Nordic Superblocks executive summary

19.12.2025

Nordic Superblocks as Decarbonization Catalysts

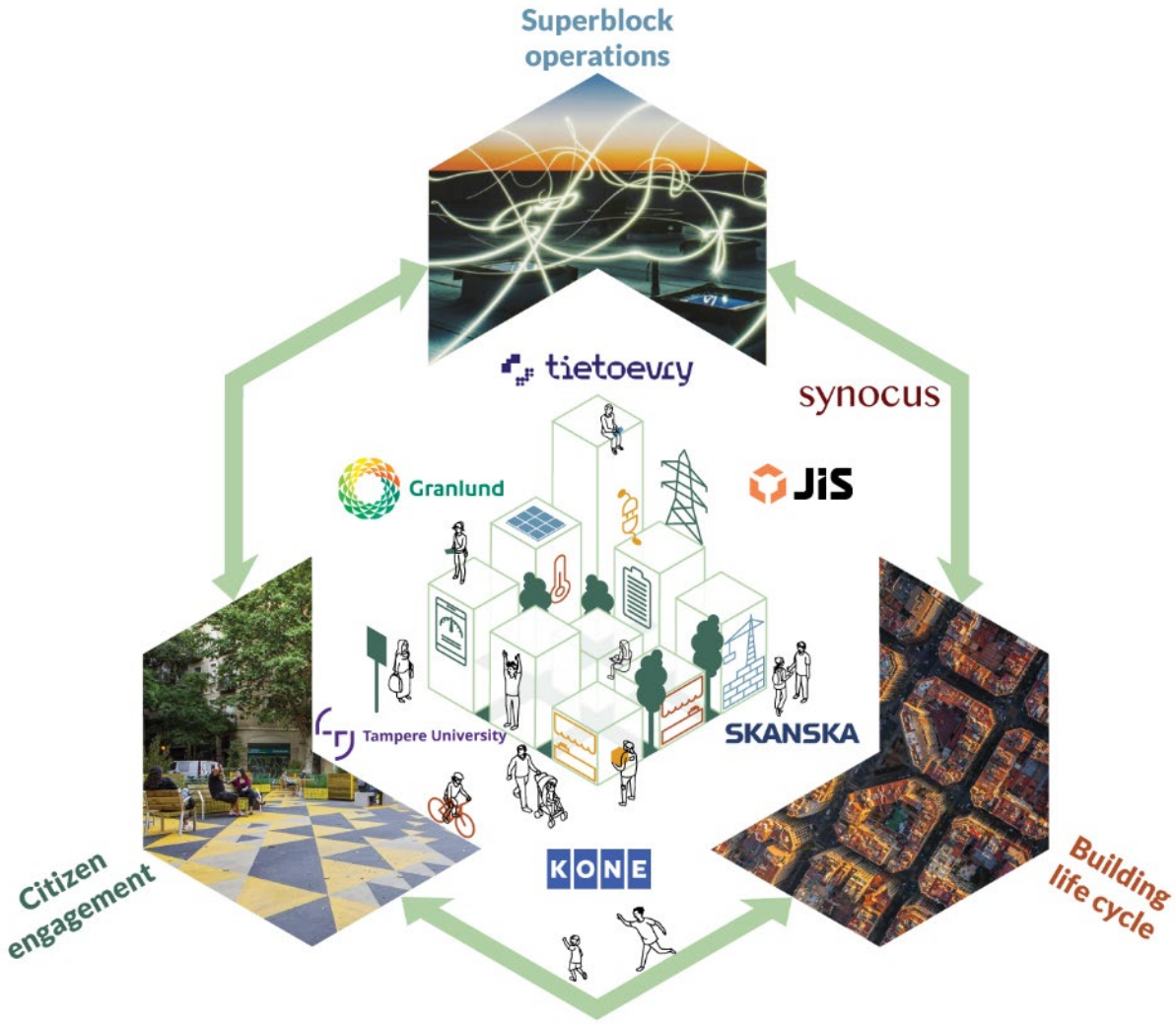
Nordic Superblocks as Decarbonization Catalysts

The Nordic Superblocks as Decarbonization Catalysts (NSDC) is a three-year Business Finland supported initiative through which Granlund, JIS-Automation, KONE, Skanska, Synocus, Tampere University, and Tietoevry develop new solutions for life cycle management of built urban environments.

The NSDC initiative aimed to develop a design manual, which could be used to support the planning, construction, operations, and renewal of sustainable built environments.

