Building Balance

UN17 Village by NREP

An Open Laboratory For
A Better Built Environment

Welcome to UN17 Village

It is, in fact, very simple: we cannot continue as we have so far. It is a necessity to start a new era for construction, and it starts right here in Denmark. Every single month, the equivalent of a new New York City is being built worldwide, and in just 30 years, half of the earth's population will live and work in buildings that have not yet been built, designed or conceived.

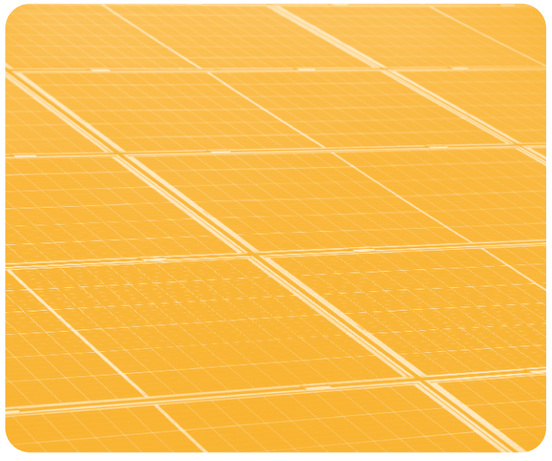
At the same time, the earth is burning beneath our feet. Drastic man-made climate change is no longer a hypothesis or future scenario, but a fact right outside our own doorstep, and the construction industry is one of the great culprits. It seems absurd that precisely our ambitions to create better housing conditions for the next generation are helping to destroy the same generation's livelihood. But it is nonetheless the course we are on right now.

At NREP, we believe it can be different. We believe that together we can start a movement that can revolutionize the industry and make the construction industry a positive player for a long-term sustainable future. A future for both people and the nature we are part of. That revolution starts in rethinking the purpose and process of construction. It is not enough to just build a new building stock. It is also not enough "just" to build green. We need to look at construction in a bigger picture, and make demands that take the climate as well as the people and the economy seriously. It must be possible to finance, possible to scale, possible to move into, and live in. Otherwise, it will just be a pipe dream.

The starting point for this ambitious movement in construction combines the highest standards in health and sustainability with the UN's Sustainable Development Goals. It is this larger and overall picture that we must consider in the construction industry, so that it truly becomes sustainable and future-proof.

UN17 Village is the realization of our most ambitious approach to construction ever. A complete method, a specific construction in Ørestaden and an invitation to all actors in and around the construction industry to create buildings that meet the highest standards and address all UN Global Goals. UN17 Village brings together actors across the industry, nationally and internationally, and serves as a forum for knowledge-sharing about sustainable construction. It must be a laboratory where we can jointly develop methods so that the next construction will be even better.

UN17 Village will be the first international reference point for a new standard. It is not just about building homes. It is about changing the conversation about what new constructions should do, about raising the bar for sustainability, and about taking the lead with the necessary solutions of the future. It is the start of a new era for construction with the good life at the center.



Part I

Breaking New Ground

Part II

UN17 Village Ørestad

UN17 Village is the first building project in the world that, through an innovative method, addresses and incorporates the 17 UN Global Goals in one complete solution. This approach to future construction challenges the status quo in a holistic project that meets the highest standards within social, environmental and economic sustainability.

Part I

Breaking New Ground

The carbon and climate footprints of properties are too large to ignore. Overall, properties account for a staggering 40% of global greenhouse gas emissions. Therefore, the construction industry is in urgent need of finding better ways to build and operate buildings, and NREP has set out to take the lead and accelerate the transformation towards a CO2-neutral sector. UN17 Village will be the world's first major real estate project to actively work with the 17 UN Global Goals – also known as the SDGs – and create a holistic methodology open for all to replicate and use. In part one we share our vision for sustainable housing, approaches, methodologies and tools for sustainable construction and insights from the process of constructing the very first UN17 Village in Ørestad, Copenhagen.

The Challenge of the Millenium

With the onset of the new millennium, the balance finally shifted. In 2008, the percentage of people living in urban areas exceeded that living in rural areas. For the first time in world history, the weight had shifted. And from here the population living in urban areas will only increase. The UN estimates that 70% of the world's population will live in cities in just 30 years.

At first glance, it means a huge challenge in securing housing that can house the billions of people who will live side by side in the cities of the world. But the challenge is far more complex than that. Because with this development also comes an almost unmanageable series of intertwined consequences.

Climate impact is just one of countless problems that arises with increased construction and relocation. Logistical challenges, mental and physical health, loneliness and inequality follow the migration, along with as yet unforeseen issues that will emerge in years to come. It makes this challenge the most complex we as a civilization have ever faced, and it requires a solution that is as ambitious as the challenge is multifaceted.

1

60% of the world's buildings by 2050 have not been constructed yet

2

1 in 3 inhabitants in cities have experienced loneliness in 2021

3

4 out of 5 inhabitants in cities are exposed to unhealthy air climates

4

70% of global CO2 emissions come from the cities of the world

5

1 in 5 inhabitants in cities have a diagnosed mental illness

Chapter I

Building a Movement

A Beacon for Sustainable Housing to Build on

Once completed, UN17 Village will stand tall as an important landmark for Ørestad in Copenhagen as well as for NREP's ambitions and visions for environmental, social and economic sustainability.

By being one of the first in Denmark to use digital tools in the development of the project, we are building a thoroughly analyzed and well-devised real estate project with the most eco and resident-friendly solutions. The five different buildings will complement one another, each targeting different categories of tenants from young graduates who are not yet ready to settle down for good, to all sorts of families and even senior living. There will be small apartments for singles, homes that combine work and pleasure, and more traditional family homes. Across all the different types of housing and common for all future residents of UN17 Village will be a daily life characterized by better physical and mental health, community and sustainability in day-to-day life.

Sustainability has been a key criterion for success in tackling this job – and in UN17 Village, a holistic project is being constructed with the ambitious goal of integrating the 17 UN Global Goals into one single project. In order to be able to integrate the 17 UN Global Goals in practice, we have grouped the goals into six main categories – biodiversity, community, health, materials, water, and energy. Within each category, NREP has thoroughly evaluated a comprehensive set of possible initiatives in order to identify those with the greatest impact. Based on this analysis, decisions have been made on approximately 300 sustainability initiatives, of which some 200 have been implemented in the project, strengthening our towering ambitions to deliver on the UN's sustainable development goals.

NREP sees the UN Global Goals as a global tool with a holistic approach to global sustainability challenges – and by using them in the development of UN17 Village, we have developed a scalable method that enables everyone in the industry to implement and measure their efforts. The result is a series of ambitious goals in health, community, biodiversity, material recycling, and water and energy supply, all of which are clearly visible in the design of UN17 Village.

A sustainable village catering to all needs

An increasing number of urban dwellers want to live active, responsible and sustainable lives with as small a climate footprint as possible. At the same time, loneliness is a significant problem in major cities where many – despite a growing number of inhabitants – feel isolated and alone. Hence, community is a central value in UN17 Village. We all live longer, healthier and better lives when we get to know each other and form relationships with the people we interact with in everyday life. This is why common functions, sharing economy and cohesion have been thought of in every building, thus encouraging residents to share more, spend more time together and get to know each other better.

The first UN17 Village is currently under construction in Copenhagen's Ørestad neighborhood comprising 35,000 square meters and will consist of five very different buildings each complementing each other. Each building is targeted at different residents from young graduates, across different family types to senior housing. There will be small apartments for singles, homes that combine work and leisure, as well as more traditional family homes. The buildings are grouped around common areas including restaurants for residents and neighbors, a health clinic which will focus on the residents' health and well-being and a health center with a fitness center. In addition, there is a sharing center, which will serve as a gathering place and inspiration for a sustainable lifestyle based on a circular economy.

The aim is to create a village with different housing typologies that cater to residents across generations and changing family patterns. UN17 Village is designed with a focus on safety, the immediate environment and with many facilities and places where the area's residents can meet in social contexts.

“If a building is to be truly sustainable, the green and climate-friendly element is just one part. It also needs to promote healthy living, communities, and biodiversity. Equally important, it should be within financial reach of people with average incomes, otherwise it will never be built. UN17 Village covers all this. Our hope is that the approach will catch on and that people around the world will be inspired to live and build more sustainably.”

— Martin Schultz Nielsen, Head of Investment, NREP

From Good Intentions to Measurable Change

Complex times call for complex measures. And the process of creating truly sustainable cities with respect for people, planet and prosperity – without compromising one over the other – is indeed complex and also long overdue. With UN17 Village, NREP is rising to this global challenge with a game changing method that succeeds in taking the 17 UN Global Goals into careful consideration.

Consider it a movement

In order to move the entire construction industry from good intentions to measurable change, we simply cannot do it alone. The building industry in its entirety must take joint responsibility for its sizable CO2 emissions and the liveability of the urban environment. This is why the UN17 Village method will remain free and open source in its continuous development while investing in knowledge-sharing and partnerships.

“It takes a village”

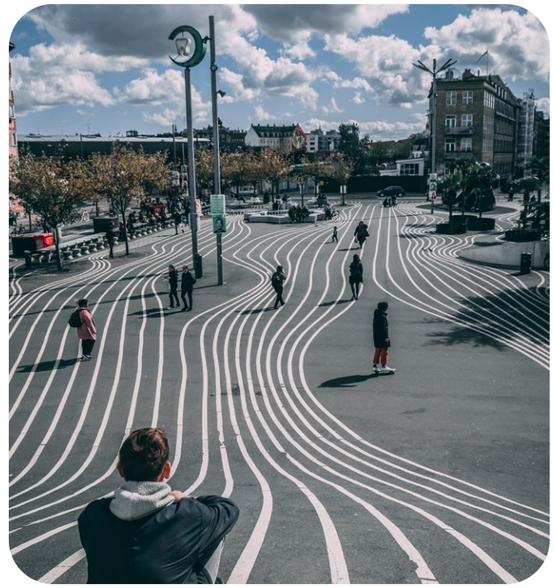
The upcoming UN17 Village in Copenhagen will be among the most ambitious SDG projects in the world. It will be living proof that the simultaneous activation of the 17 SDGs will spur innovative solutions and productive partnerships across the industry and once again place Denmark as trailblazers in sustainable development. Inhabitants of the UN17 Village will become pioneers of sustainable living with equal attention to documented CO2 emission reduction, conscientiously chosen materials with minimal degassing, a real sense of community and the physical and mental well-being of each inhabitant.

No SDG left behind

The UN17 Village method is not a quick fix. Nor is it a numbers game of certificates and standards. It is a thorough and professional analysis and handling of the complexity of the SDGs and the many interlinked requirements they entail. Sustainability lies in the balance of all the SDGs – the environmental, economic and social – however challenging to obtain. This is why the UN17 Village method unpacks and evaluates as many SDGs as possible, thereby putting an end to systematic cherry-picking.

New location, new solution

The UN17 Village will be the first of hopefully many UN17 Villages across the globe – each with its own SDG analysis and tailormade blueprint that fits the unique layout of its location. The UN17 method is scalable yet highly contextual in the truest humanist understanding that we as human beings are all equal, but not the same.



UN17 Village will incorporate and support the surrounding nature and each courtyard will be a concentrate of what the surrounding nature offers. The make-up of flora and fauna will reflect the different biotopes found in the surrounding nature, creating synergies between the constructed urban nature and the wild, spontaneous nature.

Top 3 Most Innovative Health Initiatives in UN17 Village

Our physical and mental health plays a key role in UN17 Village. The mental and physical health of residents has been taken into account in all aspects of UN17 Village, and all the health initiatives at UN17 Village are intertwined to ensure that this healthy lifestyle is implemented and flourishes.

1

Optimized indoor climate & ventilation

All indoor climate parameters have been optimized so that there is superb air quality, good acoustics, good daylight, zoning of pollution sources and optimized thermal indoor climate. Increased ventilation removes particles and poor air quality in general. Indoor climate-labeled materials and surfaces reduce harmful gasses in the indoor climate.

→ The amount of ultrafine particles increases for half an hour after frying, which can lead to an increased risk of respiratory diseases such as asthma and bronchitis, blood clots in the heart and lung cancer.

2

The visual environment

Explicit focus on daylight and electric circadian lighting in the bathroom and kitchen, which reduces the risk of a poor night's sleep and the associated health effects.

→ 40% of Danes have suffered from sleep problems within the last two weeks. The risk of developing type 2 diabetes increases by approx. 50% in people who have difficulty falling asleep.

3

Healthy knowledge & community

Advice from an authorized doctor in a local medical center, healthy diet in a shared dining house and exercise in an activity center. Communities that support social and physical well-being. Quality of life by living green, close to nature.

→ Social communities are one of the most important factors in terms of longevity and quality of life. Shared dining and shared activities help create social relationships across ages.

A Societal Perspective

Environmental sustainability and the energy-intensive construction industry do not often go hand-in-hand. The construction industry is a massive consumer of raw materials and natural resources generating an estimated 39% of the world's CO2 emissions. However, despite many complex challenges, the sector is gradually becoming more sustainable and with UN17 Village, NREP is spearheading a movement in the construction industry that considers sustainability in every process from start to finish.

Global

The 17 UN Global Goals

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action to all countries – developed and developing – in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

The UN Global Goals are increasingly being articulated across Danish society – from primary and lower secondary education to the management of the largest companies. This means that, to a far greater extent than before, we have a common language and framework for working with broad-based sustainability. This new staging of sustainability is a major expansion of the original Triple Bottom Line framework. It is a marked recognition that sustainability requires a holistic view of the issues, as well as a very strong focus on cooperation and partnership. We need to be able to successfully solve these challenges. And here the construction industry plays a particularly important part.

National

The climate agenda

With the recently enacted climate law, the current Danish government will be obliged to work for the realization of the 70% reduction target in 2030. With broad support among the parliamentary parties, the climate law is binding for the future. The Climate Act legislates the 70% target and obliges the current and future climate ministers to take concrete action.

Municipal
Green capital

For many years, the City of Copenhagen has strived to lead the way amongst sustainable cities. Among other things, this has led to a whole range of different municipal strategies and policies, each of which addresses different elements within sustainability. The expectation for urban development is that the municipality's strategic approach of creating vibrant, diverse and sustainable cities and local communities comes into play, and that Copenhagen develops in a sustainable direction.

Local
Ørestad South

The plan for Ørestad from 1995 was the beginning of a completely new discourse in Danish urban planning. The Ørestad Plan has been both a direct and indirect reason for a new discussion of the city's role in society and thus the city's role as a framework for life. Since the Ørestad Plan, Copenhagen has seen a number of development plans for new urban areas, which to varying degrees try to provide answers to some of the questions that the discussion about Ørestad has caused. The plans for Sluseholmen, Carlsbergbyen and Nordhavn can be seen as generations in that evolution, and finally the last 25 years of experience have found their way back to Ørestad. Most recently with the development of the the Arena Neighborhood – a neighborhood that challenges the original ambitions for Ørestad by introducing a new and smaller scale, but at the same time also emphasizes the value of the important basic premise on which Ørestad is based; proximity to efficient public transport and short distances to workplaces, city life and an airport combined with proximity to a real piece of nature – a quality of life many people seek and few urban areas can offer.

