



Norway



FACTSHEET

Policy recommendations for sustainable plus energy neighbourhoods and buildings


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Glossary of Terms



CEC	Citizen energy community
CSC	Collective self-consumption
DH	District heating
DSF	Demand-side flexibility
EED	Energy Efficiency Directive
EMD	Electricity Market Design
EPBD	Energy Performance of Buildings Directive
REC	Renewable energy community
NZEB	Nearly zero-energy building
P2P	Peer-to-peer
PPA	Power purchase agreement
REDII	Renewable Energy Directive
SPEN	Sustainable plus-energy neighbourhood
SRI	Smart readiness indicator

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Sustainable plus energy neighbourhoods

Sustainable plus energy neighbourhoods (SPENs) can contribute to decarbonising the building stock, while providing additional benefits for residents both at the building and neighbourhood level, enhancing wellbeing and a sense of community. SPENs can provide a range of shared spaces, services and facilities, such as shared heat pumps, PV panels, EV charging, EVs, bicycles, and common spaces with greenery, water and biodiversity. A neighbourhood approach provides additional benefits to demand-side flexibility (DSF) compared to single apartments or buildings. The optimisation of electricity and heat production and sharing renewable energy from various sources is managed by a system of twin modelling and automation.

Shared assets, services and collective energy production installations interact differently with the urban infrastructure thus they often require new legislative frameworks. This factsheet maps the progress of Norway in implementing policies regarding the following aspects relevant to SPENs: i) energy performance, ii) renewable energy and energy communities, and iii) digital technologies and demand-side flexibility¹. The factsheet provides an overview of existing gaps and barriers in the development and market uptake of SPENs, and provides policy recommendations.

The factsheet also lists the drivers, potential business models and policy support measures that enable investments and wider uptake of SPENs. The policy mapping and recommendations are based on desk research, ten interviews and two workshops with experts from the private and public sectors, including developers and local authorities involved in projects of SPEN and energy communities.

¹ A complete policy mapping is available in Boll et al. (2021)



1. Energy performance

The positive energy balance of a SPEN can be achieved with three subsequent steps:

- Sufficiency measures at neighbourhood level
- Reducing energy demand with energy efficiency measures at the building level
- Collective production and sharing of renewable energy

Energy sufficiency aims to reduce total energy consumption by analysing the need of services, spaces and the technology use in the design phase, by providing an adequate level of utility or services from energy. Sufficiency measures within SPENs, such as shared heating systems, EV charging stations, EVs, bicycles and common spaces, can reduce both operational and embodied emissions. The second type of measures that aim at reducing energy demand at the building level depend on building regulations for new constructions and renovations. Finally, after reducing the energy demand, the low amount of energy required should be covered by renewable energy produced and shared within SPENs.

The 2010 EPBD² mandated nearly-zero energy (NZEB) for new constructions by 2020 and minimum energy requirements for major renovations. Norway is not obliged to transpose EU Directives; however, national policies usually follow the EU guidelines. This section will describe in detail the implementation of minimum energy performance requirements in Norway, considering that more ambitious requirements at the building level will also have an impact on the energy balance of SPENs. All the syn.ikia demo projects have implemented ambitious targets at the building level going beyond the statutory minimum requirements. Given the scope and ambition of SPENs to achieve energy-positive performance levels, a broader set of policy provisions and support measures are being reviewed, including policies that aim to reduce lifecycle climate impacts.

² Directive 2010/31/EU

Minimum energy performance requirements

A **Norwegian Guidance** has been prepared by the Norwegian ministry on the calculation of primary energy for NZEBs with the purpose of aligning with the requirements of the EPBD (Directive 2010/31/EU). The Directive is linked to the primary energy use in buildings, while the energy requirements in the **Norwegian Building Regulations (TEK17)** do not use primary energy but refer to energy 'needs'.

The energy requirements in the Norwegian Building Regulations (TEK 17) have requirements with respect to the energy needs of new buildings and to the provision of 'flexible' heating systems to be installed in the buildings. The flexible heating system should cover at least 60%, and the use of fossil fuels is not allowed. According to the regulation, the energy need should be calculated including energy for lights and appliances (non-EBP uses). The calculation methodology is laid down in the **national standards NS 3031** and **NS-EN ISO 5200-1**.

