



CO2 Progress and Energy Action Plan

Period January 1st, 2023 until December 31st, 2023



Strukton

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APPENDIX: Abbreviations

1 Introduction

This document reports on the developments at Strukton regarding the reduction of carbon emissions and the energy needed in the organisation over the period between January 1st 2023 and December 31st 2023.

Strukton contributes to the transition to a climate-neutral and circular economy through co-facilitating the energy transition, the re-use of materials, include and encourage circularity and sustainability throughout the supply chain in which we operate, increase the percentage of sustainable energy and make a positive ecological impact with our activities.

Results in the past

For over 10 years, Strukton has been certified at the highest level of the CO2 Performance Ladder. During the period 2009-2021, we reduced the carbon footprint of our activities in the Netherlands by 47%. Following this success, we increased our ambition towards 2030 at the beginning of 2022. In the past, we reduced our CO2 emissions through a variety of measures. Regarding mobility, we have made adjustments in our car fleet (changing the standard from petrol to diesel-powered vehicles and promoting electric vehicles), enabled and encouraged the use of a mobility card for public transport (NS-business card), and promoted hybrid working, also after COVID 19. Regarding our day-to-day operations, we closed down an (outdated) asphalt plant and implemented biofuels (e.g. HVO) for certain types of equipment. We also started initiatives to electrify equipment (retrofit), re-use materials and introduce circular thinking.

Goals and ambitions as of 2021

Due to several organisational changes, we expanded our organisational boundary to include our operations in Belgium, the Nordics (Sweden and Denmark) and Italy. This has led us to set 2021 as the new reference year (base year), as this was the first year data on carbon emissions was available for all different divisions. The goal for the absolute reduction in the Netherlands and Belgium is equal to the goal set for these countries in the past. In the coming years, we expect to reduce our emission further through transitioning our fleet to electric vehicles, retrofitting our equipment to electric propulsion or the use of biofuels in cases where this is not feasible, and decreasing the impact of our work locations in terms of carbon emissions and energy consumption. Last but not least, all corporate divisions and portfolio subsidiaries are working on raising awareness among staff. These combined efforts should lead to a reduction in carbon emissions of 50% by 2030 compared to 2021. This means for Strukton as a whole (all home countries) that, in absolute terms, the carbon emissions in 2030 should be no more than 20,812 tonnes (as opposed to 41,625 tonnes in 2021).

The 50% reduction goal by 2030 compared to 2021 is an ambitious milestone in the process of getting aligned with the Paris Agreement (45% reduction by 2030 compared to 2010, and net zero in 2050). This periodic report is part of the control cycle within the energy management system that has been introduced in the context of the CO2-Performance Ladder. This periodic report includes all matters described in §9.3.1 points a to t of the NEN-EN-ISO 14064-1:2018: Description of the Organisation (a), Responsible Persons (b), Reporting period (c), Organisational boundaries (d), Current calculation method and conversion factors (f, m, n, o, r, t), Uptake of CO2 (g, h), Biomass (f, g), Direct and indirect emissions (i, j), Reference year (k, l), Changes in calculation method (k, l), Exclusions (h), Recalculate base year and historical data (j, k), Uncertainties (p) and Verification (s).

2 About the company

We are a service provider in sustainable infrastructure, with a focus on green transport and electrification. It is with passion and energy that we combine over a century of craftsmanship with the latest technology and innovation. We prioritise safety, quality and sustainability. We have developed a strong base in our home countries: Italy, Sweden, the Netherlands, Denmark and Belgium. We wish to contribute to the safety, quality and sustainability of infrastructure. Rail, roads and energy. In order to do so we develop and integrate technologies and solutions, challenging customers to opt for contracts with room for sustainability and innovation. We are committed to operate with care and integrity and in a sustainable way and encourage our sector to do the same. We combine this approach with a focus on functionality, quality, life span and a good price-quality ratio.