On the last building site in Ørestad South, and with knowledge of the construction industry's central role in the sustainable transformation, we want to create UN17 Village; a responsible and sustainable construction that incorporates the 17 UN Global Goals and contributes concretely to the sustainable agenda we see unfolding across local, municipal, national and global visions. A sustainable construction that supports a sustainable way of life.

Chapter II

A Global Tool with a Holistic Approach

Approach and Methodologies

Complex issues call for complex solutions. And creating sustainable cities that respect people, the planet and the economy – while at the same time working on a foundation of multiple certifications that ensure that the construction lives up to the highest standards – has proven to be an extremely complex process. NREP has taken up the global challenge with an innovative approach which is the very first that manages to address and initiate as many as possible of the 17 SDGs in one method. A method that meets the highest standards in social, environmental and economic sustainability.

Sustainability tools

UN17 Village is an open laboratory for the 17 UN Global Goals. The project sees these goals as a globally applicable tool which, with a bit of local interpretation, can provide a standardized jumping-off point for solving real-world challenges in sustainability. The project aims to be certified in DGNB Platinum, DGNB Heart and WELL Platinum. Since the beginning, this has given the project concrete "sustainability tools" to incorporate into the design process. There has been a particular focus here on coordinating our sustainable efforts across the various "tools" in order to create as much value as possible.

DGNB and WELL

Both DGNB and WELL are well-known tools, and both already have clearly defined requirements in terms of being able to achieve the different certifications. This also applies to DGNB Heart, despite this being a relatively new certification, which has been developed alongside the UN17 Village concept. DGNB focuses on all three facets of sustainability: environmental, social and economic. The environmental part of DGNB includes a focus on the life cycle of building materials, transport, energy and water use during and after construction, and durability. The economic aspect focuses on construction costs and operation, maintenance and flexibility. The new DGNB Heart ensures a clear focus on social sustainability, leading to a broader focus on concept and a healthy indoor climate.

WELL is all about social sustainability in terms of the physical framework for construction, and also during the operational phase. This means that work is carried out on initiatives such as access to healthy meals, updated informational materials on healthy eating and exercise, health screening offers, etc. – measures conducted during the operational phase which will ultimately safeguard the health and well-being of residents.

“The aim of UN17 Village is to create an open 'laboratory' for the UN's Global Goals, where we balance environmental, social and economic sustainability. We are proud that the project's many innovations – including the special solution for chemical-free wooden facades – may potentially be a breakthrough for tall timber constructions in Denmark. There is a need to accelerate the green transition both locally and globally, which is why we freely share our knowledge from UN17 Village with the entire industry.”

— Nicole van der Star, Investment Developer, NREP

Top 5 CO2-saving initiatives in UN17 Village

Today, construction accounts for 40% of global CO2 emissions annually and studies show that when it comes to new construction in Denmark, it is the materials that make up the majority of the climate footprint during the building's lifetime. In order to reduce the buildings' overall climate footprint, it is therefore important to initiate measures that promote sustainable materials, resource efficiency and circular economy. UN17 Village will achieve a significant reduction in embedded CO2 through sustainable materials selection, design and recycling.

1

Lightweight wooden facades instead of concrete

CO2 saving:
61% / 320 tons

2

Roof construction in wood instead of concrete

CO2 saving:
50% / 158 tons

3

Floor separation in wood instead of concrete

CO2 saving:
24% / 157 tons

4

Using FutureCem in the concrete

CO2 saving:
30% / 131 tons

5

Lightweight interior walls in wood instead of concrete

CO2 saving:
24% / 130 tons

Activating the UN Global Goals

The 17 UN Global Goals were adopted by world leaders at the UN General Assembly in 2015 to ensure progress towards a far more sustainable world by 2030.

The UN Global Goals in the Danish context

The UN Global Goals for Sustainable Development create a global vision towards a sustainable future. With 17 goals and 169 sub-goals, a common course has been set with concrete proposals for what a sustainable future entails and what changes are required. But since the goals are global goals with a common standard for how the various sub-goals are met, they require a local interpretation in a Danish context. In Denmark, it is for instance not meaningful to talk about poverty – as it is highlighted by the UN in a global perspective – as the scale for this amongst other parameters depends on a minimum income that is so low that no one in Denmark lives below it. One can still speak of poverty in a Danish context, but it requires contextualization and interpretation.

For this reason, Lendager Group prepared the document "The 17 Global Goals in Danish construction" during the spring of 2020. The purpose of the document is to provide an understanding of how the UN Global Goals can be interpreted and achieved in a Danish context, with special focus on an interpretation of the UN Global Goals related to the construction industry. The interpretation of the UN Global Goals was carried out on the basis of Lendager Group's own assessments and experiences, supported by reports and documents from e.g. the initiative Our Goals, The Danish Government, 92 Gruppen, Green Building Council, The Builders' Association, UIA SDG Dhaka Declaration, Realdania, Statistics Denmark, and various Danish municipalities' own practices with the 17 Global Goals.

In parallel, Statistics Denmark and the 2030-panel have prepared the report "Make the Global Goals our goals – 197 Danish measuring points for a more sustainable world", which was published in September 2020. The report provides an overall interpretation of the UN Global Goals in a Danish context – a process which was launched in 2019, gathering input from leading experts, universities, interest groups and the business community. This report forms the primary basis for UN17 Village's understanding of the UN Global Goals – supplemented by the initial screening ("The 17 world goals in Danish construction"), which focuses more on how the UN Global Goals are relevant in relation to the construction industry. In the following we describe how each UN Global Goal aims to be interpreted and assessed in UN17 Village.

01 No Poverty

"No poverty" is about eradicating all forms of poverty around the world. In a Danish context, this UN Global Goal involves a more nuanced idea of the concept of poverty – including material and social deprivation, as well as economic resilience in the event of life crises. The latter points, among others, to the strength of social benefits, especially benefits aimed at groups in society who are outside the job market or who, due to physical and/or mental challenges, have difficulty finding employment.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Include socio-economic workplaces in the execution and operation of the project.
2. Establish sharing economy schemes for residents.
3. Provide apartments at affordable prices.
4. Offer activities in UN17 Village at affordable prices.

Inclusion and socio-economic jobs →

UN17 Village will strive towards broader inclusion in the execution of the project but also in the operation of UN17 Village. UN17 Village will therefore contribute to broad employment across age, gender, ethnic origin and socio-economic status: this could be through including people with disabilities, e.g. in the operation of the Dining House or the operation of the green areas, by offering varying types of internships to employ young and socially disadvantaged people and by focusing on gender balance and the inclusion of people of other ethnic backgrounds in employment.

02 Zero Hunger

"Zero hunger" is about stopping all forms of hunger and malnutrition and achieving sustainable global food production. From a Danish perspective, it is very much about ensuring access to a varied and nutritious diet – including for people in low-income groups.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Give residents access to private growing areas.
2. Serve healthy and organic food in the Dining Hall at affordable prices.
3. Organize workshops on healthy eating in the Dining Hall and in connection with the health clinic.

Cultivation areas →

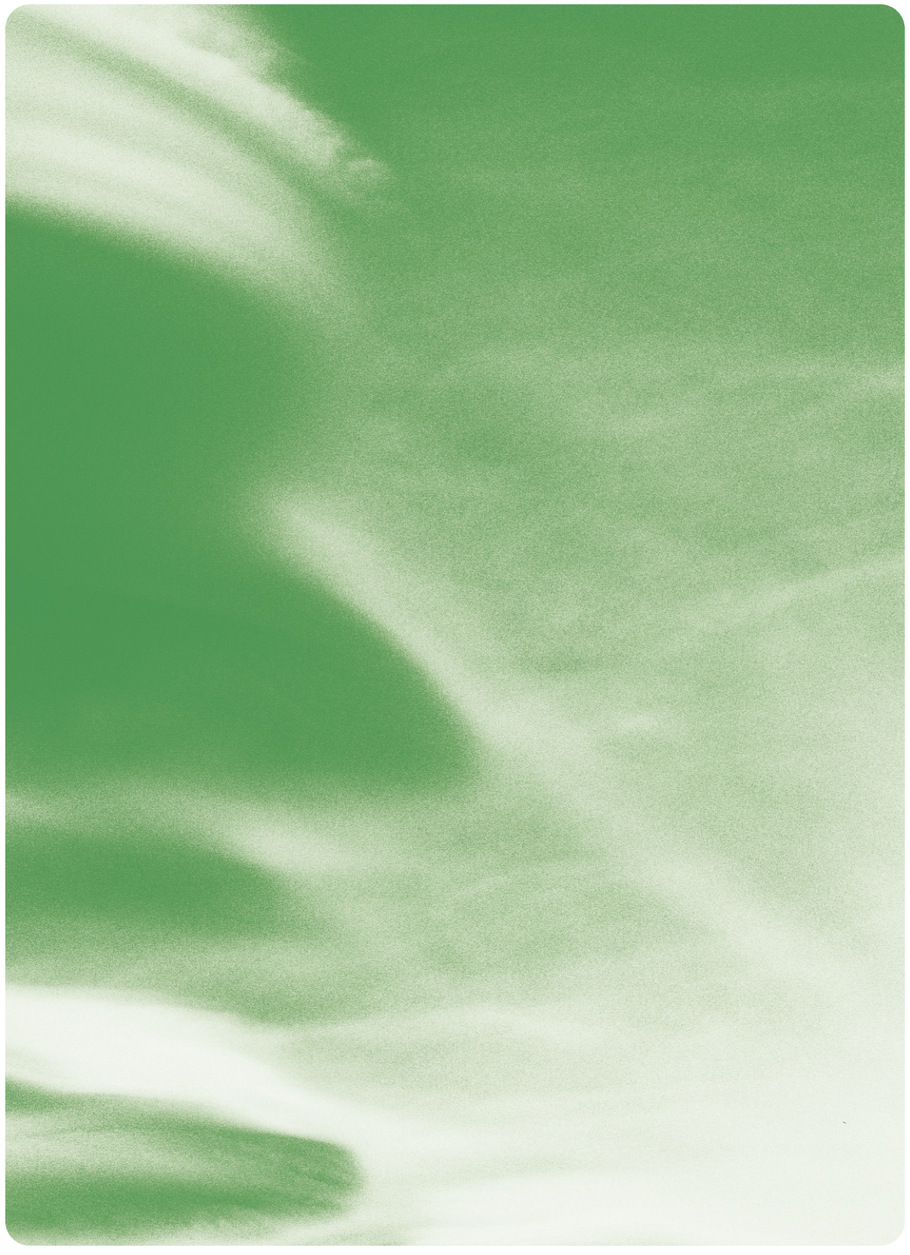
Having the opportunity to grow your own vegetables has positive effects on many levels. It contributes to exercise and fresh air, supports socializing, is economically advantageous, and of course the concept also provides the opportunity to grow your own healthy and fresh crops. In addition, it is climate-friendly, as it helps to reduce CO_2 emissions from the transport of raw materials. UN17 Village therefore focuses on establishing cultivation areas available to the residents.

03 Good Health and Well-Being

“Good health and well-being” focuses on the issue of global health and well-being as a whole, and is about ensuring a healthy life for all and promoting well-being for all age groups. In Denmark, this Global Goal is also about physical and mental health. Areas of focus have been the prevention and treatment of substance and alcohol abuse, smoking and a fundamentally unhealthy lifestyle. The limitation of diseases has also been addressed.

UN17 Village is exploring the potential offered by this UN Global Goal by looking, among other things, at opportunities to:

1. Ensure a good indoor climate in its homes.
2. Bring nature into the project and use natural materials in the development.
3. Provide access to play and exercise in the Health Center and in urban spaces.
4. Reduce the risk of infection through choice of design (easy-to-clean surfaces, non-contact dispensers and mixer taps, and large washbasins).
5. Create good conditions for cyclists.
6. Give residents access to private growing areas.
7. Make UN17 Village a smoke-free area.
8. Ensure social meeting areas both outdoors and indoors
9. Establish special co-living apartments for seniors.
10. Focus in particular on avoiding using substances that are harmful to the environment and people’s health in construction.



The air we breathe ↑

Unfortunately, the air in our homes is often far more polluted than the air outside. This is partly due to particles from cooking, stoves, vacuuming, candles and cleaning products as well as degassing from electronics, toys and materials. However, outdoor air can contain particles from traffic, pollen and fungal spores, which can cause allergic reactions in many people. In UN17 Village focus is placed on implementing measures that increase the air quality in the homes. Among other measures it involves relatively high air changes via mechanically balanced ventilation, pollen filters and high-efficiency hoods. There is also an extra focus on avoiding harmful substances in the choice of materials and electrical components, including VOCs such as formaldehyde and other carcinogenic and endocrine disrupting chemicals, but also heavy metals such as CCA (Chromated Copper Arsenate), lead and mercury.

04 Quality Education

"Quality education" is about ensuring equal access to quality education and promoting everyone's opportunities for lifelong learning. Since the Danish education system is known internationally as one of the best in the world, the debate on Global Goal 4 from the Danish perspective has instead concentrated on the motivation to learn, and on ensuring that the sustainability agenda is highlighted as central areas of focus in teaching.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Use the common spaces for learning about and sharing knowledge on sustainability, including by selecting materials in a sustainable manner, putting up information signs and organizing events.
2. Use the UN17 APP for learning and knowledge-sharing around sustainability.
3. Make sustainability visible in the design of the project (e.g. through the visible use of recycled materials).
4. Arrange activities (e.g. for children and young people) with a focus on learning and knowledge-sharing around sustainability.

Learning and knowledge-sharing →

The common facilities in UN17 Village will play an important role in learning and sharing knowledge about sustainability – and measures will be implemented that contribute to increased visibility of sustainability. This will be done both through design initiatives and materials selection, organizing activities with a focus on promoting knowledge-sharing about sustainability and through information signs that make the building's sustainability initiatives visible.

05 Gender Equality

"Gender equality" is about equality among genders. While Denmark does have formal equality between the genders in relation to key social factors, there is still some distance between formal rights and real equality. In Denmark, there have also been debates around ensuring equal rights and opportunities for minority groups, including people with disabilities and women of other ethnic backgrounds.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Focus on the gender balance and the inclusion of people from other ethnic backgrounds in employment.
2. Establish accessible housing – developed in collaboration with the Danish Handicap Association.

Universal design →

UN17 Village will meet various parameters within universal design that ensure equality and inclusion of people with physical and mental disabilities. This includes, among other things, physical layout and flexibility, access conditions and a strategy for wayfinding and signage that ensures broad inclusion across different residents and visitors. Specifically handicap-friendly homes are distributed across UN17 Village, which in their interior design enable accommodation for people with reduced mobility in wheelchairs. These are designed in collaboration with the Danish Association of the Physically Disabled (DHF).

06 Clean Water and Sanitation

"Clean water and sanitation" is about ensuring that everyone has access to clean water and sanitation, and that this is managed sustainably. In a Danish context, the debate has focused in particular on maintaining and securing our current water supply, streamlining water consumption, and complying with the thresholds for pesticides and other harmful substances in groundwater, as well as other issues.

