

# The potential for regional Nordic & Baltic co-operation

**What clean energy technologies are most relevant for Nordic – Baltic cooperation?**



# Background and method

## Background

Determine which clean energy-related technologies (CET) are most relevant in the Baltic and Nordic countries, in terms of Baltic-Nordic co-operation for decarbonising the energy system from now to 2030, 2050 and beyond.

## 5 step method

### 1 International and EU CET overview

- Identifying broad spectrum of relevant clean energy technologies

### 2 Assessing needs for CETs from the Baltic energy systems perspective

- Key CET needs in the Baltic states based on national energy and climate plans and existing scenario studies

### 3 Baltic CET stakeholder overview

- Analysis of literature and stakeholder information
- Interviews and surveys

### 4 Technology-needs matrices

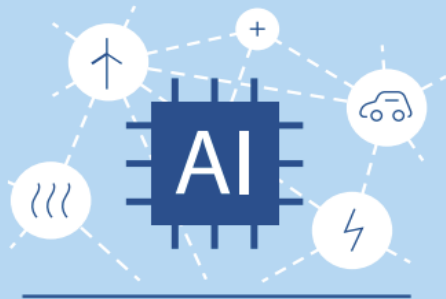
- Strengths, limitations and stakeholders of most relevant CET solutions with respect to challenges and time perspective
- Potential key R&I activities on national and Baltic levels

### 5 Development of Baltic-Nordic Roadmap for Co-operation on Clean Energy Technologies

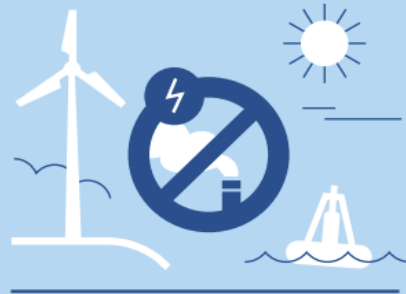
# CET category framework

BALTIC-NORDIC ROADMAP  
FOR CO-OPERATION  
ON CLEAN ENERGY  
TECHNOLOGIES

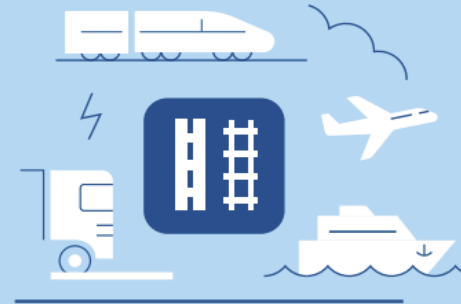
## Clean Energy Related Technologies (CET)



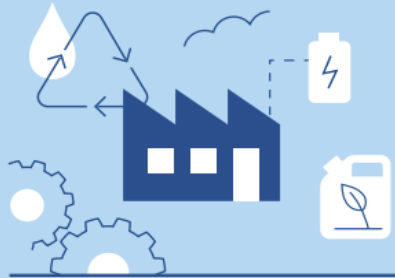
Integrated power  
and energy systems



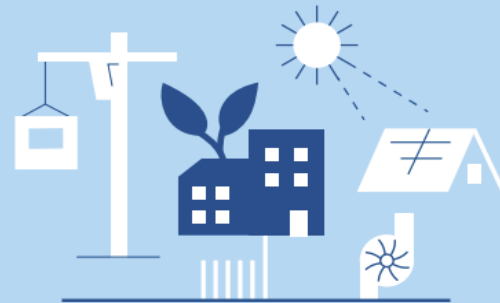
Zero emission  
power generation  
technologies



Low emission  
transport systems



Industrial energy  
systems



Urban and built  
environments



Cross-cutting  
technologies

# Co-operation Roadmap

BALTIC-NORDIC ROADMAP  
FOR CO-OPERATION  
ON CLEAN ENERGY  
TECHNOLOGIES



## Now



### Continue & Strengthen

- Sustainable and integrated power systems
- Large-scale deployment of offshore wind power
- Zero emission buildings



### Initiate New

- Efficient industrial waste heat utilisation in district heating
- Future biorefineries for the bioeconomy
- Electrification of private transport

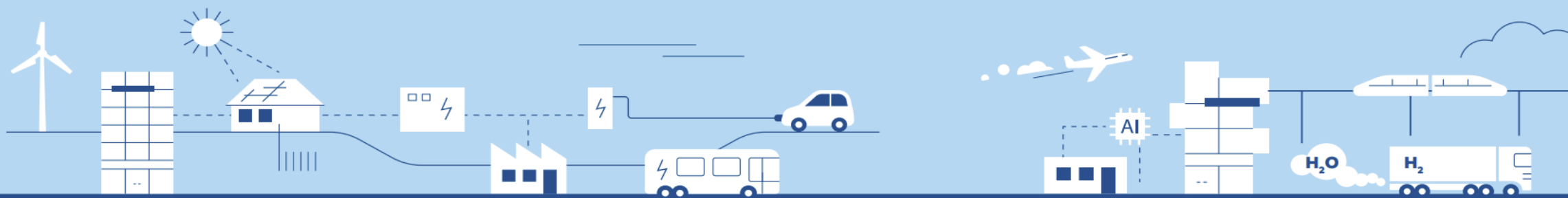


### Exploratory

- Baltic-Nordic implementation of CCS and CCU
- Digitalisation in the energy system
- Deep decarbonisation of energy intensive industry
- Potential role of distributed energy systems

