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Let’s go transnational! BOWE2H results on regional offshore-wind and hydrogen development

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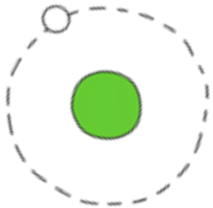
Mission

To foster a transnational green, integrated energy system in the Baltic Sea region, with offshore wind and green hydrogen at its core.



Infographic OWE & H_2 roadmap

Infographic report outlining policy, grid, and planning towards regional OWE and green H_2 development

Events & network

Six events to foster exchange and build a regional OWE and H2 network

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Infographic OWE & H2 roadmap

Meta-study (2023)

OWE and H_2 in the BSR,
transnational developments

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+

STEP2

Interviews & **co-creative workshops** on challenges and solutions (2023/2024)

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STEP 3

Strategic roadmap and poster to regional OWE & H2 (2024)

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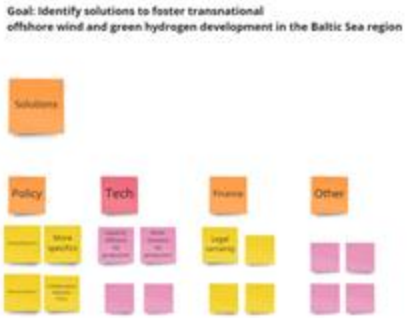
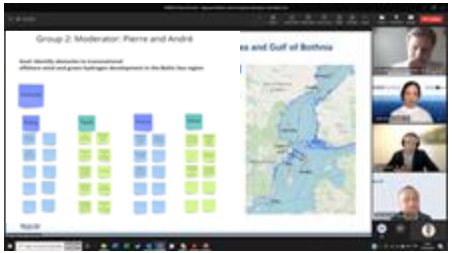
First co-creative workshop | 14 Feb 2023

- **Sixty** participants
- **Four** break-out rooms
- **Task:** Identification of challenges and desired solutions to foster (transnational) OWE and H2 development
- **Tools:** Miro board and mentimeter





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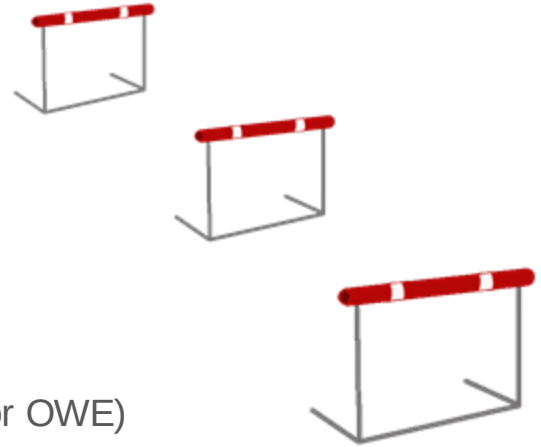

- Planning and permitting simplification and standardisation (10 years for OWE)
- Strong policy including targets + timeline for secure investment climate for industry & developers
- OWE targets strong in many countries, but H2 is newer and is not equally supported
- Cross-sector dialogue network: TSOs, policy, industry, spatial planners, defence, environment
- Supply-chain and labour shortages threaten rapid build-out of renewable energy

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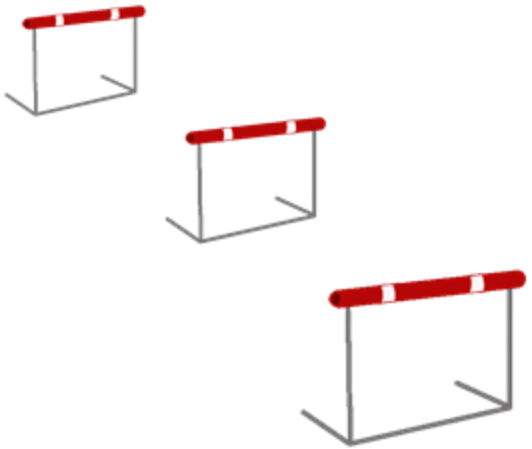

- Transnational collaboration vs domestic needs first
- Port infrastructure expanded and updated
- Ports must be future-proof and ready for green fuels, especially LNG terminals constructed now are not compatible with H2 or NH3 imports!
- Risk of further stranded assets and a prolonged use of fossil fuels