To calculate the primary energy requirements in connection with the EPBD, the ministry has recently introduced a primary energy factor of 1, to be used for all energy carriers³. The primary energy factor describes the efficiency of converting energy from primary sources (e.g. coal, crude oil) to a secondary energy carrier (e.g. electricity, natural gas) that provides energy services delivered to end-users. According to the ministry, the decision to assign a primary energy of 1 for all energy carriers is based on the premise that energy use in Norwegian buildings is mainly from renewables.

The requirements with respect to the energy need (TEK17) and primary energy uses for NZEBs is listed in Table 1.

Table 1: Minimum energy performance requirements for new buildings, according to Norwegian building regulations (TEK17) and the NZEB level. Source: Building Technical Regulations, TEK 17 and Ministry of Local Government and District Affairs.

Building type	TEK17 Energy need (kWh/m ² per year)	NZEB* Primary energy use (kWh/m ² per year)
Small house	100 + 1,600/m ² heated floor area	86 + 1,600/m ² heated floor area
Apartment building	95	67
Office building	115	76
School building	110	91

* NZEB level does not include lights and appliances, while TEK17 level includes both.

³ <https://www.regjeringen.no/no/aktuelt/rettleteing-om-utrekning-av-primarenergibehov-i-bygninger-og-energirammer-for-nesten-nulleenergibygningar/id2961158/>

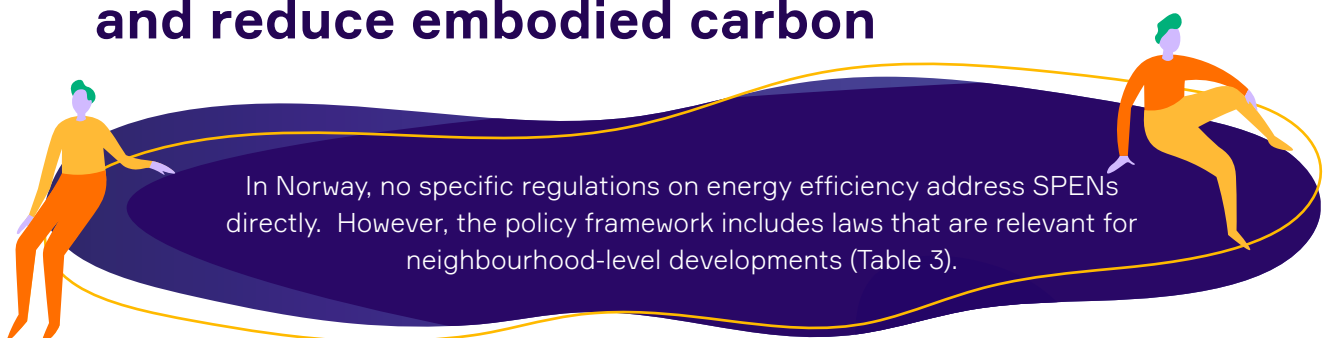
All buildings with the exception of traditional wooden constructions (log buildings) must meet the minimum requirements listed in Table 2.

Table 2: Minimum requirements for building components. Source: Building Technical Regulations, TEK 17.

Energy measures	Small house/ Residential block
U-value outer wall [W/(m ² K)]	≤0.18
U-value roof [W/(m ² K)]	≤0.13
U-value floor [W/(m ² K)]	≤0.10
U-value windows and doors [W/(m ² K)]	≤0.80
Air leakage figure per hour at 50Pa pressure difference	≤0.6

For major renovations, the requirements applicable are the same as the requirements for new buildings if the measures are covered by the building regulations.

Policies to encourage positive energy buildings and reduce embodied carbon



In Norway, no specific regulations on energy efficiency address SPENs directly. However, the policy framework includes laws that are relevant for neighbourhood-level developments (Table 3).

The Plan and Building Act § 11-7, § 12-5 of the building code (TEK17) limits the ability of municipalities to demand higher standards from developers than the requirements in the building code (TEK17). This means that municipalities cannot require more ambitious energy standards from developers.

