

Implemented activities on the development of hydrogen economy in Azerbaijan



May 23, 2024

Key strategic documents



Socio-economic Development Strategy of the Republic of Azerbaijan for 2022-2026

Activity area 5.2.5: Enhancing the use of green vehicles and other green technologies for climate action

7. Exploring the potential for hydrogen production and use and formulating proposals for pilot projects in this area.

Result indicators

- Research on the potential for hydrogen production and use
- Submission of proposals for pilot projects in hydrogen production.

"I State Program on the Great Return to the liberated territories of the Republic of Azerbaijan"

Activity area 6.4. Application of energy efficient and green technologies on the territories

6.4.2 Examination and assessment of the prospects of renewable energy sources (hydropower, geothermal energy and bioenergy), hydrogen technologies, energy storage and hydro-accumulation measures.

Result indicators

- Drafting of proposals for the planning of relevant evaluation projects.
- Submission of preliminary, interim, and final evaluation reports.

Offshore Wind Energy Roadmap

Scenarios for offshore wind energy development:

- **Low growth scenario** – 1.5 GW of baseline wind power capacity (7% of Azerbaijan's electricity demand by 2040)
- **High growth scenario** – 7 GW of fixed wind power capacity (37% of Azerbaijan's electricity demand by 2040)

Conditions:

- Decarbonisation of heat and transport demand
- Use of hydrogen as an energy carrier
- Consolidation of the electricity transmission network and enhancement of energy demand management
- Connecting to the electricity markets of neighbouring countries (EU and Turkey) to ensure carbon-free electricity exports.



Offshore Wind Development Program

OFFSHORE WIND ROADMAP FOR AZERBAIJAN

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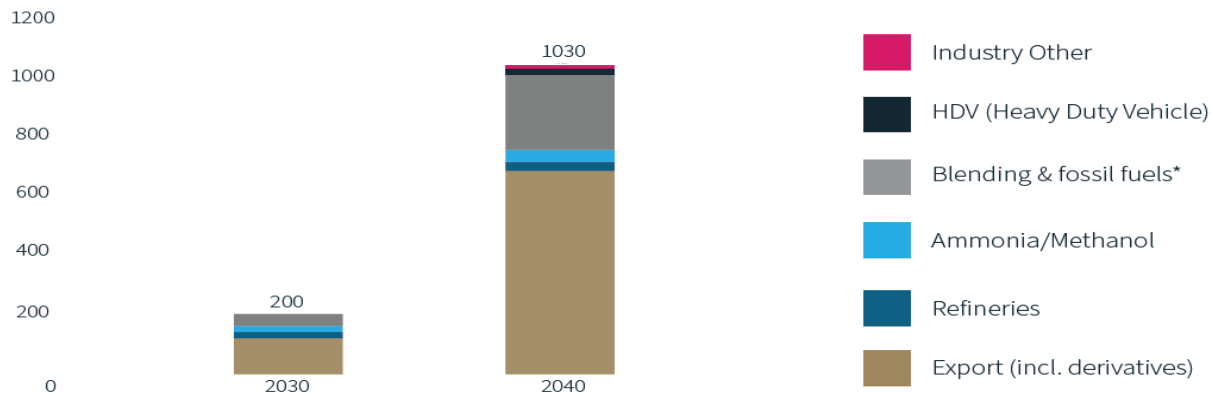
Public Disclosure Authorized

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Low Carbon Hydrogen Economics Market Research

- ❑ It is possible to use our country's existing experience in ammonia and methanol production to develop the green hydrogen industry.
- ❑ Green hydrogen can help decarbonise Azerbaijan's petrochemical industry
- ❑ The natural gas reserves in Azerbaijan create an opportunity for the development of blue hydrogen projects.
- ❑ CO2 storage capabilities in decommissioned oil and gas wells
- ❑ It is possible to export hydrogen along with natural gas (blending) through the Southern Gas Corridor (SGC).



