



## **CO2 progress report and energy action plan Organizational Boundary**

Reporting period: January 01, 2021 until December 31, 2021

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# 1. Introduction

In line with the purpose of BESIX Group **"Excel in creating sustainable solutions for a better world"**, BESIX aims to actively contribute to the transition to a low-carbon society.

As part of BESIX Group, BESIX supports the Sustainable Development Goals (SDG's), with a particular focus on SDG 13 on climate change. As an active member of the United Nations Global Compact, our group indeed recognizes the urgency of the climate challenge and addresses it as one of the main challenges of the construction sector.

In line with the Sustainability Forward program of BESIX Group, BESIX has decided in September 2020 to extend the boundary of her actual CO2 performance ladder certification (for her activities in the Netherlands) to the European Business Unit.

This periodic progress reporting is part of the steering cycle within the energy management system that has been introduced in the context of the CO2 performance ladder. This control cycle is described in the quality management plan. This progress report has been drawn up by the Steering Cycle Responsible of BESIX and describes all matters as described in § 9.3.1 of the ISO 14064.

This progress report covers the CO2 performance ladder Organizational Boundary and has to be seen as a consolidated progress report. Each company belonging to the CO2 performance ladder Organizational Boundary also reports its progress on an individual basis.

The following aspects of the ISO 14064-1 are described in this report:

*Introduction (p), Description of the organization (a), Responsibilities (b), Base year (j), Reporting period (c), Verification (q), Organizational boundaries (d), Current calculation method and conversion factors (l, n), Changes calculation method (m), Exclusions (h), Absorption of CO2 (g), Biomass (f), Recalculation of base year and historical data (j, k), Direct and indirect emissions (e, i) and Uncertainties (o).*

## 2. Carbon policy and reduction objectives

### 2.1. Energy & Carbon Policy

BESIX and the other companies belonging to the Organizational Boundary recognizes the urgency of the climate challenge and addresses it as one of the main challenges of the construction sector.

Our ambitions in this area are threefold:

- to become neutral for our own direct (scope 1) and indirect (scope 2) carbon emissions by no later than 2050;
- to promote and to be a leader in providing sustainable solutions to our partners and clients and, in doing so, to help them achieve their own climate goals and targets;
- to promote and incentivize our supply chain, in particular the building material producers with the greatest potential in this area, to reduce their carbon emissions (our scope 3 emissions) in order to become neutral by no later than 2050.

The above ambitions have been defined because our impact as a construction company is twofold. It is direct through our own construction operations and project execution. It is indirect through the value chain of our partners and suppliers, and through the sustainable solutions we promote and deliver to our client.

We will therefore for all relevant direct and indirect emissions (scope 1, 2 & 3):

- monitor and analyze our energy consumption;
- calculate our carbon footprint;
- set reduction objectives and strive to achieve them;
- implement an energy and carbon reduction programme to meet our objectives and which will be reviewed periodically;
- periodically monitor and analyze our energy consumption and carbon emissions;
- report and communicate structurally on our carbon footprint and progress on our reduction objectives

In order to meet our objectives and continually reduce our energy consumption and carbon emissions, we will:

- demonstrate leadership on a daily basis;
- wherever possible, guide and advice our clients in choosing the most sustainable solution for their projects;
- actively promote and implement energy and natural resource saving measures;
- minimize waste, promote recycling and the use of recycled product to help reduce the amount of waste sent to landfill;
- adopt a sustainable procurement policy;
- actively engage in climate action related dialogues with suppliers and subcontractors, employees and peers;
- research sustainable solutions for our industry and clients, in line with our reduction objectives;
- inspire other companies in our sector and share our best practice and knowledge;
- engage subcontractors to work in full compliance with this policy

## 2.2. Scope 1, 2 & 3 (commuting and business travel) reduction targets

The overall ambition for the Organizational Boundary is to reduce the scope 1, 2 & 3 (commuting and business travel) emissions (per million euro turnover) with 40% by 2030 related to the baseline year (2019). Intermediate targets have been defined and are made visual in the progress chart in chapter 6.2.

In order to achieve the overall ambition and based on an analysis of the consolidated carbon footprint of the baseline year 2019, intensity reduction targets (emission per million euro turnover) have been defined for the most relevant emissions categories.

These reduction targets have been set for end 2030 and relates to the baseline year 2019. The reduction targets have been reviewed early 2022 following a shift from scope 3 tot scope 1 of the emissions related to the fuel for heavy site equipment that BESIX Infra provides to its subcontractors.

- minimal 60% reduction for the emissions related to company lease cars;
- minimal 57% reduction for the emissions related to utility vehicles;
- minimal 15% reduction for the emissions related to on-road equipment and internal transport;
- minimal 27% reduction for the emissions related to owned heavy site equipment.

Above the intensity reduction target, an absolute reduction target has been set for electricity: by no later than end 2025 all electricity used for offices, production facilities and projects will come for 100% from renewable sources (as per CO2 performance ladder definition).

Each company of the Organizational Boundary has defined its own reduction targets in order to achieve the overall ambition.

## 3. Basic information

### 3.1. Description of the Organizational Boundary

#### 3.1.1. N.V. BESIX S.A. - Business Unit Europe

N.V. BESIX S.A., hereafter named BESIX, is part of BESIX Group, a leading Belgian Group, based in Brussels and operating in 25 countries and on 5 continents, in the construction, real estate development and concessions sectors. Active since 1909, BESIX operates both in the building as civil and infrastructure sector.

The European Business Unit is active in France, Benelux and Italy and mainly active in the building and civil / infrastructure sector.

BESIX's engineering department enables BESIX to carry out complex and unique projects, particularly in terms of technical and environmental aspects. BESIX has developed cutting-edge expertise in the energy performance of infrastructures. In 2020, for example, by combining sustainable solutions for electricity, ventilation and lighting, BESIX is building the first 100% CO2 neutral tunnel in the Benelux, in Rotterdam.

BESIX and its subsidiaries have often been pioneers in the field of energy performance of buildings. In Paris, Brussels and Rotterdam, BESIX has contributed to the design and construction of buildings that meet the highest environmental certifications (BREEAM, LEED, Passive Building, Cradle-to-Cradle, etc.) and contribute to improving standards in the sector.

The BESIX Group subsidiaries which are part of the CO2 performance ladder Organizational Boundary focuses on road works, deep foundation techniques and on construction, installation & maintenance of networks, technical infrastructure and electrical installations.

### 3.1.2. BESIX Nederland BV

BESIX Nederland BV is an internal service provider for BESIX and provides human resources, management and support services (QHSE, administration, accounting,...) for the Dutch Branch of BESIX.

### 3.1.3. BESIX Infra NV

BESIX Infra is the knowledge-driven road building contractor for the Flemish and Brussels markets, and is one of the top three players in the Belgian infrastructure market for both public and private clients.

BESIX Infra is active in:

- road construction and related works, including earthworks, sewerage, paving and railway works;
- works of civil engineering;
- installation of non-electric road signs;
- carrying out jacking operations;
- realization of sports fields;
- remediation projects;
- processing and crushing of rubble and construction waste.

### 3.1.4. BESIX Infra Support NV

BESIX Infra Support is a service provider and provides human resources and support services (QHSE, administration, accounting,...) for both BESIX Infra and BESIX Unitec.

### 3.1.5. Franki Foundations (group)

Franki Foundations Belgium and its subsidiaries Franki Grondtechnieken BV and Atlas Fondations SAS are specialized deep foundation contractors, delivering complex projects that meet the highest standards of design, quality and safety.

With more than a century of experience and know-how, Franki Foundations is known worldwide as an expert in deep foundation techniques.

### 3.1.6. BESIX Unitec (group)

BESIX Unitec (former Van den Berg) has an extensive experience in cable and pipeline construction and offers its customers high-quality infrastructure solutions for underground and above-ground cables and pipelines, horizontal directional drilling, high voltage and traction, (fiber optic) networks and structured cabling systems, heat networks, signaling and monitoring systems, house connections, tunnel installations and traffic techniques.

The scope of the activities of BESIX Unitec and its subsidiaries are situated in:

- the construction and maintenance of networks for utilities and telecom operators.
- the construction and maintenance of technical infrastructure along motorways, railways and waterways.
- the construction, installation and maintenance of electrical installations
- automation, electromechanical solutions for the civil sector and civil engineering maintenance.

BESIX Connect NV was created in 2021 following the merger of Larabo and Uniconnect, both subsidiaries of BESIX Unitec since respectively 2017 and 2018, and specialized in:

- the installation of underground cables and utility pipes including connections
- the construction of fiber optic networks including connections
- performing directional & horizontal drilling.

