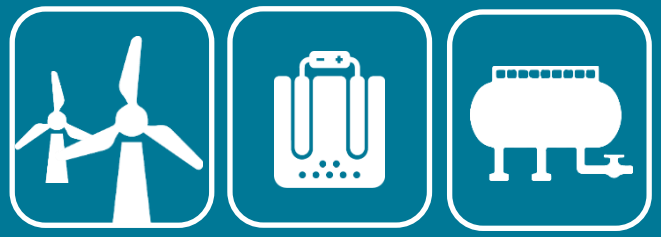
# Market shaping activity plan for GreenE$^2$

SYSTEMIC CHALLENGE: THE ENERGY TRANSITION

$H_2$ PRODUCTION, INFRASTRUCTURE AND UTILISATION



DEPLOYMENT OF P2X & CCU SOLUTIONS

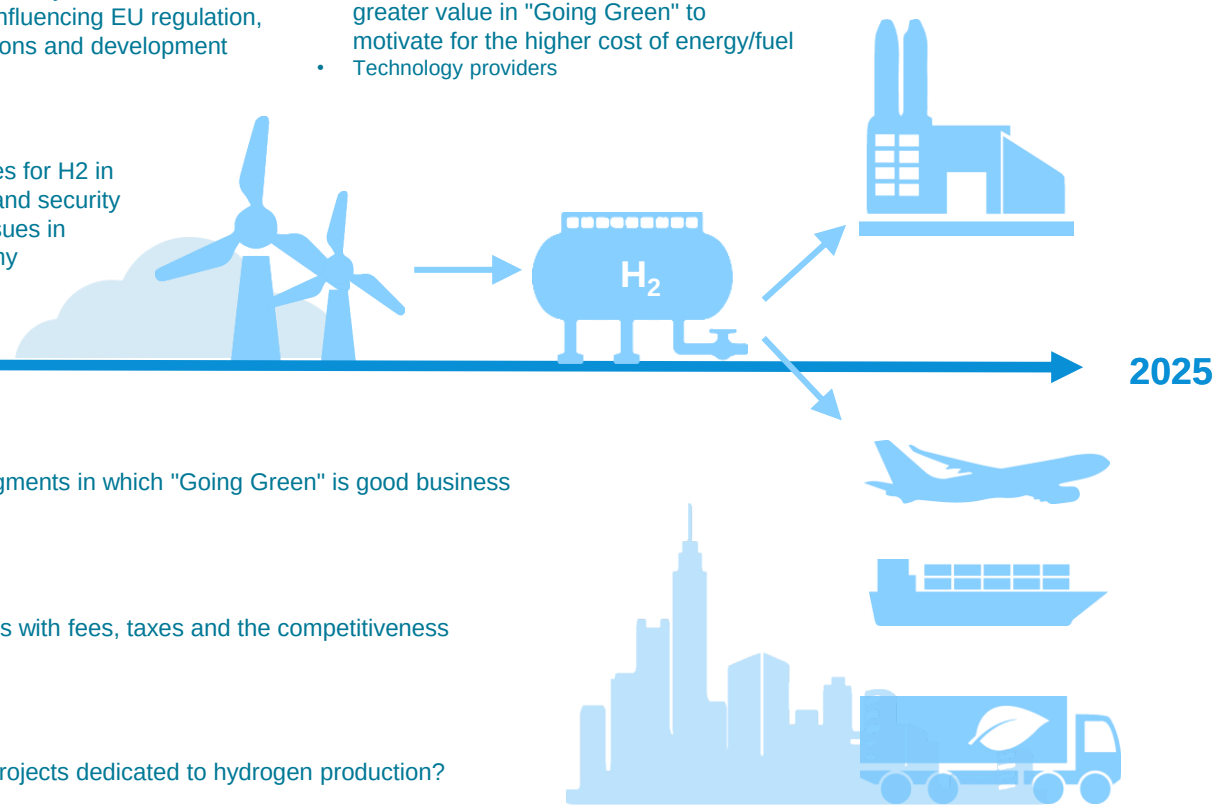
SECTOR INTEGRATION TECHNOLOGIES AND VALUE CHAINS