The design manual was developed based on in-depth case studies of the Generations Block in Helsinki, the Smart and Sustainable Jyväskylä Kangas initiative, Kotikatu365, and Hiedanranta in Tampere.

Additionally, international benchmarking has included cases from Spain, Italy, Germany, and Australia. More information about the NSDC initiative can be found at https://www.walcc.org/nsdc/



Nordic Superblocks as Decarbonization Catalysts

Nordic Superblocks – supporting livable and sustainable cities

- The **Nordic Superblock** is a spatially delimited **built environment** integrating **physical** and **human** resources with the support of **digital** technologies to **create value for** the **Superblock community members** while simultaneously **influencing** its context to provide **societal value**.
- The Superblock is both a **value creation platform**, with its internal governance function, and a **development platform**, co-governed by its ecosystem partners.
- The **stakeholders** engaged in the Nordic Superblock provide **continuity** over the Superblock **life-cycle** by **removing** value-creation **barriers** between development cycles and enhancing the value of the **collective experiences** around the Superblock.

Nordic Superblocks as Decarbonization Catalysts

The Nordic Superblock Canvas

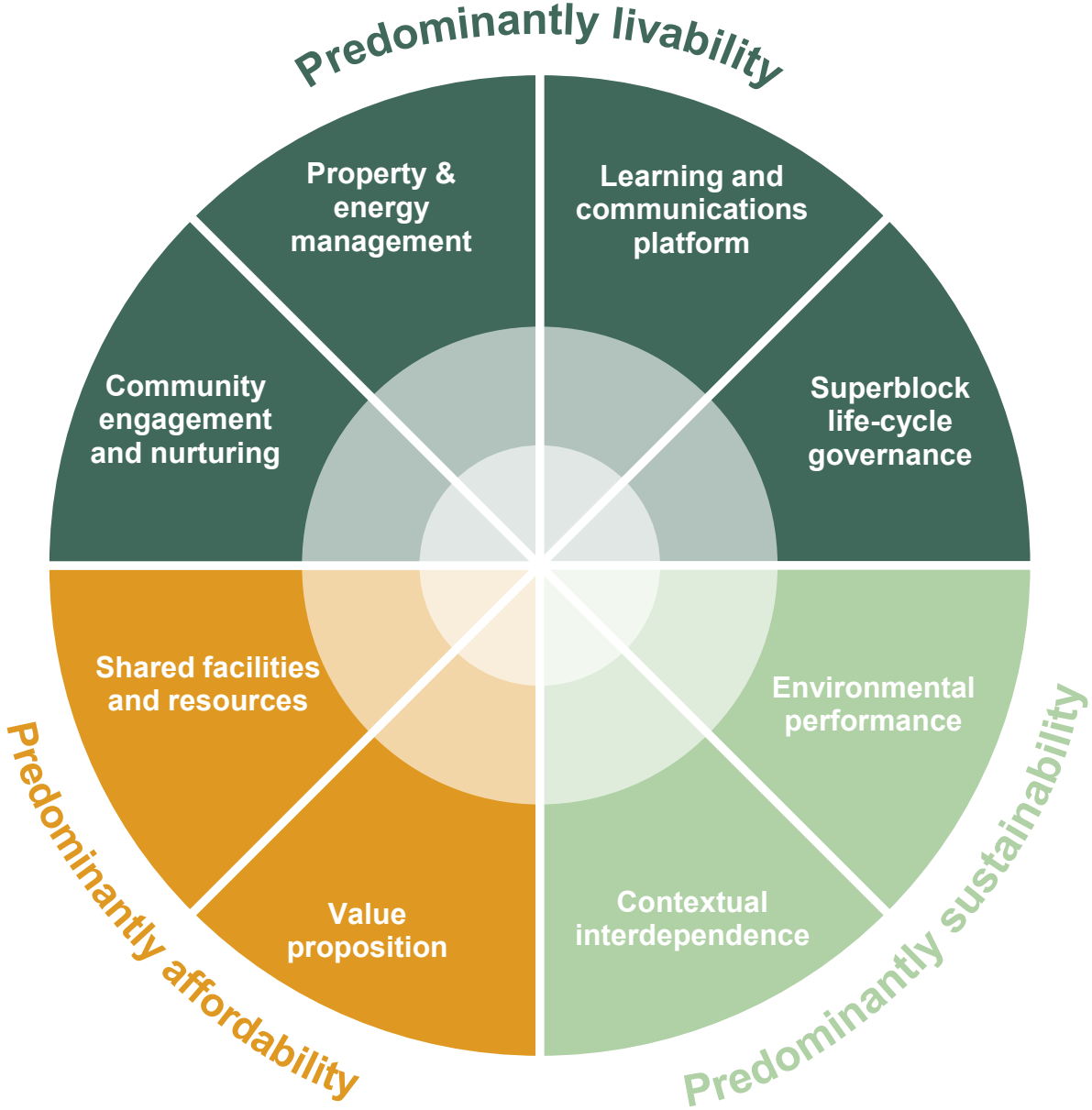
The Nordic Superblock framework consists of **eight integrated value-creating modules** which are continuously **adapted to the specific context** of the superblock still maintaining its identity of the Superblock as an integrated and **dynamically evolving entity**.