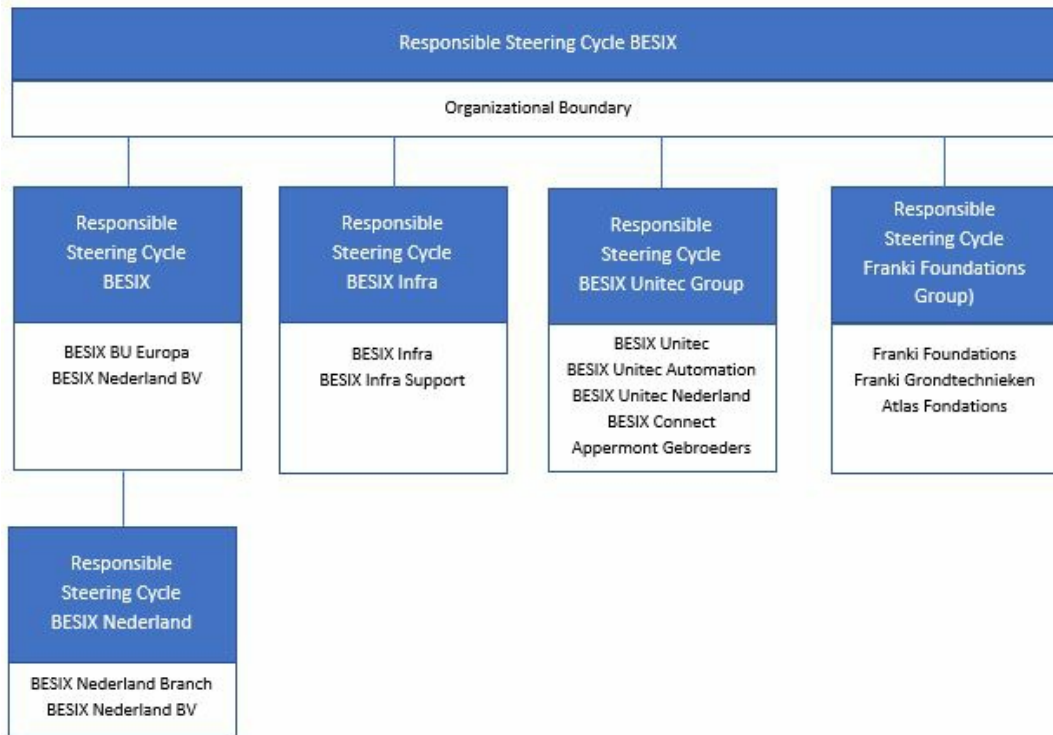
Appermont Gebroeders bv, a subsidiary of BESIX Unitec since 2020, is a builder of network infrastructures and is specialized in the installation of cables and pipelines along the railway network.

BESIX Unitec acquired in September 2021 both Agidens Infra Automation NV and BV. In March 2022 both companies changed names into BESIX Unitec Nederland BV and BESIX Unitec Automation NV. Both companies started their activities in the infrastructure market in 1987 as part of what was then Egemin and grew into a strong, reliable and experienced player on the market for large infrastructure projects in both Belgium and the Netherlands. Over the years, BESIX Unitec Automation NV has become a market leader in automation, electromechanical solutions for the civil sector and civil engineering maintenance.

### 3.2. Responsible

The General Manager of the European Business Unit of BESIX together with the General Managers of the BESIX Group entities belonging to the CO2 performance ladder's Organizational Boundary are the end responsible for the implementation and follow-up of the CO2 management within the Organizational Boundary and their respective area of control.

A Steering Cycle has been installed on both the level of the Organizational Boundary as individually for each (group) of companies. The Steering Cycle Responsible for the Organizational Boundary is the QHSE Manager of BESIX.



### 3.3. Baseline year

The baseline year is 2019.

### 3.4. Reporting period

January 01, 2021 until December 31, 2021

### 3.5. Verification

As a verification of the CO2 footprint is, as per CO2 performance standard requirement, included in the certification and yearly follow-up audit by the independent Third Party Auditor, it has been decided not to perform an additional external verification of the CO2 footprint by an independent institution.

## 4. Demarcation

### 4.1. Organizational boundaries

The demarcation of the Organizational Boundary is based on the 'operational control' methodology as per GHG protocol and the lateral method as per CO2 performance ladder standard requirements.

A company has operational control over an operation if the company (or one of its subsidiaries) has the full authority to implement its operating policies and procedures. Under the operational control approach, 100% of scope 1 (direct) and 2 (indirect) emissions from operations over which the company has operational control are accounted for. Emissions from operations where-over the company has no operational control are not accounted for.

The companies included in the CO2 performance ladder Organizational Boundary are:

- BESIX Business Unit Europe (BE+FR+NL+LUX+IT)
- BESIX Nederland (NL)
- BESIX Infra (BE)
- BESIX Infra Support (BE)
- BESIX Unitec (BE) with its subsidiaries:
  - BESIX Connect (BE)
  - BESIX Unitec Automation (BE)
  - BESIX Unitec Nederland (NL)
  - Appermont Gebroeders (BE)
- Franki Foundations Belgium (BE) with its subsidiaries:
  - Franki Grondtechnieken (NL)
  - Atlas Fondations (FR)

Projects executed under the operational control of one of the companies mentioned above are included in the carbon footprint calculation of the CO2 performance ladder Organizational Boundary.

### 4.2. Organizational changes

In the course of 2021, the following organizational changes took place:

- January 2021:
  - Uniconnect and Larabo, both subsidiaries of BESIX Unitec (former Van den Berg) merge into BESIX Connect. In the 2019 and 2020 carbon footprint both names will still appear.
  - BESIX Unitec (former Van den Berg) acquires Appermont Gebroeders. Appermont Gebroeders has been integrated in the Org. Boundary following a reviewed AC analysis. The carbon footprint of the reference year 2019 and reporting period has been recalculated (as from the 2021 first semester progress reporting).
- March 2021:
  - termination of the lease contract of the office and workshop of Atlas Fondations in Marles-en-Brie (France).
- September 2021:
  - BESIX Unitec (former Van den Berg) acquires Agidens Infra Automation NV and Agidens Infra Automation BV. As both companies need to be included in the CO2 performance ladder Organizational Boundary following a reviewed AC analysis, the carbon footprint of the reference year 2019 and reporting period has been recalculated.
- November 2021:
  - BESIX Unitec Nederland (former Agidens Infra Automation BV) moves into the regional office of BESIX Nederland BV in Dordrecht
  - BESIX France moves into a new office in Paris.

During the drafting of this progress report, Van den Berg and its recently acquired subsidiaries Agidens Infra Automation NV and BV changed names:

- Van den Berg became BESIX Unitec;
- Agidens Infra Automation NV became BESIX Unitec Automation;
- Agidens Infra Automation BV became BESIX Unitec Nederland

These new company names have been taken into account when compiling this report.



## 4.3. Projects with CO2-related award advantage

Within the CO2 performance ladder Organizational Boundary the following projects are awarded with a specific CO2-related award advantage:

Project	Project description	Operational control	Status
De Groene Boog (NL)	Construction of a new motorway (A16) including a 100% CO <sub>2</sub> neutral tunnel	Operating policies and procedures by the JV partner (Dura Vermeer)	Ongoing
Bediencentrale Den Haag	Construction of a new infrastructure control building	Operating policies and procedures by the JV partner (Vialis)	In preparation, start of the works foreseen in January 2022
Oosterweel link - Right bank - TM ROCO (BE)	Renovation of the ring road R1 (right bank) around Antwerp	Joint venture specific operating policies and procedures	In preparation, starts of the work foreseen mid-2022
R4WO - EPC (BE)	Renovation of the ring road R4 around Ghent	BESIX (Joint venture project)	In preparation, start of the works foreseen mid-2023
Via15	Extending the existing highway A15 for 12 kilometers	Joint venture (GelreGroen) specific operating policies and procedures	On hold

In addition of the above list of projects with a CO2-related award advantage: for the Oosterweel link Scheldt tunnel project the consortium TM COTU offered in her bid a project specific CO2 performance ladder level 5 certification. The project will be executed with Joint Venture specific operating policies and procedures.

Emissions and reductions of projects with a CO2-related award advantage are separately reported. Information on these projects can be found at the website [www.CO2projectplan.nl](http://www.CO2projectplan.nl). This website is an initiative of BESIX together with some other large Dutch construction companies with the objective to exchange knowledge about carbon reduction within the sector.

