

# NCC's impact areas

## Data and expertise

### NCC-1 Company-specific disclosure: Certified constructions and buildings

**NCC provides data** and expertise to its stakeholders to support data-informed and sustainable decision-making, thereby contributing to positive change.

Reliable data and expertise are keys to handling the complexity of a construction process and to contributing to its development. Data and expertise is a separate impact area as it helps both NCC and its stakeholders to make well-founded and sustainable decisions. Accordingly, developing and presenting data in such forms as environmental product declarations and climate calculations is a prioritized method that enables NCC to contribute to its customers' processes.

#### A data-informed work method

NCC's stated purpose is to take the customer through the construction process in order to create a positive result for all stakeholders. Over the course of the process, there are multiple occasions when access to data and expertise contribute to informed choices. NCC strives to be involved in the process at an early stage.

A group of NCC's size creates enormous amounts of data. For the knowledge to be shared as efficiently as possible, it is essential that the information is structured, easily available and simple to share. By working in a data-informed manner, NCC improves its own sustainability performance and that of its customers, and thus contributes to productivity improvements and increased competitiveness, while facilitating sustainable solutions. By accumulating and sharing expertise, NCC also

contributes to knowledge development in the areas of sustainable solutions and work methods for the entire industry.

With expertise in materials selection and construction processes, NCC helps its customers and other stakeholders to make sustainable choices and informed decisions ahead of and during the construction process. Access to reliable and qualitative sustainability data is a competitive advantage, which enables NCC to make a difference and achieve change, and to be an even better guide for customers throughout the construction process.

With the help of reliable, relevant and transparent data, NCC is able to use climate calculations and environmental product declarations to formulate the actual climate impact of projects and products, simplify work to obtain sustainability certifications, improve the development of products and concepts involving sustainable profiles and to measure, examine and follow up sustainability activities at the worksites.

#### Digitization and standardization

Digitization is a prerequisite for NCC's ability to leverage the collective information, data, knowledge and expertise and to increase the efficiency of and develop its sustainability work. A higher degree of digitization and standardization is also required for knowledge sharing with other players in the industry, to drive change and succeed in the climate transition, to use resources efficiently and to achieve traceability and control in the value chain.

#### Ongoing development

NCC's strategic focus is based on using the strength of the large company and developing expertise. This is formulated in the following priorities:

- Build a knowledge-based company and a culture based on shared values and behaviors.
- Work in a data-informed manner, which requires that NCC invests in IT and digitization.
- Be proactive in relation to the customers in order to manage the complexity of the construction process and utilize and develop NCC's expertise and experience.
- Leverage the Group's collective expertise in order to develop the construction process. NCC is pursuing this as part of a number of strategic initiatives, including NCC Academy, the Group's training and education initiative.

#### Climate calculations

NCC is involved in focused efforts to implement climate calculations in construction projects, whereby the calculation process is becoming increasingly digitalized in order to ensure high quality. Examples of this are BIM models, One Click and ByggLCA.

The purpose of climate calculations is to gain an overview of and control the total climate impact of a project. This includes data and related carbon emissions associated with the use of materials, energy consumption and waste. This is also an important step on the way to formulating the climate declaration that is statutory in Sweden, whereby a building's climate

#### Sustainability-certified constructions and buildings

Certification systems	Nordic Swan Ecolabel		BREEAM		LEED		DGNB		MILJÖBYGGNAD			BREEAM Infrastructure (CEEQUAL)			RTS						
		Number	Grade	Number	Grade	Number	Grade	Number	Grade	Number	Grade	Number	Grade	Number	Grade	Number					
		3	Pass	–	Bronze	–	Bronze	–	Bronze	–	Pass	–				1					
			Good	–	Silver	–	Silver	–	Silver	8	Good	–				–					
			Very good	–	Gold	1	Gold	1	Gold	1	Very good	–				–					
			Excellent	5	Platinum	2	Platinum	–			Excellent	–				–					
			Outstanding	–							Outstanding	–				–					
	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022			
<b>Total</b>	2	4	3	3	5	5	2	0	3	3	4	1	17	9	9	1	1	0	0	0	1

Constructing buildings to satisfy ambitious certification requirements has become a matter of course in many construction projects; however, it is not equally self-evident that the building will be actually certified. Preliminary certifications are not included in the table; only certifications completed during the year in question.

impact is identified and quantified using actual supplier data. The same type of statutory climate declarations are also about to be introduced in the other countries where NCC is active.

Customer interest in and demand for climate calculations is increasing. In 2022, efforts aimed at involving customers, which were initiated in 2021, continued in the form of customer meetings. NCC also has an in-house center of excellence with climate calculation experts. The in-house expertise in both lifecycle assessments (LCAs) and climate calculations continues to grow and deepen in several business areas.

In 2021, NCC initiated work to produce benchmarks for various types of buildings to increase knowledge of the impact made by the various choices. In 2022, the results of this work included NCC developing a climate guide intended, for example, to show how materials selection affects both the climate and finances. Using this, NCC can guide its customers to achieving a cost-effective reduction in climate-impacting emissions.

The Industry business area has also initiated a preliminary study – Green dimension – in order to map the information requirements that customers have in respect of climate issues related to asphalt.

### Environmental product declarations

Customers are increasingly requesting and demanding that products should have environmental product declarations (EPDs) and these are being formulated for an ever-increasing share of products produced by NCC.

EPDs are third-party verified and include transparent and comparable environmental impact information throughout a product's lifecycle, from the extraction of stone and other raw materials to delivery to customers and, ultimately, recycling.

As a result, customers obtain a transparent and comparable lifecycle assessment of the product. Customers gain access to objective and reliable data, and can thus assess the products' environmental per-

formance. This makes it easier for the customers to make environmentally conscious choices and reduce their climate footprint.

NCC's EPDs are location and product-specific, which also enables NCC to use the EPDs internally to make fact-based climate and environmental improvements in its production processes.

To date, NCC has published 31 EPDs for stone materials, of which 26 have been published and apply to EPDs for stone materials at EPD International and five to EPD Norway, as well as 23 that have been published and apply to EPDs for asphalt at EPD International.

In late 2022, 23 of NCC's 27 asphalt plants in Sweden, about 85 percent of them, had an EPD. In Norway and Denmark, there are EPDs covering asphalt from several asphalt plants; however, these are not published by the EPD operator but are used solely in direct communication with customers.

