

North Sea Energy 2020-2021

Publieke samenvatting / Public summary

Aanleiding

The North Sea will be a pivot in accelerating the energy transition towards the targets of the Paris climate agreement to substantially reduce greenhouse gas emissions and limit global temperature increase. At the North Sea a considerable role is foreseen for the deployment of offshore wind and implementing carbon capture and storage. Without these options accelerated growth of a low-carbon and sustainable energy supply and industry is difficult and costly to achieve. The foreseen strong build-up of offshore wind in the next decades comes with several challenges such as required cost reduction, reducing North Sea spatial claim by multi-use and synergy with other use functions. Managing, transporting and integrating energy in the energy system at acceptable system cost for society is another important challenge. The build-up of offshore wind assets, the need for CO₂ transport and storage infrastructure on the one hand and the decline of gas assets on the other hand, offers an opportunity; System integration between these may be of added value to accelerate the energy transition at the North Sea.

Doelstelling

This innovation project contributes to identifying and developing opportunities and innovations within TKI Gas program line Geo Energy. The aim of the North Sea Energy program is to identify and assess opportunities for synergies between low-carbon energy developments offshore. The unique position of the North Sea Energy program is that it takes into account all dominant low-carbon energy developments at the North Sea such as: offshore

Projectinformatie / Project information

Projectnummer / Project number

TKITOETKI2020-04-GE

Subsidiebedrag / Grant amount

€ 1.960.000,00

Algemene informatie / General information

Penvoerder / Secretariat

TNO

Volg Topsector Energie op X / Follow Topsector Energie on X

@TSEnergie

wind deployment, natural gas developments, carbon capture and storage, energy islands and energy interconnections, hydrogen infrastructure, energy storage and more. In this (fourth) phase of the program a particular focus will be placed on the identification of North Sea Energy Hubs where system integration projects could be materialized and advanced. This includes system integration technologies strategically connecting infrastructures and services of electricity, hydrogen, natural gas and CO₂. A fit-for-purpose strategy plan per hub and short term development plan will be needed to fast-track system integration projects, such as: offshore hydrogen production, platform electrification, CO₂ transport and storage and energy storage.

Korte omschrijving

Various technical options are assessed in the North Sea Energy program (NSE) that provide system linkage of offshore renewable energy with that of oil and gas infrastructures. The program offers new perspectives regarding the technical, environmental, ecological, safety, societal, legal, regulatory and economic feasibility for these options (see work package structure below). Also optimizing operation and maintenance for offshore assets in wind and oil and gas sector is part of the activities. An integrated energy system model is used to assess system dynamics of introducing offshore system integration concepts and scenarios. All in all, this phase of the program will take the first steps to develop offshore cluster strategies and propose a portfolio of actions for stakeholders and possible pilot and demonstration projects as a follow-up. An important element in all work packages is the participatory process, knowledge sharing and knowledge brokerage. Consortium and external stakeholders will be involved through participation in workshops and alignment meetings to facilitate knowledge sharing, awareness and co-creation of the program deliverables.

Resultaat

An important result is a roadmap plan for offshore system integration at the North Sea towards 2050. This will integrate the multidisciplinary results

generated in all phases (also program phases NSE1, NSE2 and NSE3) of the North Sea Energy program. It will include practical timelines to develop system integration projects over time and assess whether alignment of investment agendas in infrastructure developments or transformation yields barriers that need to be resolved. A high-value result of this phase will also be the process of developing a roadmap together with partners within the consortium and externally. This inherently embeds co-creation of knowledge and collaborative development of future action pathways to actually deliver concrete system integration projects/pilots and demonstrations as a spin-off from this phase of the program. Many results of the program will also be published in the interactive North Sea Energy Atlas, which is foreseen to include key energy information of other North Sea countries, and also to include other renewable energy (aquatic biomass, solar, wave- and tidal energy), offshore energy storage potential and ecological values maps.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

Voor meer informatie over de Topsector Energie, ga naar www.topsectorenergie.nl.

Voor meer informatie over de TSE / Energie-Innovatie regelingen die RVO aanbiedt, ga naar www.rvo.nl/tse.