The Nordic Superblock canvas orders the modules in three main categories of value-creating activities:

- **Affordability**
  Under Affordability we can find the modules **Value proposition** and **Shared facilities and resources.**

- **Livability**
  Under the theme of Livability there are the modules **Community engagement and nurturing, Property & energy management, Learning and communications platform** and **Superblock life-cycle governance.**

- **Sustainability**
  Under Sustainability we find **Environmental performance** and **Contextual interdependence.**



Nordic Superblock Canvas elements

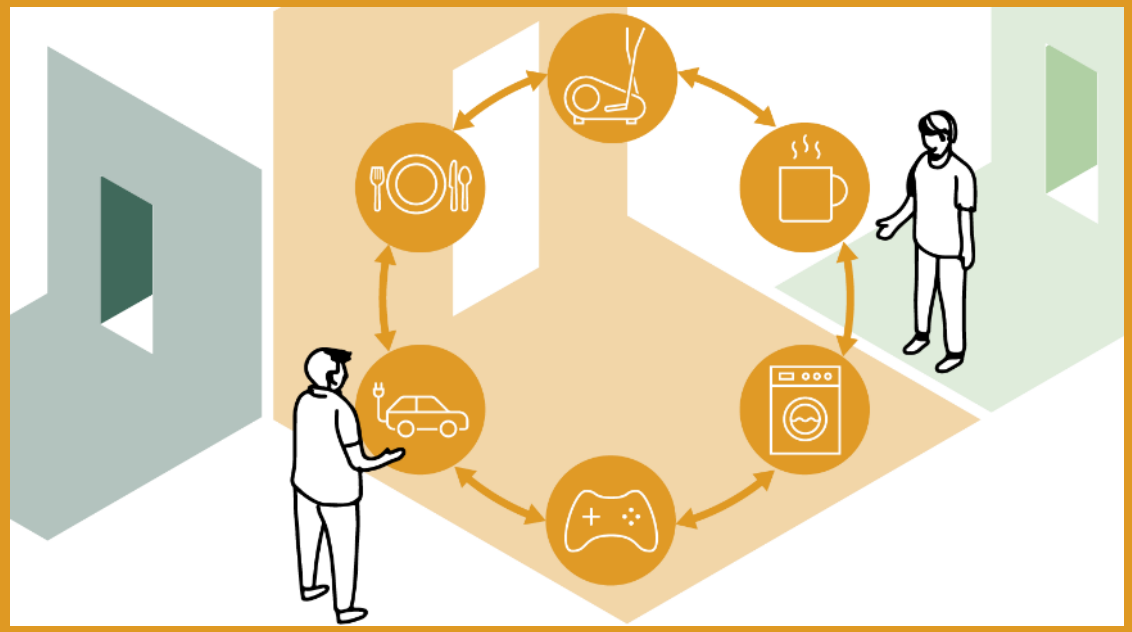
Nordic Superblocks as Decarbonization Catalysts

Value proposition

- Location
- Identity (physical & social)
- Viability (scope & adaptability)
- Quality
- Economics (price, capital costs, operational costs, value retention)

Shared facilities and resources

- Spatial design
- Shared spaces and functions, including flexible design
- Sharing services and spaces with third parties
- Transport and mobility services
- Exercise and health services



