

TECHNOLOGY AND INNOVATION CONCLAVE 1.0

Innovation and Startup Opportunities in Energy Storage and Green Hydrogen: Status in Vietnam

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I. BACKGROUND OF VIET NAM

General background of Viet Nam

1. 2021

During COP26 in Scotland, Viet Nam made a netzero commitment by 2050.

2. 2022

- During COP27 in Egypt, Viet Nam reaffirmed its commitment to achieving net zero emissions by 2050 as committed at COP26.
- Viet Nam and the International Partnership Group (IPG) signed the Just Energy Transition Partnership (JETP) agreement

3. 2023

At COP28 in 2023 in Dubai:

- Viet Nam was one of the first 63 countries to join the (Global Cooling Pledge)
- Viet Nam announced Resource Mobilization Plan (RMP) to implement JETP

Viet Nam and 10 other countries joined The Asia Zero Emission Community (AZEC)



II . SOME POLICIES OF VIETNAM ON INNOVATION, STARTUPS IN THE FIELD OF ENERGY STORAGE AND GREEN HYDROGEN

Some strategies of Vietnam

STT	Document	Related content
1	Strategy for development of science, technology and innovation by 2030 (Decision 569/QD- TTg dated May 11 th 2022)	<ul style="list-style-type: none">- Research to master energy storage and conversion material technologies including batteries, high-performance fuel cells, hydrogen storage materials, PV materials, thermo-electric materials, photothermal materials, materials serving wind power production, biofuel.- Research to master and apply the technologies to new energy, renewable energy, smart energy, advanced energy storage technologies, fuel cells
2	National strategy on climate change until 2050 (Decision 896/QD- TTg July 26, 2022)	<ul style="list-style-type: none">- Develop energy storing technology including energy battery, pumped-storage hydroelectricity, etc.- Research and apply carbon capture and storage (CCS) technology for power plants utilizing fossil fuel and industrial manufacturing facilities- Promote international cooperation in researching, developing, and applying potential technologies to reduce greenhouse emission such as carbon capture and storage, green hydrogen, energy battery, nuclear energy, and other new potential energy.



II . SOME POLICIES OF VIET NAM ON INNOVATION, STARTUPS IN THE FIELD OF ENERGY STORAGE AND GREEN HYDROGEN

Some policies of Viet Nam on innovation, startups

Laws, resolutions of the National Assembly and guiding documents

1. Law on Science and Technology No. 29/2013/QH13 dated June 18, 2013
2. Law on Technology Transfer No. 07/2017/QH14 dated June 19, 2017
3. Law on providing assistance for SMEs No. 04/2017/QH14 dated June 12, 2017 and guiding documents
4. Law on intellectual property No. 07/2022/QH15
5. Law on High Technologies 2008 and guiding documents
6. Law on Product and Goods Quality (No. 30/VBHN-VPQH dated December 10, 2018)
7. Law on standards and technical regulations (No. 31/VBHN-VPQH dated December 10, 2018)
8. Law on Enterprises 2020 and guiding documents
9. Law on Investment 2020 and guiding documents
10. Law on Bidding 2023 and guiding documents
11. Law on the Capital 2024
12. Tax law (corporate income tax; import and export tax; value added tax; resource tax; environmental protection tax; personal income tax)
13. Resolutions of the National Assembly on piloting special mechanisms and policies for the development of Ho Chi Minh City and Da Nang



III. Some activities and results on innovation and creative startups in the field of energy storage and green hydrogen

Some specific policies of Vietnam on energy storage and green hydrogen

1. Law on Electricity (compounding on 2018)
2. Decision No. 165/QD –TTg dated February 7th 2024 approved The Vietnam’s hydrogen energy development strategy by 2030, with a vision to 2050 (Hydrogen energy strategy)
3. Decision No. 215/QD- TTg dated March 1st, 2024 approving Vietnam’s National energy development strategy by 2030 with a vision towards 2045 (Energy Development Strategy)
4. Decision No. 2068/QD –TTg dated November 25th, 2015 approving the development strategy of renewable energy of Vietnam by 2030 with a vision to 2050
5. Decision No. 500/QD -TTg dated May 15, 2023 approving the National Electricity Development Planning of the period of 2021 - 2030 and vision for 2050 (the VIII Electricity Planning)
6. Decision No. 888/QD –TTg dated July 25, 2022 on The Scheme setting out tasks and solutions for implementation of outcomes of the 26th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP26 Conference)
7. Decision No. 13/2020/QD- TTg dated April 6, 2020 on incentives for development of solar energy in Vietnam
8. Resolution No. 118/2015/CP dated November 12, 2015 on provide guidelines for some Articles of the Law on Investment

Thus, the framework conditions favorable for the development of innovation, startups; energy storage and green hydrogen in Vietnam have been formed.



