



## 3rd Press Release

### Energy System Planning

ELEXIA’s focus is on three distinct pilot cases:

a **maritime port operation** in Portugal, an **existing neighbourhood** in Denmark and the design of a **city district extension** in Norway (Dokken).

Each pilot requires real-time and planification tools. In the past 12 month, the partners have continuously developed tools to support and demonstrate the inter-sectoral integration of the energy system. One aspect of the project is to develop an open-source energy system planning tool for districts. To this end, the ELEXIA consortium adopted the growing and feature rich open-source value tool SpineOpt developed at [VTI](#).

**SpineOpt** is an energy system optimisation model that is fully customizable, has flexible temporal scales within the same optimisation problem, integrate the energy chain allowing for sector integration assessment, and is fully open source.

During the first year of the project, the energy system planning tool developers have engaged the discussions with the pilot sites to understand their needs, the technical requirements of the pilot site, and the vision they have for their pilot site. Each requirement is defined and then translated in modelling language within the planification tool.

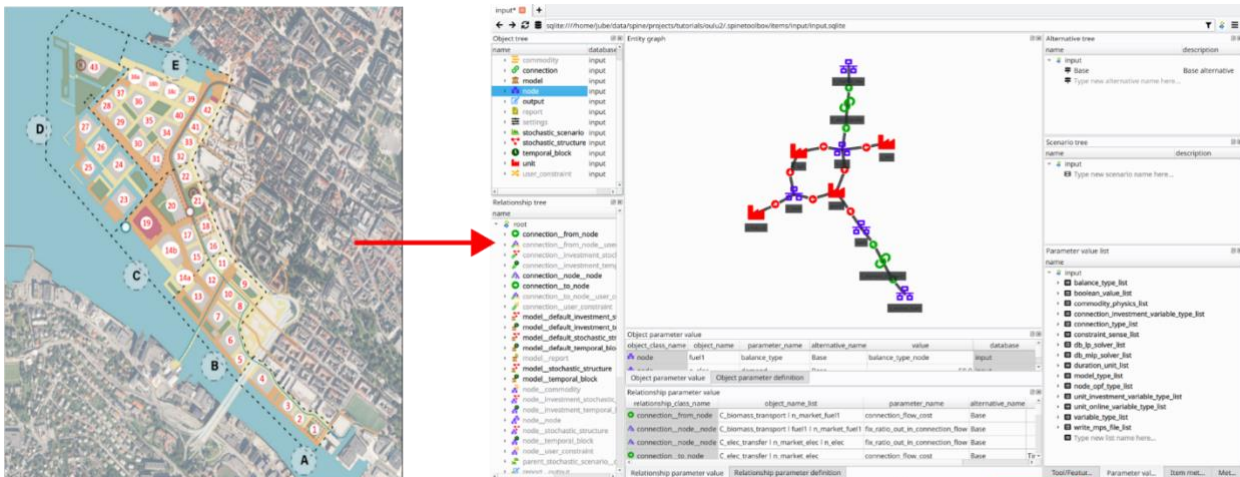


Figure 1: From urban design to model implementation in SpineOpt

On top of pilot case definition within the planification tool, power flow model was implemented in the tools for assessing the technical limitations of network expansion within the pilot cases. Multiple price and emission scenarios are being built and will be used to drive the planification optimisation. The tool will also integrate material flows such as the municipal solid waste collection that feeds the local plant in the Dokken pilot site (Norway). A very important feature is the capability to generate multiple technology and economic scenario that can be run in parallel which makes it easier for stakeholders to compare and understand the results. For instance, different heat pump technologies with various heat source (e.g. sea water, district heating, air, ground) may be explored to find out which technology pathway is most economical and support best the development of the area as well as reducing the emissions associated to the energy used.

The implementation of the planning tool is undergoing at **VTT Technical Research Centre of Finland Ltd.** Once completed, the planning tool will allow analysing future options in a local site with several energy sectors and several actors in the pilot sites within the ELEXIA project.

## ABOUT THE PROJECT

ELEXIA (Demonstration of a digitized energy system integration across sectors enhancing flexibility and resilience towards efficient, sustainable, cost-optimised, affordable, secure, and stable energy supply) is anchored under the EU Green Deal & the EU Strategy for Energy System Integration. It is in line with the Paris Agreement and the UN's 2030 Agenda for Sustainable Development.

ELEXIA contributes to establishing concrete pathways to achieve fossil fuel independence by harnessing the energy system's latent flexibility through integration across sectors, data intelligence, and planning towards 2050 European goals.

## CONSORTIUM



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