ROADMAP

Climate 2030

OUR STRATEGY FOR A CLIMATE-POSITIVE FUTURE

white

CONTENT

INTRODUCTION

As one of Scandinavia's leading architectural practice, White has both a responsibility and the desire to drive the climate transition within architecture and the built environment. Our role as architects is to shape the physical environment, and at an early stage we lay the foundation to enable cities and communities to ensure sustainable living for a long time to come.

This roadmap sets out White's direction until 2030 for how it will contribute to the transition required in society to achieve national and international climate goals and White's own vision and goals.

It focuses on the three areas where we have the greatest scope and opportunity to have an effect. In addition, we have identified three initiatives that we, either on our own or with partners, need to develop in order to make the radical shift required.

THE CLIMATE CAN NOT WAIT

The effects of climate change are already evident, and global greenhouse gas emissions must be reduced rapidly to ensure a living planet and a sustainable life for future generations. The goal of the Paris Agreement is to limit global warming to 1.5°C and to enhance the resilience to the effects of climate change. In addition, the biodiversity is threatened and the use of the Earth's resources is far beyond its access.

Achieving the goals and challenges requires a radical transition and it must happen now!

THE CLIMATE CAN NOT WAIT

As a consequence of the climate goals, countries, cities, organisations and companies have now ambitious goals for reducing emissions: EU Green Deal show the direction for Europe becoming climate neutral in 2050. Sweden will be the first fossil-free welfare nation by 2045. The Swedish construction industry has agreed on a roadmap for a fossil-free and climate-neutral value chain within the sector by 2045, with interim goals to halve emissions by 2030. In Malmö, players in the construction industry have drawn up a local roadmap (LFM30) with ambitious goals for new projects to be climate-neutral by 2030 and climate-positive by 2035. The World Green Building Council is calling for climate-neutral buildings by 2050, the UK has goals for reducing climate emissions for energy and materials, Norway is aiming for buildings and city districts with zero emissions and in Germany the main focus is on energy efficiency and fossil-free energy. In addition, many towns and cities in Sweden and around the world are now aiming to become climate-neutral by 2030.

White is backing the construction industry's roadmaps. There are many players to work with who, like us, want to take responsibility for the major transition that is required and view being at the forefront as a business opportunity.

Yet there is great potential for change. The construction and real estate industry in Sweden currently account for around 20 percent of domestic greenhouse gas emissions, but this figure almost doubles if production of construction materials in other countries is included. Globally the greenhouse gas emissions from the same industry accounts for around 40 percent. In addition, the planning of towns, cities and communities also affects inhabitants' ability to live sustainably with a low climate impact. Furthermore, Swedes are ranked at the top when it comes to consumption, and over four Earths would be required if Sweden's level of consumption were matched by the rest of the world. Every year large quantities of materials are deposited that could have been recycled. Reusing and recycling instead of producing new materials is one of the most effective ways of reducing climate impact.

WE ARE SHOWING THE WAY

Our immense breadth of competencies and variation of projects give us excellent opportunities to drive change: from planning towns and cities through to designing buildings and interiors and creating conditions for a sustainable lifestyle.

For us, sustainable development is about creating built environments based on people's needs, which contribute to health and social well-being. The condition is that the development must fall within the planetary boundaries and not be at the expense of the Earth's resources, eco-systems or climate. If the construction sector invests in a well-designed environment based on a long-term lifecycle perspective, the economy becomes a means for change.

Our mission is to enable sustainable life through the art of architecture.

WE ARE SHOWING THE WAY

OUR VISION

White's vision is that all our architecture is climate neutral through design excellence by 2030.

For us, architecture encompasses everything from planning towns, cities and communities through to designing buildings, outdoor environments, interiors and furniture to creating the conditions for people to live and work. So if all architecture is climate-neutral, what type of society do we want to create?

The next page summarizes our vision about the society of the future.

Our vision: 2030 all our architecture is climate neutral through design excellence.

– A climate-neutral society is like one giant eco-cycle, based on a circular economy with a long-term lifecycle perspective. The built environment is planned to reduce the risk of climate change, to protect human health and to ensure that buildings have net zero or lower greenhouse emissions.

The starting point is to use what has already been built or produced and, based on what already exists, create new designs, functions and attractive environments. Materials are used efficiently in non-toxic circular flows and construction can be dismantled so that the material can be returned to the material flow.

The architecture we create must stand the test of time and be timeless. Environments and buildings are designed so that they evolve over time with general and flexible floorplans and construction that make efficient use of the area. Offices can be converted into homes, streets can become parks and ground floors can become social meeting-places.