Low Carbon Hydrogen
Economy in Azerbaijan 



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The main areas of hydrogen utilisation, according to the report

Azerbaijan's main industries related to hydrogen production and proposals in this area are as follows:

- Petrochemical and oil refining industry;
- Production of ammonia and nitrogen fertilizers;
- Methanol production;
- Steel industry
- Maritime transport
- Power generation

Documents developed in accordance with the above areas:

"Terms of Reference for the preparation of a Request for Proposals (RFP) for the construction of a hydrogen production plant;

- National Hydrogen Strategy scoping document.

https://area.gov.az/storage/pdf/Low_Carbon_Hydrogen_Economy_in_Azerbaijan_Executive_Summary.pdf



Low Carbon Hydrogen
Economy in Azerbaijan 



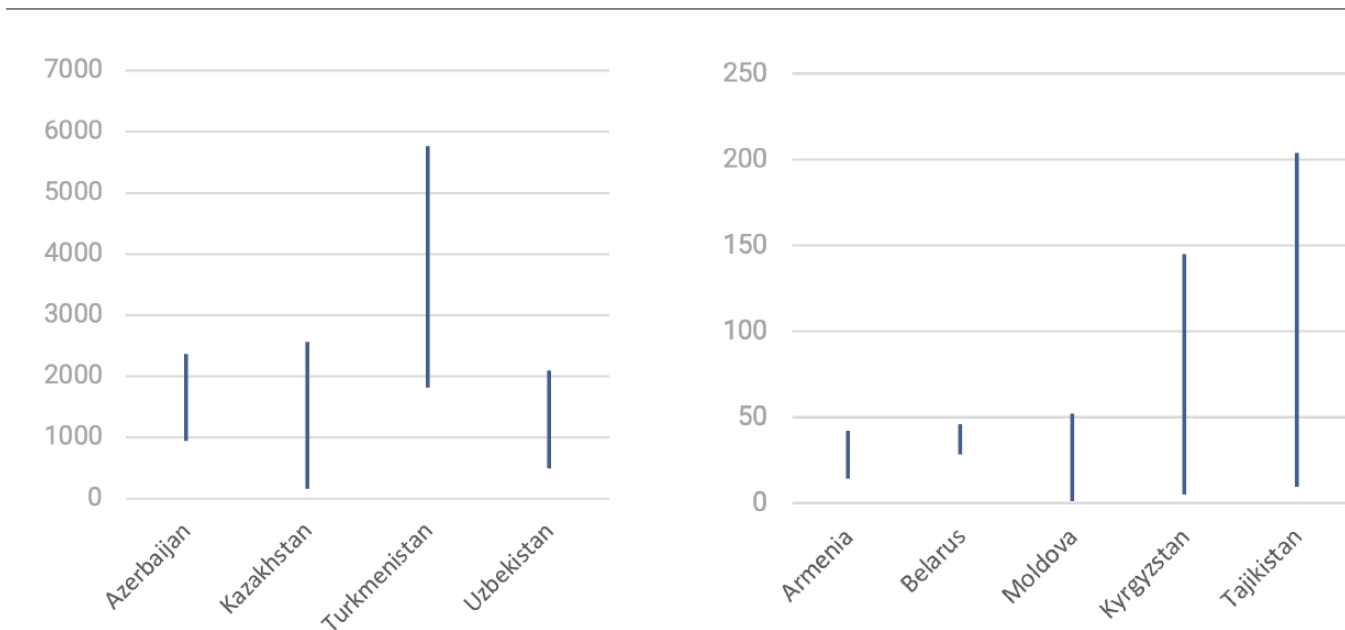
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Advisian
Workley Group

Azerbaijan's competitiveness in low-carbon hydrogen production

Sustainable Hydrogen Production Pathways in Eastern Europe, the Caucasus and Central Asia, UNECE, 2023

Low-carbon hydrogen production potential by 2040: volume (thousand tonnes of hydrogen per year)



Source: UNECE

https://unece.org/sites/default/files/2023-03/EN_Sustainable%20Hydrogen%20Production%20Pathways_final_0.pdf

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

Sustainable Hydrogen Production Pathways in Eastern Europe, the Caucasus and Central Asia

