New Energy Coalition

Drivers of Change

Project Portfolio 2021 - 2024

August 2024

Preface

The transition towards a sustainable energy system is the greatest challenge of our time with major changes and paradigm shifts.
This requires breaking barriers with new knowledge, insights, and partnerships. It creates new opportunities to build a future-proof society, with a green living environment, pioneering industries, and innovative jobs.
Especially in the northern part of the Netherlands, including the North Sea as a central hub in the European energy system, with a unique energy cluster.

New Energy Coalition is committed to stimulate this by fulfilling an organising, connecting, and coordinating role for companies, knowledge institutions and governments to work together and make the transition succeed.
Which is possible with our current Strategy Plan 2021-2024 as framework for various activities, research, and projects to gain knowhow and put the energy transition into practice.
This has led to great results and investments to strengthen our sustainable society, which are shown in this portfolio overview.

Although this is only a summary of the most important highlights and results, it does give a good indication of the wonderful developments we have initiated together.
Our thanks go to all our partners who helped make this possible. Especially our founders and coalition partners, who support our organisation and without whom none of this would be possible. But also, the numerous other project partners who have contributed to our common mission. Together we are drivers of change who have laid a solid foundation to continue working side by side towards a sustainable future.

Marieke Abbink-Pellenbarg
CEO

Owen Huisman
COO

Founding partners

Our partners and members - in total some 120 - are indispensable to our coalition. Together with our partners we define and pursue our ambitions. Our partners are involved in New Energy Coalition in several ways: as part of the governance structure and in the implementation of concrete projects and activities.

Several of our partners have been involved in our organisation from the start and are included in defining our course and strategic choices. Most of these projects are enabled by our founding partners: University of Groningen, Gasunie, Gasterra, Energie Beheer Nederland, NAM, Hanzehogeschool and Shell.

Content

Ai-Hub Noord-Nederland

www.aihub-noord.nl	NL EFRO + Groeifonds
s.chaudhry@newenergycoalition.org	€ 2.500.000
Jan 2021 - Dec 2023	11

Summary

The project aimed to advance the energy transition through Artificial Intelligence (AI) by building a strong network and ecosystem in the northern Netherlands. It focused on increasing AI support, fostering collaboration with education, and organizing networking events, while also engaging new companies and addressing specific AI project challenges.

Impact on the energy transition

The project highlighted the significant need and potential for AI-based solutions in the northern provinces of the Netherlands, identifying key actors and relevant application areas. An AI for the Energy Transition Roadmap was developed, and several matchmaking events were organized to connect potential partners for initiating and implementing AI projects.

Deliverables

- Learning communities (leading to increased social acceptance)
- Two AI training courses around learning communities
- Shortlist of AI in energy themes and potential project partners
- Student AI Traineeships
- Two conferences and 8 matchmaking events, 10 press releases, an active website with social media channels

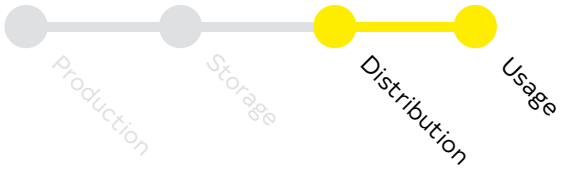
Goals

- To offer support to at least 3 SMEs in receiving subsidies
- To offer non-financial support to at least 2 SMEs
- To develop an innovation trajectory "From Analog to Digital"

Role of New Energy Coalition

- Public relations activities through identification of major actors
- Matchmaking
- Dissemination events

Impacted segments of the value chain



Countries involved

- The Netherlands

Bio-Hydrogen in Integrated Energy Systems

p.frederix@newenergycoalition.org

Jan 2023 - Jun 2024

€ 164.000

6

Summary

The evolving interest in using hydrogen as an energy carrier will result in a large hydrogen demand in the future. Thermochemical routes (currently based on fossil fuels) are state of the art for industrial scale hydrogen production. However, renewable hydrogen via thermochemical methods (as opposed to renewable hydrogen through, e.g., electrolysis) can also be achieved using biomass as a feedstock. Upon using sustainably sourced biomass for energy purposes, the carbon taken up by the plants is recycled back into the atmosphere, thereby making it a net-zero emissions fuel. If the carbon is captured and sequestered it promises to further develop into a net-negative emission technology.
The northern Netherlands' bid as a campus for hydrogen innovations can only be complete with bio-hydrogen production technology, innovations and use cases. This project envisages the design of advanced systems based on the bio-hydrogen system concept to be jointly developed with the industry and existing initiatives.

Goals

- Techno-economic overview of biomass-to-hydrogen conversion routes, and a white paper on the role bio-hydrogen may play in the energy system of northern Netherlands.
- Create a thermodynamic model and case studies of a specific hydro-pyrolysis technology.
- Experimental development of a biogas solid oxide fuel cell for off-grid or grid support applications.

Deliverables

- ASPEN models of hydro-pyrolysis and biogas-SOFC systems (forthcoming)
- Case studies on using this technologies in specific context (forthcoming)

Impact on the energy transition

The project determines the contribution bio-hydrogen may play in the energy system of the future.

Role of New Energy Coalition

- Project development

Impacted segments of the value chain

Countries involved

- The Netherlands

ConsenCUS

consencus.eu	EU Horizon 2020
d.koppert@newenergycoalition.org	€ 13.738.397
May 2021 - April 2025	19

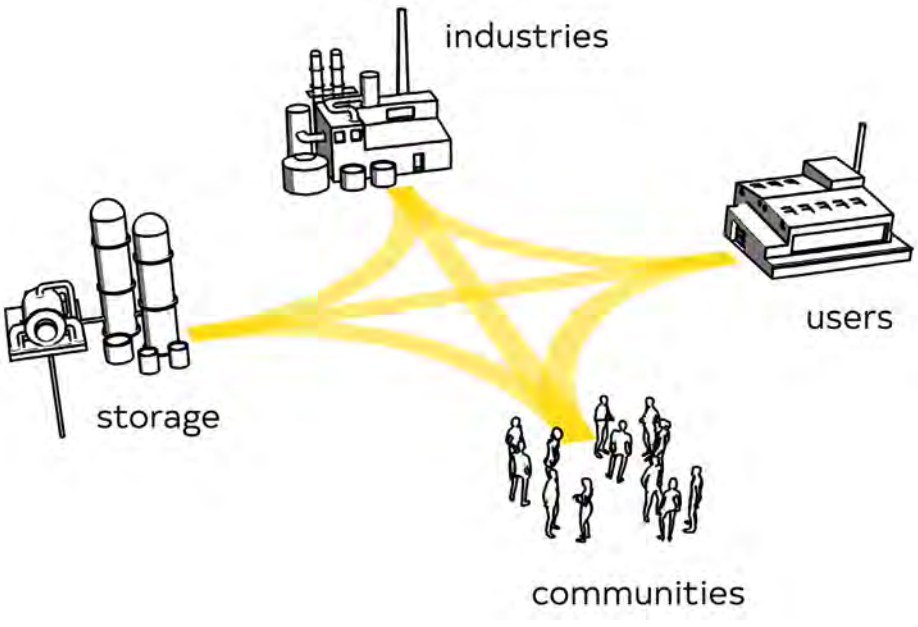
Summary

ConsenCUS is a 4-year project under the EU's Horizon 2020 framework, led by New Energy Coalition. We focus on innovative electrochemical carbon capture and conversion.

The project aims to demonstrate new techniques to capture CO_2 from industrial flue gases and transform it into useful chemicals like formate and formic acid, replacing fossil carbon sources. It also explores safe transport, storage solutions, and community engagement with these technologies.

Impact on the energy transition

The primary goal of the ConsenCUS project is to demonstrate an innovative solution for capturing, and converting industrial flue gasses, using only electricity. By utilizing electrochemical processes instead of traditional processes that require significant heat, we can reach a net-zero capture process with using electricity from renewable sources. This significantly impacts the energy transition by reducing carbon emissions through capturing the carbon emission through an efficient and more sustainable technique.



Role of New Energy Coalition

- Projectmanagement
- Coordination
- Coordinating writing and submitting full proposal
- Information dissemination
- Communication

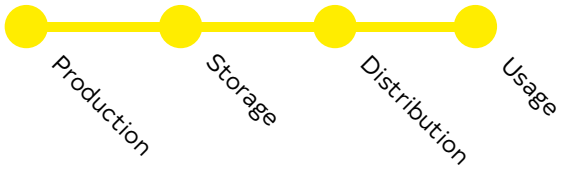
Countries involved

- Netherlands
- Denmark
- Greece
- Romania
- Great Britain
- Canada
- China

Key performance indicators

- Working demonstrator.
- Producing useful chemicals with captured carbon.
- Optimal CCUS chain design, and planning, including temporary storage.
- Technical economic assessment of the demonstrator.
- Establish a net-zero carbon framework for industries.
  Increase public engagement with CCUS.

Impacted segments of the value chain



Word from the project leader

"The uniqueness of this project is that we truly are the first to show on this scale that you can use electricity to capture carbon. To lead a consortium as New Energy Coalition that engages in this new innovations and techniques is something to be proud of."

- Dirk Koppert

CityLogistic 2.0

www.newenergycoalition.org/en/projects/citylogistic-2-0		EU Interreg	
i.klinge@newenergycoalition.org		€ 5.393.634,60	
Oct 2023 - Oct 2027		10	

Summary

The project aims to develop an innovative and sustainable logistics system to address the growing demands on city centers and the need for climate protection. This system includes an energetically self-sufficient, mobile mini-hub and a new Light Electric Freight Vehicle (LEFV) powered by renewable energy.
Planned test phases in Groningen and Oldenburg will help refine the concept, which can be adapted for use in other cities.

Deliverables

- A new last-mile logistics concept developed by the RUG
- An energy concept for an off-grid energy hub
- An innovative technical concept for a Light Electric Freight Vehicle (LEFV)
- An integrated energy and logistics concept for the LEFV
- An innovative communication system between the energy hub and the vehicle
- A comprehensive overview of the knowledge and experiences of other cities and communities

Impacted segments of the value chain

Impact on the energy transition

This project will significantly reduce emissions in cities by contributing to the goal of making inner cities emission-free.
All distribution parties face the same challenge: maximize deliveries while minimizing emissions.

Goals

- To reduce emissions in inner cities.
- To increase knowledge about the energy impacts of last-mile logistics concepts.
- And to transfer the results to other.

Role of New Energy Coalition

- Project management
- Coordination
- Stakeholder involvement
- Public relations and communications support

Countries involved

- The Netherlands
- Germany

Decom Tools

www.northsearegion.eu/decomtools		EU Interreg	
i.klinge@newenergycoalition.org		€ 13.304.885	
May 2017 - Dec 2021		13	

Summary

Decom tools address the end-of-life cycle of offshore windparks, which typically have a service life of 20-25 years. After this period, wind turbines must be decommissioned or refurbished. While onshore decommissioning is well-known, offshore experience is limited. This project aims to reduce decommissioning costs by 20%, cut the environmental footprint by 25%, and increase stakeholder expertise.

Impact on the energy transition

The project contributes to the energy transition by improving knowledge on dismantling offshore wind parks, aiming to reduce CO_2 emissions through eco-friendly processes. It supports responsible growth by developing recycling and sustainable logistics concepts and optimizing handling processes. These innovations will be promoted for market uptake by regional businesses.

Deliverables

- Stakeholder and Market analysis.
- Requirement catalogues for infrastructure and labour market development. Interface with training methods in the field of offshore wind decommissioning.
- A design decisions Support System (DSS) about the optimization of the unit design and the farm.
- A simulation model to analyse logistical operations both offshore and onshore calculate time, costs and emissions.
- Status report of onshore recycling and reuse of components/materials and comparison of offshore and onshore wind components.
- Two business models for the repowering and dismantling process

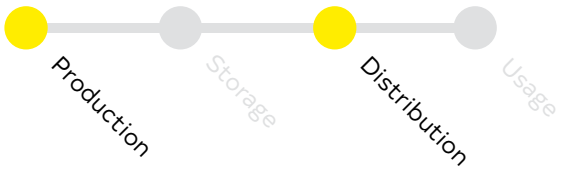
Goals

- Process optimization for dismantling offshore wind energy structures.
- Developing new logistical concepts for dismantling offshore wind structures.
- Develop new recycling concept for dismantling/re-powering offshore wind energy structures.
- Foster the market uptake of the newly developed decommissioning solutions.

Countries involved

- The Netherlands
- Germany
- Belgium
- Denmark
- Norway
- Scotland

Impacted segments of the value chain



DOSTA

DOSTA
DEVELOPING OFFSHORE STORAGE AND TRANSPORT ALTERNATIVES

www.dosta-research.nl

s.chaudhry@newenergycoalition.org

May 2020 - May 2024

€ 1.081.000

11

Summary

The DOSTA (Developing Offshore Storage and Transport Alternatives) project analyzes the feasibility of implementing offshore energy storage through electrical pumped storage and hydrogen conversion and of novel methods to transport electricity and/or hydrogen to shore in the Dutch North Sea. Feasibility is studied from a technical, market, legal, and spatial perspective, targeting joined interdisciplinary policy recommendations.

Impact on the energy transition

DOSTA as a whole is unique since it relates to the topics "offshore storage'' and "alternative transport options" that are new and barely examined and includes perspectives from several disciplines. Beyond the technical viewpoint, it incorporates market/economic, legal, and marine spatial planning perspectives. This approach aims to achieve added value that could not be attained through isolated research.

Goals

- Model and optimize energy harvesting, power production, onsite storage utilization, and balancing of the collection cables in the hybrid offshore wind farm.
- Identify the optimal design and operation of an offshore system for H_2 production and transport using offshore wind power production.
- Identify key legal/regulatory obstacles and suggest legal changes in order to facilitate and govern offshore electricity storage with a transparent storage regime as well as alternative means of transport (hydrogen and electricity grids).
- Identify the institutional innovations for marine spatial planning and associated (environmental) procedures for allocating offshore storage and transportation of hydrogen through pipelines and alternative electricity cable infrastructure.

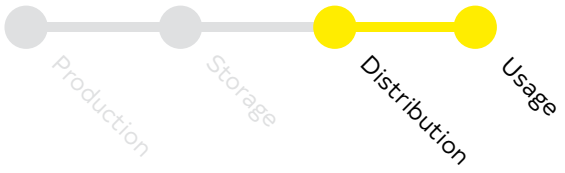
Role of New Energy Coalition

- Connecting research with societal stakeholders to improve impact

Countries involved

- Netherlands
- Germany

Impacted segments of the value chain



Deliverables

- Multiscale physics-based models of novel pumped-hydro offshore storage technology
  - Models
- Optimal sizing and operation of offshore infrastructure for wind farms coupled to hydrogen production, storage and transport
  - Report
- Legal research into the obstacles and solutions for new offshore energy storage and transport options
  - Paper
- Research into marine spatial planning, environmental impact and choice of location for future energy assets
  - Paper
- Joint policy recommendations to unlock the potential of novel storage and transport options for North Sea wind energy
  - Recommendations

EmBaGe

www.h2-region-emsland.de/embage-interreg/

i.klinge@newenergycoalition.org

Jan 2024 - Jul 2024

Interreg 6 A Deutschland-Nederland

€ 25.000

4

Summary

EmBaGe focuses on the emission-free development of public building yards. The goal is to design both the buildings and the associated machines and vehicles to operate without emissions. This project aims to serve as the initial phase of a broader innovation initiative targeting zero-emission construction sites.

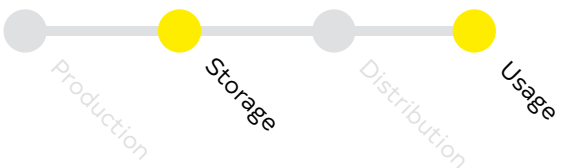
Deliverables

- A list of requirements of the sites
  - List
- Four workshops and events organised
  - Events
- A project concept
  - Paper

Phases

1. Analysis of the general conditions.
2. Analysis of emission sources and energy needs.
3. Challenges and possible solutions.

Impacted segments of the value chain



Impact on the energy transition

The project supports the energy transition by developing best practices for two municipalities and construction yards, and sharing the outcomes with approximately 50 public and private stakeholders.

Goals

- Determine the energy requirements of the sites.
- Create an action plan.
- Set up the network.

The main goal of the EmBaGe project is to achieve a list of requirements for the municipalities involved, and set up a concept for a bigger project.

Role of New Energy Coalition

- Coordination
- Co-lead partner

Countries involved

- The Netherlands
- Germany

Energy Hubs of the Future

j.sanderink@newenergycoalition.org

Aug 2020 - Jan 2027 (awaiting approval)

€ 429.650

50

Summary

Grid congestion within Europe, but particularly the Netherlands, is a fast-spreading winestainaffecting the sustainability goals of companies, the socio-economic prosperity of affected populations and the speed of innovation throughout affected areas. The Energy Hubs of the Future project seeks to provide a holistic approach (social, judicial, financial and technical) to creating energy positive self-sustainable company parks which can innovate within the confines placed by the grid-congestion challenge. The projects were kicked off by the Winkelerzand initiative, where a techno-economical analysis was performed on relevant solutions. But it has quickly grown to encompass a wider area, owing to increasing challenges faced by companies within the Noord-Holland area.

Energy Hubs of the Future

The Energy Hubs of the Future project, in collaboration with Ontwikkelingsbedrijf NHN, provides a guiding role for companies within the Noord-Holland region. For example in developing innovative solutions for companies facing the grid-congestion problem and sharing the knowledge base gained by New Energy Coalition within the judicial, financial and social landscape of the energy transition. The focus within Energy Hubs of the Future is on a holistic approach, looking at communication between stakeholders, monitoring, congestionmanagement, logistics and setting up sustainable entrepeneur communities.

Jan 2023 - Jan 2027

Winkelerzand

To design a sustainable, smart, affordable, and flexible energy system, a techno-economic analysis was conducted on the applicability of various individual and collective sustainability options. This analysis took into account the limited transport capacity of the regional network operator. The focus was on the electrical system and the thermal system, as well as the interaction between the two.

Aug 2021 - Aug 2022

Wieringermeer - Agriport A7

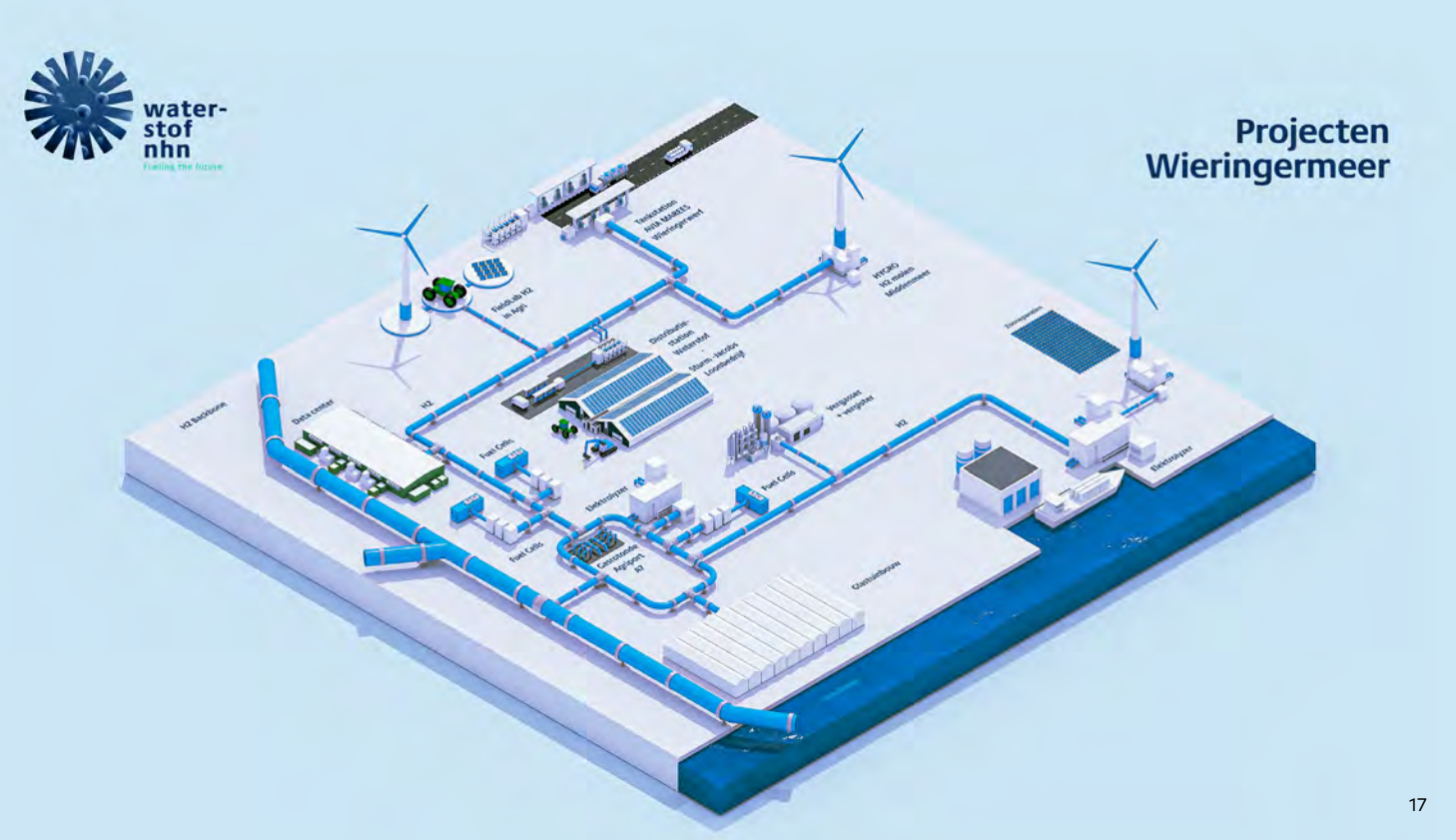
The Agriport A7 region consists of a high concentration of greenhouse agricultural companies, datacenters, logistics and agribusiness. The increasing sustainable demands of these companies are being sought to be met via the use of hydrogen storage to replace traditional combined heat and power installations. The project encompassed and will encompass the initial steps in identifying this problem, the planning of the infrastructure and the implementation of installations. Collaboration with private distribution system operators (DSO's) as well as integrating into the existing heat grid is essential to this project.

