Dear friends and colleagues,

In this rich edition we showcase the potential of sustainable plus energy neighbourhoods (SPENs) in Norway, Spain, Austria and the Netherlands, while providing a wealth of fundamental reports, guidelines, innovative processes and tools. We invite you to delve into our real-life projects and learn more about integrated energy design at the neighbourhood scale (IEDN).

In addition, we present the Commissioning Framework for SPEN, a systematic process for ensuring that neighbourhoods perform according to their design intent and meet the plus requirements from project initiation and design, and throughout the planning, construction and use phases. Such process aims at achieving increased energy efficiency, reduced operating costs, improved indoor environmental quality, enhanced asset longevity, and better maintainability and reliability.

How innovative financing schemes can support collaborative energy initiatives under SPENs and ensure inclusion and wider participation in implementation? Partners have developed a thorough overview of funding opportunities and a strategy for connecting them with syn.ikia’s innovations and investors.

Additionally, a detailed techno-economic analysis for syn.ikia exhibitors, provides insights into potential revenue sources, value capture opportunities and financial strategies related to SPEN business models.

Enjoy the read and stay tuned for more.

The syn.ikia Coordinator
Niki Gaitani, NTNU

New video: Deep dive into the syn.ikia Sustainable Plus Energy Neighbourhoods demos
New reports

Report on the commissioning of plus energy neighbourhoods in the four climatic zones - A structured approach to commissioning of Sustainable Plus Energy Neighbourhoods (SPENs)

As a tool for the structured performance documentation of SPENs, this report addresses the evaluation of the building design, construction, and operation of six demonstration projects in four different climate zones using a common commissioning framework.

The framework includes detailed documentation of the project requirements, building design, fabric, and technical systems. Additionally, the report presents monitoring plans related to the main key performance indicators (KPI) of the demonstration projects.
IEDN Integrated energy design planning guidelines for plus energy neighbourhoods (D2.9) - A guideline for Integrated Energy Design for Sustainable Plus Energy Neighbourhoods

Based on the experiences from development of the four syn.ikia demonstration neighbourhoods, syn.ikia partners have created a guideline for the planning and design of SPENs. Since the process involves close interdisciplinary cooperation, the target groups for the IEDN guideline include developers, urban planners, housing cooperations, architects, engineers, and energy specialists. The guideline includes descriptions of process, methods, and tools to apply in the planning and design phases of such neighbourhood projects. It is organized in four main planning and design phases: 1) Masterplan, 2) Zoning Plan and Detailed Plan, 3) Schematic Design and Design Development, and 4) Detailed Design. Within each of these stages, a set of key activities are described.
An overview of financing opportunities and a strategy to link them to syn.ikia innovations and investors

This report provides an overview of the financial mechanisms, schemes, and resources that could play a role in accelerating the implementation of SPENs across the four syn.ikia countries. It also strives to propose a strategy to attract investors to realize the innovation(s) needed in a SPEN. It lays out policy recommendations regarding the barriers and opportunities of the available financial schemes.

These elements are vital for the realization of SPENs, since many investors, both public and private, are looking for new green and sustainable investment opportunities but...
these are often challenging to pursue due to the stakeholder diversity and complexity of innovations involved in the realization of a SPEN.

Identification, design and evaluation of business models

This report provides an in-depth analysis of the business models suitable for sustainable plus energy neighbourhoods (SPENs), focusing on long-term viability and potential revenue streams, especially concerning surplus energy production. The report encompasses various business model formulations, regulatory challenges, stakeholder perspectives, and optimization strategies within the context of the four syn.ikia demonstration sites in Austria, the Netherlands, Spain, and Norway.

Through a detailed techno-economic analysis on the syn.ikia demonstrators, the report offers insights into the potential revenue sources, value capture opportunities, and financial strategies pertinent to SPENs business models.