Nordic Superblock Canvas elements

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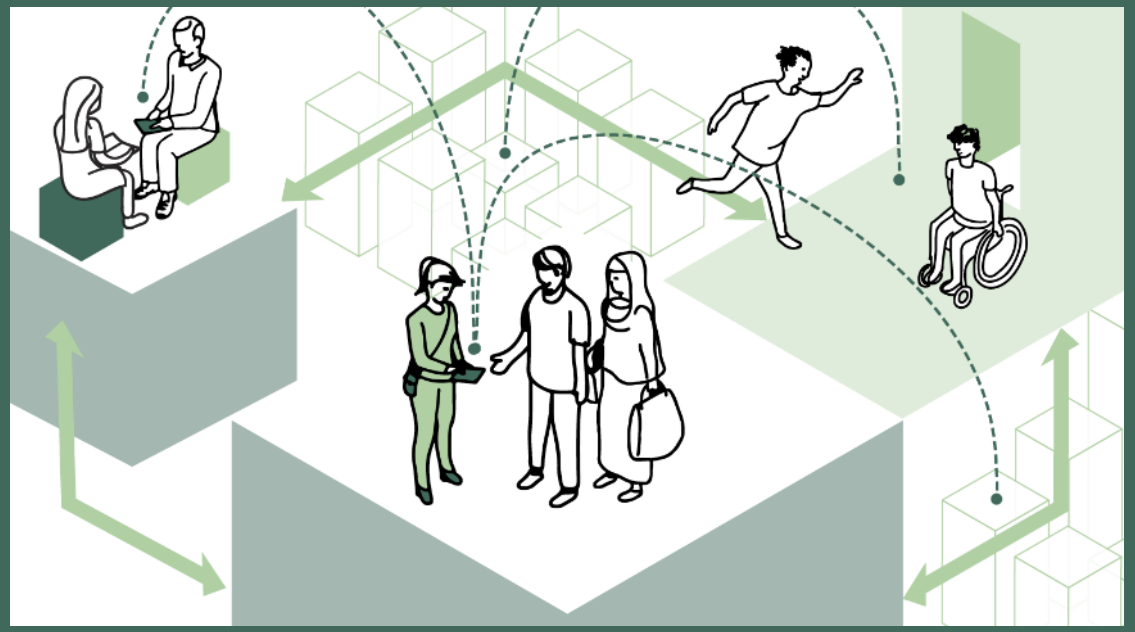
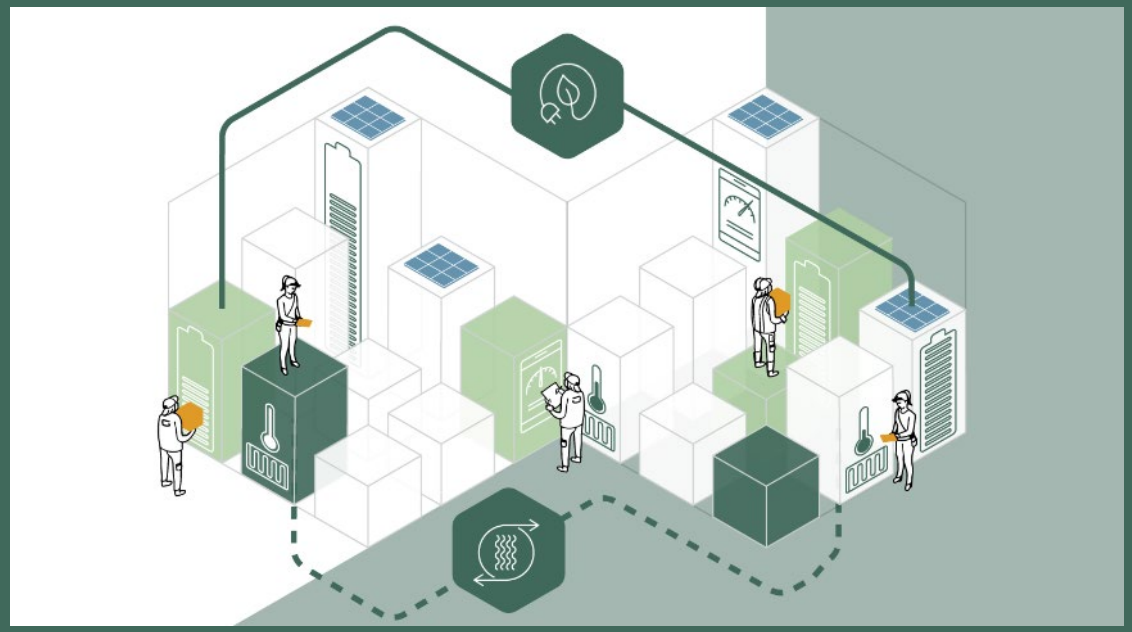
Community engagement and nurturing

- Community coordination
- Community board/local democracy
- Service coordinator
- Neighborhood engagement
- Community activation



Property & energy management

- Property management & maintenance
- Energy infrastructure
- Safety
- Renovation
- Proptech, IoT & other digital infrastructure



