



Hanze
University of Applied Sciences
Groningen



EnTranCe: Centre of Expertise Energy

“If we want things to stay as they are, things will have to change.”

Dr. Ir. Jan-jaap Aué

Dean Centre of Expertise Energy

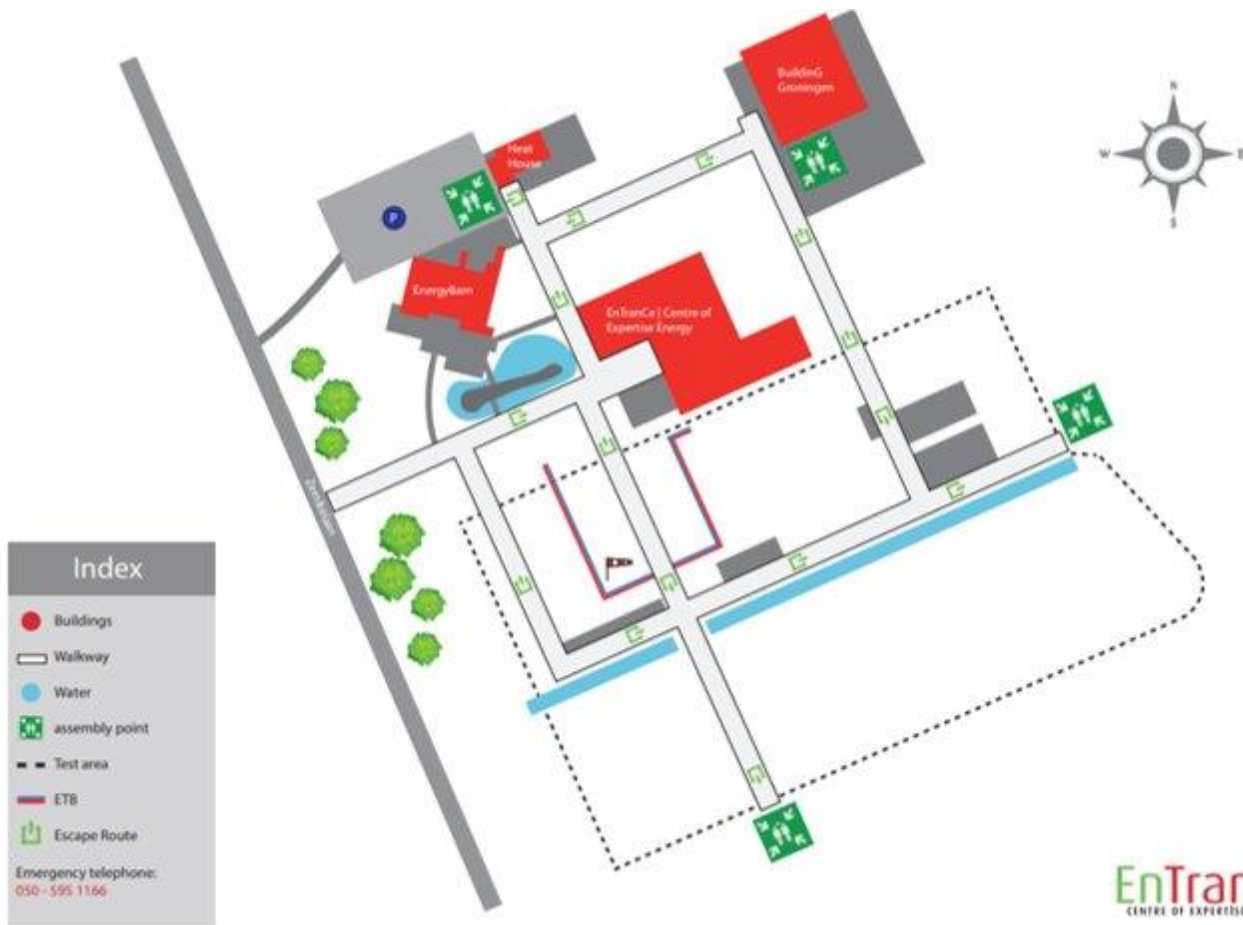
Professor Hydrogen Applications



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EnTranCe
ENERGY TRANSITION CENTRE





Centre of Expertise Energy

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EnTranCe
CENTRE OF EXPERTISE ENERGY

Hanze University of Applied Sciences

- Established in **1798**
- Professionally oriented higher education
 - 30,000+ students, 3500 employees
- **Strongpoint Energy:**
 - energy routes in 22 studies
 - 3 energy master programs
 - 10 professorships with topic energy

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<https://twitter.com/janjaapaue>