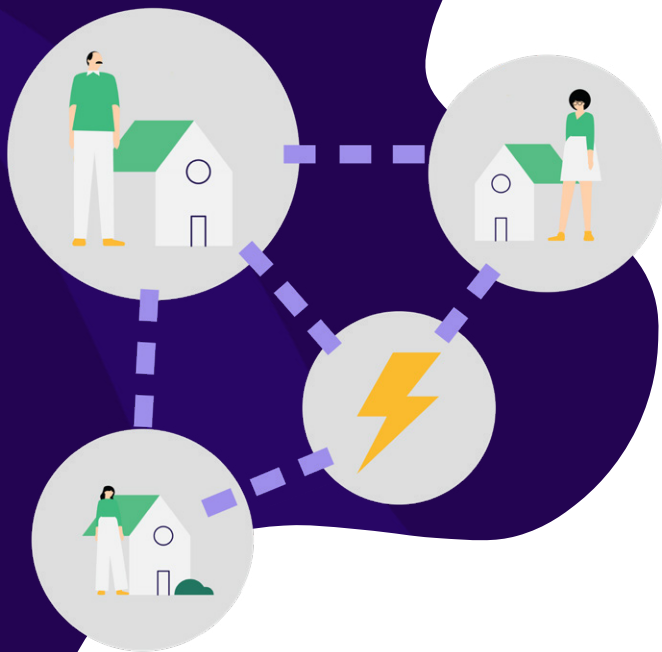
Table 3: Main policy updates. For a complete list of policies relevant for SPENs and energy efficiency, see Boll et al. (2021)

Policy	Implementation level	Main provisions
Regulations on electricity grid operation (Forskrift om kontroll av nettvirksomhet) § 13-1, § 14-2 - 14-3, § 15-2.	National	Building level: grid costs are partly priced by energy use and incentivise energy efficiency. There is a system where the costs related to the grid are billed based on: (i) how much energy is used, and (ii) how much power is simultaneously used. Neighbourhood level: grid costs cannot be settled with combined metering of several users unless costs are unreasonable (§ 14-3).
<u>Electricity Support Act (Strømsøtteordningen)</u>	National	The government has introduced an electricity subsidy scheme to help households deal with extraordinary electricity prices. The scheme works in such a way that when the market price (spot price) in the price area to which the household belongs exceeds 0.70 NOK per kilowatt hour (kWh), the state will pay 90% of the electricity price above this level. This support act is valid until the end of 2024. This also applies to jointly measured household consumption in housing cooperatives and condominiums as well as to agriculture and voluntary organisations.
Plan and Building Act §12-7 no 8.	National	Developers have an obligation to connect, but it is not obligatory to use DH in areas where DH infrastructure is already in place and where a new building is to be built. DH can be used as a backup source of energy for SPENs.

Several updates in building regulations incorporate the Whole Life Carbon (WLC) perspective and encourage the reuse and renovation of buildings over demolitions, as well as reuse of building elements (Table 4).

Table 4: Overview of policies to reduce embodied carbon.

Policy	Implementation level	Main provisions
Revised building code chapter 9, §9-5 and §9-7	National	Plan buildings with disassembly in mind to encourage the reuse of building elements and reduction of embodied carbon.
<u>Prop. 64 L (2020–2021)</u>	National	Change in state planning guidelines for climate and energy planning. The municipality should assess whether the rehabilitation and reuse of buildings is a more sustainable solution overall to reduce greenhouse gas emissions than regulations for demolition.



2.

Renewable energy and energy communities

Overview of existing policies

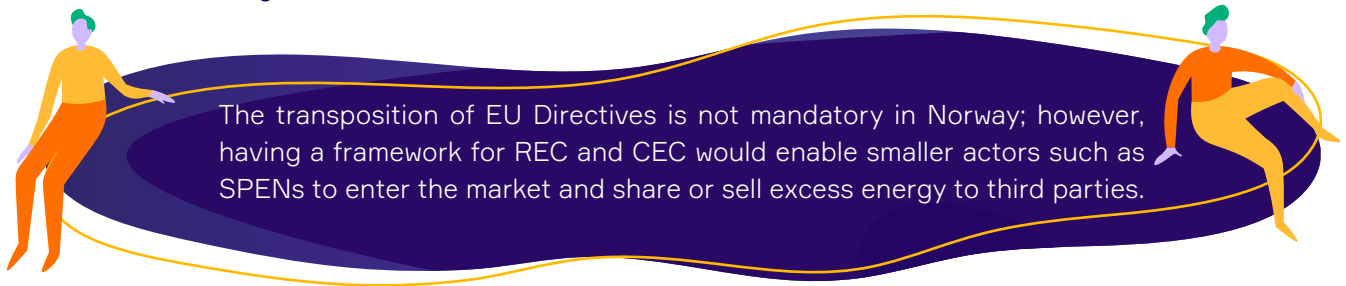
REDII (Directive (EU) 2018/2001) and EMD (Directive (EU) 2019/944) contain important provisions and definitions that enable the production, storage, sharing and selling of energy. Norway is not obliged to transpose EU Directives; however, national policies usually follow EU guidelines.