### Sustainability certifications

NCC offers its customers all the types of environmental certifications that are available for buildings and civil-engineering structures, both nationally and internationally.

Nordic Swan Ecolabel, Miljöbyggnad, CEQUAL, BREEAM, LEED, DGNB, WELL, RTS, Citylab and NollCO<sub>2</sub> are used for housing and infrastructure projects, as well as whole city districts. BREEAM, DGNB, Citylab and NollCO<sub>2</sub> are used for the projects that NCC develops itself. Having verified data for the projects makes it easier to get buildings and structures certified.

During the past year, NCC projects received three Sweden Green Building Awards. These projects were an e-shopping warehouse in Gothenburg for ICA, which was named BREEAM Building of the Year, the Stenängsskolan school in Huddinge, which was named Green Building of the Year (årets Miljöbyggnad) and the Fyrspår project in Lund-Arlöv, which received the year's award for sustainable infrastructure from the Sweden Green Building Council.

### Products and concepts with an environmental profile

NCC has a number of products and concepts with sustainability profiles, such as "Smart choices for a better world" within the stone materials and asphalt operations.

These are products and solutions for reducing the environmental impact from a lifecycle perspective, such as NCC Green Asphalt, NCC Machine Sand and environmentally optimized parking buildings, as well as products and solutions for managing the negative impact of climate change, such as drainage products and NCC Armour Stone.

NCC also has a method for increasing biodiversity in NCC's quarries; refer to Natural resources and biodiversity on pp 89-90.

### Sustainable / Responsible sites

NCC has its own work method, known as Sustainable Site and Responsible Site in Denmark. This method entails that all of NCC's workplaces have a shared foundation upon which to base their sustainability activities, regardless of country or operation, from planning and throughout the course of a project. This work method is subject to checklists for ensuring that a number of sustainability requirements are fulfilled in relation to both environmental and social sustainability.

The use of Sustainable/Responsible Site is mandatory for all projects in the business areas Building Sweden (with a project value exceeding SEK 20 M), Infrastructure (projects exceeding SEK 100 M), Building Norway (projects exceeding NOK 40 M) and Building Denmark (projects exceeding DKK 50 M); they are also used to some extent in Building Finland. NCC Industry's quarries, division Stone Materials, also use Sustainable Site (it is voluntary, but 44 quarries currently apply Sustainable Site). Sustainable Site continued to be developed during the year, to further support the projects' focus on climate and other sustainability issues. Work has also been under way to address more stringent requirements from sustainability certifications, which impact various parts of NCC. The application of Sustainable/Responsible Site is monitored during environmental rounds and internal audits.

### Environmental product declarations

Number EPDs	Total YTD			Country
	2022	2021	2020	
Asphalt	23	5	16	2 SE
Stone materials	31	11	9	DK, FI, NO, SE
Concrete piles			1	SE

NCC Industry formulates plant and quarry-specific EPDs for asphalt and stone materials. NCC has now published EPDs for 23 of our 27 permanent asphalt plants in Sweden. NCC has also published EPDs for stone materials from a total of 31 of the rock pits and gravel quarries: 17 in Sweden, six in Denmark, six in Norway and two in Finland. NCC plans to continue to producing EPDs for more plants and quarries. One EPD was produced in 2020 for concrete piles that NCC manufactures in two of the Group's factories.

## Environmental sustainability

NCC regards environmental considerations as a key aspect of operations. NCC generally works in an environment where meticulous demands for environmental considerations and reporting are placed by regulating authorities and by customers. The impact areas in NCC's sustainability framework that can be re-

lated to environmental sustainability are Climate and energy, Natural resources and biodiversity and Materials and circularity. Environmental sustainability work will be described through these impact areas.

It is also reflected in the overall impact area of Data and expertise, which

describes NCC's approach to this work. NCC's point of departure is to use this data and expertise to ensure that the right choices and informed decisions are made and to direct focus on developing ways to compile, utilize and share data and expertise.

# Natural resources and biodiversity

## GRI 303 Water and effluents, GRI 304 Biodiversity

**NCC strives for** resource stewardship of natural resources, to help secure well-managed ecosystems and responsible use of natural resources. Proactive efforts are also under way to reduce adverse effects on biodiversity and to increase the positive effects.

### Governance

To support effective governance, all NCC business areas are certified or work in accordance with ISO 14001 and ISO 9001, and base their actions on NCC's Sustainability and Environmental Policy and its sustainability framework.

### Natural resources

Since NCC's business is resource-intensive, it is important that these resources are used as effectively as possible, and that the greatest possible share is included in a circular flow without having a detrimental effect on the quality of the resources. To achieve this, product and process development is constantly ongoing to facilitate higher efficiency and circular material flows. Ongoing work with raw materials, the mass balance and water is presented in this section.

#### Raw materials

Although NCC strives to increase its circular resource flows, the majority of the materials used in operations are so-called raw materials. To minimize this type of use of resources, NCC endeavors to use its raw materials as effectively as possible and to develop products and solutions so that, with retained quality, resource stewardship is achieved while work is performed efficiently. NCC prioritizes the use of raw materials over which the Group has control of the extraction process.

#### Stone materials

NCC strives to extract stone materials responsibly, which is done at quarries in Sweden, Denmark, Norway and Finland. NCC primarily uses crushed gravel (stone materials) rather than natural gravel.

One of Sweden's environmental objectives is that the use of natural gravel should be avoided to preserve eskers for future water supply. NCC develops substitute products from crushed rock material in order to reduce the use of natural gravel, for example, in the production of concrete.

Sand is a natural resource that is important in construction and production. NCC has developed something called machine sand products as substitutes for natural sand and natural gravel in construction. NCC's machine-made sand is based on rock material that is crushed, screened and processed to satisfy customer requirements for various applications. Machine sand replaces natural sand and gravel in the production of concrete and asphalt, and in building and infrastructure projects. It can also be used in, for example, the sanding of winter roads. The production of machine sand is also a way for NCC to achieve a mass balance in its quarries.

#### Mass balance

The objective of achieving a mass balance in quarries is to utilize all stone materials that are extracted from a quarry. By aiming to achieve mass balance, NCC gains a market for its fine-grained material, as a substitute for natural gravel and sand. What was previously considered a residual product is washed, processed into a more customized form and used primarily in concrete products. Close cooperation with customers to satisfy their requirements

is a prerequisite for successful work to achieve mass balance.

