

ECCK E&E Webinar on Hydrogen's Potential to Achieve a Carbon Neutral Future

Session I: Legal Framework

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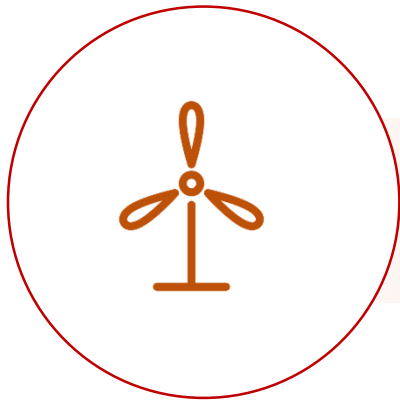
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I. Efforts to Pursue a Hydrogen-Based Economy

| Hydrogen Economy Roadmap (Jan 2019)

Roadmap for promoting a hydrogen-based economy focusing on:



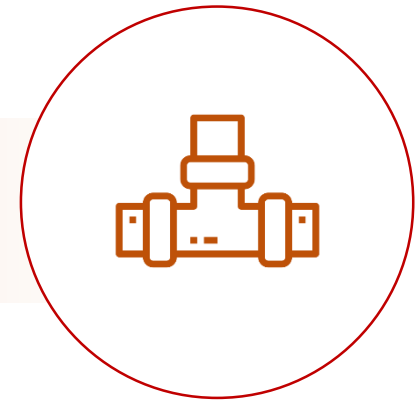
H₂ Production

**Expansion of green H₂
production**



H₂ Storage & Transportation

**Stable and economical
storage and transportation
system**



H₂ Utilization

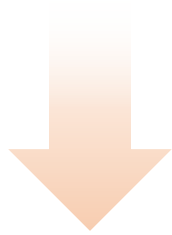
**Expanding the use of
H₂ for transportation,
housing & buildings,
power generation**

I. Efforts to Pursue a Hydrogen-Based Economy

| Hydrogen Economy Roadmap (Jan 2019)

Cumulative Domestic Goals

2022



2040

| | |
|------------------------|----------------|
| Hydrogen Fuel Vehicles | 67,000 |
| HRS | 310 |
| Power Generation | 1.5 GW |
| Housing/Buildings | 50 MW |
| Power Supply | 470,000 t/year |
| Price | KRW 6,000/kg |

| | |
|------------------------|------------------|
| Hydrogen Fuel Vehicles | 2,900,000 |
| HRS | 1200 |
| Power Generation | 15 GW |
| Housing/Buildings | 2.1 GW |
| Power Supply | 5,260,000 t/year |
| Price | KRW 3,000/kg |

II. Hydrogen Act

| Legal Framework for the Promotion of a Hydrogen-Based Economy

➤ Hydrogen Economy Promotion and Hydrogen Safety Management Act (“Hydrogen Act”)

- Passed the National Assembly on Jan 9, 2020
- Enacted on Feb 4, 2020
- Implemented on Feb 5, 2021 (except for the safety regulations and insurance clause which will be implemented on Feb 5, 2022)

II. Hydrogen Act

Structure of the Hydrogen Act

| | |
|--|----------------------------|
| Systems & Groundworks for the Promotion of Hydrogen Economy | Chapter 2 (Articles 5-8) |
| | Chapter 4 (Articles 19-25) |
| | Chapter 5 (Articles 26-35) |
| Support for Hydrogen-Specialized Companies | Chapter 3 (Articles 9-18) |
| Safety Regulations | Chapter 6 (Articles 36-49) |
| Penalties | Chapter 8 (Articles 58-62) |
| Others | Chapter 7 (Articles 50-57) |

II. Hydrogen Act

| Systems & Groundworks for the Promotion of Hydrogen Economy

- **Establishing a Master Plan for the Implementation of the Hydrogen Economy** (Article 5 of the Hydrogen Act)
- **Establishing the Hydrogen Economy Committee** (Article 6 of the Hydrogen Act)
- **Securing Financial Resources to Promote the Hydrogen Economy** (Article 7 of the Hydrogen Act; Article 16 of the Enforcement Decree of the Hydrogen Act)
- **Installation of Hydrogen Fuel Supply Facilities** (Articles 19, 20 and 21 of the Hydrogen Act; Articles 26 and 27 of the Enforcement Decree of the Hydrogen Act)