UN17 Village is exploring the potential offered by this UN Global Goal by looking, among other things, at opportunities to:

1. Collect, treat and reuse rainwater for irrigation in growing areas and green areas on roofs and in courtyards instead of using drinking water.
2. Implement water-saving mixer taps.
3. Monitor and report water consumption, e.g. via the UN17 APP, to encourage residents to use less water.
4. Sell eco-labelled household items in the Lobby/Dining Hall.
5. Use plants in the ornamental pond which can help to purify the rainwater which then flows out into the lake to the south.

Rainwater harvesting and recycling →

In UN17 Village, roof surfaces and courtyard areas are used to collect rainwater, which can then be reused for drip irrigation of the biotopes in the courtyards and on roofs. Due to the challenging growth conditions on roof surfaces it is necessary to establish a permanent irrigation solution in the form of drip irrigation. Drip irrigation ensures that no more water is used than necessary to maintain favorable growth conditions. For watering the greenhouse on the roof and utility gardens in terrain, water is collected from roof surfaces, which is stored in rainwater barrels and tanks. For watering plants in living rooms where there is no requirement for discoloration of the water or mycobacterium growth, water collected from the greenhouse, technical rooms and bicycle sheds are used. For irrigating the greenhouse and utility gardens in terrain, water collected from roof surfaces is used, which are stored in barrels and tanks under terrain. This reduces the risk of bacterial growth, and the water can therefore be used for irrigating vegetables that are eaten raw.

07 Affordable and Clean Energy

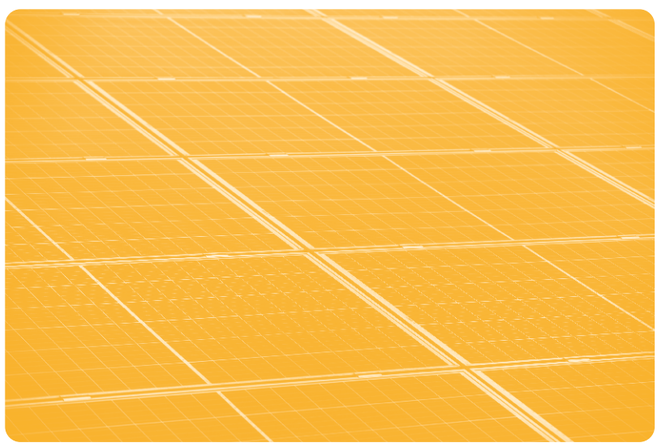
"Affordable and clean energy" is about all people having access to reliable, sustainable and modern energy at an affordable price. In Denmark, debates have focused on issues such as increasing the share of renewable energy on the Danish energy market as part of the ambition to fully resolve Denmark's reliance on fossil fuels by 2050.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Use district heating from HOFOR which in recent years has converted their heat production to a more climate-friendly production based on biomass.
2. Utilize the waste heat recovered from room heating as a source of heat for heat production using heat pumps.
3. Erect solar cells to offer residents self-generated energy.
4. Select an energy provider with renewable energy sources for construction and operation of the building, e.g. wind farms that provide electricity from 2,500 Danish wind turbines.

Sustainable energy and solar cells →

In order to offer residents self-produced, sustainable energy, solar cells are set up on selected roof surfaces. The solar cells are placed east and west with a slope of 10-15 degrees. This location strategy optimizes energy production in relation to the available roof area, just as it extends energy production to morning and afternoon hours, when the residents are more at home and can consume the energy produced. Solar cell production is settled at the main meter level and then distributed to the residents, who all have a secondary meter installed.

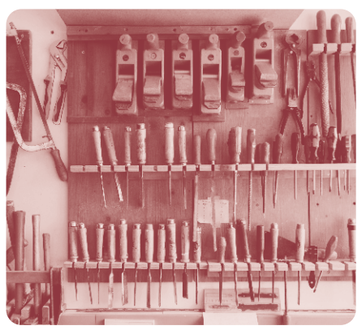


08 Decent Work and Economic Growth

"Decent work and economic growth" is about promoting long-lasting, inclusive and sustainable economic growth, full and productive employment, and decent work for all. In terms of sustainable economic growth in Denmark, the debate has focused heavily on climate, sorting of waste and recycling resources. In addition, Global Goal 8 is very much about the working environment and inclusion on the job market where good working conditions (less stress and fewer accidents at work) and equal access to work for different groups should be ensured.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Include people with disabilities, e.g. in running the Dining Hall or managing the green areas.
2. Offer varying types of internships and apprenticeships, e.g. to employ young and socially disadvantaged people.
3. Focus on the gender balance and the inclusion of people from other ethnic backgrounds in employment.
4. Establish sharing schemes that can help reduce residents' consumption.



← Sharing centre

The Sharing Center is UN17 Village's sharing economy community and workshop. We all have a lot of things that we use so little that we do not need to have them all the time. In the Sharing Center, you can donate your own things or borrow items from your neighbors. A sustainable idea that offers social connections. At the same time, the Sharing Center is also the shared workshop where residents can repair bicycles or furniture, or work on their own or group DIY projects. On the exchange shelves, residents can hand in or pick up used but well-functioning furniture, materials, toys, etc.

09 Industry, Innovation and Infrastructure

"Industry, innovation and infrastructure" is about building a robust infrastructure, promoting inclusive and sustainable industrialization, and supporting innovation. In Denmark, the green transition has been a common theme in the debate surrounding Global Goal 9, with a focus on maintaining a competitive business sector while increasing sustainability, e.g. in energy and resource efficiency, greenhouse gas emissions and innovation.

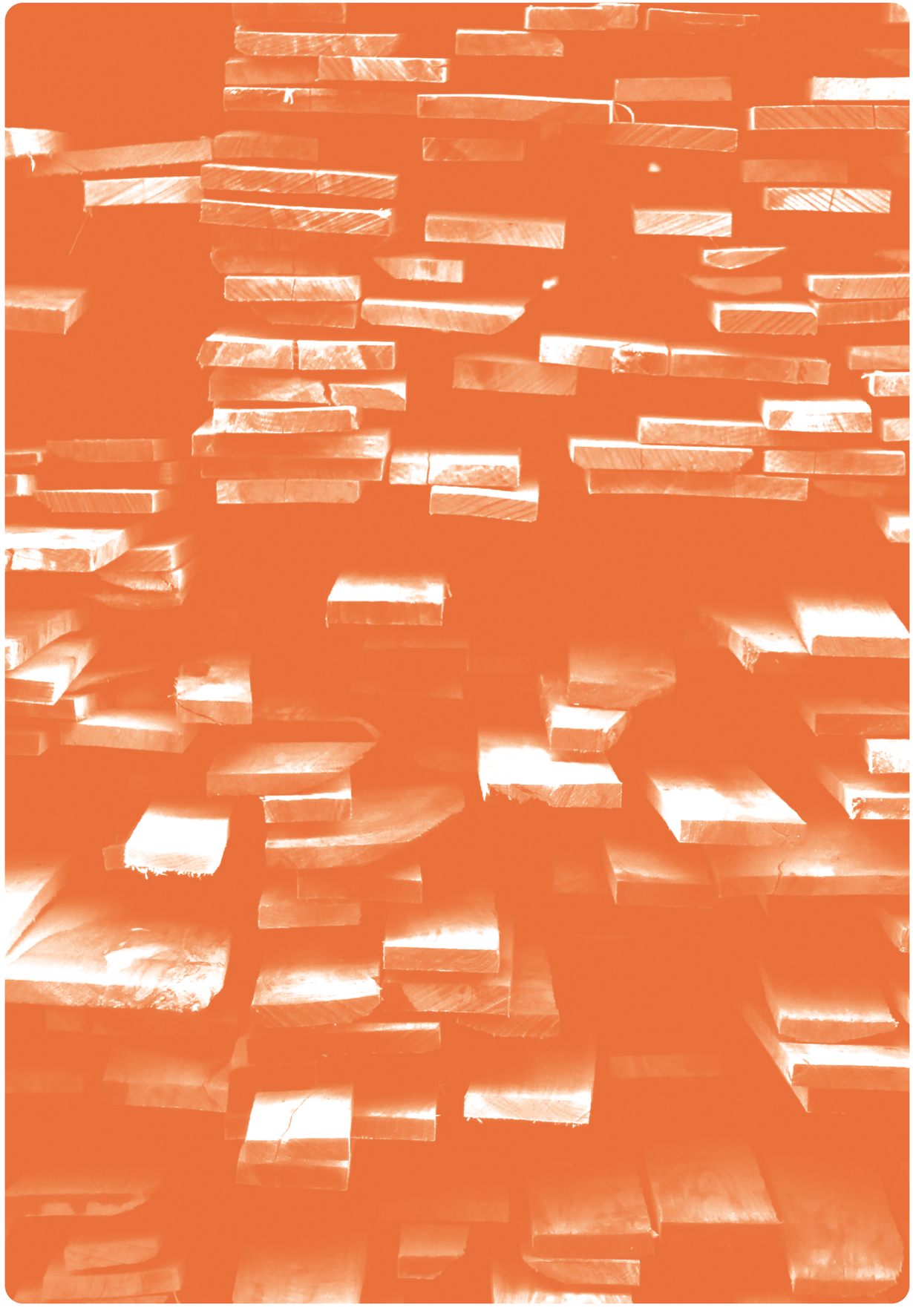
UN17 Village is exploring the potential offered by this UN Global Goal by looking, among other things, at opportunities to:

1. Establish sharing schemes that can contribute to a more efficient use of resources.
2. Implement different materials and construction principles that contribute to a more resource-efficient construction project with lower CO2 emissions.
3. Implement new standards for recycling and reduce waste from the construction site.
4. Recycle and co-produce waste from the construction site.
5. Invest in innovation in terms of construction.

Resource-efficient facade cladding →

The outer walls of buildings account for a large share of the building's total CO2 emissions. Of this, the facade construction and windows make up the largest part, but the facade cladding and the suspension system also play an important role. By incorporating materials with a low CO2 footprint and minimizing the use of resources, we make it possible to reduce the construction's total CO2 emissions. In addition, the facades provide a special opportunity to make the sustainability of the construction visible through the choice of materials. The facades are the building's first large visible surfaces and help to give the architecture and the urban spaces character and identity.

UN17 Village's facades will contribute to the story of sustainable construction, by making sustainability visible through design, sustainable materials selection and implementation of recycled materials to the greatest possible extent. UN17 Village has therefore initiated special innovation tracks that are intended to uncover the possibilities of implementing recycled materials in the facades of the buildings. LCA compositions of various facade claddings and suspension systems based on collected EPDs from concrete products have also been prepared.



10 Reduced Inequalities

"Reduced inequalities" is about reducing inequality between people and between countries. Therefore, the issues discussed in connection with Global Goal 10 have been inequality between rural and urban areas, women and men, negative social heritage, and discrimination against people with disabilities, ethnic minorities and LGBTI+ people.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Include people with disabilities, e.g. in running the Dining Hall or managing the green areas.
2. Offer different types of internships and apprenticeships, e.g. to employ socially disadvantaged people.
3. Focus on the gender balance and the inclusion of people from other ethnic backgrounds in employment.

Diversity in employment ↑

The construction industry has traditionally been dominated by middle-aged men and has a reputation for being conservative. UN17 Village contractor CG Jensen believes that hiring broadly – across gender, age and ethnicity – can create serious change. CG Jensen has a formal policy of training and employing more women, seniors and people with different ethnic backgrounds within their workforce. Today, every fourth construction manager in the company is female and their workforce consists of a diverse mix of nationalities and ethnic backgrounds.

11 Sustainable Cities and Communities

"Sustainable cities and communities" is about making cities, communities and residential developments inclusive, safe, resilient and sustainable. Denmark can strive for more inclusive, greener and more sustainable cities, buildings and communities. It is, for example, also about ensuring resilience against the negative influences of climate change and increased urban population growth.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Implement the DGNB, DGNB Heart and WELL sustainability certifications.
2. Establish inclusive green public spaces with a high degree of security.
3. Implement measures that make it easy and attractive to choose the bicycle instead of the car, in order to promote a sustainable infrastructure with a focus on human well-being.
4. Safeguard a number of parameters within universal design that create equality and inclusion for people with physical and mental disabilities.
5. Investigate (including through initial LCA analyses) and implement various different materials and construction principles that will contribute to more resource-efficient construction with lower CO2 emissions (including choice of building system, insulation, concrete, and interior and exterior surfaces).
6. Recycle and co-produce waste from the construction site.
7. Collect, divert and reuse rainwater.
8. Set up charging stations for electric vehicles.

A mixed building with space for everyone ↑

The construction industry has a huge impact on our surrounding society. Social responsibility is about ensuring sustainable solutions, inclusion and proper social conditions – both in the design process, the execution and operation of construction projects. UN17 Village will offer different types of apartments at affordable prices, aimed at promoting a mixed composition of residents in terms of age, gender, family size and employment. We are therefore working with different types of apartments in varying sizes (ranging from sizes of 1 to 5 rooms), including family homes, Noli homes, senior housing community apartments, as well as special health apartments. The ambition for a mixed housing development also spreads to urban spaces and communal facilities where varied activities with room for different types of people with different incomes will be offered.

12 Responsible Consumption & Production

"Responsible consumption and production" is about spreading sustainable consumption and production models. The debate surrounding Global Goal 12 in a Danish context is about how material management should be viewed to a greater extent from a circular economy perspective. The construction industry is a serious contender in this debate as the construction industry accounts for 30% of the total amount of waste generated in Denmark.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Establish sharing schemes for residents that can contribute to a more efficient use of resources.
2. Implement different materials and construction principles that contribute to a more resource-efficient construction project with lower CO_2 emissions.
3. Recycle and co-produce waste from the construction site.

Sustainable sharing ↑

UN17 Village will contribute to promoting a sharing economy and focuses on implementing measures that make it easier for residents to share resources across UN17 Village for example by establishing shared guest housing, a digital platform for sharing (e.g. via a UN17 APP), and an "items bank" where you can borrow or rent equipment from fellow residents. In addition, the possibility of establishing an electric car sharing scheme is explored in order to contribute to support the sustainable transport habits of the residents.

13 Climate Action

"Climate action" is about acting quickly to combat climate change and its consequences. In a Danish context, the debate surrounding Global Goal 13 focuses on how to integrate climate action into policies and the planning of cities, as well as how we can contribute to lowering greenhouse gas emissions.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

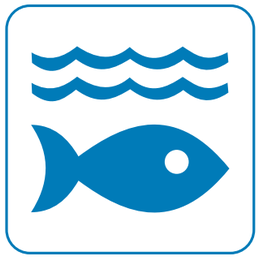
1. Implement different materials and construction principles that contribute to a more resource-efficient construction project with lower CO2 emissions.
2. Collect, divert and reuse rainwater.
3. Contribute to learning and knowledge-sharing on sustainability through common facilities, events and stakeholder meetings for residents and visitors.

Sustainable building system →

Today, construction accounts for 40% of global CO2 emissions annually. Figures from DK-GBC show that when it comes to new constructions in Denmark, it is the materials that make up the majority of the climate footprint in the building's lifetime (up to 80%). This is primarily due to the fact that we in Denmark have long had a focus on reducing the buildings' operating energy through increasing requirements in the building regulations, the voluntary energy classes and due to the Danish energy supply becoming greener. Therefore, the embedded CO2 of the building materials makes up a larger part of the total amount. In order to reduce the buildings' overall climate footprint, it is therefore important to initiate measures that promote sustainable materials, resource efficiency and circular economy measures.