# Co-operation Roadmap

BALTIC-NORDIC ROADMAP  
FOR CO-OPERATION  
ON CLEAN ENERGY  
TECHNOLOGIES



## 2030



### Continue & Strengthen

- Developing zero emission power systems
- Positive energy buildings and smart cities
- Efficient waste heat utilisation in district heating
- Future biorefineries for the bioeconomy
- Deep decarbonisation of energy intensive industry
- Electrification of transport



### Initiate New

- Hydrogen society – demand-side aspects
- Deep decarbonisation of energy-intensive industry
- CCS/CCU technologies and infrastructure
- Distributed energy systems



### Exploratory

- Exploring new advanced technologies within renewable energy sources (RES) power generation, energy storage, CCS/CCU/PtX and hydrogen production

## 2050+



### Continue & Strengthen

- Zero emission transport system
- Hydrogen society
- CCS/CCU/BECCS for net zero/negative emissions
- Integration of flexible power generation, storage and demand side



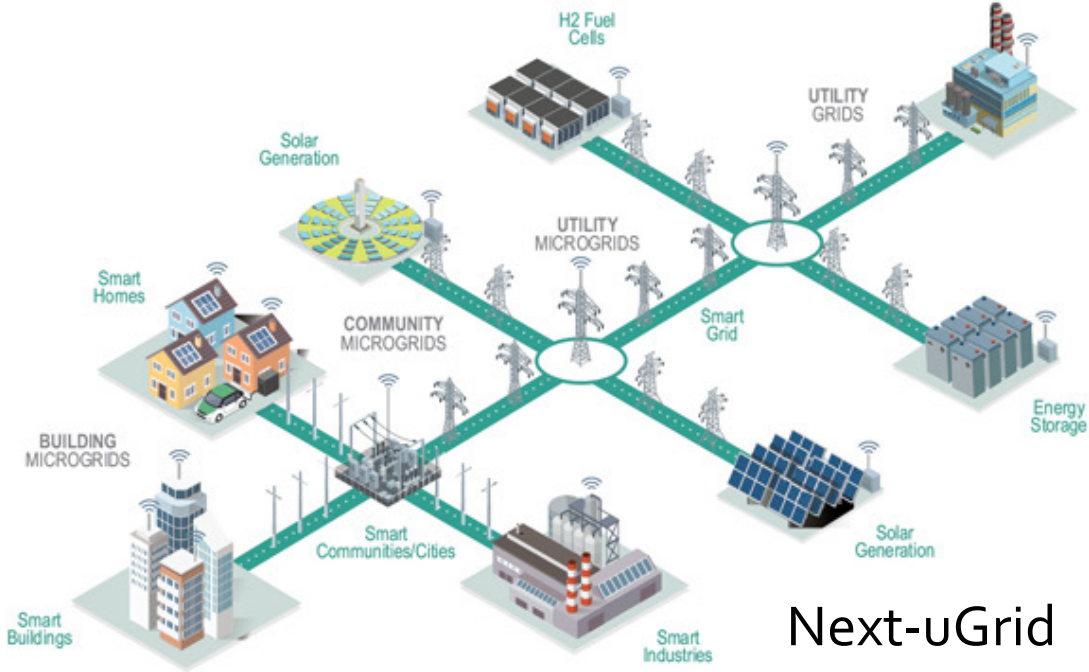
### Initiate New

- Development/implementation of new advanced technologies within RES power generation, energy storage, CCS/CCU/PtX and hydrogen

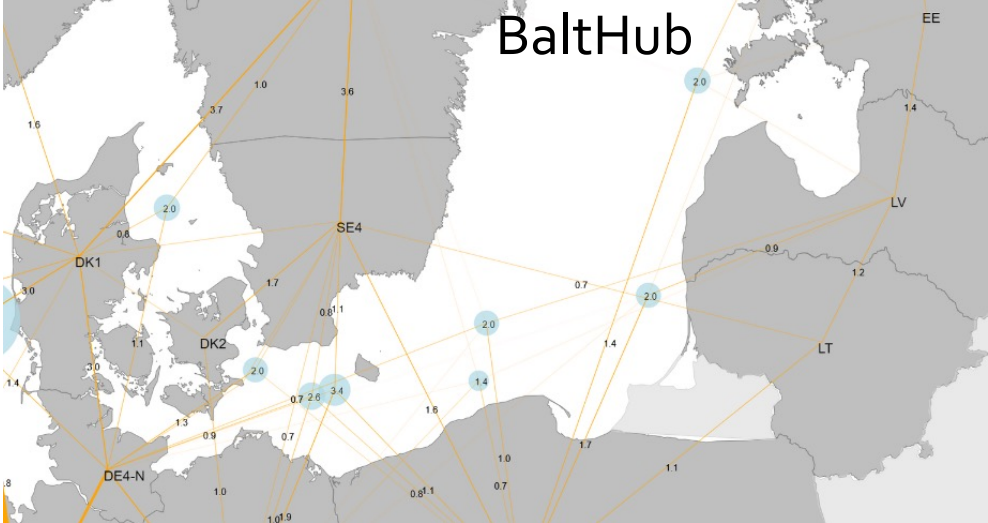
# Energy Security?



# Financed research in key areas of co-operation



Next-uGrid





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