II. Hydrogen Act

| Systems & Groundworks for the Promotion of Hydrogen Economy

- **Hydrogen-Specialized Complexes & Pilot Projects** (Articles 22 and 24 of the Hydrogen Act)
- **Securing the Price Safety of Natural Gas Used in Fuel Cells** (Article 25 of the Hydrogen Act)
- **Groundworks for Hydrogen Economy** (Articles 26-35 of the Hydrogen Act)
 - Training of Personnel
 - Standardization of Hydrogen-Related Products
 - Statistics Related to Hydrogen Economy
 - International Cooperation & Expansion into Overseas Markets
 - Comprehensive Information Management System

II. Hydrogen Act

| Support for Hydrogen-Specialized Companies

- **“Hydrogen-Specialized Company”** is a company
 - which operates hydrogen-related business; and
 - whose share of sales related to hydrogen business is more than a certain percentage of total sales or
 - whose share of investment in R&D related to hydrogen business to total sales is more than a certain level.

- **“Hydrogen-Specialized Investment Company”**
 - An investment company which invests 51% or more of its capital in hydrogen-specialized companies
 - Borrowing funds, providing collateral, guaranteeing debt

II. Hydrogen Act

| Total Sales | Share of Hydrogen Business Related Sales to Total Sales | Share of Hydrogen Business Related R&D Investment to Total Sales |
|--|---|--|
| KRW 100 billion or more | 10/100 or more | 3/100 or more |
| KRW 30 billion or more and less than KRW 100 billion | 20/100 or more | 5/100 or more |
| KRW 10 billion or more and less than KRW 30 billion | 30/100 or more | 7/100 or more |
| KRW 5 billion or more and less than KRW 10 billion | 40/100 or more | 10/100 or more |
| KRW 2 billion or more and less than KRW 5 billion | 50/100 or more | 15/100 or more |

II. Hydrogen Act

Support for Hydrogen-Specialized Companies

| | | |
|---|--|--|
| Administrative & Financial Support | Support for Technology Development Related to the Hydrogen Industry | Article 9 of the Hydrogen Act |
| | Shared Use of Expensive Equipment | Article 17 of the Enforcement Decree of the Hydrogen Act |
| | Support for Commercialization of Technologies Related to the Hydrogen Industry | |
| | Priority to Move into Hydrogen-Specialized Complexes | |
| | Foreign Investment and International Technical Cooperation | |
| | Support for IP Application for Technologies | |

II. Hydrogen Act

Support for Hydrogen-Specialized Companies

| | | |
|------------------------------|--|--|
| Subsidies & Loans | Technology Development and Personnel Training Related to the Hydrogen Industry | Article 10 of the Hydrogen Act |
| | International Cooperation and Technology Exchange | Article 19 of the Enforcement Decree of the Hydrogen Act |
| | Commercialization of Developed Technologies | |
| | Securing Domestic and Overseas Sales Channels | |
| | IP Application | |
| Tax Exemptions | National & Local Tax Exemptions | Article 17 of the Hydrogen Act |
| State-Owned Property | Lease or Sale of State-Owned Property | Article 18 of the Hydrogen Act |

II. Hydrogen Act

| Safety Regulations

- **“Hydrogen-Related Products”** refer to products related to (i) fuel cells; (ii) electrolysis facilities; or (iii) hydrogen extraction facilities.
- **License** required to manufacture hydrogen-related products (Article 36 of the Hydrogen Act)
- **Registration** required to manufacture hydrogen-related products for export to South Korea (Article 38 of the Hydrogen Act)

II. Hydrogen Act

| Safety Regulations

➤ Safety Requirements

- Licensed/registered manufacturers must comply with certain facility standards and technical standards.
- Licensed manufacturers must
 - ✓ establish and submit to the local government a safety management policy (addressing matters including process inspection and employee training) with an opinion letter from KGS; and
 - ✓ appoint and report to the local government a safety manager.
- Hydrogen-related products must be inspected prior to sale or use.
- Once hydrogen product manufacturing facilities are installed, inspection is required before use.

II. Hydrogen Act

| Others

➤ Disclosure of Selling Price of Hydrogen

- Anyone who sells hydrogen through facilities that supply hydrogen to vehicles equipped with fuel cells must report the selling price to KOGAS (Article 50 of the Hydrogen Act).