In infrastructure projects too, NCC is conducting a comprehensive initiative to handle excavation mass in a circular manner and in relation to mass balance with the aim of reducing its climate and environmental impact. Read more on p. 91-93.

#### Water

Meticulous water management is key, primarily for infrastructure projects. Ahead of every project start, NCC performs thorough analyses and risk assessments concerning the impact on water; how groundwater and natural receptacles are affected and how runoff occurs.

NCC devises measures for how the projects will be conducted in a manner that manages surface water, minimizes the removal of particles and substances and in other ways reduces the impact on water. The solutions are designed on the basis of project-specific requirements.

In 2022, NCC worked to map its use of water in order to manage, report and reduce usage. This work is continuing in 2023.

#### Biodiversity

Biodiversity is one of NCC's impact areas and is an aspect where its operations have both a positive and negative impact. NCC has expertise in the area of biodiversity, and is something that is integrated into all of NCC's construction projects. Through primarily four types of initiatives, NCC works to reduce the negative – and increase the positive – impact on biodiversity. 1) NCC Kielo, 2) property development, 3) Building Denmark and Building Norway, which aim to implement at least one bio-

diversity measure in all new projects and 4) that all construction and infrastructure projects are to be certified according to BREEAM and BREEAM Infrastructure (formerly CEEQUAL).

*NCC Kielo – for promoting biodiversity in quarries*

NCC works to promote biodiversity at places where gravel pit operations are conducted, both during the production phase and during post-processing in conjunction with pit closures.

The extraction of stone materials results in changes in nature. To counter the negative impact, NCC has developed a method that promotes biodiversity in quarries, known as NCC Kielo. Using the NCC Kielo method as the starting point ensures that NCC approaches biodiversity in a structured manner on the basis of relevant criteria.

This work benefits both animal and plant species in the unique micro-climate that quarries can create. It could involve favorable conditions for endangered bird species, insects, amphibians or plants that require infertile soil or other special habitats to thrive and reproduce. The NCC Kielo method is also a way to develop NCC’s expertise in nature conservation, and to provide in-house guidance underlying com-

mercial decisions that also take biodiversity into account.

To be classified as an NCC Kielo quarry, a systematic inventory, objectives, a plan, an examination and follow-up of the work, as well as a summary of the biological results for the quarry, are required.

*Kielo-approved quarries*

NCC has a total of about 200 quarries in the Nordic region, of which 11 have been approved as Kielo quarries. Of these, four

Kielo-approved quarries	Number
Sweden	2
Denmark	4
Norway	2
Finland	3

are in Denmark, three in Finland, two in Norway and two in Sweden. No new Kielo quarries were added during the year. NCC has instead focused on further developing the tools and work processes, and on simplifying the method within the organization. NCC has a workgroup that will continue to focus on these issues.

*Property development*

The Property Development business area

takes biodiversity into account on the basis of each project’s specific conditions. Suitable initiatives are created with this as the starting point.

These initiatives are usually included as a feature of BREEAM certification. An example is the installation of green roofs in the form of sedum roofs or biotope roofs.

*Certification according to BREEAM*

All construction and infrastructure projects are sustainability-certified according to BREEAM and BREEAM Infrastructure (formerly CEEQUAL), and biodiversity is an indicator in these certifications. In NCC’s projects, biodiversity is addressed on the basis of the requirements and conditions of the specific project. This could take the form of fauna measures under and over roads, ranging from enabling moose to safely cross over roads to frog tunnels and dormouse passages under road structures. It could also involve moving the over-wintering habitats of frogs or auditing of tree stocks when areas are being developed.

NCC offers in-house training for project managers that addresses the topic of species protection and the measures required when protected species are found. During the year, training in the handling of invasive species was also implemented.



NCC Kielo

# Materials and circularity

## GRI 301 Materials, GRI 306 Waste

### Targets

Circular materials shall be a feature of all projects

The plastic delivered to all of NCC's worksites in Building Sweden must consist of at least 30 percent recycled materials and be 100 percent recyclable.

**NCC strives to** close the loop and prioritizes the use of sustainable material and product selection, minimizing and responsibly managing the waste that is created in the construction process, and building to enable recycling and reuse.

### Governance

To support effective governance, all NCC business areas are certified or work in accordance with ISO 14001 or ISO 9001, and base their actions on NCC's Sustainability and Environmental Policy, and its sustainability framework.

NCC works to maximize recycling and reuse, and facilitates this through active collection and analysis of data. For waste, NCC compiles statistics via waste-management suppliers and summarizes this information per unit (division or business area). The statistics are subsequently aggregated and summarized at Group level.

NCC follows up and governs the waste activities conducted at the construction sites through regular checks of waste statistics, at production meetings and during environmental rounds. NCC has established partnerships in all countries for handling the waste that arises at construction sites.

In addition, NCC has developed specific control tools for increasing the proportion of recycling and reuse in its projects. In construction projects, for example, specific materials choices are made based on the projects or the customer's requirements, needs and wishes. Certain certification systems can also set requirements for material choices.

Various code systems are used to increase traceability. In Sweden, NCC works with, for example, Global Trade Item Numbers (GTINs), which includes registration in logbooks. In Denmark and Norway, NCC uses supplier systems that are based on European waste codes. These are included in the report basis for designs.

### Design and material selection

Work on issues involving materials, circularity and waste is performed on the basis of each business area's specific conditions and operations, and is designed to reduce the use of materials with a negative impact on the climate, environment, and human health.

Efficient resource utilization, purchases of materials with the lowest possible environmental impact and increased recycling are essential in this work.

The materials that have the greatest climate impact are concrete, steel and asphalt, although circular material flows are also of great importance in the use of other materials, such as rock and soil material.

NCC applies the precautionary principle to the selection of materials and several development projects are under way.

#### Concrete

Concrete is the most widely used construction material in the world today. The climate impact of concrete structures (concrete and steel) is related to the amount and quality of the concrete that is used. More than 90 percent of the climate impact of concrete derives from the manufacture of cement, a component in concrete, from which large amounts of carbon are emitted.

NCC conducts thorough and sustained work aimed at implementing continuous improvements in operations to enable efficient resource utilization.

NCC has formulated a roadmap, including structures and processes, with the aim of achieving climate-neutral concrete-based construction. On the basis of this roadmap, NCC works at Group level, where coordination is conducted, and in each business area.