Buildings are climate-neutral or climate-positive, which means they do not contribute to negative greenhouse gas emissions during their lifecycle, and they may even capture carbon dioxide. New construction is carried out largely using timber and bio-based materials or using recycled raw materials with a low carbon footprint.

Using digital design tools, the architecture can always be optimised in terms of energy, health and climate. In addition, the tools create opportunities for material-efficient, function-adapted design without unnecessary waste and for tailor-made prefab constructions of high architectural quality.

< SUMMARY OF EMPLOYEE VISIONS FROM WORKSHOPS

Towns, cities and communities must be planned to provide space for climate-neutral construction, but they must also manage the consequences of a changed climate, as these pose a risk to both human health and the built environment. Greenery and eco-system services occupy a natural place in towns and cities because they contribute to climate adaptation, ecological values and healthy and attractive environments that can capture carbon dioxide. A higher degree of social equality in society is also a positive driving force for a better environment.

The energy supply is fossil-free and more local, circular systems are created for energy, water and waste. More and more food is produced locally and farming takes place both in the urban environment and indoors on an industrial scale. Land is used efficiently and in a way that protects natural values, but also make room for buildings, infrastructure and green spaces.

Consumption has shifted towards a sharing economy and it is commonplace to reuse, borrow or hire products instead of buying new ones. Transport and mobility are fossil-free, efficient and based on sharing services, with a heavy emphasis on stimulating "muscle mobility" and reducing the need for travel and transport.

More and more people have moved out of the large cities, while smaller towns and cities have enjoyed a renaissance. This creates opportunities for self-sufficiency, but also a need for local transport, services and jobs. Many companies create hubs on the outskirts of large cities as more and more people work from home.

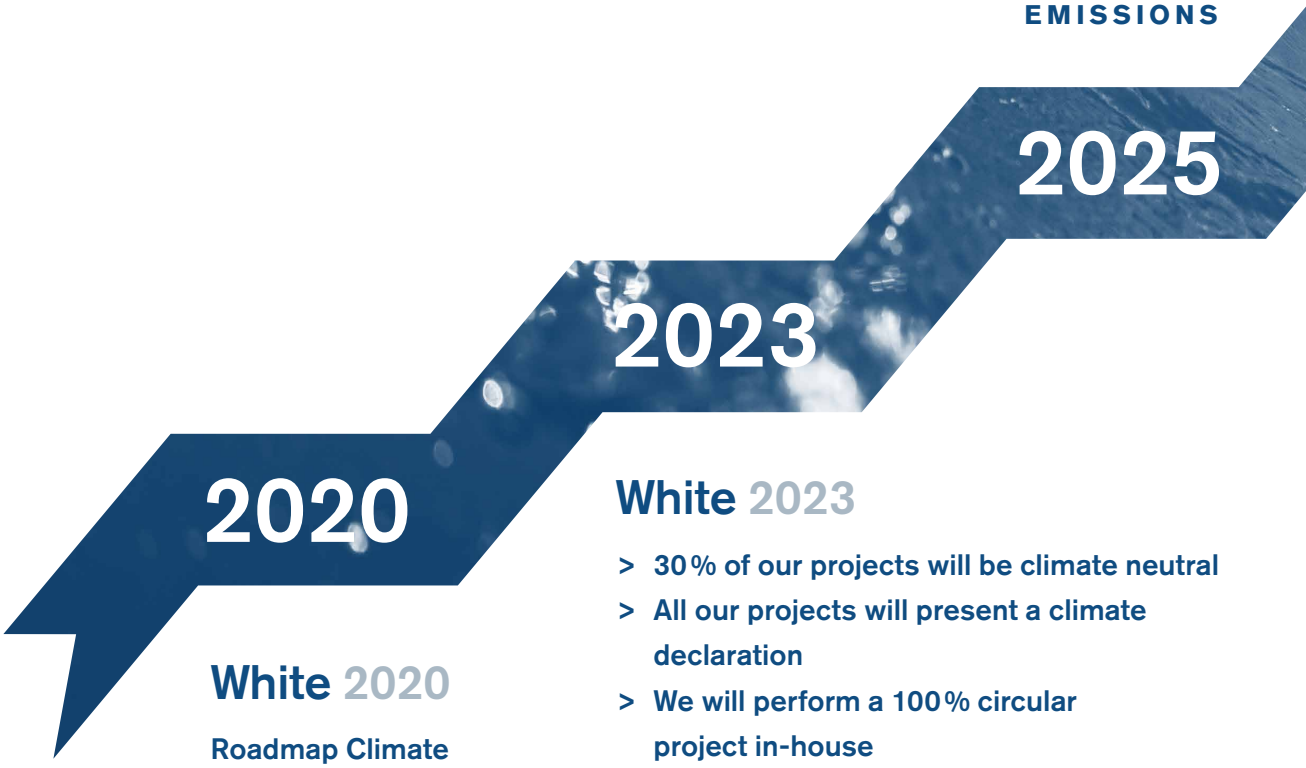
In the climate-positive future, the construction industry considers the long-term lifecycle perspective and investments in quality, sustainability and timeless architecture to be a matter of course in order to be financially profitable.