2.1 Responsible officers

Name	Actors
Strukton Groep N.V.	Responsible assessment: Peter Kingma (SR)
Portfolio Investment Holding B.V.	Responsible assessment: Peter Kingma (SR)
Strukton Civiel B.V.	Responsible assessment: Abdelaziz Fifel (SC, SR&C & SIS)
Strukton Groep Enkelvoudig	Responsible assessment: Yvonne van de Biezen (Strukton Groep & SIS)
Strukton Integrale Projecten	Responsible assessment: Yvonne van de Biezen (Strukton Groep & SIS)
Strukton Power B.V.	Responsible assessment: Marcel van Kordelaar (SP)
Strukton Rail B.V.	Responsible assessment: Peter Kingma (SR)
Strukton Rail Italy B.V.	Responsible assessment: Massimiliano Serci (CLF)
Strukton Rail Nordics	Responsible assessment: Carolina Osterberg (SR Nordics)

2.2 Base year

Name	Default reference year
Strukton Groep N.V.	2021
Portfolio Investment Holding B.V.	2021
Strukton Civiel B.V.	2021
Strukton Power B.V.	2021
Strukton Rail B.V.	2021
Strukton Rail Italy B.V.	2022
Strukton Rail Nordics	2021

2.3 Reporting period

This report covers the period from January 01st, 2023 till December 31st, 2023.

2.4 Verification

The CO2 footprint in this document has not been verified by an (external) auditor. This happens once every year in line with the certification audit by an external certifying body (CI).

3 Demarcation

3.1 Organisational boundaries

Name	Consolidation percentage
Strukton Groep N.V. <i>Group</i>	100%
Portfolio Investment Holding B.V. <i>Department</i>	100%
Strukton Civiel B.V. <i>Department</i>	100%
Strukton Power B.V. <i>Department</i>	100%
Strukton Rail B.V. <i>Department</i>	100%
Strukton Rail Italy <i>Department</i>	100%
Strukton Rail Nordics <i>Department</i>	100%

3.2 Organisational changes

For the period up to and including 2020, the organisational boundary consisted of the divisions that carried out activities in the Netherlands. In 2021, due to an organisational change within Strukton Rail B.V., Strukton Rail N.V. (Belgium) was included in the organisational boundary.

In 2021, Strukton Rail B.V. ceased to exist following an organisational restructuring. Due to Strukton Rail B.V. being the intermediate holding company, the activities in Italy and the Nordics (i.e. Denmark, Sweden) were directly placed under management of Strukton Group. These divisions have therefore been included in the organisational boundary from 1-1-2022 forward, and are included on the certificate in 2023. The CI auditor has approved the way in which this integration was implemented.

In 2022, the former regional organisations of Strukton Civiel and the former Strukton Civiel Projecten B.V. were allocated to either Strukton Roads & Concrete or Strukton Infrastructure Specialties. The other civil (specialist) companies active in civil engineering are included separately as portfolio companies within the Portfolio Investment Holding.

In December 2023, the grid solutions activities of Strukton Power and Strukton Immersion Projects were sold. Due to the short period left in 2023, the emission of these entities were taken into account calculating the 2023 figures. They will be left behind for 2024.

3.3 Projects tendered with CO2 Performance 2 Ladder component

Once a year, a list of won projects that included a CO2 Performance Ladder component is published on the [SKAO website](#).

3.4 Current calculation method and conversion factors

The conversion factors to calculate the CO₂-footprint were derived from several sources, in line with the local standards:

- For the Netherlands: <https://www.co2emissiefactoren.nl/>
- For Belgium: <https://www.co2emissiefactoren.be/>
- For Italy: Association of Issuing Bodies (AIB)
- For the Nordics: Swedish Energy Authority

3.5 Changes in calculation method

No relevant changes in the calculation method occurred during the reporting period. We have adjusted the carbon emissions for the activities in Belgium in our CO₂-footprint over 2021 with retroactive effect, as we inadvertently used the Dutch conversion factors instead of applying the Belgium standard.

3.6 Exclusions

Similar to previous years, the electricity used for the trains deployed by Strukton Rail Equipment is excluded from the footprint.

3.7 Absorption of CO₂

Where possible and paid by the client, we use Olivine to reduce CO₂ emissions by binding the CO₂ from the air. Strukton also develops commercial concrete products made with miscanthus grass. This grass absorbs 4 to 5 times as much CO₂ during growth as a forest of similar dimensions. After processing, the CO₂ remains captured within the grass. Next to that, we are piloting a new type of railway element (a bamboo railway sleeper instead of a concrete or wooden railway sleeper) at an industrial track. This bamboo sleeper would considerably reduce the amount of carbon emissions over its life cycle compared to the commonly used concrete sleeper. The emission of this sleeper is negative.

3.8 Biomass

Strukton does not use biomass.

