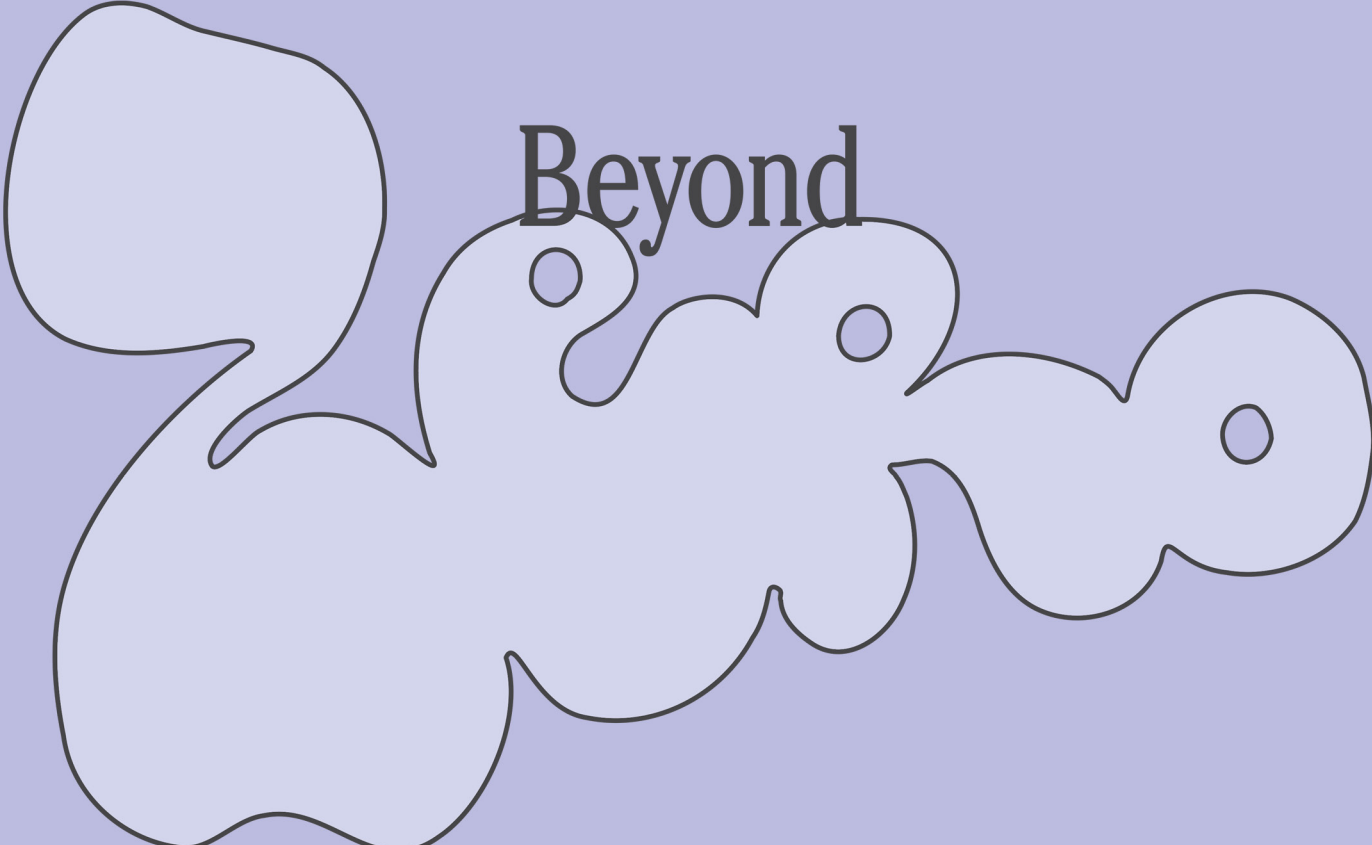




Beyond

NORDIC ARCHITECTURE ON THE ROAD
TOWARDS RENEWED PRACTICES

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This publication is also available online in a web-accessible version at:
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Foreword

The Beyond Zero exhibition addresses the most urgent and significant topic for architecture today: environmental degradation. Architecture, along with other creative fields, holds immense power to drive the systemic transformation necessitated by this crisis. It can inspire, provoke, question and make tangible the radical changes at hand.