The building system is a good place to start. According to Concito, load-bearing elements and foundations in a standard construction of concrete are responsible for approximately 70% of the building's total climate impact (GWP). 40% is ascribed to foundations and decks, with load-bearing elements accounting for 30%. Roofs and facades are not included. This indicates that the building system plays a major role in the overall climate footprint of the building. Hence, measures that deal with reducing the climate footprint of the building system could make a big difference.

14 Life Below Water



"Life below water" is about preserving and ensuring the sustainable use of the world's oceans and its resources. From a Danish perspective, Global Goal 14 is largely about the problems of overfishing and increased pollution of the oceans which are affected by, e.g., agriculture, lifestyle and waste management, all of which can be sources of pollution. Microplastics are a particular challenge in our local environment.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Implement products and building materials that recycle plastic collected from the oceans or abandoned fishing gear.

2. Avoid using building materials with environmentally harmful substances (choosing products that are Nordic Ecolabelled, EU blue flower, Blaue Engel or similar), to minimize pollution of soil, air, groundwater and surface water, as well as flora and fauna.

Upcycled fishnet rugs ↑

Plastic pollution is a major problem for our oceans today. If you want to protect and restore our oceans, removing amounts of plastic is a great goal. Fishing nets are among the biggest sources of plastic waste in many of our oceans. Apart from the amount of plastic in our oceans, those nets also continue to catch and kill fish. UN17 Village will contribute to preserving life below water by using regenerated nylon fiber made from synthetic fishnet waste as carpets in the buildings.

15 Life on Land

"Life on land" is about protecting, restoring and supporting the sustainable use of ecosystems on land, promoting sustainable forestry, combating desertification, and stopping soil erosion and loss of biodiversity. The debate surrounding Global Goal 15 in a Danish context concentrates to a large extent on ensuring a sustainable and environmentally-friendly improvement to and utilization of the country's land and resources to protect the future biodiversity of the country.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Design varied green courtyards, roofs and facades with local plant species and biotopes from Kalvebod Fælled which will help to increase biodiversity.
2. Manage green areas with a focus on biodiversity.
3. Contribute to the purification of rainwater and basins locally.

← Avoiding environmentally harmful substances

Building materials that can contribute negatively to pollution of soil, air, and ground and surface water, as well as flora and fauna (both locally and regionally) should be avoided. Products should as far as possible have one of the following certificates: the Nordic Ecolabel, EU blue flower, Blaue Engel or the equivalent. The DGNB certification requires that a minimum of 90% of all wood and wood materials used in the building itself and the construction process are derived from responsibly utilized forestry, as well as that all used natural stone in building and in terrain is from documented responsible origins. The documentation for sustainable wood is the FSC (Forest Stewardship Council) or PEFC (Program for Endorsement of Forest Certification) certifications of wood and wood materials.

16 Peace, Justice and Strong Institutions

"Peace, justice and strong institutions" is about creating peaceful and inclusive communities that are supported by institutions that provide individuals with legal certainty. The debate surrounding Global Goal 16 in a Danish context is about reducing physical/mental/sexual violence, gang crime, money laundering and tax evasion, corruption and bribery, and discrimination in laws and policies. There is also a focus on ensuring transparency in decision-making processes and civic involvement.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Ensure the involvement of local stakeholders in the process.
2. Provide spaces for common facilities, such as the Common Room, where institutions and associations can organize democratic debates.

A space for democratic debates →

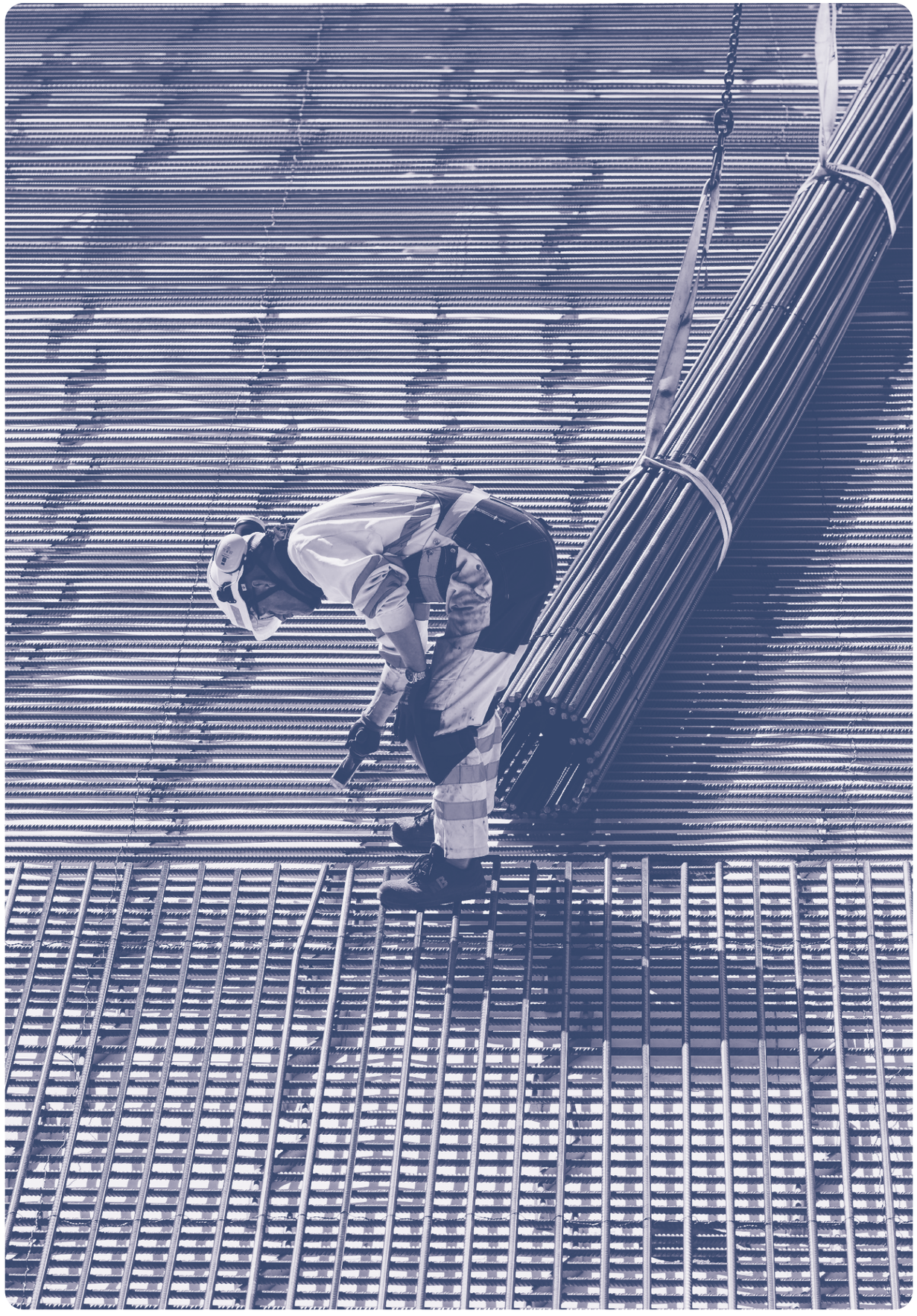
The Common House will be an extension of the residents' own living rooms, with a focus on community and togetherness. It is designed so that it can be transformed and adapted to suit various activities and the needs of different residents. In the Common House, residents can meet during the day or in the evening for activities for children, young people and seniors alike. There is space here for a creative workshop, exercise activities for adults and children and the possibility of organizing larger events. It is also in the Common House that UN17 Village's workshops and lectures are held on everything from the body and health to biodiversity and vertical vegetable cultivation.

17 Partnerships for the Goals

"Partnerships for the goals" is about strengthening the global partnerships for sustainable development and about sharing knowledge and technologies across all borders. In Denmark, the debate points towards increasing Denmark's support for sustainable development, especially in developing countries, as well as how we, here in Denmark, should work on implementing Global Goal 17, i.e. securing partnerships across sectors and across stakeholders in Danish society.

UN17 Village explores the potential of this UN Global Goal by looking at opportunities to:

1. Ensure a diverse and interdisciplinary project team.
2. Ensure the involvement of experts and local stakeholders in the process.
3. Contribute to learning and knowledge-sharing around sustainability through common facilities, events and stakeholder meetings.



Diverse project team and stakeholder involvement →

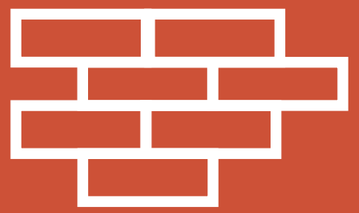
The project team for UN17 Village consists of a diverse and interdisciplinary project team with mixed experience and knowledge across the construction industry. It helps to ensure that different kinds of knowledge come into play and experiences are exchanged. In relation to the sustainability strategy, the coordination between the Global World Goals, DGNB, DGNB-heart and WELL has in itself contributed to different disciplines interacting early on how sustainability measures are anchored in the architecture. Throughout the project, there is a focus on involving various experts. They can be professional experts, but also passionate and local actors. They will contribute to an increased level of knowledge throughout the process and at the same time create a greater sense of ownership when the project is completed.

Innovation Processes

UN17 Village has an ambition to push the boundaries of the construction industry and show the way forward for sustainable construction. Therefore, in the early design phase, several studies have been carried out to uncover the possibilities for imple-menting innovative recycled materials in the project. The innovation processes are in a development phase which does not necessarily enable the use of the mentioned ma-terials in UN17 Village; however we are continually working on implementing innovative materials in order to lower CO2 emissions compared to traditional materials.

Upcycled plastic

Innovation process with the vision of developing a facade cladding with upcycled plastic produced from Carlsberg Draughtmaster kegs. This addresses issues regarding plastic waste and provides a concrete solution on how we handle this resource more respectfully in future.

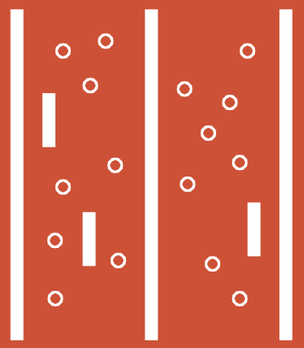


Red concrete

Innovation process with the vision of developing stairways with recycled brick as aggregate and cement replacement. The purpose is to reduce CO2 emissions and achieve aesthetically beautiful facade.

Recycled concrete

Innovation process with the vision of developing a facade slab of concrete with recycled ceramics, glass or sanitation as aggregate. The purpose is to bring challenging waste fractions to life and at the same time achieve an aesthetically unique stairways.



Wood fiber insulation

Innovation process with the aim of developing a sandwich element of concrete with wood fiber insulation instead of rock wool. The purpose is to reduce CO2 emissions and increase the amount of CO2 stored in the structure.

Recycled wood

Innovation process with the vision of developing a facade cladding that utilizes discarded wood and thus utilizes valuable resources that are otherwise wasted. The purpose is to reduce CO2 emissions in construction and create a special aesthetic and identity for UN17 Village.

Recycled windows

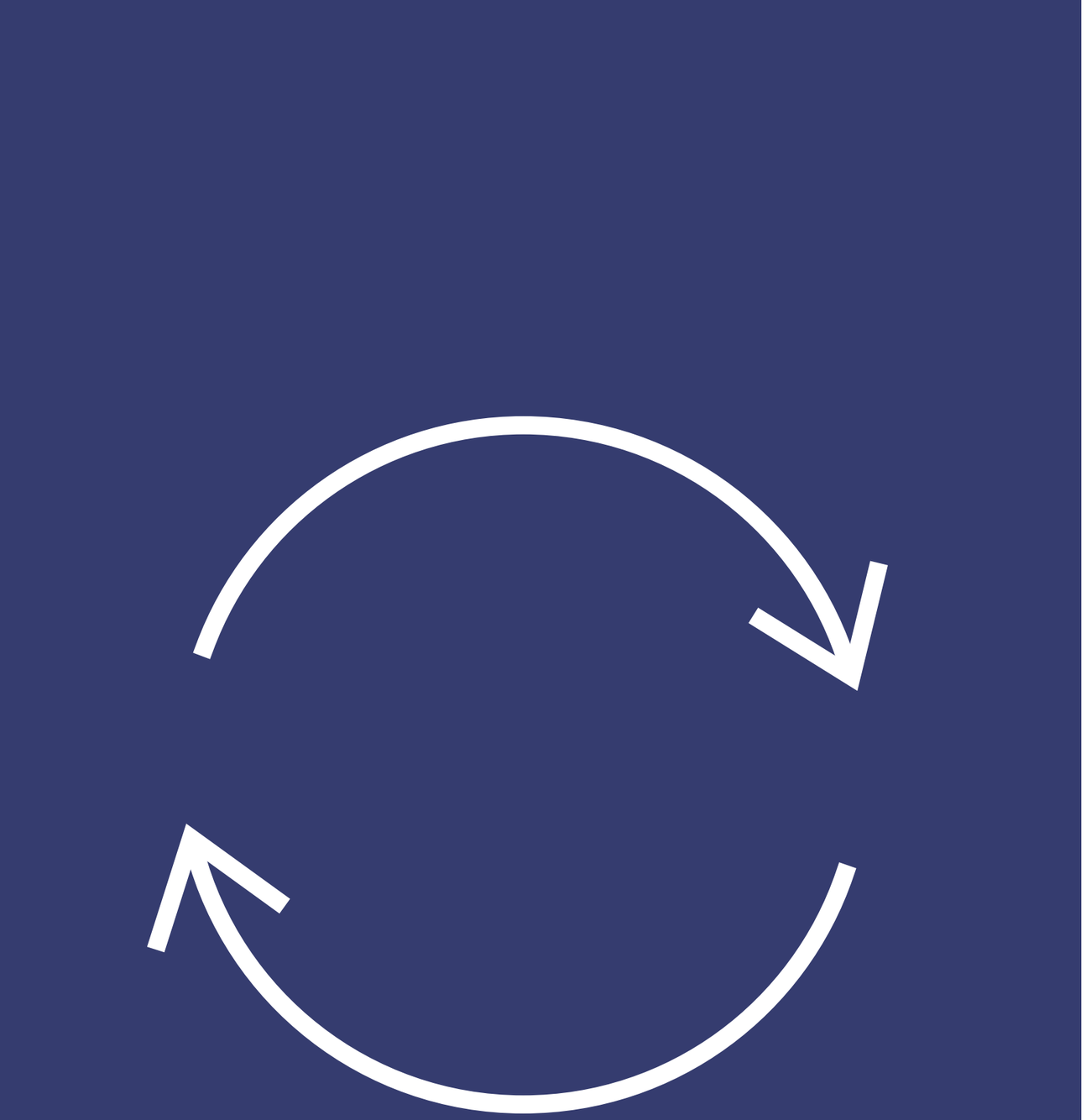
Innovation process with the vision of continuing the development of windows with recycled/sorted glass in order to demonstrate the full potential in unused glass categorized as waste.