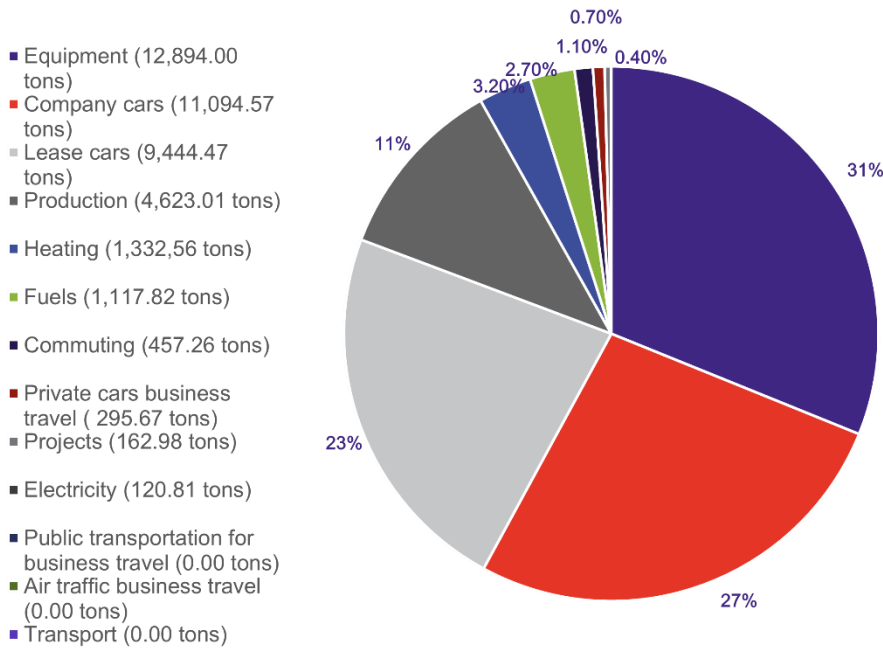
3.9 Uncertainties

Over the first half of 2023, we aligned reporting on carbon emissions with the reporting cycle of the supervisory board.

4 CO2 emissions

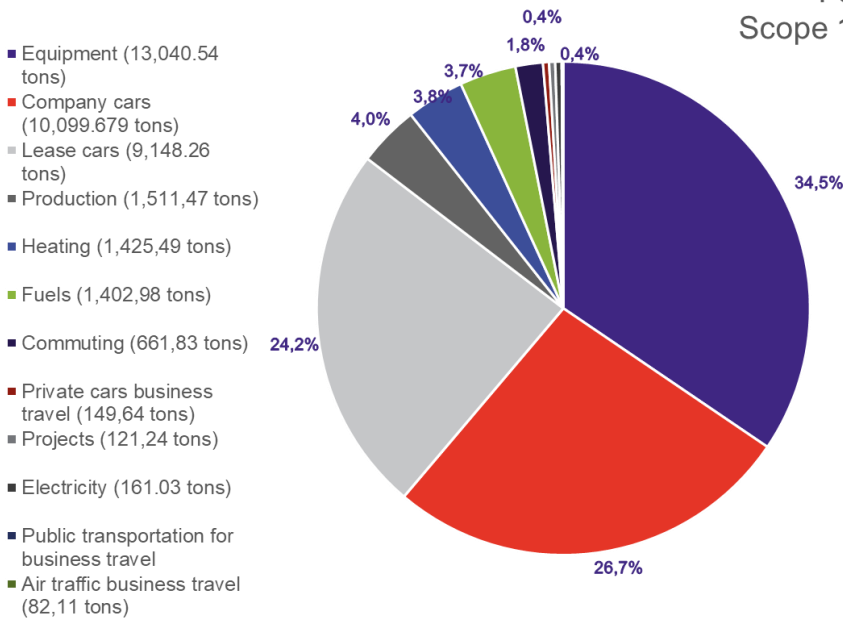
4.1 Footprint base year scope 1 & 2

Footprint base year (2021) scope 1 & 2 (41,544 tons)