Local production, sharing and trade of energy is regulated by the Energy Act which allows individual users to sell surplus energy to the retailer (Table 6). The CSC is allowed with certain limitations, on private networks only, and collective users are not allowed to trade electricity with neighbours without a concession from the regulator.

The SPEN project in Fredrikstad was granted a regulatory sandbox⁴: the project was exempted from the regulations for five years to pilot collective production and sharing of energy within the SPEN. The developers were among the stakeholders involved in the participatory process to identify gaps and barriers in the current legislation, and they provided inputs for the new legislation coming into force in 2023. In the proposed new legislation, tax and grid tariff exemptions will be introduced to encourage production and sharing within a neighbourhood of a capacity of up to 1000 kW (see Table 6). The Electricity Support Act introduced additional extraordinary subsidies due to high energy prices both for renewable energy production and for energy efficiency measures, which provide additional drivers for SPENs.

⁴ **Regulatory sandboxes** are frameworks which, by providing a structured context for experimentation, enable where appropriate in a real-world environment the testing of innovative technologies, products, services or approaches for a limited time and in a limited part of a sector or area under regulatory supervision, ensuring that appropriate safeguards are in place.

There is no legal framework similar to REC or CEC as defined in REDII and EMD (Table 5).



The transposition of EU Directives is not mandatory in Norway; however, having a framework for REC and CEC would enable smaller actors such as SPENs to enter the market and share or sell excess energy to third parties.

Table 5: Transposition of collective self-consumption and energy communities in national legislation in Norway. Retrieved from Murley & Mazzaferro) 2021.

Collective self-consumption (CSC)	Renewable energy community (REC)	Citizen energy community (CEC)
<u>Prop. 1 LS (2021–2022)</u> <u>punkt 9.6</u> <u>Høringen til RME</u> Allowed on private networks within one property	No framework available	No framework available

Table 6: Main policy updates (for a complete list of policies relevant for SPENs and renewable energy deployment, see Boll et al. (2021))

Policy	Implementation level	Main provisions
<u>Prop. 1 LS (2021–2022)</u> <u>punkt 9.6</u> <u>Høringen til RME</u>	National	Production up to 1,000 kW on the same property can be shared in the neighbourhood without tax or grid tariff. Renewable energy production can be larger than 1,000 kW, but the tax exception is only for production up to 1,000 kW. (This change is still under implementation.)
<u>Electricity Support Act</u>	National	Temporary subsidy to reduce extraordinarily high electricity prices. Reduced electricity prices by 90% when market price exceeds 70 øre/kWh for households. Businesses using >3% of their turnover on electricity can apply for support. Support requires businesses to undertake energy mapping and energy efficiency measures ⁵ .
Forskrift om kontroll av nettvirkosomhet § 13-1, § 14-2 - 14-3, § 15-2. (Regulations on electricity grid operation)	National	Grid costs are partly avoided by single users through the net metering of on-site renewables. Grid tariffs must reflect actual grid costs (§ 13-1 j), thereby incentivising DSF. Possibility to digitally combine electricity data from smart meters for several users. Renewable surplus is exempted from the payment of fixed feed-in tariffs, but is subject to a small feed-in tariff if the input exceeds 100kW.
Energiloven § 4-1 (Energy Act)	National	For individual users, the surplus can be sold to the retailer. However, collective users are not allowed to trade electricity with neighbours without a concession from the regulator, which can be a barrier for SPENs.
Plan and Building Act §12-7 no 8.	National	For new constructions, developers have an obligation to connect to DH in areas where DH infrastructure is already in place, without an obligation to use DH.