III. SOME ACTIVITIES AND RESULTS ON INNOVATION AND STARTUPS IN THE FIELD OF ENERGY STORAGE AND GREEN HYDROGEN

About innovation

Global Innovation Index (GII)

Vietnam ranked 46/132 countries/economies

Increase 2 ranks compared to 2022

4th in Southeast Asia

Vietnam ranked 4th in Southeast Asia

Increased for 13 consecutive years

For 13 consecutive years, Vietnam has always had results higher than its development level.

Input 57 – Output 40

The rank of the “input” index group is 57, the rank of the output index group is “40”



Our country's innovation activities have achieved some remarkable results. Vietnam's national innovation system is reflected in the results of the Global Innovation Index (GII)



III. SOME ACTIVITIES AND RESULTS ON INNOVATION AND STARTUPS IN THE FIELD OF ENERGY STORAGE AND GREEN HYDROGEN

Provincial Innovation Index (PII)

1. Vietnam has developed, applied and published the PII index since 2023 based on the GII index, other domestic indexes and international experience (India, China, Columbia, USA), and technical support from WIPO.

2. Accordingly, the top 10 provinces with the highest index are:

Hanoi; Ho Chi Minh City; Hai Phong; Da Nang; Can Tho; Bac Ninh; Ba Ria Vung Tau; Binh Duong; Quang Ninh; Thai Nguyen.

Viet Nam Industry Innovation Index (VIII)

1. SATI, MOST and VinUni University launched the Vietnam Industry Innovation Index (VIIR) Development project in January 2024.

2. The project is chaired and professionally sponsored by the Ministry of Science and Technology; implemented by VinUni University and the Portulans Institute; led by Professor Soumitra Dutta (Dean of the Saïd Business School, University of Oxford; Co-founder and President of the Portulans Institute).



III. SOME ACTIVITIES AND RESULTS ON INNOVATION AND STARTUPS IN THE FIELD OF ENERGY STORAGE AND GREEN HYDROGEN

About startups

2023

58/100 (- 4)

Global Startup Ecosystem Ranking

46/132 (+2)

Ranking on the Global Innovation Index GII

529 million USD (- 17%)

Total venture capital investment (2023)

122 (- 9%)

Total investment deals (2023)

~3100

Startups recorded in the list (not including Startups that have not been updated/recorded/certified. Actual number is estimated at ~ 3500-4000)

3

Unicorns:
VNG,
VNLife,
MoMo

397

Patents granted (including inventions + utility solutions in the first 6 months of 2023)