PhD Materials Sciences
KPN Research & TNO
Hanze University of Applied Sciences



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Source : energy valley

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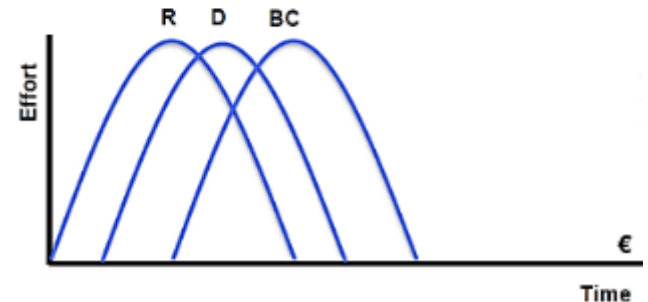
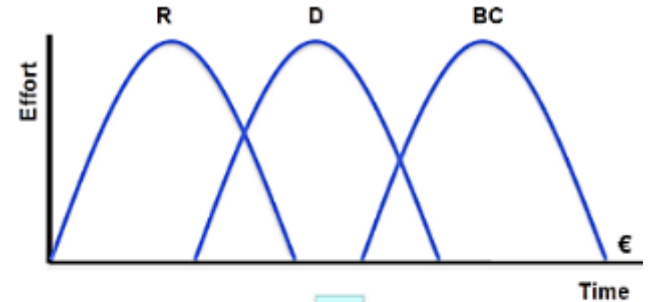
What : Speeding up Innovation

At the Centre of Expertise Energy, we speed up innovations needed for the transition towards a sustainable energy society. We contribute by applied research and education.



HOW?

- Create new sustainable value chains
- Integrate the chains with the needs of society
- Secure young brains being able to work on these new value chains



Who : Professors @EnTranCe



Dr. Carina Wiekens
Sustainable
Behaviour



Dr. Wim Elving
Sustainable
Communication



Dr. Ir Gerard Schepers
Wind Energy



Dr. Ir. Marten vd Laan
System Integration



Dr. Ir. Jan-jaap Aué
Hydrogen Applications



Dr. Jeff Gourcester
Sustainable fuels &
gasses



Dr. Ir. Jan-Peter Nap
Life Sciences & renewable economical aspects
energy

vacancy



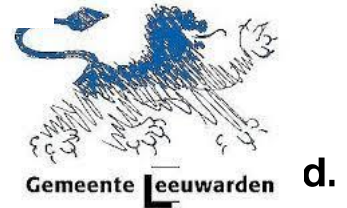
Dr. Daisy Templeman
Legal aspects



Mr. Bert de Jonge
Legal aspects



Dr. Ir. Martien Visser
Power & Energy
distribution



What : interdisciplinary research themes

Sustainable mobility

(sustainable fuels, charging/tanking, smart charging, time-sharing, offgrid (shipping),)

System Integration and flexibility

(digitalization, smart grids, balancing, legal frameworks, demand patterns, markets,)

Renewable gases/sustainable fuels

(hydrogen, biogas, chain efficiency, generation, storage and transport, applications)

Local and Regional Energy Strategies

(participation, governance, energy poverty, built environment, energy communities,)

