Danish German Renewable Energy Storage & Utilization – Local Transition (DG RESU-LT)

Background

A core priority in the regions of Schleswig-Holstein, Zeeland, and Southern Denmark (fig. 1) is to turn their rich renewable energy (RE) production into a key driver of local development (socio-economically and environmentally). To do so, the ambition is not simply to become net exporters of renewable electricity but to benefit from all steps of the RE value chain (fig 2).

Extensive strategic energy planning across sectors is necessary to achieve this, not least in relation to integrating the power-to-x value chain from procurement and production to the attraction of industry and other end users (fig 3).

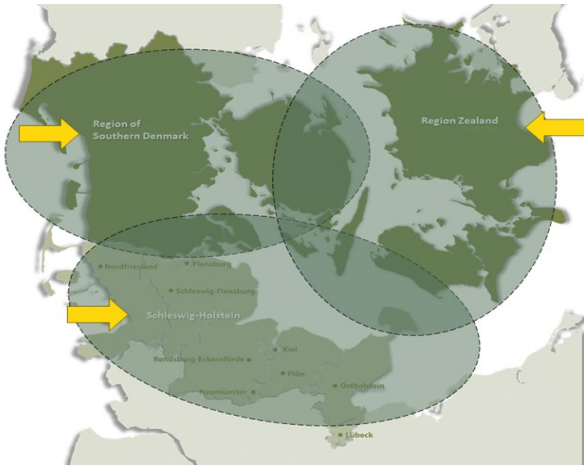


Figure 1. Sustainable energy regions

Importantly, all three regions also aim to enhance their mutual collaboration, especially across the German-Danish border, to benefit from the added value of coordinated strategic energy planning and knowledge exchange. Together, the regions aspire to develop the critical mass of innovation, knowledge transfer, investment, and political pull required to establish themselves as leading sustainable energy regions in Europe.

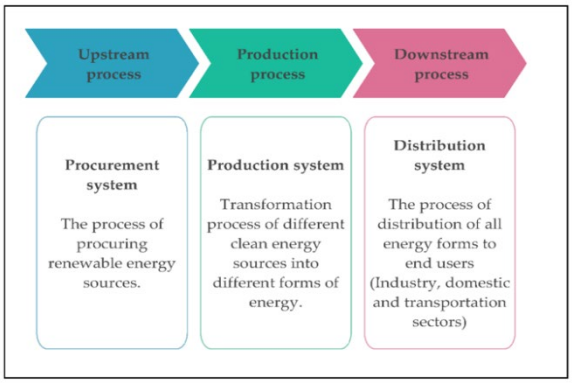
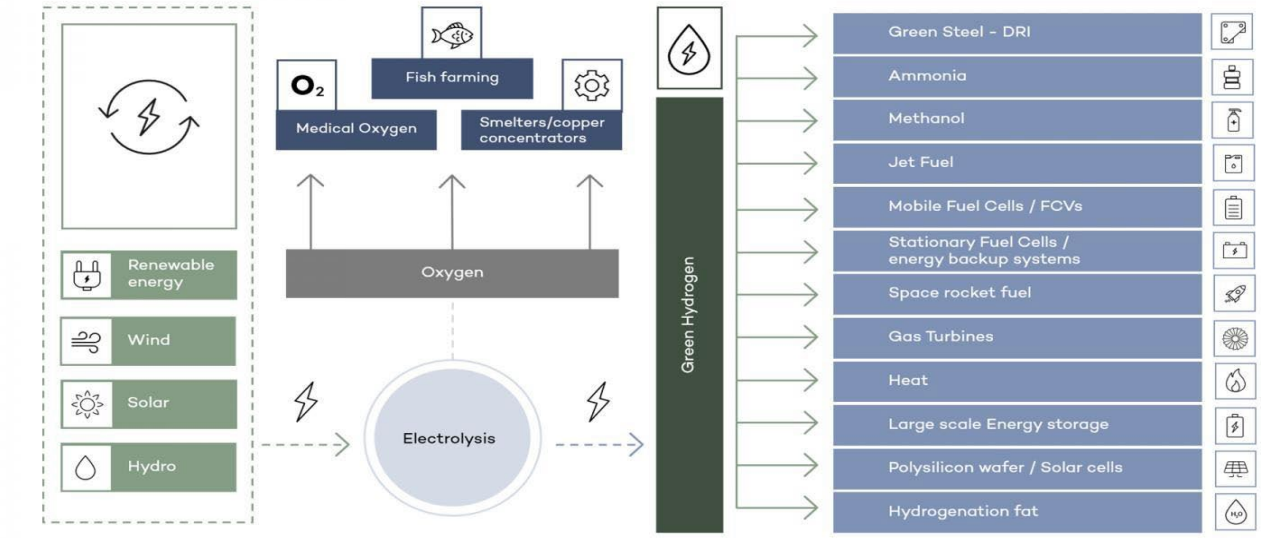


Figure 2. Renewable energy value chain[3]

Nevertheless, these ambitions also face challenges.