“In The Danish Green Investment Fund, we want to help develop projects and companies that make a significant contribution to the green transition – especially regarding CO2 reduction, and here we know that construction has great potential. We need to build housing for more people but do it in a responsible and sustainable way. Here, UN17 Village can be an inspiration for an important industry both nationally and internationally, and therefore we are happy to be a financing partner for the project.”

— Linda Høibye, Green Impact Director,
The Danish Green Investment Fund

Chapter III

Ongoing Learning and Evaluation



Thematic Focus Areas

In order to form a common framework for the project, UN17 Village has from the start worked with the following six areas of importance: Health, Community, Materials, Energy, Biodiversity and Water. Based on the content and understanding of the various sustainability tools, the project has defined specific themes within the six areas of importance that will be incorporated into the project. For example, within the focus area “Health” one of the themes is “Healthy Indoor Climate.” As the project works with over 250 initiatives, not all the different initiatives are elaborated in this publication.

Health

UN17 Village will provide Denmark's healthiest housing accommodating more aspects of physical, mental and social health.

Themes

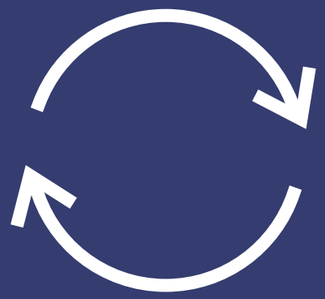
- Healthy indoor climate
- Mental health
- Healthy movement
- Healthy microclimate
- Healthy nutrition

Community

UN17 Village creates more than 2,000 square meters of community facilities for residents, and as a framework for sustainability partnerships.

Themes

- Common facilities and sharing economy
- Social responsibility
- New partnerships and co-creation
- Sustainable learning and knowledge sharing



Materials

UN17 Village achieves a significant reduction of embedded CO2 through sustainable materials selection, design and recycling.

Themes

- Sustainable building system
- Sustainable surfaces
- Circular construction site
- Innovation processes
- Sustainable learning and knowledge sharing

Biodiversity

UN17 Village creates an ecosystem with high biodiversity and biomass that maximizes the integration of local urban nature and wildlife.

Themes

- Green urban spaces
- Healthy environmental conditions

Water

UN17 Village uses rainwater as a valuable local resource and reduces drinking water consumption.

Themes

- Minimized drinking water consumption
- Rainwater in the cityscape
- Healthy water quality

Energy

UN17 Village uses renewable energy sources and reduces energy consumption in production and operation.

Themes

- Sustainable heating
- Renewable electricity
- Minimization of energy consumption

Assessment and Evaluation

In order to fulfill the vision for UN17 Village and in order to work in coordination with the Global Goals, DGNB, DGNB Heart and WELL, the management tool for the project process is crucial. Therefore, in the project start-up phase, a sustainability process has been outlined, which is rooted in five phases. These should not be seen as linear phases, but instead a description of a process that will move iteratively and dynamically as new knowledge develops in the project.

Screening and Qualification

Screening of the competition proposal in relation to sustainability measures, initial selection and qualification of the measures that are desired to be implemented in the project.

Assessment

Conducting theme meetings shedding light on various sustainability themes and initiatives, and assessing them based on five assessment parameters: Sustainable value creation, Branding and core narrative, Risk and obstacles, Economy and Innovation & scalability. These measurement parameters must ensure that the initiatives and developments create a valuable and measurable impact on people, place and the environment. In addition, they ensure that the measures are feasible within the project's financial framework with an overview of any risks, so that the right choices can be made.

Selection and Prioritization

Selection and prioritization of sustainability measures on the basis of the five measurement parameters.

Innovation, Development, Assessment & Implementation

This phase runs in parallel with the main design and ensures that the various sustainability measures are implemented in the project at the right time.

Effect Measurement

Documentation of the (expected) effects in relation to sustainable value creation. This can include CO2 savings, biofactor, indoor climate measurements, etc.

Process Plan for Implementing Sustainability Measures

Screening & qualification

of visions and initiatives

VISION	Action 1A Action 1B Action 1C
VISION	Action 2A Action 2B Action 2C
VISION	Action 3A Action 3B Action 3C
VISION	Action 4A Action 4B Action 4C
VISION	Action 5A Action 5B Action 5C
VISION	Action 6A Action 6B Action 6C
VISION	Action 7A Action 7B Action 7C
VISION	Action 8A Action 8B Action 8C
VISION	Action 9A Action 9B Action 9C
VISION	Action 10A Action 10B Action 10C
VISION	Action 11A Action 11B Action 11C
VISION	Action 12A Action 12B Action 12C
VISION	Action 13A Action 13B Action 13C
VISION	Action 14A Action 14B Action 14C
VISION	Action 15A Action 15B Action 15C
VISION	Action 16A Action 16B Action 16C
VISION	Action 17A Action 17B Action 17C

Assessment

of the project initiatives

SDG

INTERNATIONAL WELL BUILDING INSTITUTE™

Sustainable value creation

Economy

Identity value

Risk & obstacles

Innovation & scalability

Selection & prioritization

of the project initiatives

Action 1
Action 2
Action 3
Action 4
Action 5
Action 6
Action 7
Action 8
Action 9
Action 10
Action 11
Action 12
Action 13
Action 14
Action 15
Action 16
Action 17
Action 18
Action 19
Action 20
Action 21
Action 22
Action 23
Action 24
Action 25
Action 26
Action 27
Action 28
Action 29
Action 30
Action 31
Action 32
Action 33
Action 34

Innovation, development, assessment & implementation

of the selected initiatives

	Outline proposal	Project proposal	Authority project	Tender project	Execution project	Execution phases	Delivery phases
Action 1	Effort						YES
Action 2							YES
Action 3		Effort					YES
Action 4			Effort				NO
Action 5	Effort						NO
Action 6							YES
Action 7	Effort						YES
Action 8				Effort			YES
Action 9							YES
Action 10	Effort						NO
Action 11	Effort						YES
Action 12	Effort		Effort				YES
Action 13						Effort	YES
Action 14							YES
Action 15				Effort			YES
Action 16	Effort						NO
Action 17				Effort			YES
Action 18				Effort			YES
Action 19				Effort			YES
Action 20				Effort			YES
Action 21			Effort				NO
Action 22	Effort						YES
Action 23							YES
Action 24			Effort				YES
Action 25					Effort		YES
Action 26					Effort		YES
Action 27							YES
Action 28	Effort						NO
Action 29							YES
Action 30							YES
Action 31			Effort				NO
Action 32				Effort			YES
Action 33		Effort					YES
Action 34	Effort				Effort		YES

Measure & effect

of the selected measures

EFFECT
EFFECT
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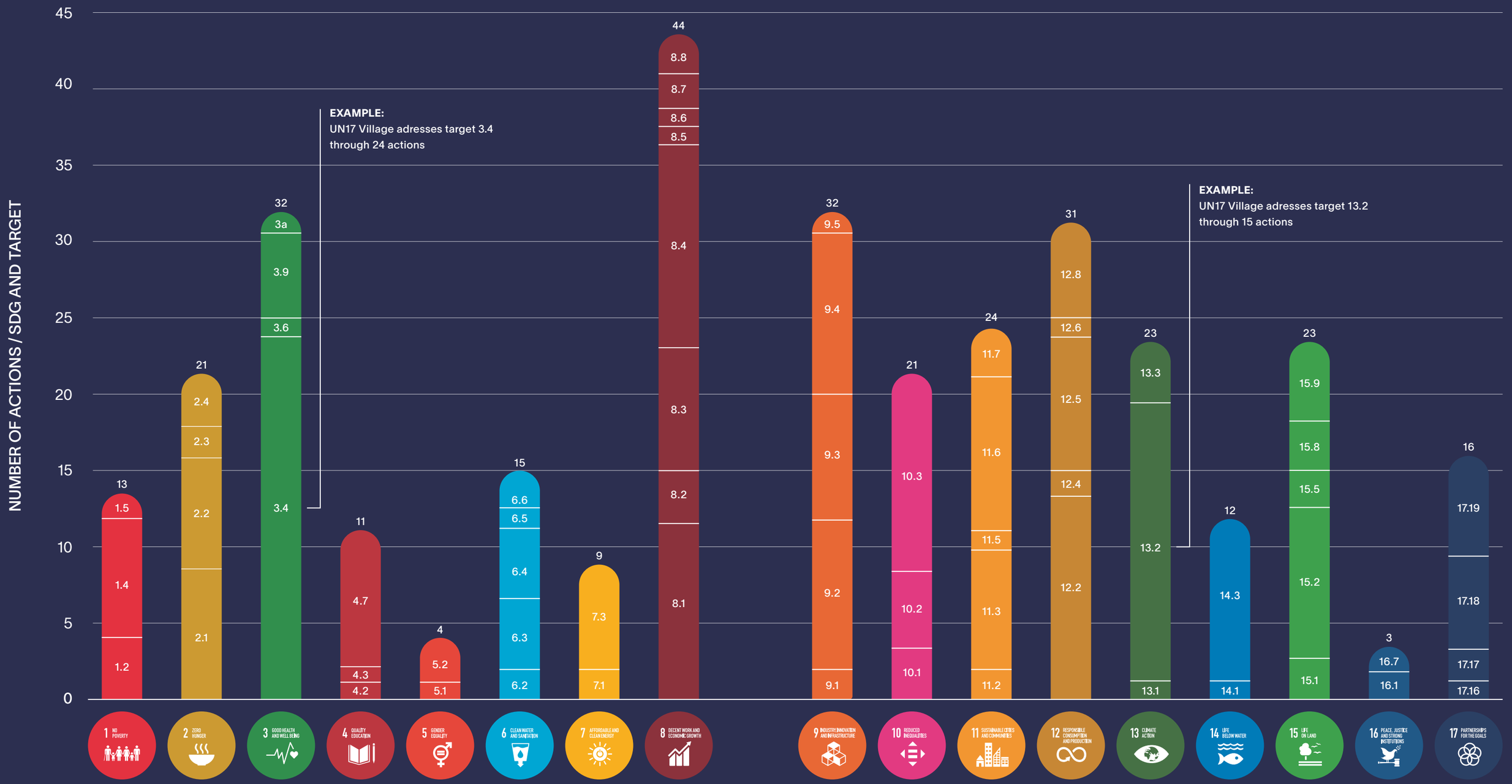
Being in UN17 Village should feel like being “in nature”, not next to it, which is why the landscape in the courtyards is being created with a particular focus on establishing a maximized growth layer with structural diversity which will support plants and wildlife, as well as on planting local plant species and biotopes from the surrounding area.

Overview:
Sustainability measures

The status of the sustainability strategy is illustrated in the pie chart, which shows a current snapshot of the distribution of the project's sustainability pool. The prioritization of the many sustainability measures examined changes as the five assessment principles are mapped for each individual measure, and will continue to do so as the design progresses.

The diagram shows how many initiatives have been implemented in the project at present, divided into six essential themes: Health, Community, Materials, Water and Energy. Although it would be obvious to form a link between the number of implemented initiatives and the weighting of each given theme, the reality is much less linear, and the number of selected initiatives should therefore not be seen as a reflection of the six themes' priorities in the project.



Overview:
SDG Impact, Global Goals and sub-targets represented by project initiatives

Overall, it can be said that the project's six sustainable focus areas together contribute to addressing the 17 UN Global Goals. This does not mean that UN17 Village meets all the 169 targets. Instead, the sub-targets that are most relevant for the project have been specifically selected.

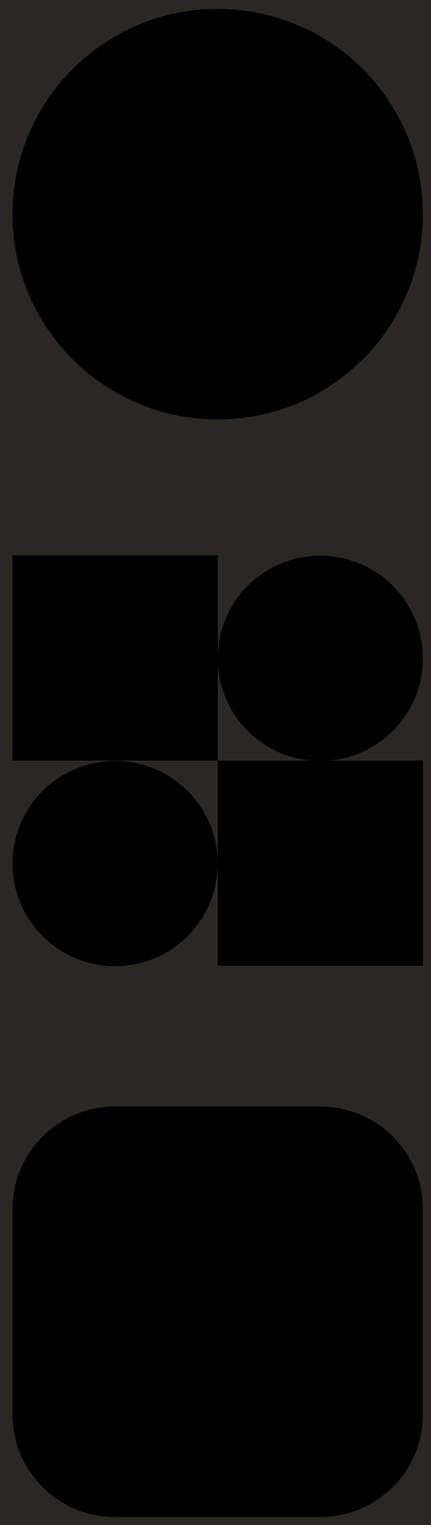
Above is a snapshot overview that illustrates how many UN Global Goals and targets UN17 Village addresses. The form is used as a "living" overview that ensures that measures are implemented that contribute to the UN Global Goals and that this focus is maintained through the various phases of the project.

“If we are to live more sustainably in the future, we have to change the way we build, but we also have to rethink the way we live. With UN17 Village, we are architecturally raising the bar by incorporating all aspects of sustainability. For example, we have created a concept for health housing where we technically and spatially improve the indoor climate while at the same time creating an optimal framework for mental health through communities in close prox-imity to the housing.”

— Jes Johannsen, Market Director, Sweco Architects

Part II

UN17 Village Ørestad



UN17 Village Ørestad, which is currently under construction in Copenhagen, will be the first ever UN17 Village and ground zero of a new movement towards a more sustainable, healthier and community-based way of living. UN17 Village Ørestad will house more than 1,100 residents in 535 homes in five buildings when it is completed in 2024. The construction includes family homes, community homes, flexible housing and senior living communities. UN17 Village may be the largest community-based housing association in Denmark that addresses the UN Global Goals through a complete, holistic solution.

Human-centered Architecture

The facades of the five buildings in UN17 Village Ørestad are all designed based on a concept of diversity, identity and community. Each of the five buildings has its own distinctive identity – which is expressed through five different color profiles and architectural expressions, which also emphasize the diversity of the project and the future residents, who will become part of the community.

Common for all five buildings is a horizontal facade division that brings a new interpretation of classic references into play that are recognizable from the historic buildings in Copenhagen. Work has been conducted with a high level of detail at the base and more architectural lightness upwards through a three-part division. In this way, the combination of different materials and details is brought into play, each of which has a narrative in relation to function, aesthetics and durability.