Nordic Superblock Canvas elements

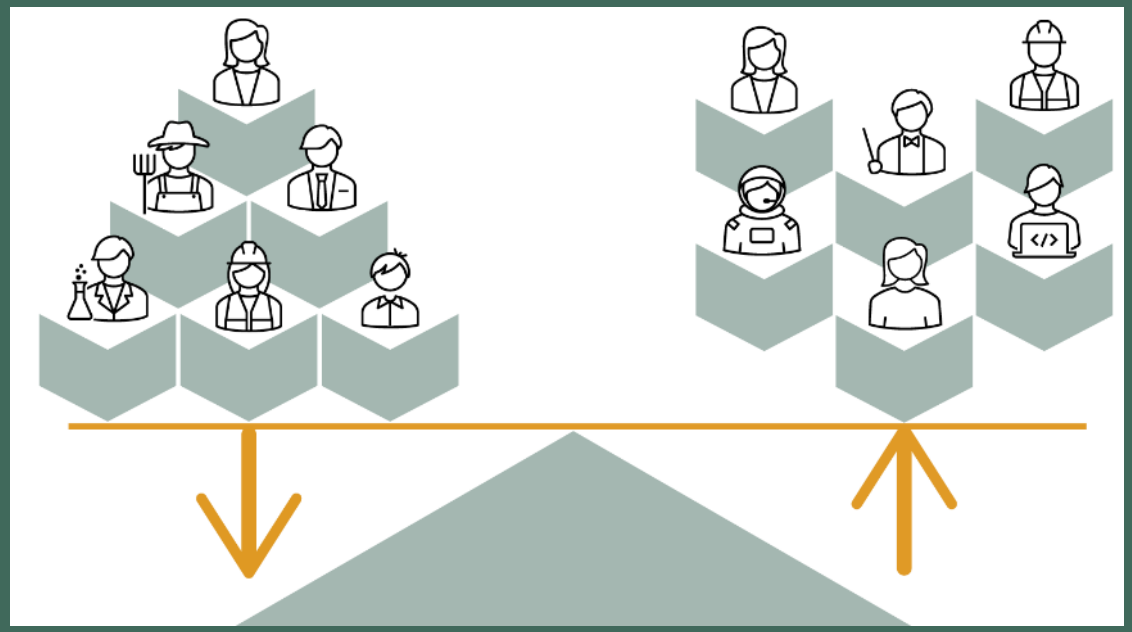
Nordic Superblocks as Decarbonization Catalysts

Learning and communications platform

- Community communication
- Stakeholder platform
- Community engagement platform including digital information boards
- Educating community members and the rest of the ecosystem
- Skill sharing as a service

Superblock life-cycle governance

- Ensuring continuity
- Collaborative/flexible planning & development
- Superblock strategy and operation
- Cooperative management
- Governance principles & common rules



Nordic Superblock Canvas elements

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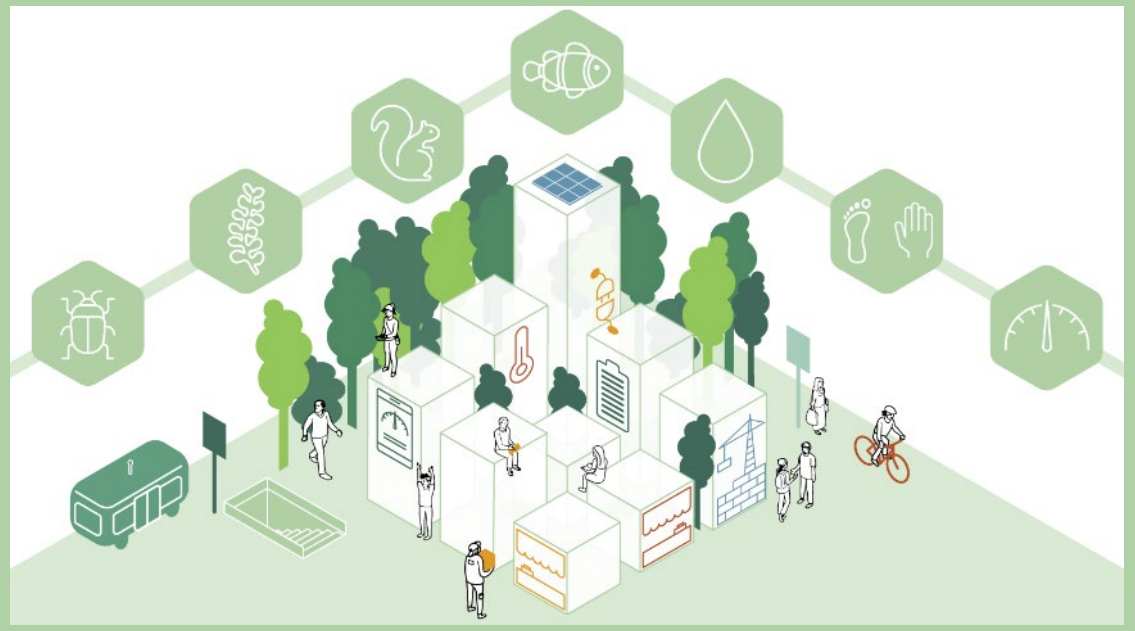
Environmental performance