Relevance of the project

Solar panel capacity has increased by over 30% between the years 2022-2023. This increase, in combination with a significant increase in other forms of both decentralised electricity generation and consumption, has led to a reduction to disappearance in electricity transport capacity. This reduction affects the socioeconomic prosperity of populations and companies, unable to develop due to constraints laid upon them by this challenge. The Energy Hubs of the Future seeks to address this problem.

Impact on the energy transition

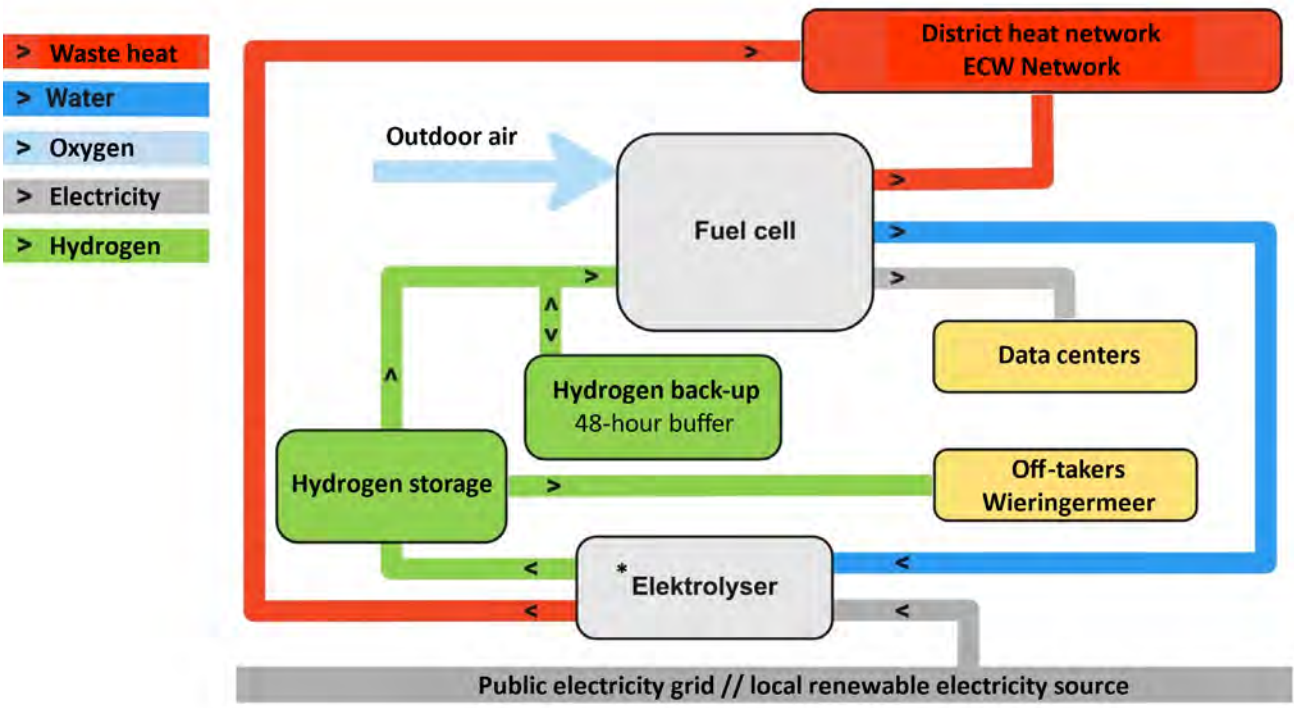
In the opinion of the project leader, the grid-congestion problem is one of the biggest barriers facing the energy transition at the moment in the Netherlands, but also in other countries. Via these programs and projects New Energy Coalition and its partners are finding solutions to circumvent this problem. The solution to these kinds of problems and a future proof energy system cannot be addressed with a silver bullet and must combine solutions such as electricity storage, hydrogen, social approaches and all other pieces of this complex puzzle to come to a modularized solution. Focusing outside of the energy transition, the project also contributes to the economic and social prosperity of the affected regions, ensuring their development is not constricted by the problems facing them with regards to the grid-congestion problem.



Results and deliverables

While the Winkelerzand project has completed its timeline and the end-deliverable is to be found below, Energy Hubs of the Future and Wieringermeer are both ongoing projects. Energy Hubs of the Future has recently reflected on it's program within the year 2023, while Wieringermeer has recently completed its latest phase in which a blueprint, energetic analysis and business analysis was completed on the various hydrogen options for the Wieringermeer area.

- Energyhubs of the Future - Reflection on 2023
- Winkelerzand - Techno-Economical Analysis
- Wieringermeer - Blueprint, Energetic Analysis and Business Analysis.



Role of New Energy Coalition

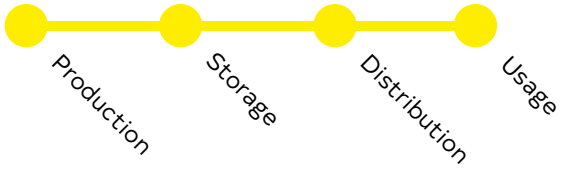
- Project management
- Public relations
- Developing replicable business
- Communication
- Adressing energy poverty
- Capacity building

New Energy Coalition took a role of sharing specific expertise on various topics within the energy transition. Furthermore, New Energy Coalition provides a map for companies navigating the difficult terrain of solutions, but also possible partnerships relevant for specific business cases and judicial and funding possiblities. Only through an approach addressing all four of these aspects synthesising practical examples of sustainable business models within the grid-congestion problem can this challenge be addressed.

Countries involved

- The Netherlands

Impacted segments of the value chain



Key performance indicators

Company profiles analysed:	4
Potential generation capacity analysed:	83.6 GWh/year
Subsidies analysed:	4
Potential kg of CO_2 saved (per company):	2112.000.
Percentage of Dutch electricity use used by company parks:	32%

*Due to the confidential nature of the Energy Hubs of the Future and Wieringermeer project, only the KPI's of the Winkerlerzand project are shown.

Word from the project leader

"There is no silver bullet for these issues, only through collaboration and the creation of an extensive knowledge base, which can be carried through to other business models, can we address these challenges."

- Joep Sanderink

ENSYSTRA

www.newenergycoalition.org/projecten/ensystra/

d.goeree@newenergycoalition.org

Oct 2017 - Oct 2021

22

Marie Skłodowska-Curie Innovative Training Network, funded by the Horizon 2020 Programme of the European Commission.

Summary

ENergy SYStems in TRAnsition (ENSYSTRA) trains 15 early stage researchers (ESRs) in all aspects of energy systems transition.
The North Sea energy transition requires that technical sciences, social sciences and the humanities work together. Therefore, ENSYSTRA aims to train energy professionals with an integrated understanding to become experts in the front line of the energy transition.

Impact on the energy transition

The ENSYSTRA network studies key energy technologies and greenhouse gas mitigation in the North Sea region, focusing on techno-economic potentials, system integration and spatial aspects, while training 15 ESRs in advanced energy systems transition, scenario analysis and energy modeling tools to benefit both the region and comparable areas globally.

Deliverables

- Quantified roadmaps towards 2050
- Policy strategy framework on energy transition in the North Sea region
- Best practice guidelines for model collaboration
- 15 Ph.D. Theses
- 22 Articles and conference papers published

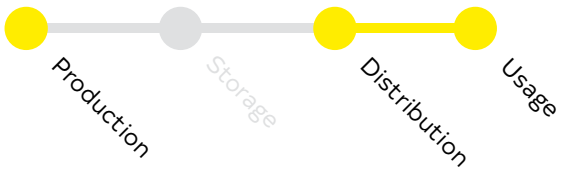
Role of New Energy Coalition

- Project management
- Training and communication activities

Goals

- Develop state-of-the-art science of energy systems transition, scenario analysis and energy modelling tools with emphasis on interdisciplinary model collaboration.
- Provide ESRs with interdisciplinary, inter-sectoral and applied perspectives on the energy transition.
- Provide new skills and competences for interdisciplinary analysis.
- Establish collaboration between key universities and their networks.
- Create and increase linkages between different academic disciplines, applied research, industry and the public sector.
- Develop links and synergies between relevant scientific arenas.
- Contribute to accessible energy science based on open source work

Impacted segments of the value chain



Countries involved

- The Netherlands
- Germany
- The United Kingdom
- Denmark
- Norway
- Sweden

Enterprise Europe Network

een.ec.europa.eu

j.kalfsbeek@newenergycoalition.org

Jan 2015 - Jun 2025

EU COSME

€ 13.354.084

500+

Summary

The Enterprise Europe Network (EEN) is Europe's biggest small- and medium-sized enterprise (SME) support network.
The project of the European Union spans more than 500 organisations worldwide in more than 50 countries. The project focuses on supporting SMEs, SMEs making up more than 98% of the companies within Europe, and providing them with advisory and partnering support.
Advisory support can range from IP legislation, providing information about international markets and funding opportunities. Partnering support brings together SMEs seeking valuable partnerships through matchmaking sessions, company missions and most importantly, a complete and intuitive profile database.

EEN-North (€2.565.000)

EEN-North was established with a focus on SMEs in the north of the Netherlands. With a positive proposal evaluation in 2014, New Energy Coalition and its partners established a separate consortium delving specifically into the cluster organisations of Energy, Health and Water Technology where we and our partners fostered the support of local SMEs in Friesland, Drenthe and Groningen.

Jan 2015 - Dec 2025

EEN-NL (€10.789.084)

In 2022, EEN-North merged into EEN-NL where New Energy Coalition has helped guide partnerships with SMEs for over 2 years. Member organisations include chambers of commerce and industry, regional development organisations, universities and research institutes and innovation agencies. The organisation regularly organises events where SMEs are encouraged and matched in their partnerships. The organisation is centered around its profile database, in which companies anonymously upload key information about themselves to connect to other companies in an effortless and intuitive manner.

In addition to its profile database, the network provides informal network connections, adding pathways between disconnected networks between countries otherwise unexplored.

Focusing on collaboration instead of competition, the project takes its place within the economic development of Europe as a whole.

Jan 2022 - Jun 2025

Relevance of the project

The Enterprise Europe Network (EEN) project is essential today due to the significant role SMEs play in the European economy and the urgent need for an energy transition. SMEs make up 98-99% of all EU companies, forming the economic backbone. The EU's Green Deal emphasises sustainable growth and carbon reduction, making the energy transition critical. EEN's support is vital as SMEs often lack the resources to navigate international markets and complex regulations. By offering advisory and partnering support, EEN helps SMEs access funding, understand IP legislation, connect with international partners and foster sustainable innovation.

Results and deliverables

The project is encompassed by four main key performance indicators (KPIs), these being the support of SMEs through basic services, individual support through client journeys, working towards advisory and partnering achievements and finally the evaluation of these impacts with the SMEs.

The project does not encompass tangible deliverables, however practical examples include the successful engagement and support of SME's to become part of new European projects in order to develop their innovations and technologies. We have organised multiple company missions and matchmaking events resulting in several hundred meetings with many successful outcomes for new collaborations.

- EEN - Success Stories
- EEN Partnering Opportunities
- Wind Meets Gas Conference

Impact on the energy transition

The Enterprise Europe Network has significantly impacted the energy transition by facilitating the growth and internationalisation of SMEs in the energy sector. Through its extensive advisory and partnering support, EEN helps SMEs navigate complex regulations, access funding, and connect with international partners.
This support accelerates the adoption of renewable energy technologies and sustainable practices. EEN's matchmaking events and company missions have enabled numerous SMEs to form strategic partnerships, leading to innovative projects and collaborative efforts in areas such as green hydrogen, energy storage, and smart grids.

By fostering these connections, EEN enhances the capacity of SMEs to contribute to the EU's climate targets and sustainability goals. The network's role in disseminating knowledge and best practices further amplifies its impact, ensuring that the latest advancements in energy technology are widely adopted and integrated into the European market.
Overall, EEN plays a crucial role in driving the energy transition and supporting the EU's vision for a sustainable future.

Role of New Energy Coalition

- Project management
- Capacity building
- Knowledge Partner on Energy
- Network Connector
- SME Support
- Facilitator of International Collaborations

New Energy Coalition plays a crucial role in the Enterprise Europe Network by focusing on the energy sector. It provides specialised knowledge and support to SMEs as a local endpoint, helping them navigate international markets and connect with partners.
We organise local events, company missions, and matchmaking sessions, fostering collaboration and innovation. By leveraging the broader EEN network, New Energy Coalition enables SMEs to access funding and participate in European projects, driving the energy transition forward. Our efforts support local ecosystems and contribute significantly to sustainable growth and the achievement of EU climate targets.

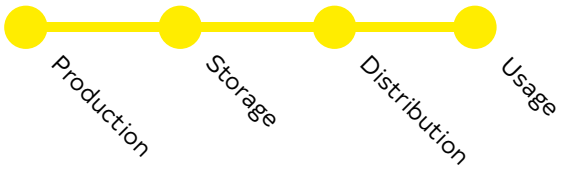
Key performance indicators

SMEs supported:	>150
Customized action plans designed:	25
Matchmaking events:	5
Company missions:	6
Advisory/partner results:	35
Local events:	12

Countries involved

- Over 50 countries

Impacted segments of the value chain



Word from the project leader

"What truly energises me as an EEN advisor is seeing the results and successes of the companies we support. When they achieve their goals, we achieve ours. The Enterprise Europe Network is about building connections and trust, providing SMEs with invaluable opportunities to innovate and expand internationally."

- Jannes Kalfsbeek

ESTRAC

ESTRAC Energy Systems Transition Centre

p.frederix@newenergycoalition.org

Jan 2018 - Jan 2022

€ 3.919.000

9

Summary

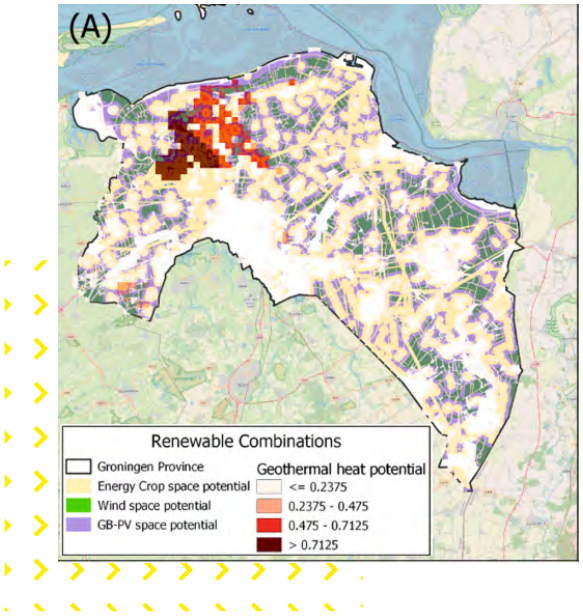
ESTRAC (the Energy Systems Transition Centre) was a visionary umbrella that attempted to bring all the energy transition research in the northern Netherlands together.
ESTRAC supported five projects, but its main research lines were Integrated Energy System Analysis (IESA) and Transforming Regions.

Transforming Regions

While national-level energy transition pathways are well-supported by quantitative analysis, detailed regional underpinnings are lacking.
This project develops an approach that considers the specifics of various locations, such as industrial sites and villages, to optimize energy systems and involve all stakeholders.
Stakeholders, including local governments, businesses, and consumers, need tailored information to develop regional energy strategies and make investment decisions. Although various tools and methodologies exist, there is no single comprehensive approach to support all regional stakeholders effectively. The project addresses this by using case studies in built and industrial environments to develop and demonstrate a comprehensive methodology for Transforming Regions.

Integrated Energy Systems Analysis

The increasing share of variable and uncertain energy sources like wind and solar in electricity generation necessitates greater flexibility in energy supply and demand.
This flexibility must be found not only within the electricity system but also in other parts of the energy system, such as gas supply and heat provision for various uses.
Understanding the interactions between different parts of the integrated energy system is crucial for making informed investment decisions and designing effective policies and regulations. Insights into the transition path towards a low-carbon energy system are also needed. The research program aimed to provide these insights by studying the linkages and interactions in future integrated energy systems with more intermittent renewable sources.



Goal of the project

The overall aim was to provide a coordinated effort with the northern Netherlands on energy transition research and assistant transition research. So what does our future energy system look like?

For Integrated Energy Systems Analysis, the goal was to develop, improve and implement available models in order to provide better insights in the linkages and interactions of future integrated energy systems with increasing shares of intermittent renewables in the electricity supply. Transforming Regions developed a 'real practice based methodology for regional energy transition' aiming to support the most important stakeholders in decision making on regional energy transition. The methodology was developed based on several cases, of which one set of cases focuses on the built environment and another set of cases is directed at the industrial environment.

Relevance of the project

ESTRAC develops crucial tools for regional energy planning, enabling areas to determine their contributions of wind, solar, and biomass to the national energy system. For instance, renewable energy strategies in the Netherlands are organised per region, such as the province of Groningen, and even smaller areas within provinces. Collaborating with various municipalities and asset owners is essential for the success of the energy transition, making these planning tools highly relevant.

Impact on the energy transition

Both projects, particularly the Transforming Regions initiative, successfully brought together stakeholders to collaborate on practical aspects of the energy transition. For instance, in the Transforming Regions project, workshops were conducted with residents of neighbourhoods like Paddepoel in Groningen to help them design their local energy systems, fostering community involvement. The main outcome of these efforts is the development of advanced modelling tools, enabling researchers and provincial authorities to design and plan the energy transition effectively.

Results and deliverables

The results of ESTRAC have been designed to help make decisions in energy system developments. It provided (modelling) tools and approaches for those having to transition the built environment or industry to sustainable power and heat, such as regional governments or business park owners.

- Synthesis report ESTRAC case studies in the built environment
- Support for informed decision making on the energy transition of industrial clusters
- The IESA-Opt Energy system model
- Regionally integrated energy system detailed spatial analysis: Groningen Province case study

Role of New Energy Coalition

- Coordination
- Monitoring
- Reporting
- Communicating

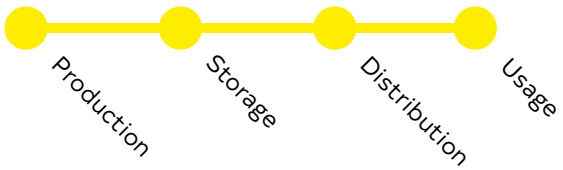
New Energy Coalition mainly had a coordinator role in this project, which means that we brought the parties together, the private and knowledge partners, and made sure that the project progressed as much as possible as written in the proposal. Furthermore, we are responsible for monitoring and reporting project progress and deliverables to the project consortium and funding organisations. We also provided support in communicating project results.