The climate screen, the visible part of the facade, consists of various materials which strive to be climate-friendly, recycled or upcycled, and which appear in the hues of the individual buildings.

UN17 Village is based on a human scale, and therefore the vision is to scale down the traditional urban block to smaller vibrant neighborhoods with inner courtyards and passages. The facades of the five buildings in UN17 Village are all designed based on a concept of diversity, identity and community.

Kronen

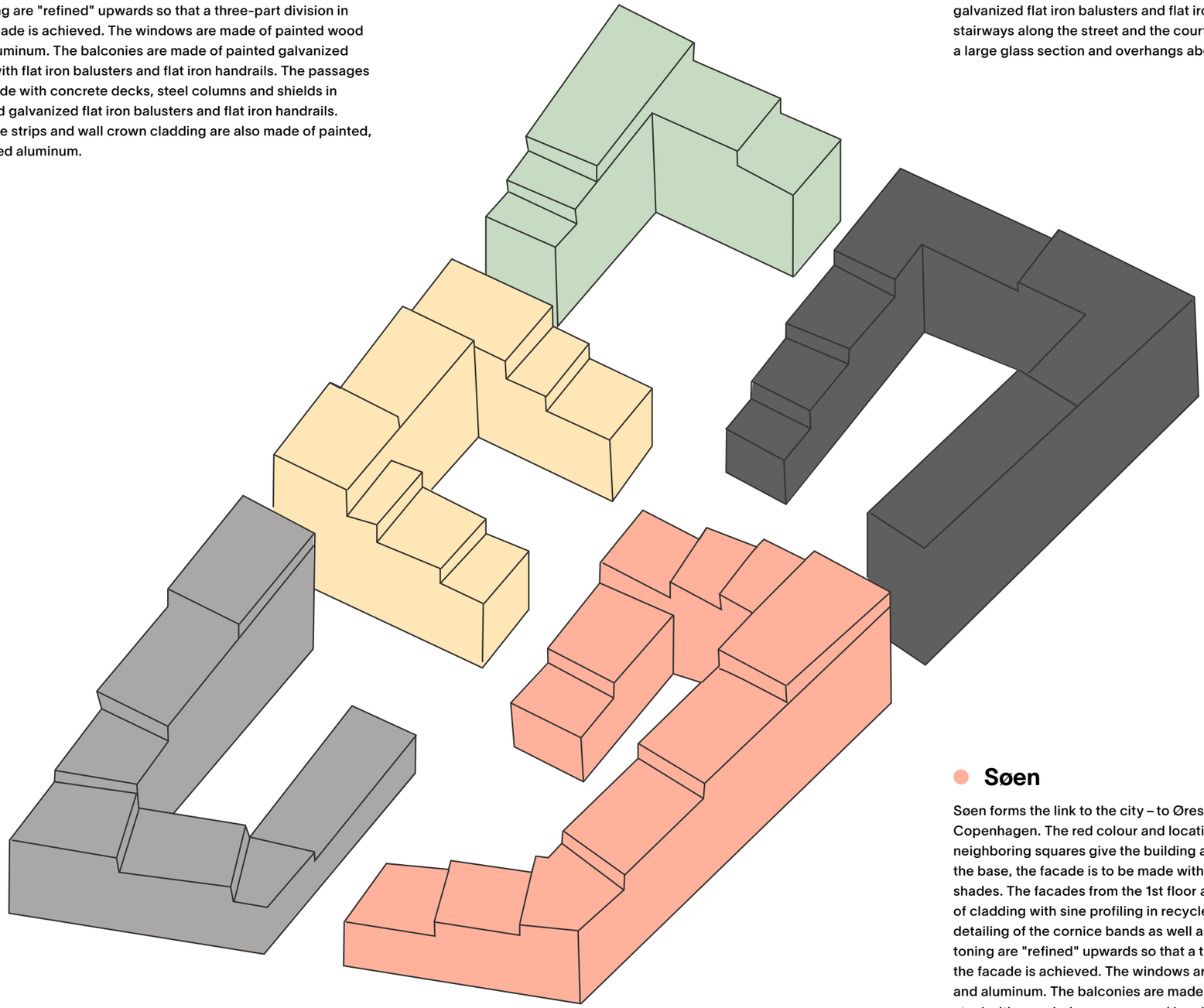
Kronen is UN17 Village's "health building" with an extra focus on health, community and a healthy indoor climate. The building includes approx. 688 tonnes of wood, divided into 324 columns with a total weight of approx. 80 tons and 4,905 sqm CLT tires with a total weight of approx. 588 tons. The building's yellowish expression in wood contributes to the narrative of the influence of natural materials on mental well-being. Located centrally in the settlement and on the edge of the common, it brings warm materials into the settlement and along the main axis. At the base, the facade is to be made of wooden planks, which are preserved with a dark, burnt surface treatment and will have a long service life with good durability. The facades from the 1st floor and up are to be made of planks in wood. The wood is mounted with an overlap that changes direction on the floors upwards so that a shadow effect is achieved. The detailing of the cornice bands and the scale in the wood's profiling are "refined" upwards so that a three-part division in the facade is achieved. The windows are made of painted wood and aluminum in a dark color. The balconies are made of painted galvanized steel with flat iron balusters – also in a dark color. Cornice strips and wall crown cladding are also made of painted, recycled aluminum.

Lunden

Lunden marks the transition to the common. The green color respects the building's location next to nature and at the same time invites plants into the building and up along the facades. Cornice bands, detailing and the cladding's trapezoidal profiling in recycled, painted aluminum – all in shades of green – harmonize with nature and provide depth. The detailing of cornice bands as well as the scale and color toning of the profiling are "refined" upwards so that a three-part division in the facade is achieved. The windows are made of painted wood and aluminum. The balconies are made of painted galvanized steel with flat iron balusters and flat iron handrails. The passages are made with concrete decks, steel columns and shields in painted galvanized flat iron balusters and flat iron handrails. Cornice strips and wall crown cladding are also made of painted, recycled aluminum.

NOLI

Noli creates a distinct arrival to the village. The dark color in colored concrete, with a tactile and structured surface, highlights power, elegance, style and the youthful life around Noli. The windows are made of painted wood and aluminum. The balconies are made of painted galvanized steel with flat iron balusters and flat iron handrails. The passages are made with concrete decks and steel columns, as well as protection with painted galvanized flat iron balusters and flat iron handrails. Entrances to stairways along the street and the courtyard are highlighted with a large glass section and overhangs above the door.



Spidsen

Spidsen is located on the southernmost tip towards the scenic Kalvebod Fælled and marks the edge of UN17 Village towards the pristine nature reserve. The white building refers to purity, tranquility and well-being and is expected to house the Health Center. With a location close to the water, the building is a symbol of the horizon and the open expanses towards nature.

At the base, the facade is to be made with shingles of fire-impregnated wood. The facades from the 1st floor and up are to be made of a material with a light, whitish or light gray surface. The detailing of cornice strips is "refined" upwards so that a three-part division in the facade is achieved. The windows are made of painted wood and aluminum. The balconies are made of painted galvanized steel with a painted, solid plate in the lower part of the balcony as well as painted, galvanized flat iron balusters and flat iron handrails. Cornice strips and wall crown cladding are also made of painted, recycled aluminum.

Søen

Søen forms the link to the city – to Ørestaden and the rest of Copenhagen. The red colour and location facing the road and the neighboring squares give the building an urban character. At the base, the facade is to be made with recycled aluminum in red shades. The facades from the 1st floor and up are to be made of cladding with sine profiling in recycled painted aluminum. The detailing of the cornice bands as well as the profiling scale and toning are "refined" upwards so that a three-part division in the facade is achieved. The windows are made of painted wood and aluminum. The balconies are made of painted galvanized steel with rounded corners, round iron balusters and flat iron handrails. Cornice strips and wall crown cladding are also made of painted, recycled aluminum.

"At CG Jensen, we have an ambition of becoming climate neutral by 2029, and in the design phase of UN17 Village, we have gained even more experience with new, green solutions. Kronen – the seven-storey high wooden building – is CG Jensen's first large CLT building. Prior to the construction, there were months of preparation, including an educational visit to Sweden to learn more about, among other things, assembly details, logistics and moisture strategies."

— Michael S. Larsen, CEO, CG Jensen

A Diverse Range of New Homes

UN17 Village Ørestad will offer a wide range of modern and healthy homes. Each building will contain different typologies and communities connected around a compact urban square with inner courtyards, urban spaces, passages and alleys. Thus, work has been done on a wide range of housing options in the buildings.

The living area is divided into 535 homes, varying from 1 bedroom to 5 bedroom apartments. 469 family homes will be established, including 193 minimal homes and 66 community homes. Distributed throughout the buildings are a number of specifically handicap-friendly homes, which in their interior design will enable housing for people with reduced mobility in wheelchairs.

Family homes

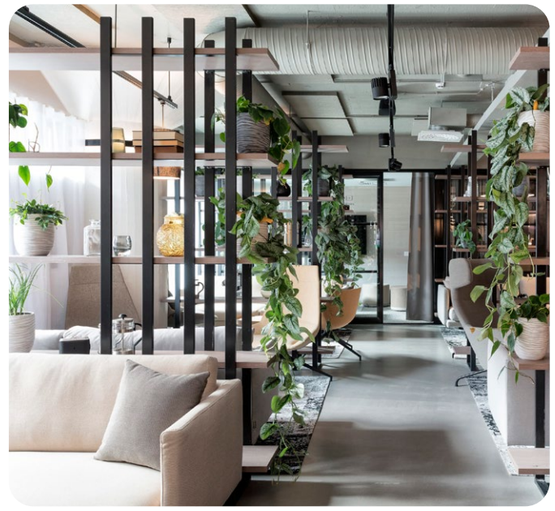
Søen and Spidsen will be equipped with family homes, consisting of a robust mix of multi-storey apartments ranging from 1 to 5 rooms. The homes are designed to cover the housing needs of a broad target group, including for families with children of all sizes, young and old, couples and singles. In addition, there is a larger proportion of 5 bedroom homes with community spaces, which will be suitable as a shared home for e.g. students or another type of smaller community. In addition, in collaboration with the Danish Handicap Association, a number of homes have also been designed that are specifically suitable for users in need of increased accessibility. All family homes are provided with private outdoor spaces in the form of either a balcony, roof terrace or terrace at terrain-level.

Health homes

Kronen will be equipped with family homes with an extra focus on healthy initiatives. The homes are divided into zones where e.g. the wardrobe and kitchen have their own closed zone. In this way, the residents' exposure to harmful particles from e.g. dust and cooking is minimized. In addition, focus is placed on implementing measures that increase the air quality in the homes. Among other initiatives, it involves relatively high air circulation via mechanically balanced ventilation, pollen filters, and highly efficient hoods. There is also an extra focus on avoiding harmful substances in the choice of materials and electrical components, including formaldehyde and other carcinogens and endocrine disruptors chemistry, but also heavy metals such as CCA (Chromated Copper Arsenate), lead and mercury. All health homes are provided with private outdoor accommodations in the form of either a balcony or roof terrace.

NOLI homes

Noli contains the minimal housing concept of the same name, consisting of small homes of approximately 40 square meters. The homes are aimed at residents with a need for a high degree of mobility and spontaneity. The concept has its own common facilities on the ground floor in close proximity to the Lobby. In this way, residents can supplement the minimal housing square meters with common zones. The Noli homes are provided with common balcony pockets in connection with the balcony entrance. Except for the corner homes to the northeast and northwest, private balconies will not be established at Noli. This is in order to strengthen the community through random meetings at social outdoor spaces, as part of creating a housing typology with a strong focus on social sustainability.



Community homes

Lunden is provided with community housing for seniors with common facilities that will strengthen the community between the residents of the building. The homes are designed as smaller housing units for 1 to 2 people with an average size of 67 square meters, and with different floor plans depending on the individual resident's need for a higher or lower degree of privacy around their home. The community is concentrated around a common space, which is connected to the building's primary access road, distributed on all floors. The communal facilities are physically connected on every other floor, and are designed to form communities of up to approximately 20 to 25 people, corresponding to the occupancy capacity of two floors. The common areas are furnished with functions that provide space for common cooking, common living rooms and the cultivation of hobbies, etc.

A Lush Nature-based Landscape

With its location on the southernmost tip of Ørestad South, UN17 Village faces the open nature areas at Kalvebod Fælled with a view of the common to the west and south. Green courtyards are created with a focus on establishing a natural landscape with biotopes that spring from and support the nature found on Kalvebod Fælled. Together with basins in the form of depressions in the terrain, the biotopes contribute with recreational value and added biodiversity in the area.

The courtyards are arranged so that they have different characteristics in relation to planting and activities that help to support the residents' affiliation with the individual courtyards. In the courtyards there are also living areas, bicycle parking, areas for utility gardens and play opportunities for children, which are inspired by activities you can do in nature with nature-based elements such as trunks and stones.

The ground floors will contain common functions such as a dining house, farm shop, common house, lobby, shop and health center. Several of the functions are aimed both towards the courtyards as well as the surrounding neighborhood. There will be opportunities for outdoor activities and dining at the Dining House and Common House – and the open facade sections allow for visual contact between outside and inside.

Chapter IV

Activating Communities

Community and Togetherness

Communities and a good neighborhood are central values in UN17 Village. We all live longer, healthier and better lives when we get to know each other and form relationships with the people we interact with in everyday life. Which is why common functions, the sharing economy and cohesion have been thought of in every building, encouraging residents to share more, spend more time together and get to know each other better.

In UN17 Village, different types of apartments are offered at affordable prices, aimed at promoting a good mix of residents in terms of age, gender, family size and employment. At the same time, a number of parameters have been accommodated for in terms of universal design that ensure equality and inclusion for people with physical and mental disabilities.

UN17 Village meets the need for new forms of housing in the capital, and a large part of the development is organized around communities that add an extra dimension to everyday life. Here, residents and visitors can meet in social settings, when cultivating allotments, at group dinners and for wellness. To create community, the common facilities will support specific activities such as neighborhood activities, organized group meals, volunteer work, cultivating kitchen gardens, repairing bicycles, homework café and more. The common facilities will initially be run by community managers who will facilitate and support initiatives to create community across residents and activities. In the long run, the idea is that the residents themselves will run the spaces on a voluntary basis in order to promote ownership and community spirit.

New trends towards community-oriented forms of housing

An increasing number of Danes are looking for community when they choose housing. Driving this trend is an increasing desire for closeness and cohesion, but also security and the fear of loneliness occupy an ever-increasing number of Danes. It is a growing trend across Denmark, and it is seen in both cities and rural areas. It's everyone from families with children, seniors and young people. During the COVID19 pandemic it also became clearer how important a community is in terms of one's well-being. The communities may look different, but common to them is a conscious desire for a closer neighborhood, togetherness and yes, community. Various analyses indicate that approximately 50% of Danes feel positively about becoming part of a community the next time they choose housing, and for almost 10% it is an explicit determining factor.

There is a budding movement towards communities in the construction and real estate industry, and good initiatives have been launched. This applies to everything from visionary housing projects, funding for research on communities, to the establishment of a working group under the government, which will look at the barriers to more community-oriented forms of housing. In other words, we are many who see the same development in the Danes' housing dreams.