- Green spaces and carbon sinks
- Energy efficiency and passive design
- Biodiversity
- Sustainable construction
- Recycling



Contextual interdependence

- Pioneering ambitions
- Contextual synergies
- Logistical infrastructure
- Reachability, accessibility and walkability
- Sustainable development principles

The Nordic Superblock operations

Nordic Superblocks as Decarbonization Catalysts

The conducted analyses of our research cases exhibit the superblock's value in three types of activities:

Facility management

Infrastructure &
Shared premises

Community nurturing

Neighborhood engagement &
Communication platform

Platform orchestration

Innovation collaboration &
Sustainability leadership

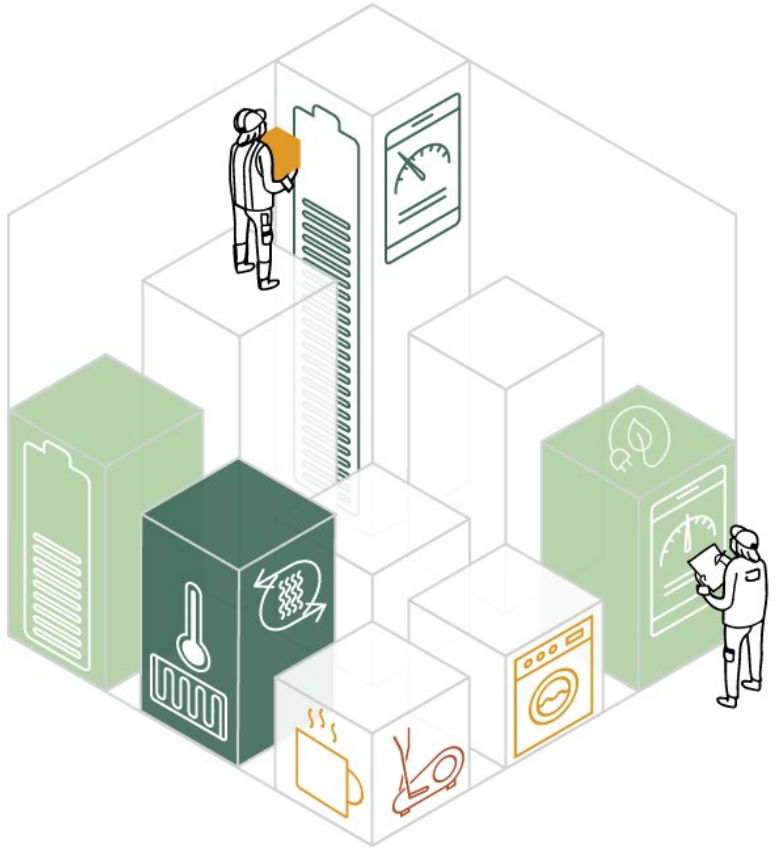
Minimum stack

Medium stack

Full stack

Facility management

- Cost efficient and adaptive energy infrastructure making energy efficiency a key objective and aiming for a positive energy future.
- Smooth and integrated transport solutions integrating public transit, bicycling, walking, and car-sharing to reduce dependency on private cars.
- Advanced digital infrastructure and facilitating information sharing among residents relating to news and residents' messages, the physical building, the availability of and access to services, common development efforts, and the evolving framing of the superblock context.
- Shared spaces and common facilities that will save costs and increase communality such as a common kitchen, gym, sauna, guest rooms, etc.
- Evolving spatial design leveraging contextual interdependencies and ensuring a common identity with collectively owned gardens and yards stimulating spontaneous interactions.
- Develop processes that will reduce carbon emissions during the construction phase.
- Ensure the renewability of the built environment.