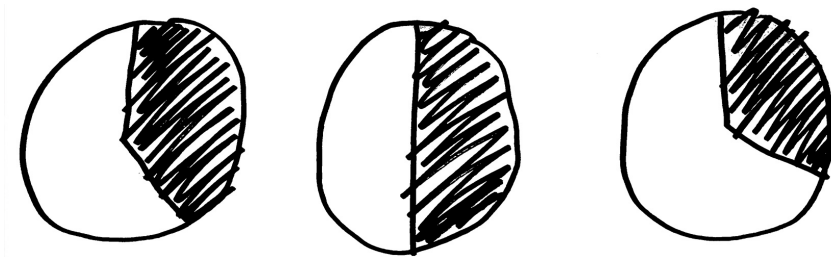
This publication summarizes the Beyond Zero exhibition, originally designed to conclude the "Nordic Carbon Neutral Bauhaus" one and a half years project funded by the Nordic Council of Ministers and coordinated by the Ministry of the Environment Finland. The exhibition debuted at the Form/Design Center in Malmö from November 2024 to January 2025 and is designed as a traveling exhibition. Together with the 17 projects originally presented in the exhibition this publication forms a snapshot of Nordic architecture on the road towards renewed practices.

We hope to challenge and inspire the reader to rethink what architecture is – and what it must become – in the pursuit of a truly sustainable future.

Ilina Karkulahti, Anssi Lauttia, Charlotte Nyholm, Meri Wiikinkoski
Curators

Nordic Architecture on the Road Towards Renewed Practices

THE BUILT ENVIRONMENT CAUSES ...



**... 40% OF ALL
CLIMATE
EMISSIONS ...**

**CONSUMES UP TO
50% OF ALL
VIRGIN
RESOURCES ...**

**... AND
PRODUCES
ABOUT 33% OF
ALL WASTE.**

The current architecture and construction industry doesn't function within planetary boundaries. In addition to causing 40% of all climate emissions, the built environment consumes up to half of all virgin resources and produces about a third of all waste. Environmental degradation is a complex challenge, and problems such as the depletion of virgin resources, biodiversity loss, eutrophication, chemical loads, and a socially just transition are all intertwined. Aiming for net zero carbon in construction is therefore a step in the right direction, but if it is viewed as separate from – or as the sole solution to – addressing the wider environmental crisis, the conversation around emissions cannot achieve the systemic change the crisis truly demands. Architecture and other art forms should be recognized as significant media for achieving and making palatable the holistic disruption that is at hand.

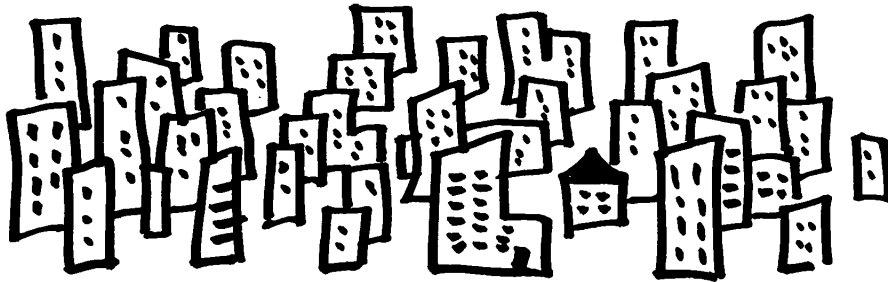
To understand how architecture's environmental impacts arise and where its potential for improving environmental conditions lies, we must focus on the processes through which the built environment is produced. Architecture should not be understood merely as pieces of art conceived at the designer's desk, culminating in the completion of buildings, but as ongoing processes that both build and maintain humanity's largest physical objects.

The Beyond Zero dives deeper into these architectural processes, approaching them from six different perspectives:

1. From Pioneering to Mainstreaming
2. Architecture Is a Material Practice
3. New Life for a Building
4. Enough Is Enough
5. No Hoax
6. Sustainability is Stagnation.

These perspectives are brought to life by 17 selected architectural projects from the Nordic countries and Estonia, each offering its own ambitious perspective on the transition towards sustainable practices in the building industry.