What makes a community?

In the past, one had an understanding of communities as binding. Today, most communities are open: One often participates as needed, and one has a great degree of individuality in the community. The communities are composed of everything from communal dining, leisure activities and childcare to burglary protection, climate activism or the development of communal gardens. Communities can be fun, practical or engaging. The diversity is great. No model is better than the other – but they appeal to different residents. Therefore, it is not an easy task to define exactly what types of communities the Danes demand. It can create uncertainty among developers, investors and brokers, and necessitates increased debate and knowledge about what types of communities one wants to develop and what gains one strives for.

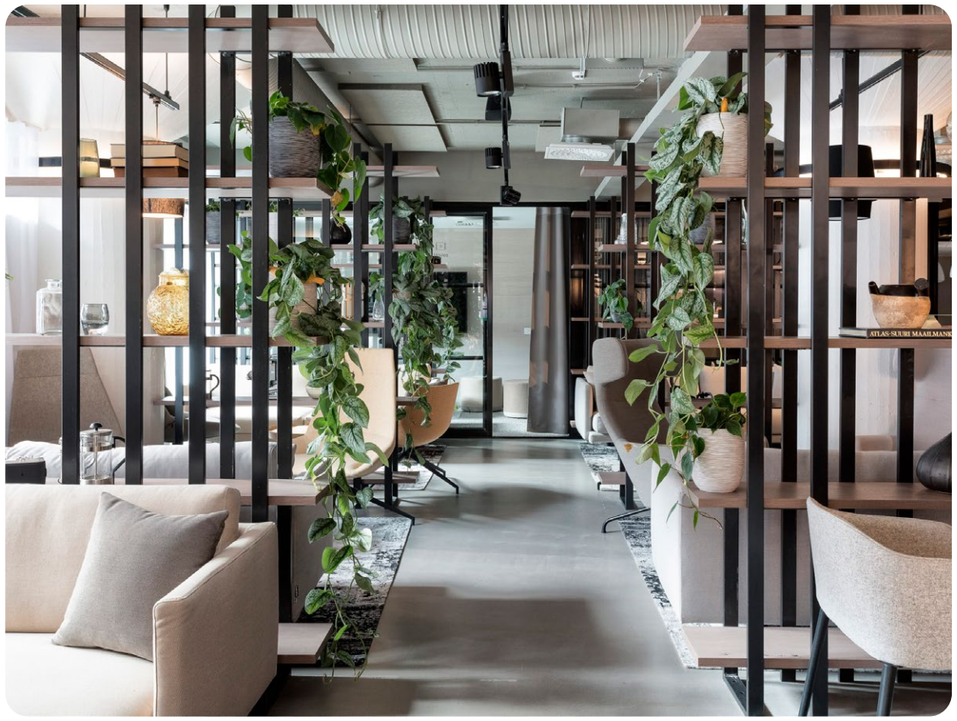
Why is it happening?

One of the reasons for the new trend is that we live differently today. We have become a society of individuals and loneliness is spreading. Denmark is, for example, the European champion in total of single parents who make up almost 30% of all families with children. Today, if you look across households, 44% of all Danish homes include only one adult. It is approximately 37% higher than 30 years ago. It is especially the total of 30 to 60 year-olds living alone that is increasing significantly. In 2020, we have also seen the highest number of Danes over the age of 65 living alone.

The development must be seen in contrast to the existing homes in Denmark, and the homes we are building now. For example, a very large part of the Danish population lives in detached houses, which were built for nuclear families approximately 70 years ago. In addition, the oldest population group is expected to grow by just over 21,000 persons a year for the next 10 years, and almost every fourth person in Denmark will be 65 years or older by 2030.

However, the challenge between supply and demand does not apply to senior housing alone. It is also seen, for example, in single parents, which is a rapidly growing population group, and where recent analyses indicate that they are increasingly looking towards communities and shared facilities. Single parents and reunited families are looking for a greater degree of community. These family types would like to share facilities and equipment for both social and economic reasons. Their shared life situation makes it easier to initiate the community. The gap between supply and demand is thus seen across age groups.

Community-based housing in UN17 Village Ørestad



Noli Studios

Noli Studios is UN17 Village Ørestad's solution for Copenhagen's young graduates who want to keep opportunities open in their lives and who prefer flexible and comfortable housing together with like-minded people. Noli Studios is a concept for young apartment-seekers and travelers looking for a homely feel with hotel service.

The small, contemporary "move-in-when-you-want" apartments offer good opportunities to retreat to a "private" space combined with a wide range of services and access to common areas. There is a shared kitchen with attached lounge, common work area, two smaller meeting rooms and a TV/games room that offers the opportunity to settle into the community of like-minded tenants.

Senior living communuity

Denmark is currently experiencing an ever-aging population. At the same time, we are more active in our old age and live longer than before. This places new demands on how we live and organize ourselves, and is a trend that challenges the housing market as the supply does not meet the demand of the future. At the same time, more and more elderly people are experiencing loneliness. It is in old age that loneliness increases most over the course of a person's life.

Today, up to 40% of the detached houses are inhabited by so-called "empty nesters", i.e. households with one or two adults where the children have moved away from home. Many of these "empty nesters" are active seniors who demand more community. A study from VIVE shows that more than 80,000 older people are actively considering moving into a senior living community. The challenge is that there is a shortage of senior living communities. In 2017, there were 7,000 homes in senior living communities and approx. 8,400 seniors on the waiting list. Senior living communities can provide a higher quality of life, access to new relationships and strong communities.

With its modern senior living community, UN17 Village lays the foundations for new communities, better social relationships and better quality of life across generations and lifestyles. The UN17 Village senior living community will contain smaller housing units, with a common living area located in the center of the building. There are communal kitchens on every other floor with a staircase connecting to living areas with a TV room, lounge, meeting room, library and studio across the different floors. This helps residents to meet naturally across the floors of the building.

Catalyzing dialogue and knowledge about new forms of housing

If we are to meet the Danes' demand for more community-based housing there are a number of barriers that must be broken down – and community needs to be a focal point for more actors in the industry. Many actors who are already engaged find answers to challenges by conducting their own research. However, as the real estate market is characterized by fierce competition, one does not necessarily want to share all these experiences and expensive knowledge. We need more cross-cutting collaborations and projects where we share knowledge with each other about what types of communities are good and what models and tools work.

More actors across the industry must initiate collaborative projects, focusing on the community, bringing new ideas to the table and sharing knowledge. It can happen in many different ways. Here we present five proposals for initiatives that can accelerate development and meet the growing demand.

Municipalities

We call on the municipalities to award higher priority to social sustainability in their development plans. This means in particular the provision of building plots for community-oriented housing. We need to focus more on communities in the planning, which provides the opportunity to build more sustainably, with fewer but better square meters and more meeting places for the local community. For the municipalities, there is a lot to save by giving the residents an increased quality of life and reducing costs for social services. At the same time, the municipalities have a role in facilitating concrete wishes for the establishment of housing associations from interested citizens.

Design

Communities are different, and different communities require different frameworks to function. Hence, systematic work must be done to define target groups and their priorities. We need to listen and ask the right questions in order to develop the right design that will assist the community to be easily set in motion and cultivated daily. The architecture can support community, like physical nudging of social behavior. One must consider why, when and where the neighbors meet. And what various spaces should consist of, where the best location may be, how different groups can use the space individually or at the same time. In addition, one can include digital tools to support the community, and one should consider how the daily operation and organization also plays an active role for the community in everyday life.

The Industry

Actors in the construction and housing industry must increase their knowledge and ambitions for community-oriented forms of housing. This can be done, for example, by sharing knowledge in networks, creating educational opportunities, incorporating community as part of social sustainability in certification schemes, and entering into research collaborations. The possibilities are many.

Construction and renovation

Community must be thought of in all building projects as part of social sustainability. Constructing new housing does not solve the problems alone, it is necessary to look at how we can establish more community in existing buildings. It is not only about how to create community among the residents, but also about how we invite the surrounding community to participate. The community needs to extend beyond itself.

Residents

We need to build for a wider audience – the communities must not only be for enthusiasts, detached house owners and people with medium and higher education. There must also be opportunities for those who cannot pay a high rent or have access to loan options. Furthermore, community is not only about buildings, but also about the organizational, procedural, and digital tools that promote community.

Higher quality of life

There are many good reasons why Danes seek community when choosing a home. Communities reduce loneliness, provide higher quality of life, better health and are a good investment. It is not only good for the individual, but also for society as a whole. Both Danish and international studies indicate that, for example, senior living communities both increase the quality of life and actually prolong the lives of the residents, and in addition help to reduce municipal expenses for practical matters. This is due to neighbors taking care and helping each other with chores such as shopping, cooking, cleaning, gardening and transportation. The same care and helpfulness is also seen across age groups, and also applies to families with children and young people.

Communities are also good for environmental sustainability. The residents of community-based housing associations regularly share transport and other common goods with each other, which reduces the need for individual consumption. At the same time, some communities are raising environmental awareness through activities such as waste reduction, recycling, sustainable gardening and more.

For the more than 1,100 future residents in UN17 Village Ørestad it will become one large community with facilitated activities as well as smaller communities in the individual houses, each of which will have its own common functions. UN17 Village Ørestad may become the largest community-based housing association in Denmark comprising family homes, community homes, flexible housing and senior communities.

With its modern senior living community, informal and welcoming dining hall, sharing center and flexible common room, UN17 Village Ørestad will support the physical and mental well-being of both the community and the individual. At the same time, UN17 Village extends an invitation to the rest of the local area, creating a framework for new communities throughout Ørestad.

Shared spaces in UN17 Village

Dining Hall

The Dining Hall with the restaurant, café and farm shop is UN17 Village's large kitchen for everyday life and for parties. Here, residents can meet over dinner both indoors and outdoors. Cooking classes and workshops on healthy food, local ingredients and organic products are also on offer. It will also be possible to sign up for meals and have them delivered as meal boxes and vegetable boxes.

The atmosphere is informal and welcoming, with a focus on healthy vegetarian dishes. The Dining Hall is part of a close collaboration with the Health Center, the Health Clinic and the Lobby in coordination and shares a strategy with all of UN17 Village's activities with a focus on health through diet, exercise, activities and common areas that support the community.

Sharing Centre

The Sharing Center is UN17 Village's sharing economy community and workshop. We all have a lot of things that we use so little that we do not need to have them all the time. At the Sharing Center, you can donate your own things or borrow items from your neighbors. A sustainable idea that offers social connections. At the same time, the Sharing Center is also a shared workshop where residents can repair bicycles or furniture, or work on their own or group DIY projects. On the exchange shelves, residents can hand in or pick up used but well-functioning furniture, materials, toys and more.

Lobby

The Lobby is the gateway and the main entrance to UN17 Village, drawing passers-by into the area. In the Lobby, people can get to know each other, meet with friends and colleagues and share resources. Here you can borrow sports equipment or musical instruments, or exchange books, for example. This is also where curious people can get information about UN17 Village, activities, weekly events and knowledge on sustainable lifestyles.

The Lobby is furnished with touch-down workplaces as a common living area, enabling residents in the smaller homes to use the area for, e.g., a study group or similar activities. There is a lounge area designed for informal meetings or for those who simply want to read the newspaper in company. The wine club, the moms' group or the walking group can also meet up here. The Lobby is also where you can get information about all the different activities being held in the development. Examples include workshops on healthy eating in the Dining Hall, presentations on growing seasonal vegetables in the greenhouse and exercise groups in the health house.

Fælledhuset

Fælledhuset is an extension of the residents' own living rooms, with a focus on community and togetherness. Fælledhuset connects the courtyard to Amager Fælled and is designed so that it can be transformed and adapted to suit various activities and the needs of different residents. In Fælledhuset, the residents can meet during the day or in the evening for activities for children, young people and seniors alike.

There is space here for a creative workshop, exercise activities for adults and children and the possibility of holding larger events. It is also in Fælledhuset that UN17 Village's workshops and lectures are held on everything from the body and health, to biodiversity and vertical vegetable cultivation.

“This is the first time a Danish building of this size has such high ambitions for health and indoor climate. We aim for UN17 Village to become the first Danish residential building to be certified according to the American health scheme WELL. We also expect to receive the new DGNB Heart award, which will be proof of a thorough anchoring of health parameters as part of the sustainability system.”

— Steffen Maagaard, Group Competence Manager for Energy Design & Indoor Climate, MOE.

Chapter V

Biodiversity and Reducing Emissions

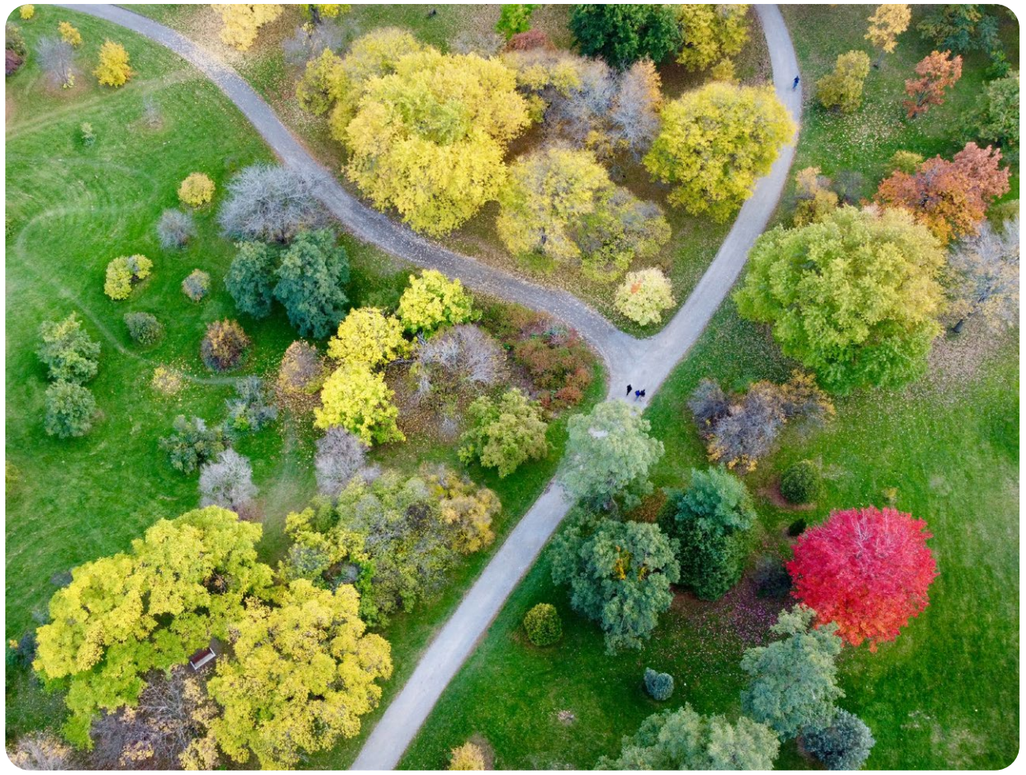
Reducing CO2 Emissions and Maximizing Integration of Urban Nature

A global goal of the UN and the EU is to stop the decline in biodiversity by no later than 2030 – a goal which Denmark has also committed to. Urbanization can lead to loss of biodiversity and fragmented wildlife habitats.