OUR GOALS

ROADMAP
Climate 2030

To achieve our vision and contribute to society's objectives, we have set some clear, measurable goals. The goals go up to 2030 but our vision extends beyond that.

GOAL LFM 2030: 50% REDUCED CARBON EMISSIONS

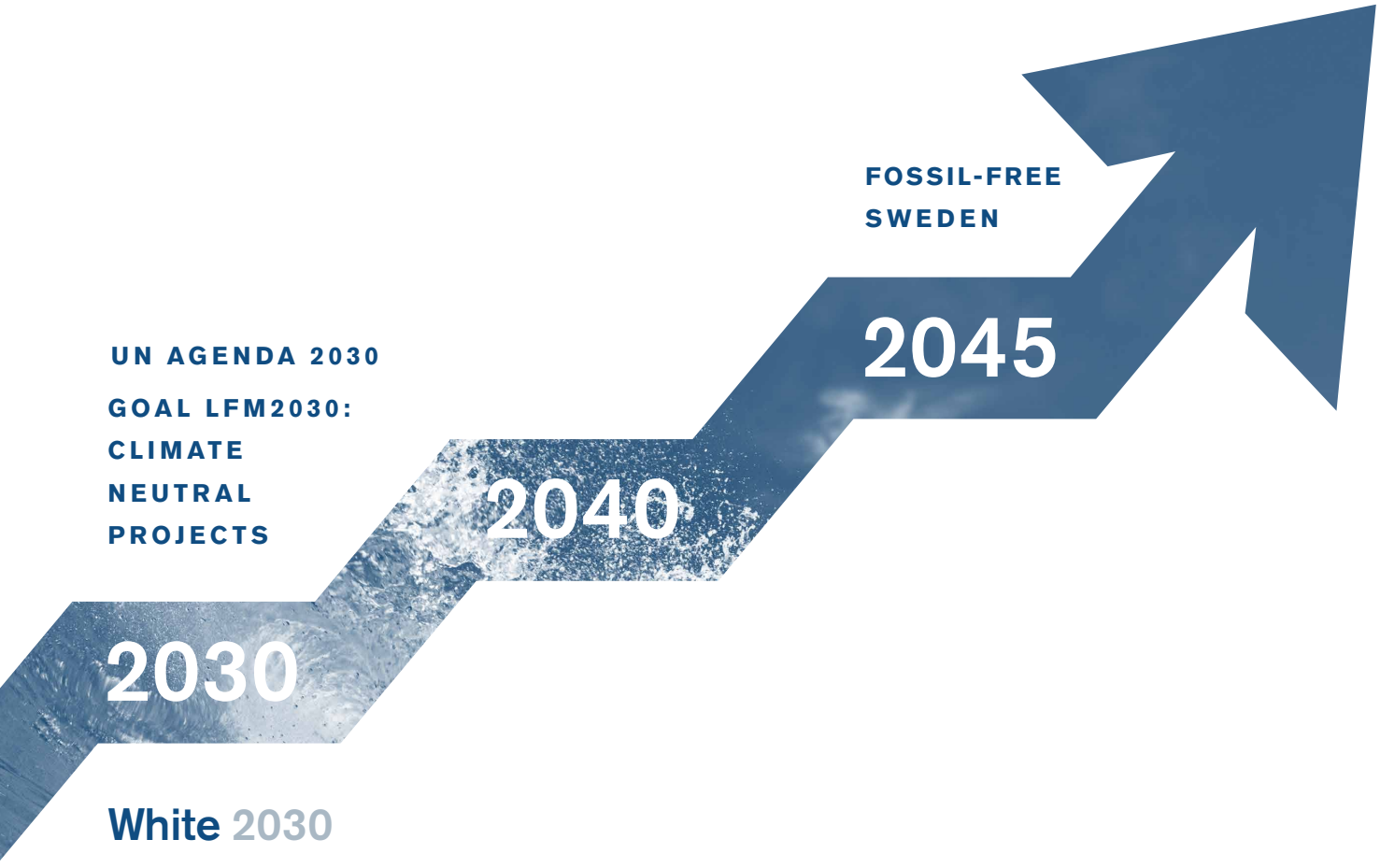


White 2020

Roadmap Climate 2030 is launched

White 2023

- 30% of our projects will be climate neutral
- All our projects will present a climate declaration
- We will perform a 100% circular project in-house
- The carbon emissions from our organisation will be reduced by 30% compared to 2018 levels.
- 50% of our travels within Europe will be made by train