➤ Mandatory Insurance Coverage

- Article 51 of the Hydrogen Act, Article 53 of the Enforcement Decree; Article 50 of the Enforcement Rule

II. Hydrogen Act

Penalties

| Violation | Penalties |
|---|---|
| Manufacturing hydrogen products without license | Imprisonment up to 2 years or criminal fine up to KRW 20 mil |
| Failure to comply with facility standards and technical standards | Imprisonment up to 1 year or criminal fine up to KRW 10 mil |
| Failure to meet the requirement for inspection of manufacturing facilities | |
| Failure to meet the requirement for inspection of hydrogen-related products | |

III. Government & Private Sector Initiatives

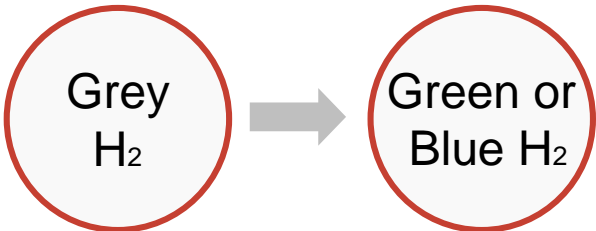
| The 3rd Hydrogen Economy Committee Meeting (Mar 2, 2021)

➤ Hydrogen Economy Committee

- Consisting 8 related ministries, private sectors (industry, academia and civic groups); chaired by the Prime Minister
- Aiming to create a balanced hydrogen industry ecosystem throughout the entire cycle of the production-distribution-utilization of hydrogen

III. Government & Private Sector Initiatives

Private Investment & Government Support

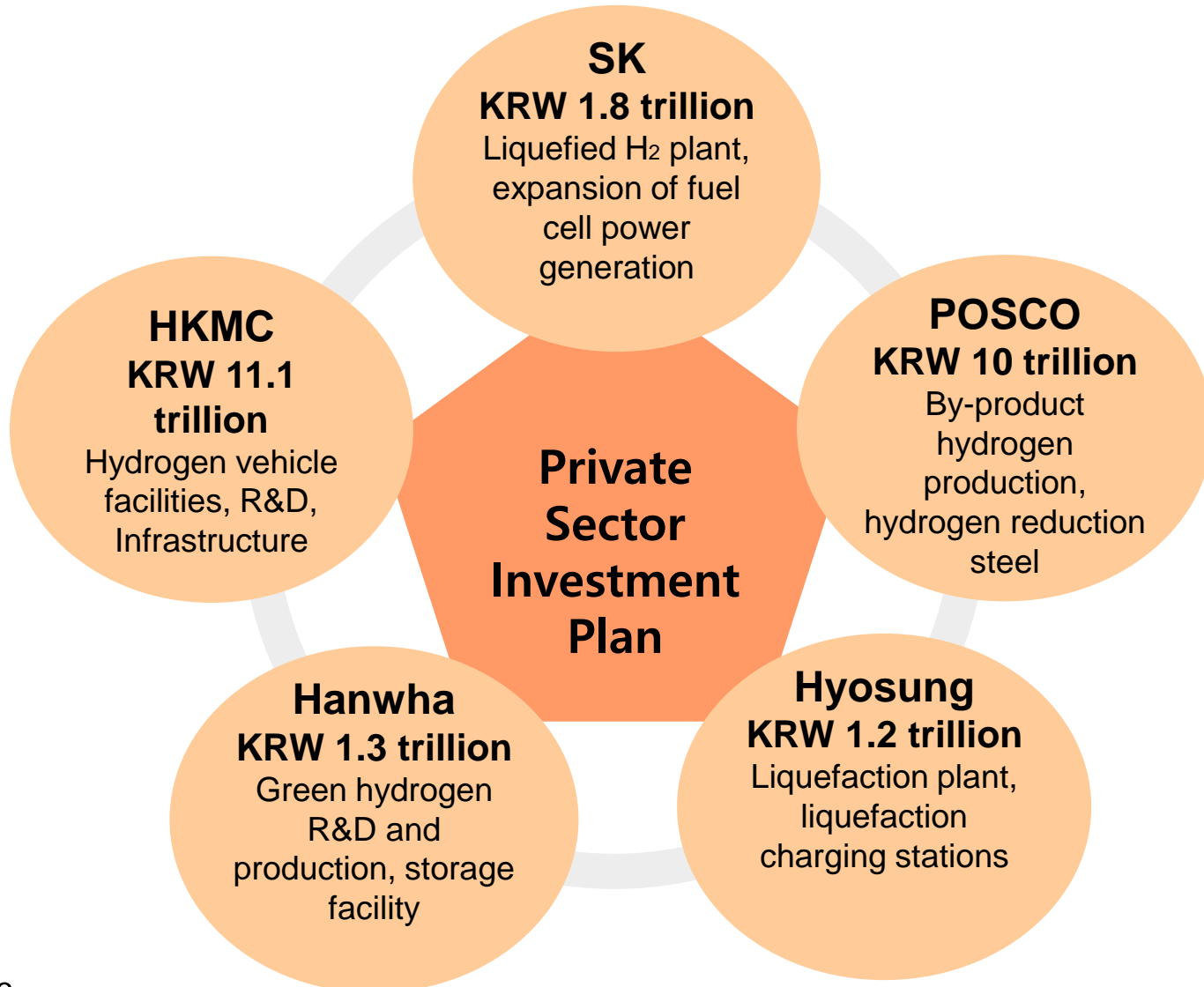
| | Private Sector | Government |
|---------------------|--|--|
| Hydrogen Production | <div><ul style="list-style-type: none">• Electrolysis R&D• Large-Scale Production Base• CCUS Facilities• CO₂ Recycling</div> | <ul style="list-style-type: none">• Introducing clean H₂ certification system• Support for demonstration of green H₂ production of various sizes and means• Clean H₂ infrastructure |