1. From Pioneering to Mainstreaming

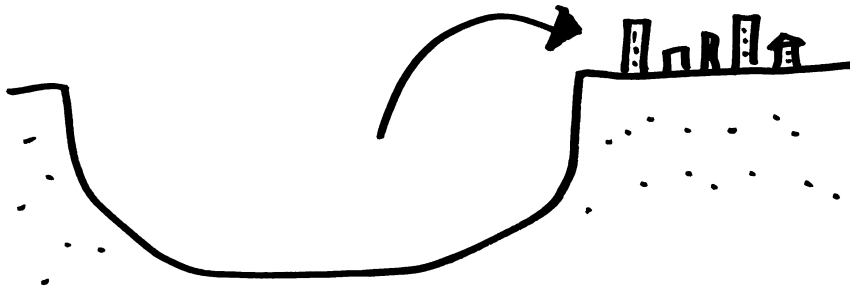


Sustainability can no longer be reserved for specialty projects or pilots but must be central to all of our everyday architecture. We need strategies that target the majority of all construction to make an impact. This means integrating sustainable practices into construction on an industrial scale.

Buildings like museums and corporate headquarters are important in showcasing the value of sustainable construction, but the majority of both existing and new buildings are residential. Therefore, the greatest potential in creating more sustainable practices and buildings lies in the typology. Residential construction also touches everyone's lives in the form of their own homes. Thus, it matters what individuals consider as good living, and whether they are able and know how to demand homes and housing solutions that align with their values.

Sometimes surprising potential lies in places where we don't even think to look. Industrial and farm buildings – often located out of sight at the fringes of cities – are large-scale structures that, due to their structural simplicity, could be built using a variety of construction methods. These halls tend to get overlooked in discussions as we often fail to recognize them as part of the domain of construction, or especially that of architecture. However, from the green transition perspective, what matters is achieving impactful change in the entire building stock, regardless of typology.

2. Architecture is a Material Practice



Architecture creates physical objects – some of humanity's largest works. These objects embody abstract meanings and values, but at their core, they are deeply material. The impacts of construction extend far beyond the building site itself, reaching the places where the materials are sourced and processed, as well as the people whose hands shape them.

Architects struggle to address the effects of material extraction but have embraced timber construction as a possibility to harness material usage into something positive. Using timber in long-lasting structures furthers the industry's decarbonization efforts, as the embodied carbon in wooden structures functions as carbon storage. This does, however, hinge on forests being replanted so that they can keep functioning as carbon sinks^[1].

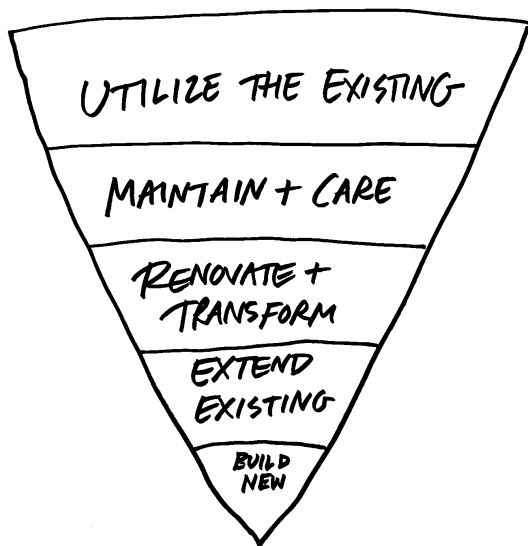
This shift to renewable materials has sparked debate about resource availability. Are we using timber from forests faster than they are able to regenerate, thus depleting increasingly valuable carbon sinks? From this perspective, other faster-growing bio-based materials, such as straw, may be preferable to wood. Extraction of straw does not place significant strain on the environment.

The discussion around the ecological effects of bio-based materials stands in stark contrast to **the silence surrounding the origins of minerals and other abiotic virgin raw materials**. We deplete virgin materials from the earth's crust at an accelerating pace, simultaneously creating a waste problem, which we then try to answer by burying these hard-won materials in landfills and roadbeds. **At which pace can we consume materials, which have taken billions of years to form?**

The greatest shift must occur in our attitudes towards materials already in human use. There's no longer space for disposability. Harnessing the existing but unused building stock as a resource – urban mining – is a way to step away from architecture's extractivist practices.