Key performance indicators

Reports published: 43 scientific papers and reports have been published, many of which using the Province of Groningen, Wadden Sea islands or the cities of Groningen and Emmen as cases.

The results of ESTRAC have been designed to help make decisions in energy system developments.
It provided (modelling) tools and approaches for those having to transition the built environment or industry to sustainable power and heat, such as regional governments or business park owners.

Impacted segments of the value chain



Countries involved

- The Netherlands

Word from the project leader

"The intermediate milestones and interactions with stakeholders in more research-oriented projects are perhaps even more important than in application-oriented projects to keep progressing toward the desired goal. Especially when considering the whole energy system!"

- Pim Frederix

European Hydrogen Valleys

LIHYP: EU | Interreg North Sea

EPHYRA: EU | Clean Hydrogen Partnership

TRIĒRĒS: EU | Clean Hydrogen Partnership

H2Value: EU | I3

www.interregnorthsea.eu/lihyp

www.ephyraproject.eu/

www.trieres-h2.eu/

www.h2value.eu/

i.klinge@newenergycoalition.org

s.bouma@newenergycoalition.org

€ 44.103.970

63

Nov 2022 - May 2028

Summary

These projects are combined under the theme of developing and connecting hydrogen value chains. EPHYRA and TRIĒRĒS create a Hydrogen Valley in Greece, H2Value links Estonia and Latvia into one Hydrogen Valley, and LIHYP connects hydrogen stakeholders within and across regions, all focusing on integrating components of the hydrogen value chain.

EPHYRA (€24.631.840)

EPHYRA is a project aimed at establishing a 30 MW renewable hydrogen production facility at the Motor Oil Hellas refinery in Southern Athens, Greece. By replacing grey hydrogen with green hydrogen, EPHYRA seeks to reduce the refinery's carbon footprint.
The project utilises renewable energy from solar and wind, and explores the reuse of by-products like oxygen and heat to enhance energy efficiency. EPHYRA aims to demonstrate reliable green hydrogen production, support EU renewable hydrogen goals, and promote industrial decarbonisation and zero-emission fuels.

Jun 2023 - May 2028

TRIĒRĒS (€10.492.431)

The TRIĒRĒS project aims to create a "Small Scale Hydrogen Valley" centered around the Motor Oil Refinery. By linking the green hydrogen production unit developed in the EPHYRA project, TRIĒRĒS will establish a hydrogen economy in the region.
This initiative will integrate multiple hydrogen applications, including city buses, passenger vehicles, shipping, and power plants, into a resilient and interconnected ecosystem.

Jul 2023 - Apr 2028

LIHYP (€4.896.419)

The LIHYP (Linking Hydrogen Power Potential) project connects hydrogen supply and demand, fostering collaboration among stakeholders in the North Sea region. LIHYP aims to accelerate the market introduction of hydrogen applications through pilots for hydrogen cargo bikes, freight trains, and bus stations. The project will establish a hydrogen marketplace platform and a database for hydrogen demand, production, and supply until 2030. It also develops business model roadmaps and promotes cross-border integration and standardization of hydrogen infrastructures.

Jun 2023 - Feb 2027

H2Value (€4.284.280)

H2Value aims to establish the first interregional green hydrogen value chain in South Estonia (Tartu region) and Northern Latvia (Vidzeme region). The project will set up a small-scale green hydrogen production plant using solar energy, establish a green hydrogen refueling station, and test hydrogen transport via road. Hydrogen will be used as a zero-emissions fuel for transport, supporting strategic development and market uptake.

⌛ November 2022 - November 2025

Relevance of the project

The projects EPHYRA, TRIĒRĒS, LIHYP, and H2Value advance the hydrogen economy and promote sustainable energy transitions. EPHYRA and TRIĒRĒS reduce carbon footprints and enhance energy efficiency by integrating green hydrogen in industrial processes and creating hydrogen valleys around refineries. LIHYP fosters regional hydrogen chains and accelerates hydrogen application in mobility, supporting decarbonisation efforts. H2Value establishes a green hydrogen value chain in Estonia and Latvia, promoting zero-emissions transport and enhancing regional capacities in the EU hydrogen economy. H2Value also aims to create structured links among EU stakeholders, overcome market failures, and increase the capacities of less developed regions to participate in EU value chains. Together, these projects demonstrate the viability and benefits of green hydrogen, fostering collaboration and innovation across Europe.

Impact on the energy transition

The EPHYRA, TRIĒRĒS, LIHYP, and H2Value projects significantly advance the energy transition by promoting green hydrogen adoption and sustainable energy practices. EPHYRA reduces carbon emissions by replacing grey hydrogen with green hydrogen in the Motor Oil Hellas refinery, enhancing energy efficiency and promoting a circular economy. TRIĒRĒS creates a hydrogen valley around the refinery, integrating hydrogen applications in transport and industry, and facilitating regional hydrogen economy development. LIHYP develops regional hydrogen chains around the North Sea, accelerating hydrogen adoption in mobility and supporting decarbonisation efforts. H2Value establishes a green hydrogen value chain in Estonia and Latvia, promoting zero- emissions transport and enhancing regional participation in the EU hydrogen economy. Overall, the projects illustrate the feasibility of green hydrogen, promote the adoption of sustainable energy, encourage collaboration and help reduce greenhouse gas emissions, thereby contributing to the global effort to combat climate change.

Results and deliverables

- EPHYRA
- TRIĒRĒS: D5.2 Hydrogen Valley WIVA P&G Hy-West
- H2Value: Estonian and Latvian Pilot
- LIHYP: The pilots and the platform

All deliverables from EPHYRA can be found on the website. The same applies to TRIĒRĒS, but one of the reports is highlighted. In this report, the problem-solving methodology and strategic approach using the example of the Tyrolean energy system in the framework of the WIVA P&G HyWest project are described. The pilots within H2Value are also part of the deliverables, and more information can be found on the website.

Role of New Energy Coalition

- Leadpartner
- Coordination
- Connecting the valleys
- Communication
- Dissemination
- Support in Hydrogen Valley development

New Energy Coalition has different roles in these projects. In LIHYP, we are the lead partner and project manager. For EPHYRA and TRIĒRĒS, we connect hydrogen valleys and share knowledge. In EPHYRA, we also manage communication and dissemination. In H2Value, they support Hydrogen Valley development.

Countries involved

LIHYP

- The Netherlands
- Belgium
- Germany
- France
- Denmark

EPHYRA and TRIĒRĒS

- France
- Greece
- Croatia
- Egypt
- Cyprus

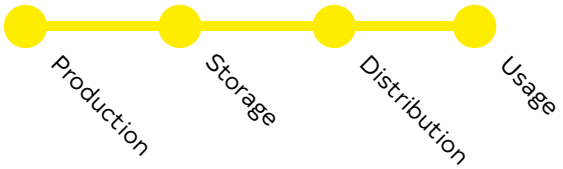
H2Value

- Estonia
- Latvia

Key performance indicators

Tons of green H_2 produced per year:	2.410
Different applications:	23
Working electrolyser:	1

Impacted segments of the value chain



Word from the project leader

"What makes LIHYP unique is the strong commitment of pilot project owners and the collaboration between companies, clusters, and governments across five countries."

- Ingrid Klinge

"What makes the EPHYRA and Trieres projects unique is that the hydrogen user is also the project owner, ensuring direct investment and commitment to the project's success."

- Siep Bouma

Fieldlab - Hydrogen in Agri

www.greenportnhn.nl/projecten/fieldlab-waterstof-agri

b.broen@newenergycoalition.org

Jul 2023 - Jul 2026

€ 3.700.000

12

Summary

The Fieldlab Waterstof in Agri (Hydrogen in Agriculture) is to become a decentralised physical hotspot for testing and demonstrating hydrogen innovations within the agricultural sector. Connecting twelve parties, ranging from agricultural companies, technical companies, educational insitutions and government instutions, the Fieldlab supports agricultural entrepeneurs, develops education for technicians of hydrogen applications and develops plans for upscaling innovations to the entire Noord-Holland Noord region. It does so through their four locations: Loonbedrijf Sturm-Jacobs, Rainbow Colors, Vertify and Living Lab Elektrolyse Hogeschool Inholland.

Countries involved

- The Netherlands

Key performance indicators

Area of installed PV panels:	18.000 m²
Battery power:	4 MW
Hydrogen storage capacity (goal):	50 - 400 kg
Intended electrolyer capacity:	2 MW

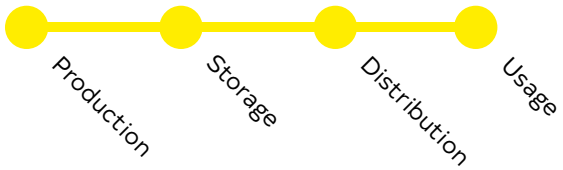
Impact on the energy transition

Many farms are actively exploring hydrogen applications, partnering with tech firms to address production, storage, and usage. Currently, agricultural entrepreneurs are addressing similar challenges individually, operating separately and thus slowing the energy transition. Bringing stakeholders together to collectively tackle these issues can expedite progress. The Fieldlab serves as a catalyst, providing a platform where agricultural entities can collaborate towards energy transition goals.

Role of New Energy Coalition

- Coordination
- Dissemination
- Business development
- Technical support

Impacted segments of the value chain



Word from the project leader

"I believe that agriculture is essential for the Dutch economy and its culture. Decarbonizing the sector's activities will help securing a sustainable future for the country and its people."

- Beau Broen

FLEXPOSTS

FLEXPOSTS
FLEXIBLE ENERGY POSITIVITY DISTRICTS

www.newenergycoalition.org/projecten/flexposts/		RVO + Innovation Fund Denmark	
p.tamis@newenergycoalition.org		€ 823.910	
Sep 2022 - Mar 2025		5	

Summary

Positive Energy Districts (PEDs) are crucial for urban energy transitions, requiring integration into urban planning and partnerships. FLEXPOSTS aims to enhance PED creation and business models through stakeholder engagement and interdisciplinary approaches. Demonstrated in Zwette VI and Aalborg East, the project addresses energy planning barriers and aims for net-zero emissions. Zwette VI tackles energy system planning barriers, while Aalborg East focuses on mixeduse neighbourhoods. FLEXPOSTS promotes PEDs as green energy solutions and addresses grid congestion issues. Its outcomes will facilitate sustainable urban development and energy transition efforts.

Goals

- Address the increasing demands for peak transport capacity and balance electricity systems.
- Tackle the challenge of replacing fossil-based heat sources with sustainable alternatives.
- Decrease electricity demand and enhance flexibility where feasible, with a focus on aligning urban and energy system planning.

Impact on the energy transition

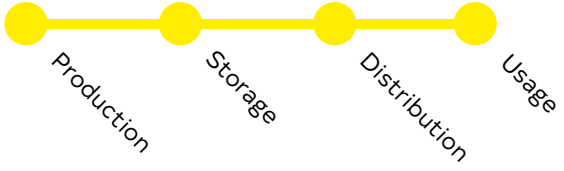
Achieving PEDs requires integrating building design, renewable energy, and stakeholder input with urban planning and sustainability. FLEXPOSTS tackles this by promoting sustainable, affordable, and inclusive cities through a holistic focus on economic, social, and environmental factors.

Role of New Energy Coalition

- Project developer

We were the project developer and developed a replication strategy for the overall project and one specifically for the Zwette.

Impacted segments of the value chain



Countries involved

- The Netherlands
- Denmark

Deliverables

- **Methodological Guideline for PEDs:** Report outlining methodologies for: existing energy systems and energy balance at neighbourhood level, future energy scenarios, identifying regulatory, structural and technical barriers for implementing PEDs, interdisciplinary and transdisciplinary methodology for synergising energy planning and urban planning processes, local stakeholder engagement, local partnerships and networks.

- **Business Models and PED implementation strategies:** Report outlining an approach for innovative business models, replicable PED implementations strategies and an assessment of the applicability of the PED model.

- **Replication Toolkit:** Report describing all relevant technological and non-technological information needed for an effective replication of the developed processes, solutions, best practices of the two demo-sites.

- **Local energy balance assessment:** Assessment of the energy demand and generation profiles to establish the current energy balance and flexibility options in Zwette VI.

- **Local energy balance assessment:** Assessment of the energy demand and generation profiles to establish the current energy balance and flexibility options in Aalborg East.

Green Hysland

www.newenergycoalition.org/projecten/green-hysland/		EU Horizon 2020	
t.block@newenergycoalition.org		€ 20.453.569	
Jan 2021 - Jan 2026		30	

Summary

Green Hysland is the first southern European Hydrogen Valley aiming to create a green hydrogen ecosystem on an island. The project takes place in Mallorca in Spain. It will deploy the green hydrogen value chain from production, distribution, infrastructure and end use in mobility and in generation of heat and power for commercial and public buildings.

Goals

The aim of the project is to deploy a fully operational green hydrogen ecosystem on the island of Mallorca. The project is developing the required infrastructure for the production of hydrogen, distribution and end use of hydrogen in mobility, heat and power. Green Hysland will provide a scalable and replicable hydrogen value chain that will be the foot print for other European islands territories and beyond.

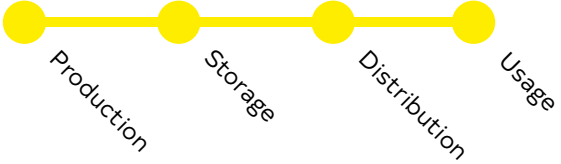
Impact on the energy transition

The Green Hysland project aims to produce 300 tons of green hydrogen per year after completing the deployment of the green hydrogen value chain. It has been estimated that by the end of the project it will reduce 20.700 tons per year of CO_2 emissions. The project will decarbonise the tourism activity and boost the diversification of the regional economy creating new jobs in the energy sector.

Role of New Energy Coalition

Communication & dissemination, deployment Advisory Group, green H_2 studies in Mallorca, HEAVENN project connection, key Results & exploitation and scaling up Hydrogen Islands.

Impacted segments of the value chain

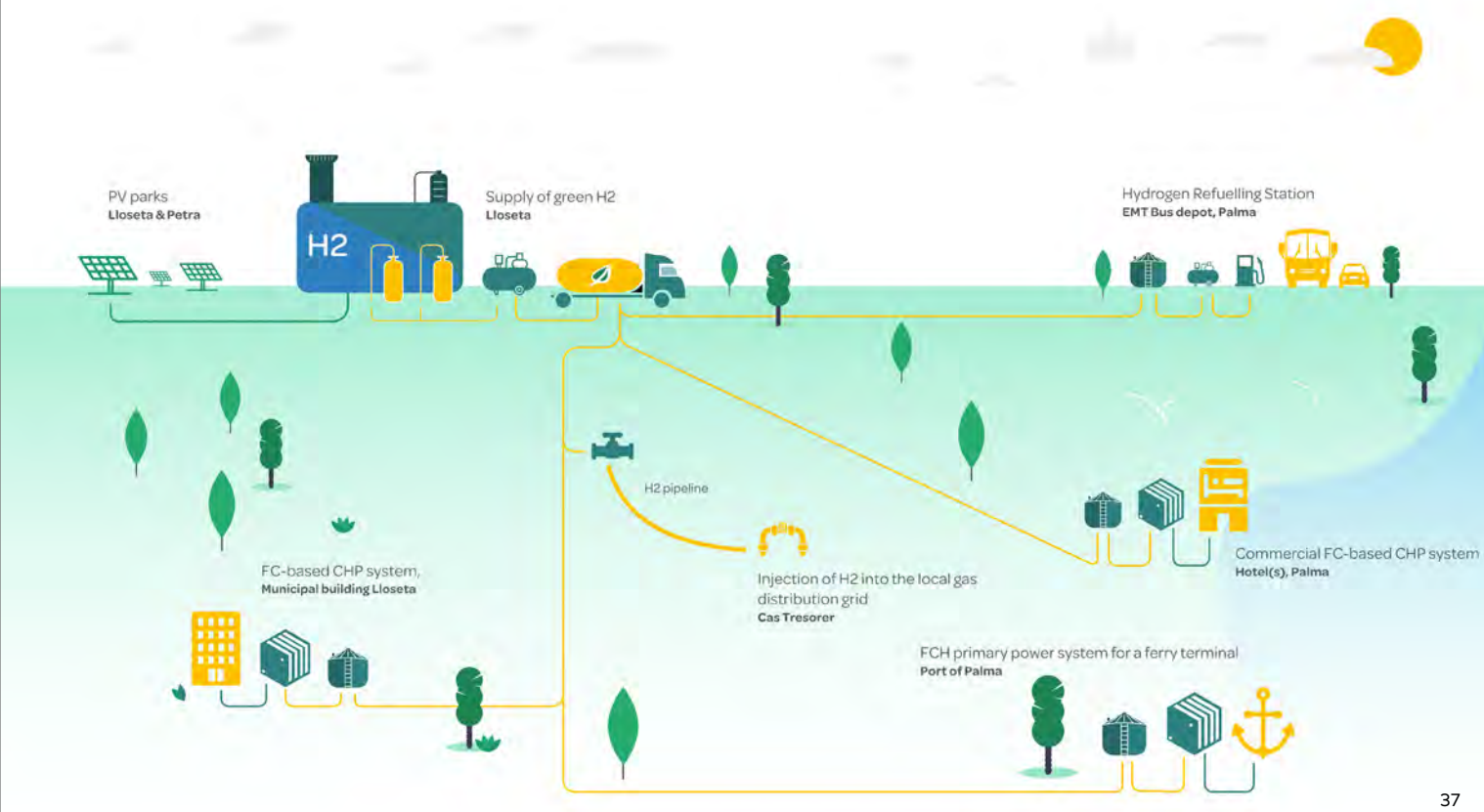


Countries involved

- The Netherlands
- Ireland
- Greece
- Marocco
- Spain
- Portugal
- Chile

Deliverables

- **A green hydrogen production plant:** the deployment of infrastructure for distribution of hydrogen.
- **A dedicated hydrogen pipeline:** distribution via road trailers and a hydrogen refueling station for distributing hydrogen across the island and integrating green hydrogen supply with local end-users.
- **Six hydrogen fuel cell end-user applications:** public transport buses and cars, at 2 commercial buildings (Palma Hotel and Port of Palma), auxiliary electricity supply for vessels at the port and injection of H_2 into the local gas grid.
- **A long term roadmap:** for the development of a widespread hydrogen economy in Mallorca and the Balearic Region, in line with the environmental objectives set for 2050.
  The development of replication experiences in five other EU islands: Madeira (PT), Tenerife (ES), Aran (IE), Greek islands and Ameland (NL) as well as Chile and Marocco.



Groene Waterstof Booster

www.groenewaterstofbooster.nl/	SNN EFRO
p.frederix@newenergycoalition.org	€ 1.865.849
Mar 2019 - Dec 2022	16

Summary

The Green Hydrogen Booster accelerates developments in hydrogen by, among other things, helping entrepreneurs realise hydrogen ideas with a financially very attractive voucher arrangement. The scheme offers access to a broad (knowledge) network in the Northern Netherlands as well as unique testing options on the EnTranCe site. How? By connecting ideas and innovations in the field of green hydrogen to students, educational institutions, SMEs and industry.

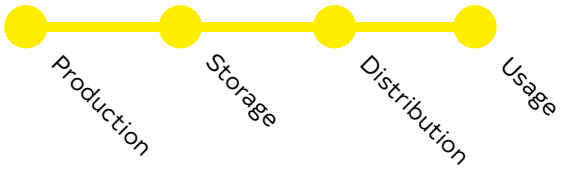
Deliverables

- Eindboekje Groene Waterstof Booster - Booklet

Impact on the energy transition

For the energy transition to be a success, new technologies and energy solutions have to be adapted by many people and businesses: GWB allowed SME owners to have their hydrogen-related questions answered, or their innovation tested in a professional environment.

Impacted segments of the value chain



Role of New Energy Coalition

- Locate entrepeneurs with hydrogen-related questions.
- Provide expertise on the developing hydrogen economy.