ENHANCED SYSTEM LEVEL EFFICIENCY & SECURITY

# $H_2$ PRODUCTION, INFRASTRUCTURE AND UTILISATION

GreenE²

| Timeline 2022 | What needs to be shaped? | How? |
|---|---|---|
| **FACILITATE DEVELOPMENT OF AN ENABLING BUSINESS ENVIRONMENT**<br>- Regulation<br>- Technical standards<br>- Infrastructure<br>- Value chains & networks | **NEED 1**<br>Create an enabling regulatory framework | **NEED 1**<br>• Regulations on distribution of Hydrogen or similar forms and grid injection limitations across countries. Influencing EU regulation, regulatory discussions and development<br>• In a market economy the end customer, the one who is paying have to see a greater value in "Going Green" to motivate for the higher cost of energy/fuel<br>• Technology providers |
| | **NEED 2**<br>Safety and security<br>Safe transportation, storaging and operating of hydrogen. Rules, certifications and standars needed as well as training and risk mitigation | **NEED 2**<br>• Similar safety rules for H2 in EU level. Safety and security very important issues in hydrogen economy |
| **ACTIVATE POSITIVE SPIRIT ON THE MARKET**<br>- Understandable terminology<br>- Symbols for raising awareness<br>- Active media for information sharing<br>- Customer preferences and behaviour | **NEED 3**<br>Fees and taxes | **NEED 3**<br>• Identify market segments in which "Going Green" is good business |
| | **NEED 4**<br>Clear classification of low-carbon or green hydrogen | **NEED 4**<br>• We need to link this with fees, taxes and the competitiveness |
| | **NEED 5**<br>Securing green electricity for hydrogen production | **NEED 5**<br>• New wind power projects dedicated to hydrogen production? |



# DEPLOYMENT OF P2X & CCU SOLUTIONS

GreenE²

| Timeline 2022 | What needs to be shaped? | How? |
|---|---|---|
| **FACILITATE DEVELOPMENT OF AN ENABLING BUSINESS ENVIRONMENT**<br>- Regulation<br>- Technical standards<br>- Infrastructure<br>- Value chains & networks | **NEED 1**<br>Create an enabling regulatory framework | **NEED 1**<br>• Engage private sector in the preparation work of new legislation by e.g., co-producing policy recommendations and white papers with industries to support the public authorities in their work. Address key missing items or restrictions from the current regulation.<br>• Join relevant roundtables for regulation in Europe to influence EU-level regulatory discussions and development. |
| | **NEED 2**<br>Create common practices for permitting | **NEED 2**<br>• Take in best practices from international projects and create clear instruction for permitting for local authorities<br>• Organize sharing and learning sessions with regions |
| | **NEED 3**<br>Create common operational & rescue practices to secure safety in hydrogen value chains | **NEED 3**<br>• Engage industries and rescue services into co-creation and sharing of best practices<br>• Take in learnings from international projects |
| **ACTIVATE POSITIVE SPIRIT ON THE MARKET**<br>- Understandable terminology<br>- Symbols for raising awareness<br>- Active media for information sharing<br>- Customer preferences and behaviour | **NEED 4**<br>Create acceptance among general public | **NEED 4**<br>• Create customer attraction methods for green solutions by utilizing e.g., advertisement & communication campaigns and also price incentives<br>Openly disseminate co-created safety protocols for hydrogen |