1. *Carbon sink = something that absorbs more carbon from the atmosphere than it releases.
Carbon storage = something that doesn't actively absorb carbon anymore, but holds embodied carbon*

3. New Life for a Building



The illustration is adapted from the Hierarchy of resource-efficient construction (Towards Sustainable Architecture: Finland's national architectural policy programme 2022–2035, Finnish Government, Helsinki, 2022)

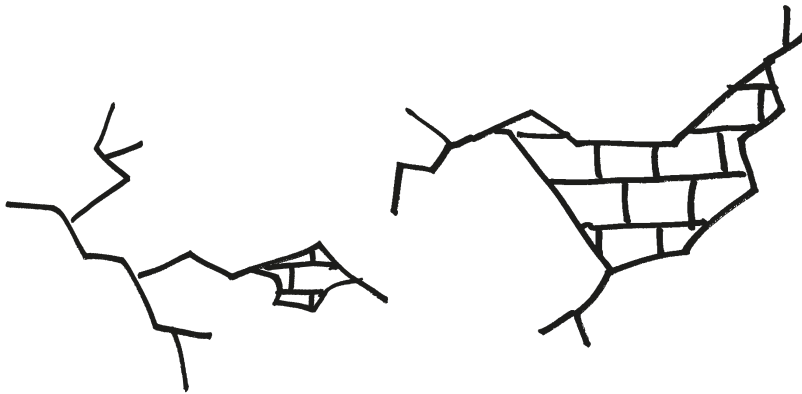
Recognizing the materiality of architecture requires acknowledging that we can no longer produce objects at the same rate as now. The circular economy is often understood as the recycling and reuse of materials, but a much more important goal is extending the lifespan of buildings and materials we already have. **Thus, the most sustainable building is one that is kept in use and loved.**

Currently, without recognized aesthetic or cultural values and a protected status, a building is not truly viewed as a permanent object. Instead, a building remains in place 'for now'—until it is demolished and turned into waste. In most countries, there is no proactive, deliberate approach to the preservation of buildings, but rather protection happens case-by-case when it does. The attitude towards the permanence of buildings is vividly captured in the idea of a building's 'life cycle,' **as if it were necessary or even logical to assign a 'best before' date to materials like stone.**

At the same time, as some cities and regions grow while others shrink, more and more of our existing buildings are in the 'wrong place.' As people move, buildings are left behind, and the materials and resources embedded in them are perceived as having lost their value. In addition, a building's functionality can also become obsolete as demographics shift and societies evolve. Sometimes, the building is known to meet only a temporary need already as it is being designed.

While preservation on heritage grounds remains justified, our relationship with the existing building stock requires a rethink. In the future, more buildings will need to be shielded from demolition, but not all of them can or should be protected in a similar manner. How can buildings be transformed, or even transferred to another place, to remain in use? We need different, active ways of approaching the integrity of the original design as well as an increased tolerance for wear and historical layers.

4. Enough is Enough



Compared to new construction, repair and renovation are generally more sustainable as they require less raw materials. However, current repair and renovation practices need to be overhauled. Of all the construction and demolition waste generated by the construction sector in Finland, a whopping 85% is caused by renovation and demolition and only 15% by new construction^{[2]*}. Some of the ways in which we treat our existing building stock produce substantial amounts of waste.

In their current use, the terms 'renovation' and 'repair' cover a vast field of construction practices, from almost full demolition to high-quality restoration. These broad definitions blur the effect that these activities have on the built and natural environment, as well as the communities in which they take place. More precise terminology brings to light the differences within renovation practices, and therefore guides us to make more balanced decisions.

When changes are planned, we need to ask ourselves: "What is enough?" The necessary scale of renovation needs to be critically evaluated. In many cases the need for changes and alterations may derive simply from a craving for novelty. What changes in our attitudes towards existing structures, materials, and communities, if instead of pursuing maximum wow-factor, we strive for the smallest possible intervention? Architecture can play a crucial role in communicating that sustainability is not about "settling for less", but about harnessing the full potential of what we already have.