Industrial transformation

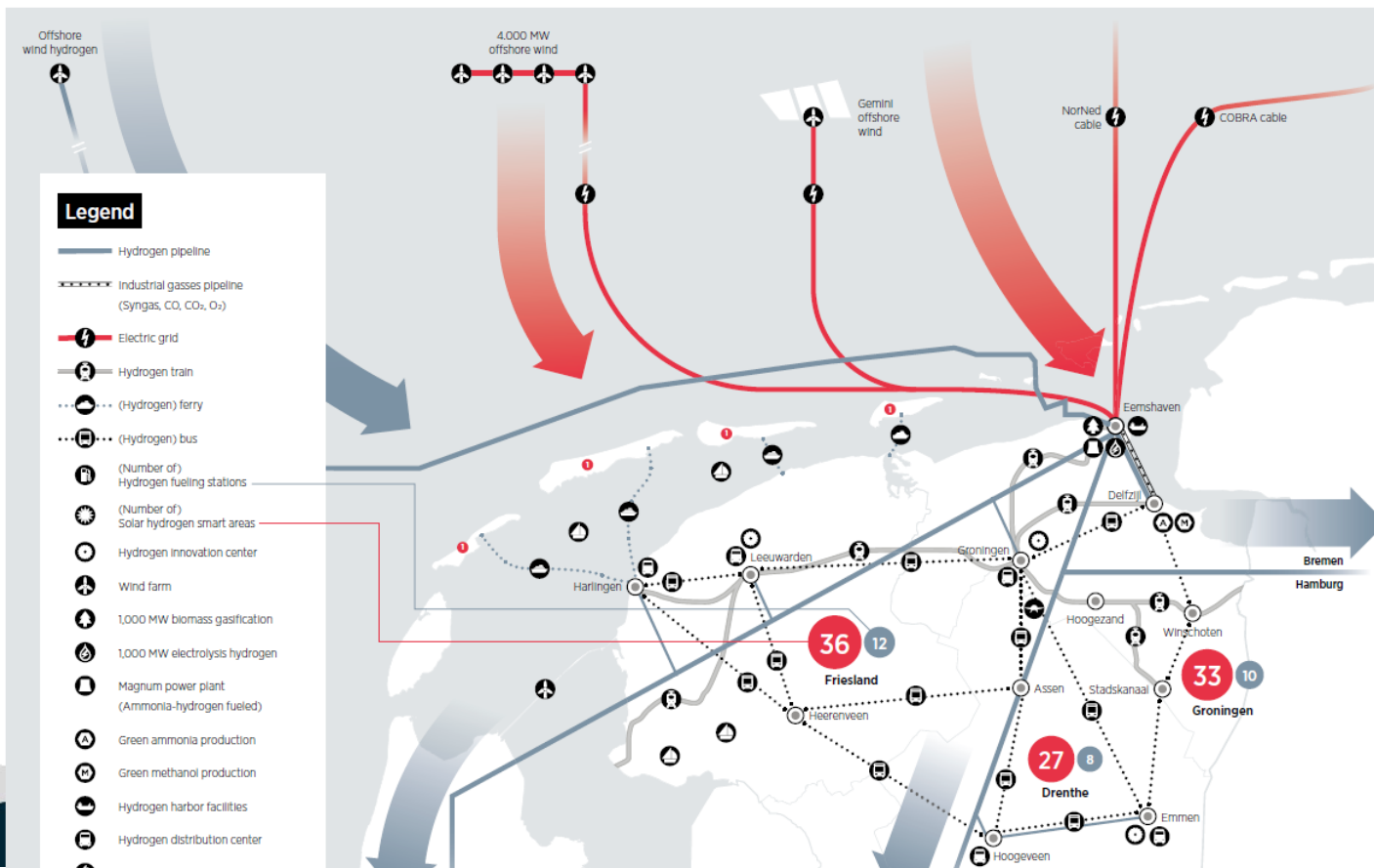
(multi commodity, electrification, waste heat, ecosystems,)

Educational programs

- Energy Routes in 22 bachelor programmes leading to EAE certification
- Learning Community (*Energy Transition Community EnTranCe*)
- Master (MSc) portfolio
 - European Master Renewable Energy
 - Master Sustainable Energy System Management
 - Master Energy 4 Society
 - Master International Communication (specialisation Energy)