208

Venture capital fund

84

Incubators

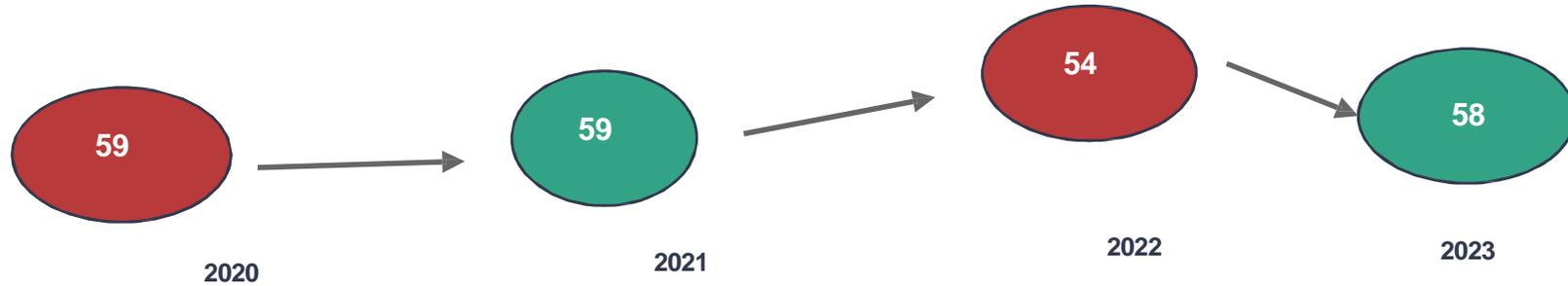
35

Acceleratators

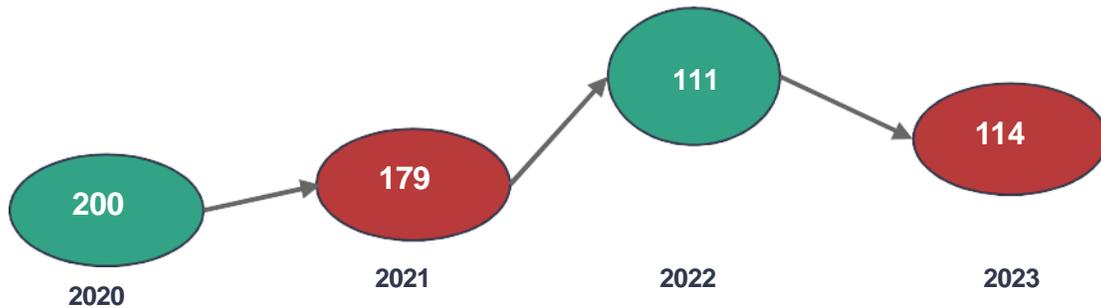


III. SOME ACTIVITIES AND RESULTS ON INNOVATION AND STARTUPS IN THE FIELD OF ENERGY STORAGE AND GREEN HYDROGEN

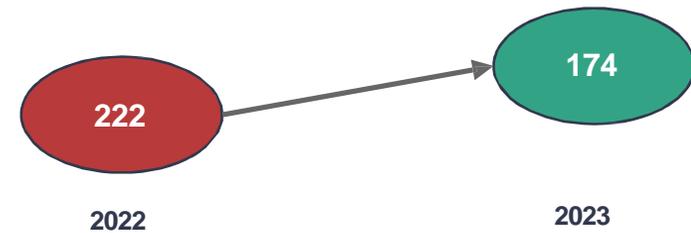
About Viet Nam's startup ecosystem



Vietnam's startup ecosystem ranked 58th globally and 5th regionally



Ho Chi Minh City (114)



Hanoi (174)

2 major cities of Vietnam are in the top 200 cities developing global startup ecosystems

*Source:
The Global Startup Ecosystem Index
Report 2023 (StartupBlink)*



III. SOME ACTIVITIES AND RESULTS ON INNOVATION AND STARTUPS IN THE FIELD OF ENERGY STORAGE AND GREEN HYDROGEN

Energy Storage technology example of Viet Nam



Alterno

Sand Battery Climate Tech

Zero-emission thermal energy storage (TES) system from sand



IV. OPPORTUNITIES AND CHALLENGES FOR INNOVATION, STARTUPS IN THE FIELD OF ENERGY STORAGE AND GREEN HYDROGEN

Opportunities

1. Support for the policies of the Party and Government of Vietnam
2. The legal framework, including supporting policies, has been established.
3. Energy storage and hydrogen technologies are in the list of prioritized technologies and technological products in:
 - List of high technologies prioritized for development investment (Decision No. 38/2020)
 - List of hi-tech products encouraged for development (Decision No. 38/2020)
 - List of technologies encouraged for transfer (Decree 76/2018)
4. Storage batteries power source structure by 2030 is 300 MW (0.2%; Power Plan VIII). Exceeding production and non-optimization of RE required efficient energy storage technologies.
5. Energy storage battery projects are in the list of important projects and investment priorities of the electricity industry.
6. Use of hydrogen:
 - Until 2030: testing hydrogen-derived energy in some areas: Electricity production; Transportation; Industry
 - Until 2050: promote using green hydrogen and hydrogen-derived energy in all areas which use energy.



IV. OPPORTUNITIES AND CHALLENGES FOR INNOVATION, STARTUPS IN THE FIELD OF ENERGY STORAGE AND GREEN HYDROGEN

Challenges

1. Technology in the production and storage of renewable energy is still limited, making it difficult to ensure a stable energy supply.
2. Green fuel technology for industry and transportation such as hydrogen technology is still in the experimental stage and has not been commercialized; carbon capture and storage technology still faces many challenges and is expensive.
3. The legal basis for deploying baseload power sources and renewable energy sources has not been completed.
4. Lack of mechanisms and policies to encourage investment, support prices and localize technology. Legal regulations on planning and investment are not comprehensive, synchronous, and do not keep up with practical requirements and implementation resources.
5. The capacity of domestic entities to receive and apply renewable energy technology is still limited.
6. Domestic production capacity and technology level are still low, product quality and lifespan are low.



SUMMARY OF CONTENTS

1. Vietnam is considered a country with great potential for renewable energy development; has the opportunity to take a shortcut in the energy industry.
2. Vietnam has participated in and actively implemented international commitments towards netzero.
3. Innovation support policies have shown priority for the energy storage and hydrogen sectors; Vietnam's innovative startup ecosystem has formed and is operating actively.
4. Energy storage and hydrogen are of interest and reflected in policy documents, especially storage batteries have been planned in the VIII power plan.

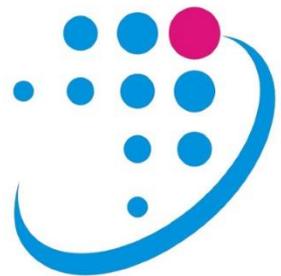
=> Favorable framework conditions for innovation and startups in the field of energy storage and green hydrogen in Vietnam have been formed.

5. Challenges in the supply of high-quality technology, suitable for Vietnam's conditions and at reasonable prices; technological capacity of Vietnamese enterprises; national standards on energy storage battery systems in Vietnam are being built

6. Challenges in investment costs, high-quality human resources, and international support.

7. Vietnam's dynamic innovative startup sectors include technology on: agriculture, education, media & marketing, biology, 4.0, e-commerce, logistics & transportation, retail, etc., but have not yet shown much in the energy sector (especially green hydrogen).

= > Faced with great opportunities and challenges, Vietnam needs the support and cooperation of the international community to firmly step on the path of green transformation towards the Netzero goal!



THANK YOU VERY MUCH!

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