White 2030

- All of our projects will be climate neutral or climate positive
- Embodied carbon for materials will be 50% lower compared to 2023 levels
- The carbon emissions from our organisation will be reduced by 50% compared to 2018 levels

Vision 2030: All our architecture will be climate neutral, through design excellence

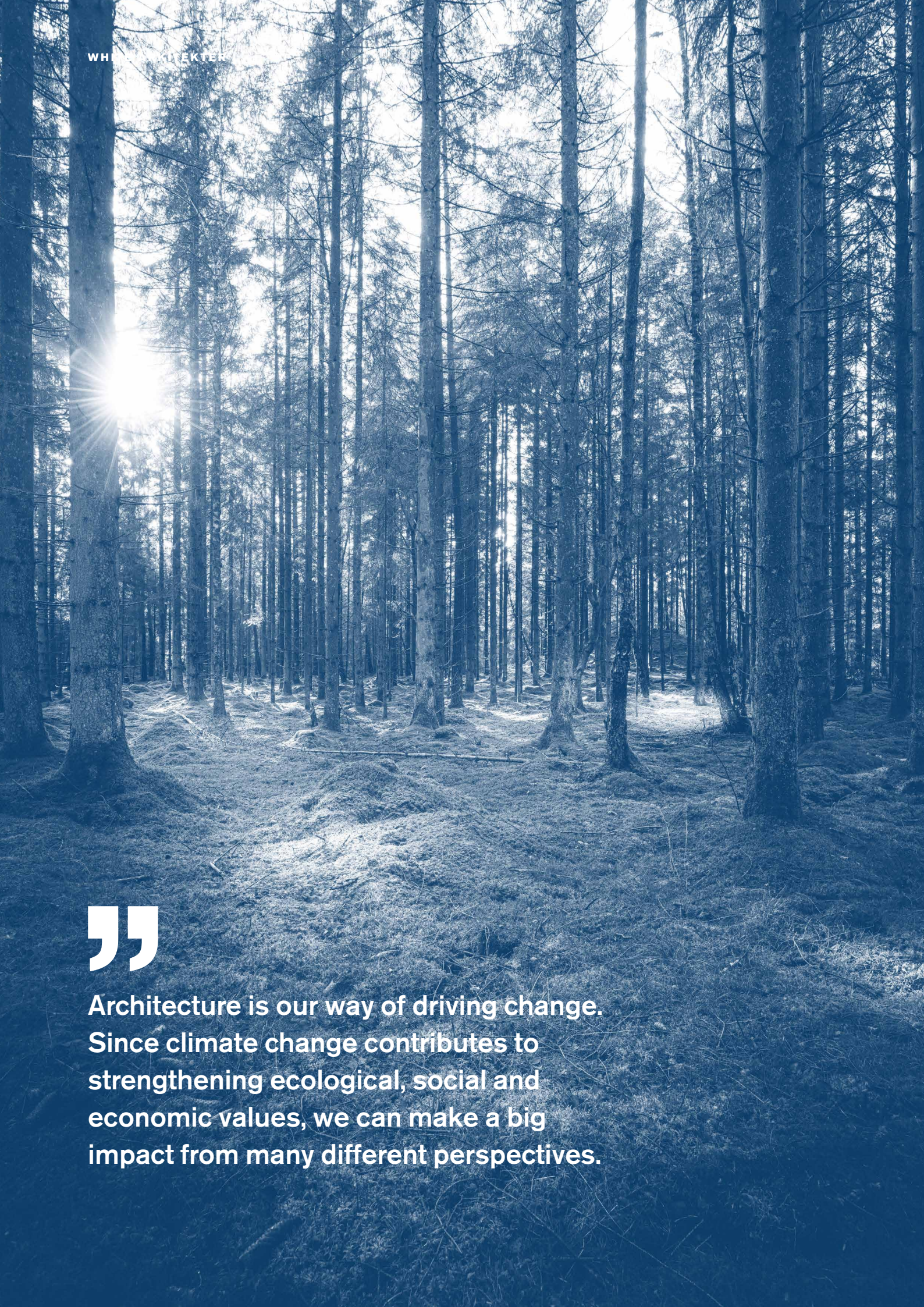
A CHANGED APPROACH

The built environment and the architecture we create always contribute to climate impact and the use of natural resources. In the vast majority of cases, therefore, it is best not to consume or build at all. Reuse and the use of more recycled materials will not only save the Earth's resources, it is also one of the most effective measures for reducing greenhouse gas emissions. We must therefore drive the development towards a more circular economy.