⁵ <https://www.nho.no/tema/energi-miljo-og-klima/artikler/regjeringen-legger-ram-stromstotteordning-for-naringslivet/>

Existing drivers and barriers

Drivers	<ul style="list-style-type: none">• Regulatory sandboxes (exemptions from current regulations for five years) have been provided for innovative pilot projects such as SPENs to test new models of collective production and sharing of energy.• The Norwegian Energy Regulatory Authority involved private stakeholders including developers in participatory processes for elaborating the legal framework for CSC, providing insights from pilot projects such as SPENs on existing barriers and gaps in regulations.• The public company administrating DH set up new business models in cooperation with private SPEN developments, allowing the DH to be the backup source of energy. New developments must be connected to DH.• Various incentives to produce and share energy locally such as exemptions of tax or grid tariff within the same property. Grid costs are partly avoided by single users through net metering of on-site renewables.
Barriers	<ul style="list-style-type: none">• Policy lagging behind technologies and market, lack of a predictable framework for investments in SPENs. Lack of regulatory frameworks for RECs and CECs, while CSC took a long time to be regulated. SPEN developers were granted regulatory sandboxes; however, they lack predictability for their business models.• Limitation of CSC to a single property, not possible to trade electricity with neighbours without a concession from the regulator.



3.

Digital technologies and demand-side flexibility

An adequate policy framework is a prerequisite for a successful implementation of demand-side flexibility (DSF). DSF refers to a mechanism that allows consumers to change their electricity consumption or generation (reduce, increase or shift) for a certain duration based on external signals, such as market price. In this way, they could reduce their exposure to high energy prices, hedge against potential power outages, and monetise their flexible energy use.

Electricity markets need to improve the accuracy of demand-supply forecasts. Thus, the so-called 'imbalance settlement period'⁶ should be set at 15 minutes. This would drive market price balance, and the system would be closer to becoming a real-time electricity market. All smart meters can deliver 15-minute measurements. Previously, yearly net metering⁷ was being used as an incentive to encourage investments in renewable energy; however, it does not encourage DSF as the alternative of 15-minute imbalance settlement. DSF is important to reduce peak demands and avoid additional investments in grid upgrades.

Overview of existing policies: existing drivers and barriers

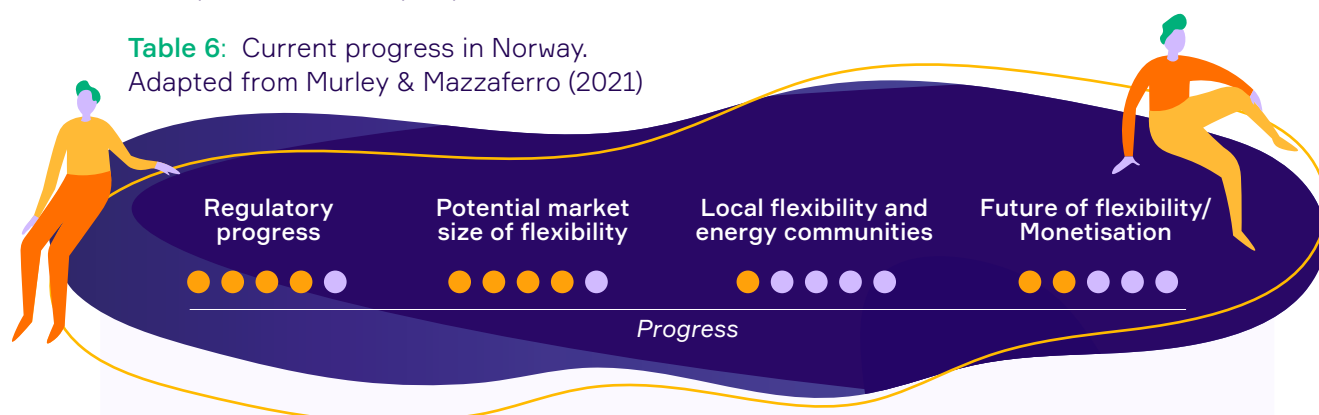
The success of the DSF development will largely depend on i) having demand-side regulation in place, ii) potential market size, iii) the presence of local flexibility mechanisms, and iv) monetisation and the possibility of having markets in the future.

⁶ Imbalance settlement determines the electricity deliveries between the parties operating in the electricity market.

⁷ Net metering is an electricity billing mechanism that allows consumers who generate electricity to account for it in the billing as used electricity anytime within a certain time period, instead of when it is actually used.

The progress of the existing regulatory framework, as well as future regulatory targets and flexibility market maturity, is presented in Table 8.

Table 6: Current progress in Norway.
Adapted from Murley & Mazzaferro (2021)



Regulatory progress

To enable DSF, the regulatory framework must allow aggregators⁸ or other companies offering DSF or ancillary services⁹ to enter the market. DSF and potential savings on the bill for residential consumers allow for new types of services on the electricity market, provided by aggregators. Thus, the new electricity market regulations must allow new companies to enter the market, including in the REC context, at the same time protecting consumers who must ultimately benefit from DSF savings (BEUC, 2018).



