

Sustainable Plus Energy Neighbourhoods

SPEN

Smart Energy Summit

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More than a group of connected buildings with a surplus of renewable energy

Positive Energy Neighbourhoods (PEN)

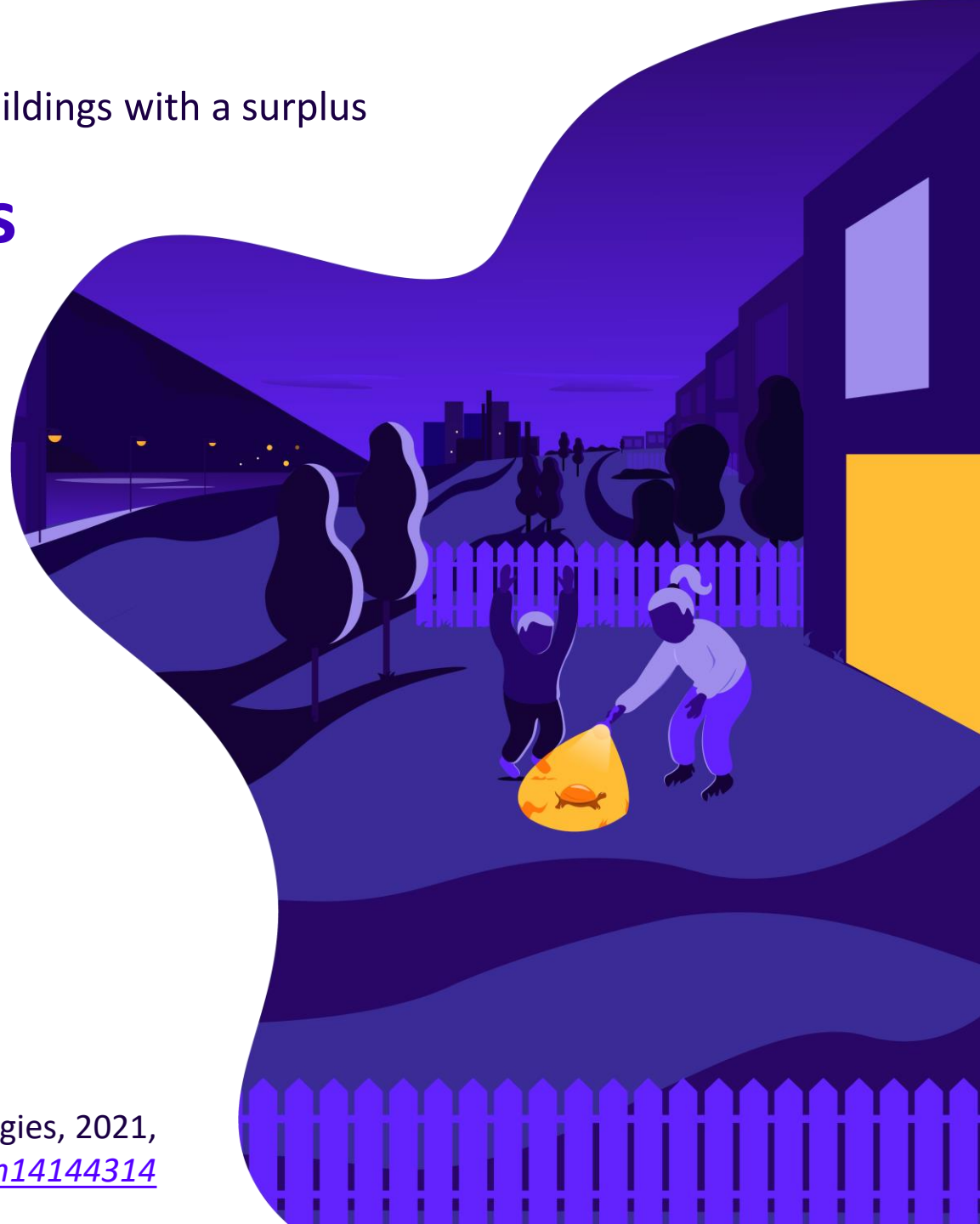
“Positive Energy Districts are **energy-efficient** and **energy-flexible** urban areas or **groups of connected buildings** which produce net zero greenhouse gas emissions and **actively manage an annual local or regional surplus production of renewable energy**. They require integration of different systems and infrastructures and interaction between buildings, the users and the regional **energy, mobility and ICT systems**, while securing the energy supply and a good life for all in line with **social, economic and environmental sustainability**.”