## 5. Calculation methodology

### 5.1. Current calculation method and conversion factors

The carbon footprint was calculated in accordance with the GHG protocol and with version 3.1 of the CO2 performance ladder manual as published by SKAO in July 2020.

In general, the conversion factors as published on [www.CO2emissiefactoren.nl](http://www.CO2emissiefactoren.nl) are used for the carbon footprint calculation of the Org. Boundary whereby SKAO's modification list is considered to be leading. These conversion factors are kept up-to-date by the software provider 'Smartrackers'.

Only for the electricity procured for offices, fixed facilities and projects outside the Netherlands it is decided to work with location-specific conversion factors. Source of information for Belgium and French conversion factor for electricity is the International Energy Agency (IEA) - version 2019, source of information for the Italian conversion factor for electricity is the Association of Issuing Bodies (AIB) - version 2019. BESIX is supported by the consultant CO2logic for keeping these location-specific conversion factors up-to-date. An update of these location-specific emission factors is foreseen in June 2022 in relation to the progress reporting of the first semester of 2022.

A specific conversion factor for 2-takt has been determined based on literature. The impact of this emissions stream is however very limited.

End 2020 an update has been performed on the waste related conversion factors in order to take into account the improved level of recycling and thus increase the level of accuracy of the footprint calculation. The updating of these conversion factors has been performed by consultant CO2logic.

## 5.2. Changes in calculation methodology

Following the internal audit carried out by the consultant 'Smartrackers' on 13/04/2022, the emissions related to fuel for heavy site equipment provided by BESIX Infra to its subcontractors have been changed from scope 3 to scope 1 emissions. As a consequence, the footprint of the reference year and reporting period has been recalculated. As this change was made during the drafting of this report, the change has been taken into account in this reporting.

There are no other changes to mention for the used calculation methodology.

## 5.3. Exclusions

According to ISO14064-1, direct and indirect GHG sources which are defined as not material or whose quantification would not be technically feasible or cost effective, may be excluded from the carbon footprint calculation.

In the CO2 performance ladder Organizational Boundary footprint the following carbon emissions are excluded:

- Air condition refrigerants (mainly used for (site) offices): as leakage of air condition refrigerants are rare and minimal this is considered as not relevant and material;
- Cutting & welding gasses such as acetylene and oxygen - often used on site in small quantities but research on the significance shows that the effort for data collection would not be proportional with the significance in the carbon footprint;
- Lubricants used to protect internal combustion engines. Research shows that the effort for data collection would not be proportional with the significance in the carbon footprint. Exception is on the use of Ad Blue which has been taken into account in the carbon footprint calculation;

## 5.4. Absorption of CO2

CO2 absorption or capture is not applied within the CO2 performance ladder Organizational Boundary.

## 5.5. Biomass

No biomass other than the additives in standard fuel blend is used within the CO2 performance ladder Organizational Boundary.

Combustion of biomass is not applicable. GHG sinks and removals are also not applicable.

## 5.6. Uncertainties

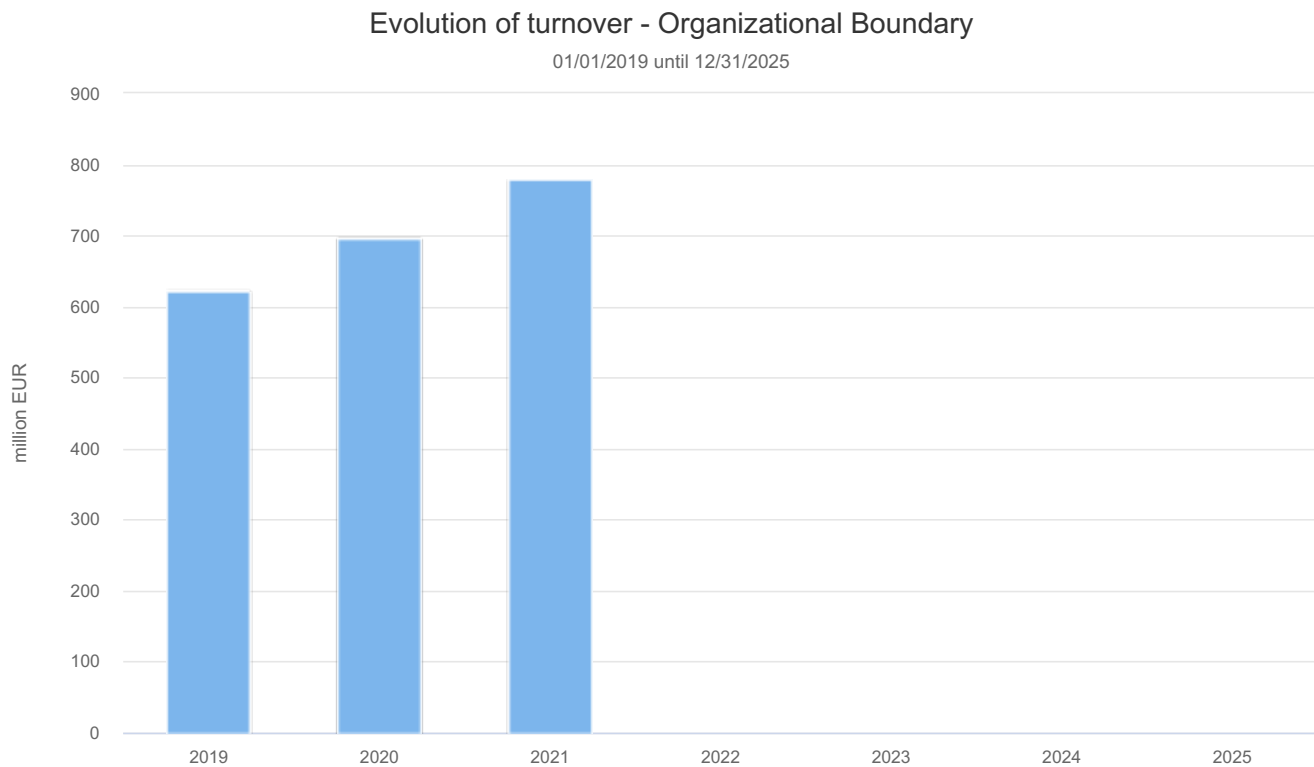
The following uncertainties can be considered in the interpretation of the carbon footprint calculation of the CO2 performance ladder Organizational Boundary:

- the data source used for the calculation of the scope 1 & 2 carbon footprint mainly comes from invoices (electricity, natural gaz,...), reporting by the supplier (electricity, fuel for on-road and off-road equipment, business travel,...) based on real consumption data and/or by meter reading. The margin of error can be considered as very small.
- if the data on purchased quantities is not available, for example in case of advance payment invoices for electricity and/or natural gaz, conservative estimations are made based on the consumption of the previous years. Corrections are made retro-active once the final invoice is available and no later than in the reporting of the following period. The margin of error can be considered as very small.
- the calculation of the scope 3 carbon footprint is depending of the company based on primary data (units of measurement) and/or secondary data meaning financial data (spent) from accounting, sector conversion factors to convert financial data into units of measurement (volume, square meters, weight,..) and sector emission factors retrieved from Dubocalc (National Environment Database of the Netherlands), LCA software 'One Click LCA' and Environmental Product Declarations. As a result the margin of error must be considered as quite important. The purpose is to go more in detail over time in order to obtain more accurate data.
- for calculating the emissions related to commuting, an average travel distance has been used for the carbon footprint calculation;

## 6. Evolution of turnover Organizational Boundary

As an intensity target (emissions per million euro turnover) is used in both the overall reduction ambition as in a number of sub-KPI's, the evolution of the turnover has a direct impact. The graph below shows the evolution of the turnover taken into account in the calculation of the several key performance indicators.