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Basic observations

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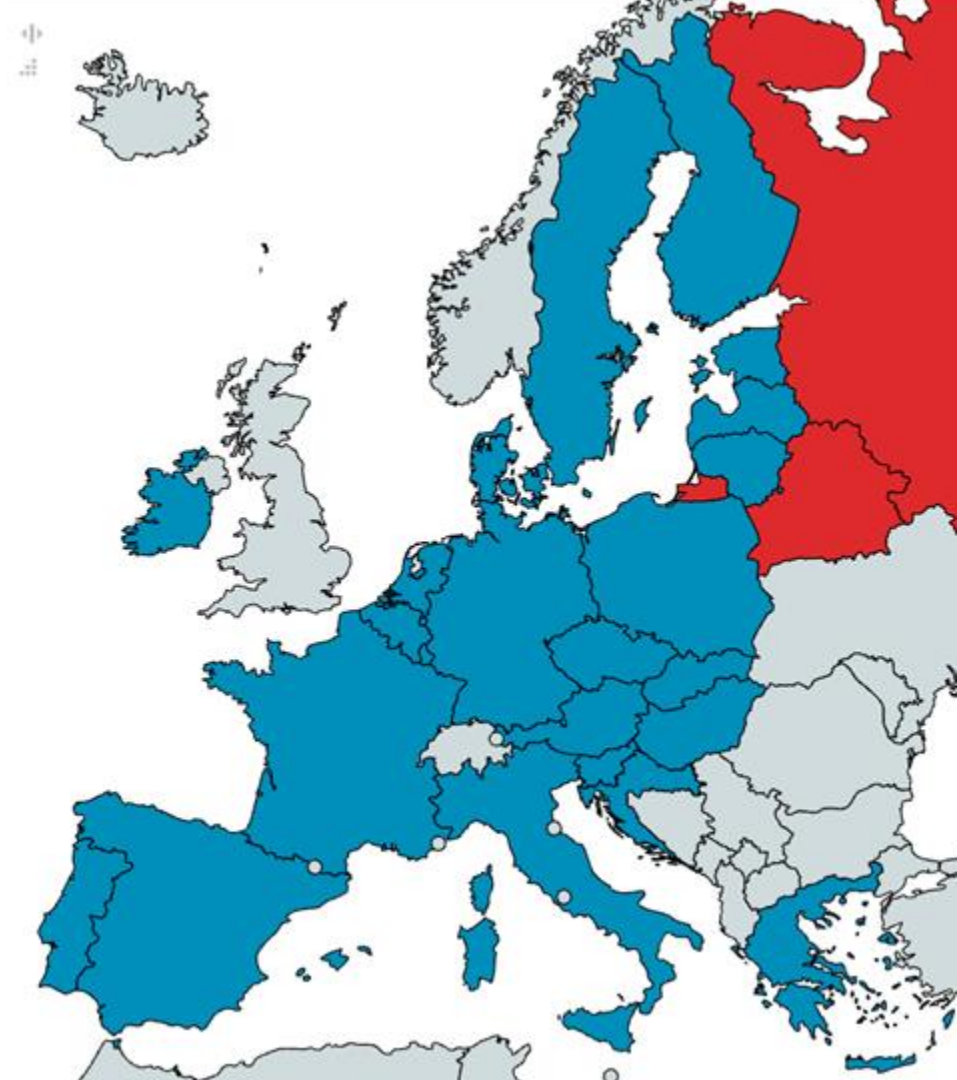
Basic observations



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Basic observations

Average EU citizen has paid more than EUR 400 for Russian fossil fuels since invasion

Two years since Russia's full-scale invasion of Ukraine, despite a range of sanctions and embargoes, Russian fossil fuels continue to

23 February 2024

Global

746,870,217,979 EUR

Oil (68%) **513,878 M EUR**

Gas (20%) **155,022 M EUR**

Coal (12%) **77,969 M EUR**

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202,069,143,987 EUR

Oil (53%) **108,329 M EUR**

Gas (44%) **90,101 M EUR**

Coal (3%) **3,638 M EUR**

(Centre for Research on Energy and Clean Air)

Direct cost of war for Russia:
USD 211 (€190) billion in
February 2024 (Pentagon)