2. The Finnish Ministry of Environment, <https://ym.fi/en/circular-economy-in-the-construction-sector>

5. No Hoax

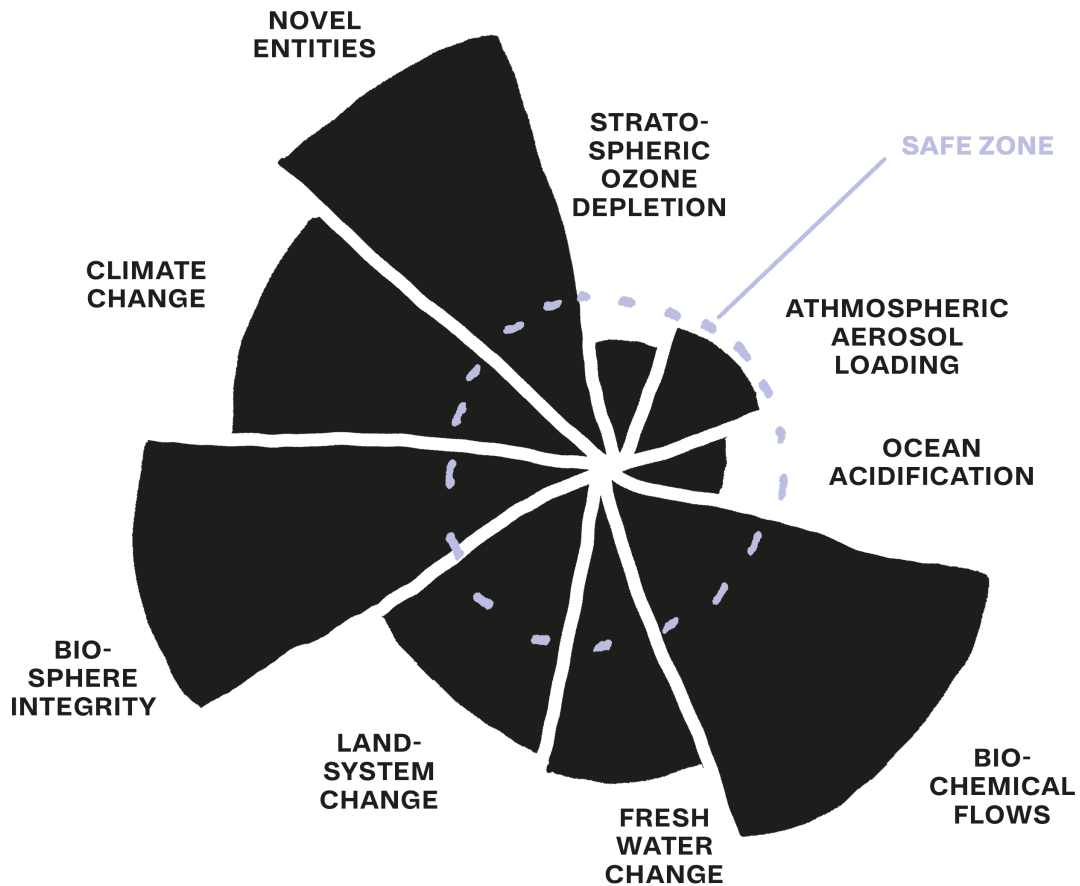
DEMAND
FACTS.

Intentional as well as unintended **greenwashing** runs rampant in all parts of our society and the construction sector is no exception. False or exaggerated claims of sustainability set the entire field back, as they blur our understanding of the scale of impact of various actions and cast doubt on all sustainability efforts. To achieve maximum impact and be able to reliably communicate it, decisions taken in construction projects must be grounded in the best available scientific knowledge. To ensure efforts can be traced, replicated and shared, both the impacts and the processes used to achieve them need to be carefully documented and reported.

Transparent and comprehensive documentation requires an understanding of and data from the entire value chain. At the moment it is still often challenging to get reliable information about construction materials and products. **Where do the various raw materials come from and what chemicals do they contain, for example?** As regulatory development is shifting the focus of construction sector actors to supply chains, more attention will be paid to these questions.

While documentation is often considered highly technical and dull, it can reveal something otherwise hidden, and help us comprehend complex scientific information in a more easily digestible form. Ambitious documentation and reporting are a tool for producing and sharing knowledge and best practices required for the green transition – at best they can shed light on challenges and perspectives, which we haven't yet considered.

6. Sustainability is Stagnation



The planetary boundaries 2023. The concept by Stockholm Resilience Centre^[3] presents a set of nine planetary boundaries within which humanity can continue to develop and thrive for generations to come. 6 out of 9 boundaries were crossed in 2023.