Nordic Superblocks as Decarbonization Catalysts

Community nurturing

- Provide opportunities for the residents to spend time together and enhance the sense of community and social wellbeing through the aid of digital solutions.
- Initiate shared activities and neighborly help. Everyone should have the opportunity to be part of the community – but participation is never an obligation.
- Organize various types of shared activities brunches, holiday gatherings, art exhibitions, volunteer events, or group exercise sessions.
- Link to third parties that residents want to engage with.
- Promote the attractiveness and sustainable development of the area's properties.
- Support intergenerational activities and the integration with different types of networks and activities on city level.

Nordic Superblocks as Decarbonization Catalysts

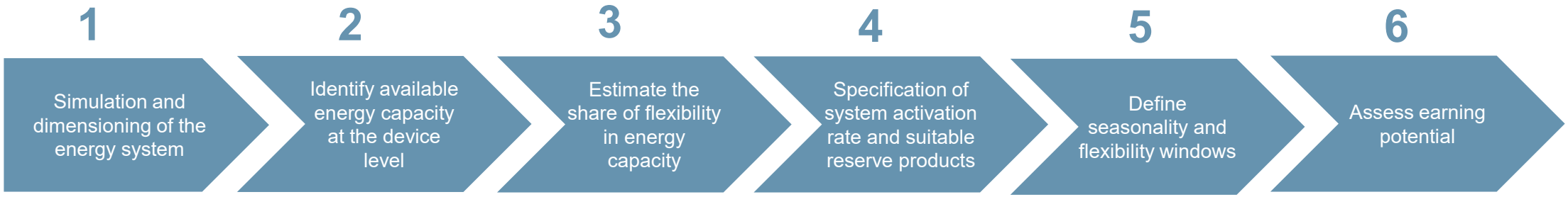
Platform orchestration

- Make an innovation platform the foundation for joint efforts of the city, researchers, and companies to exhibit the value of a springboard approach to innovation collaboration.
- Introduce new forms of public-private collaboration in the construction sector including innovative risk management and more systematic processes.
- Encourage development partners to contribute with their own specific expertise to find solutions for good living that simultaneously meet demanding criteria for sustainable construction.
- Mobilize residents to share their experiences and skills with fellow residents and developers to strengthen the collective responsibility.
- Monitor the evolution of the regulatory framework to exploit new opportunities and mitigate possible future risks.

Nordic Superblocks as Decarbonization Catalysts

Assessing a block's potential for energy flexibility

- Before the technical and operational implementation of demand response, it is necessary to assess the flexibility capacity and the size of the property mass required to participate in the Transmission System Operator's (TSO) reserve market.
- As a rule of thumb, the flexible capacity should be at least 1MW, which is the minimum bid size for most reserve products, and especially for products that are suitable for the activation rate of typical energy resources in properties.
- Below are the steps in assessing the flexibility potential. N.B! The flexibility potential differs significantly from the overall power capacity of the equipment.



1	2	3	4	5	6
Suitable properties for energy flexibility, e.g., the intended use of the building allows it to be flexible, and the ownership and management structure is clear	Identify each appliance with significant energy consumption or production, as well as their consumption/production profiles	Estimate the amount of flexible energy for each type of equipment and its impact on building conditions	Estimate the potential response time of each device to the necessary control measures and determine the system-level activation time to achieve the required increase or decrease in energy consumption	Estimate the impact of the seasons on the available flexible energy, which can vary between summer, autumn, winter and spring. The use of the spaces can cause daily restrictions that affect the time periods of flexible energy during the day	Calculate daily, seasonal, and yearly earning potential based on historical market price data

Nordic Superblocks as Decarbonization Catalysts

NSDC Fieldbook

Cases

- *Kotikatu365*
- *Kangas*
- *Hiedanranta*
- *Generations Block*

Superblock value creation	Life-cycle: Planning	Construction	Operations	Renewal
Value proposition				
Shared facilities and resources				
Community engagement & nurturing				
Property & energy management				
Learning & communications platform				
Superblock life-cycle governance				
Environmental performance				
Contextual interdependence				

Nordic Superblocks as Decarbonization Catalysts

The Nordic Superblock life cycle management

In the following we provide an overview of how the superblock principles can be applied during the four phases of planning, construction, operation and renewal.

