

A dramatic seascape with a large, curling wave and a kitesurfer in the distance. The sky is overcast and the water is a deep greenish-blue. A red kitesurfer is visible in the upper left, and a small figure of a person is riding the base of the wave.

WIND MEETS GAS.

**SECURING ECONOMY AND ENERGY IN
THE NORTH SEA REGION**

#WindMeetsGas25



Aniek Moonen

MODERATOR

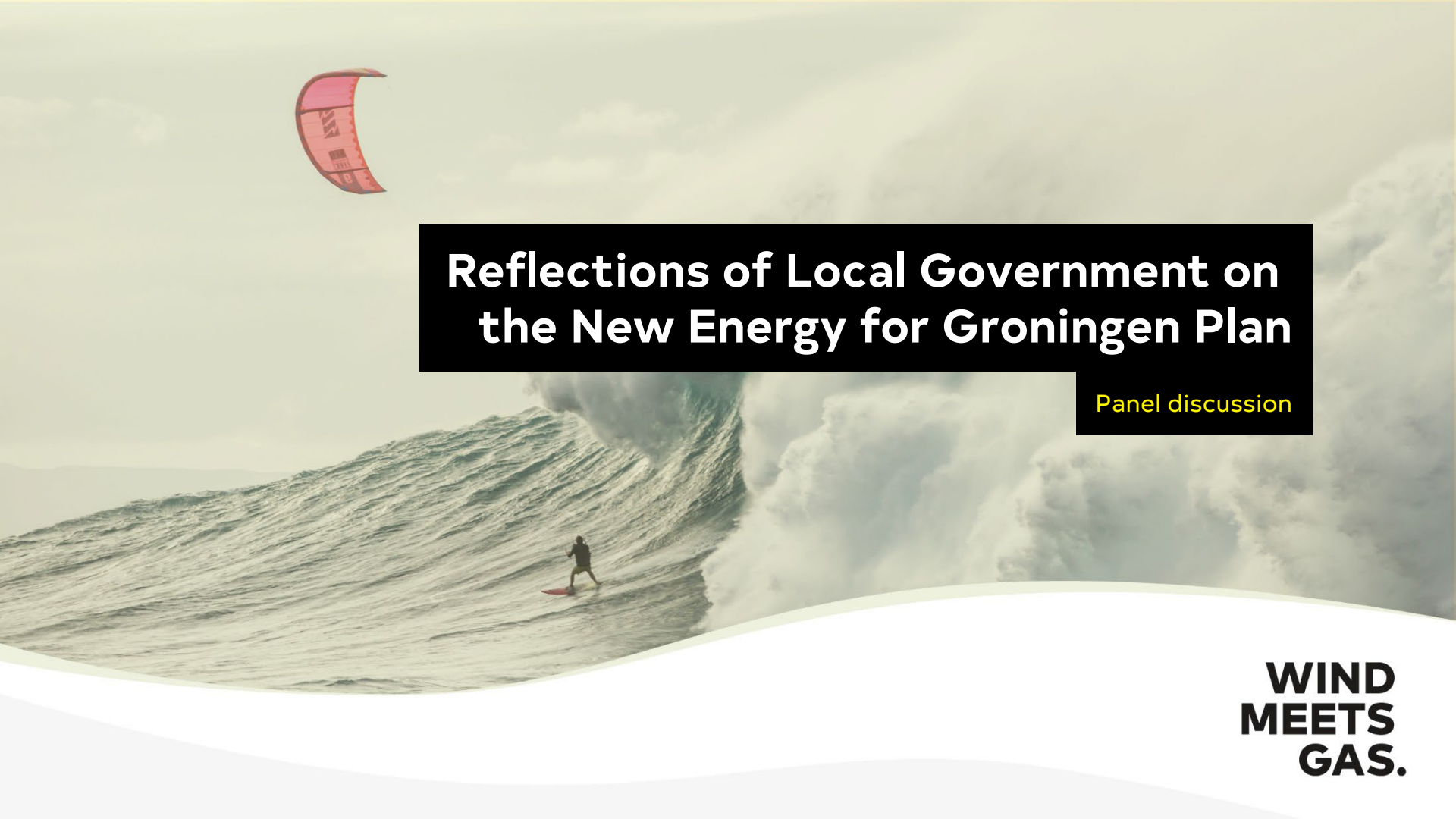
**WIND
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GAS.**



Base Load Power Hub

Announcement

**WIND
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A full-page background image showing a kitesurfer riding a large, curling wave. A red kite is visible in the upper left sky. The scene is dramatic with white foam on the wave and a cloudy sky.

Reflections of Local Government on the New Energy for Groningen Plan

Panel discussion

**WIND
MEETS
GAS.**

1 Aanlanding wind op zee in de Eemshaven

2 Corridor voor kabels en leidingen

3 Betere verbindingen

4 Groningers profiteren mee

5 Stimulering mkb





Barbara Verwayen

Cluster Director Cluster 6

**WIND
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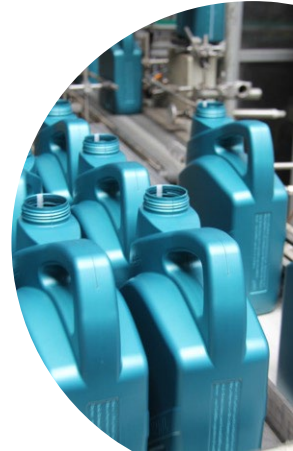
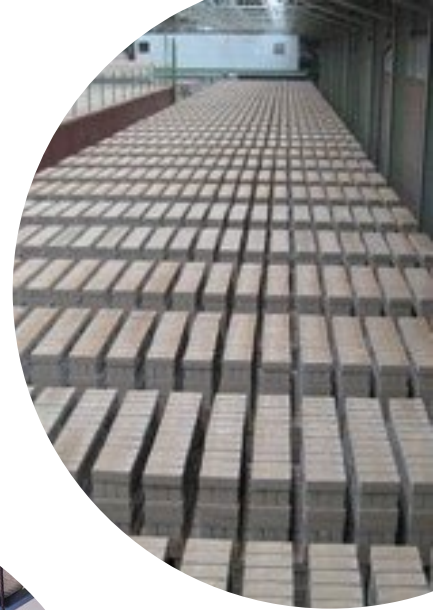
Cluster 6

Outlook for regional industry in NL: More realism needed?

Barbara Verwayen
Clusterregisseur

Cluster 6: regional industry

- Makes **products**, or components, we **use on a daily basis**. Like food, bricks, paper, glass, shampoo bottles, but also electric trucks
- Datacentres, offshore industry, waste-to-energy plants
- Combined contribution **€125 miljard euro** and employs ca **210.000 fte**
- Cluster 6 facility uses > 1 miljoen m³ natural gas or > 10 GWh electricity
- Flywheel for other societal transitions (circularity, protein transition, scope 3 greening, etc.)



Cluster 6: How did we get here?