The roadmap is designed to minimize climate impact and transform concrete-based construction, to achieve climate neutrality.

Efforts to minimize climate impact are conducted from three perspectives: using the right concrete in the right place, minimizing the amount of cement in concrete and minimizing the volume of concrete. Based on these perspectives, NCC is reviewing the design of its structures to ensure an efficient use of resources, to minimize the amount of concrete and to reduce waste in production.

For NCC, transforming to achieve cli-

mate neutrality includes working to identify initiatives and techniques that generate long-term effects. Implementing these, which includes new methods and materials, is the second aspect of NCC's roadmap: transforming concrete-based construction.

### Internal cement directive

During the year, the Building Sweden business area implemented an internal cement directive with associated activities, connected to the Group-wide roadmap for concrete.

The directive includes requirements to use eco-friendly concrete in all projects, using the right concrete in the right place, minimizing the volume of concrete and optimizing the quality of concrete in respect of drying.

In addition, NCC is cooperating with suppliers, customers and other players in the industry in the areas of product development and innovation. Collaborations with concrete suppliers include initiatives for reducing the proportion of cement in concrete, and using machine sand to replace natural sand or gravel in the production of concrete. Read more on p. 89.

#### Steel

NCC strives to source steel reinforcement with a low climate impact. To maintain control over the climate impact of the material, NCC mainly purchases steel reinforcement covered by EPDs and, in large-scale infrastructure projects, NCC is subject to the requirement of only purchasing steel reinforcement covered by EPDs. Most of the steel reinforcement purchased in Sweden, Denmark and Norway is covered by EPDs. The recycling and reuse of heavy building components, in order to reduce climate impact, includes steel elements, such as sheet piling. Read more under the section Climate and energy on pp.94-96.

#### Asphalt

NCC and its customers aim to use recycled asphalt (reclaimed asphalt pavement, RAP) to the greatest extent possible. Asphalt essentially consists of two components: crushed stone materials and the oil-based resin bitumen, and is 100 percent recyclable. The use of recycled asphalt reduces the consumption of bitumen and virgin stone materials.

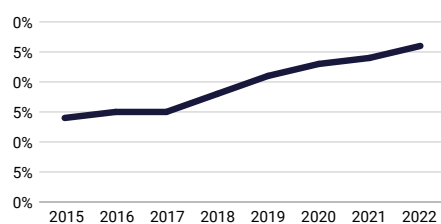
Recycling occurs by mixing used as-

phalt into the new asphalt manufactured in asphalt plants. The asphalt can also be recycled on site during the paving of roads, using what is known as the repaving or remixing method. The degree of recycling is mainly determined by rules and regulations, and by the method chosen and the capacity of the asphalt plants.

All of the paving that is removed in connection with repaving or maintenance, where NCC can determine the degree of recycling, is recycled. NCC uses as much of the recycled asphalt as is permissible by rules and regulations and authorities, and continuously improves the methods and the recycling capacity of its asphalt plants.

In 2022, recycled asphalt accounted for 26 percent (24<sup>1)</sup> of the total production of asphalt. The inclusion of recycled asphalt means that GHG emissions are approximately 16,800 tons of CO<sub>2</sub>e lower per year, compared with if the asphalt had been produced using conventional technology without having the recycled asphalt mixed in.

#### Reclaimed asphalt pavement (RAP), %



As a result of the increased amount of recycled asphalt, the climate impact of NCC's total asphalt production in 2022 was about 7,300 tons of CO<sub>2</sub>e lower than in 2015.

#### Rock and soil material

The circularity of rock and soil material is a complex yet important area where the intention is to reduce the climate impact related to extraction, excavation and transportation of rock and soil masses, and preventing the depletion of natural resources.

The Industry business area is working to promote the reuse and recycling of stone materials, soil masses, gravel, concrete, asphalt and garden waste, and both purchases and receives materials from NCC's other business areas, and from external customers. The business area aims to increase the volume of materials received for reuse and recycling and to increase the volume of sold recycled materials.

#### Recycling and reuse

The construction waste generated at construction sites represents great potential because it can be used in other projects. NCC engages in internal cooperation between various functions and business

areas, and also with suppliers, to develop new ways of reducing construction waste and reintroducing it into production, and re-using and recycling materials.

Cooperation concerning circularity also occurs between property development and contracting operations, on the basis of the projects' specific conditions.

#### Traceability

NCC aims to only use materials and products that are sound from an environmental and health perspective. Ultimately, the aim is to be able to recycle all input materials in buildings when the service life of the building expires.

A crucial link in the transition to the use of more recyclable products and materials is to impose requirements on suppliers and to work with traceability throughout the value chain.

NCC's digitization work supports the Group's sustainability ambitions. Digital models and tools are a prerequisite for this work, for example, to minimize production waste, make the right selection of materials while considering their lifecycle impact, manage chemical contents and increase recycling of building materials in connection with renovation and demolition.

#### Circular handling of excavation mass

In connection with infrastructure projects, NCC aims to not excavate more rock and soil material than is necessary, and the company strives to increase the reuse of excavation masses that were previously sent to landfill.

This reuse shall occur either within the specific project or in a closely located project that needs filler materials, and where the excavation mass has the technical and environmental qualities that are required. Measures include a systematic sampling and chemical analysis of the rock to identify suitable projects for receiving the material. This method has been used, for example, in the handling of excavated rock from the expansion of the Stockholm subway.

#### Waste

NCC is working actively to adapt to circular flows and to minimize the waste that arises throughout the construction process. NCC collaborates with various players in the value chain in order to adapt to a circular and sustainable construction process, and to minimize the negative impact on people and the environment, such as the waste that construction gives rise to.

#### Impact of waste on people and their surroundings

Following mining, construction and civil engineering is the sector in the Nordic region that generates the most waste. Construc-

tion and demolition waste causes large amounts of GHG emissions throughout the value chain, from the extraction of natural resources and production of materials to waste management during construction and demolition.

Construction and civil engineering products contain hazardous substances that can result in damage and inconvenience for people's health and the surrounding environment. For example, there is a risk of leakage to soil and water caused by poor waste management practices.