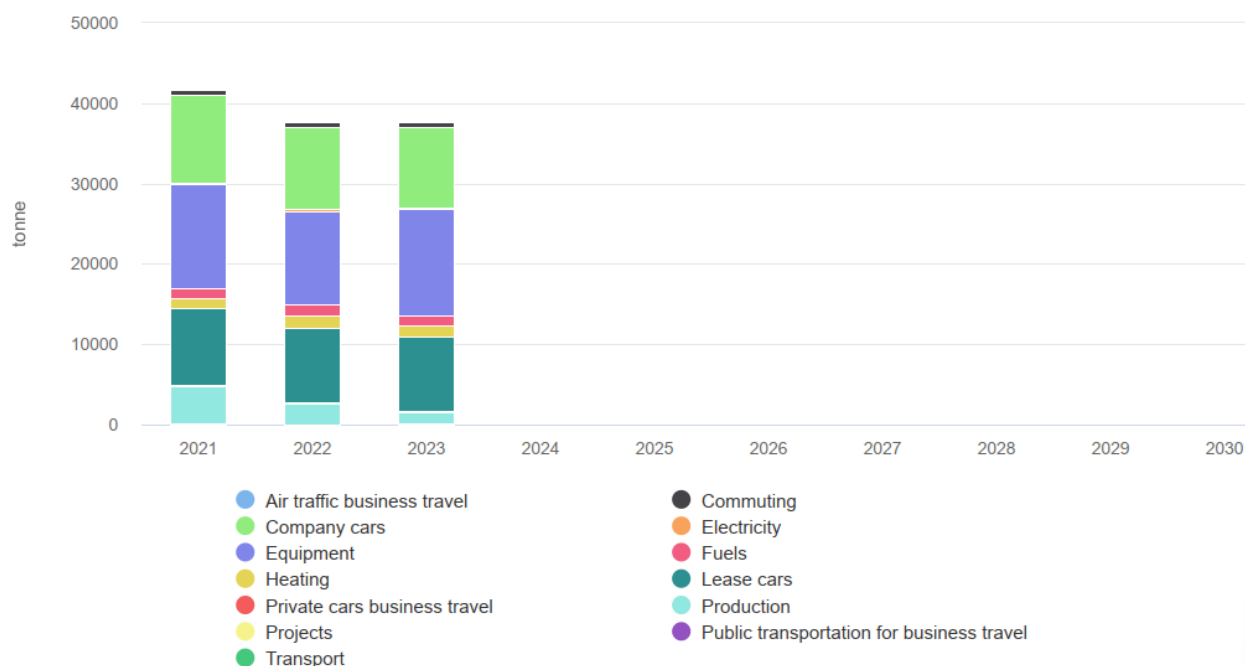
4.2 Footprint reporting period (2023)

Footprint 2023
Scope 1 & 2 (37,806 tons)



4.3 Trend over the years by category

CO2 emissions 01/01/2021 until 12/31/2030



CO2 emissions 2021-2023

CO2 (ton)	2021	2022	2023
Air traffic business travel	0.00	119.86	82.11
Commuting	457.26	617.50	661.83
Company cars	11,094.57	10,379.62	10,099.67
Electricity	201.04	169.35	161.03
Equipment	12,894.00	11,441.81	13,040.54
Fuels	1,117.82	1,381.81	1,402.98
Heating	1,334.31	1,673.14	1,425.49
Lease cars	9,444.47	9,196.90	9,148.26
Private cars business travel	295.67	161.70	149.64
Production	4,623.01	2,624.04	1,511.47
Projects	162.98	87.85	121.24
Public transportation for business travel	0.44	1.14	1.49
Transport	0.00		
Total	41,625.56	37,854.71	37,805.75

The most significant developments of the trend over the years are highlighted below.

- **Air traffic business travel** - The number of flights declined in 2023 following the implementation of the new travel policy in July 2022.
- **Commuting** - In 2023, employees worked relatively more often in the office (not at home) than in 2022. The emissions of Commuting increased as a consequence.
- **Company cars** - The emission of company cars gradually decreases over the years. This is the result of the introduction of electric cars and less kilometres.

- **Electricity** - The emissions of electricity decreased over the years owing to measures taken, in particular centralising office locations in Utrecht. In 2023, the reduction was higher than the aim to reduce 5% relative to 2022.
- **Equipment** - The emissions of our equipment increased due to the increase of shifts made by the equipment (which can also be seen from the higher turnover). Another reason was the transfer of a ship from one company to the other. The first company registered the emissions of the ship as production; the second company registered the emissions under equipment.
- **Heating** - The emissions caused by heating went down because of the higher temperatures in 2023 as opposed to 2022.
- **Lease cars** - The emission of lease cars decreased in 2023 because of the introduction of more electric cars. This was however compensated by an increase of kilometres driven, which limited the total decline.
- **Production** – The reduction of emissions from Production is mainly caused by transfer of the ship (see Equipment)