2025

# SECTOR INTEGRATION TECHNOLOGIES AND VALUE CHAINS

GreenE²

| Timeline 2022 | What needs to be shaped? | How? |
|---|---|---|
| **FACILITATE DEVELOPMENT OF AN ENABLING BUSINESS ENVIRONMENT**<br>- Regulation<br>- Technical standards<br>- Infrastructure<br>- Value chains & networks | **NEED 1**<br>Value chains (many)<br>**NEED 2**<br>Market for very different types of energy storages<br>**NEED 3**<br>Digital platform, a common marketplace<br>**NEED 4**<br>Smart EV integration to the power System<br>**NEED 5**<br>Future CHP: Role, Fuels, Power grid & DHC coupling, Heat pumps<br>**NEED 6**<br>Financing and predictable legislation | **NEED 1**<br>• Research organizations: Value chain analyses, e.g., side streams, waste heat utilization, etc.<br>**NEED 2**<br>• Aggregators between the existing actors – every stakeholder should win<br>**NEED 3**<br>• RDI projects, promote digitalization<br>• IT startups based on utilization of big data, IoT, etc.<br>**NEED 4**<br>• Digital platform, requires RDI.<br>• Smart EV charging as first step, V2G follows<br>**NEED 5**<br>• Centralized / distributed heat pumps & storage<br>**NEED 6**<br>• Messages to decision-makers. Big picture needed<br>• GreenE2 Comms group + Energy industry associations |
| **ACTIVATE POSITIVE SPIRIT ON THE MARKET**<br>- Understandable terminology<br>- Symbols for raising awareness<br>- Active media for information sharing<br>- Customer preferences and behaviour | **NEED 7**<br>Simple information to the public: Goals, simple language, repetition, use of examples<br>**NEED 8**<br>Reward customers for providing flexibility to the system | **NEED 7**<br>• Easy to use products, market communication about benefits, practical examples<br>**NEED 8**<br>• Demand-response, incentives to customers for using their premises / buildings as heat storage<br>• EV-batteries as flexibility assets of the power grid<br>• Local energy communities & efficient urban solutions |

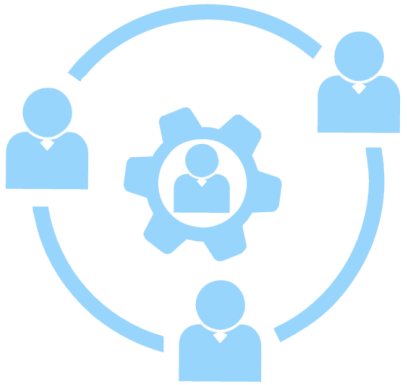


2025

# ENHANCED SYSTEM LEVEL EFFICIENCY, RESILIENCE & SECURITY

GreenE²

| Timeline 2022 | What needs to be shaped? | How? |
|---|---|---|
| **FACILITATE DEVELOPMENT OF AN ENABLING BUSINESS ENVIRONMENT**<br>- Regulation<br>- Technical standards<br>- Infrastructure<br>- Value chains & networks | **NEED 1**<br>Creating an enabling environment for data exchange | **NEED 1**<br>• Develop standards eg. Gaia X<br>• Identify revenue generation streams and business models |
| | **NEED 2**<br>Understand end user needs regarding telecom standards from energy market | **NEED 2**<br>• Better collaboration with telecommunication researchers and energy experts |
| | **NEED 3**<br>Identify owners for cyber physical systems | **NEED 3**<br>• Governance and regulations |
| | **NEED 4**<br>Transparency , forecasting and clear roles forenergy market | **NEED 4**<br>• Digital twin pilots for Finnish energy ecosystem |
| | **NEED 5**<br>Flexibility | **NEED 5**<br>• Platforms for integrating prosumers |
| | **NEED 6**<br>Data Forecasting | **NEED 6**<br>• Usage of data for managing volatility |
| **ACTIVATE POSITIVE SPIRIT ON THE MARKET**<br>- Understandable terminology<br>- Symbols for raising awareness<br>- Active media for information sharing<br>- Customer preferences and behaviour | **NEED 7**<br>Communication about flexibility | **NEED 7**<br>• Create a communication plan and strategy for prosumers<br>• Models for forecasting consumption, production and pricing |



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