Goals

- The connection between parties and initiatives in the north with which we accelerate green hydrogen innovations through innovative practical projects with the aim of sustainable growth and the creation of employment.
- An open innovation climate where hydrogen solutions and the promotion of hydrogen can be worked on safely, concretely and practically, with the aim of putting the Northern Netherlands (inter) nationally on the map as a green hydrogen region.
- Providing demonstrations and developing teaching material about hydrogen with the aim of transferring knowledge and technology to students, professionals, administrators and policy makers.

Countries involved

- The Netherlands

GZI Next

www.gzinext.nl/

r.paap@newenergycoalition.org

Jul 2017 - Jul 2027

€ 100.000.000

10

The hydrogen refueling station has received funding from the European Union's Horizon 2020 research and innovation program, the entrepreneurs' platform Hydrogen Europe, and the innovation promoter Hydrogen Europe Research

Summary

The GZI Next project in Emmen transforms a fossil gas purification site into a sustainable energy hub, focusing on solar energy (SES PV Park), green hydrogen (EMMHY), and green gas (Northstar) production. The GZI Next project also connects with local industry (Getec) through a hydrogen grid and initiated the realisation of a green gas collection grid between Emmen and Ommen.

The GZI location, spanning 30 hectares, is also connected to the high-voltage electricity grid of Enexis. The site's redevelopment is a public-private partnerschip supported by local and regional governments, energy companies, and industry groups. And last but not least: it contributes substantially to the Netherlands' CO_2 reduction goals.

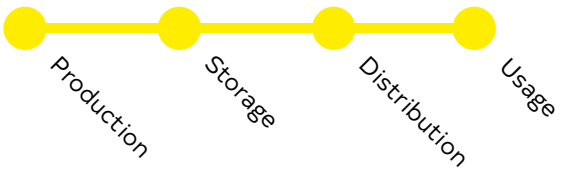
Results and deliverables

- Locate entrepeneurs with hydrogen-related questions.
- Provide expertise on the developing hydrogen economy.

Countries involved

- The Netherlands

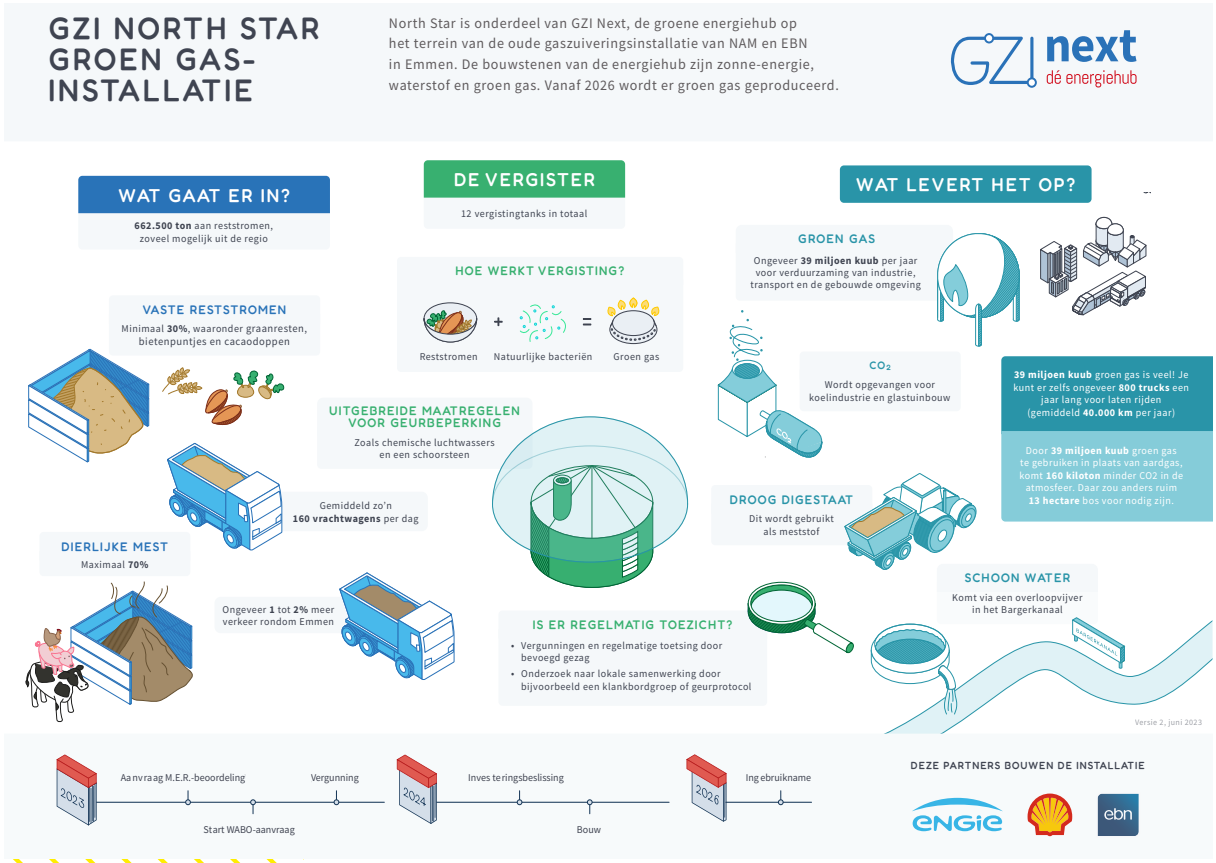
Impacted segments of the value chain



Role of New Energy Coalition

- Governance
- Human capital
- Assisting

New Energy Coalition stimulates innovation and education by bringing together knowledge, policy, and entrepreneurship.



Key performance indicators

Solar Park:	28.500 solar panels with a capacity of 12 MW
Hydrogen Plant production per year:	4 MW capable of producing approximately 600 tons of green hydrogen.
Green Gas Facility (North Star) production per year:	47 MW or 39 million Nm^3 of green gas per year, sufficient for nearly 33.000 households.
Total investment:	€100.000.000

Word from the project leader

"This project showcases how we can use fossil energy infrastructure to accelerate the energy transition. It's the first project that combines the production of renewable electricity, hydrogen and green gas on this scale. There is no other project in the world that does this but others will follow."

- Ruud Paap

H2CoVE

https://www.newenergycoalition.org/en/

i.yap@newenergycoalition.org

Mar 2024 - Mar 2028

EU ERASMUS

€ 4.000.000

21

Summary

H2CoVE extends the focus to a European scale, engaging five regions: Vestland in Norway, Northern Netherlands, Tyrol in Austria, Estonia and Precartharian region in Ukraine to develop and share vocational skills needed for the emerging hydrogen value chains. This project also involves the creation of an interactive platform to facilitate collaboration between educational institutions, businesses, and research entities across Europe. The project aims to equip the European workforce with the right and necessary high quality vocational skills for industries in the emerging value chains, for a hydrogen economy.

Impact on the energy transition

The H2CoVE project boosts hydrogen awareness and education, developing skilled students and workers, and extends its impact through international collaboration, enhancing the local hydrogen economy in Europe.

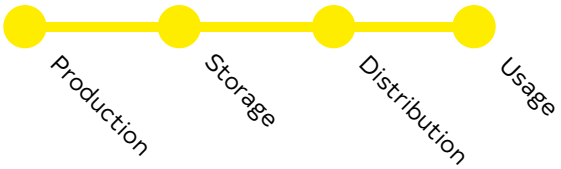
Role of New Energy Coalition

- Regional coordinator for the Northern Netherlands.
- Work package leader in developing an interactive platform.

Deliverables

- Connecting and engaging citizens, education and research institutions and businesses for continuous knowledge sharing and innovation in hydrogen skills at European level through a specially designed platform.
- Improving required knowledge and skills among students, workers, and the potential workforce on basic and advanced applications for the hydrogen economy.
- Developing, updating and testing courses, modules, education programmes which answer the needs of the industry in the partner regions at different VET levels in an inclusive way.
- Ensuring European added value and sustainability for project results by embedding and transferring best practice between regions and ecosystems throughout Europe.

Impacted segments of the value chain



Countries involved

- The Netherlands
- Austria
- Norway
- Estonia
- Ukraine

HEAVENN

HEAVENN

www.heavenn.org/	EU Clean Hydrogen Partnership
heavenn@newenergycoalition.org	€ 100.000.000
Jan 2020 - Dec 2027	33

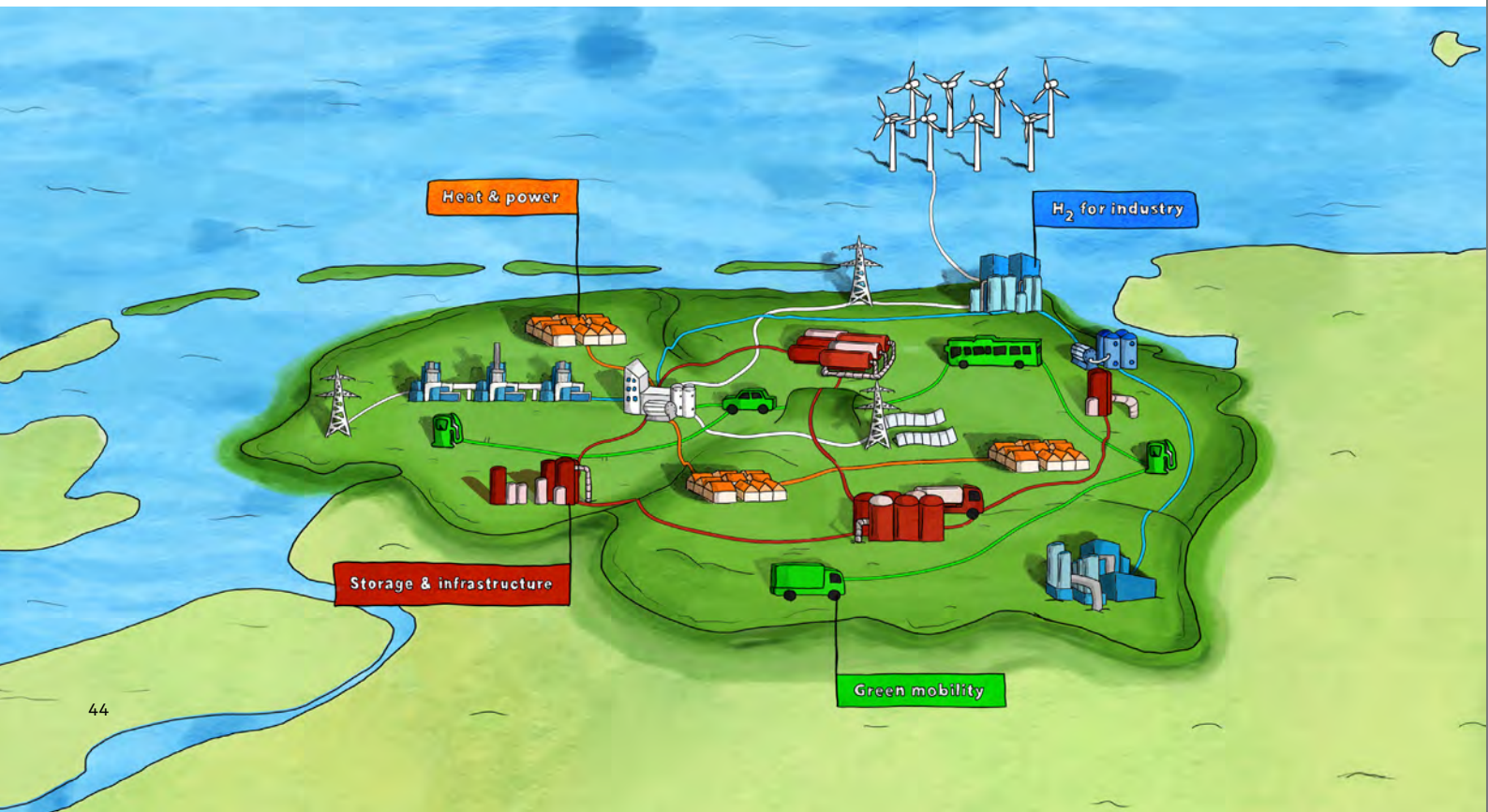
Summary

HEAVENN is a hydrogen valley project funded by the European Commission, it comprises a wide range of projects with related and supporting complementary studies. Experience and best practices resulting from HEAVENN will be gathered, tested and translated into a means of demonstrating the replicability of this concept in Europe and beyond.

HEAVENN is a large-scale programme of demo projects bringing together core elements into a fully-integrated and functioning "H_2 valley". The main goal is to make use of green hydrogen across the entire value chain, while developing replicable business models for wide-scale commercial deployment of H_2 across the entire regional energy system.

Impact on the energy transition

HEAVENN tackles the hydrogen market's chicken-and-egg problem by ensuring stable hydrogen production and offtake through a consortium. This stability enables scaling and attracts more users. Ultimately, HEAVENN could significantly contribute to the green hydrogen system by breaking the cycle of stalled production due to a lack of reliable offtakers.



Role of New Energy Coalition

- Project management
- Coordination
- Communication
- Dissemination
- Liaisoning
- Financial grant coordinator

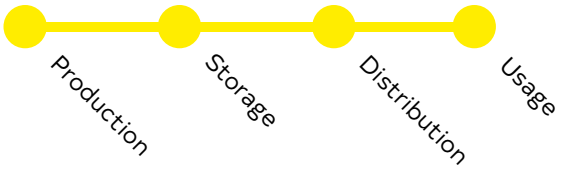
Countries involved

- The Netherlands
- Belgium
- Germany
- Denmark
- Spain
- Great Britain
- Ireland

Deliverables

- There are 107 deliverables divided over 33 partners. Some of the key deliverables can be found on the HEAVENN website.

Impacted segments of the value chain



Key performance indicators

Hydrogen production per year:	9.260 tonnes per year
Hydrogen distribution and storage:	161,4 km in pipelines
Total electrolyser production capacity:	64 MW

Word from the project leader

"To me HEAVENN is one of the most ambitious projects, as it is the first European hydrogen valley, and as the New Energy Coalition, we are really able to lead the way and help other regions on the road to a green hydrogen economy."

- Geerte de Jong

Hydrogen Valley Campus Europe

HVCE
Hydrogen Valley Campus Europe

https://www.newenergycoalition.org/en/

j.meinema@newenergycoalition.org

Feb 2022 - Sep 2027

funded by NPG & JTF

18

Summary

The northern Netherlands has significantly developed over the past few years as a center for new hydrogen-related activities. This has led, among other things, to recognition from Europe as the first Hydrogen Valley of Europe; in addition, an impressive hydrogen investment agenda has been established towards 2030. From the beginning, the region recognized that its success as a hydrogen region is determined by the sum of these investments and other business activities, the collaboration within the triple helix, and public acceptance.

All of this has led to the concept of a Hydrogen Valley Campus Europe (HVCE). The HVCE concept focuses on four components that, together, aim to strengthen the educational and knowledge base in the region concerning green molecules to the extent that, over time, an internationally renowned campus focused on hydrogen and green molecules will emerge.

The uniqueness of HVCE lies firstly in the fact that, because the various affiliated locations specialise in different parts of the value chain, the collaboration between them can lead to the required broad coverage of the hydrogen value chain in the region.

Secondly, a distinguishing feature of the HVCE is the collaboration across different levels of knowledge, from secondary education (VO), vocational education (MBO), higher vocational education (HBO), university education (WO), to post-initial education. The development of hydrogen requires knowledge, innovation, and a workforce that collaborates effectively across levels, ranging from conceptual to practical.

Finally, an interdisciplinary approach, both in education and research, is a key characteristic of the HVCE. The complexity of developing the entire hydrogen value chain demands this, and moreover, the knowledge institutions offer a broad disciplinary coverage and a strong focus on the energy transition as a specialty and a subject of special attention.

Components

- An integrated education and training program focused on creating a significant workforce potential, collectively referred to as the H_2 Train and Learn Hub.
  This component will be further highlighted in the following sections.

- A coherent system of testing centers and experimental locations in the field of hydrogen and green molecules, collectively referred to as the H_2 Knowledge and Innovation Hub.

- A number of initiatives around start-ups and scale-ups for economic development in the field of hydrogen and green molecules, collectively referred to as the H_2 Business Hub.

- A program with the explicit goal of making appropriate innovative concepts suitable for innovative commercial application and valorization, the H_2 Valorization Hub.

H_2 Train and Learn Hub

The H_2 Train and Learn Hub is the first component of the HVCE project. The goals of the H_2 Train and Learn Hub are about continuous learning, working and about doing research in the hydrogen economy in the north of the Netherlands. This project focuses on an integrated approach of thematic education, research, training and (re-)education at all learning levels to prepare students and professionals for the hydrogen economy being built. These programs emphasize project-based learning and collaboration across vocational, higher, university and post-initial (advanced professional) level, aiming to develop a continuous learning environment that supports the regional hydrogen economy.

Relevance of the project

The HVCE projects focusing on human capital development in the hydrogen sector in the Northern Netherlands are essential for the transition from natural gas to hydrogen. They address educational gaps by creating programs across various educational levels. Integrating research and practical applications, these initiatives aim to develop a skilled workforce prepared to work in the emerging hydrogen economy.

Impact on the energy transition

The hydrogen-focused projects in the northern Netherlands are key to the region's energy transition. The H_2 Train and Learn Hub has raised regional awareness and educational engagement in hydrogen, developing skilled students and workers in the field of hydrogen at different levels. These efforts position Groningen as a potential leader in the hydrogen sector in Europe, aligning educational initiatives with strategic regional goals to advance the energy transition.

Deliverables

The main deliverables for all the educational projects in the field of hydrogen are:

- Retain intake inflow from students.
- Increase student's knowledge and skills about the energy transition, and hydrogen in particular.
- Increase knowledge and skills of companies, teachers and practical trainers about the energy transition, and hydrogen in particular.
- Reduce the looming discrepancies in the labor market.
- Further developing the Groningen knowledge sector and support the investment agenda with sufficient workforce.

Results

An important result from the H_2 Train and Learn Hub is profiling Groningen as a hydrogen region.

Role of New Energy Coalition

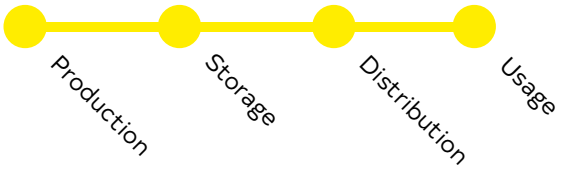
- Project leader
- Coordination
- Communication
- Network building

New Energy Coalition (NEC) was the initiator and the overall project leader of the H_2 Train and Learn Hub, primary doing the coordination and communication within the project. Additionally, NEC organises networking events like HySociety to foster collaboration among industry, education, and government stakeholders. So NEC also has an important role in network building and for informing the general public.

Countries involved

- The Netherlands

Impacted segments of the value chain



Key performance indicators

Number of vocational university research trajectories:	7-8
Number of public activities:	60
Number of networking activities combination of public and network:	20
Number of hydrogen related internships:	200
Number of experts trained:	2.000
Number of students in practical research projects:	250

Word from the project leader

"This project is really unique, because it is the biggest human capital project in the field of hydrogen and in the energy transition.
The entire educational chain is working together, and the market is contributing ideas on the skills that need to be developed to make the hydrogen economy a success."

- Jogchem Meinema

HyDelta

www.hydelta.nl/

p.frederix@newenergycoalition.org

Dec 2020 - Oct 2024

NL TKI Nieuw Gas

€ 6.415.724

6

Summary

HyDelta is a Dutch national research program and collaborative effort dedicated to the large-scale implementation of hydrogen in the Netherlands. It focuses on integrating hydrogen safely into the gas transport and distribution infrastructure. The program addresses technical, scientific, and societal barriers that impede the transition to a carbon-neutral hydrogen economy, a sustainable energy system where hydrogen serves as a primary energy carrier.

HyDelta 1.0 (€2.314.380)

HyDelta 1.0 represented the initial stage of the HyDelta research program, designed to address the foundational aspects of hydrogen integration within the Dutch energy system through structured Work Packages (WPs).
This phase focused on vital areas like hydrogen safety, integration into the gas grid, and hydrogen admixing. In this project, detailed studies were done on the behavior of hydrogen in pipelines and distribution grids, assessing technical risks associated with its transport and distribution.