To offset this and other waste-related risks, NCC works to promote the efficient use of materials and chemical products from a lifecycle perspective and bases its work on the EU's waste ladder. This entails that the order of priority is primarily to prevent the generation of waste followed, in a falling scale, by reuse, materials recycling, energy recovery and the final recourse disposal; i.e. depositing waste in landfills.

Preventive work at early stages of the process is important to achieve favorable results. This involves legal and customer requirements, as well as ensuring well-functioning design, planning and project engineering in which targets and actions for circularity and waste are integrated.

All of the business areas are conducting active work in the area of waste. This includes using more recovered materials, ensuring the use of non-hazardous materials, standardized construction with made-to-measure and prefabricated products to reduce waste, and designing the buildings so that it is possible to reuse and recycle.

#### At construction sites

At the construction sites, NCC works to reduce the use of materials and prevent the occurrence of waste.

NCC has stringent demands for the sorting of waste in its operations and has solutions for re-introducing construction waste and materials within the operations. Significant activities include ensuring that surplus purchased materials can be reused, protecting weather-sensitive materials, minimizing packaging through intelligent transport solutions and having a well-developed sorting system.

In respect of chemicals, a list of chemicals is formulated to ensure they are managed correctly from a waste perspective. Organizational aspects include having a designated person in charge of waste management for projects, having a waste management plan and holding regular meetings.

In addition, NCC employees receive regular training and information. NCC's requirements pertain to both its employees and all subcontractors who work at NCC's construction sites.

<sup>1)</sup> A recalculation has been made for 2021 as a result of the sale of the asphalt operations in Finland.

The principal categories of materials that give rise to large amounts of waste are gypsum, plastic, concrete, bricks, wood and metals. The most common types of residual products that are returned through circular flows are pallets, flooring waste, gypsum, brick and plastic. By expanding cooperation with suppliers, there is great potential to increase the circular use of the various residual products that arise, such as packaging material.

*Business models and partnerships in the value chain*

NCC collaborates with such players as suppliers, hauliers and waste contractors in order to increase circular flows and minimize waste, and to work for resource-efficient management of the waste that arises. This includes development work and initiating various pilot projects. NCC also participates in research projects in this area.

**Targets and plans moving forward**

Working for increased circularity, such as sustainable materials and design choices, is of great significance to the Group's success in achieving its target of climate neutrality.

For example, Building Nordics has set a target that circular material flows will be integrated in all projects by 2045. By 2030, the aim is that the plastic delivered

**Amounts of waste by type and disposal method**

Residual product and waste category	2022		2021		2020	
	Total weight, tons	%	Total weight, tons	%	Total weight, tons	%
<b>Non-hazardous waste</b>						
Sorting	6,204	12	5,961	11	8,189	17
Energy recycling	5,592	11	7,617	14	9,023	19
Reuse/materials recycling	38,690	73	37,036	69	27,563	58
Plastic	1,325		1,069			
Wood	13,736		14,149			
Gypsum	3,453		3,825			
Metal	9,644		11,664			
Concrete, bricks, tiles	9,096		1,546			
Other reuse/recycling	1,435		4,783			
Landfill	1,896	4	2,445	5	2,194	5
<b>Hazardous waste</b>						
Special treatment	702	1	608	1	611	1
<b>Total amount</b>	<b>53,085</b>		<b>53,667</b>		<b>47,580</b>	

In 2022, the proportion of recycled/reused materials increased by 4 percentage points compared with 2021. Continuous efforts are made to increase this share even further. The figures include typical construction waste above ground. Soil, stone and fill materials that depend on the projects' geography are usually handled separately and are not included in the statistics. Concrete, bricks and tiles/clinkers are recycled to some extent and are reported for parts of the operations. This fraction fluctuates depending on the number of refurbishment/demolition projects. The increase in the amount of hazardous waste was due in part to several projects where old impregnated wood (creosote and heavy metals) had to be removed from construction sites.

to NCC's worksites in Building Sweden will consist of at least 30 percent recycled materials and be 100 percent recyclable.

NCC reports its waste from the pro-

duction of buildings and constructions (Building Sweden, Building Nordics and Infrastructure) according to the categories in the table above.



Asphalt paving work

# Climate and energy

## GRI 302 Energy, GRI 305 Emissions

### Targets

#### Climate neutrality 2045

60-percent decrease in CO<sub>2</sub>e emissions (Scope 1 and 2, base year 2015), measured in tons of CO<sub>2</sub>e per SEK M of sales

50-percent decrease in CO<sub>2</sub>e emissions (Scope 3, base year 2015) from concrete, asphalt, steel and transportation, measured in tons of CO<sub>2</sub>e per purchased volume.

**NCC strives to** eliminate GHG emissions from the entire value chain, increase energy efficiency and enable adaptation to climate change. NCC's target is to become climate neutral by 2045.

The construction industry accounts for considerable GHG emissions and the climate is a high-priority issue for NCC. To lower its climate impact, NCC focuses on materials and transportation used by the Group and works to increase the use of renewable fuels and electricity, improve energy efficiency and implement process improvements.

### Governance

To support effective governance, all NCC business areas are certified or work in accordance with ISO 14001 and ISO 9001, and base their actions on NCC's Sustainability and Environmental Policy and its sustainability framework.

### Reporting principles – climate

For calculating emissions, conversion from consumption to emissions has been conducted in accordance with the Greenhouse Gas Protocol.

The market-based calculation method is used to measure GHG emissions from electricity and heating. The location-based calculation method is also reported, but this does not form the foundation for measurements concerning the climate targets. NCC does not use climate compensation.

Information on purchases of fuels, electricity, heating energy, ready-mix concrete, steel reinforcement and asphalt is collected from NCC's suppliers. An internally developed digital tool has been used to compile the statistics that form the basis for the reported climate data. In those cases where NCC does not use supplier-specific emission factors,

emission factors from DEFRA (2022) or the Swedish Environmental Protection Agency (2021) are used, depending on applicability.

During 2022, work to request specific data from suppliers in the Nordic region continued to be intensified in order to obtain a comprehensive impression of NCC's climate footprint. The potential for what is possible to request concerning historical figures varies among countries and suppliers.

Figures concerning concrete include data on ready-mix concrete. Underlying data on volumes, including connected EPD-based emission factors for specific products, was obtained from the various suppliers for the Swedish market.

In other markets, volumes derive from suppliers; however, in those cases where product-specific emission factors are lacking, industry-specific, or official generic, emission factors for the various resilience category have been used.