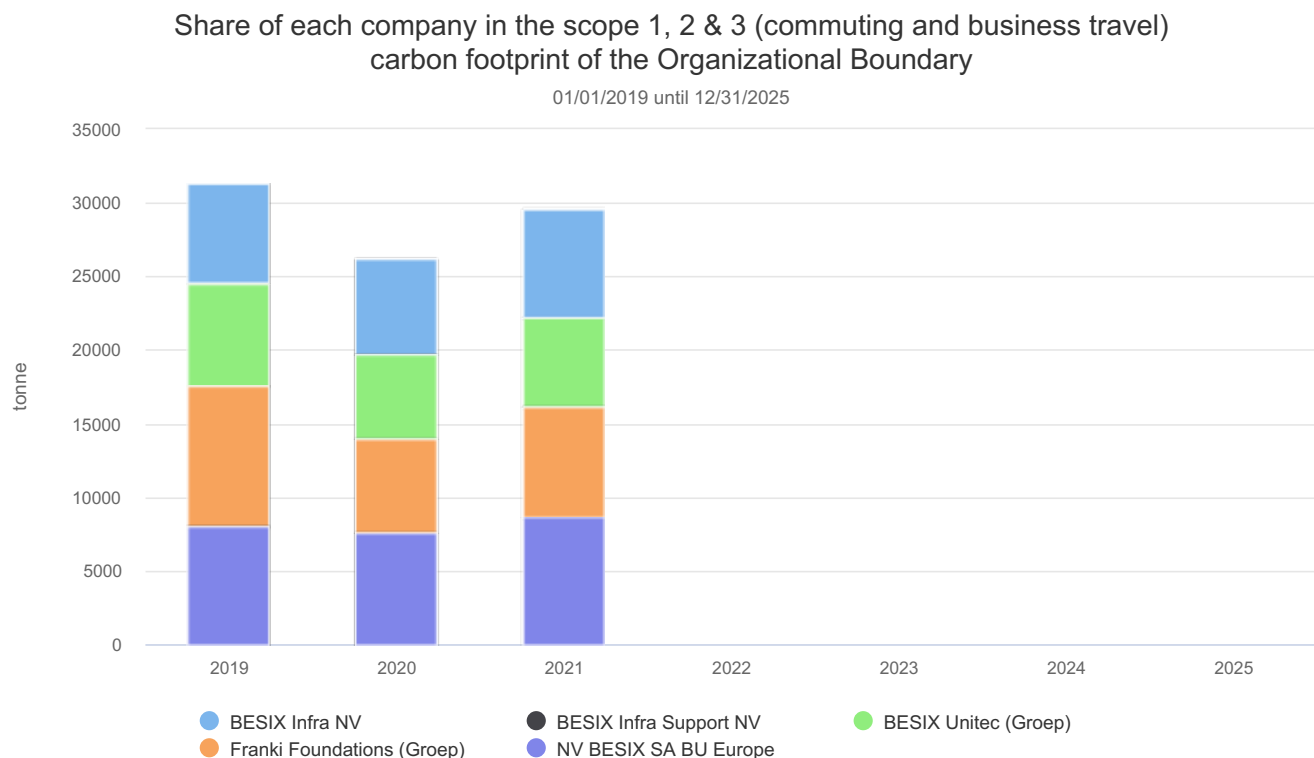
The increase in turnover in 2020 and 2021 has a direct impact on the several key performance indicators.



## 7. Carbon footprint scope 1, 2 & 3 (commuting and business travel)

The carbon footprint of scope 1, 2 & 3 (commuting and business travel) emissions is a means to clarify how the CO2 emissions are distributed throughout the organization and subsequently to analyze and reduce the largest energy flows and emissions contributors. The inventory of the emission sources is made visual in the software application 'Smartrackers' and in document 'Inventory scope 1, 2 & 3 emission categories'.

As a first step, the share of each company in the consolidated scope 1,2 & 3 (commuting and business travel) carbon footprint of the Organizational Boundary was made transparent in the below graph.

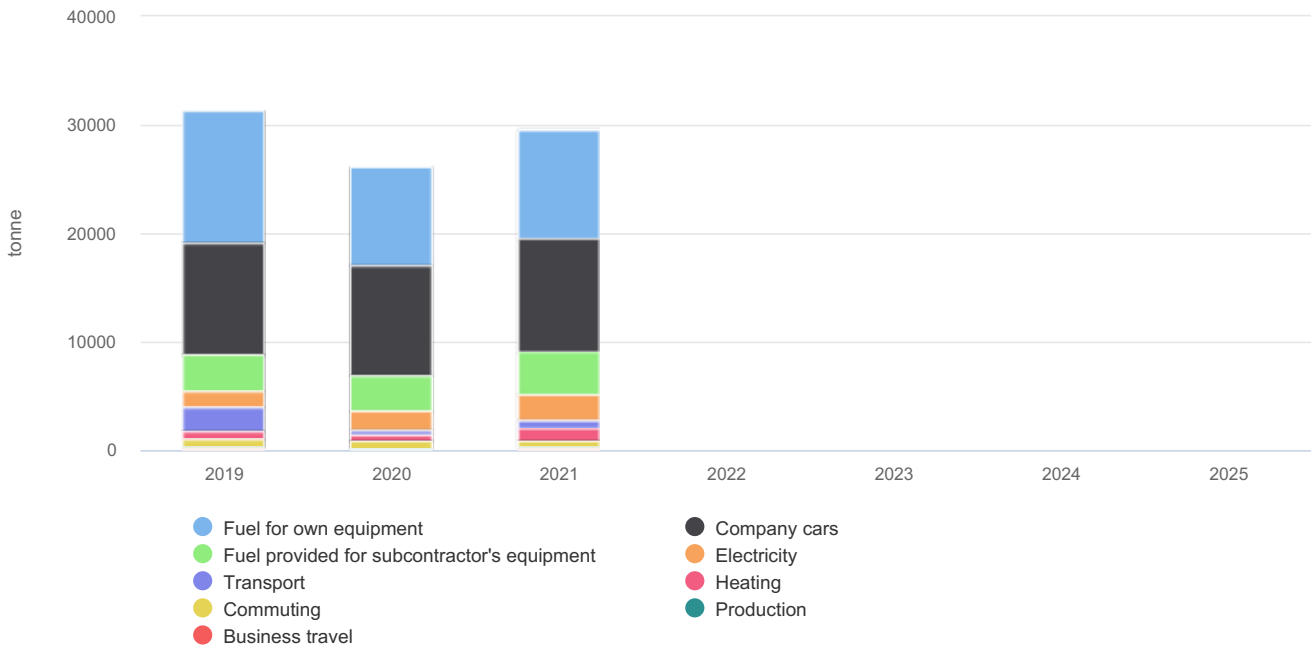


### 7.1. Evolution consolidated scope 1, 2 & 3 (commuting and business travel) carbon footprint Organizational Boundary

The consolidated carbon footprint consists of all scope 1, 2 & 3 (commuting and business travel) emissions of the companies belonging to the Organizational Boundary. As some important reduction measures (electrification of the company car fleet, procurement of green electricity, electrification of plant & equipment, renovation of offices,...) are implemented as from 2022, we expect to see an important reduction in absolute carbon emissions in the coming years.

## Consolidated scope 1, 2 & 3 (commuting and business travel) carbon footprint Organizational Boundary

01/01/2019 until 12/31/2025

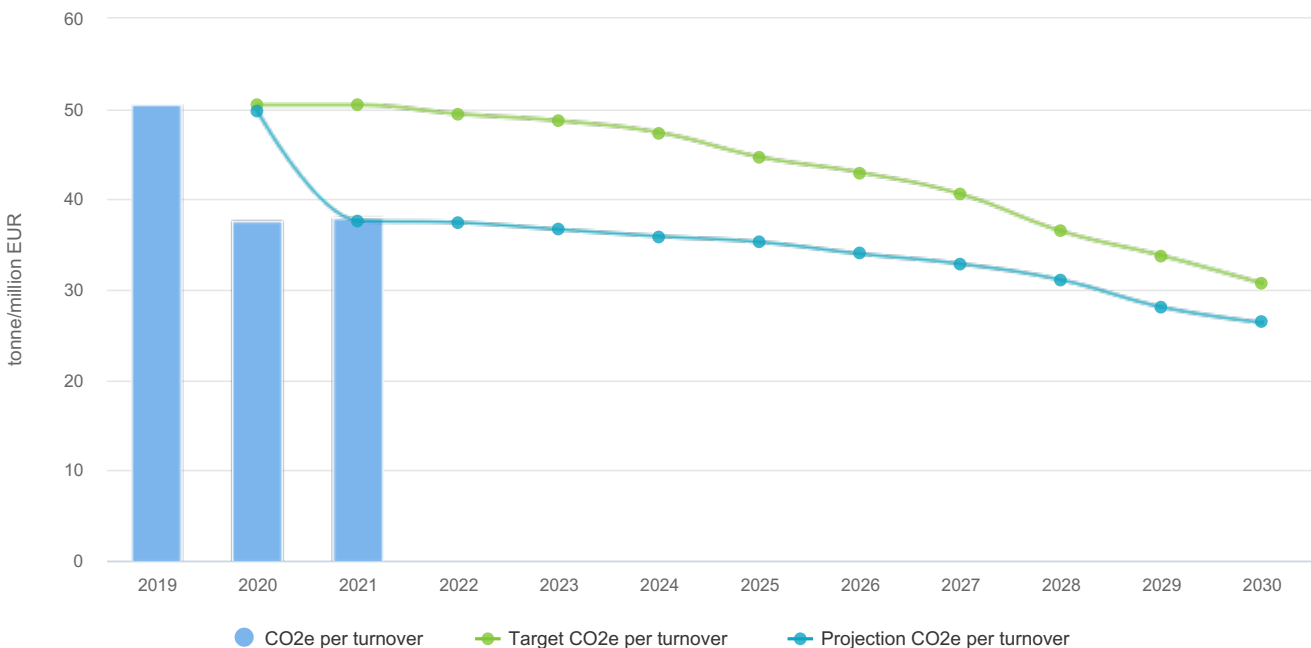


## 7.2. Evolution consolidated scope 1, 2 & 3 (commuting and business travel) carbon footprint Organizational Boundary per million euro turnover

