N°ICE North European Infrastructure of Clean Energy

N°ICE is a strong foundation for cooperation between North European regions, clusters and politicians to develop tangible deliverables within the value chain of clean energy, transport industry and services. The main goal is to align local projects and initiatives so that they contribute efficiently to the common mission of creating a sustainable, innovative and conjoint North European Infrastructure of Clean Energy.

Representatives from academy, industry and the public sector are part of every cluster involved in the N°ICE network. This triple helix model for the cluster organizations provides a strong foundation to provide assistance to different actors and the cross-sectorial setup involving SMEs and other stakeholder groups from the relevant industries related to sustainable energy systems (see focus areas below). Combined this activates a large and diverse stakeholder population that provides innovative solutions for complex value chains and can work in partnerships to meet regional demands in the NSR (and international demands). Consequently N°ICE is well-positioned to build bridges and support SMEs in accessing new cluster services to open up new innovation potentials for them.

At the same time the N°ICE network of clusters and their entrepreneurs cover a wide spectrum of innovative solutions wherein the regional solutions put in place are often very different. From a system optimization point of view this holds the potential to offer and apply solutions from different networks to other regions and cities for their specific local challenges in order to find the best possible solutions.

Initial members of the consortium and the N°ICE Steering Committee are the triple helix networks CLEAN (Denmark), Oslo Renewable Energy and Environment Cluster (Norway), Renewable Energy Hamburg (Germany) and Sustainable Business Hub (Sweden), Innovatum (Sweden) and supplemented by the windcomm network (Germany/Schleswig-Holstein). The networks cover the North-Sea area from Hamburg to Oslo (STRING region).

The set of focus areas in the N°ICE network is as follows:

- Further establishing and integrating a "network of networks" between North-EU partner clusters (ensuring sustainability of cooperation by conjoint projects with a long term perspective and geo-strategic considerations ensuring presence on all highly competitive markets in the NSR).
- Integrated sustainable clean energy system (incl. solar and wind energy, biomass gas and heat).
- Energy efficiency and urban processing systems (incl. heating/cooling grids, e-/CH4/H2 gas grids, charging/fueling solutions for e-mobility, cities/urban enabled by ICT Telecomm/App/Web solutions).
- Optimized applications for storage, heat and cooling (incl. district-heating/cooling, power-to-heat, solid-matter biomass, power-to-gas, hydrogen/fuel cells, and methane reservoir/cavern).
- Upgraded clean transport and mobility markets (incl. Bio/CNG/LBG/Fuels, EV/FC/Hybrid-VS).
- Application interfaces with enabling technologies for production/services (incl. non-technical interfaces like resources, financing, framework conditions, markets, ICT, trading).
- Energy efficient households and living (incl. district heating, heat/cooling/power/resource/ mobility efficiency, awareness).
- Efficient legal framework conditions and financing (specialized, grants, public procurement).

"Sustainable Energy" providing system solutions rather than optimized single component solutions has been identified as key and primary focus area within this framework of common areas. In connection to this focus area by the N°ICE clusters an upgrade of cluster services shall be carried out for regions/cities, SMEs/stakeholders and between the clusters forming strong cross-cluster collaboration besides existing market competition and across borders:

Optimization of general cluster service portfolio

- Enhance cooperation methods between the clusters:
    - Mutual toolbox development and sharing of best practices (e.g. ensuring inflow of research and practical experience from relevant institutions like universities, on improving cluster organizations' performance and services).
    - High quality Matchmaking and other targeted events – repetitive and alternating between cluster regions - for qualitative partnerships by granting and facilitating direct access to decision makers/peers (e.g. B2B, B2Cluster, Cluster2Cluster including business and knowledge institutes).
    - Innovation management methods (e.g. patent portfolio (IPC), business intelligence, market screening).
    - SME support schemes (e.g. management, finance, and internationalization tools).
    - Information exchange (market related, technology related, framework related).
    - Innovation financing methods (e.g. cross-cluster cooperative investment fund, crowd-funding/-investing, project finance, private equity/VC, certificate schemes).
- Develop barrier free communication platform and infrastructure (physical meetings, virtual meetings by tool for online meetings via audio and video, online-survey tools, webinars etc.).
- Develop service matrix (incl. SWOT-analysis, identify gaps in the service portfolio).
- Develop template for cities to screen their needs and share it consistently with the N°ICE network (incl. cooperatively identify needs and gaps in sustainable solution portfolio).
- Develop joint service innovation program (e.g. digitalization tools, market absorption practice, business model innovation, cross-sectorial symbiosis, innovation foresight in actor task groups i.e. innovation "radar groups").
- Develop joint service quality management principles (e.g. ensuring methodic impact analysis of the assessed services).
- Develop together "Code of Open Source Principles for Competition". Clusters can act as mediators for involved parties. They can bring together a variety of entrepreneurs that together are able to solve challenges from a system optimization point of view. Thereby up to a certain level clusters can use competition amongst the entrepreneurs as driver for new market development, sustainability and efficiency. This may also help cities/regions to develop guiding principles for cascading solutions from different regions to tackle their challenges. The codex could therefore define how to handle competition by:
    - Transparency.
    - System optimization.
    - Providing all clusters and their members with access to cities.
    - Assist in public procurement.

Optimizing services to SMEs and regional stakeholder

- Assist existing businesses to identify commercialization opportunities and thereby create new business opportunities for industry in the region.
- Support emerging innovative enterprises by bridging the gap between the development and commercialization of ideas into viable and sustainable enterprises and products (incl. new startup companies, initiatives and institutes)
- Support cross-border and multi-national innovation processes, abilities and projects:
    - Education and qualification on university and technical level.
    - Access to new markets with exploration trips/missions.
    - Product and service development.
    - Technology demonstration and implementation.
- Develop market integration methods for sustainable energy solutions in the NSR:
    - System analysis.
    - Energy asset mapping.
    - Innovation pooling and platforming.
    - Identifying and cultivating concrete, demand driven business opportunities (business models for establishing, operating, producing, storing, distributing, socializing, marketing and communicating sustainable energy solutions).

Optimizing support of regions and cities

- Become integral part of the regional development and urban planning processes (both regional and local levels).
  - Become a "solution warehouse" with a toolbox for challenges that we face in cities.
  - Conduct state of the art workshops for sustainable energy in selected NSR regions/cities (multi-cluster approach, cross- and multi-sectorial analysis).
  - Together with and for cities conduct solution pitches for future local challenges with trans-national focus groups (incl. technical, social, cultural stakeholders from all regions).
  - Identify optimization potentials within city and metropolitan region structures with a system optimization and even new system approach. This implies not focusing only on the status quo but present existing state of the art solutions – from different regions – that contribute to the vision of the future city with the future sustainability targets. Example: Industry shall not provide heat-pumps but an approach how to be energy efficient in a whole quartiers related to heat looking at today and visioning tomorrow.
  - Become joint demonstrator region for sustainable energy solutions (e.g. use of sustainable energy for cities)
  - Support cities in a mediator function to strengthen the cooperation with each other with regard to their climate protection, energy efficiency and sustainable energy targets (city-to-city communication).
  - Actively engage with other relevant initiatives (regional, cross-regional, NSR, EU) to avoid duplication of efforts and exploit synergies wherever possible.