	Planning
Value proposition	Aligning the identity of the Superblock with the area, its owners and future vision.
Shared facilities and resources	Making sure shared spaces and services are planned in line with the identity and have inbuilt flexibility for the (future) neighborhood residents and services, their location can support the natural community building.
Community engagement & nurturing	To what extent the superblock entity will provide support for community engagement must be decided upfront. Community management in person, digital tools and sharing services must be integrated in planning.
Property & energy management	During the planning phase, sufficient space should be reserved for the energy system, including the energy center, geothermal wells, piping, and technical facilities in buildings, so that a block-level energy system can be implemented in the area.
Learning & communications platform	Collaborative planning and sharing of capabilities and knowledge. The lifecycle perspective calls on planners to consider the potential leveraging opportunities once the superblock is operational.
Superblock life-cycle governance	In the establishing phase, the infrastructure and facilities are designed in a way that support the subsequent application of the good practices of the community governance model.
Environmental performance	Minimizing greenhouse gas emissions from concrete and steel, optimizing material use, using less virgin materials and considering low-carbon alternatives.
Contextual interdependence	Guiding the people flow through the neighborhood and create a common place for engagement in the district in line with the identity.

Nordic Superblocks as Decarbonization Catalysts

The Nordic Superblock life cycle management

	Construction
Value proposition	To ensure the proper balance between affordability, livability, and sustainability, the superblock initiator(s) must adapt the final solution to the intended target groups. Quality in construction and durability is key to value retention over time.
Shared facilities and resources	
Community engagement & nurturing	Possible local Percentage Art and/or Culture initiatives have their share of the construction phase and collaboration with artists is needed during this time.
Property & energy management	Construction of the energy system is steered by emphasizing the life cycle impacts of the selected solutions as regards both emissions and costs.
Learning & communications platform	A developer platform, that supports the ambitions for leadership in sustainability. Knowledge accumulation, through which continuous collaboration should generate increasingly sustainable solutions.
Superblock life-cycle governance	Construction is steered by emphasizing the life cycle impacts of the selected solutions regarding both emissions and costs.
Environmental performance	The selected construction partners have a significant impact on the carbon emissions during the construction phase, both through the materials and the processes used during the construction phase.
Contextual interdependence	

Nordic Superblocks as Decarbonization Catalysts

The Nordic Superblock life cycle management

	Operations
Value proposition	Building a place, where residents, businesses and organizations come together to develop a viable, diverse, and sustainable urban culture.
Shared facilities and resources	The availability of various services is one of the main contributors to customer satisfaction in a superblock.
Community engagement & nurturing	Community management paired with in-person community services.
Property & energy management	The energy management concept will guide how the energy assets of the superblock are organized. This concept may also include a virtual power plant and energy storage enabling the superblock to operate on energy markets.
Learning & communications platform	Local communications and feedback platform.
Superblock life-cycle governance	Clear ownership with the explicit intention to support the collaboration for the longer term provides a strong foundation. Regular meetings annually for the residents that give them an opportunity to discuss how to further develop the community.
Environmental performance	Urban gardening is popular among residents, allowing them to be active in the neighborhood. This is also one way to increase a sense of belonging and shared responsibility among the residents.
Contextual interdependence	With the aspiration of creating more opportunities for encounters in the superblock, the plinth can be activated by bringing shared spaces to the daily routes of the people.

Nordic Superblocks as Decarbonization Catalysts

The Nordic Superblock life cycle management

	Renewal
Value proposition	The renewal phase is crucial in ensuring that buildings remain resilient, relevant, and valuable throughout their lifecycle.
Shared facilities and resources	Meaningful involvement of residents, local stakeholders, and partners are essential throughout a renewal process.
Community engagement & nurturing	Pilot projects and temporary interventions allow communities to test transformational ideas for their living environment collaboratively before permanent changes, helping build trust and reduce resistance.
Property & energy management	To maximize the impact of renewal efforts, the integration of adaptable, digitalized, and low-carbon solutions which support energy efficiency and flexible management as well as improve livability.
Learning & communications platform	An ongoing renewal process supports continuous adaptation to evolving environmental standards, urban development needs, and user expectations.
Superblock life-cycle governance	New operational frameworks can be implemented, which allow for the introduction of advanced technologies, sustainable practices, and flexible management models.
Environmental performance	Renewal within the superblock concept is an ongoing, multifaceted process that ensures the long-term adaptability and sustainability.
Contextual interdependence	

Nordic Superblocks as Decarbonization Catalysts

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Thank You!

The NSDC initiative was funded by Business Finland through NextGenerationEU funding (5/2023-12/2025).

The operationalization of the Nordic Superblocks concept and “The Nordic Superblocks Fieldbook” was a joint effort that involved all members of the NSDC initiative, with practical work being conducted by the Project Management Team and oversight of the process, and the initiative as a whole, by the steering committee whose members were:

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Timo Silver (JIS-Automation)
Shahram Heidari (KONE)
Toni Tuomola (Skanska)
Johan Wallin (Synocus)
Fredrik Jansson (Tietoevry)
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