Sustainability (by definition) is stagnation, sustaining current conditions and practices. As the year is coming to an end, 2024 is well on the track of being the first year on record when the global average temperature surpasses the 1.5-degree Celsius increase^[4]. 1.5 degrees is, as we know, what was identified in the Paris Agreement as the safe limit for global warming. Six out of nine other so-called planetary boundaries of safe

3. Azote for Stockholm Resilience Centre, based on analysis in Richardson et al. 2023.

4. Copernicus Climate Change Service, 9.12.2024.

operating space have also been breached including, for example, biochemical flows and freshwater change. Mere sustainability is no longer enough; we must shift towards actions that actively improve the state of the environment – we must be regenerative.^[5]

We need to recognize the world as we've inherited it, and learn ways of living with it while turning current harmful processes into regenerative ones. Due to the interlinkages between the different facets of the environmental crisis, architects need to consider and address questions traditionally considered to lay outside of the field of architecture, such as effects on the natural environment, pollution, and human rights in construction and the supply chain. Regenerative architecture can provide solutions that have a positive impact reaching far beyond the construction site itself.

Shifting to regenerative practices requires us to question the processes of architecture and construction from inception to execution and maintenance. We need to redefine the role that architecture can play in a transforming world.

5. *sustainable = able to continue over a period of time*
regenerative = relating to the improvement of a place or system.

WHISKY CATHEDRAL . MÅRTENSSON. NORWAY 2022

Sustainability can no longer be reserved for specialty projects or pilots but must be central to all of our everyday architecture. The Whisky Cathedral projects high sustainability goals on a warehouse, a typology often overlooked in the discussion.



RESOURCE ROWS. LENDAGER. DENMARK 2019

As a material practice, the impacts of construction extend far beyond the building site itself. With no room left for disposability, we must make the most out of the materials already in human use. Lendagers' Resource Rows harnesses material through urban mining.



ÖSTERMALM MARKET HALL AND ÖSTERMALM PADEL HALL. TENGBOM. SWEDEN 2014 AND 2022

We can no longer produce new objects at the current rate. Circularity demands extending the lifespan of buildings we already have, as the turning of Östermalm market hall into a sports court demonstrates. The most sustainable building is one that is kept in use and loved, even when it means changes in the original building.



NARVA ART RESIDENCY. ESTONIA

We must ask ourselves: "What is enough?". Narva art residency is being renovated bit by bit by the occupants of the residence, appreciating the aesthetic of the in-between phase of this slow process. How do our attitudes toward existing structures, materials, and communities change when we prioritize minimal intervention over novelty and wow-factor?



SERPENTINE HOUSE. SALONEN & SCHALIN. FINLAND 2020

Architecture can show that sustainability is not about "settling for less" but harnessing the full potential of what we already have. The delicate restoration of the Serpentine House rental complex illustrates this and emphasizes social sustainability by allowing the residents to return to their homes after the renovation.



JARÐSETNING. BOGADÓTTIR. ICELAND 2021

To understand architecture's environmental impacts and its potential, we must focus on the processes through which the built environment is produced. Jarðsetning, a poetic documentation of demolition, shows how documentation can shed light on challenges and perspectives, which we haven't yet considered.



CLOSED FOR MAINTENANCE. FAROE ISLANDS 2019

We need to recognize the world as we've inherited it and turn current harmful processes into regenerative ones. The Closed For Maintenance project embodies this by inviting tourists to restore the paths and structures eroded by tourism.

Regenerative practice requires redefining what is considered as architecture, and what roles it can play in a transforming world.