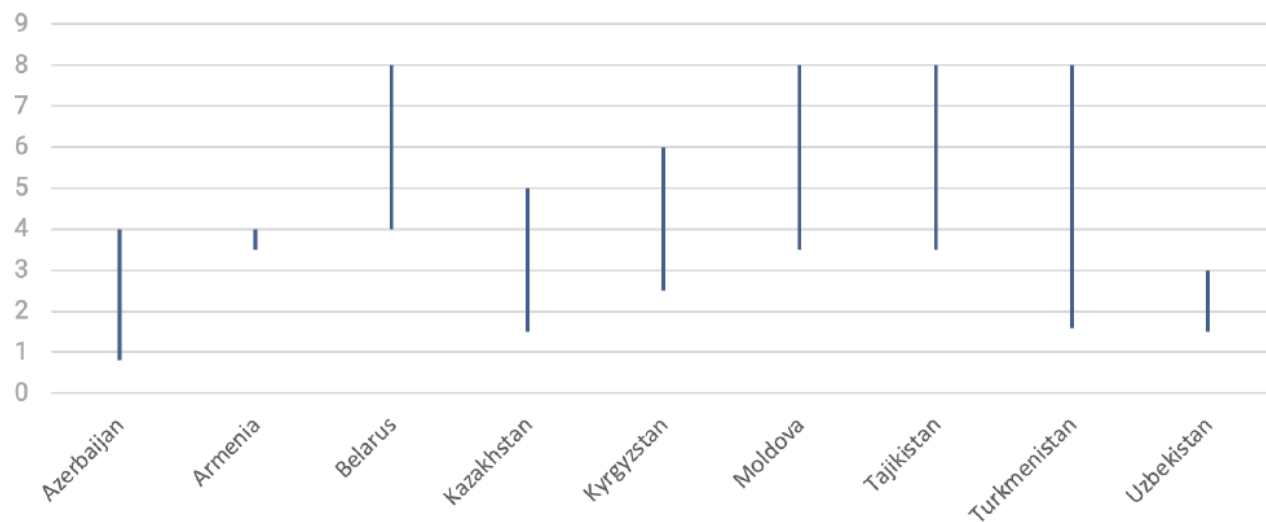


Azerbaijan's competitiveness in low-carbon hydrogen production

Sustainable Hydrogen Production Pathways in Eastern Europe, the Caucasus and Central Asia, UNEC, 2023

Low-carbon hydrogen production potential till 2040: a financial analysis

Cost ranges for low-carbon hydrogen by country, USD per kg of H₂



Source: UNECE

https://unece.org/sites/default/files/2023-03/EN_Sustainable%20Hydrogen%20Production%20Pathways_final_0.pdf

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

Sustainable Hydrogen Production Pathways in Eastern Europe, the Caucasus and Central Asia



Projects under implementation



Framework agreement between the Ministry of Energy and Australian company Fortescue Future Industries (FFI) on cooperation in research and development of renewable energy projects and green hydrogen potential in Azerbaijan.
11 GW wind farm project (10 GW offshore and 1 GW onshore) with integrated green hydrogen and green ammonia



2 GW offshore wind farm and integrated hydrogen in the implementation phase

Signed agreement
The State Oil Company of Azerbaijan (SOCAR) and Abu Dhabi National Oil Company (ADNOC) have signed a Strategic Cooperation Agreement to further expand joint activities in the fields of environmental protection, blue hydrogen, geothermal and carbon management.

Becoming a green energy centre



Strategic Partnership Agreement on Green Energy signed between the Governments of Azerbaijan, Georgia, Romania and Hungary in Bucharest

In addition to the export of green energy, it is planned to assess the potential for exporting green hydrogen and other green gases; for this purpose, the consulting company CESI has been engaged to carry out work in this area.



Joint communiqué of the heads of relevant ministries of Azerbaijan, Kazakhstan and Uzbekistan

- co-operation in energy exchange with a focus on renewable energy sources;
- co-operation in the development and export potential of green hydrogen and green ammonia;
- co-operation in the creation of adequate infrastructure.

Infrastructure, legal framework and international cooperation for the production of green hydrogen

- IRENA forecast for green and blue hydrogen production under a 1.5°C temperature increase scenario:
 - 15 EJ (125 Mt) – by 2030
 - 63 EJ (523 Mt) – by 2050.
 - The share of green hydrogen in total hydrogen production is expected to increase from a projected 40% in 2030 to 94% by 2050.

Approaches for accelerating the transition to a hydrogen economy

- Development of national hydrogen strategies (including industry priorities)
- Enhancing international cooperation in green hydrogen development.



Recommendations for accelerating hydrogen deployment (G7)

WORLD ENERGY TRANSITIONS OUTLOOK 2023

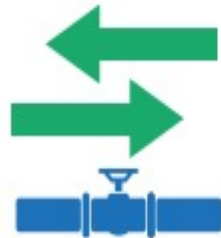
1.5°C PATHWAY



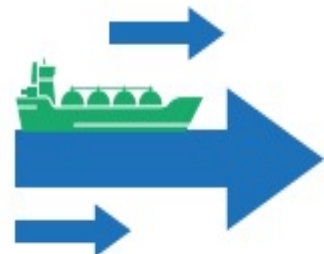
Global hydrogen trade flows under optimistic technology assumptions in 2050

Source: IRENA (2022a).