Emission levels are directly related to technical requirements for various types of building structures, and the project portfolio varies over time.

2015 has been chosen as a base year to correspond to the base year for energy, asphalt and steel. Work is in progress to develop a base level that reflects our product mix and variations among countries, as well as to comply with a forthcoming industry base level.

Using materials more efficiently and reducing the use of materials through, for example, design optimization and reduced waste is a key feature of the work to reduce the climate impact of the construction sector. Accordingly, the base level for concrete will be supplemented with a performance indicator, so that the impact of reduced volumes is included.

For asphalt, the climate impact is calculated according to the standard for environmental product declarations (EPDs). For 2022, data is reported for internally purchased asphalt, which accounted for about 76 percent of the total volume of purchased asphalt. Work is in progress to be able to report quality-assured data about the total volume of purchased asphalt.

For steel, NCC's base level for reinforcement is based on a summary of the figures obtained from clients, industry organizations and steel reinforcement producers in Europe and their EPDs.

The levels of CO<sub>2</sub>e for steel vary considerably depending on the amount of waste metal used in production, and the energy efficiency of the producer. The base level for steel reinforcement has been set at 1,000 kg of CO<sub>2</sub>e/ton and the base year is 2015. The climate impact is shown as of 2017, because no previous data is available. Data from Finland has been excluded from the report, because no quality-assured EPD figures have been reported for Finland.

Data with figures recalculated from purchasing volumes is not included, due to inadequate reliability. NCC also purchases other types of steel, such as structural steel used in frameworks. Work is in progress to be able to also report the climate impact of these types of steel.

### Reduced climate footprint

NCC works in a focused and determined manner to eliminate carbon emissions from the entire value chain, which is essential to achieve climate neutrality. Analysis, cooperation and dialogue with customers, suppliers and other stakeholders for the implementation of measures and changed work methods is of the utmost importance.

NCC's target is to reduce emissions from its own operations (Scope 1 and 2) by 60 percent measured in tons of CO<sub>2</sub>e/SEK M of sales by 2030 (base year 2015). Emission intensity in 2022 amounted to 2.5 CO<sub>2</sub>e tons/SEK M, corresponding to a reduction of 52 percent compared with 2015.

Carbon dioxide emissions related to purchased electricity, district heating and district cooling are unchanged during the year compared to 2021. This was largely due to energy efficiency improvements, and an increased use of electricity from renewable sources.

Carbon dioxide emissions related to fuels have decreased as a result of an increase in the share of renewable fuels.

### Scope 3

A mapping and analysis of Scope 3 emissions, which was initiated in 2021, continued in 2022. This work will continue in 2023.

The four areas where the climate impact is the greatest involve emissions related to concrete, steel, asphalt and transportation. In Industry, the transportation of stone materials and asphalt mass to customers accounts for the largest share in Scope 3.



In 2021, NCC mapped its climate emissions in these categories, which resulted in roadmaps for concrete and transportation with the aim of reducing emissions in accordance with set targets. Read more about the roadmap for concrete on p. 8 and about transportation on p. 96.

Work still remains to collect further quality-assured data for concrete, asphalt, steel and transportation. The target for concrete, asphalt and steel is to reduce CO<sub>2</sub>e emissions by 50 percent by 2030, measured as kilograms of CO<sub>2</sub>e per purchased volume, compared with 2015. Initially, volumes for ready-mix concrete, steel reinforcement and internally purchased asphalt are reported.

NCC’s ambition is to include more products in the above-mentioned categories, as well as additional categories, in order to steadily cover an even larger share of the Group’s Scope 3 emissions.

The target for transportation is to reduce

CO<sub>2</sub>e emissions by 50 percent by 2030, compared to 2015. Work is under way to analyze and measure emissions from transportation.

**Concrete**

In order to achieve the target of halving emissions from concrete and becoming climate neutral by 2045, NCC has formulated a Group-wide roadmap for concrete-based construction.

The roadmap with associated measures is designed to minimize climate impact and also to transform concrete-based construction, to thereby achieve climate neutrality. Read more about concrete under Materials and circularity on pp 91–93.

**Asphalt**

NCC’s asphalt production accounts for 31 percent (31<sup>1)</sup>) of the Group’s carbon emissions (Scope 1 and 2). The asphalt division’s total carbon emissions from both

asphalt production and paving accounts for 47 percent (50<sup>1)</sup>) of the Group’s total emissions (Scope 1 and 2).

The primary measure to reduce the climate emissions is a continued conversion of asphalt plants to the use of biofuels. All asphalt plants in Sweden have been converted for the use of biofuel. In Sweden, the target is that at least 95 percent of the energy used in the asphalt plants will come from biofuel (primarily wood pellets), as of 2024. This can be compared with 2015, when the proportion of biofuels was 53 percent.

In Norway, NCC intends to convert all asphalt plants from being heated only by fossil LPG and heating oil to being heated with biofuel. Two of the asphalt plants in Norway are now fueled by wood pellets. The target is that all asphalt plants in Norway will be converted by 2030.

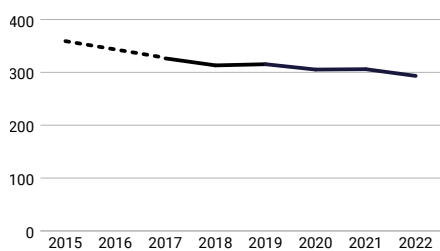
NCC is also working to replace fossil bitumen with bio-resins in asphalt.