This requires a brand-new approach, and instead of starting with the assumption that we will create new environments and use new materials, we always need to ask ourselves the question: how can we create something new from what already exists?

The potential to reduce climate impact is greatest in the early planning and design stages. We should therefore always work based on four strategies:

1. **PLAN** with a long-term perspective for circularity, bio-diversity, health, a sustainable lifestyle and climate adaptation.
2. **PRESERVE AND TRANSFORM** instead of building new but create new functions and designs from existing environments and products.
3. **ECONOMISE** of energy and materials.
4. **CHALLENGE** new construction with low carbon materials, renewable energy and design for circularity.



Architecture is our way of driving change. Since climate change contributes to strengthening ecological, social and economic values, we can make a big impact from many different perspectives.

OUR STRATEGY

There are many ways that society can reduce greenhouse gas emissions, but the circumstances are different in different industries.

White has identified three focus areas where we have the greatest opportunity to drive change through our projects. We want to contribute to a transition by creating Sustainable Living Environments, Circular Architecture and Climate-neutral Design.

In order to contribute to a radical shift, we also need to invest in the following development areas: Processes and Business, Digital Design and Expertise and Innovation.

By focusing on these areas, we also contribute to development in line with Agenda 2030, and especially our most prioritised Sustainable Development Goals:

In order to achieve the climate goals and our vision, we will be focusing on reducing the use of materials and energy, creating circular and climate-positive architecture and creating environments that can cope with climate change and contribute to a sustainable life, for humans as well as the planet.

THREE FOCUS AREAS

Sustainable Living Environments
Circular Architecture
Climate-neutral Design

THREE FOCUS AREAS

The transition to a climate-neutral society begins in the early planning, from regional level to detailed plans. Conditions need to be created for renewable energy, sustainable mobility, efficient circular resource flows, climate-neutral construction and service that supports a sustainable lifestyle. The consequences of a changing climate also need to be managed as they pose a risk to both human health and the built environment. Eco-system services play a key role as they contribute both to climate adaptation and to necessary ecological and social values. In addition, an equal society is essential for creating incentives for driving the transition towards improved environment and climate.

We can contribute to sustainable living environments by:

> preserving and transforming existing environments and buildings

> using land efficiently to protect natural values or maximise functions from a lifecycle perspective, such as buildings, green structure, mobility and energy production

> integrating measures for climate adaptation to protect health and the built environment

> creating space for greenery and integrating eco-system services in towns and cities

> creating circular, local solutions for renewable energy, water and waste

> creating the conditions for fossil-free, efficient mobility, but also reducing the need for travel and transport

> enabling timber construction and energy-efficient and climate-neutral buildings in detailed planning

> stimulating sustainable behaviours and lifestyles

> striving for inclusive processes and socially sustainable planning

CIRCULAR ARCHITECTURE

Through circular architecture we can drive the transition from a linear to a circular economy. The starting point is to make use of what already exists – be it neighbourhoods, buildings or materials – to create new designs and attractive environments. It is also about creating timeless architecture that evolves over time, using spaces efficiently and using recyclable materials. Circular architecture contributes to significant savings in natural resources and reduction of climate impact, but it also supports preservation and development of social and cultural values.

We can contribute to circular architecture by:

> preserve and transform existing environments, buildings and products as a starting point

> creating high-quality, timeless architecture

> creating environments that evolve over time with flexible, general solutions and enable rebuilding, shared use and a mix of operations

> increasing the reuse, recycling and upcycling of products

> optimising the use of materials in construction and reducing waste

> selecting products with a long lifespan that can be dismantled and repaired

> increasing the use of timber and bio-based or recycled raw materials

> selecting non-toxic materials with a low climate impact

> taking the lifecycle perspective as a basis in the design process

CLIMATE-NEUTRAL DESIGN

To reach the climate goals, all construction must drastically reduce its climate impact from both energy and materials. Our goal is to create buildings that are climate-neutral or better by 2030. This means keeping greenhouse gas emissions from materials, energy and construction as low as possible throughout their lifecycle. Emissions are balanced against renewable energy or carbon sequestration so that the sum is net zero or negative. Climate neutrality requires an holistic view with optimised design, careful material choices and local energy solutions, all validated from a lifecycle perspective.