III. Government & Private Sector Initiatives

Private Investment & Government Support

| | Private Sector | Government |
|------------------------|---|---|
| Storage & Distribution | <ul style="list-style-type: none">Large-scale liquefied H₂ plantLiquefied H₂ refueling stations <div><div>Production SK 30k t/y Hyosung 10k t/y by 2023</div><div>Storage/ Transport Liquefied Refueling Stations</div><div>Utilization Buses (10 t/y) Trucks (5 t/y)</div></div> | <ul style="list-style-type: none">Liquefied H₂ Safety RegulationsSupport system for the entire liquefied H₂ value chainSupport for utilization of by-product H₂ (incentives such as carbon credits, hydrogen production subsidies) |
| Utilization | <ul style="list-style-type: none">Expansion of H₂ mobility (intra-company mobility)Supply of fuel cells using blue H₂ | <ul style="list-style-type: none">RPS → RPS + HPSGreen H₂ RoadmapSubsidies & public procurement of commercial H₂ vehicles |

III. Government & Private Sector Initiatives



III. Government & Private Sector Initiatives

Government Commitment

- Expected budget support this year (40% increase over last year)

| Field | Budget Support (KRW Billion) | Increase over Last Year |
|---|---------------------------------|----------------------------|
| Subsidies for H ₂ Vehicles | KRW 365.5 billion | 44% |
| Construction of H ₂ Production Base | KRW 66.6 billion | 122% |
| H ₂ Fuel Cell Technology Development | KRW 81.6 billion | 72.5% |
| Green H ₂ Technology Development | KRW 10 billion | 151% |

III. Government & Private Sector Initiatives

Government Commitment

- Preliminary feasibility studies for H₂ industry clusters:

| Cluster | Specialized Field |
|------------------|---------------------------------|
| Incheon | By-product H ₂ |
| Ulsan | Mobility |
| Gangwon-do | Storage & Transport |
| Jeollabuk-do | Green H ₂ Production |
| Gyeongsangbuk-do | H ₂ Fuel Cells |

III. Government & Private Sector Initiatives

Dedicated Institutions

| | Institutions | Responsibilities |
|--------------------|---|--|
| Industry Promotion | Hydrogen Convergence Alliance (“H2Korea”) | <ul style="list-style-type: none">• Fostering hydrogen-specialized companies: technology transfer, product certification, market development• H₂ industry statistical system |
| Distribution | KOGAS | <ul style="list-style-type: none">• H₂ trading market (H₂ price reduction through joint purchase)• Hydrogen tube trailers• Real-time refueling station monitoring system |
| Safety | KGS | <ul style="list-style-type: none">• Detailed H₂ product safety standards• Liquefied H₂ safety standards• Refueling station safety management system |

Thank you.



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