From climate agreement to national overview



Climate agreement in 2019 resulted in seat at the table

- 2022 started with fact-based approach
- CES 1.0 juni '22
- 143 production facilities



More regional approach in 2024

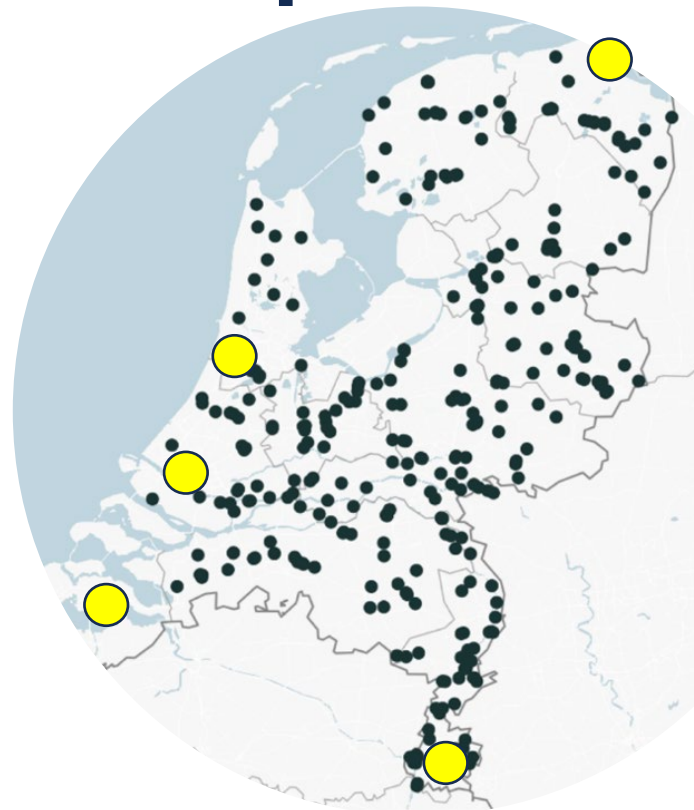
- Increasing coverage
- Regional approach aligned with regional programming

Search for action perspective

- 330 production facilities
- 689 sustainability projects
- Potential reduction: 6,2 Mton CO₂
- Recommendations on national level

Little perspective for Cluster 6 companies

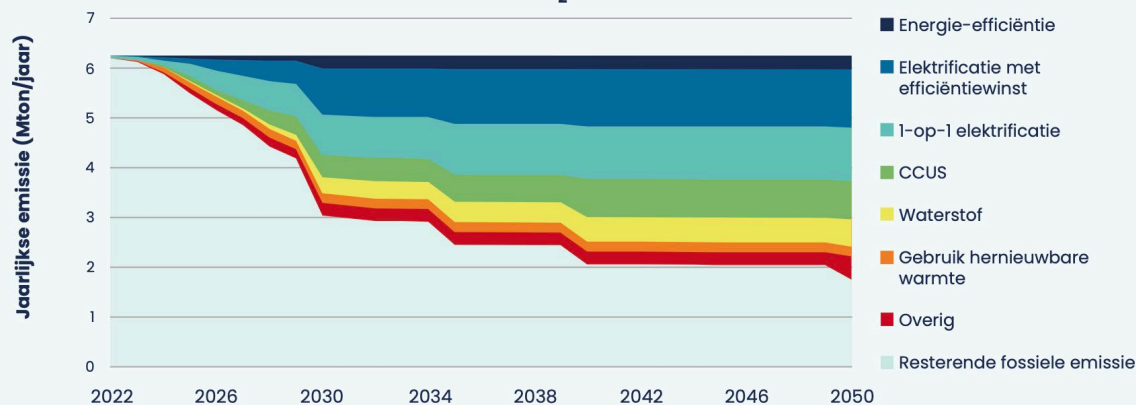
- Investments are not planned due to a lack of transparency and predictability about connections/infrastructure
- Selection of sustainability routes is being postponed due to uncertainty about the availability and affordability of sustainable alternatives (heat, CCUS and hydrogen)
- Uncertainty about associated regulations and permits
- Difficult competitive position compared to locations outside the Netherlands
- Buca's along value chain are not adding up



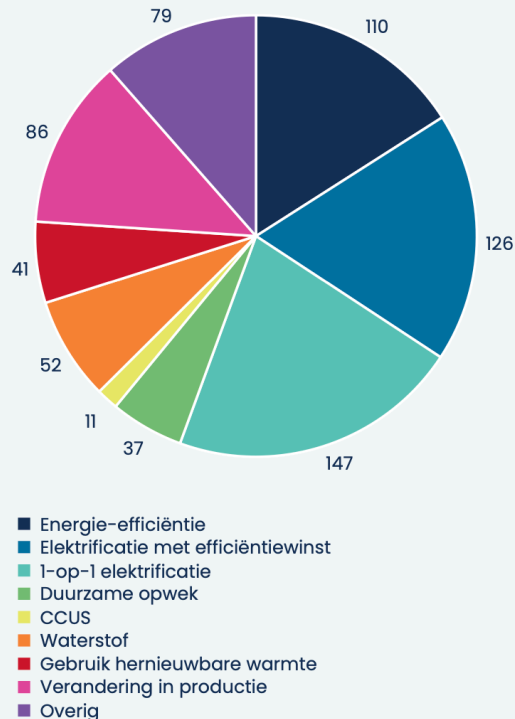
Huge CO₂ reduction potential

The sustainability plans of participating Cluster 6 companies offer the opportunity to reduce CO₂ emissions by more than half by 2030 compared to 2022!

Fossiele CO₂-emissie



689 verduurzamingsplannen voor 2030 in deelnemende Cluster 6-industrie

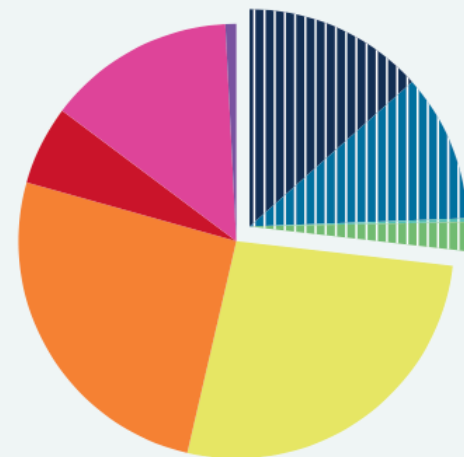


Lack of infrastructure delays investments

- Of the 689 sustainability projects identified, 373 require a new/expanded infra connection. These include electrification, sustainable generation, H2, and CCUS projects.

Under current circumstances, 73% of sustainability projects requiring a new or expanded connection will not be able to proceed before 2030 due to a lack of energy infrastructure.

- Postponement of 1.7 megatonnes of CO2 emissions reduction per year until after 2030. This is > 50% of the planned reduction.