Potential market size of flexibility

Electricity markets encompass many ancillary services, which can create revenue opportunities. These ancillary services need to exist in the local market; the regulation needs to enable a dynamic and flexible market, with no double network charges, and to enable aggregation of resources.

In Norway, about 91% of electricity comes from hydropower, so hydropower also dominates ancillary service markets. From a regulatory perspective, DSF can participate in different ancillary services; however, the technical barriers to entry are rather high. For example, electricity generators and DSFs need to submit a bid of a certain capacity to the market. Network charges (which were another impediment to market entry in some countries) were revised in Norway, and from 2022 operators must include a variable capacity charge for residential users. Commercial and industrial customers are charged variable tariffs which reflect wholesale costs (Murley & Mazzaferro, 2021).

⁸ An aggregator is an energy service provider which can increase or moderate the electricity consumption of a group of consumers according to total electricity demand on the grid, and can also operate on behalf of a group of consumers producing their own electricity by selling the excess electricity they produce.

⁹ Ancillary services are additional services provided by the distribution system operator required for a proper operation of the grid such as keeping the frequency, voltage and power load within certain limits.



Local flexibility and energy communities

The regulatory framework should also enable energy production and the sharing and selling of excess energy by transposing the CSC, REC and CEC into national legislation. Table 5 shows a limited transposition of CSC allowed only on private networks within one property and no legislative frameworks for REC and CEC, and Table 9 provides the latest policy updates regarding energy sharing.



Future of flexibility

The progress of policies in terms of future targets for renewables or target dates to join European market coupling is assessed in Table 8, as well as the current monetisation of flexibility. Distribution system operator flexibility is only in the trial stage and the market is not as developed as in other Nordic countries; neither does Norway have a 15-minute imbalance settlement period.

Table 7: Implementation of smartness and DSF in electricity regulation (adapted from Murley & Mazzaferro (2021))

Residential dynamic tariffs	15-minute imbalance settlement period	Storage in ancillary service	Distribution system operator flexibility – commercial/trial
Available	Not implemented	Yes	Trial

A proper automation of the heating system at a SPEN level as opposed to an apartment level can contribute significantly to the DSF. However, it requires modelling, smart systems and automation, as well as good understanding of the legal and contractual aspects. With outputs from energy monitoring, the contracts can be adjusted to maximise local consumption of energy and allow consumers to reap the maximum benefits from billing. The need for an energy administrator within SPENs opens up new opportunities for business models.

Table 8: Main policy updates (for a complete list of policies relevant for SPENs and DSF, see Boll et al. (2021))

Policy	Implementation level	Main provisions
Forskrift om kontroll av nettvirksomhet (Regulations on electricity grid operation)	National	Building level: electricity data for settlement is automatically delivered via smart meters. Neighbourhood level: possibility to digitally combine electricity data from smart meters for several users.
Energiloven (Energy Act)	National	Building level: surplus can normally be sold to retailer. Neighbourhood level: not possible to trade electricity with neighbours without a concession from the regulator. Change is underway for trade within the same property.

Drivers	<ul style="list-style-type: none"> • Availability of data from smart meters and the possibility to digitally aggregate electricity data from smart meters from several users. • New opportunities for business models based on DSF such as aggregators or other companies that manage all types of heat and electricity exchange within a SPEN.
Barriers	<ul style="list-style-type: none"> • Policy lagging behind technologies. • Energy and electricity sharing within a SPEN require complex monitoring and modelling systems. • Grid costs are partly avoided by single users through net metering of on-site renewables, which does not encourage DSF.



4. Financing, business models and enabling conditions

Low energy demand and the surplus of energy of a SPEN offer new business model opportunities for energy sharing within SPENs, as well as selling excess energy within a REC. The business models (Table 10) were analysed in a workshop with developers from Norway, to assess their applicability to existing SPENs and their alignment with the existing regulatory frameworks (Table 11).