4.4 Goals

Strukton's sustainability ambitions for the period 2021-2035 are:

- We want to be a climate-neutral organisation by 2035
- Our working locations (both office and project locations) are free of harmful emissions and residual waste by 2030
- We design our products and projects in a circular way, re-use materials and build with circular materials by 2030
- All our projects contribute to better soil quality and biodiversity by 2030

Our ambition to be climate-neutral by 2035 breaks down in the following goals to reduce carbon emissions:

- We reduce our total gross carbon emissions in 2030 by 50% compared to 2021, related to our operating income
- We reduce our carbon emissions resulting from business travel by 50% per FTE in 2030 compared to 2016
- We reduce carbon emissions in our value chain for the production and commissioning of (circular) concrete catenary supports by 55% in 2030 compared to 2023
- We reduce carbon emissions in our value chain for the production of ballast and ballasting tracks by 50% in 2030 compared to 2023

We have translated these long term goals into annual goals for the upcoming three years. The annual goals for 2023 to 2025 (expressed as a percentage) are relative reductions compared to the gross emissions of the previous year. When we achieve a goal before the date provided, we will update our goals accordingly.

Direct company emissions (scope 1 and 2)

Mobility

We aim for a yearly reduction in carbon emissions of our car fleet relative to our operational income. A 5% reduction in 2023 relative to 2022, a 5% reduction in 2024 relative to 2023 and a 10% reduction in 2025 relative to 2024.

Production

We aim for a yearly reduction of carbon emissions in our own production facilities relative to our operational income. A 5% reduction in 2023 relative to 2022, a 5% reduction in 2024 relative to 2023 and a 10% reduction in 2025 relative to 2024.

Energy

We aim for a yearly reduction of carbon emissions caused by the consumption of natural gas at permanent working locations relative to the gross surface area. A 5% reduction in 2023 relative to 2022, a 5% reduction in 2024 relative to 2023 and a 5% reduction in 2025 relative to 2024.

4.5 Progress of reduction measures

The implementation of and progress on measures to achieve the aspired reductions is described for each goal separately.

Our overall gross carbon emissions added up to 37.806 tons over the year 2023. Compared to 2022 (37.855 tons) we achieved a reduction of 49 tons (or 0,13%). Relative to our operational income we achieved a reduction of 0.97 tons CO₂ per million euro: 27.08 tons CO₂ per million euro in 2022 as compared to 26.11 tons CO₂ per million euro in 2023. Due to the increase in revenue of 2023 compared to 2022, this leads to a relative overall reduction of 3.6%.

Analysing the figures over 2023, it became clear that for equipment approximately 60,000 litres of fuel were forgotten during the process of gathering the figures of 2022 due to the way the figures were gathered in the past. We have adjusted the process to make sure that this will not happen again. The litres missed have been taken into account comparing the figures 2023 with 2022.

A critical analysis of the figures in the past showed that the gas consumption of the CLF office in Bologna (Italy) over the years 2021, 2022 and 2023 has not been submitted into the footprint. This was also taken into account for the comparison over the years. The process was adjusted to make sure that this will not happen again.

Mobility

Over 2023, the total gross carbon emissions resulting from business travel per FTE increased by 0.06 tons to 4.91 tons. With the implementation of a new lease regulations in the Netherlands, involving that electric cars will be the standard for new cars as of January 1st, we expect that the emissions of lease cars will be reduced in the coming years. Also for the lease of new vans, electric will be the standard within Strukton Rail Netherlands as of January 1st 2024.

Relative to our operational income, we see a reduction of 0.71 tons in carbon emissions resulting from our car fleet. Our total carbon emissions resulting from our car fleet per million euro operational income decreased to 13.29 tons CO₂ in 2023 (14.00 tons in 2022).

The following initiatives and measures were implemented in 2023:

- Molhoek-CCT realised the placement of a smart charging plaza with room for up to 5 EVs in the village of Raalte (NL)
- 16 Electric vehicles chargers were placed at Strukton's headquarters in Utrecht (NL) to accommodate the increasing number of electric vehicles. The chargers are not connected to the grid yet, due to net congestion issues. The forecast is that these will be connected in the first six months of 2024.