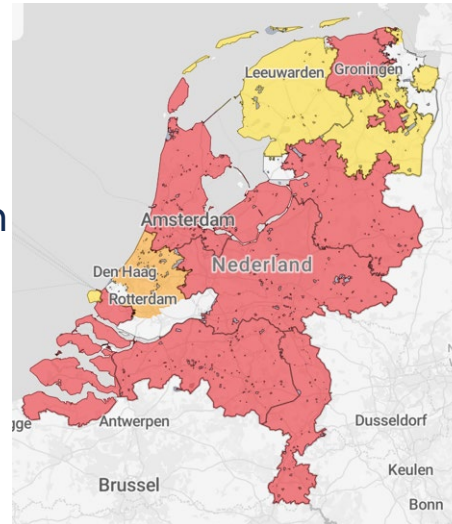
|| Elektrificatie met efficiëntiewinst
|| 1-op-1 elektrificatie
|| Duurzame opwek
|| Waterstof
|| CCUS
|| Elektrificatie met efficiëntiewinst
|| 1-op-1 elektrificatie
|| Duurzame opwek
|| CCUS

Energy carriers face various challenges

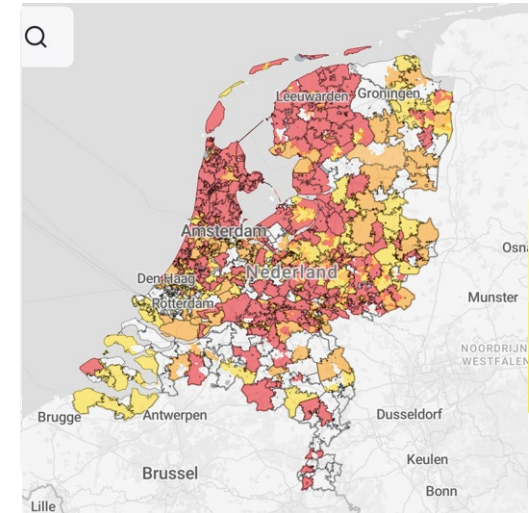
- Grid congestion in most provinces will only be resolved well after 2030
- Connecting Cluster 6 to Hynetwork is not planned until after 2030
- Market regulation of regional H₂ networks still unclear.
- Connection costs for Cluster 6 are high due to the long distance to the main infrastructure.
- CCUS and sustainable heat often require additional electricity

Grid congestion in the Netherlands

TenneT



RNB's



Reference: September 2025

Current “Action Plan” to more perspective

Current initiatives do not yet offer C6 any relief

landelijk
actieprogramma
netcongestie



National Action Programme
for Grid Congestion



CHP research

Flywheel: de-risking
sustainable investments



Maatwerkaanpak



Rijksoverheid

Case by case approach
Cluster 6



Rijksoverheid

VEKI innovation subsidy

My dilemma:

Political urgency vs positive perspective



Everyone their own role in the energy transition

Transition requires a fundamental change in the way we work together!



Utility companies

Build!

Work together & be transparant!

Be predictable

Make investments plannable!



Governments

Know your industry!

Be pro-active!

Grant permissions!

Condone!



Industry

Tell your story!

Be creative!

Be an example!

Work together!

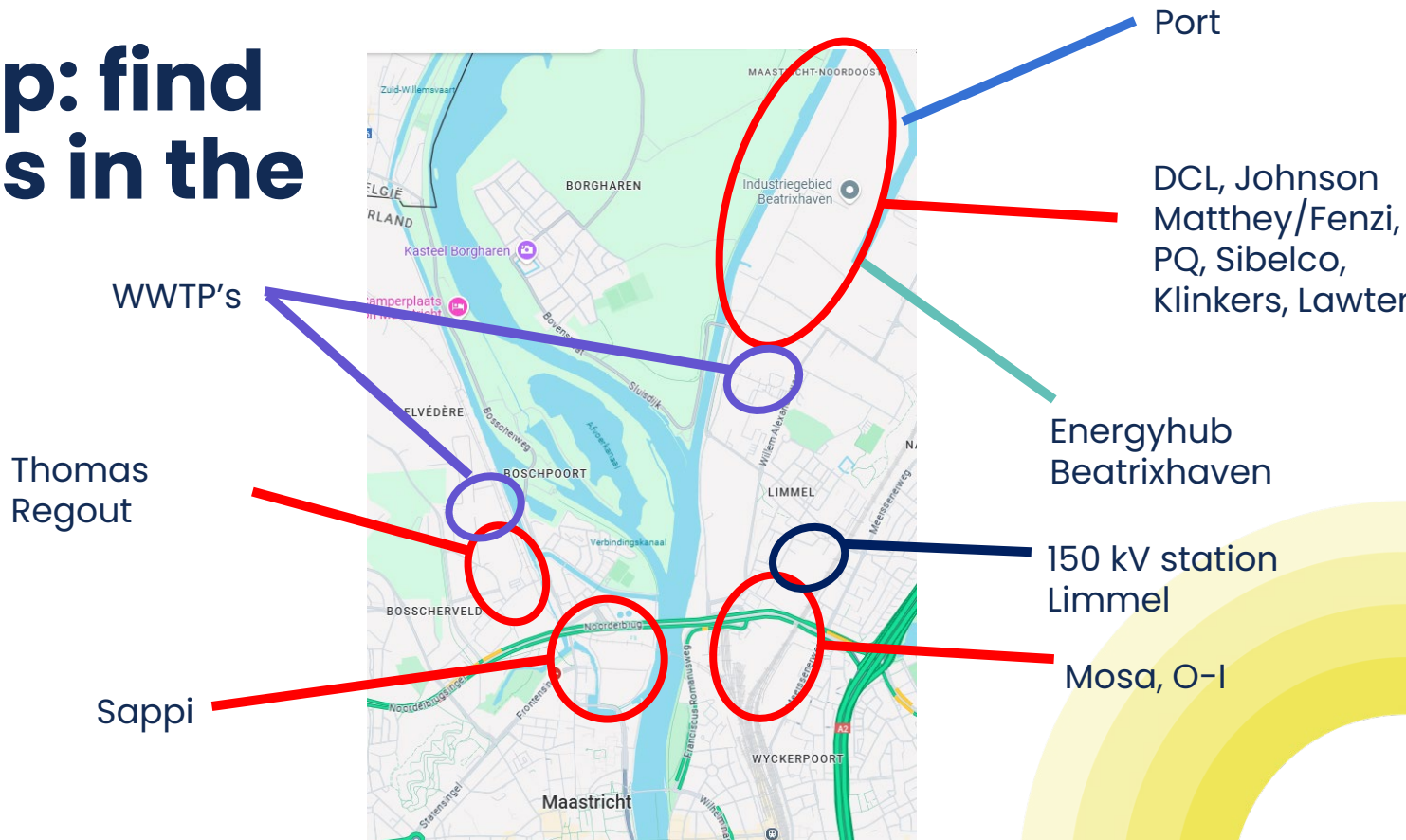


What is needed?

1. Preconditions in place: investment conditions right
2. Make investments plannable & predictable
3. Accept differentiation in pace of sustainability
4. More integrated approach to sustainable development in policy development: “integrated environmental benefit”.
5. Transition agreement!