Below graph shows the evolution of the consolidated scope 1, 2 & 3 (commuting and business travel) carbon footprint (related to turnover) for the Organizational Boundary. As indicated in chapter 6 the evolution of turnover plays, beside the impact of COVID-19 crisis and the reduction measures taken, an important role in the evolution of this performance indicator. As indicated in chapter 7.1 we expect to see an important reduction in (absolute) carbon emissions in the years to come.

### Scope 1, 2 & 3 (commuting and business travel) footprint per million euro turnover - Organizational Boundary

01/01/2019 until 12/31/2030



## 8. Progress scope 1 & 2 carbon reduction programme

The scope 1 & 2 carbon reduction programme focuses on the following main emission categories:

- company car fleet (company lease cars, utility vehicles)
- electricity
- heavy site equipment

### 8.1. Company lease car (white collar)

#### **Target:**

The overall ambition is to reduce by end 2032 the emission from the company lease cars to zero. As BESIX and the underlying entities have no control on the type of electricity (green/grey) used by the employee for charging the company lease car, a reduction target of 80% by end 2032 has been defined out of caution.

The following intermediate intensity (and absolute) reduction targets have been determined for the company lease car fleet:

- end 2025 - at least 10% reduction (vs turnover) in emissions compared to 2019
- end 2028 - at least 40% reduction (vs turnover) in emissions compared to 2019
- end 2030 - at least 60% reduction (vs turnover) in emissions compared to 2019
- end 2032 - at least 80% reduction (vs turnover) in emissions compared to 2019

This objective, is in addition to the CO<sub>2</sub>-emissions related to turnover, also monitored by means of a KPI '% zero-emission company lease cars'. The objective is that the company lease car fleet exists of minimal:

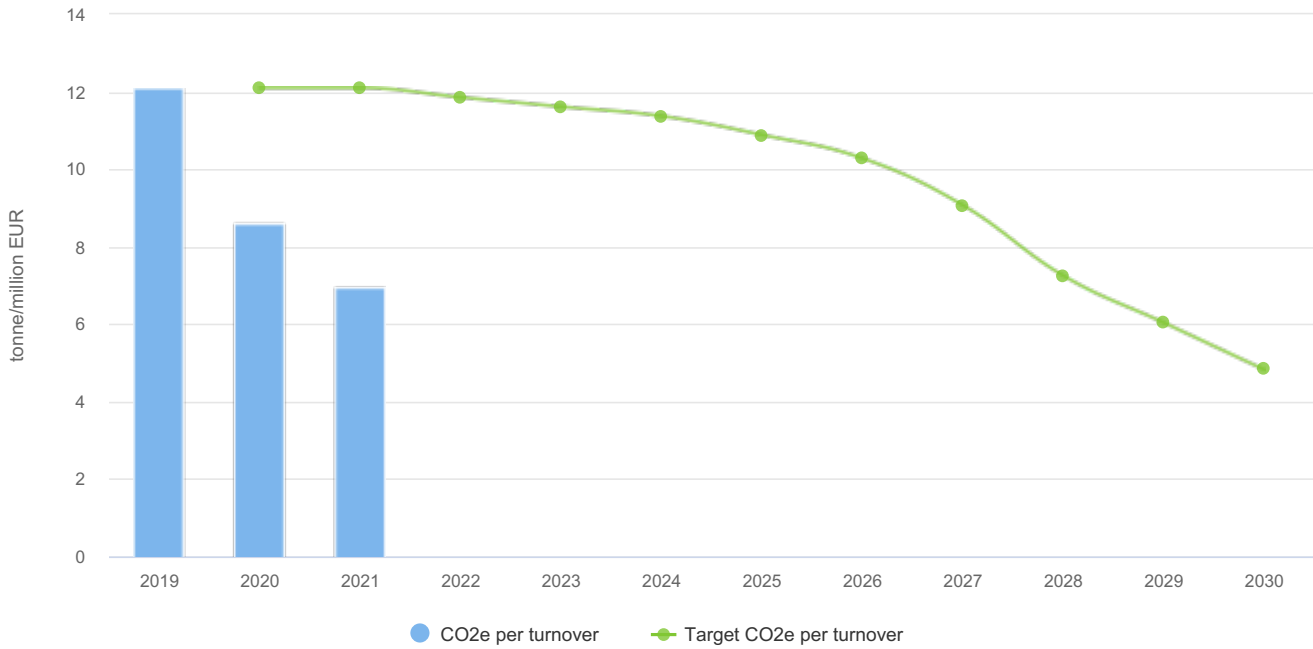
- 10% of zero emission vehicles by no later than 2025;
- 40% of zero emission vehicles by no later than 2028;
- 100% of zero emission vehicles by no later than 2032.

#### **Progress:**

- The Belgian and Dutch BESIX Group company lease car policy has been reviewed in the second half of 2021, integrating the application of electrical vehicles into the company lease car policy. Each company of the Organizational Boundary shall apply this new BESIX Group company lease car policy taking into account the context of the company.
- Within BESIX Belgium and Franki Foundations Belgium, all new company lease cars with an expected annual mileage < 25.000km will be full electric as from January 2022. As from mid-2023 this will be the case for all new company lease cars regardless the expected annual mileage.
- Within BESIX Netherlands, all new company lease cars will be full electric as from January 2022. A study to apply these principles in France is ongoing.
- The other regional entities belonging to the Org. Boundary have integrated a number of electrical company cars in their company lease car pack without a formal obligation for the employee to shift to a full electric company lease car.
- Installation of 40 charging points at the regional office of BESIX Nederland in Dordrecht
- The reason for the important decrease in 2020 and 2021 is, above the impact related to the COVID-19 crisis, also due to a change in allocation of the fuel of company lease cars within BESIX Unitec in 2020 and within BESIX Connect after the merger of Larabo and Uniconnect early 2021. Also the further detailing and breakdown of the fuel cards within Appermont (in 2019 and 2020 there was no distinction between fuel for company lease cars, utility vehicles and trucks while this was reported under 'company lease cars') had an impact on the decrease of the emissions.