Dec 2020 - Apr 2022

HyDelta 2.0 (€2.423.485)

Building on the groundwork laid by HyDelta 1.0, HyDelta 2.0 focused on removing barriers to scaling up hydrogen use within the Dutch energy system. This phase explored the economic aspects of the hydrogen system, enhanced safety measures within the gas grid, and examined how to practically transition transport assets to hydrogen. Additionally, it delved into the social and environmental implications of transitioning to hydrogen by evaluating maintenance requirements and socio-economic and labor market considerations to ensure a smooth and feasible transition.

May 2022 - Apr 2023

HyDelta 3.0 (€1.677.859)

HyDelta 3.0 is dedicated to addressing strategic questions concerning the implementation of hydrogen networks. This phase concentrates on asset management, hydrogen gas quality and reusing offshore infrastructure. It also investigates the economic and societal implications of creating self-sufficient hydrogen regions to mitigate grid congestion, and examines emissions, particularly on the greenhouse effects of hydrogen and the role of ammonia.

Additionally, the project develops recommendations for safe handling of hydrogen in the energy network and looks into preconditions on unit standardization, digitalization, hydrogen infrastructure manufacturing industry and on the spatial arrangement. The primary aim of this project is to develop a dependable hydrogen supply chain and address remaining challenges to facilitate a seamless and effective shift to hydrogen-based systems.

Nov 2023 - Oct 2024

Relevance of the project

HyDelta's significance as a Dutch national research initiative stems from its focus on overcoming the technical, scientific, and social hurdles that currently impede the large-scale implementation of hydrogen as a key component of the Netherlands' energy strategy. This project is strongly driven by the knowledge gap at the transmission and distributed system operations. By tackling these unresolved questions in 1-year phases, HyDelta is a very unique project, paving the way for the necessary investments and deployments that will propel the hydrogen economy forward, moving beyond the early developmental stages toward a integrated hydrogen infrastructure.

Impact on the energy transition

HyDelta plays an instrumental role in addressing the classic "chicken and egg" problem within the hydrogen sector in the Netherlands, where the lack of an established hydrogen supply deters demand, and vice versa. Recognising this issue, the Dutch government has initiated moves to establish a hydrogen distribution and transport network, ensuring that hydrogen can reach the necessary destinations. HyDelta is pivotal in this transition, tasked by network operators to eliminate uncertainties surrounding hydrogen distribution. By providing detailed insights and resolving questions related to the large-scale transport and regional distribution of hydrogen, HyDelta is clearing pathways for investment and regulatory frameworks. This work is crucial not only for building a viable business case for hydrogen but also for setting standards for safety and regulatory compliance. As HyDelta continues to generate and share research findings, it significantly reduces risks associated with hydrogen infrastructure, empowering stakeholders from industry leaders to policymakers, also in the international arena, to make informed decisions. This accelerates the shift from theoretical frameworks to practical implementations, pushing towards a sustainable, hydrogen-fueled future.

Deliverables

HyDelta 1.0

- Hydrogen Safety
- Hydrogen in the Gas Grid
- Value Chain & Hydrogen Admixing

https://hydelta.nl/hydelta-1-0

HyDelta 2.0

- Economic aspects of the hydrogen system
- Hydrogen safety in the gas grid
- Hydrogen and transport assets
- Social aspects of hydrogen

https://hydelta.nl/hydelta-2-0

HyDelta 3.0

- Asset management
- Economy & society
- NOx & emissions
- Value chain & system development
- Technology & safety in hydrogen network

https://hydelta.nl/hydelta-2-0

Results

The HyDelta program is organised into 1-year phases, focusing on a specific area of research. Each report aims to make concrete recommendations to realise the distribution of hydrogen aspects.

Role of New Energy Coalition

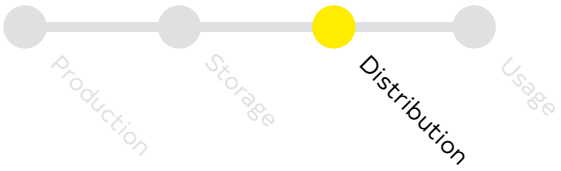
- Project leader
- Lead partner
- Techno-economic analysis
- Social and labor market analysis

New Energy Coalition (NEC) plays a central role in the HyDelta project, focusing on the effective management and coordination of various project activities. They ensure the alignment of project objectives with the operational tasks, from leading stakeholder meetings to maintaining an active online presence, the New Energy Coalition facilitates the smooth progress of research and the dissemination of its results.
Furthermore, NEC's Energy analysts perform techno-economical and social studies to inform decision-makers of the optimal path towards a partially hydrogen based energy system.

Countries involved

- The Netherlands

Impacted segments of the value chain



Key performance indicators

Number of deliverables:	90
Total downloads (2020-mid 2024):	75.000
Project completion rate:	21 deliverables per year
Number of experts involved:	150+
Webinars and conference presentations:	30+

Word from the project leader

"HyDelta is not just about facilitating the hydrogen economy; it's about solving real-time challenges as they arise, ensuring that every step we take is immediately relevant to the ongoing energy transition."

- Pim Frederix

Hy2Market

www.hy2market.eu	EU i3
d.koppert@newenergycoalition.org	€ 14.277.578
Feb 2022 - Jan 2026	42

Summary

The project Hy2Market focuses on creating hydrogen value chains in Europe, leveraging the northern Netherlands' expertise in hydrogen technology and eco-system builder.
The project addresses key areas such as production, transport, industry, and mobility within the hydrogen value chain. We partner with ten European regions to speed-up hydrogen system development, aiming to bring hydrogen to the market and foster knowledge sharing among regions.

Deliverables

- Deliverable 5.1: Synthesis report of limitations, constraints and barriers and main routes of Hydrogen Mobility in European regions.
- Deliverable 3.1: Summary Report Pipe-Line Testing Campaign And Deployment Plan.
- Deliverable 4.7: Report on Use of Synthetic Fuels in the Transport Sector (Shipping and Aviation) to Demonstrate New Business Models.

https://hy2market.eu/results/

Impact on the energy transition

The main goal of the project is getting hydrogen to the market. By investing in pilots and sharing learnings from different regions in Europe, the project helps regions accelerate their development without reinventing the wheel. All the projects contribute in building the hydrogen capacity across Europe. This collaborative approach allows regions to benefit from each other's expertise, improving efficiency and fostering innovation in hydrogen technologies. This project contributes to the energy transition by developing and implementing pieces of the hydrogen value chain that supports the deployment of green hydrogen.

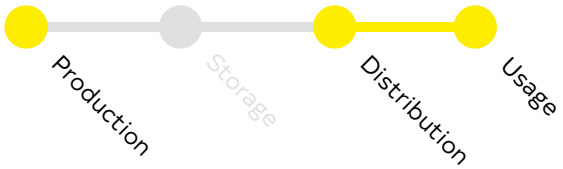
Role of New Energy Coalition

- Project leader
- Lead partner
- Techno-economic analysis
- Social and labor market analysis

Countries involved

- The Netherlands
- Germany
- Austria
- France
- Spain
- Italy
- Greece
- Romania

Impacted segments of the value chain



Key performance indicators

Regions cooperating:	10
Hydrogen investment projects:	15

Word from the project leader

"We are unlocking so much enthusiasm and engagement across Europe. You can make life so much easier and the Hydrogen Market development go so much faster, by just sharing the knowledge, across countries and across regions."

- Dirk Koppert

IANOS

www.ianos.eu	EU Horizon 2020
s.chaudhry@newenergycoalition.org	€ 7.000.000
Oct 2020 - Sep 2024	33

Summary

IANOS is at the forefront of addressing the complex geographic, topological, and social challenges faced by islands striving for sustainability and energy independence within the European Union. This initiative has established two 'Lighthouse Islands' in Ameland (Netherlands) and Terceira (Portugal). IANOS's Energy Transition Strategy not only develops practical innovations but also implements them within the social fabric of these islands. Key focus areas include "Energy efficiency and grid support", "Decarbonization", and "Empowering local communities".

These strategies are set to be replicated and verified across three 'Replication Islands' throughout the European Union. Innovations include a 'Virtual Power Plant' that leverages artificial intelligence, smart AI systems to forecast weather on local, regional, and national levels and a hydrogen value chain being developed for Ameland.

Impact on the energy transition

Islands are often powered by fossils fuels due to their geographical isolation, do not make use of their large solar and wind energy potential and experience high energy costs. IANOS addresses these issues through the five-pronged goals of reducing fossil fuel consumption, increasing utilisation of renewable energy, enhancing predictability of variable renewable energy sources, reducing energy bills for consumers and engaging prosumers and consumers to participate in the energy transition.

Within these goals, IANOS takes the niche and close-knit nature of island communities into account to ensure sustainable success.

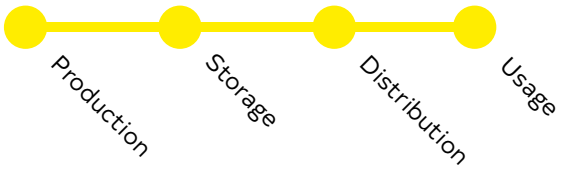
Role of New Energy Coalition

- Capacity building
- Public relations
- Facilitating
- Connecting stakeholders
- Coordinating

Countries involved

- The Netherlands
- Germany
- Austria
- France
- Spain
- Italy
- Greece
- Romania

Impacted segments of the value chain



Key performance indicators

Fossil fuel consumption reduction per year:	379.9 GWh
Renewable energy system (RES) utilisation increase:	83.6 GWh
Virtual RES forecast accuracy increase:	>10%
Energy bill reduction of end-users:	>15%
Prosumers and consumers involved:	900

Word from the project leader

"People are the heart of the energy transition. People need to be informed, engaged and involved for a successful and socially acceptable energy transition on islands and on mainlands."

- Shubhra Chaudhry

InCUBE

www.incubeproject.eu/

p.tamis@newenergycoalition.org

Jul 2022 - Jun 2026

€ 9.989.643

25

Summary

InCUBE envisions to unlock the EU renovation wave through cutting-edge standardised and integrated processes based on industrialisation, innovative renewable energy technologies, digitalisation, and new market entrants.
All while accounting for social inclusion, upskilling, and enhancement of women's role in the construction industry. The InCUBE solutions will be demonstrated in 3 large-scale demo sites: Zaragoza (ES), Trento (IT) and Groningen (NL).

Impact on the energy transition

Firstly, InCUBE focuses on reducing the energy demand of buildings through renovations. Saving energy is the first step in the trias energetica. Secondly, inCUBE focuses on using less energy in the renovation process itself through more efficient technologies and solutions. Thirdly, InCUBE increases the Renewable Energy production of the buildings including energy storage.

Goals

- Faster, cheaper and more sustainable renovation process of existing buildings in Europe.
- Accounting for social inclusion, upskilling, and enhancement of women's role in the construction industry.
- New market players, and new funding from venture capital and private equity are transforming current business models. Innovation advancements will lead to the introduction of new entrants and novel business models that will allow for increased levels of collaboration and productivity.
- The introduction of new technologies and materials is a growing trend. New multifunctional solutions are emerging that focus on the operation of the entire building envelope.
- The use of digital tools in renovation projects, such as design, structural and energy analysis software as well as planning management software, is the norm in certain processes of the planning and design stage of a project.
- Industrialisation refers to the automation and mechanisation of construction. Currently, this is mainly realised with robot-assisted offsite construction, "prefabrication" of large building elements and onsite assembly of these prefab elements.

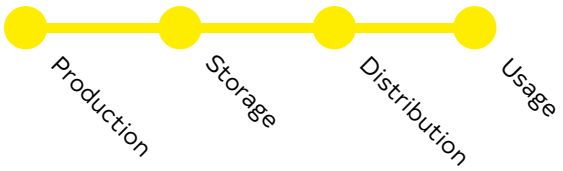
Role of New Energy Coalition

- Co-developer (proposal)
- Communicator
- Dissemination

Deliverables

- InCUBE Technological Pool of Solutions
- InCUBE's Gender Impact Matrix
- InCUBE's Digital Dashboard for Social Data

Impacted segments of the value chain



Countries involved

- The Netherlands
- Belgium
- France
- Poland
- Spain
- Italy
- Greece

Investa Center of Expertise

www.investa.org/
j.sanderink@newenergycoalition.org
33

Provincie Noord-Holland, Horizon 2020 (EU), Horizon Europe (EU), Kansen voor West, EZK

Summary

The InVesta foundation stimulates, facilitates and connects entrepreneurs, researchers and governments operating in the field of green molecules (e.g. green gas, hydrogen and biofuels) to further develop, demonstrate and commercialise innovative technologies. InVesta's Center of Expertise is located at the Boekelermeer businesspark in Alkmaar. The foundation focuses on the entire chain of green molecules, from pre-processing organic residual flows, via e.g. gasification to syngas, to ultimately reprocessing towards the desired end product. Crossovers with sustainably generated electricity and electrolysis, and carbon capture and utilisation are also part of InVesta's scope. The emphasis lies on pilot and demonstration projects (TRL5-8) that, through the offered shared facilities of InVesta, are enabled to bridge the well-known 'Valley of Death'.

Deliverables

- The construction of InVesta's Center of Expertise (August 2022).
- The establishment of Sustenso's biological carbon capture unit (February 2023).
- DOPS gasification unit (March 2023).
- POSHYDON electrolyser (May 2024.

Impact on the energy transition

The energy transition requires both 'clean electrons' (electricity) and 'clean molecules', but progress on the latter is lagging. To meet green gas and hydrogen ambitions, significant technological and economic advancements are needed for these innovations to scale up and reach commercial viability. InVesta supports start-ups, SMEs, and other companies by providing a location with necessary permits for testing and optimising their innovations.

Goals

InVesta aims to contribute to:

- The acceleration of technical and economical developments in the production and application of green molecules.
- Connecting education, research, and businesses to co-shape a future proof energy system.
- Strengthening the energy cluster in the region Noord-Holland Noord through job creation and stimulating the business environment.

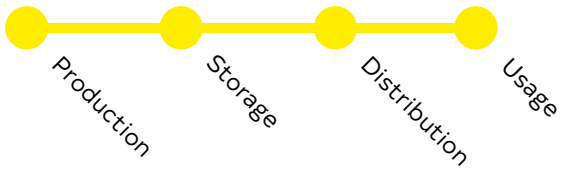
Role of New Energy Coalition

- Connecting research with societal stakeholders to improve impact

Countries involved

- The Netherlands

Impacted segments of the value chain



Making City

www.makingcity.eu

j.kalfsbeek@newenergycoalition.org

Dec 2018 - Dec 2024

EU Horizon 2020

€ 20.000.000

34

Summary

MakingCity is a Horizon 2020 project within the program of "Smart Cities and Communities". The project focuses on the energy transition within cities and the application of a concept called "positive energy districts" (PEDs). Through the implementation of innovative technologies within buildings ranging from old to new, the project aims to create districts in which more energy is produced than consumed. By doing this, the project transforms cities which have traditionally been seen as energy consumers, to energy producers.

The project demonstrates this concept in two "Lighthouse Cities"; Groningen (Netherlands) and Oulu (Finland) and aims to replicate the PED concept in six follower cities.

Impact on the energy transition

The MAKING-CITY project aims to demonstrate the PED concept, redefining cities from energy consumers to producers. The project focuses on the entire urban range, from reducing energy use in traditionally energy negative buildings, to increasing energy positivity in newer buildings to compensate for others. The project focuses on the implementation of new technologies, but also on the wider implementation of these PEDs via their validated technical feasibility, generated suitable business models and wider social acceptance.

The MAKING-CITY project takes it's place within the wider energy transition as a step in lightening the energy load on surrounding areas of cities by transforming cities into PEDs.

Deliverables

- D1.4 – Capacity building, coaching and mentoring
- MAKING-CITY Communication Video
- Action 45: Business Case Modelling
- Capacity Building (Kadikay, Istanbul)
- Positive Energy District Plan (Groningen)
- "Power Up Your City" (Groningen)

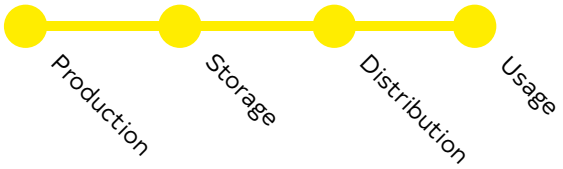
Countries involved

- The Netherlands
- France
- Finland
- Spain
- Italy
- Bulgaria
- Slovakia
- Poland
- Turkey

Role of New Energy Coalition

- Project management
- Addressing energy poverty
- Capacity building
- Communication
- Public relations
- Developing replicable business models

Impacted segments of the value chain



Key performance indicators

Positive energy balance (Groningen, goal):	243,1 MWh
People reached:	2000
PED-readiness tool levels:	3

Word from the project leader

"What makes this project unique is its approach to cities as a whole, in not just focusing on the interesting innovative buildings, but also creating sustainability in buildings which you would not expect. Together, these fit into the bigger puzzle of PEDs."

- Jannes Kalfsbeek

NESSIE

NESSIE | Interreg North Sea | Co-funded by the European Union

www.newenergycoalition.org/en/projects/nessie/	Interreg North Sea Region Call 3C (FA)
d.goeree@newenergycoalition.org	€ 3.383.172
Jan 2024 - Mar 2027	13

Summary

NESSIE aims to develop a proactive, bottom-up and holistic approach aimed at increasing the workforce and accelerate needed skills. The project aims to improve the mainstream technical education and training curriculum by offering a rapid, but responsible quality boost. NESSIE facilitates collaboration between leading energy transition islands, pioneer installers and local/regional vocational schools. The project uses unconventional recruitment campaigns and offers flexible learning, attractive internships and dynamic career paths to significantly increase student enrolment. Students receive practical training on islands in the North Sea region and work as trainees with local artisans.

Goals

The expected outcomes of the NESSIE project are:

- Introduction of relevant Short Advanced Courses on energy transition in vocational courses – attractive for students and replicable.
- Increase in the number of students (graduates and lateral entrants) through targeted recruitment campaigns.
- Accelerated growth in capacity and skills through 1.000 new certified professionals.
- Structured exchange of best practices between North Sea regions and proactive contribution to national and EU policies on urgent ET technical education.

Impact on the energy transition

The NESSIE project aims to be a proactive, bottom-up & holistic initiative focusing on fast-tracking capacity and skills building, with immediate action in the North Sea region. The project aims to enhance the regular technical education & training curriculum.

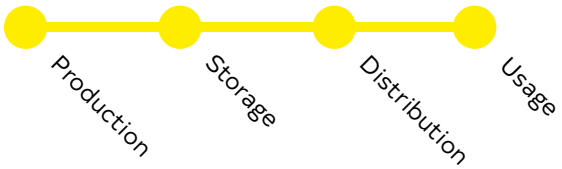
Role of New Energy Coalition

- Lead partner
- Organisation of various activities
- Implementing communication and dissemination initiatives

Countries involved

- The Netherlands
- Belgium
- Germany
- Denmark
- France

Impacted segments of the value chain



Deliverables

- Development of SACs, E-Campus, Traineeships and Novel Recruitment plan

Network & Events

www.windmeetsgas.com

www.newenergyforum.nl

c.vansantvoord@newenergycoalition.org

45+

These events take place every year

Summary

New Energy Coalition aims to inspire others and share new developments in knowledge, research and innovations. To achieve this, they continuously host various events covering their own topics as well as other energy-related subjects. This combined project consists of two annually organised events: the Wind Meets Gas Symposium and the New Energy Forum, where the ENTRANCE Award is presented.
These events are designed to promote energy transition through innovation, collaboration, and education, positioning the northern Netherlands as a hub for sustainable energy solutions. And the perfect place for networking.

Wind Meets Gas

The Wind Meets Gas Symposium is an annual event focused on the topic of hydrogen. It is scheduled to take place in October each year, in the Martinikerk in Groningen.
The symposium features keynote speakers from the northern parts of the Netherlands and the North-Eastern countries such as Sweden, Norway, Finland, and Denmark. These countries, along with their ambassadors and government representatives, participate in the event annually.

New Energy Forum

The New Energy Forum is an event designed to exchange ideas and foster collaboration in the field of energy transition. The event, which is more informal compared to the Wind Meets Gas Symposium, includes various activities aimed at showcasing practical solutions rather than just debating issues.