JPI Urban Europe, SET Plan Action 3.2

<https://jpi-urbaneurope.eu/ped/>

Sustainable Plus Energy Neighbourhoods (SPEN)

An evaluation framework for Sustainable Plus Energy Neighbourhoods, Energies, 2021, 14, 4314. <https://doi.org/10.3390/en14144314>



Sustainable Plus Energy Neighbourhoods SPEN



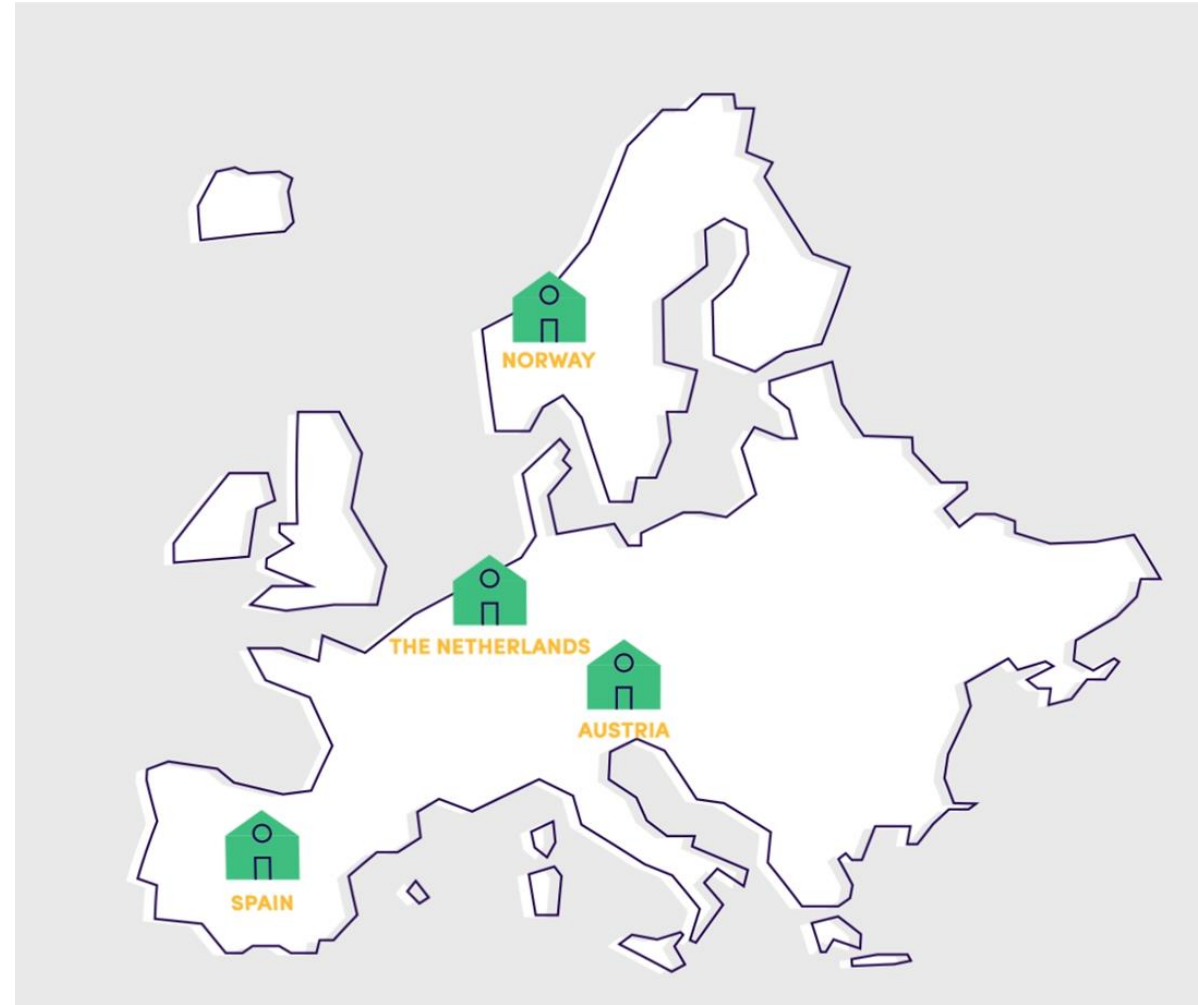
The syn.ikia innovation project within the EU Horizon 2020 framework involves 13 partners from six countries.
<https://www.synikia.eu/>