After the completion of the syn.ikia SPEN project in Fredrikstad, the developers will set up a new legal entity that will manage the sharing of heat and electricity in the neighbourhood. The entity requires modelling, smart systems and automation, as well as knowledge regarding the legal and contractual aspects, and opens new opportunities for business models. A proper automation of the heating system at a SPEN level can contribute significantly to the DSF compared to a similar system installed at apartment level. Leveraging data collected from energy monitoring, the contracts can be adjusted to maximise the local consumption of energy and allow consumers to reap the maximum benefits from billing. The need for an energy administrator within SPENs opens up new opportunities for business models. In the electricity sector, new market players such as aggregators offer DSF services; however, in the SPENs context, these services should go beyond electricity and also manage heating from all sources of renewable energy.

In Norway, all new developments must be connected to DH where available; however, they are not obliged to use it. The public DH companies have set up new business models in cooperation with private developments, allowing the DH to be the backup source of energy. For example, the syn.ikia demo project in Fredrikstad is using a ground-to-water heat pump, powered by PV panels.

When necessary, the DH provides the additional heat needed. A collaboration agreement was reached between the demo developers and the public company managing the DH which can be replicated in other cities or countries where DH is available. For a wider rollout of this approach, the DH should adjust to low-temperature heating systems.

Table 10: Overview of potential business models relevant for SPENs

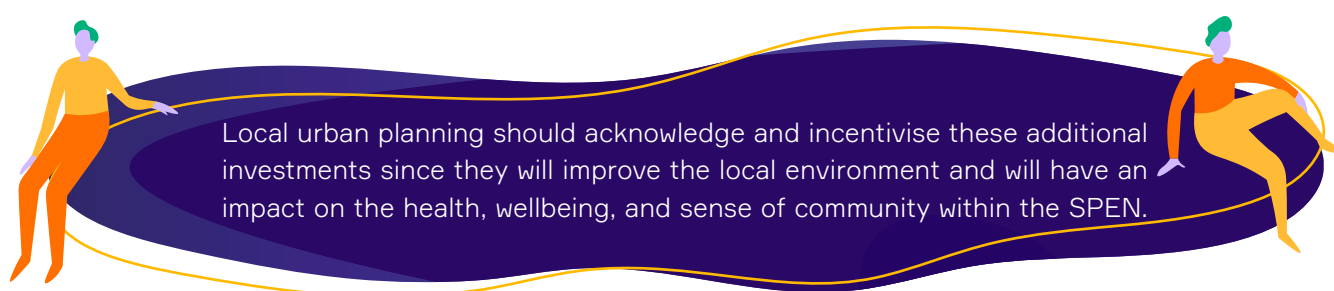
Business model	Description	Relevance for SPENs
P2P or local electricity market	Promote collective self-consumption by creating a marketplace among prosumers and consumers.	Energy sharing system among positive energy buildings in a SPEN. It incentivises and rewards plus-energy buildings. It encourages the community as a whole to share electricity and achieve a potential net gain.
Joint shared assets	Shared energy assets and investments such as batteries, PV panels etc.	Assesses the added value of SPEN projects compared to business as usual. Determines the optimal investments and the source of revenues to pay these (individual, collective, or both).
SPEN as an energy retailer	The SPEN becomes a retailer that buys power directly from wholesale markets, hence reducing costs by avoiding an intermediary (currently retailers).	Assuming that an advanced energy management system is available in the SPEN, automatises the hourly energy balance and predicts demand commitments in the power market. It brings advantages including more choices of energy suppliers and independence from retailers. This challenges the status quo and has the potential to channel more revenues to consumers, by avoiding the transaction costs of a retailer.
PPA	Power purchase agreements. Green or zero-carbon-emission energy might be of interest for industry or public buildings to certify guarantees of origin.	PPAs offer the possibility of a long-term commitment to sell surplus energy from SPENs to external players interested in acquiring certified renewable energy.
Inter-SPEN	The surplus energy of a SPEN can be traded or offered to an open marketplace, for example within a REC.	Trading surplus energy outside SPENs may incentivise additional investments in energy efficiency and renewable energy. Surplus energy could be bought by aggregators, other neighbourhoods or SPENs, industry, retailers etc. RECs and CECs may enable small actors such as SPENs to enter the electricity market.
SPEN flexibility services	Business models based on DSF: shifting demand according to energy availability to reduce peak loads and reduce grid congestion. The DSF avoids additional investments in grid upgrades.	SPENs provide energy flexibility to external actors: distribution system operators, aggregators, local grid, EV smart charging etc. The SPEN, through the energy management system, engages in DSF that has to be monetised and brings financial benefits to the consumers.