**GHG emissions from NCC’s operations**

Market-based calculation method	2022	Change compared with base year 2015, %	2021	2020	2019	2018	2017	2016	2015
GHG emissions, <sup>1)</sup> CO <sub>2</sub> e (thousand tons)	135	-50%	151	161	189	202	217	232	271
– of which, Scope 1 <sup>2)</sup>	131	-40%	148	155	182	192	190	188	217
– of which, Scope 2 <sup>3)</sup>	4	-93%	4	6	7	10	26	44	54
Net sales, SEK M	54,198	4%	53,414	52,994	57,294	56,376	53,452	51,984	52,155
Emission intensity, CO <sub>2</sub> e (ton)/SEK M	2.5	-52%	2.8	3.0	3.3	3.6	4.1	4.5	5.2
CO <sub>2</sub> e (ton)/MWh	0.147	-32%	0.151	0.160	0.173	0.185	0.200	0.209	0.215
Location-based calculation method, CO <sub>2</sub> e (tons)	8,190	-66%	9,619	11,217	12,184	11,360	11,078	8,929	24,280
GHG emissions Scope 3 <sup>5,6)</sup> CO <sub>2</sub> e (thousand tons)	149	–	144	174	106	135	143	–	–

- 1) Greenhouse gases N<sub>2</sub>O, CH<sub>4</sub> and CO<sub>2</sub> are included in the calculations. The greenhouse gases for 2015-2021 have been recalculated as a result of the sale of the asphalt operations in Finland, according to the Greenhouse Gas Protocol Corporate Standard.
- 2) Refers to direct emissions from NCC’s operations, of which 1.1 (tons 000) derived from the combustion of biofuel (2022).
- 3) Refers to indirect emissions from electricity and heat.
- 4) The net sales for 2015-2021 have been recalculated as a result of the sale of the asphalt operations in Finland, in accordance with GHG Protocol Corporate Standard.
- 5) Includes >80% of purchased amount of ready-mix concrete, steel reinforcement and asphalt as of 2017. Baseline for KPIs has been set based on industry average figures for 2015.
- 6) All GHG are included in the calculations.

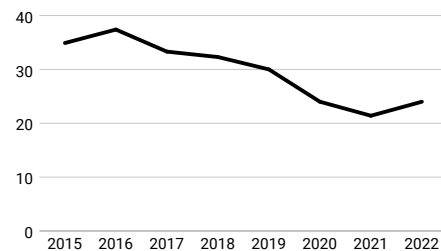
**Ready-mix concrete (kg CO<sub>2</sub>e/m<sup>3</sup>)**



Outcome 2022: -16 percent from 2015

The above graph shows the mean value for emissions from ready-mix concrete in CO<sub>2</sub>e/m<sup>3</sup>. Work on collecting data is under way. The report is based on data from Sweden for 2017–2021, Denmark for 2020–2022, Norway for 2017–2021 and Finland for 2020–2022. The base level for concrete is based on a compilation of values from customers, trade associations, manufacturers and various others.

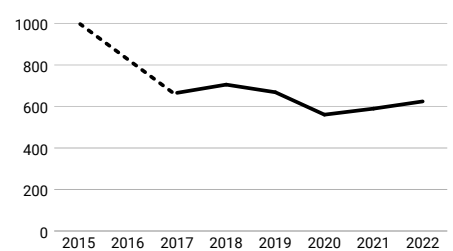
**Asphalt (kg CO<sub>2</sub>e/ton)**



Outcome 2022: -31 percent from 2015

The above graph shows the volume of internally purchased asphalt, which corresponds to about 76 percent of the total volume. The internally purchased asphalt has a lower climate impact per ton than the industry average.

**Steel reinforcement (kg CO<sub>2</sub>e/ton)**



Outcome 2022: -38 percent from 2015

The above graph shows data on steel reinforcement in 2017–2019 for Sweden and Norway. Data on Denmark is also included for 2020, 2021 and 2022. The base level for steel reinforcement derives from a summary of the figures obtained from clients, industry organizations and steel reinforcement producers in Europe and their EPDs; for more information, refer to Reporting principles above.

1) A recalculation has been made for 2021 as a result of the sale of the asphalt operations in Finland.

### Green Asphalt

NCC aims to develop asphalt products with a lower climate impact and increase the portion of recycled asphalt in production. NCC Green Asphalt is the collective name for NCC's method of producing asphalt that results in lower carbon emissions than conventionally produced asphalt.

The method involves the mixing in of reclaimed asphalt pavement (RAP), a lower manufacturing temperature and the use of biofuel. All of NCC's asphalt plants produce NCC Green Asphalt.

### Steel

In order to halve the climate impact of steel reinforcement, well-informed purchasing from producers who provide products with a lower climate impact is crucial. Environmental product declaration (EPDs) for materials are used in the supplier assessment to ascertain whether the suppliers fulfill the requirements of NCC and its customers.

To achieve this target for steel, NCC cooperates closely from an early stage with both steel suppliers and customers. NCC depends on its customer to provide specific emissions requirements and information on product performance.

Reinforcement made from recycled steel is also an integral part of NCC's journey toward climate neutrality. By using recycled steel, energy consumption can be reduced by up to 75 percent compared with production of ore-based steel. In order for steel reinforcement to be made fossil-free, new technologies are needed for the production of steel.

### Transport

NCC is working to reduce carbon emissions by optimizing its logistics chains and increasing the efficiency of transportation. Major efforts are required to meet the target of a 50-percent cut in carbon emissions.

NCC engages a large number of sub-suppliers for transportation, and it is essential that work on data collection and emissions reduction includes these and thus also promotes the climate work of all players.

During the year, NCC continued its efforts to analyze transport emissions, both its own and those from purchased transportation.

NCC has also undertaken to, inter alia, introduce new types of transportation in Denmark and emissions-free construction sites in Norway. However, in order to reduce emissions from transportation, work remains in the form of formulating relevant targets and KPIs. A key part of work to reduce the climate impact of machinery and transportation is the continued optimization and reduction in the number of transport journeys. Civil engineering projects in which NCC, using digital tools, optimizes truck loads – thereby resulting in fewer transport journeys, reduced emissions and lower costs – are an example of this.

Digital tools are an important element of efforts to collect this type of data in a structured manner and provide insights that can lead to better planning of transport work and simplified administration.

Work to map and collect quality-assured data on transportation will continue in 2023.

### Climate risks and opportunities

A TCFD (Task Force on Climate-related Financial Disclosures) analysis has been conducted for the second consecutive year. The purpose of the analysis is to both highlight the opportunities and risks associated with the climate, and to develop better guidelines for reporting climate-related risks and opportunities. The Sustainability Report complies with the TCFD guidelines and contains information on how the company manages climate-related risks and opportunities in its strategy, management, risk management and assessment and reporting. Read more on p. 29.

### Energy

Central to efforts to reduce the carbon footprint include the energy efficiency of processes and production, and replacing fossil energy sources with renewable ones. Carbon emissions related to purchased fuels, and electricity, district heating and district cooling, have been reduced continuously since 2015.

To continue to reduce carbon emissions, NCC is working with a series of initiatives such as continued energy-efficiency improvements in the operations and in property development, an increased mix of renewable fuel in machinery, a continued transition to green-labeled electricity and electrification of machinery and worksites. Read more about electrification on p. 97.

