the implementation of the fuel conversion roadmap towards a hydrogen-based energy.

Storage, transportation, and distribution of hydrogen

- Research and pilot implementation using existing energy sector infrastructure and specialized equipment manufacturing centers/facilities serving the transportation, storage and distribution of hydrogen - a stepping stone to expand the infrastructure to get to a market scale of 10 to 20 million tons per year by 2050;
- Research and pilot construction of hydrogen distribution systems for the transportation sector on routes and in areas with favorable conditions.

Hydrogen exports

- Taking advantage of natural resources of renewable energy and geographical location advantages, and encouraging investment in green hydrogen production for export.

Implementation tasks and solutions

For the implementation of the Hydrogen Strategy, the Prime Minister approved the following tasks and solutions, among others:

Policies and mechanisms

- Formulating and supplementing regulations on renewable energy development, covering hydrogen energy sources in the Electricity Law (amended), securing a legal basis for sustainable development of new and renewable energy (the Ministry of Industry and Trade will be responsible for this);

Under the proposed draft of new Electricity Law (released by the MOIT on 29 March 2024), the MOIT proposed that power generated from new energy sources, including hydrogen, may be eligible for incentives under the laws on investment, land, sea, tax, fees and investment credit, and that the national assembly also authorizes the government to decide on specific incentives from time to time.

- Formulating mechanisms and legal basis for companies that produce and use fossil energy to actively convert to producing and using hydrogen (the Ministry of Industry and Trade will be responsible for this);
- Formulating and promulgating regulations on the authority to decide/approve investment policies for hydrogen/ammonia production and export projects using renewable energy (the Ministry of Planning and Investment will be responsible for this);
- Formulating and promulgating incentive mechanisms and policies (e.g., taxes, fees and land) to attract the development of hydrogen production and usage (the Ministry of Planning and Investment will be responsible for this);
- Preparing amendments and supplements to the national standards and regulations on hydrogen in accordance with international regulations and standards (the Ministry of Science and Technology will be responsible for this).

Investment and finance

- In the initial stage, proactively researching and investing in small-scale hydrogen pilot production projects in accordance with the roadmap to start using hydrogen-derived fuel at a reasonable price;
- In the following stage, based on the pilot projects above, investing in large-scale hydrogen production projects in areas with advantages in renewable energy, to provide power for relevant consumers and for export activities;
- Mobilizing diverse capital sources and forms of capital to effectively attract domestic and foreign capital sources, including mobilizing and utilizing international support commitments, green international financing, climate international financing, and green bonds, among others;
- Diversifying investments into hydrogen-based energy projects (e.g., private, public and public-private partnership models) and promoting the role of state-owned enterprises.

Science and technology

- Promoting the research, application and transfer of hydrogen-based energy production technologies and fuel conversion technologies from coal and gas to biomass, ammonia and hydrogen;
- Formulating mechanisms to promote innovation, research and development of hydrogen-based energy among domestic enterprises.

Environmental protection and sustainable development

- Promoting the transition from fossil fuels to hydrogen-based energy to reduce pollution and greenhouse gas emissions, and achieving the net-zero emissions target by 2050;

- Constructing hydrogen-based energy projects and infrastructure in accordance with regulations on environmental protection and biodiversity, minimizing risks and damages due to climate change.

In a nutshell, the Hydrogen Strategy reinforces and enhances the general policies on the development of hydrogen as set out in the approved national power development master plan (PDP8) (issued under Decision No. 500/QĐ-TTg dated 15 May 2023), PDP8 implementation plan (approved under Decision No. 262/QĐ-TTg dated 1 April 2024) and the national overall master plan for energy (issued under Decision No. 893/QĐ-TTg dated 26 July 2023) as a part of the Vietnam's energy transition plan in which hydrogen is aimed to be developed for both domestic use and export.

If you would like to discuss the above developments in more detail, please contact us at thanhhai.nguyen@bakermckenzie.com and thiynly.le@bakermckenzie.com.

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