The projects presented in the Beyond Zero original exhibition

Closed for Maintenance landscape restoration, Visit Faroe Islands in collaboration with local communities, environmental experts, and marketing professionals, Location: Faroe Islands / Denmark, on-going project

Drangar Guesthouse, Architect: Studio Granda, Location: Iceland, Area: 1,068 m², Completed: 2019

ETC Housing, Architect: Kaminsky Arkitektur in collaboration with architect Hans Eek, Location: Västerås / Sweden, Total area: 2,900 m², Designed: 2019–2021, Completed: 2021

Hedekov / Center for Regenerative Practise, Architect: Djernes & Bell Architecture, Location: Rønne / Denmark, Total area: building: 500 m², land area: 180 ha, Constructed: 2022–2024, Completed: 2024

Jarðsetning – film and book, Author: Anna María Bogadóttir, Location of the demolition site: Reykjavik / Iceland, Time of creation: film 2021/ book 2022

Jyväskylän University Library renovation, Architect: Arkkitehtitoimisto Sipinen and BST-Arkkitehdit, Original building: Arto Sipinen / 1974, Location: Jyväskylä / Finland, Total area: 11,274 m², Design and construction: 2017–2021, Completed: 2021

Kristian August gate 13, Architect: Mad Arkitekter, Location: Oslo / Norway, Total area: 4,300 m², Designed: 2017–2020, Completed: 2020

Living Places / Prototypes, Architect: EFFEKT Architects, Location: Copenhagen / Denmark, Total area: 2,230 m², Designed: 2021–2022, Completed: 2023

Narva Art Residency and renovations, Location: Narva / Estonia, Total area: 1,020 m², Original architect of the building: Paul Friedrich Wilhelm Alisch / 1893, As art residency: 2014 →, Renovations: 2014–2015, 2019–2020 and 2025–2026

Pelgulinna Upper Secondary School, Architect: Arhitekt Must, Location: Tallinn / Estonia, Total area: 8,273 m², Designed: 2020–2022, Completed: 2023

Resource Rows / Housing, Architect: Lendager, Location: Copenhagen / Denmark, Total area: 9,148 m², Designed: 2015–2016, Constructed: 2017–2019, Completed: 2019

Serpentine House renovation, Architect: Kati Salonen & Mona Schalin Architects, Original building: Yrjö Lindegren / 1951, Location: Helsinki / Finland, Total area: 15,883 m², Completed: 2020

Thoravej 29 Community Hub, Architect: Pihlmann Architects, Location: Copenhagen / Denmark, Total area: 6,221 m², Designed: 2021–2024, Constructed: 2022–2024, Completed: 2025

Villa Koppa, Architect: Collaboratorio, Location: Inkoo / Finland, Total area: 150+30 m², Designed: 2021–2022, Constructed: 2022–2023, Completed: 2023

Vindmøllebakken Housing, Architect: Helen & Hard, Location: Stavanger / Norway, Total area: 4,950 m², Designed: 2017–2019, Completed: 2019

Whisky Cathedral, Architect: Erik Mårtensson, Location: Myken island / Rødøy / Norway, Total area: 400 m², Designed: 2018–2019, Constructed: 2020–2022, Completed: 2022

Östermalm Padel Hall transformation, Architect: Tengbom, Original Location: Stockholm / Sweden, New Location: Mölnlycke / Sweden, Total area: 2,300 m², Designed: Initial design (as the temporary market hall) 2014–2015, redesign for the padel hall adaptation 2020–2021, Constructed: Dismantling of the original structure 2021, reconstruction at the new location 2022, Completed: 2022

About Beyond Zero Exhibition

EXHIBITION: Beyond Zero – Nordic Architecture on the Road Towards Renewed Practices.

CURATORS: lines Karkulahti, Anssi Lauttia, Charlotte Nyholm, Meri Wiikinkoski (Noon Architects & Vapaa Collective).

EXHIBITION ARCHITECTURE AND GRAPHICS: Johannes Nieminen, Tuomas Siitonen (Kombo Office).

Built with CONNECTY modular furniture system concept by NOZO.

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Padel Hall: Felix Gerlach. Narva Art Residency: Tõnu Tunnel.

Serpentine House: Kuvatoimisto Kuvio Oy / Anders Portman.

Jarðsetning: Anna María Bogadóttir. Closed For Maintenance: Kirstin Vang.

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Nordic co-operation

Nordic co-operation is one of the world's most extensive forms of regional collaboration, involving Denmark, Finland, Iceland, Norway, Sweden, and the Faroe Islands, Greenland and Åland. *Nordic co-operation* has firm traditions in politics, economics and culture and plays an important role in European and international forums. The Nordic community strives for a strong Nordic Region in a strong Europe. *Nordic co-operation* promotes regional interests and values in a global world. The values shared by the Nordic countries help make the region one of the most innovative and competitive in the world.

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