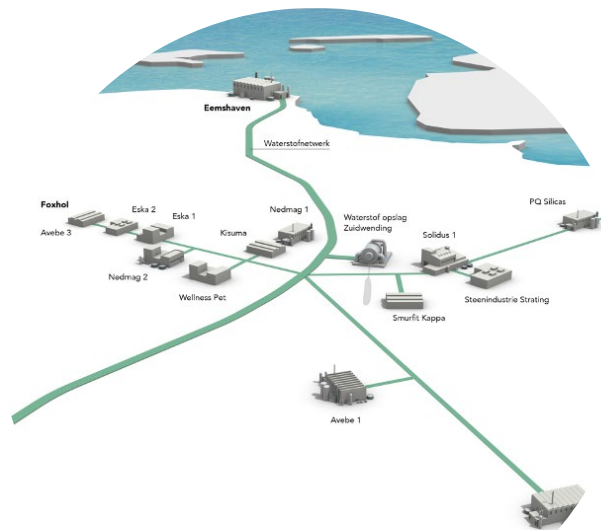
Next step: find solutions in the region



Regional perspective Oost – Groningen

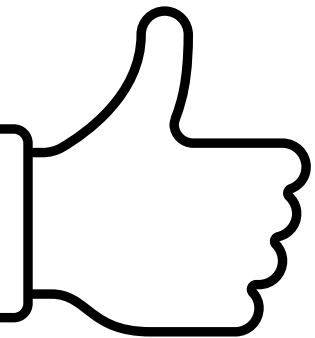
Most pre-conditions in place!

- Potential blue & green H₂ production
- Demand side: IC-OG-cluster + DE
- Infrastructure: Enexis, Northgrid, Gasunie
- Aggregator: EBN
- Public authorities: Province of Groningen, Groningen Seaports, NOM
- NEC coordination
- Potential regional funding
- Hydrogen Valley status





**Student challenge:
Good luck!!**



Thank you!

Barbara Verwayen

Barbara.verwayen@cluster6.nl

06-27596573





H2 Power Unit

Mbo-pitch

**WIND
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Coffee break

10:15 – 10:45

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A full-page background image showing a kitesurfer riding a large, curling wave. A red kite is visible in the upper left sky. The scene is dramatic with white foam from the wave and a cloudy sky.

Groningen Hydrogen Transition

Student presentation

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INTRODUCTION TO

GRONINGEN HYDROGEN TRANSITION FROM GAS TO HYDROGEN HUB (2025-2040)

Presented to you by: Oliver Dalenoord, Chris van Campen, Nasrin Suraya, Sophia O., Toby Laseby, Leonard Ghesquiere



THE CHALLENGE

- Natural gas is the past
- Uncertainty about safety
- Hydrogen prices are unstable
- Underdeveloped infrastructure





THE PROPOSAL

- Test side East Groningen Industry Cluster (ICOG)
- Dual pipelines utilizing current and new infrastructure
- AI assisted decision-making based on prices
- Working towards reutilization of current gas infrastructure





ROADMAP 2025-2040

- **2025-2027:** Technical research on system development.
- **2028-2030:** Integration of systems with the ICOG cluster and laying the pipelines.
- **2031-2032:** Evaluation of: AI-model, integration of hydrogen, social aspects, cost of hydrogen.
- **2032-2040:** Expanding the hydrogen network, rollout to the rest of the country.



Technical research



System readiness & integration



Evaluation

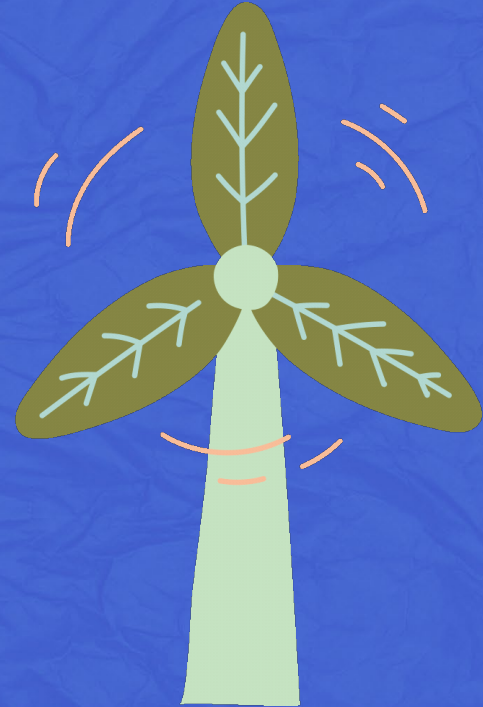
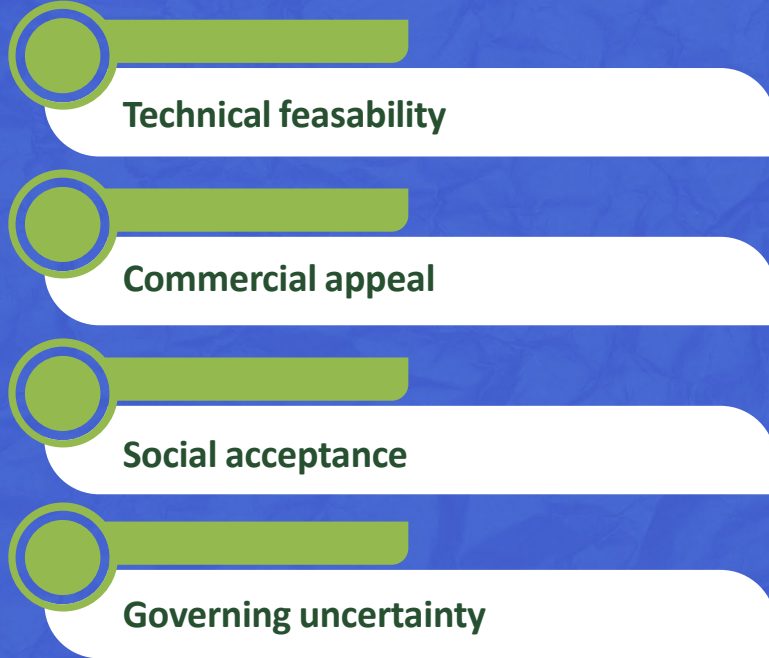


Expantion of the hydrogen network



RISKS AND MITIGATION

6





CONCLUSION



DUAL PIPELINES



AI DECISION-MAKING



EAST GRONINGEN
INDUSTRY CLUSTER (ICOG)