The overall regional Hydrogen vision up to 2030

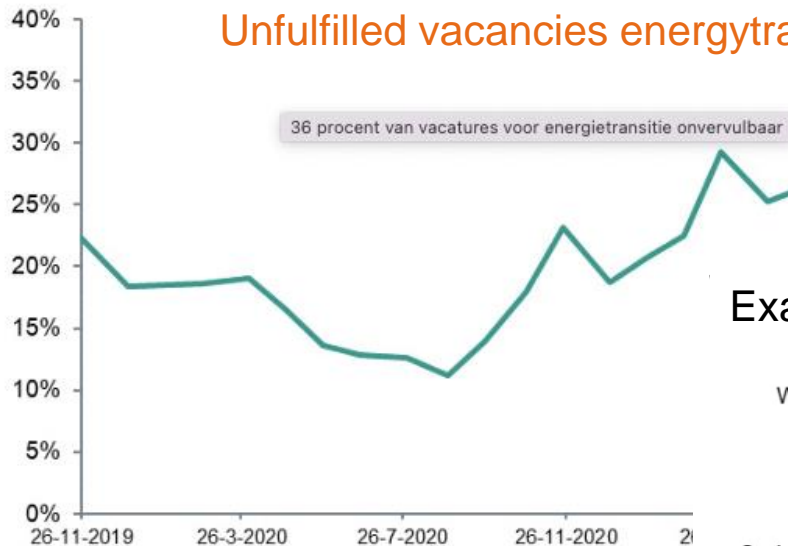


Current Dutch labourmarket situation & education

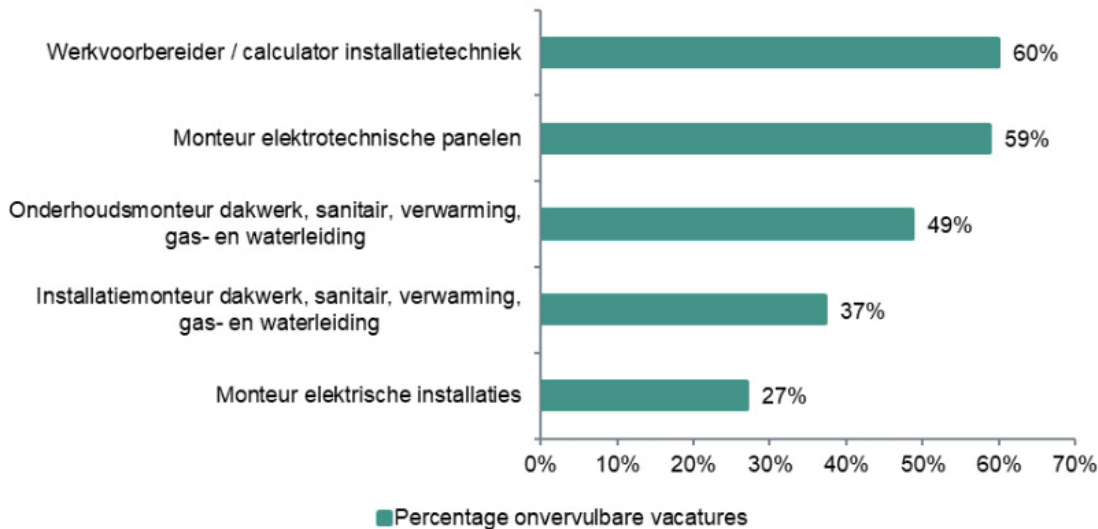


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36 procent van vacatures voor energietransitie onvervulbaar



Examples of unfulfilled vacancies (%)




Developing Human Capital for hydrogen

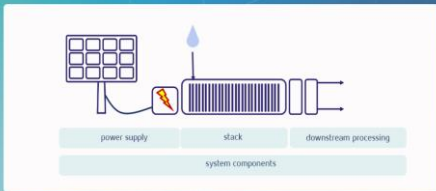


Public / private partnerships & projects

With HCA components, NOT ment to be complete

HyScaling 

- > Make better electrolyser systems
- > Make electrolyser systems in a better way



power supply stack downstream processing

system components



Hydrohub



Groene
Waterstof
Booster

 | Groene waterstof en chemie
voor een duurzaam Nederland

GAS 2.0
POWERED BY
Energy College



'MAKING HYDROGEN WORK'



Noorderpoort



Co-financiers:

Techniek Nederland/Wij techniek, Bouwend Nederland, Afeer, Stork, Shell Nederland, Gemeente Groningen, EBN, GasTerra, Gasunie, NAM

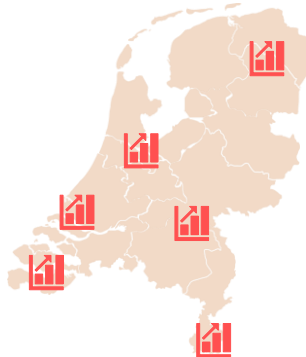
- continuous learning, research and work in hydrogen
- Period: 2022-2027
- 7.1 million euros
(€3 million from National Programme Groningen)
- Combined public and private funding
- Early investment in the entire educational chain



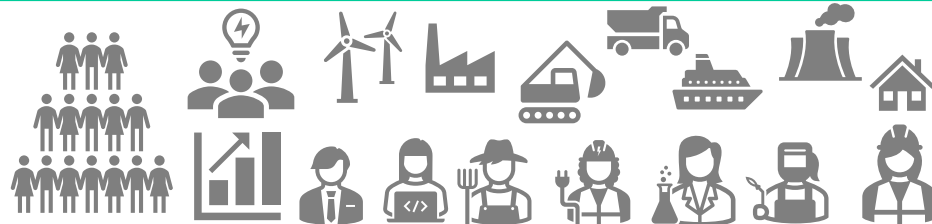
Human Capital Agenda 'GroenVermogen'

Regio's aan zet

Regionale Liaisons
Roadmaps
Consortia en pps
Learning communities
Grootschalige Faciliteiten
Opleidingen