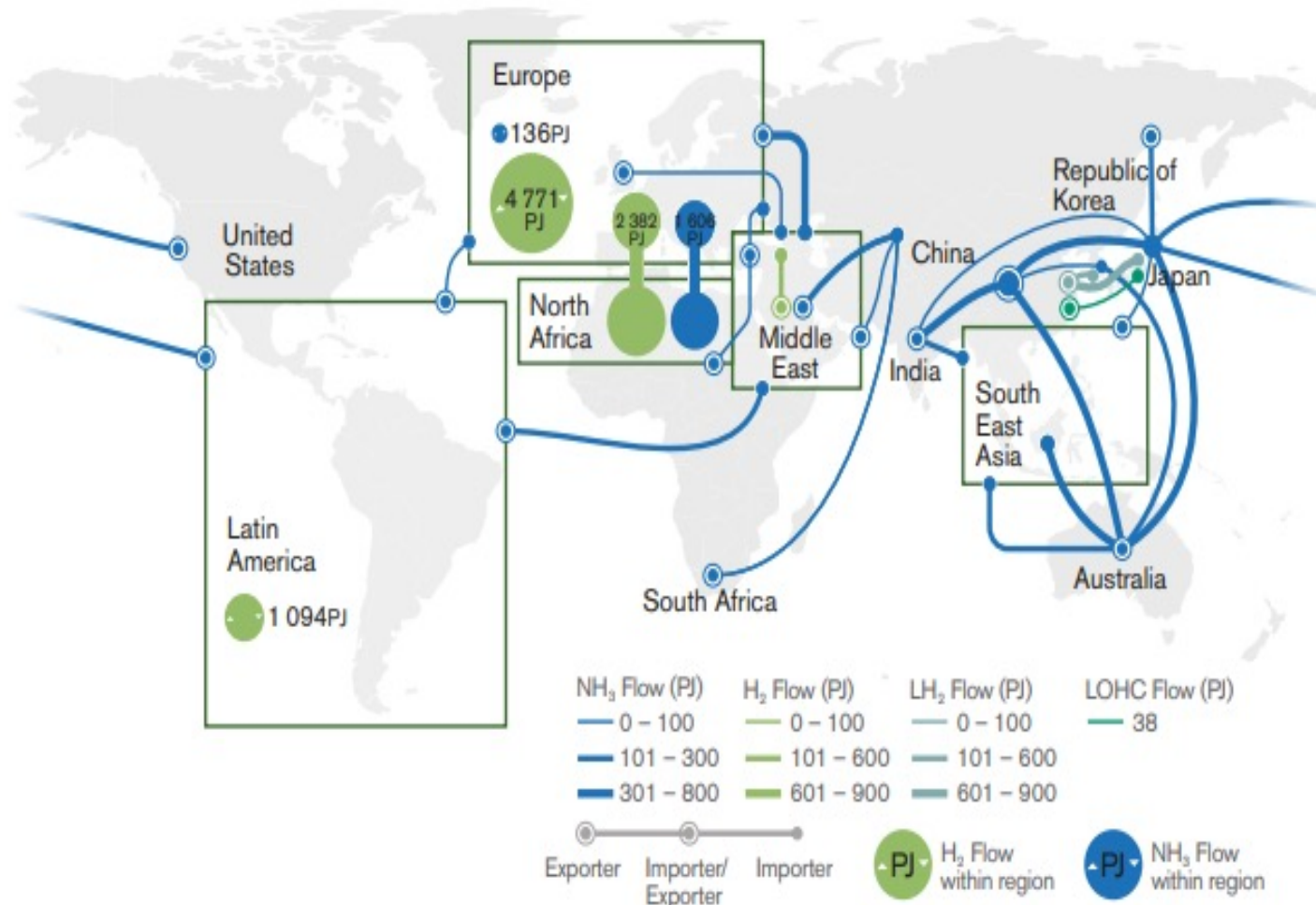
By 2050, international trade could satisfy about 1/4 of the total global hydrogen demand in IRENA's 1.5°C scenario.



55% of this hydrogen would be traded via pipelines.



45% of this hydrogen would be shipped, predominantly as ammonia.



Thank you for your attention!

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