As the cities in Denmark grow, there is a need – both for existing cities and new urban areas – to ensure that development does not take place at the expense of nature. Nature therefore must have more space – both physically, and in people's consciousness. It is therefore vital that we include nature in the growth of society, not least in our cities. UN17 Village addresses this challenge by establishing green urban spaces that function as natural ecosystems with high levels of biodiversity and biomass that maximize the integration of local urban nature and wildlife.

Today, construction accounts for 40% of global CO2 emissions annually. Figures from DK-GBC show that when it comes to new constructions in Denmark, it is the materials that make up the majority of the carbon footprint over the building's lifetime (up to 80%). This is primarily due to the fact that we in Denmark have long had a focus on reducing the energy required to run buildings by increasing requirements in building regulations, implementing voluntary energy classes, and making the Danish energy supply greener. Therefore, the embedded CO2 of the building materials accounts for a larger share of the total figure. In order to reduce buildings' overall carbon footprint, measures are being implemented that promote sustainable materials, resource efficiency and a circular economy – meaning UN17 Village is achieving a significant reduction in embedded CO2 through a sustainable materials selection process, design and recycling.

There is a need in the construction industry for a collective and credible shift from good intentions to measurable change. This is a shift that NREP cannot manage on its own. We need to take responsibility for the construction industry's considerable CO2 emissions and for the quality of life in our cities together. Because of this, the UN17 Village method will be open, free and accessible to all and combined with a major investment in knowledge-sharing and partnerships. UN17 Village will be the first of hopefully many UN17 Villages around the world – each with their own sustainability analysis and tailor-made construction plan adapted to the unique circumstances of their respective locations.



Green urban spaces and natural ecosystems

It is a global goal from the UN and the EU that the decline in biodiversity must be stopped by 2030 at the latest, a goal that Denmark has also endorsed. Urbanization can lead to the loss of biodiversity and fragmented wildlife habitats. As the cities in Denmark grow, there is a need for both existing cities and new urban areas to ensure that development does not take place at the expense of nature. Nature must therefore have more space – both physical space, but also space in the human consciousness. It is therefore important to include nature in the development of society, not least in the cities. UN17 Village will address this challenge and therefore places emphasis on establishing green urban spaces that function as natural ecosystems with high biodiversity and local plant species.

The plants and greenery in UN17 Village Ørestad's five urban spaces will be based on the area's surrounding natural qualities. UN17 Village borders Kalvebod Fælled, which is a large international nature conservation area, with many unique species and qualities. Kalvebod Fælled is an old seabed, which today mainly consists of salt marshes. Within the area there are also protected meadows, bogs, lakes and streams, all of which constitute unique habitats for a rich flora and fauna. To the south is Pinseskoven, which is a predominantly self-grown birch forest on a beach meadow, and together with Fasanskoven is the only forest areas on Kalvebod Fælled. Both forests are designated as "peace forests", which in its simplicity means that when a tree is felled, a new one must be planted.

UN17 Village Ørestad borders Kalvebod Fælled, which is a dammed and protected area on western Amager. The area is approximately 2,000 hectares. The area was dammed during World War II. Since then, many plants and animals have immigrated. Many birds, especially waders, benefit from the moist area and the low vegetation. Over time, large parts of the area have grown into shrubs and trees, as well as the country's largest birch forest, the Pentecostal forest. Cows, horses, fallow deer and roe deer graze the area to prevent it from growing further.

Sustainable construction system

In UN17 Village, we are establishing a construction system which minimizes our carbon footprint and ensures flexibility in construction. That's why we chose the biggest possible beam construction, as well as non-load-bearing facade cassettes. This optimizes the amount of materials with respect to the construction, while at the same time ensuring the overall flexibility of the building in terms of changing needs and conditions over its lifetime. In addition, there is a focus on utilizing wood as a construction material as much as possible.

To further reduce the building's environmental impact, the choice of insulation material plays an important role. Initial LCA analyses have been performed which show that glass wool has the lowest CO2 emissions throughout the lifetime of the material – even lower than wood fiber insulation. However, unlike wood fiber insulation, glass wool cannot store CO2. For fire safety reasons, therefore, glass wool is used in the light wooden cassettes. Since concrete accounts for about 5 to 9% of the world's total CO2 emissions, we are also focusing on helping to reduce the carbon footprint of the concrete used in our construction. Work is being done to implement concrete structure designs that optimize CO2 emissions, use of cement with low CO2 emissions and use of sustainable reinforcing steel produced from scrap metal.

CO2-reducing cement

The construction of UN17 Village marks the start of the use of a completely new and sustainable type of cement in the Danish construction business. The first concrete structure, which is the retaining wall against the lake, will be built with the new CO2-reducing cement type FutureCem, developed by Aalborg Portland – and according to plan it will also be used on a large scale in the construction itself. Sustainability is absolutely central to the construction, and it is crucial for NREP that the building will deliver significant CO2 reductions compared to ordinary buildings, especially in materials selection and during construction. Aalborg Portland's new cement type, FutureCem, is produced with a CO2 reduction of 30% and will be used in UN17 Village on a large scale for the first time.

- Provides 30% reduction in CO2 emissions for cement production.
- Enables the production of durable concrete with reduced clinker content by exploiting synergies of two widely available materials.
- Is fully recognized as a solution for reducing the clinker content of the International Energy Agency's Roadmap for reducing CO2 emissions in the cement industry

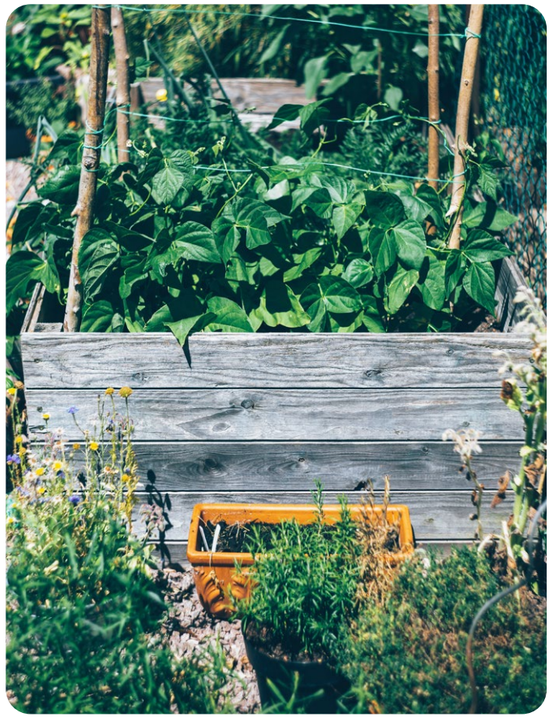
“We are pleased that Aalborg Portland has accepted the challenge and is seriously working towards developing a more sustainable cement for the concrete structures, and that Unicon and Ambercon as concrete suppliers have chosen to use the new cement in their concrete deliveries.”

— Jesper Kyhl Gudmann,
Project Development Director, NREP

Biodiverse courtyards, roofs and vertical greening

In UN17 Village, the landscape of Kalvebod Fælled is drawn in between the buildings and characterizes the identity of the courtyards. Being in UN17 Village should feel like being “in nature”, not next to it, which is why the landscape in the courtyards is being created with a particular focus on establishing a maximized growth layer with structural diversity (with differences in humidity and light), which will support plants and wildlife, and on planting local plant species and biotopes from Kalvebod Fælled. In addition to making a positive contribution to the bio-factor of the area, these green urban spaces will also help to improve the acoustic and microclimatic conditions in the urban spaces, divert rainwater, improve the “heat island effect”, and add real recreational value to the development.

In addition to the courtyards, green roofs are also being established. Some roof surfaces will be established as sedum roofs, with selected roof surfaces (connected to living areas) focusing more heavily on recreation and biodiversity. Here, a higher growth layer will be established which will support biodiversity to a greater extent, while local plant species and biotopes from Kalvebod Fælled will also be planted, just like in the courtyards. At the same time, vertical greening on the facades, balconies, corridors, bicycle sheds and utility rooms will increase the bio-factor and create larger cohesive green areas.



Sustainable surfaces

In UN17 Village, the landscape of Kalvebod Fælled is drawn in between the buildings and characterizes the identity in the courtyards. Being in UN17 Village should feel like being “in nature”, not next to it, which is why the landscape in the courtyards is being created with a particular focus on establishing a maximized growth layer with structural diversity (with differences in humidity and light), which will support plants and wildlife, and on planting local plant species and biotopes from Kalvebod Fælled. In addition to making a positive contribution to the bio-factor of the area, these green urban spaces will also help to improve the acoustic and microclimatic conditions in the urban spaces, divert rainwater, improve the “heat island effect”, and add real recreational value to the development.

Collecting and recycling rainwater

Clean drinking water is a valuable resource that needs to be handled with care. At UN17 Village, roof surfaces and courtyard areas are used to collect rainwater which can then be reused for irrigation in green ornamental and living spaces and in greenhouses and allotments. For irrigation in living spaces where there are no requirements for discoloration of water or micro-bacterial growth, water collected from the greenhouse, utility rooms and bicycle sheds is used. For irrigation in the greenhouse and allotments on the grounds, we use water collected from roof surfaces which is stored in barrels or tanks under ground. This reduces the risk of bacterial growth, meaning the water can be used to irrigate vegetables that are to be eaten raw.

Sustained heating

Heat production for domestic heating and domestic hot water has a significant part to play in Denmark’s ambition to be fossil fuel-free by 2050. In order to achieve this goal, analyses indicate that the district heating sector must reorganize production and that there might be socio-economic benefits to more people within the current district heating areas being connected to the collective supply. As heat supply, UN17 Village uses district heating from the utility company HOFOR which, in recent years, has converted their heat production to a more eco-friendly production based on biomass. Solar cells have also been erected on selected roof surfaces. This strategy optimizes energy production in relation to the available roof area, and also extends energy production to morning and afternoon hours when residents are more at home and can consume the energy being generated.

Chapter VI

A Healthier Everyday

Physical and Mental Health

Our physical and mental health is more important than ever and plays a key role in UN17 Village. The mental and physical health of residents has been taken into account in all aspects of UN17 Village, and all the health initiatives at UN17 Village are intertwined to ensure that this healthy lifestyle is implemented and flourishes.

Danes spend on average 80 to 90% of our day indoors, with approximately 16 hours spent in our homes, so UN17 Village has a particular vision of creating healthy homes with a healthy indoor climate and a special focus on the air we breathe and the light, sounds and temperatures in our homes. In Denmark, far too many men and women are physically inactive. UN17 Village therefore has a special focus on outdoor sports and play facilities, which are free to use and accessible to all. In Fælledhuset, with its large flexible space, you can do yoga and dance, etc. – while in the Health Center, indoor exercise and wellness facilities will provide residents and visitors with something special.

At the same time, measurements – of everything from stress hormones to heart rate, and brain waves to protein markers – show that something vital happens when we live in a green environment. In UN17 Village, therefore, there is a focus on implementing initiatives that increase access and visual connection to nature – both inside and outside. In UN17 Village, residents have the opportunity to grow their own vegetables in freely accessible growing areas. This helps them exercise and get fresh air, supports socializing – and is also eco-friendly as it helps to reduce CO2 emissions from the transport of raw materials.

Physical environments and mental health

Our physical environment affects our mental well-being. Studies show that something vital happens when we live in green surroundings, which is why UN17 Village has a focus on implementing measures that increase access and visual connection to nature – both inside and outside. At the same time, studies show that using wood and natural materials has measurable, beneficial effects on users' and residents' physical and mental health and well-being. Wood and natural materials are therefore used in the buildings, both inside the homes and outside in the urban spaces. Work is also being done to ensure residents' safety and security by using safe lighting, highlighting edge zones and ensuring good transitions between private and public areas.

We work with a holistic view of how UN17 Village's residents can be encouraged to follow a healthier way of life through healthy housing, information on healthy eating and exercise, active outdoor environments and communities. In order to tie all the health initiatives together and encourage healthy choices, and to ensure the overall management of all health-related strategies, a community manager with a special focus on collaborating with the Health Clinic's coordinators is attached to the development.

Healthy indoor climate

UN17 Village has a vision of creating healthy homes with healthy indoor climates. In UN17 Village, measures are being implemented to increase the air quality in homes. This involves relatively high levels of air circulation using mechanically balanced ventilation, pollen filters and high-efficiency cooker hoods, etc. There is also an extra focus on avoiding harmful substances when choosing materials and electrical components. At the same time, the quantity and quality of light has a major impact on our health and well-being. Therefore, measures are being implemented to increase the quality of both natural and artificial light in the homes. This means that the amount of daylight in a home is being optimized using, e.g., floor plans, facade design and window glass specifications. Noise and noise nuisances can also have a major impact on our well-being, concentration and quality of sleep. In UN17 Village, noise nuisances between the housing units and internally within each apartment (between bedrooms and living rooms) are minimized.

Encouraging movement

UN17 Village promotes movement in everyday life by establishing a system of recreational trails that connects buildings, communal facilities and social meeting spaces. The path system spreads out throughout the courtyards and across the roof surfaces and helps encourage residents to take a detour rather than the fastest route. At the same time, outdoor sports and play facilities will be established within the development, and will be free and accessible to all – while in the Common Room, with its large flexible space, you can do yoga and dance, etc. In addition, indoor exercise and wellness facilities in the Health Center will provide residents and visitors with something special – and with Amager Fælled on the doorstep, there are plenty of opportunities for cycling, running or taking a walk surrounded by gorgeous nature.

Health centre

The Health Center offers a holistic approach to physical exercise and mental well-being. The goal is to encourage residents to exercise and keep moving all year round. At the Health Center, there is a focus on functional exercise, including individual personal training, exercise in larger and smaller teams, yoga and cross fit. At the same time, a collaboration will be established with the Health Clinic and Dining Hall with a focus on health topics and activities.

Health clinic

UN17 Village has an ambition to establish a health clinic as a special offer for residents with everyone being offered regular check-ups. As a potential part of their contract, residents will have the opportunity to have regular check-ups or consultations and access to professional knowledge platforms such as health blogs, weekly menu plans, training programs, counseling, online courses and teaching. The goal is for all health-related aspects to improve and, consequently, for the frequency of illnesses to fall, meaning that well-being has increased. In order to encourage healthy choices and to ensure the overall management of all health-related strategies and initiatives, a community manager with a special focus on collaborating with the Health Clinic's coordinators will be attached to the development.

“By using digital tools in the development of the project, we are building a thoroughly analyzed and well-devised real estate project. Throughout the project we strive to implement eco and resident-friendly solutions, which will lead to better physical and mental health, community and sustainability for the future residents of UN17 Village.”

— Lars Bock, Senior Development Manager, NREP

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Scan to watch video about UN17 Village

UN17 Village is among the most ambitious sustainable construction projects and the very first building project to be conceived and designed with the use of a holistic method that addresses and incorporates all of the 17 UN Sustainable Development Goals. We hope that UN17 Village will mark the beginning of a new era within sustainable construction. An era that NREP is proud to initiate – and which all stakeholders across the entire building industry are welcome to join and enter into close and innovative partnerships. We believe in the power of community and that it does indeed take a village.

UN17 Village by NREP