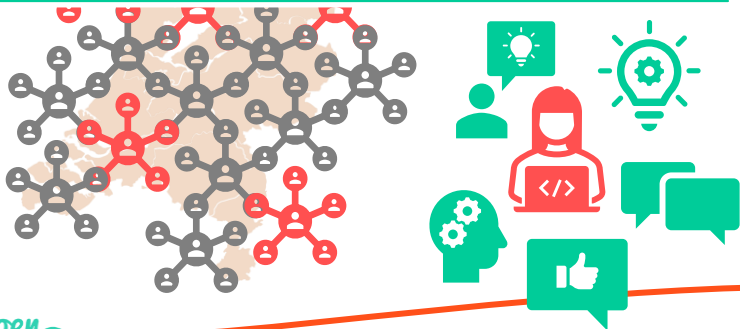


Scholing en training professionals



Digitale Leeromgeving

Nationaal Kennisplatform



Nationaal Pakket Onderwijsprogramma's



Nationale basiscurcus

Toepassingsgericht

Thematisch

Awareness

MBO

HBO

WO

Functie-
gericht

Formeel én
informeel

©

Diplomeren en certificeren

Kwaliteit en impact

Learning by Doing



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EnTranCe Field Lab

world.

Hydrogen network and storage



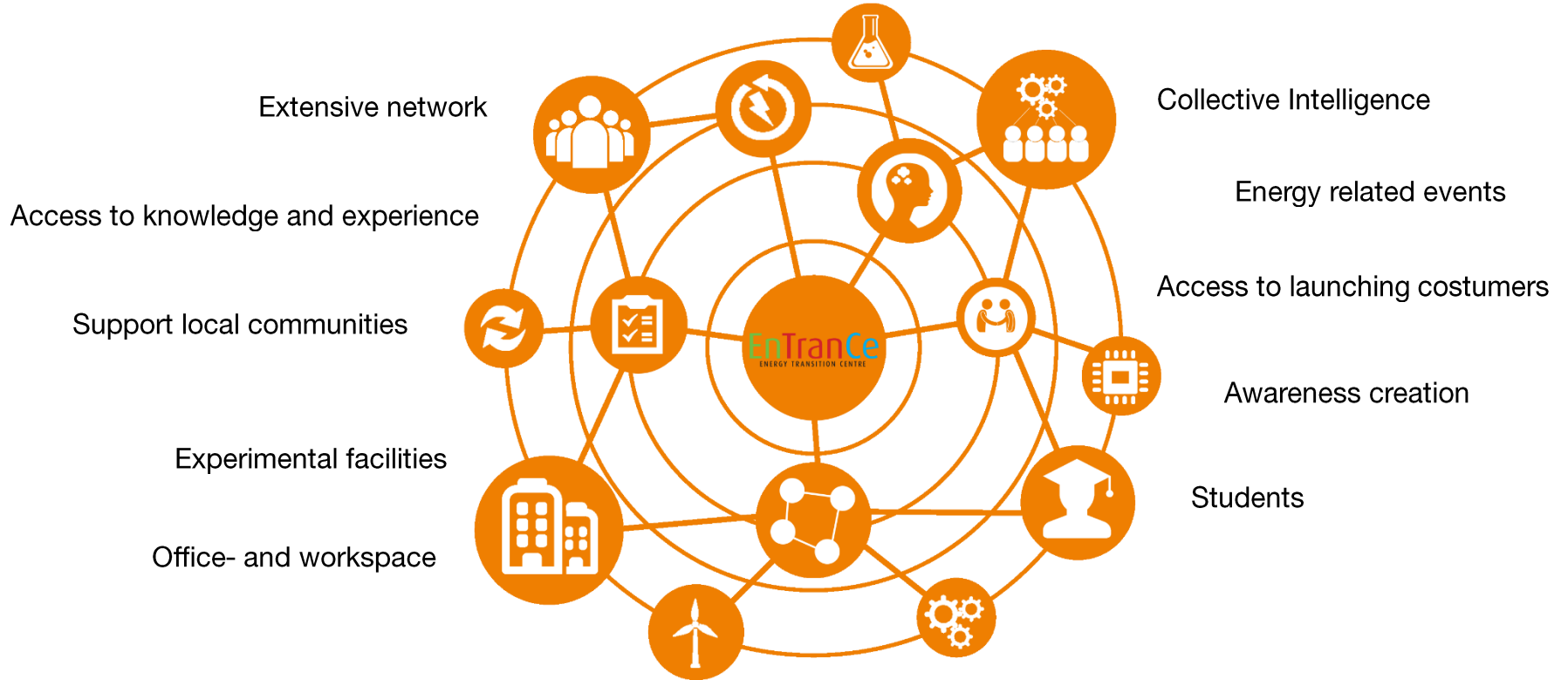
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Elektrolyser testbed (HydroHub MegaWatt Testcentre)



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For you



Dr. Ir. Jan-jaap Aué

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