### CO2e emission company lease car fleet per million euro turnover - Organizational Boundary

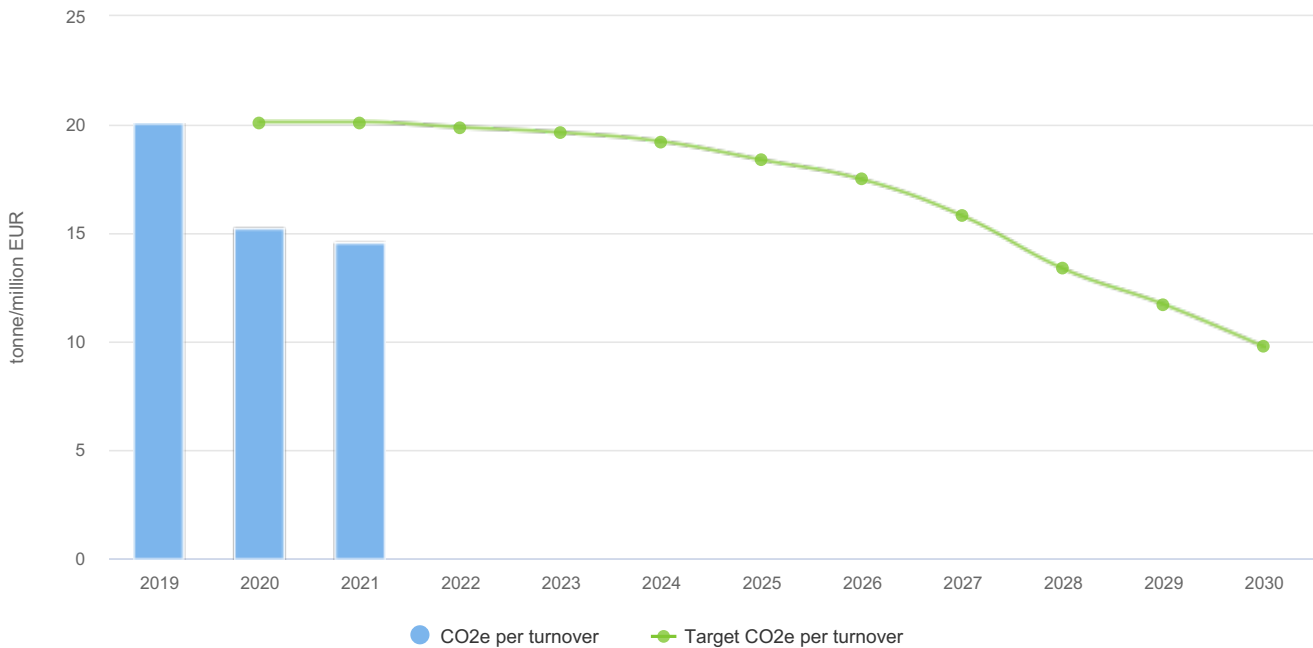
01/01/2019 until 12/31/2030



In order to have a more correct view of the progress, a progress chart indicating the evolution of the consolidated emissions of company lease cars, utility vehicles and trucks has been added.

### Consolidated CO2 emissions (per million euro turnover) of company lease cars + utility vehicles + trucks - Organizational Boundary

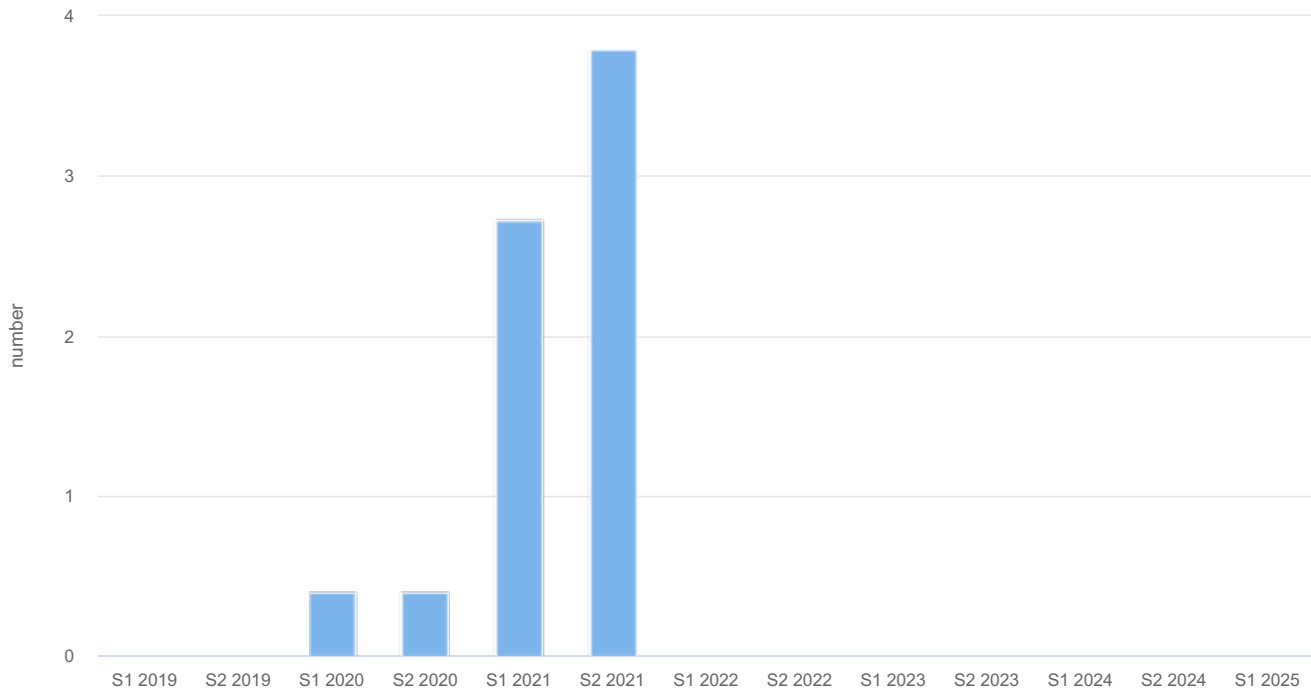
01/01/2019 until 12/31/2030



A graph indicating the percentage of zero-emission company lease cars in the company lease car fleet of the Organizational Boundary has been added below:

## % zero-emission company lease cars (white collar) - Organizational Boundary

01/01/2019 until 06/30/2025



## 8.2. Utility vehicles (blue collar)

### **Target:**

The overall ambition is to reduce by end 2032 the emission from the fleet of utility vehicles lease to zero. As BESIX and the underlying entities have no control on the type of electricity (green/grey) used by the employee for charging the utility vehicle, a reduction target of 80% by end 2032 has been defined out of caution.

The following intermediate intensity (and absolute) targets have been determined for the fleet of utility vehicles:

- end 2025 - at least 7% reduction (vs turnover) in emissions compared to 2019
- end 2028 - at least 34% reduction (vs turnover) in emissions compared to 2019
- end 2030 - at least 57% reduction (vs turnover) in emissions compared to 2019
- end 2032 - at least 80% reduction (vs turnover) in emissions compared to 2019

This objective, is in addition to the CO<sub>2</sub>-emissions related to turnover, also monitored by means of a KPI '% zero-emission utility vehicles'