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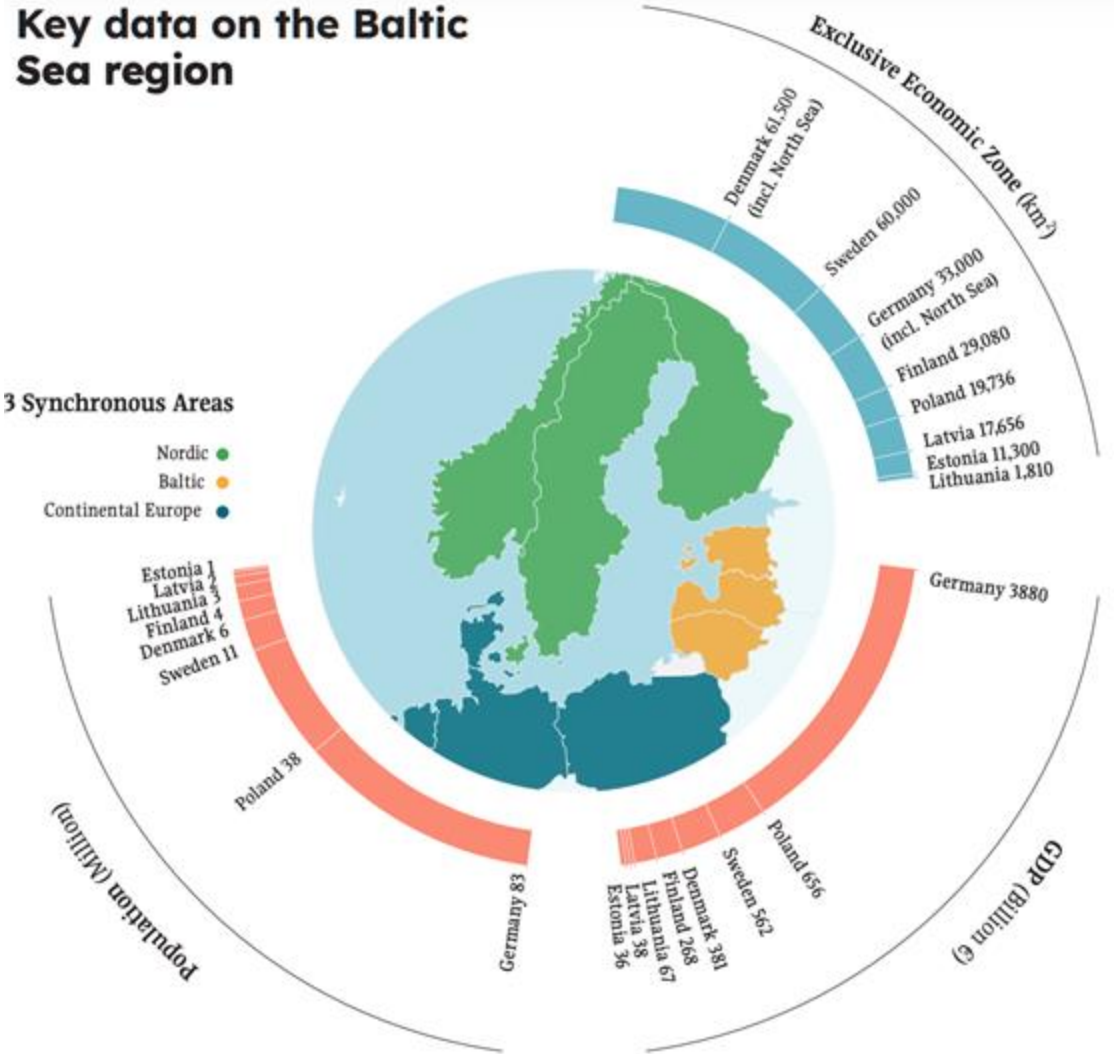
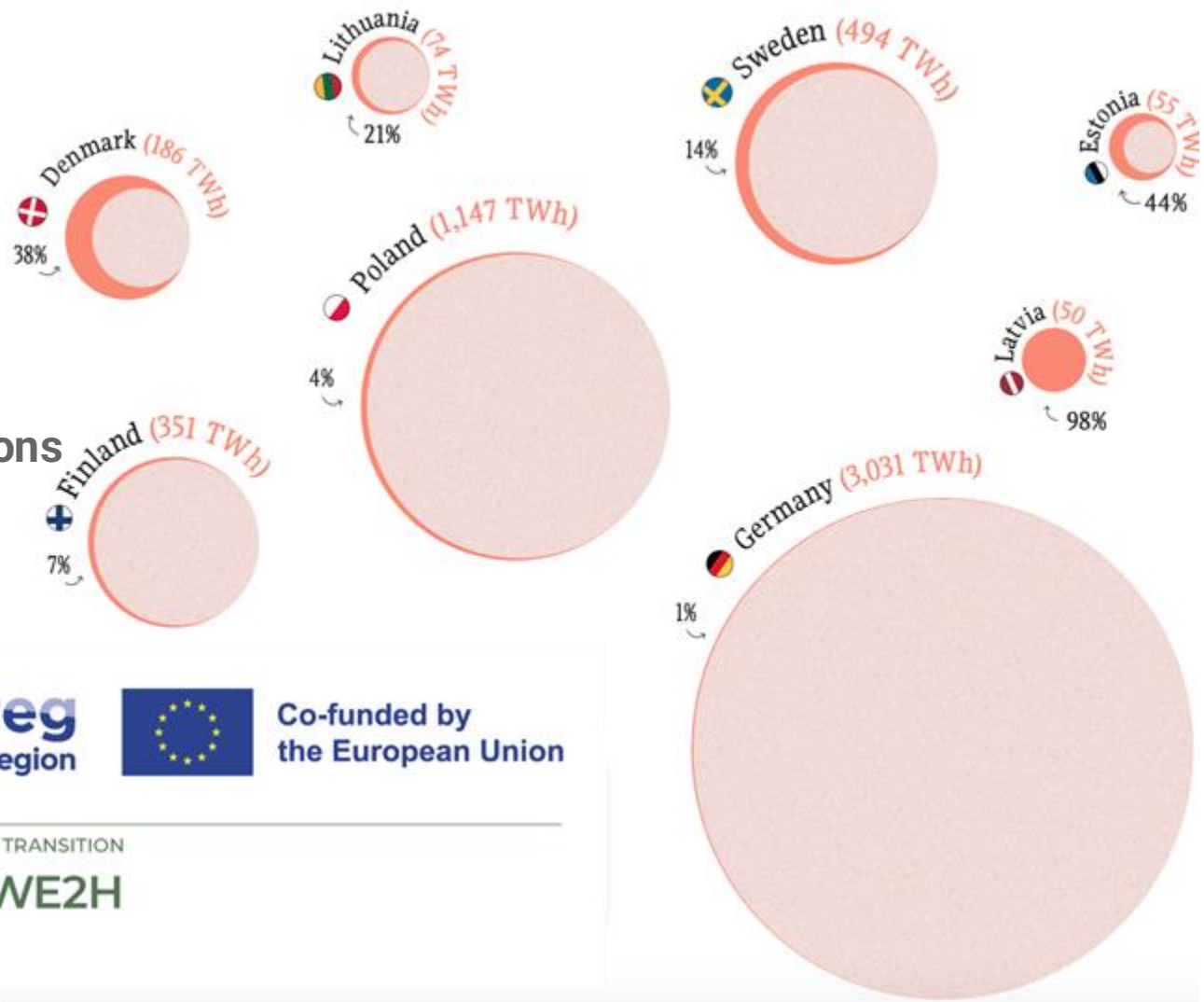
Basic observations