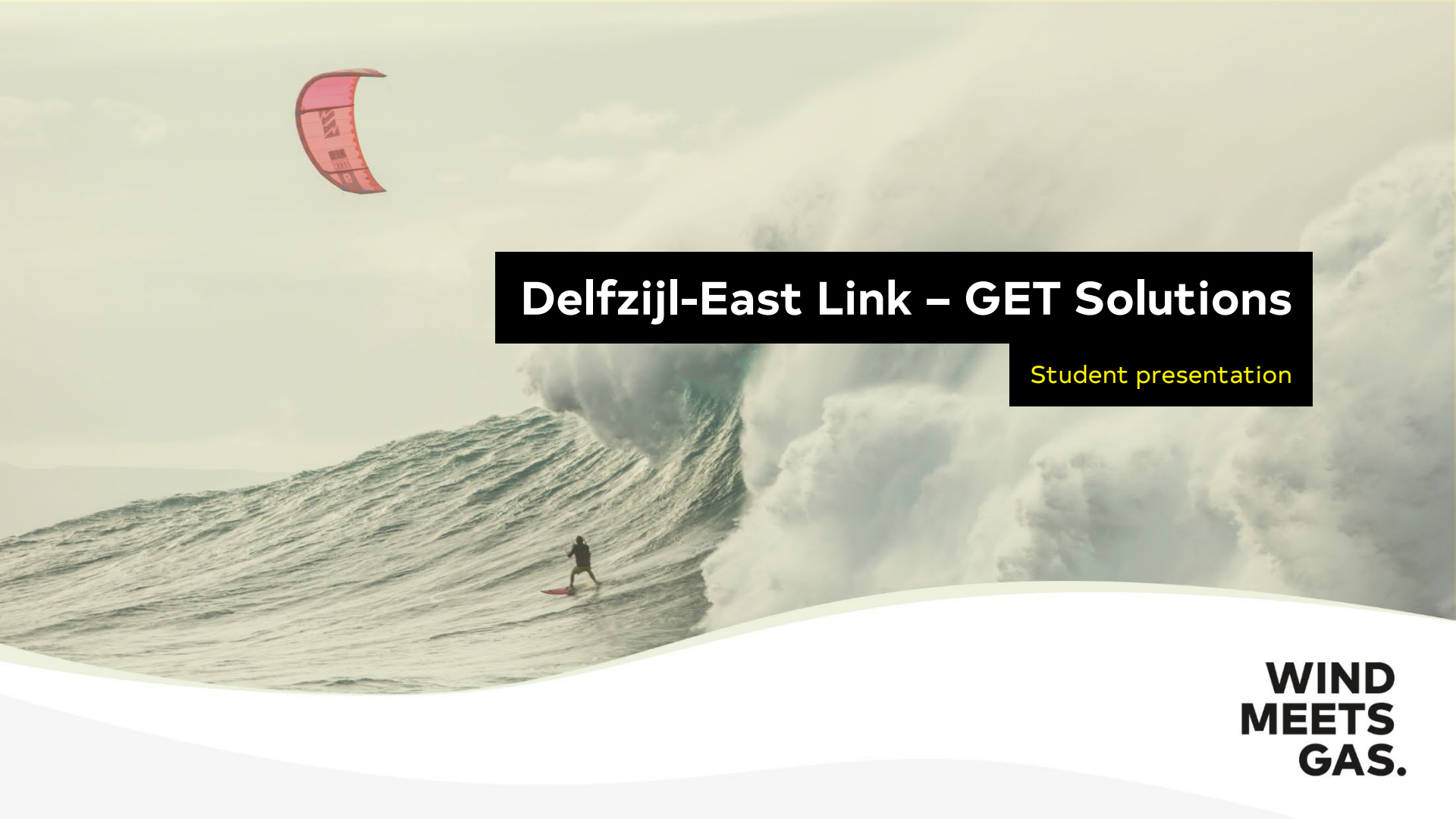


HYDROGEN
ENERGY STORAGE



**THANK YOU
FOR YOUR
ATTENTION**



A full-page background image showing a kitesurfer riding a large, curling wave. A red and black kite is visible in the upper left sky. The scene is dramatic with white foam from the wave and a cloudy sky.

Delfzijl-East Link – GET Solutions

Student presentation

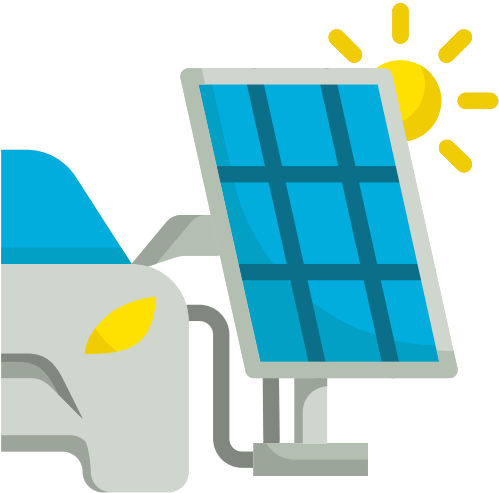
**WIND
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GAS.**

Delfzijl–East Link

By GET Solutions



**Hanzehogeschool
Groningen**
University of Applied Sciences



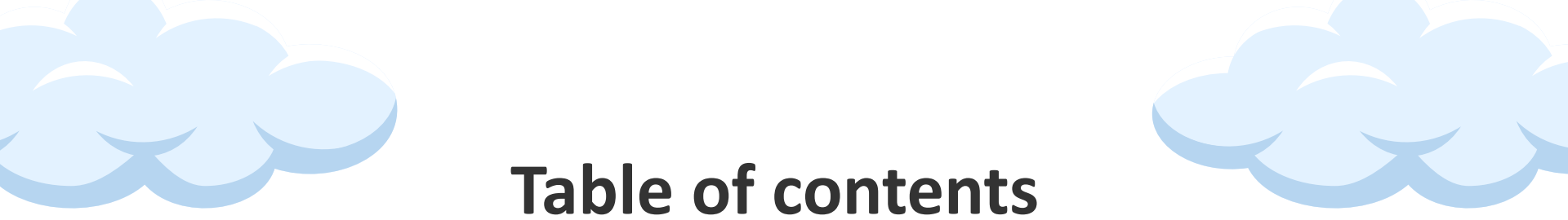


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Kickstart Hydrogen Pipeline

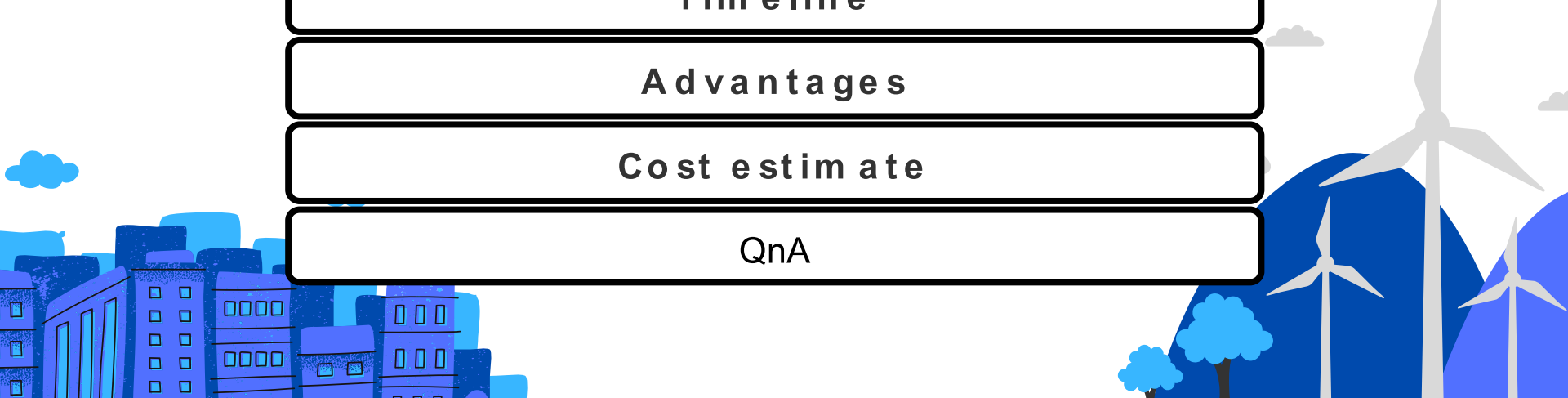
Delfzijl–East Link (Our plan)