### Asphalt plants

An important measure to reduce emissions was the continued phase-out of fossil fuels and continued conversion of asphalt plants to enable the use of biofuel, whereby fossil fuels have primarily been replaced by wood pellets.

NCC is also working to cut back on the number of starts and stops of asphalt plants in order to reduce energy consumption. Additional actions include reducing moisture in the stone materials mixed into the asphalt and to keep them dry, in order to reduce energy consumption in connection with asphalt production.

### Energy audit

NCC continued the energy audit of its own operations in Sweden in order to identify possible energy-saving potential in production. The audit includes worksite visits, measurements and calculations at asphalt plants and quarries, as well as at construction sites. On the basis of the audit, actions to reduce energy consumption can be identified and taken.

### Fuel use<sup>1)</sup> in the organization

MWh	2022	Change compared with base year 2015, %	2021	2020	2019	2018	2017	2016
Renewable fuels	178,893	104%	192,683	164,725	137,273	111,879	114,206	87,893
Fossil fuels	557,266	-39%	751,719	746,055	854,982	889,356	951,544	906,966
<b>Fuels, total</b>	<b>736,159</b>	<b>-26%</b>	<b>944,402</b>	<b>910,780</b>	<b>992,255</b>	<b>1,001,234</b>	<b>1,065,750</b>	<b>994,854</b>

<sup>1)</sup> Fuels include purchased fuels for vehicles, heating, industrial processes and, for example, drying processes at construction sites. NCC continues to reduce its use of fossil fuels. Since 2015, use has been reduced by 39 percent, due largely to the conversion to biofuels in Swedish and Norwegian asphalt plants.

### Total energy consumption<sup>1)</sup> in the organization

MWh	2022	Change compared with base year 2015, %	2021	2020	2019	2018	2017	2016
<b>Energy consumption, total</b>	<b>915,780</b>	<b>-27%</b>	<b>1,143,487</b>	<b>1,112,013</b>	<b>1,206,097</b>	<b>1,201,831</b>	<b>1,268,992</b>	<b>1,256,865</b>

<sup>1)</sup> Total energy consumption is a sum of reported energy usage for electricity, district heating and cooling, and fuels.

### Renewable electricity

NCC has set a target of only purchasing renewable electricity. In 2022, the portion of renewable electricity was 95 percent (95) of the total consumption of electricity. The Property Development business area's ambition is that every building should produce local energy on site.

### Increased electrification

Efforts are continuing across the Group to electrify machinery and tools as well as entire production worksites in order to reduce the climate footprint. Actions taken during the year include the installation of electricity at gravel and rock pits to enable mobile rock crushers to be run on electricity instead of diesel. The continued electrification of mobile crushers results in significant energy savings and has generated major climate effects in the form of reduced emissions. The permanent crushers used in rock pits in Sweden and Norway are already run on electricity.

In Norway, NCC has a number of fossil-free construction sites, and also works with fossil-free machinery and transporta-

tion. An example of this is Fredensborgveien in Oslo, where two electric diggers and two electric dumpsters are used. Projects involving emissions-free machinery in Sweden include the Bergsbyn business park in Skellefteå, where various energy storage solutions are also being evaluated.

The testing and implementation of electric machinery for paving works is also continuing, and the subsidiary Hercules, which engages in foundation engineering, installed the world's first battery-powered pile driver during the year. An additional pile driver will be purchased during 2023.

NCC has also started work to establish a Group-wide center of excellence for electrification, to facilitate knowledge sharing, innovation and development.

### Targets and plans moving forward

NCC's target is to become climate neutral by 2045. The interim targets are:

- 60 percent reduction in CO<sub>2</sub>e emissions (Scope 1 and 2) by 2030 (base year 2015), measured as tons of CO<sub>2</sub>e emissions per SEK M of sales.
- 50 percent reduction in CO<sub>2</sub>e emissions

(Scope 3) by 2030 (base year 2015), from concrete, asphalt, steel, and transportation measured as kilograms of CO<sub>2</sub>e per purchased volume.

- Initially, volumes for ready-mix concrete, steel reinforcement and internally purchased asphalt are reported.

### Outcome and comments

Emission intensity amounted to 2.5 CO<sub>2</sub>e tons/SEK M in 2022, which means that emissions related to Scope 1 and 2 have been reduced by 52 percent since 2015.

For the outcome for Scope 3, see p. 95. Carbon emissions related to purchases of electricity, district heating and district cooling declined during the year. The share of renewable electricity remains high and accounted for 95 percent (95) of purchased electricity during 2022. The share of renewable fuels also increased during the year.

In total, a reduction in scope 1 is seen due to a reduction in the total amount of purchased fuels, as well as an increase in the proportion of purchased renewable fuels.

### District heating/district cooling use within the organization

MWh	2022	Change compared with base year 2015, %	2021	2020	2019	2018	2017	2016
District cooling	–	-100%	–	75	598	624	22	1,286
District heating	24,162	-51%	23,931	29,560	42,508	29,156	29,207	48,933
<b>District cooling/district heating, total</b>	<b>24,162</b>	<b>-52%</b>	<b>23,931</b>	<b>29,635</b>	<b>43,106</b>	<b>29,780</b>	<b>29,229</b>	<b>50,219</b>

The need for district heating and district cooling varies from year to year. The amount of district heating and district cooling that is purchased depends to a large extent on the projects that were under way during the year, their placement and the phase of the project. Comparable data for 2021 has been adjusted from previous year's report due to new information from a supplier, which has led to a lower value.

### Electricity use in the organization

MWh	2022	Change compared with base year 2015, %	2021	2020	2019	2018	2017	2016
Electricity from renewable sources <sup>1)</sup>	147,347	35%	156,888	159,561	157,204	152,259	118,754	108,927
Other electricity	8,112	-92%	9,001	12,037	13,535	18,559	55,259	102,861
<b>Electricity, total</b>	<b>155,459</b>	<b>-27%</b>	<b>165,890</b>	<b>171,598</b>	<b>170,736</b>	<b>170,817</b>	<b>174,013</b>	<b>211,787</b>

<sup>1)</sup> Hydroelectric and wind power. Comparable data for 2021 has been adjusted from previous year's report due to new information from a supplier, which has led to a lower value.