- Cross-regional strategic energy planning is only in its initial phase and still lacks coordination, especially regarding integration of power-to-x into the energy system.
- Models of energy system integration providing a qualified basis for reaching cross-sector and cross-regional consensus need to be developed. These should include assessments of socioeconomic and environmental benefits.
- Cross-sector coordination and alignment needs further development.
- Citizen involvement and support needs to be strengthened.
- Inter-regional knowledge and networks are insufficient to facilitate coordinated strategic energy planning, especially across the border.
- The Danish-German border mostly function as an obstacle rather than an opportunity for regional energy planning and creation of added value through the green transition.
- Digitalization both in relation to regional ecosystem mapping and the development of solutions for connecting and driving energy system integration is largely missing.



Project Aims

The objective of DG RESULT is to facilitate the formation of strong and interconnected "sustainable energy regions" across the Danish-German border with specific focus on the integration of power-to-x into the energy system. More specifically, the aim of the project is to develop a white paper containing a shared framework and knowledge base for strategic energy planning and the roll-out of the green transition in the regions. This will be organized as a collaborative effort between sectors and be informed by research and consultancy dedicated to the topic. Throughout, the focus will be on enhancing local benefits socio-economically and environmentally.

Project Partners

The preliminary project consortium consists of the three members: Gate 21, Centre for Border Region Studies at the University of Southern Denmark, and SCS Hohmeyer |Partner GmbH, with long-term expertise in the field of renewable energy systems on both sides of the Danish-German border. and with a sound network of close contacts to municipalities, industry and businesses, scientific institutions, NGOs and politics. The consortium members will enable the formation of an effective network of regional stakeholders as well as a

Figure 3. Power-to-X value chains - The next industrial revolution. Source: AFRY.COM, 2023.

strong cross-border cooperation with a focus on feasibility and scaling opportunities.

Duration

The project is planned to run for 36 months from primo 2025 till primo 2028, corresponding to the framework of the DE-DK Interreg 6A program.

Budget

The maximum total budget depends on the number of affiliated project partners and the extent of the work packages. A preliminary budget together with the first project sketch will be sent by the 3rd of March 2024 to the Interreg secretariat. Final application deadline is 29th of April 2024.

Project Design

- The project is structured around two pillars that will be directly connected through ongoing collaboration:

  1) Sustainable energy regions.
  2) Research and consultancy.
- Each sustainable energy region and each research and consultancy topic will be structured around a work package.
- Each sustainable energy region will be composed of stakeholders from: 1) the public sector; 2) the private sector; 3) civil society; 4) cross-sectoral actors. All of these must be active in the given region.
- A group of network partners and an advisory board will inform and support the activities within and between the two pillars.
- Gate21 will be lead partner and administer the project with support from a coordinating group with representatives from the two pillars.

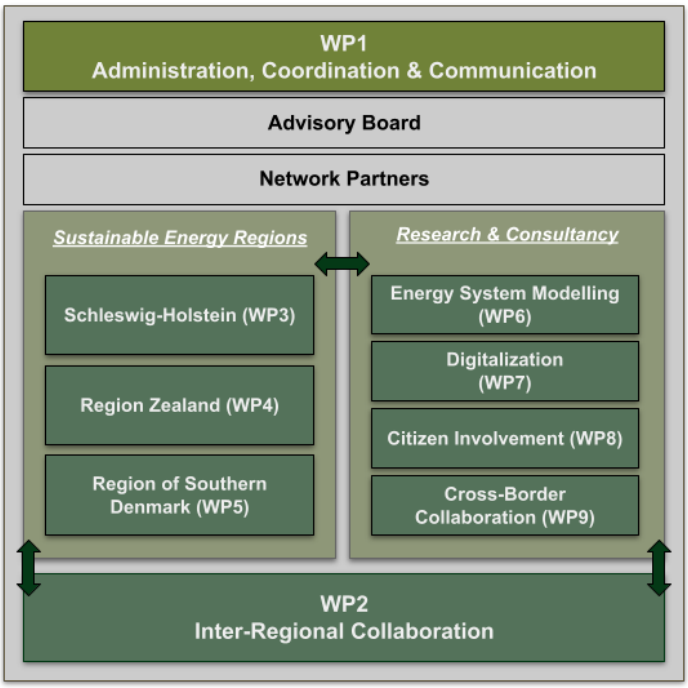


Figure 4. Project Design

Method

Each work package will be structured to meet their specific objectives as determined by the project aims. In addition, the project will have a strong focus on collaboration and coordination between partners both within the individual sectors and regions and across these. Throughout the work will be supported by applied research and consultancy developed in direct cooperation with the regional partners.

The methodological backbone of the project will consist of a series of workshops in which regional stakeholders and the project partners will work together in a process of identifying and prioritizing strategic energy targets for the regions based on multicriteria analysis and the specific regional preconditions (e.g. existing energy plans, potentials, and the challenges). This process will be led by prof. Olav Hohmeyer, former IPCC Lead Author and expert in renewable energy system modelling.

Outputs

1. White paper containing targets, priorities, and pathways for an integrated regional energy system.
2. Knowledge base consisting of:
   a. Maps (energy ecosystem, regional stakeholder composition, socio-economic potentials and challenges, governance structures and additional framework conditions).
   b. Recommendations (policies, digital solutions, citizen involvement, cross-border collaboration).
   c. Reports detailing the results of each WP.
   d. Library (existing energy plans, regulations, policy-recommendations, literature, etc.)
3. Coordinated networks and channels for knowledge sharing.