Tim e line

Advantages

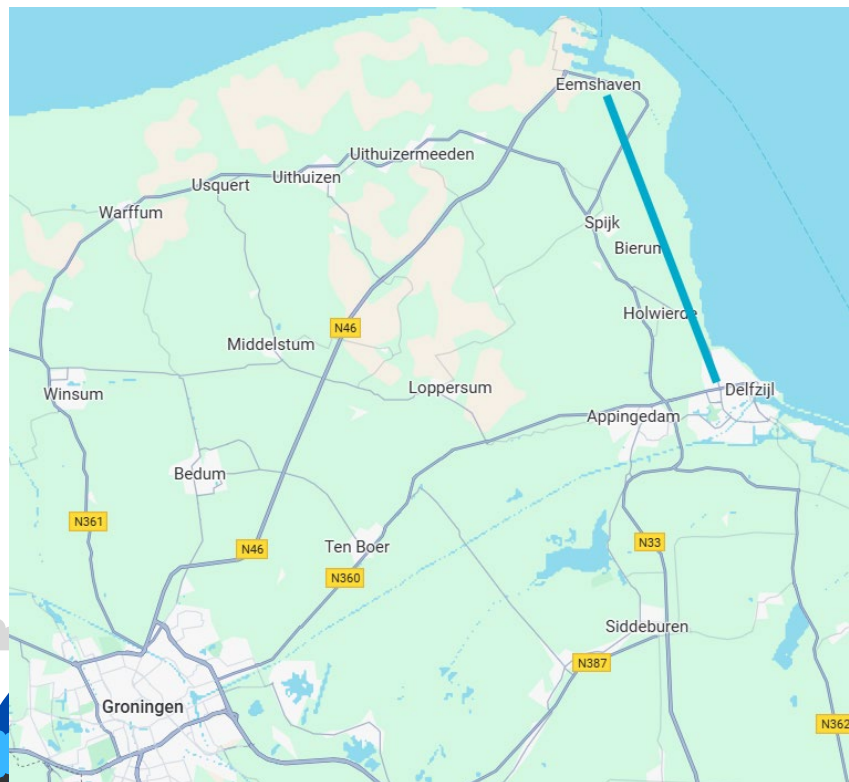
Cost estimate

QnA



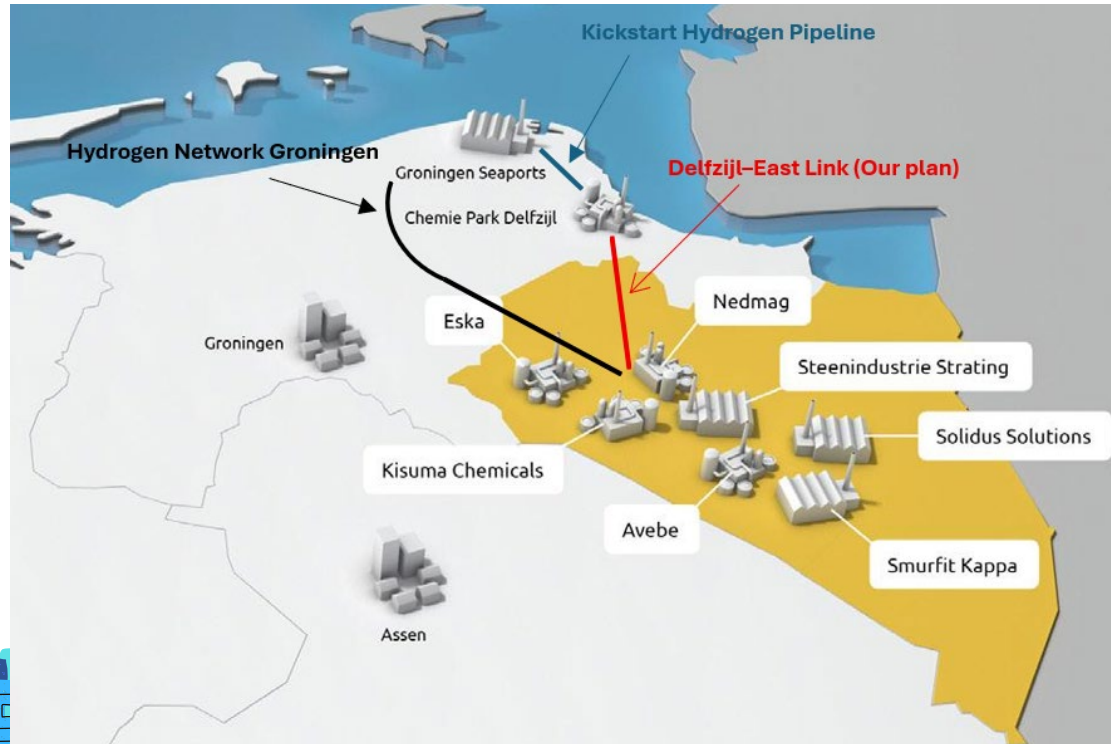
Kickstart Hydrogen Pipeline

- **Purpose:** transport hydrogen from Eemshaven to Delfzijl
- **Length:** ±25 km, low pressure (<16 bar)
- **Capacity:** 12,000–13,500 m³ H₂/hour
- **Initiative:** NorthGrid & Groningen Seaports
- **Cost:** ±€15 million, €4.4 million JTF subsidy
- **Timeline:** construction 2025–2026, accelerates energy transition