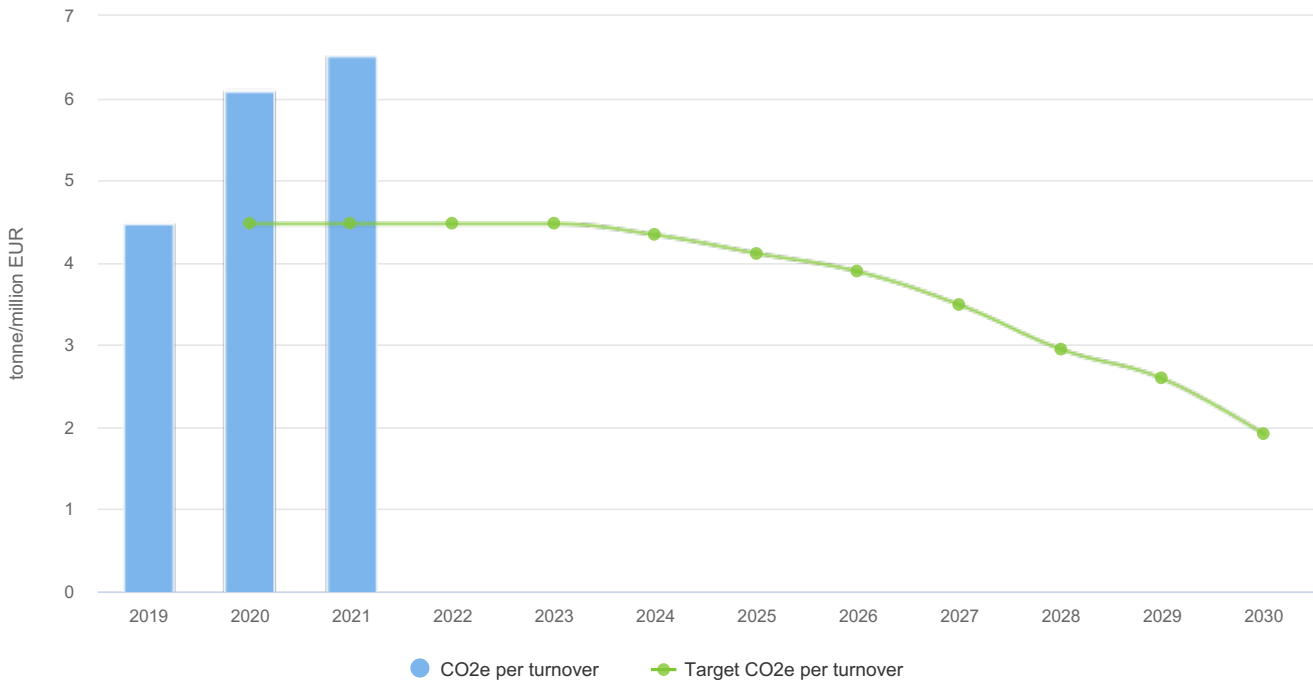
### **Progress:**

- in the first semester of 2021 a number of electric utility vehicles were tested by BESIX. The outcome of the test showed that the actual range of these electric utility vehicles remains an issue. BESIX continues to monitor the market evolution and decided, as a trail, to lease and test in 2022/2023 two electric utility vehicles.
- the reason for the important increase in 2020 and 2021 is due to:
  - a change in allocation of the fuel cards within BESIX Unitec
  - the fact that after the merger of Larabo and Unitec into BESIX Connect one single fuel tank is used for both the utility vehicles and heavy trucks meaning that no distinction can be made. It was decided to allocate the fuel under 'utility vehicles'.
  - the further detailing and breakdown of the fuel within Appermont (in 2019 and 2020 there was no distinction between fuel for company lease cars, utility vehicles and trucks while this was reported under 'company lease cars')
- there are still some unclarities in the allocation of fuel related to utility vehicles and heavy transport within BESIX Unitec and BESIX Infra (detected during the 2022 CO<sub>2</sub> management review) which will be investigated and, if required, adjusted in the reporting of the first semester of 2022.



### CO2e emission utility vehicles per million euro turnover

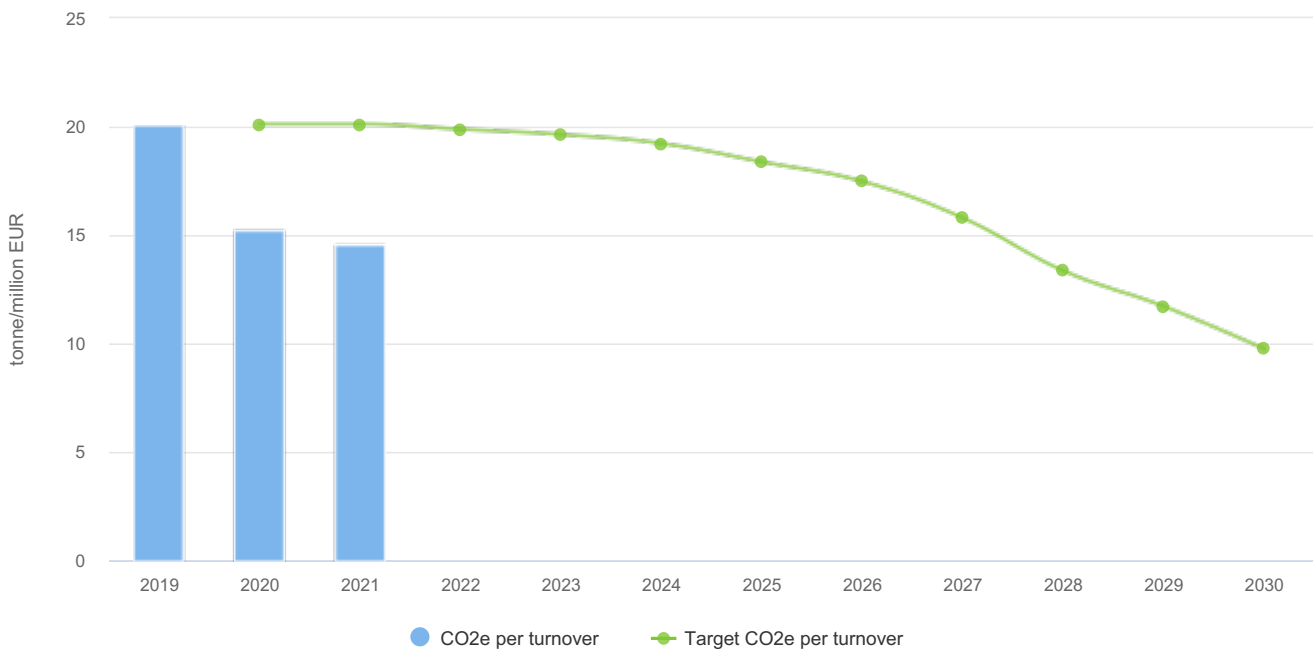
01/01/2019 until 12/31/2030



In order to have a more correct view of the progress, a progress chart indicating the evolution of the consolidated emissions related to the fuel for both company lease cars, utility vehicles and heavy trucks has been added.

### Consolidated CO2 emissions (per million euro turnover) of company lease cars + utility vehicles + trucks - Organizational Boundary

01/01/2019 until 12/31/2030



As no electric utility vehicles are yet introduced within BESIX Group, the graph for making progress visually clear is not yet embedded in the reporting.

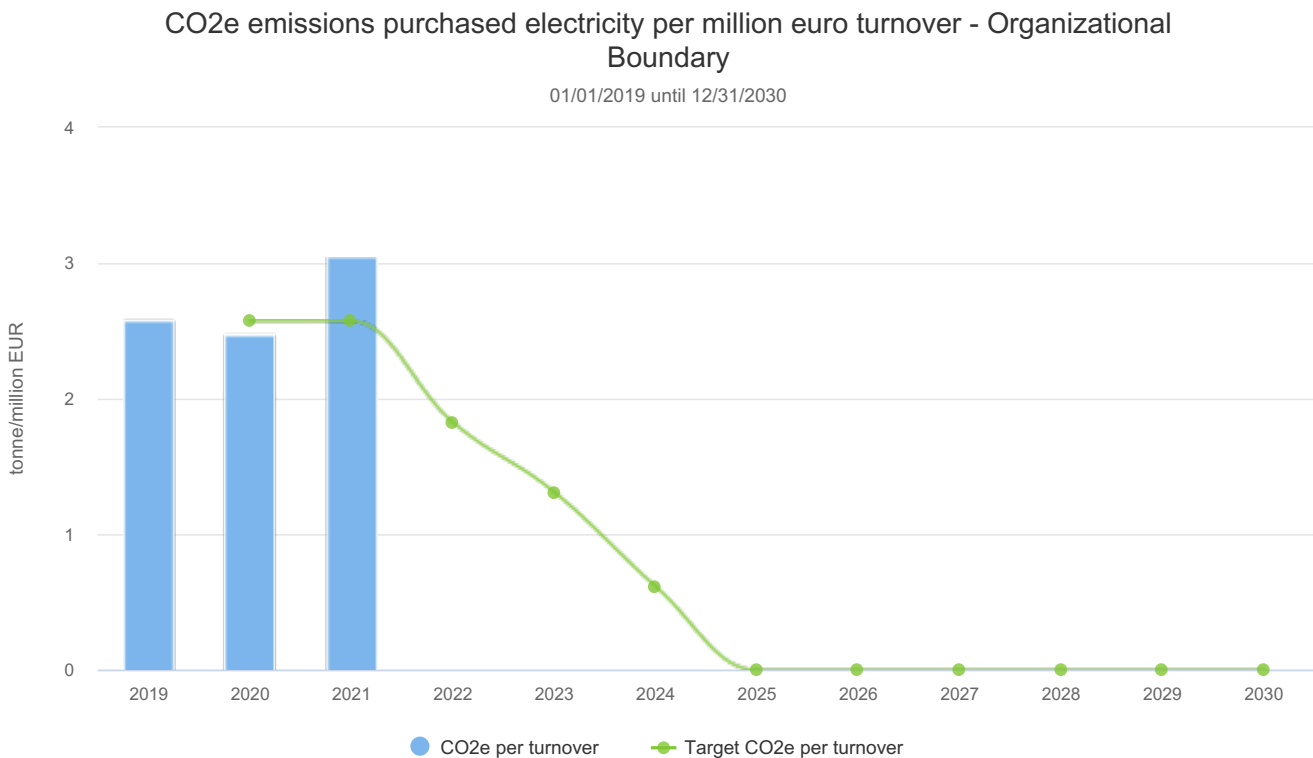
## 8.3. Electricity

### Target:

The overall ambition is to reduce the emissions related to the use of electricity for the offices, fixed production facilities (work shops, steel & formwork SPL BESIX , concrete batching plants BESIX Infra,...) and projects to zero by end 2025.