We can achieve climate-neutral design by:

- taking the principles of circular architecture as a starting point
- designing energy-efficient buildings by optimising building volumes, building envelopes, passive energy solutions and access to daylight
- increasing timber construction and the use of bio-based products
- optimising the use of materials in construction and selecting materials with a low climate impact from a lifecycle perspective
- proposing local, fossil-free energy solutions and increasing the use of building integrated photovoltaics
- carrying out and follow up energy- and climate calculations and lifecycle analyses throughout the design process
- drawing up a climate budget and climate declaration in all projects

To be able to make a radical shift requires new ways of leading and collaboration in our projects and that we can drive knowledge development together with our customers and other partners.

THREE DEVELOPMENT AREAS

Processes and business
Digital Design
Expertise and innovation

PROCESSES AND BUSINESS

Strong, innovative leadership and new business models are factors for a successful climate transition. Expanded collaboration both within the industry and with other players, together with a willingness to work towards the same goals, is essential. We can drive the design process in new ways, broaden our role and develop new services. Furthermore, we can exert an influence on the construction sector to encourage it to take a long-term economic perspective that values quality, environmental and social values from a lifecycle perspective.

Our initiatives entail:

- developing new services and being a leader in climate-neutral planning, construction and design, and in development of circular architecture
- deepening collaboration and developing new business models with clients and other business partners
- highlighting climate gains in monetary terms in our projects
- developing services and process leadership in investment calculations for sustainable solutions from a long-term economic perspective

DIGITAL DESIGN

Digital design tools contribute to strong design together with optimised, efficient design based on materials, health, energy and climate. Various analysis and calculations are key for supporting and verifying designs and design choices. Digital tools are essential for increasing the transition towards circular architecture and support new opportunities for collaboration, efficient and climate-assured project planning, tailor-made, material-optimised construction and information for ensuring sustainable building management.

Our initiatives entail:

- further develop digital tools that support transformation, circular and climate-positive architecture as well as planning for climate adaptation
- developing design parameters for climate adaptation, indoor climate, energy, daylight and climate impact
- integrating computational design into the design process
- explore AI and generative design to support the design process
- developing BIM-models that report lifecycle data relating to carbon emissions, environmental impact and material information
- carrying out lifecycle analysis and climate calculations in all projects and report a climate budget and climate declaration
- using digital models and data to create built environments that can support a sustainable lifestyle based on people's needs and behaviours