ENTRANCE Award

The ENTRANCE Award is a national prize presented at the New Energy Forum.
It is designed to recognise and stimulate innovative start-ups and scale-ups that contribute to the energy transition.
The award targets new ideas and solutions that can be easily scaled and have a significant impact on the energy sector.
The winner receives € 100.000,- in value!

Relevance of the project

The project, encompassing the Wind Meets Gas Symposium, the New Energy Forum, and the ENTRANCE Award, is crucial for several reasons. First of all it serves as a platform for showcasing cutting-edge developments in energy technology, facilitating collaboration among key industry players, government officials and academia. By positioning the northern Netherlands as a hub for sustainable energy, it attracts investment and talent to the region. Additionally, the project supports the commercialisation of innovative solutions, ensuring that advancements move from research to real-world applications. Through these efforts, the project contributes to the acceleration and visibility of the energy transition.

Impact on the energy transition

New Energy Coalition's events impact the energy transition by promoting innovation, collaboration, and education.
These events showcase advancements in hydrogen technology and renewable energy. Through the ENTRANCE Award, they accelerate the market integration of new technologies. The events foster collaboration among corporate leaders, government officials, researchers, and young professionals, creating strategic partnerships. Educational initiatives target students and young professionals, building a skilled workforce for the future.

It also positions the northern Netherlands as a leader in sustainable energy and contributes to global efforts to climate change. Overall the events drive the energy transition by promoting sustainable practices, innovation and building industry capacity.

Role of New Energy Coalition

New Energy Coalition's involvement in these events is crucial for driving forward the energy transition through effective dissemination, valorization, and capacity building. These events are designed to disseminate and valorize project outcomes, ensuring that successful projects reach the market for further development and broad utilisation of new discoveries. To achieve this, we organise several events. They provide a platform for showcasing their own projects, ensuring that innovative solutions and successful initiatives are shared with a wider audience. Complemented by social media they ensure continuous engagement before, during, and after the events. This approach maximises the reach and impact of the events, ensuring that key messages and outcomes are widely disseminated. Finally, New Energy Coalition uses these events to position ourself as a central player in the energy transition. By facilitating networking and collaboration among diverse stakeholders, we accelerate the adoption of sustainable energy practices. The events also play a critical role in motivating and influencing the next generation of energy professionals, helping to build a knowledgeable and skilled workforce dedicated to advancing the energy transition.

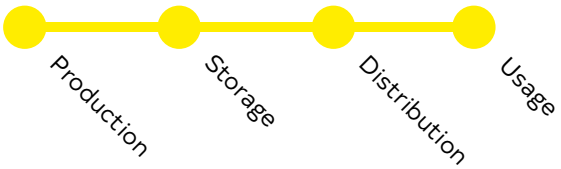
Results and Deliverables

These events have produced results and deliverables. Key outcomes include increased awareness and engagement in the energy transition, successful integration of innovative projects and collaboration among diverse stakeholders. These events have also provided valuable educational opportunities for students and young professionals.
Deliverables include reports and policy papers, platforms for showcasing innovations, strategic partnerships, and multi-channel communication to maximise the reach and impact of these initiatives. Previous winners of the ENTRANCE Award were BioBTX (2022), New Born Rubber (2023) and Saluqi Motors (2024).

Countries involved

- The Netherlands
- Germany
- Denmark
- Norway
- Sweden
- Finland

Impacted segments of the value chain



Key performance indicators

Visitors of the New Energy Forum:	1500
Visitors of Wind Meets Gas Festival:	450
ENTRANCE Award price:	€100.000

Word from the project leader

"Our goal on these events is to share knowledge and innovations, and to connect and inspire paticipants. With our projects and human capital activities we contribute to the general welfare in the northern region and to (inter)national impact. And our work is necessary for future generations!"

- Charles van Santvoord

Normatief Kader

www.newenergycoalition.org/custom/uploads/2024/01/Normatief-kader-fase-I-eindrapport.pdf

m.vos@newenergycoalition.org

Jan 2022 - Dec 2022

€ 35.000

6

Summary

The 'Normative Framework' initiative focuses primarily on direct government intervention in which the government, through state participations such as EBN, Gasunie and Tennet, takes an active role in participating in the energy market for the energy transition and collaborates with private market parties.
This direct government intervention must comply with existing assessment frameworks for good governance. The normative framework adds criteria for the reason for the exploration of normative intervention framework for energy transition intervention, the effectiveness and efficiency of the intervention and its alternatives, and determining the duration of the intervention, including an exit strategy.

Goals

- Start the conversation regarding state participation and normative framework that could be established.
- Initiate/join a project where the normative framework can be further developed.

Impact on the energy transition

The project has contributed to the energy transition by starting the conversation on the possibility of state intervention within the energy transition market and, in a later stage, developing a framework for it.

Role of New Energy Coalition

- Initially, New Energy Coalition had a role as initiator and coordinator. Currently, we have a more supporting role within the project.

Deliverables

Until now, there is only one report that came out of this project, namely "Normatief kader: Voor overheidsinterventies in de energiemarkt ten behoeve van de energietransitie". This report contains an inventory of existing assessment and assessment frameworks as well as aspects relating to interventions through participation which have not yet or insufficiently been arranged or developed. Based on conversations with a guidance group, conversations with several professors and a literature study, this report results in a number of criteria and principles for further elaboration of a normative intervention framework for energy transition through (state) participation.

- Normatief Kader – Phase I - Report

Countries involved

- The Netherlands

Impacted segments of the value chain

North Sea Energy

north-sea-energy.eu/en/home

r.vanzoelen@newenergycoalition.org

Apr 2020 - Oct 2025

NL TKI Nieuw Gas

€ 8.664.586

NES 4: 29

NSE 5: 37

Summary

Europe is transitioning towards a reliable and affordable climate-neutral energy system, with the North Sea at its core. Once known for oil and gas, the North Sea is now a hub for renewable energy, including wind, solar, and marine energy, plus hydrogen production and carbon storage. Smart offshore connections will save society costs, time, space, ecological impacts and CO_2 emissions.

The North Sea Energy (NSE) programme is a precompetitive shared innovation programme leveraging this shift, creating synergies between diverse low-carbon energy sources to optimise benefits for society and the environment. With nearly 40 national and international partners, NSE emphasizes collaboration, knowledge sharing, and practical demonstrations to test and demonstrate innovative concepts in practice, steering Europe towards a sustainable energy future.

NSE 4 (€3.550.077)

The fourth phase of the North Sea Energy programme is focused on identifying and developing North Sea Energy hubs, aimed at integrating various energy systems including electricity, hydrogen, natural gas, and CO_2.

This phase involved strategic planning for each hub to expedite projects like offshore hydrogen production, platform electrification, and CO_2 transport and storage.
In this programme the system integration concepts were for the first time applied on a map resulting in three offshore hub designs. Technical, environmental, economic and legislative evaluations of these hubs have been provided in the programme.

A significant outcome of this phase was the creation of a roadmap for offshore system integration in the North Sea by 2050, incorporating insights from earlier phases. This roadmap outlines the development of system integration projects and evaluates potential investment and infrastructure transformation barriers. The participatory process, crucial for knowledge sharing and co-creation, involved stakeholders in workshops and meetings, enhancing awareness and collaboration in the programme's deliverables.

Apr 2020 - Dec 2023

NSE 5 (€5.114.509)

The fifth phase of the North Sea Energy (NSE) programme extends from previous results, focusing on refining offshore energy system blueprints for 2050 across three North Sea hubs—west, east, and north.

This phase involves detailed assessments of offshore hydrogen production and energy storage technologies, alongside developing a public repository of these technologies.
Efforts include establishing design principles that are inclusive of ecological and societal considerations, addressing supply chain and human capital challenges to support offshore energy transition.

A key development is that multiple models will be interlinked via ESDL (Energy System Description Language) to form an IT toolbox for offshore system design, which supports planning, simulation, and optimisation processes.
Another innovation is that this phase works in so called research sprints. This enables the partners to collaboratively exchange knowledge in workshops on intermediary results and keeps the research scope updated by the latest developments.

The programme is well appreciated by the Dutch government. It provides direct input for the new assigned offshore wind areas, its tenders, landfall connections and the Energy Infrastructure Plan North Sea (EIPN).

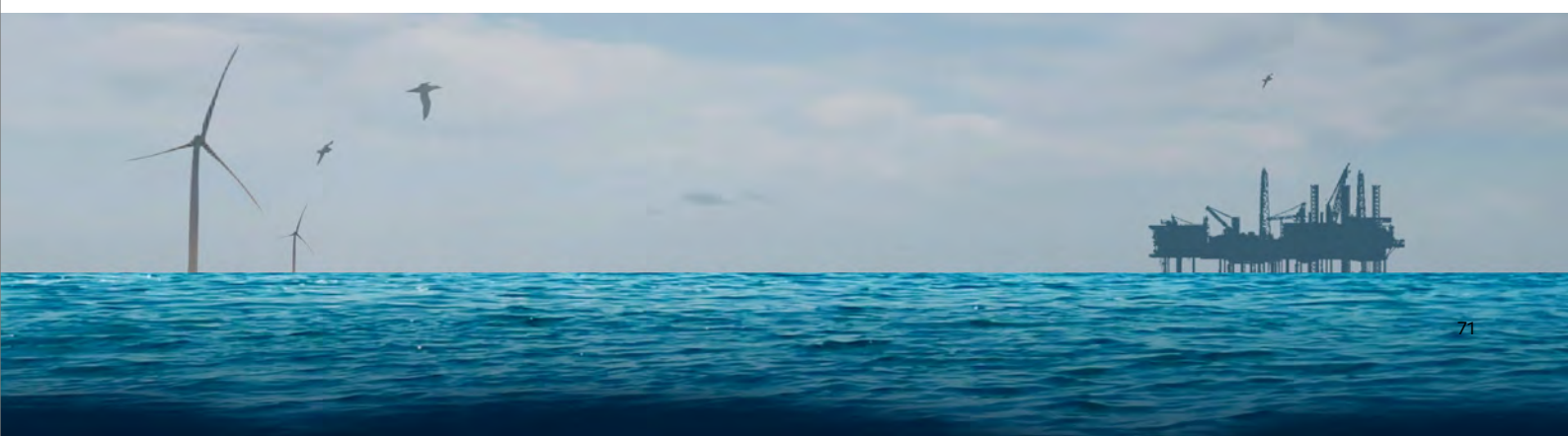
Apr 2023 - Oct 2025

Relevance of the project

The North Sea Energy (NSE) projects are central to Europe's shift towards a sustainable energy system, integrating renewable energy with existing infrastructures. NSE 4 and NSE 5 enhance the efficiency and environmental sustainability of the North Sea's energy production.
These phases align with the European Green Deal and RePowerEU, advancing energy security, economic growth through sustainable innovation, and serving as models for global offshore energy projects.

Impact on the energy transition

The North Sea Energy programme has stimulated the energy transition towards low-carbon sources using North Sea's resources. It integrates offshore wind, marine energy, carbon capture and storage (CCS), and hydrogen to optimise energy systems with innovative, inclusive designs that improve economic feasibility and supply security. The project's three energy hubs, in the NSE 4 study, could produce 150% of the Netherlands' current electricity, replace 50% of its grey hydrogen with green, cut 20% of its gas use, and bury 16% of its annual CO_2 emissions under the ground.
It also fosters international collaboration and enhances policy-making with advanced models and simulations.



Deliverables

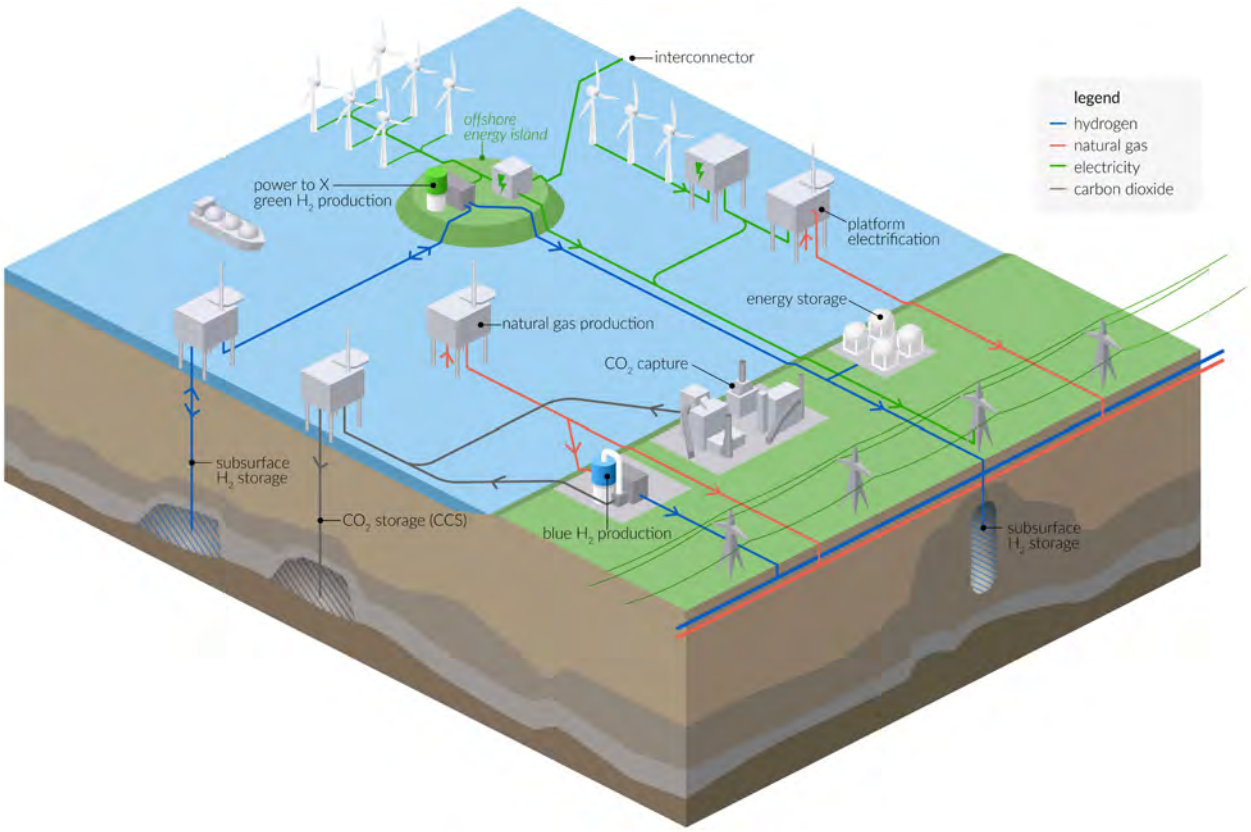
The North Sea Energy programme is organised into various Work Packages (WPs), each focusing on a specific area of research.

NSE 4 (Phase 2020-2022)

- North Sea Energy hubs and transport infrastructure.
- Society, governance and communications.
- Safety, integrity & reliability.
- Ecology & environment.
- Offshore logistics.
- North Sea Energy system mapping and modelling.
- Vision and roadmap.

NSE 5 (Phase 2023-2025)

- North Sea Energy hubs clusters (and technical innovations).
- Society and stakeholders.
- Market making & business case development.
- Health, safety and environment (nature inclusive building).
- Systems design.
- North Sea Energy Atlas and spatial.
- Offshore transition scenarios and international collaboration.



Role of New Energy Coalition

- Executive partner
- Communication
- Connecting stakeholders
- Integrating

As one of the core partners being involved from NSE 1 onwards, New Energy Coalition plays a crucial role in the NSE program.
In NSE 4, New Energy Coalition was primarily focusing on techno-economic modeling and system integration. We contribute to Work Package (WP) 1, which centers on the design and evaluation of energy hubs, and WP 7, which develops the programme's vision and roadmap, emphasising international cooperation.
In NSE 5, We are involved in WP 3, assessing the economic aspects and business models essential for the sustainability of these hubs.
Our involvement also facilitates connections among stakeholders to enhance system integration and implementation.

Countries involved

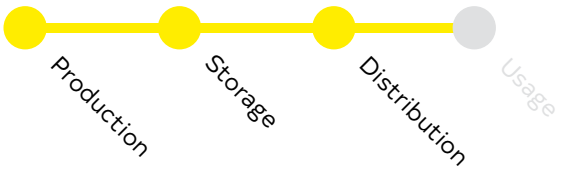
NSE 4

- The Netherlands
- Belgium
- The United Kingdom

NSE 5

- The Netherlands
- Germany
- Norway
- The United Kingdom

Impacted segments of the value chain



Key performance indicators

Number of (expected) deliverables for NSE 4 and NSE 5:	53
Energy vectors integrated:	5
Number of years NEC has collaborated under NSE programmes:	8 years
Number of disciplines involved:	8

Word from the project leader

"What I really like about this project is that we combine a lot of knowledge from many different parties and other projects. By bringing these different expertises and viewpoints together, we can really come up with integral and interdisciplinary solutions that make a difference.''

- Rob van Zoelen

North Sea Hydrogen Valley Ports

k.stamou@newenergycoalition.org

Jan 2024 - Dec 2026

EU Interreg North Sea

€ 1.208.875,92

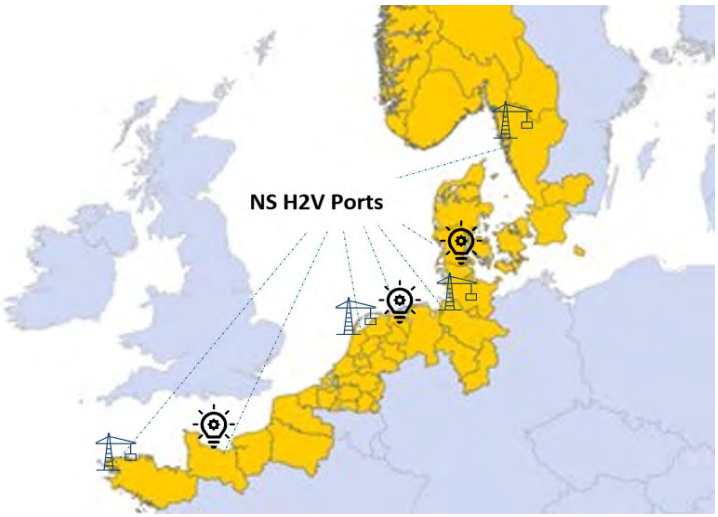
9

Summary

Hydrogen will play a central role in the decarbonisation of heavy industries and the maritime sector. Ports will be pivotal hubs in facilitating hydrogen production and import/export of renewable energy and molecules. In North Sea Hydrogen Valley Ports (NS H2V Ports), the consortium members will join forces in planning future hydrogen assets by developing concrete roadmaps that optimally plan hydrogen production, utilisation, storage, and transport in four North Sea ports: the Port of Brest, Esbjerg, Bremerhaven, and Den Helder. This project takes a bottom-up approach, involving all relevant stakeholders in the port ecosystems to develop future maritime hydrogen valleys.

Impact on the energy transition

In North Sea Hydrogen Valley Ports (NS H2V Ports), the consortium will develop the hydrogen programme of the North Sea Ports of Brest, Esbjerg, Bremen, and Den Helder, and translate these into concrete and feasible roadmaps. These roadmaps will be eligible for establishing maritime Hydrogen Valleys and will be the foundation for future implementation projects. The goal is to remove barriers in developing these hydrogen valleys, focusing on funding, safety, and governance issues, creating a solid foundation for deployment.



Role of New Energy Coalition

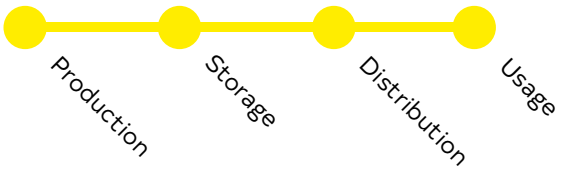
- Project management
- Lead partner
- Coordination

Within NS H2V Ports, New Energy Coalition leads as a partner, ecosystem coordinator, and project manager. We co-wrote the application, developed the consortium, and manage the ecosystem of the port of Den Helder in collaboration with local development agencies.

Countries involved

- The Netherlands
- France
- Germany
- Denmark

Impacted segments of the value chain



Key performance indicators

Number of academic articles published:	1
Number of developed strategies and action plans:	19
Number of masterplans:	4

Word from the project leader

"Developing the hydrogen economies in maritime port ecosystems requires close stakeholder interaction and careful planning. We aim to build a solid foundation to deploy maritime hydrogen valleys effectively."