Basic observations



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Findings

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Findings

The Baltic Sea Region has **great importance in terms of geopolitics and energy**, and offshore-wind energy has great untapped potential

Due to the geographic, economic and demographic **diversity** of countries, it is particularly well suited to **transnational cooperation and partnerships**

Energy transport is very important – **pure** electricity or **embedded** in hydrogen or industrial projects

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Hydrogen applications can connect a lot of these dots

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Findings

Use of land for transmission 42 GW

14 high voltage powerlines

1000 meters wide

One 1,2 m pipeline underground

20 meters wide

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Vision

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Vision

Endless possibilities

Poland: 33 GW possible

Sweden: 68 GW in discussion, 106 GW possible

Finland: 302 GW possible

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ENERGY TRANSITION BOWE2H

Vision

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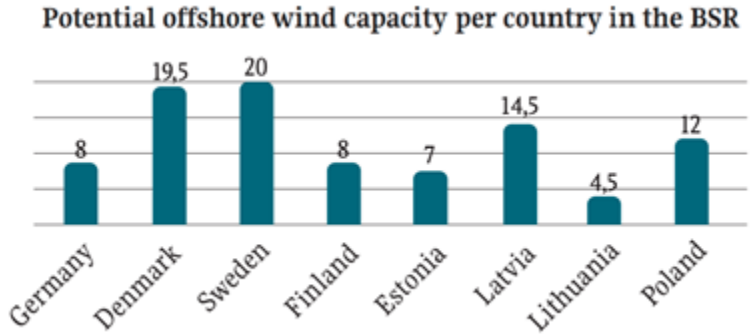
Reasonable?