EXPERTISE AND INNOVATION

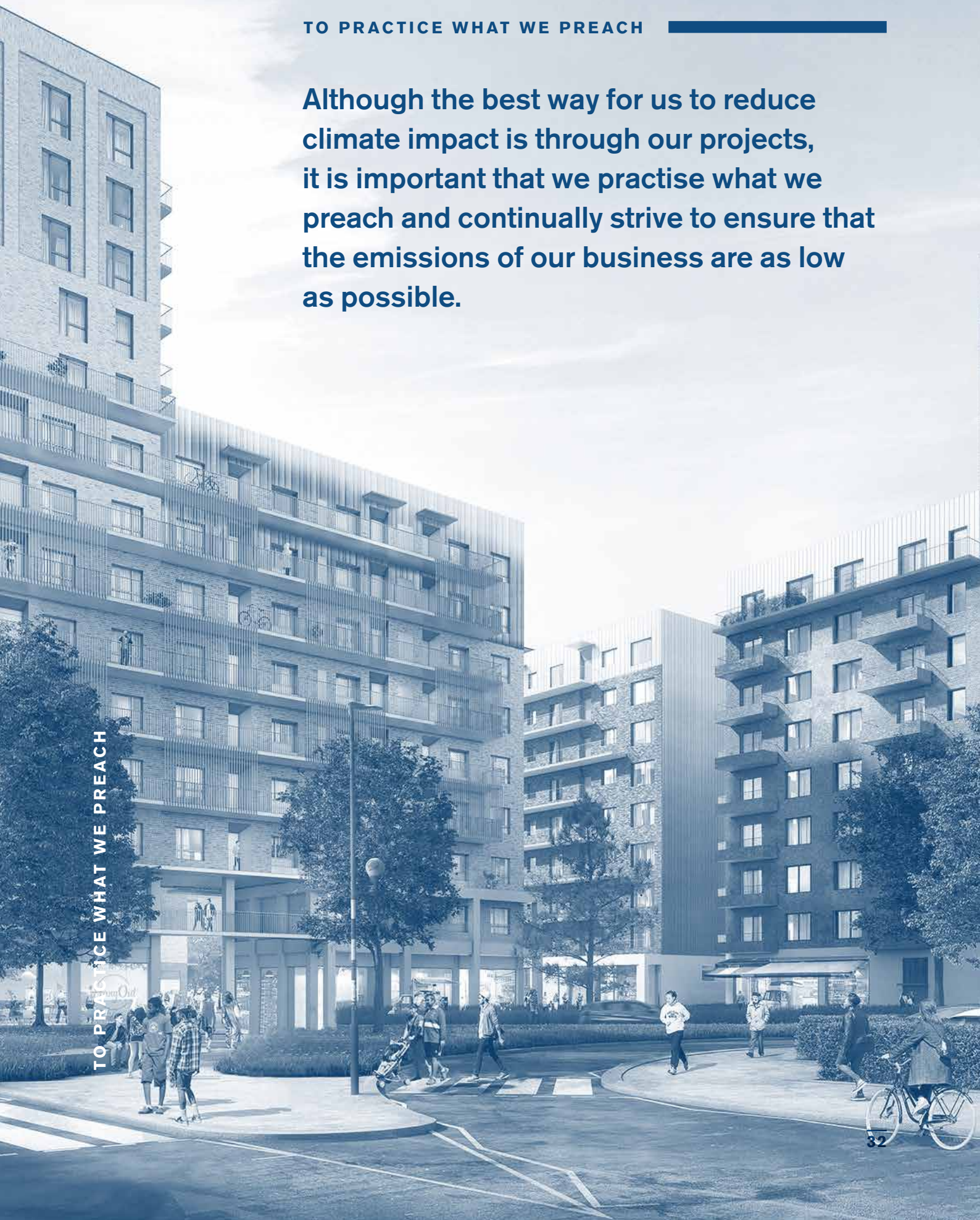
Achieving the climate goals requires expertise, innovation and courage. White Research Lab invests in research, development and innovation that pushes the boundaries of what is possible, makes a difference for environments and people and demonstrates how architecture, design and urban planning contribute to development in line with the sustainable development goals and climate goals. Our key to real change is running development projects together with clients and other stakeholders.

Our initiatives entail:

- targeting our development at areas that contribute to a climate transition based on environmental, social and economic perspectives
- creating strategic collaborations with external parties and participating in research projects, both nationally and internationally
- carrying out in-house full-scale development projects
- developing and contributing to innovations that are instrumental in the climate transition
- driving the public debate and influencing decisions- and policy-makers

TO PRACTICE WHAT WE PREACH

Although the best way for us to reduce climate impact is through our projects, it is important that we practise what we preach and continually strive to ensure that the emissions of our business are as low as possible.



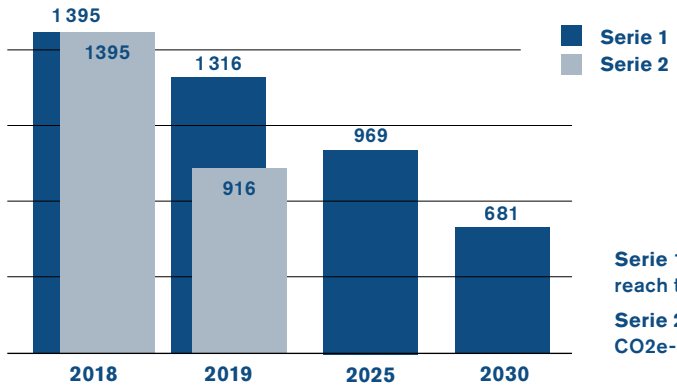
A climate report is prepared annually to record the business's greenhouse gas emissions.

The report follows the methodology of the Greenhouse Gas Protocol. White reports emissions in accordance with scope 2, which covers heating, cooling and electricity for offices, and scope 3, which covers business and study travels, hotels, purchases and waste. White don't report any emissions in accordance with scope 1. Interim goals are set for each scope and followed up annually.

Using Science-based targets, we have calculated what efforts are required to enable the company to reach the 1.5°C goal by 2030. Compared with 2018, we need to halve our emissions by 2030.

To achieve this, it is necessary to reduce the climate impact of travels and purchases. 94% of all journeys within Sweden are already performed by train, so a challenging goal by 2023 is to increase train travels within Europe: 50 percent of all journeys will then be made by train. Other measures include improved climate requirements for purchased products.