- Koen Stamou

OWIC

www.owic-eemshaven.nl

i.klinge@newenergycoalition.org

Oct 2020 - Jun 2023

SNN + Province Groningen

19

Summary

Offshore Wind Innovation Centre Eemshaven (OWIC) is an information, training, and innovation centre that supports 19 parties, including businesses, knowledge institutions, and governments, in advancing offshore wind energy generation. The centre focuses on facilitating innovation and development in offshore wind energy, particularly in service and maintenance, to meet the growing demand for green energy. By expanding regional innovation capacity, OWIC aims to enhance economic opportunities for all involved in the construction and maintenance of offshore wind farms.

Goals

OWIC serves as the primary contact for information and networking.
Additionally, the project supports business development in Eemshaven related to maintenance and innovation. OWIC also establishes training and education facilities focused on offshore wind energy.

Role of New Energy Coalition

- Work package leader
- Communication and dissemination
- Education and training

Impacted segments of the value chain

Impact on the energy transition

OWIC contributes by providing an innovation platform with education, training, and testing facilities for local businesses, particularly in operations and maintenance.
This initiative boosts Eemshaven's role as a leading port in Northern Europe, enhancing company competitiveness and employment in the offshore wind sector.

Deliverables

- Create awareness of the five themes of OWIC. Cable maintenane, bolting, remote operations & maintenance, rotor blades, and energy generation, storage & balancing.
- Develop test facilities. Develop physical test environments for O&M companies.
- Business development initiatives spotlight on Eemshaven. New products or services and creating new jobs.
- Establish collaboration projects.
- Connect vocational, higher vocational, and university education in Northern Netherlands, developing teaching materials and training.
- Develop training on the project's content.

Countries involved

- The Netherlands


JUMBO

Panorama Green Gas 2023

https://www.newenergycoalition.org/kennisbank

r.paap@newenergycoalition.org

Jan 2023 - Jun 2023

€ 18.000

5

Summary

The "Panorama Green Gas" brochure, published by industry associations within the biogas and gas distribution sectors, brings together the knowledge on renewable gas production, particularly green gas in the energy transition. This comprehensive guide offers a factual overview from production to consumption, detailing the raw materials, technologies, production means, transportation options and regulations involved.

Designed as a practical reference for stakeholders, policymakers, and entrepreneurs, it combines scattered and biased information into a neutral, factual document, enhancing understanding of green gas. This publication helps accelerate the energy transition by providing stakeholders with factual, non-opinionated information.

Results

The content of the brochure encompasses the entire value chain of green gas, covering raw materials, production methods, operational installations, product variations, and the logistics of transportation and distribution. It delves into the detailed regulations, guidelines, and quality standards governing green gas, including available subsidies and their criteria. Additionally, separate sections are dedicated to discussing the financial and economic dimensions of green gas production, the regulatory landscape, and the oversight roles of various regulatory bodies involved with producers.

Deliverables

- Panorama Groen Gas - Brochure

Role of New Energy Coalition

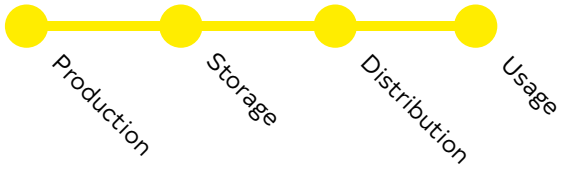
- Exclusive partner
- Production

Production was in the hands of
New Energy Coalition. We also have a role in
dissemination of the Panorama Green Gas.

Countries involved

- The Netherlands

Impacted segments of the value chain



Key performance indicators

Energy vectors integrated:	2
Number of pages with opinion-free and factual information about the entire green gas value chain:	110
First joint project of the entire green gas sector (edition I)	

Word from the project leader

"If people start googling, they probably find a lot of things that went wrong. Because if something goes wrong, you can read about it in the paper and those are the things that you can find if you start a Google search. Now they can find also some factual information about what's happening in an biogas installation like this."

- Ruud Paap

POCITYF

https://pocityf.eu/	EU Horizon 2020
m.devries@newenergycoalition.org	€ 22.000.000
Oct 2019 - Oct 2025	46

Summary

The POCITYF project aims to transform European cities rich in cultural heritage into sustainable urban environments, with a primary focus on energy sustainability. POCITYF demonstrates innovative smart city technologies in Alkmaar (NL) and Évora (PT), and replicate these solutions in six Fellow Cities throughout Europe. By combining Positive Energy Blocks (PEB) with grid flexibility, e-mobility, innovative ICT technologies, and citizen engagement strategies, the project strives to reduce carbon footprints, improve quality of life, and set a model for integrating modern energy solutions within the context of urban cultural heritage. New Energy Coalition coordinates the project within Lighthouse Alkmaar and thus acts as the central point of contact for both the Alkmaar partners and the overall project coordinator.

Impact on the energy transition

This project aims to explore ways to make Alkmaar more sustainable, focusing on energy. Together with our partners we will demonstrate innovative techniques in buildings, smart networks, storage systems, and sustainable mobility solutions, involving citizens and stakeholders locally. This knowledge should lead to repeatable concepts that make the entire city, including the historic parts, more sustainable. The ultimate goal is to develop effective methods for a citywide energy transition.

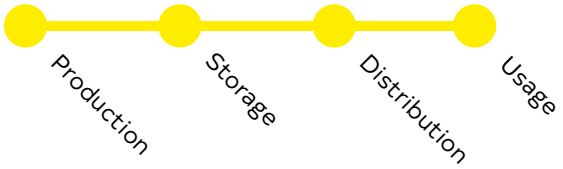
Role of New Energy Coalition

- Project leader
- Business case development
- Implementation of innovative citizen participation methods
- Coordinator of implementation of building-related innovative energy technologies
- Initiator and developer of the project

Countries involved

- The Netherlands
- Denmark
- Spain
- Portugal
- Italy
- Greece
- Slovenia
- Hungary

Impacted segments of the value chain



Key performance indicators

- Drawing up a 2050 transition plan for Alkmaar aimed at making the city more sustainable, greener, smarter and more livable.
- Realising 5 Positive Energy Buildings.
- Applying innovative citizen participation methods aimed at making Alkmaar more sustainable.
- First step towards realising a Positive Energy District (PED).

Results

- 5 Positive Energy Buildings in Alkmaar.
- Start of realising a Positive Energy District in Alkmaar.
- Feasible business cases for innovative energy solutions for buildings.
- Deployment of smart energy management systems in residential and commercial buildings.
- Increased citizen engagement in energy transition efforts commercial buildings.

Word from the project leader

"Creating a sustainable Alkmaar is like making the perfect cup of coffee: it takes the right blend of renewable energy sources, a touch of smart technology and a lot of careful planning. And just like coffee, it's something everyone in the community can enjoy together."

- Martijn de Vries

Powering Agrifood

www.newenergycoalition.org/en/projects/powering-agrifood

p.frederix@newergiecoalition.org

Dec 2021 - May 2024

€ 19.500

13

Summary

New technologies offer the agricultural and food processing sectors opportunities to promote the energy transition, while generating additional revenue and/or reducing their own energy costs and carbon footprint. Powering Agrifood accelerated the energy transition by providing context-specific advice on what technologies are applicable, with focus on energy or cost efficiency and environmental or societal impact. Digestion, thermocatalytic conversion and electrification were considered in the context of sustainable bioenergy production from waste or weeds and decentral grid support in rural areas.

Impact on the energy transition

The projects have guided investment decisions and research on energy conversion technologies, contributing to knowledge on novel, efficient bioenergy solutions and grid support for sustainable energy use.

Goals

- Perform case studies on how farmers, cooperatives and processing plants can positively impact local or regional energy systems by offering flexibility, reversible conversion or electrification.
- Demonstrate the potential of a 4 kW innovative biogas solid oxide fuel cell unit, converting agricultural waste streams to locally needed energy carriers.
- Provide a system perspective study on how such technologies can impact the energy system in the Dutch regional context.

Deliverables

- Experimental feasibility study on beer wort digestion and biogas usage in a solid oxide fuel cell.
- Paper about the thermodynamic optimization of a biogas-SOFC system for South African hospitals.
- Paper about the technological evaluation of bioenergy production options from chicory root pulp.
- Ecosystem service conceptual model on bioenergy production from water hyacinth.
- Paper about the perspective on the role of the agricultural sector in the Northern Netherlands energy system (forthcoming).

Role of New Energy Coalition

- Project coordination
- Dissemination of results

Impacted segments of the value chain

Countries involved

- The Netherlands
- South-Africa
- India

Public Participation Center

participationcenter.org

d.goeree@newenergycoalition.org

Nov 2020 - Jul 2024

NEC NPB

€ 250.000

3

Summary

The energy transition forces us to rethink how we perceive, produce, and consume energy. This project touches upon an important social aspect: the participation of citizens in the energy transition. Participation centre is a collaborative project together with the University of Groningen. The aim is to connect experts, the university of Groningen and Hanze university of Applied Sciences, so they can integrate research and disseminate results on the topic of public participation in the energy transition. New Energy Coaliton will collect all questions related to participation within energy projects where researchers within the participation centre could work on and then answer real time cases. This project takes place in the Netherlands.

Goals

The participation centre aims to connect researchers to relevant stakeholders (policymakers, NGO's, private and public organisations) in the field of energy transition, climate change and other social concerns. The goal of the project is to create a sustainable platform in which research is conducted and disseminated through research, education and outreach activities with the aim to facilitate societal impact.

Focus on three goals:
1) stimulate and build theoretical and empirical knowledge, 2) building knowledge on participation between researchers from different disciplines, and 3) launching the centre of participation in relation to energy.

Impact on the energy transition

The energy transition is like a complex puzzle requiring every piece to fit together, including technology readiness, viable business models, and community acceptance. Participation centre emphasizes the importance of involving and informing people about new energy projects, such as the installation of heat pumps or building large electrolysers near residential areas, to prevent resistance and ensure project success. Effective public participation is identified as a crucial factor for the success of energy projects and is increasingly being included in subsidy criteria. Thus, this project underscores that community involvement is essential for achieving the goals of the energy transition.

Role of New Energy Coalition

- Communicating
- Building a network
- Contact with partners
- Facilitating
- Organizing symposia
- Stakeholder building

Key performance indicators

Symposia organized:	5
Publications published:	5

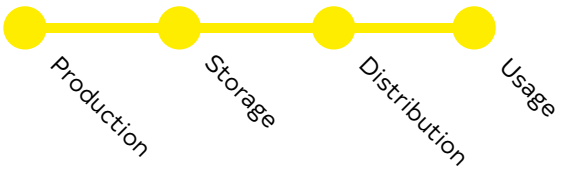
Deliverables

- How Can Co-Creation Support Capacity Building for Adaptive Spatial Planning?
  - Research article
- Satire, humor, and environmental crises
  - Book
- Time to talk about values, time to say no
  - Research article
- Making Groningen CO_2 neutral in 2030
  - Paper
- De mening over het proces van de Inwonerraad Energie en zijn adviezen
  - Paper
- The website

Countries involved

- The Netherlands

Impacted segments of the value chain



Word from the project leader

"It was great to see that every faculty of the RUG was represented within the participation centre. It is nice to see that every faculty is willing to work together. Not only were they surprised but their own network expanded as well."

- Deborah Goeree

REFORMERS

REFORMERS
RENEWABLE ENERGY VALLEYS

reformers-energyvalleys.eu	EU Horizon 2020
j.sanderink@newenergycoalition.org	€ 19.649.625
Nov 2023 - Oct 2028	50

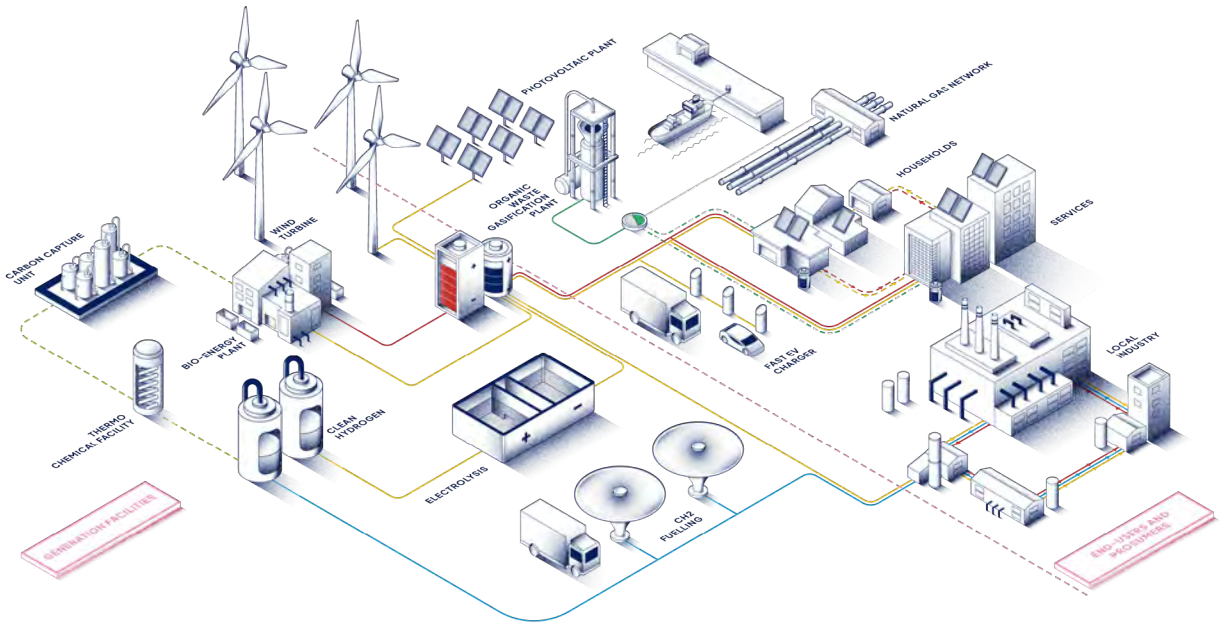
Summary

REFORMERS will develop, realise and replicate Renewable Energy Valleys (REV) across Europe. Achieving the goal of transforming a local energy system (LES) to a REV requires an approach not simply confined to electrification, but integration of the broadest range of renewable energy carriers.

Through a focus on production, storage, conversion and consumption REFORMERS sets the stage for the first Flagship REV in Alkmaar, with the ambition to replicate the best-practices across six "Replication Valleys".
Through a focus on production, distribution, aggregation and consumption REFORMERS sets the stage for the first flagship REV, with replication of its example in six "Replication Valleys".

Impact on the energy transition

REFORMERS aims to set an example of integrating all renewable energy carriers in a future proof energy system. This example will be replicated not only through the "Replication Valleys" but also carried out throughout Europe, contributing to the European Unions goal of being the first climate neutral continent. Furthermore, REFORMERS aids in increasing the share of renewable energies with a large focus on diversification of gas supplies and bringing new green molecules into the mix.



Role of New Energy Coalition

- Project Management
- Communication
- Public relations
- Developing replicable business models
- Addressing energy poverty
- Capacity building

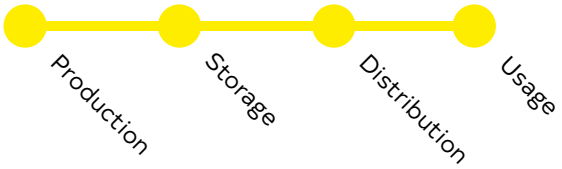
Countries involved

- The Netherlands
- Belgium
- France
- Spain
- Italy
- Austria
- Switzerland
- Sweden
- Poland
- Greece

Results and Deliverables

- Flagship Valley Implementation and Operation Plan (Month 10).
- Flagship Valley Performance Monitoring (Months 36, 48, 60)
- Stakeholder Engagement, Social Impact Assessment (Month 24).
- Replication Valley's Energy Assessment Master Plan (Month 53).
- Exploitation Roadmap For Supporting Deployment of Energy Valleys in Europe (Month 60).

Impacted segments of the value chain



Key performance indicators

Increase in annual solar capacity (target):	13-30 GWh
Battery storage capacity (target):	7 MWh
Clean hydrogen production (target):	9-109 GW
Decrease in natural gas consumpion (target):	84 GWh
Decrease in annual CO_2-eq emissions:	15-17,5 kTon
Green gas production (target):	157-230 GWh

Word from the project leader

"I believe the uniqueness of this project lies in the integration and optimisation of multiple renewable energy carriers – such as heat, electricity, hydrogen and biomethane – across the entire value chain from renewable energy production towards ultimately end-usage."

- Joep Sanderink

Regio Deal Noord-Holland

Regio Deal
Maritiem cluster Kop van Noord-Holland

https://kopregio.nl/waterstof/
f.brandsen@newenergycoalition.org
Jul 2020 - Dec 2024

DKTI Waddenfonds EZK
€ 9.810.785
29

Summary

The Regiodeal H_2 Kop van Noord-Holland programme encompasses general efforts to introduce hydrogen and develop a hydrogen economy in the region, as well as supporting specific projects. These projects are collectively titled "Proeftuin H_2," which is an integral part of the Regiodeal initiatives. The projects "Walstroom Den Helder," "Elektrolyser Den Helder," and "H2Gateway" are part of the H_2 Proeftuin. A key outcome of the Regional Deal has been the establishment of a cohesive hydrogen program for the Noord-Holland Noord region. This program focuses on developing supply chains from production to distribution. It has been integrated with a similar program in the North Sea Canal area, resulting in a Hydrogen Valley status for Noord-Holland.
The development of hydrogen in Noord-Holland has achieved European recognition as a Hydrogen Valley. This status is awarded to regions that distinguish themselves in developing an energy system based on sustainable hydrogen.

Walstroom Den Helder (€3.927.601)

Shore power is a key component of the energy transition. Docked ships often rely on generators for onboard energy, leading to emissions of fine particles, nitrogen oxides, and CO_2. Shore power offers an opportunity to reduce these emissions by providing ships with a clean energy source.

To supply ships with emission-free electricity, five shore power facilities will be installed in Den Helder, generating electricity using hydrogen. These facilities will be integrated into a smart grid solution with an advanced energy management system. Along with the development of a hydrogen bunkering port and an integrated hydrogen value chain (Zephyros), the innovative shore power facilities will form the foundation of a hydrogen ecosystem, expected to be operational by 2025

Sep 2020 - Sep 2023

Elektrolyser Den Helder (€3.210.444)

The objective of this specific initiative is to develop, build, and operate an electrolyser to produce green hydrogen for maritime applications as cost-effectively as possible. Within the hydrogen value chain, the electrolyser will be used in multiple ways. This aims to optimize the hydrogen value chain, minimize the costs of green hydrogen, and maximize emission reductions. For this purpose, integrating the electrolyser into the energy landscape is necessary, contributing to a solution for congestion on the electricity grid.

Sep 2020 - Sep 2023

H2Gateway

The H2Gateway project aims to establish a blue hydrogen production facility at the NAM site in Den Helder. Supported by the Regional Deal, NEC is contributing to both Phase 1, the Quick Scan, and Phase 2, the business analysis. This initiative seeks to build a plant capable of producing 0.2 million tons of blue hydrogen per year for industrial applications. H2Gateway is specifically focused on supplying hydrogen to industrial clusters in both the Netherlands and Germany through the H_2 Backbone. The hydrogen produced will be used for high-temperature heat generation and as a raw material in various industrial processes. By connecting key industrial regions, H2Gateway contributes to the decarbonization of energy-intensive industries and supports the broader transition to cleaner energy sources.

Relevance of the project

The relevance of this project lies in its contribution to the hydrogen economy, which supports the reduction of carbon emissions and enhances regional energy security. By focusing on hydrogen technology, it addresses the growing need for sustainable energy solutions. Additionally, the project helps alleviate congestion on the electricity grid and provides industrial sectors with a clean energy source, positioning hydrogen as a key player in the energy transition. Furthermore, the project fosters innovation in hydrogen production and distribution, laying the groundwork for a scalable and replicable model. This not only benefits local industry but also strengthens cross-border energy cooperation, contributing to a more resilient and sustainable energy system in Europe.