Positive Energy Neighbourhoods SPEN

Four demo projects

Enable the development of SPEN in different climates, regulatory and markets context.



Demo Neighbourhood Austria

Gneis District | Salzburg

Developer | Heimat Österreich



- New built and renovation
- 250 social housing dwellings
- 40 apartments distributed through Caritas to residents with special needs.
- A kindergarten

Passive systems

- Optimised insulated building envelope,
- Triple glazing and airtight building.

Active systems

- PV power plant;
- Ground and waste water source heat pump

Innovations

- Integral Energy Management
- Digital Cloud Hub
- Grey Box Models for SPEN-level optimization
- Smart EV charging at neighbourhood level
- Agent-based modeling of an energy community
- User engagement via FeedMe app



Benefits of the neighbourhood approach for DSM versus individual building approach

Shared assets for energy production and storage

- Valorise the renewable energy potential at neighbourhood scale
- Shared PV, heating systems, storage, EV charging, EV car sharing

Mix of building typologies

- Different energy use patterns for residential, tertiary, hospitals, kindergarten, etc.

Integral smart systems and energy management within SPEN

- Need for an energy manager for the SPEN – new business case opportunities!
- Opportunity to assign different shares of RE for each building based on modelling to optimize savings on the bills

SPEN as a market player within REC or CEC

- Sell the surplus of RE
- Provide energy flexibility services to external actors



Country Factsheets

Policy recommendations for sustainable plus energy neighbourhoods and buildings

Austria

The Netherlands

Norway

Spain

<https://www.synikia.eu/library/>

<https://www.bpie.eu/publication/policy-recommendations-for-sustainable-plus-energy-neighbourhoods-and-buildings/>



Legal frameworks for production, storage, sharing and selling of energy

	Collective self-consumption (CSC)	Renewable energy community (REC)	Citizen energy community (CEC)
Austria	2017 Electricity Act (ElWOG) Allowed only within a building	2021 Austrian Renewable Energy Act (EAG)	Electricity Industry and Organisation Act 2010 (Modified by the Gazette BGBl. Nr. 150/2021 on 27 July 2021)
Norway	Prop. 1 LS (2021–2022) punkt 9.6 Høringen til RME Allowed on private networks within one property	No framework available	No framework available
Spain	Royal Decree 244/19 (including use of public grid) – national level Decree Law 24/2021 – regional level	Definition first introduced in the Royal Decree-Law 23/2020	First mentioned in the Royal Decree-Law 23/2020 No CEC framework available
The Netherlands	Allowed in a regulatory sandbox Postcode approach	Transposed as ‘energy community’ in Energy Law 2022	

Policy recommendations Austria

Renewable energy and energy communities

- CSC must be extended beyond the building, similar to the implementation of CSC in other Member States such as France and Spain, which implemented CSC within a range of 2km.
- The establishment of one-stop shops to support RECs could be combined with one-stop-shops promoting energy renovation. This would be a good opportunity to promote the concept of SPENs.

Digital technologies and DSF

- Within RECs, the 15-minute imbalance settlement has to be set by default to encourage DSF.
- **Provide easy entry to companies offering additional services to SPENs in terms of DSF, such as aggregators or energy managers in the market**
- In testing and implementing the SRI, the current building level method should be adapted for the neighbourhood level for certifying SPENs.

Thank you!

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