CO2E-REDUCTION TO 2030



Serie 1: Max CO2e-emissions to reach the 1,5°C-goal (tonnes)

Serie 2: Actual measured CO2e-emissions (tonnes)

DEFINITIONS AND REFERENCES

CIRCULARITY Refers to a conversion aimed at reducing the consumption of natural resources and the generation of waste. This can be achieved by creating material cycles, mainly through reuse, upcycling or recycling. Ellen MacArthur Foundation often refers to a biological and technical cycle. Circular economy refers to systems and business models that support and stimulate the efficient use of resources and circular material flows.

CLIMATE NEUTRALITY Net zero greenhouse gas emissions. Emissions shall be capable of being absorbed by the ecological cycle or by technical solutions and thus not contributing to the greenhouse effect. The strategy is primarily to reduce carbon emissions of materials, production and energy and to counterbalance them with compensatory measures such as renewable energy or carbon storage so that the sum is zero.

CLIMATE POSITIVE More removals than emissions of greenhouse gases. The same strategy as for climate neutrality, but the compensatory measures exceed emissions by at least 10 percent, so that the sum is less than zero. Climate-positive equals to carbon-negative in this report.

ECOSYSTEM SERVICES The functions provided by nature that are important for people's living conditions and well-being. For example, pollination, air and water purification, water infiltration and food.

FOSSIL-FREE Free from fossil fuels/raw materials.

FOSSIL-FREE SWEDEN National initiative to make Sweden the world's first fossil-free welfare nation by 2045. To achieve this, various industries have developed their roadmaps, such as the construction sector. www.fossilfrittsverige.se

LCA Short for life cycle analysis which is a method of calculating the environmental impact of raw material extraction to final handling.

LFM 30 Short for Local Roadmap Malmö which is an initiative of the City of Malmö and several actors in the construction and real estate industry to reach a climate neutral sector in Malmö by 2030. www.lfm30.se

CONTINUOUS IMPROVEMENTS

This plan forms the basis for business plans, the annual action plans, strategic investments and budget. It also sets out the direction for development of expertise, research and innovation. Detailed plans with measures and strategies will be developed in each focus area. The roadmap will be reviewed in 2023 ahead of a new business plan.

Follow-up is reported annually in White's Sustainability Report. The report also details our business's actual climate impact, as well as theoretical emissions in projects.

PROJECTS: Kastrup Sea Bath, p. 1, 2 / Naturum Vattenriket in Kristianstad, p. 6
Observation Tower in Varberg, p. 16 / Broparken in Linköping, p. 19
Selma Lagerlöf Centre in Göteborg, p. 21 / 100-year Pavilion in Stockholm, p. 23
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Gascoigne East i London, UK, p. 31 / Nuuk Psychiatric Clinic in Greenland, p. 35

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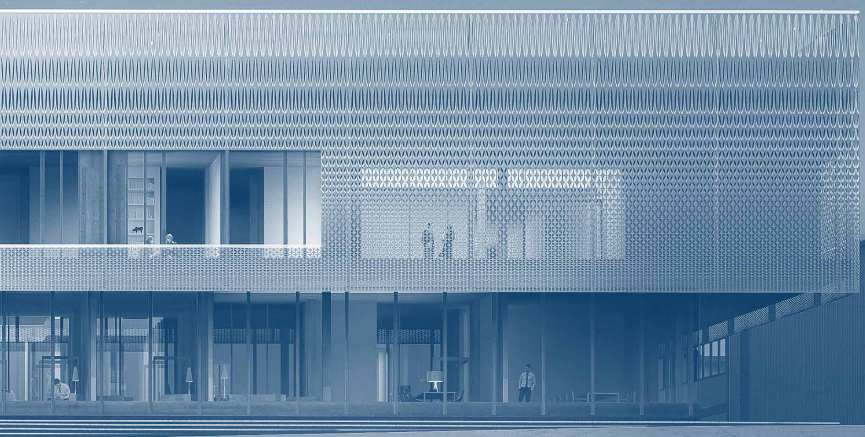

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White Arkitekter is one of Scandinavia's leading architectural practices. We work with sustainable architecture, urban design, landscape architecture and interior design for current and future generations. Our mission is to enable sustainable life through the art of architecture. Our vision is that by 2030 all our architecture will be climate neutral, through design excellence.
We are an employee-owned architecture collective of about 800 employees, with presence in Sweden, Norway, UK, Germany, Canada and East Africa.

TALK TO US!
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