News from the syn.ikia demos

News from the Dutch demo
Since November the model predictive controller (MPC) developed by TNO was implemented step by step in three apartments in Uden. The aim of the MPC is to use the on-site solar energy as much as possible. TNO has defined a cost function and used a predictive model to optimize the consumption of solar energy. TNO is now in close contact with the tenants for their feedback of the MPC and is monitoring closely the data of these apartments to get input for optimising the MPC. In the upcoming
months tenants will be interviewed to evaluate their experience with the MPC and the comfort levels in their apartments.

Sneak peek into the Spanish demo!
Construction works are well underway and building manufacturers are now working on interior finishes and installations. The syn.ikia consortium will have the pleasure to visit the building during its upcoming project meeting in April. Stay tuned for updates!

News from the Austrian demo: Laying of the first stone of GNICE project

On February 21, representatives from the city of Salzburg, the housing association Heimat Österreich, the active building companies, experts from SIR and the energy consultant ECA met on the site of the housing project „Gnice“, located south of Salzburg.
Heimat Österreich Director, Stephan Groeger, presented the project. 250 apartments will be built (social housing, discounted apartments to buy and apartments for disabled or elderly people). Additionally a kindergarten, a doctor, a fair trade shop and rooms for common use will be situated in the ground floor areas. This project will be built using a combination of brick, concrete and wood and will be heated with the energy from wastewater and thermal energy.

For these large fields of soil collectors are situated below the underground parking. A large photovoltaic plant on the roofs will produce electricity for the heating system and for tenants' use.

Earth collectors are laid under the floor slab, which will provide environmentally friendly energy for hot water and heating. A simulation to test the climate resilience of the residential complex was carried out, in which overheating, ventilation and water drainage during heavy rain events were checked and recommendations for planting and materials were made. Construction started in November 2023, and will be finalised in Summer 2026.

Learn more about the Austrian demo

News from partners

[Housing Europe] Urging the EU to Take 3 Steps for Affordable Housing: Housing Europe's Manifesto Gains Strong Support
EU urged to prioritize affordable housing through Housing Europe's Manifesto, backed by MEPs and Wallonia's housing minister. Over 100 stakeholders call for a new housing approach within the EU to combat the crisis.

Three key steps proposed:
1. Adopt a new housing paradigm
2. Support fair energy transitions
3. Address housing exclusion and homelessness at the root.

Proposed measures include creating a Task Force led by a European Commission Vice-President and establishing a transformative fund for renovations. Housing Europe emphasizes people over profit in this new paradigm. The initiative aims to mobilize policymakers and citizens around #VoteNewHousingParadigm.


In a new development for Syn.ikia, a scientific publication with the details below has been published, introducing a business model that could significantly enhance the economic foundation of sustainable energy practices within the SPENs of Spain, Norway, the Netherlands, and Austria. The study outlines a streamlined power purchase agreement (PPA) tailored for local energy communities, aimed at stabilizing, and securing revenue streams from solar energy production. This business model ensures balanced and practical solution for energy transactions, benefiting surplus energy sellers of SPENs. It represents a strategic advancement in the pursuit of plus-energy neighbourhoods and underscores the commitment to sustainable development of communities through financially viable business models. This paper can serve as an interesting read to understand an economic perspective for integration of renewable energy solutions in community settings.

[DTU] DTU has been working on the modeling and control design for D4.5. DTU observed good results in the control of HVAC systems considering CO2 emissions and PV generation self-consumption in the simulation (Norwegian and Austrian demos), co-simulation (Spanish demo), and implementation (Dutch demo). Furthermore, the abstract of the paper “Optimal price signal generation for local energy management using flexibility function” was accepted and presented during the Smart Energy Conference in Copenhagen. A complete version of the paper was provided and submitted to the Smart Energy Journal. DTU also presented demand-side management results in the syn.ikia demonstration cases using the flexibility function in the framework of the International Energy Agency Energy in Buildings and Communities Programme (IEA EBC Annex 82).

DTU is also organising a Summer School: **Time Series Analysis - with a focus on modelling and forecasting in energy systems Summer School**
Date: August 19-23, 2024. Venue: TBD. More information [here](#).