93 GW for the Baltic Sea Region in 2045/2050



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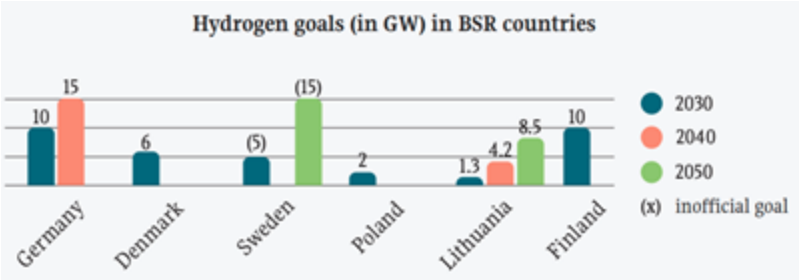
Vision

Hydrogen



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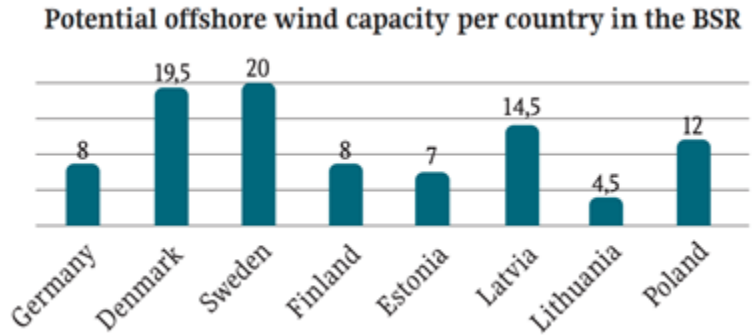

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Obstacles

Investors and industry see the lack of clear, binding political targets as a risk in the development of capital-intensive projects

Lengthy and complex planning and permitting processes increase uncertainty, risks and possible delays

A lack of expertise and skilled labour makes the timely implementation of projects challenging

Supply-chain shortages, affecting materials and equipment, increase costs, risks and delays further; this is compounded by global inflation

The many stakeholders can create acceptance issues over innovative projects involving offshore-wind energy and/or hydrogen

Hydrogen in particular suffers from uncertainties surrounding demand and uptake, as well as the cost of green electricity for electrolysis

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Recommendations

Innovative green technologies like offshore-wind energy and power-to-hydrogen can be greatly optimised through **transnational, region-wide planning**.

This way:

1. **Best practices** and lessons learnt in new domains like green hydrogen are **widely shared**
2. Supply chains and labour are **coordinated and developed in accordance with the planned project pipeline** in the region
3. Power production can meet demand – both within countries and across borders, and for power-to hydrogen projects
4. **Maritime space** is used **more efficiently**
5. Resources in **skill and infrastructure-building are pooled** to maintain a leading position for the Baltic Sea Region and the EU

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Policymakers

Recommendations

Develop **consistent long-term policies** for green transitions, focusing on offshore wind, hydrogen, and interconnected power and gas grids. **Harmonise national strategies** to boost offshore-wind power and hydrogen efficiency. Adapt tender rules, provide financial incentives, and establish grid access points to **encourage investments**. **Simplify permitting** processes to reduce delays. **Foster acceptance** measures in project planning. Create a framework for **transnational exchange** between advanced offshore & hydrogen countries, and starters. Form a regional training programme to **boost skilled labour**.

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Local authorities

Recommendations

Engage communities early in project planning to **build trust and minimise opposition**. Maintain transparent communication and **support dialogue** between developers and civil society. Offer economic **incentives to local communities** and promote education to raise **awareness about renewable-energy** benefits.

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Energy industry

Recommendations

Choose project sites **compatible with current and future transmission** systems. Form public-private partnerships and consortia to **share costs and expertise**. **Strengthen supply chains** and **provide career opportunities** in offshore-wind and hydrogen sectors.

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Grid operators

Recommendations

Develop cross-border electricity and hydrogen **infrastructure**. Draft **funding strategies** for transmission infrastructure and **increase grid capacity** for renewable energy. Implement **smart grid technologies**, seek partnerships, and establish **national hydrogen TSOs** for a coordinated hydrogen grid.

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Research institutions

Recommendations

Create a hydrogen valley for **large-scale training and practical experience**. Research energy-system costs, **identify bottlenecks** and **study socio-economic effects** of renewable projects. Develop **innovative financing models** to support green-energy initiatives.