- We are conducting pilots with electric vans (E-LCV's) for mechanics. Mechanics across different business lines swapped their van with an ICE for an electric van and share their experiences
- The management team of Strukton Rail Netherlands has decided to order electric vans only starting as of 1-1-2024. As a consequence, the number of vans running on fossil fuels will decrease in the coming years.
- The lease arrangement has been adjusted for the subsidiaries in the Netherlands, allowing EVs only as of January 1st, 2024. ICE-powered vehicles will only be possible by exception.
- Both the Nordics and Belgium stimulate the choice for electric cars among their employees. This stimulation leads to an increase in the number of electric cars in Sweden to 61 (this number used to be 13). The influence is limited in the 2023 footprint, because the cars came in by the end of 2023. However, this measure will influence the 2024 footprint .
- In total Sweden has 154 leasing cars (76 electric and 78 hybrid). The number of company cars is 433 (116 of those are electric or hybrid).

Equipment

In 2023, carbon emissions as a result of equipment relative to our operational income increased to 10,13 tons per million euros, resulting in an increase of 0.01 ton per million euros compared to 2022 (10.12 tons per million euro).

The increase is caused by a larger number of shifts made by our equipment in the Netherlands and Sweden, which can also be seen in the increase in revenue in 2023 compared to 2022. In order to reduce the emissions as a result of equipment in the years to come, the following initiatives were taken in 2023:

- Strukton Rail Netherlands has bought an electric-powered quad and two electric (mini)excavators. Additionally, they started retrofitting aerial working platforms for catenary work with a hybrid powerline. Lastly, optimisation and testing of the battery-powered locomotive is ongoing.
- Strukton Rail Netherlands had the ambition to carry out a renewal project in the north of the Netherlands without emitting (carbon) emissions. This ambition was not realised in 2023 because during the preparation phase with all stakeholders involved we found that safety could not be guaranteed. New zero emission pilots have been planned for 2024, in which we will use the lessons learned in 2023.
- In September, Strukton Roads & Concrete started the N270 Deurne project, using emission-free and low-emission equipment, applying recycled asphalt and using HVO. The use of emission-free and low-emission equipment was initiated to reduce NOx, and will also lead to CO2 reduction. The lessons learned from this project will be applied in other projects.
- Strukton Infra Specials increasingly used low-emission equipment on the Dijkgracht project and plans to use more low-emission and zero-emission equipment in 2024.
- Strukton Rail Netherlands has invested into the retrofit of an old crane on lorries running on fossil fuel into a full-electric machine. The crane was officially handed over at the end of December 2023 and will be operational in the first half of 2024. Two more electric cranes were ordered for.

Energy

In order to reduce the use of energy, Strukton is centralising its office locations throughout the Netherlands in Utrecht where possible.

We are exploring the possibilities and limitations of PV panels at our technical service location in Zutphen (NL). Considering the potential, this has to be done in consultation with the local network operator. The plan to realize < 1,000 solar panels has started.

Projects

For each project gained with CO₂-related award advantage, we draw up a reduction plan, which is discussed with the principal. The initiatives taken to reduce the emission of fuels on equipment and for the power supply have the biggest impact on the scope 1 and 2 reduction at the project and contract sites (in addition to lease cars). We try to optimise the use of electricity instead of fuel. The knowledge and best practices are used throughout Strukton.

Strukton Rail made new agreements with the supplier of construction sheds, using only well isolated sheds in combination with a hybrid power unit. The results on saving fuel were very promising.

Scope 3

Next to the reduction of our scope 1 and 2 emissions, we are taking initiatives to downsize the emissions within scope 3.

- We are conducting pilots with catenary structures made from circular concrete. The entire process (from extracting old catenary structures to pouring new structures) is carried out by several Strukton subsidiaries.
- Focusing on timely maintenance, we aim to prevent major maintenance or renewal and hereby use less materials.
- We are piloting a new type of railway element (a bamboo railway sleeper instead of a concrete or wooden railway sleeper) at an industrial track. Using bamboo sleepers would therefore considerably reduce the amount of carbon emissions over its life cycle compared to the commonly used concrete sleeper; the bamboo sleeper even has a negative carbon emission
- When allowed by the customer, we are re-using elements (like points, beams, sleepers, level crossings and switches) and use recycled materials in our projects (like circular concrete for platform edges). We proactively approach clients to discuss opportunities for re-using elements.