Impact on the energy transition

The project has diversified the regional energy mix, reducing dependency on fossil fuels and enhancing energy security through the adoption of locally produced hydrogen. By developing and implementing hydrogen technology, the project makes a contribution to economic growth and created new job opportunities in the region, fostering a robust clean energy sector. The project has also positioned the region as a strong partner in hydrogen technology innovation, attracting research and development activities and fostering collaborations between academia, industry, and government. Moreover, through comprehensive public awareness campaigns and stakeholder engagement initiatives, the project has built stronger community support and involvement in the energy transition, ensuring a broad base of support for future sustainability efforts.

Deliverables

- Feasibility study reports.
  A detailed report outlining the technical, economic, and environmental viability of some hydrogen technology project in the region (i.e. shore power, hydrogen bunkering).

- Pilot Projects Implementation.
  Successful launch and execution of pilot projects demonstrating hydrogen applications in maritime transportation.

- Public Awareness Campaigns.
  Increased public awareness and understanding of hydrogen as a clean energy source through targeted communication and outreach initiatives.

- Training and Capacity Building Programs.
  Development and delivery of a training program (Masterclass Hydrogen) to build local expertise and workforce capabilities in hydrogen technology.

- Strategic Business Models and Investment Frameworks.
  Creation of sustainable and replicable business models and investment frameworks for hydrogen projects.

- Hydrogen Valley of the Year 2023

Role of New Energy Coalition

- Communication and public relations
- Project management
- Developing replicable business models
- Addressing energy poverty
- Capacity building

New Energy Coalition (NEC) played a role in communication and public relations by developing and implementing strategies to raise awareness about the project, engaging with the public, stakeholders, and media to promote the benefits of hydrogen energy and the project's progress. They provided project management by ensuring adherence to timelines, budgets, and quality standards, and coordinating activities among partners and stakeholders.

NEC focused on developing replicable business models by analyzing market potential, identifying investment opportunities, and designing frameworks for other regions. They addressed energy poverty by creating strategies to provide affordable hydrogen energy solutions to underserved communities. Additionally, NEC contributed to capacity building through training programmes, workshops, and educational outreach, equipping local communities and businesses with necessary skills for hydrogen technology.

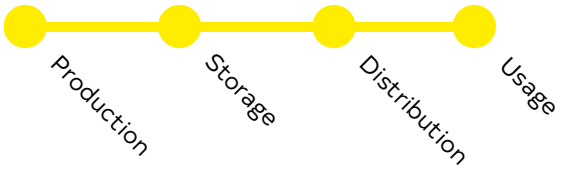
Countries involved

- The Netherlands

Key performance indicators

Hydrogen initiatives:	8
Energy vectors integrated:	3

Impacted segments of the value chain



Word from the project leader

"One intriguing aspect of the hydrogen project is its collaboration across borders and sectors, linking different parties to come to hydrogen chains. This cross-border cooperation not only enhances knowledge exchange but also strengthens efforts towards a unified approach to sustainable hydrogen technology adoption."

- Frank Brandsen

RIF Gas 2.0

https://energycollege.org/

j.meinema@newenergycoalition.org

Sep 2018 - Aug 2022

NL RIF

€ 2.000.000

61

Summary

RIF GAS 2.0 is a public-private partnership aimed at building vocational education in the Northern Netherlands for the energy sector. This programme combines seven vocational colleges, three provinces, four municipalities, and 47 SMEs. The programme combines three pillars: recruitment of students and side-entrants, educational innovation, and community of practice. The programme's goals are centered on increasing the knowledge and skills of students, teachers, and companies regarding the energy transition, with specific objectives to maintain student intake and realize an active business community.

Impact on the energy transition

Thematically, the focus is on five key areas: hydrogen, energy saving & sustainability, geothermal energy, biogas/green gas, and power to gas.

Role of New Energy Coalition

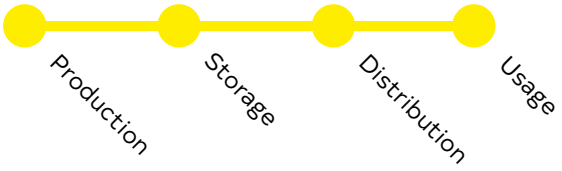
- Coordinator

Goals

These initiatives aim to develop a skilled workforce prepared to work in the emerging hydrogen economy. The five goals are:

- Retain intake inflow from students.
- Increase student's knowledge and skills about the energy transition.
- Increase knowledge and skills of teachers and practical trainers about the energy transition.
- Increase knowledge and skills within companies about the energy transition.
- Realising an active business community.

Impacted segments of the value chain



Countries involved

- The Netherlands

SMILE

https://h2020smile.eu/

p.tamis@newenergycoalition.org

May 2017 - Dec 2021

19

Sustainable Living Labs research program, financed by the NWO, SIA and Top Sector Logistics

€ 13.304.885

Summary

SMILE demonstrated different smart grid technologies on three different islands.
The end goal of the project is to foster the market introduction of these nine technologies. The development of Smart Grids are an important prerequisite for the transition towards a clean, affordable and reliable energy system. Through Smart grids, peak demand can be reduced and the energy grid can be stabilised. Therefore, the development of market ready technologies that facilitate this transition are important.

Impact on the energy transition

By optimising supply and demand using various smart grid technologies and demonstrating these technologies in a closed environment lessons learned and best practices could be used and extrapolated to other islands and even main land situation to solve energy transition challenges on a more local level.

Goals

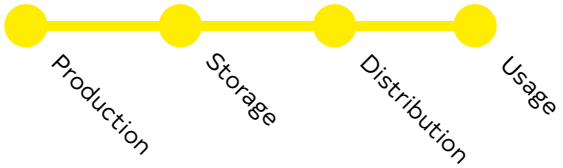
- Testing and Demonstration of Technologies: Implement and evaluate different combinations of technological solutions tailored to local specificities and existing infrastructure in three large-scale pilot projects across Europe to build stakeholder confidence for smart grid rollouts.
- Cross-Regional Learning and Best Practices: Establish mutual learning processes and develop best practice guidelines through cross-cutting activities among the pilots to address common technical, organisational, legal, regulatory, and market-related challenges.
- Societal Engagement and Scalability: Leverage the unique engagement potential of island communities for real-life testing and societal involvement, ensuring that the solutions tested can be replicated in other regions, both on islands and the mainland.

Deliverables

All deliverables are accessible through the SMILE website. A few examples are:

- D9.5 SMILE Replication Plan
- D6.4: Cost-benefit analysis, cost-effectiveness analysis and social impact
- D8.5: Policy strategy recommendations
- D7.3: Developing Micro-grids in the EU

Impacted segments of the value chain



Role of New Energy Coalition

Initiator, co-developer of the project. Communication, Dissemination, Exploitation and Replication activities together with the coordinator RINA.

Countries involved

- The Netherlands
- Denmark
- Portugal
- The United Kindgom
- Greece
- Italy

SMiLES

www.smiles-living-lab.nl/

p.frederix@newenergycoalition.org

May 2017 - Dec 2021

20

Sustainable Living Labs research program, financed by the NWO, SIA and Top Sector Logistics

€ 13.304.885

Summary

Open and connected logistics networks of shared mobility promise enhanced efficiency, effectiveness, and sustainability by sharing vehicles, tasks, space, infrastructure, and even contracts, risks, rights or liabilities.
The SMiLES project explores innovative business and organisational models to achieve efficient, effective, and emission-free transport, considering technological advancements, human behavior, and ethical and legal constraints. Through practical studies and collaborations with affiliated companies, SMiLES aims to gain insights and test new concepts. This living lab integrates science, practice, and education to drive advancements in shared mobility.

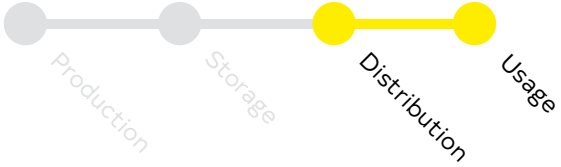
Impact on the energy transition

Shared connectivity in Mobility and Logistics Enable Sustainability (SMiLES)

Role of New Energy Coalition

- Connecting research with societal stakeholders to improve impact

Impacted segments of the value chain



Goals

- Study barriers and opportunities for open sharing networks in a comprehensive way through an interdisciplinary lens;
- Develop innovative business and organisation models for open sharing networks to enable efficient, effective and emission-free transport;
- Investigate the role of technology, human behaviour, ethical and legal boundaries, trust, governance, information and privacy considerations on the functioning of an open sharing network;
- Perform studies in practice to gain new insights from practice for theory development, as well as to test concepts in a public-private-people cooperation.

Deliverables

- A friendly crowd logistics platform - https://versoek.nl/
- A node-place analysis of 57 hubs in Groningen and Drenthe - Hub evaluation report
- Juridisch onderzoek waterstofschepen - Hub evaluation report

Countries involved

- The Netherlands

System Study Green Molecules

r.paap@newenergycoalition.org

Aug 2021 - Apr 2022

€ 120.000

4

Summary

Green hydrogen and green gas are essential green molecules that can effectively substitute the vital role currently held by natural gas in our energy system. It is crucial to provide ample support for both of these green molecules and gain a better understanding of their prospective roles in our energy system. To address this, two system studies have been conducted. DNV GL examined the future potential of green hydrogen, while CE Delft focused on green gas, finding that in some cases, both molecules can replace each other, while in other cases, they are complementary.

Impact on the energy transition

Systemstudy Green Molecules demonstrated that both green hydrogen and green gas are essential for the success of the energy transition. Hydrogen can greatly benefit from the experience gained through green gas.

Role of New Energy Coalition

- Project initiation jointly with NetBeheer Nederland

Impacted segments of the value chain

Goals

- Analyze the projected impact and applications of green hydrogen in the context of the energy transition.
- Evaluate the anticipated role and potential of green gas in advancing the energy transition.
- Examine the prospective interactions and synergies between green hydrogen and green gas in the future energy landscape.

Deliverables

- Maatschappelijke waarde groengas. Casussen voor mobiliteit, industrie en gebouwde omgeving
  - Paper
- Societal value of green hydrogen. An appraisal of the role of green hydrogen in achieving net zero in the Netherlands
  - Paper
- Maatschappelijke waarde groengas
  - Factsheet

Countries involved

- The Netherlands

Virtual Reality

New Energy
Business School

www.nebs.nl/

n.bakker@newenergycoalition.org

Oct 2021 - May 2024

€350.000

6

Summary

The New Energy Business School (NEBS) developed a virtual reality (VR) experience that explores every step of the hydrogen value chain, from production to end-use applications.
This VR tour allows users to visit unique locations like salt caverns and 6 MW wind turbines, providing an immersive way to understand hydrogen's journey and its environmental benefits. Initially aimed at education, the tour was 45 minutes long and has been adapted for easier use at various events.
The tour highlights the future value chain of green hydrogen and the key environmental goals associated with its use. Additionally, NEBS developed VR experiences for the blue hydrogen value chain and the entire system.

Impact on the energy transition

The goal is to make the energy transition, particularly the hydrogen transition, more visible and understandable.
Initially, the project was an educational tool to bring locations to people.
However, it evolved into an effective means of informing both the energy professionals and the general public. This shift transformed the project from simply showcasing locations to virtually transporting people to these key sites.

The VR project has effectively inspired many young people to start careers in energy by making the energy transition more understandable and engaging.
It has clarified what the transition entails and helped individuals think about planning and participating in future energy projects.

Role of New Energy Coalition

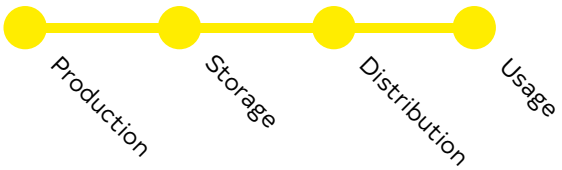
- Came up with the idea
- Collecting content
- Implementation
- Dissemination
- Securing the funding

NEBS came up with the idea and started working with STARK learning to set it up. Together they collect content and write the script.

Countries showcased

The VR glasses were used in multiple countries to showcase what we do in the Netherlands. For example in Mexico, Kuwait, and South-Korea. And NEBS is showing it to delegations from over the world that come to visit the New Energy Business School.

Impacted segments of the value chain



Key performance indicators

Number of years used:	2,5
Times used in events and confrences:	75+
Energy vectors integrated:	3
Times used in vocational events:	50+

Word from the project leader

"A fun fact about the project is that our Virtual Reality glasses were first launched for the King of the Netherlands, making him our very first customer, alongside the mayor of Groningen and officials from the ministry!"

- Nanne Bakker

WAviatER

www.newenergycoalition.org/projecten/waviater/	EU EFRO
p.cnubben@newenergycoalition.org	€ 2.925.882
Jan 2022 - Sep 2023	7

Summary

The broad consortium has developed a decentralized mid-range electrolyser, optimized for operational costs and fluctuations in desired production. To create a prototype in limited time and to avoid using scarce materials, the consortium has opted for developing an alkaline electrolyser. The electrolyser design should ensure that systems can easily be scaled up or down in capacity, depending on the application. This new electrolyser technology will be ideal for decentralised use, near green generation facilities as wind and solar parks or for hydrogen applications as filling stations, industry (clusters) or airports.
The prototype was demonstrated at Groningen Airport Eelde, future hydrogen user and location of the first European Hydrogen Valley Airport.

Impact on the energy transition

Providing one of the first operational electrolyser prototypes in the region.
Creating experience and expertise at regional SMEs on electrolyser manufacturing.

Impacted segments of the value chain

Role of New Energy Coalition

- Development
- Dissemination

Goals

- 1. Realising and demonstrating an electrolyser in the operational environment of Groningen Airport Eelde.
- 2. This electrolyser will be scalable and suitable for automated production.
- 3. The system is optimized in terms of performance and costs for broad decentralized applications and does not use scarce materials.

Deliverables

- Alkaline electrolyser at Groningen Airport Eelde.
- Expertise at regional SMEs on electrolyser production.

After the project is completed, commercial electrolyser technology based on the prototype will be developed, which can be delivered in various configurations.
Also see the North NL consortium for WAviatER.

Countries involved

- The Netherlands

WhyCareMore

p.frederix@newenergycoalition.org

Oct 2019 - Sep 2023

8

€ 1.479.820

RAAKPRO program of the Taskforce Applied Research SIA, part of the Dutch Organization for Scientific Research (NWO).

Summary

Given the expected pressure on biomass (availability, alternative use), the yield of green gas from biomass that is difficult to process, such as roadside and natural grass, must increase through fermentation. Three times better conversion of grass can be achieved by improved microorganisms, for example from the rumen of the cow. Green hydrogen is then used to convert the carbon dioxide from fermentation into methane and to maximize the yield of biogas and therefore green gas. Suitable bioreactors to increase the production rate of biogas are designed and tested. Business models for the two improved biogas technologies will be actively developed. The research will help develop a research culture and will be integrated with at least five different curricula at BSc and MSc levels.

Impact on the energy transition

The project has supported local biogas initiatives, expanded biogas production using grass as feedstock, and developed green gas education and infrastructure at Hanze UAS.

Impacted segments of the value chain

Countries involved

- The Netherlands

Goals

- Allow for new feedstock for biogas production (specifically grass).
- Develop business or mission models for local digestion and methanation.
- Develop infrastructure and educational programmes on biogas and biomethane production from biomass and hydrogen.

Deliverables

- Energy self-sufficiency and sustainability in a defined neighbourhood: Bio-methanation to green gas can outperform green hydrogen - Paper
- Message Framing and Attitudes Toward Green Gas Facilities in Rural Communities of The Netherlands - Paper
- Farm-scale bio-power-to-methane: Comparative analyses of economic and environmental feasibility - Paper

Role of New Energy Coalition

Contibute access to our network, datasets and infrastructure. Advise on the role of green gas in a sustainable energy system.

Subsidy Overview

Citylogistic 2.0

The Citylogistic 2.0 project is facilitated by the Interreg Germany-Netherlands program and co-financed by the European Union (EU) and the program partners.

ConsenCUS

This project has received funding from the European Union's Horizon 2020 research and Innovation programme under grant agreement No. 101022484. This website reflects only the author's view. The European Climate, Infrastructure and Environment Executive Agency (CINEA), under the powers delegated by the European Commission, is not responsible for any use that may be made of the information it contains.

Decom Tools

Hydrogen Works & H2 Train and Learn Hub

H2 CoVE

This project has received funding from the European Union as part of the Erasmus+ Programme 'Partnership for Excellence - Centres Of Vocational Excellence' under the project No. 101143966. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. The European Union cannot be held responsible for them.

Co-funded by the European Union

EU H2V - Ehpyra

The project has been funded under the European Union's Horizon Europe framework (Grant Agreement No. 101112220).
Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

EU H2V - LiHyp

Interreg North Sea Co-funded by the European Union

EU H2V - Trieres

The project has been funded under the European Union's Horizon Europe framework.
Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA).
Neither the European Union nor the granting authority can be held responsible for them.

EmBaGe

The EmBaGe project: Emission-free construction sites and community works is facilitated by the Interreg Germany-Netherlands program and co-financed by the European Union (EU) and the programme partners.

Interreg Deutschland – Nederland (Ko-)finanziert von der Europäischen Union (Mede) gefinancierd door de Europese Unie

Enterprise Europe Network

The European Commission launched the Enterprise Europe Network in 2008. It is funded through the Single Market Programme (SMP) and implemented by the European Commission's European Innovation Council and SMEs Executive Agency (EISMEA).

FLEXPOSTS

This project received funding from Rijksdienst voor Ondernemend Nederland and Innovation Fund Denmark through JPI Urban Europe.

Green Hysland

The European Commission launched the Enterprise Europe Network in 2008. It is funded through the Single Market Programme (SMP) and implemented by the European Commission's European Innovation Council and SMEs Executive Agency (EISMEA).

Green Hydrogen Booster

HEAVENN

This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under grant agreement No. 875090. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme, Hydrogen Europe and Hydrogen Europe research.

Hy2Market

Hy2Market is funded through the EU i3-programma.

HyDelta

This project is co-financed by TKI Nieuw Gas | Top Sector Energy from the PPS allowance ref. no. TKI2020-HyDelta, TKI2022-HyDelta, and TKI2023-HyDelta.

InCube

This project is funded by the European Union under grant agreement No. 101069610. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

MakingCity

This project has received funding from the European Union's Horizon 2020 research and Innovation programme. This website reflects only the author's view. The European Climate, Infrastructure and Environment Executive Agency (CINEA), under the powers delegated by the European Commission, is not responsible for any use that may be made of the information it contains.

NESSIE

North Sea Energy

The project has been carried out with a subsidy from the Dutch Ministry of Economic Affairs and Climate, National Schemes EZK-subsidies, Top Sector Energy, as taken care of by RVO (Rijksdienst voor Ondernemend Nederland).

North Sea Hydrogen Valley Ports

Northstar / GZI Next

This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under grant agreement No. 875090.
This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme, Hydrogen Europe and Hydrogen Europe research.

OWIC

POCITYF

This project has received funding from the European Union's Horizon 2020 research and Innovation programme. This website reflects only the author's view. The European Climate, Infrastructure and Environment Executive Agency (CINEA), under the powers delegated by the European Commission, is not responsible for any use that may be made of the information it contains.

REFORMERS

This project is funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

SMiLES

SMiLES is part of the Sustainable Living Labs research program that is (co-)financed by the Netherlands Organi- zation for Scientific Research (NWO), the Ministry of Infrastructure & Water Management, the National Regional Agency for Practice-Oriented Research (SIA), and the Top Sector Logistics."

Waviater

WhyCareMore

This work was financed through the RAAKPRO program of the Taskforce Applied Research SIA, part of the Dutch Organization for Scientific Research (NWO).

Colophon

Executive editor

New Energy Coalition communication department

Research and Interviews

Young Advisory Group Groningen (YAG)

Graphic design

Strawberry Fields Groningen

About New Energy Coalition

New Energy Coalition is a continuously growing network of knowledge institutions, industry and private businesses, government bodies and NGOs working together on the energy transition for a sustainable future. The organisation connects knowledge, market and policy.

New Energy Coalition is rooted in the northern Netherlands, where a wealth of energy knowledge has traditionally been concentrated, and with a strong energy infrastructure. From that knowledge position, the coalition works on energy innovations, research and education. The region as a testing ground, with (inter)national scope.

Drivers of Change

New Energy Coalition

New Energy Coalition is a continuously growing network of knowledge institutions, industry and private businesses, government bodies and NGOs working together on the energy transition for a sustainable future. The organisation connects knowledge, market and policy.

www.newenergycoalition.org