Table 11: Overview of possible business models for SPENs in Norway

Business model	P2P or local electricity market	Joint shared assets	SPEN as retailer	PPA	Inter-SPEN	SPEN flexibility services
Applicability of business models for SPENs in Norway	Yes	Yes	Limited	Yes	No	Limited
Regulatory framework requirements	CEC and CSC	REC and CSC	CEC	REC	CEC and REC	CEC and REC

The SPEN concept foresees the sharing of spaces and services, with the aim of increasing social sustainability and community feeling. Many SPEN projects, including the syn.ikia demo in Fredrikstad, investigate the possibility of car-sharing services within the neighbourhood. Various companies offer this service at an urban level, so a new business model for these companies would be to offer specialised services for car and bicycle sharing within a SPEN, linked with shared parking and EV charging facilities.

The demo project of syn.ikia implemented shared parking spaces for cars and bicycles, EV charging facilities, storage spaces, playgrounds, and a community house. These are classified in urban planning regulations as public spaces. However, within a SPEN, with an increased need for outdoor and indoor shared spaces such as community houses, there is the need for a framework of collectively owned spaces or services at the SPEN level, beyond the building level. SPENs often require additional investments in green spaces, water infrastructure, and biodiversity. The demo in Fredrikstad foresees outdoor meeting areas next to a small lake area and the establishment of a park with a bird sanctuary around the lake.



SPENs will need to assess and track whether they add value in terms of quality of life, sense of community or access to green spaces compared to more traditional real estate developments. Certification schemes can attest to the added values of SPEN developments compared to business as usual and become a source of verified documentation that can support compliance with sustainable finance claims (taxonomy) or the articulation of the business case for SPENs.



5. Policy recommendations for Norway

Reducing energy demand at the building level for new constructions and renovations plays an important role in the total energy balance of a SPEN. Previous policies implemented NZEB standards for new constructions and renovations. The next steps should be towards implementing zero-emission building, also considering the embodied carbon associated with materials and construction processes throughout the whole lifecycle of buildings.

The existing regulations regarding collective production and sharing of energy are not supportive for SPENs: existing projects benefit from regulatory sandboxes that grant them temporary exemptions. The following recommendations aim at addressing the existing policy gaps.

Energy performance	<ul style="list-style-type: none"> ● After the implementation of NZEB standards, the upcoming implementation of zero-emission building standards should further increase the ambition for new constructions and renovations, considering the embodied carbon. ● Support schemes are necessary to encourage additional investments in positive energy buildings, beyond minimum requirements.
Renewable energy and energy communities	<ul style="list-style-type: none"> ● Need for a predictable regulatory framework for SPENs, especially regarding local and collective production and sharing of energy. Developers need clear and predictable rules for significant investments like SPENs. ● CSC must be extended beyond the boundary of one property, similar to the implementation of CSC in other countries such as Spain or France, within a range of 2km or within a low-voltage grid. CSC does not require a legal entity like REC and provides a good framework for sharing energy within a SPEN. ● Sharing energy within a SPEN requires the existing CSC framework to be adapted because it does not currently include renewable heating, being limited to electricity. ● A regulatory framework for REC and CEC is needed to allow smaller market players such as SPENs to enter the electricity market and sell excess energy beyond the neighbourhood. ● The new legislation on CSC was developed in collaboration with private stakeholders who are frontrunners in developing SPENs and were granted exceptions. The participatory process must accelerate progress in overcoming existing regulatory barriers.
Digital technologies and demand-side flexibility	<ul style="list-style-type: none"> ● Develop and implement frameworks for REC and CEC for regulating the role of new market players such as aggregators or SPENs within energy communities. ● Net metering should be gradually phased out to be replaced by the 15-minutes imbalance settlement period with the objective of encouraging DSF.

References

BEUC. (2018). ELECTRICITY AGGREGATORS: STARTING OFF ON THE RIGHT FOOT WITH CONSUMERS The Consumer Voice in Europe. 32(9505781573), 0–11. www.beuc.eu

Boll, J. R., Dorizas, V., Broer, R., & Toth, Z. (2021). Policy mapping and analysis of plus-energy buildings and neighbourhoods.

Murley, L., & Mazzaferro, C. A. (2021). European Market Monitor for Demand Side Flexibility. In https://smarteu.eu/wp-content/uploads/2022/02/EU_Market_Monitor_2021_PUBLIC_ONLINE.pdf



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