Strukton has conducted a materiality analysis to determine which of our activities lead to the highest emissions in scope 3 and in which supply chains we have the highest influence. The activities with highest impact were our railway construction activities in the Netherlands. The use of materials, especially concrete and ballast, has the most significant impact on our scope 3 emissions. We therefore focus our strategy regarding CO₂-reduction in scope 3 on concrete and ballast. These are supply chains with a high impact on CO₂-emissions, but also these are the supply chains where Strukton has some form of influence on CO₂-reduction. We aim to reuse as many materials as possible, followed by refurbishing and recycling (if our clients permit us to do so). We analysed the supply chains of these materials and formulated CO₂-reduction targets and measures. The complete supply chain analyses and the targets and measures can be found on our website.

4.6 Employee contribution

Several initiatives are deployed across the organisation to increase employee awareness regarding (the importance of) sustainability. For example, sustainability is a topic during the onboarding of new employees. Sustainability is also discussed during quarterly meetings in the various divisions. Additionally, a study was conducted by an external student among project and contract managers regarding their sustainability views, needs and intentions. Sustainability is also part of an internal course on rail infrastructure techniques within Strukton Rail Nederland (BORIT). Colleagues participate in events

that focus on sustainability, such as the Climate Classic (a cycling tour to raise awareness about climate change) and the Tour de Duurzame Infra, a cycling tour along sustainable infrastructure projects). CSR coordinators join project team meetings to brainstorm about sustainability opportunities.

In Belgium, Strukton formulates collective targets for all employees. When these targets are met, every employee will be rewarded. The 2023 collective targets focused on 4 different themes having to do with sustainability (from taking the train, organising bike days to checking the tyre pressure of vans to collecting waste). The 2023 were such a success that the same themes will be repeated in the collective targets for 2024.

5 Initiatives

Strukton actively participates in initiatives and actions including:

- Europe's Rail Joint Undertaking
- Closing the Loop initiative for circular viaducts
- Coalitie Anders Reizen
- Manifest Duurzaam GWW 2030
- Green Deal Verduurzaming Betonketen (national concrete deal)
- De Duurzame leverancier
- Asfalt Impuls
- Bewuste Bouwers
- Emissieloos Netwerk Infra (ENI)
- De Groene Koers
- Bereikbaarheidsalliantie A2
- Programme Natural Capital in Construction Sector
- Transition paths of ProRail and Rijkswaterstaat
- Nature builders (part of Infranatuur – Delta plan recovery of biodiversity)
- Ketenoverleg duurzaam spoor
- Circulaire Grondstoffencorridor Utrecht

Together with the Dutch public contracting authority ProRail and other major (Dutch) railway contractors we have initiated periodic consultations on how to increase sustainability across the value chain ("*Ketenoverleg Duurzaam Spoor*"). Among the topics discussed is the approval process of new (more sustainable) products and how this can be speed up. The parties involved committed themselves to 4 agreements in July 2023 and had a follow-up meeting in November.

A selection of other actions in 2023

- Coalitie Anders Reizen: In February 2023, 24 companies including Strukton signed the '*Anders Vliegen*' statement, promising that they will reduce the CO2 emissions of business flights by 25% compared to 2019 and to implement 12 measures on that behalf. The Coalition initiated an investigation into the actual flights within the participating companies.
- In July, Anders Reizen introduced a Summer Checklist for companies to swap from plane to train.
- De Duurzame Leverancier organised a Circular Market and three knowledge-sharing sessions in March.
- We participated in the Tour de duurzame infra (Sustainable infrastructure Tour) in September, a sector initiative where parties in the industry show best practices
- 20 Colleagues from various business units participated in the Climate Classic in June

- In September, GBN co-organised the impact festival Impact on the Beach, an event where organisations and professionals that want to create more social or sustainable impact meet, learn from each other, and get inspired by leading impact entrepreneurs. Together with Rijkswaterstaat, GBN also provided three sessions on Closing the Loop.

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Strukton

APPENDIX: Glossary and abbreviations

- CI – Certifying body
- CO₂ – Carbon dioxide
- E-LCV – Electric light commercial vehicles
- EV – Electric vehicle
- FTE – Full-time equivalent
- HVO - 'Hydrotreated vegetable oil'. This type of diesel is, next to the vegetable oils, produced from waste, residue oils and fats, such as used cooking oil.
- PV panel – A device that converts sunlight into electricity by using photovoltaic (PV) cells. PV cells are made of materials that produce excited electrons when exposed to light
- SKAO – Stichting Klimaatvriendelijk Aanbesteden en Ondernemen
- Sleeper – A large heavy beam that support the rails of a railway track



Strukton