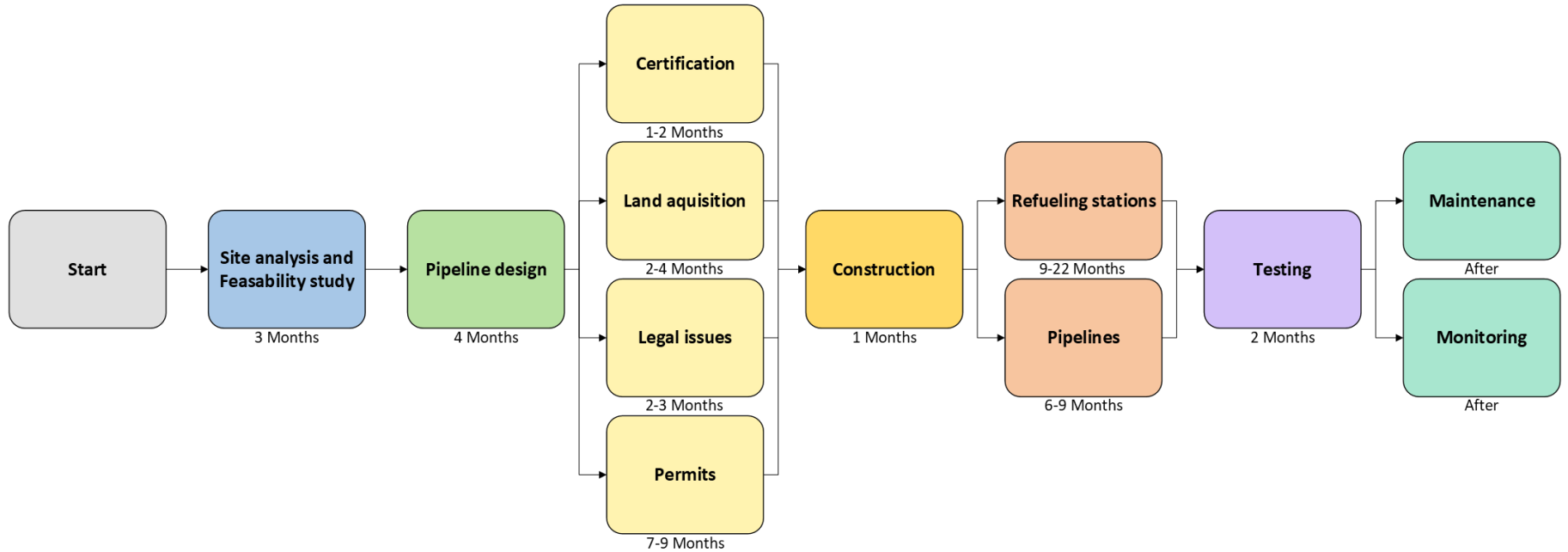


Delfzijl–East Link (Our plan)

- **Purpose:** transport hydrogen from Delfzijl to East Groningen Industry Cluster
- **Length:** ±37 km, low pressure (<16 bar)
- **Initiative:** Can also maybe be semi- privatized
- **Cost:** between €25,3 million and €35,5 million, maybe subsidies
- **Timeline:** between 2,4 years or 3,5 years



Timeline

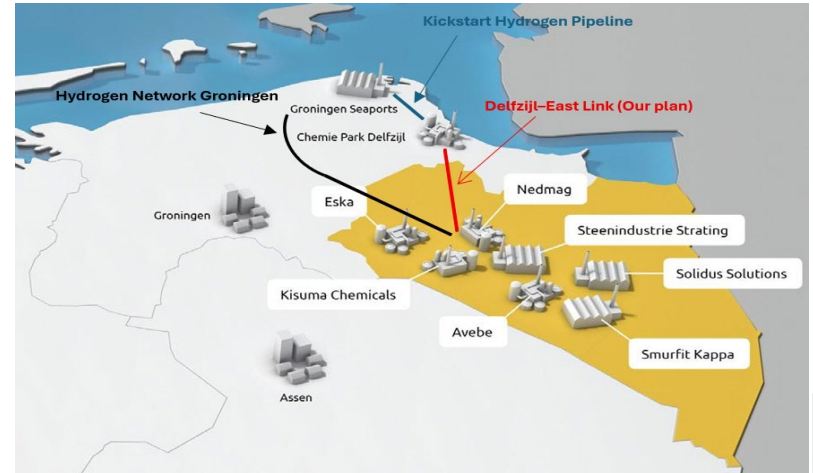


BLUE HYDROGEN

2 Years and 4 Months

Advantages

- **Faster and more cost-efficient implementation**
 - No connection to the HNS backbone required
- **Lower technical requirements**
 - 16-bar pressure sufficient for ICOG — no need for expensive steel pipelines
- **Simpler project execution**
 - Work on the distribution grid can be carried out by private (non-regulated) contractors
- **Reduced permitting and complexity**
 - Fewer regulatory steps, faster approvals
- **Greater flexibility for future connections**
 - Easier to develop links with the transport system later on



Cost estimate

Component	% of total	Base cost € (Estimate)	Base €/km	+40% CAPEX
Trench excavation & backfill (open cut)	32,00%	~€8,2 million	~€220,8/km	~€11,5 million
Pipe & fittings	25,70%	~€6,5 million	~€174/km	~€9 million
HDD & major crossings	12,50%	~€3,125 million	~€84,5/km	~€4,4 million
Engineering, testing, commissioning	8,70%	~€2,2 million	~€59,1/km	~€3,1 million
Road reinstatement & traffic management	6,20%	~€1,6 million	~€42,2/km	~€2,2 million
Contingency	6%	~€1,5 million	~€40,5/km	~€2,1 million
Permits / Surveys / Environmental studies	4,40%	~€1,1 million	~€30,1/km	~€1,6 million
Land/ easement compensation & reinstatement	4,50%	~€1,1 million	~€30,1/km	~€1,6 million
Total (Rounded)	100%	~€25,3 million	~€681,3/km	~€35,5 million

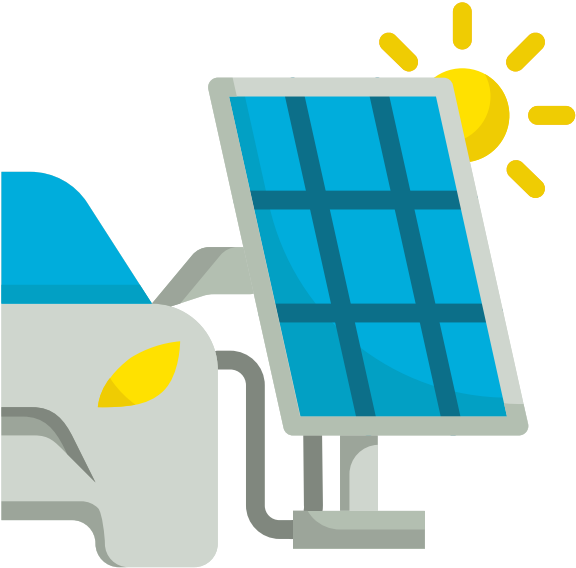


Welcome to

QnA Time

Two stylized, fluffy white clouds with light blue shading underneath, positioned at the top left and top right of the image.

Thank You





Communication and Hydrogen - HYDROCOMM

Student presentation



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Communication in the Hydrogen Transition



Groningen

PRESENTED BY
HydroComm





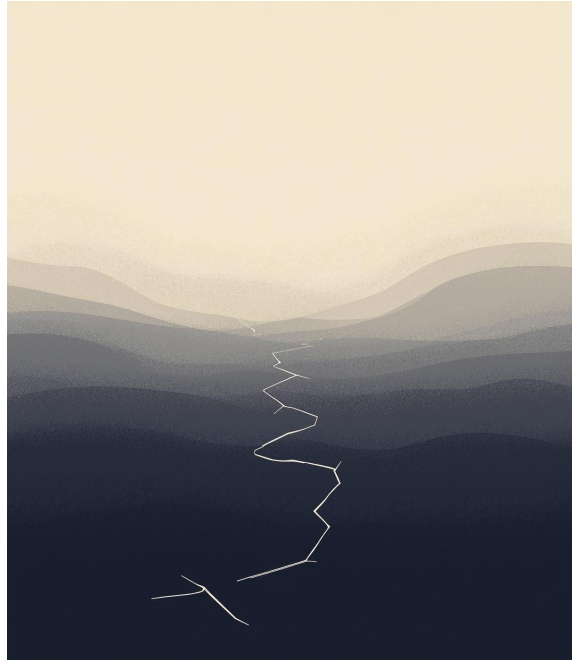
Blue now. Green tomorrow.

Outlines of a strategic **communication plan** for Groningen's hydrogen transition, highlighting key messages about trust, inclusion, and the journey from blue to green hydrogen.

10 OCTOBER 2025

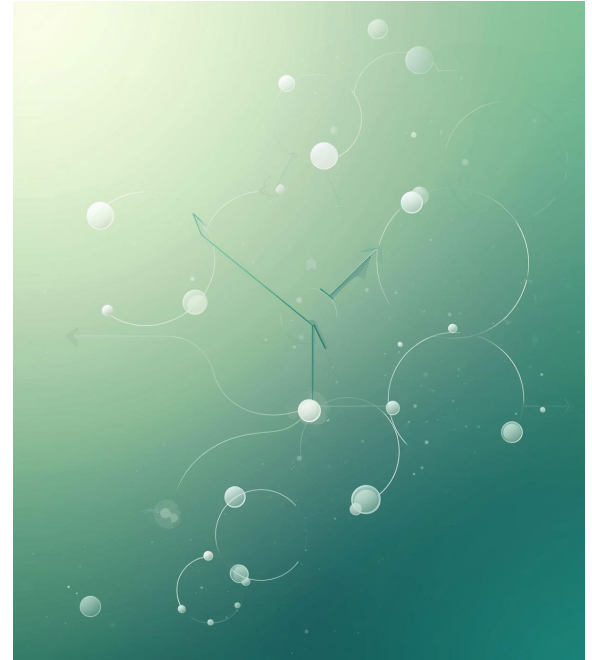


The Challenge and Our Solution



GRONINGEN'S GAS LEGACY CHALLENGES

Becoming Europe's Hydrogen Valley



BUILDING TRUST THROUGH COMMUNICATION

Transparent and phased approach

20-Year Transition Timeline (2025–2045)

Strategic Alignment
(2025 - 2027)

Develop strategic communication and awareness campaigns.

Design Frameworks
(2027 - 2030)

Establish design and legal frameworks with stakeholders.

Blue Hydrogen Launch
(2030 - 2035)

Launch blue hydrogen and engage in milestone storytelling.

Hybrid Phase
(2035 - 2040)

Transition towards green hydrogen and activate industries.

Green Rollout
(2040 - 2045)

Implement full-scale green hydrogen initiatives regionally.

Global Branding
(continuously)

Establish global branding for Groningen's hydrogen leadership.

Regional Impact

TRANSMISSION BACKBONE & STORAGE SYSTEM

Routing & Re-use
Salt caverns secure utilization

INDUSTRIAL SHIFT

Attracting investments and keeping
the benefits in the region

COMMUNITY WORKSHOPS & EDUCATIONAL CAMPAIGNS

Promoting hydrogen safety
knowledge and addressing
concerns directly



Social and Economic Transition: Addressing Change

JOB TRANSITION & ECONOMIC ANXIETY

As Groningen transitions to green hydrogen, it is essential to address potential **job losses** in the gas industry. Retraining programs and "Just Transition" plans, while collaborating with **unions**, will ensure workers acquire new skills for hydrogen roles, while wage support and pathways to employment promise to create **over 10,000 jobs by 2030**.

PARTICIPATORY PLANNING

Engaging local stakeholders is critical for a smooth transition. This includes involving farmers, environmental groups, and councils in decision-making processes and offering them **compensation or co-ownership** for land use. Such collaborative efforts will foster a sense of community ownership and ensure that the transition benefits everyone involved.

Stakeholders landscape

HIGH POWER, HIGH INTEREST

- Local government, industries, and universities: Drive decisions and actively implement initiatives.
- Local government, industries, and universities: Participate in strategic dialogues, workshops, and research collaborations.

LOW INFLUENCE, HIGH INTEREST:

- Citizens, schools, and small businesses: Contribute feedback and participate in awareness programs.
- Citizens, schools, and small businesses: Access open data and engage in consultations to support project adoption.

HIGH INFLUENCE, LOW INTEREST

- National/EU policymakers: Provide approvals, shape regulations, and influence policy alignment.
- National/EU policymakers: Receive updates and insights to maintain potential support.

LOW INFLUENCE, LOW INTEREST

- External observers and media: Observe developments and report on progress.
- External observers and media: Receive selective updates to ensure transparency and credibility.

Engagement strategies for Stakeholders

- **DIALOGUE**

Engaging stakeholders through open conversations to build trust and understanding.

- **CO-DESIGN**

Collaborating with community members to create solutions that reflect their needs.

- **OPEN DATA**

Providing transparent information to ensure accountability and informed decision-making.

- **INCLUSION**

Actively involving all stakeholders to foster a sense of ownership and commitment.

Public Communication

Strategy for Hydrogen Transition Engagement

Understanding

Building a foundation of **awareness** through educational campaigns helps the community grasp hydrogen technology, its benefits, and how it impacts Groningen's future sustainably.

Participation

Creating opportunities for **active involvement** through hydrogen cafés and town halls fosters community engagement, allowing citizens to voice concerns and contribute ideas towards the transition process.

Ownership

Establishing **transparent communication** through open data and regular updates assures stakeholders that their input is valued, reinforcing confidence in the hydrogen initiative's long-term success.

Implementation Framework for Groningen's Hydrogen Transition

01 COORDINATED TASKFORCE

The HydroComm Taskforce will unite government, industry, and community stakeholders for effective communication and collaboration.

02 PHASED ENGAGEMENT

The strategy evolves from awareness to engagement, culminating in celebration of achievements and milestones throughout the transition.

03 BUILDING TRUST

Transparent communication will foster trust among stakeholders, ensuring an inclusive approach to the green hydrogen future.

04 MEASURING SUCCESS

Progress will be tracked through regular updates and feedback loops, ensuring accountability and ongoing community involvement in the process.

Thank you...



j.winkelhorst@st.hanze.nl





Jan Rotmans

Professor in Sustainability Transitions

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Award ceremony

Student presentations

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Wrap-up by Noé van Hulst

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Match and lunch

13:15 – 14:00

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See you next year!

#WindMeetsGas25



Drivers of Change