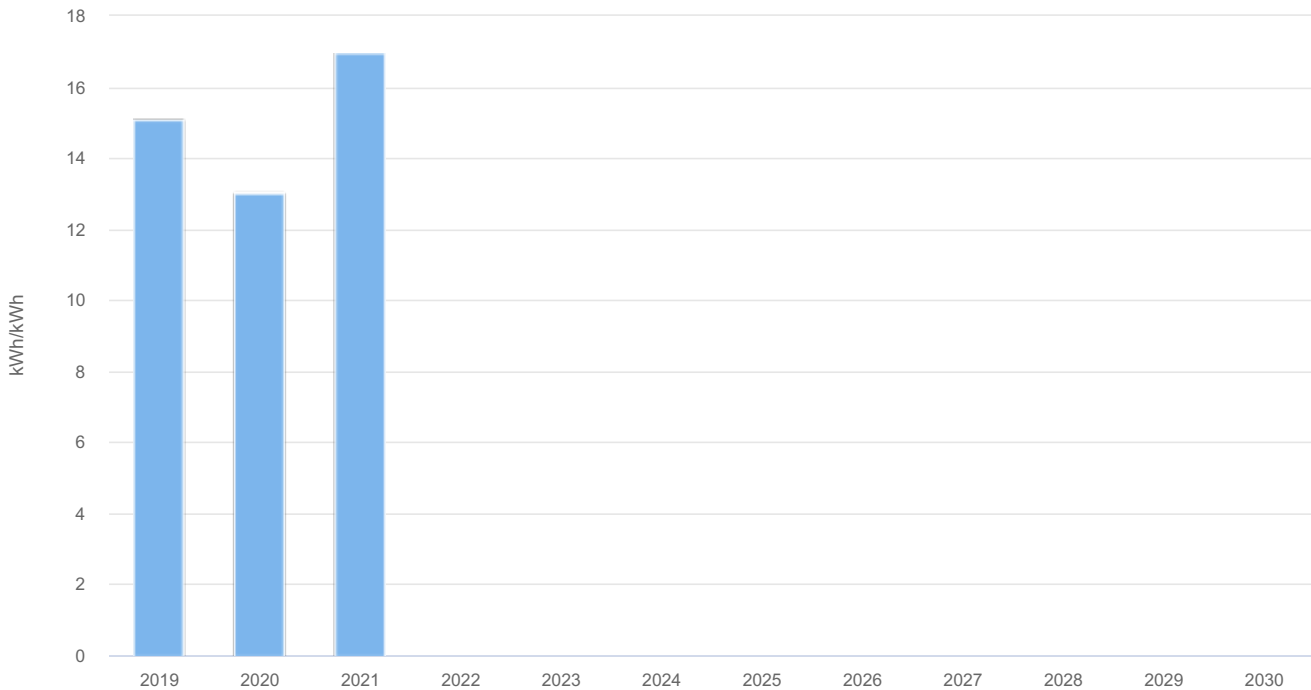
### Progress:

- despite the fact that the use of green electricity is mainly situated in the Netherlands, the reason for the increased use of grey electricity in 2021 is due to a JV project (Grotius) in the Netherlands where grey electricity has been used instead of green.
- as from January 2022, all electricity for the Belgian offices and fixed facilities of the companies belonging to the Organizational Boundary will originate 100% from local renewable sources as per CO2 performance ladder definitions. The Belgian frame agreement with the energy provider has been renewed taking into account this requirement.
- In 2022 the frame agreement for the power on the Belgian sites will be renewed in accordance with the same principle. The same principle will be investigated for BESIX France.
- BESIX Infra and BESIX Unitec will renovate and extent their actual head office in Schelle between 2022 and 2024. During this renovation the building will be transformed into a Smart Building which will communicate and exchange energy with the local grid.
- Permitting for the construction of a 4,5 MW windmill on the premises of BESIX Infra in Bilzen is ongoing. Start of the construction phase is foreseen in 2022 with a planned start-up in Q3-2023.



## % green purchased electricity - Organizational Boundary

01/01/2019 until 12/31/2030



## 8.4. Heavy site equipment

### **Target:**

As per observation made by the consultant 'Smartrackers' during the internal audit of 13/04/2022, the allocation of the emissions of the fuel provided by BESIX Infra to its subcontractors for their heavy site equipment has been changed from a scope 3 to a scope 1 emission.

This means that the actual intensity reduction target has been reviewed and split-up between an intensity reduction target related to the fuel for owned equipment and an intensity reduction target related to the fuel provided by BESIX to its subcontractors:

- minimal 27% reduction (related to turnover) for the emissions related to owned heavy site equipment by no later than 2030 related to the reference year 2019
- minimal 25% reduction (related to turnover) for the emissions related to the fuel provided by BESIX Infra to its subcontractors for their heavy site equipment by no later than 2030 related to the reference year 2019

This is monitored by the following performance indicators:

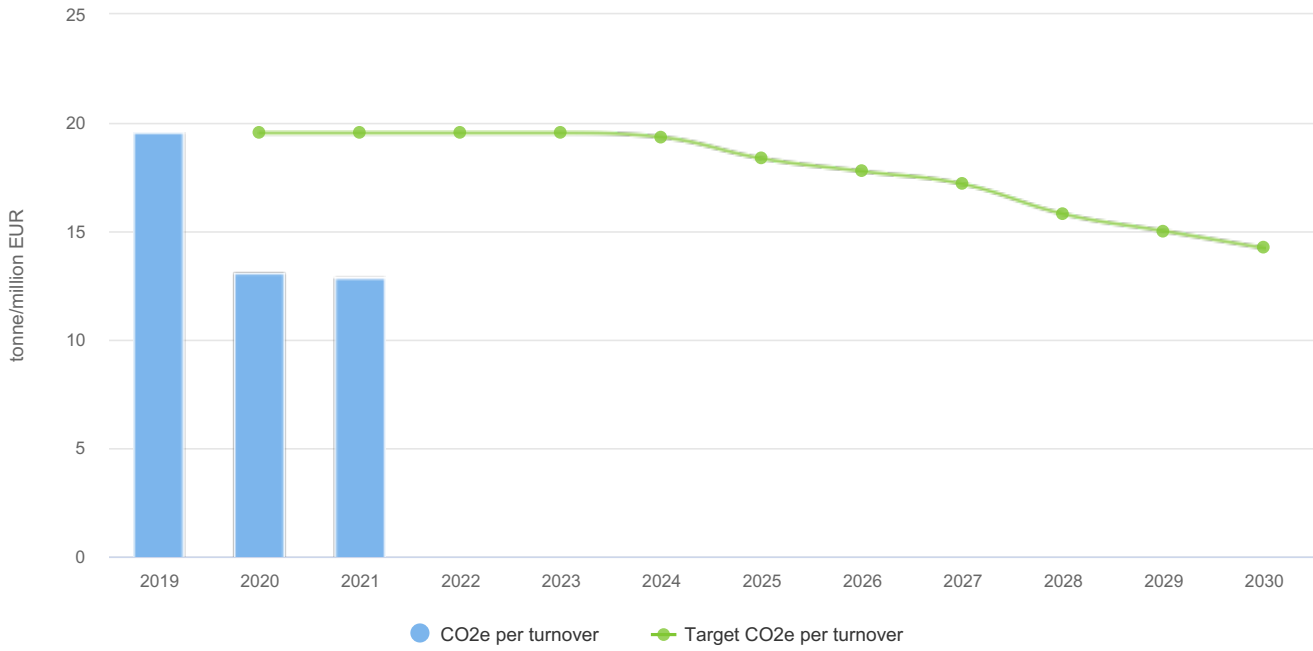
- carbon footprint related to the use of fuel for owned heavy site equipment compared to turnover.
- carbon footprint related to the use of fuel provided by BESIX Infra to its subcontractor for their heavy site equipment compared to turnover
- type of fuel used for heavy site equipment (to visualize the use of alternative fuels and/or electrical power) - as today only traditional fuel is used the graph has not yet been added in the reporting.

### **Progress:**

- A workgroup between BESIX, Franki Foundations, BESIX Infra and BESIX Unitec has been created with the objective to facilitate the shift to more sustainable heavy site equipment. In 2022, BESIX will procure its first electric crawler crane and rotative telehandler.
- At the Groene Boog project in the Netherlands, the use of alternative fuels such as Hydrotreated Vegetable Oil (HVO) is being tested extensively in collaboration with a number of subcontractors.
- At the same project, testing is performed with electrically powered heavy site equipment.
- An awareness and sensibilisation campaign will be developed within the Organizational Boundary for both internal and external (subcontractors) machine operators which will be rolled-out end 2022/beginning 2023.

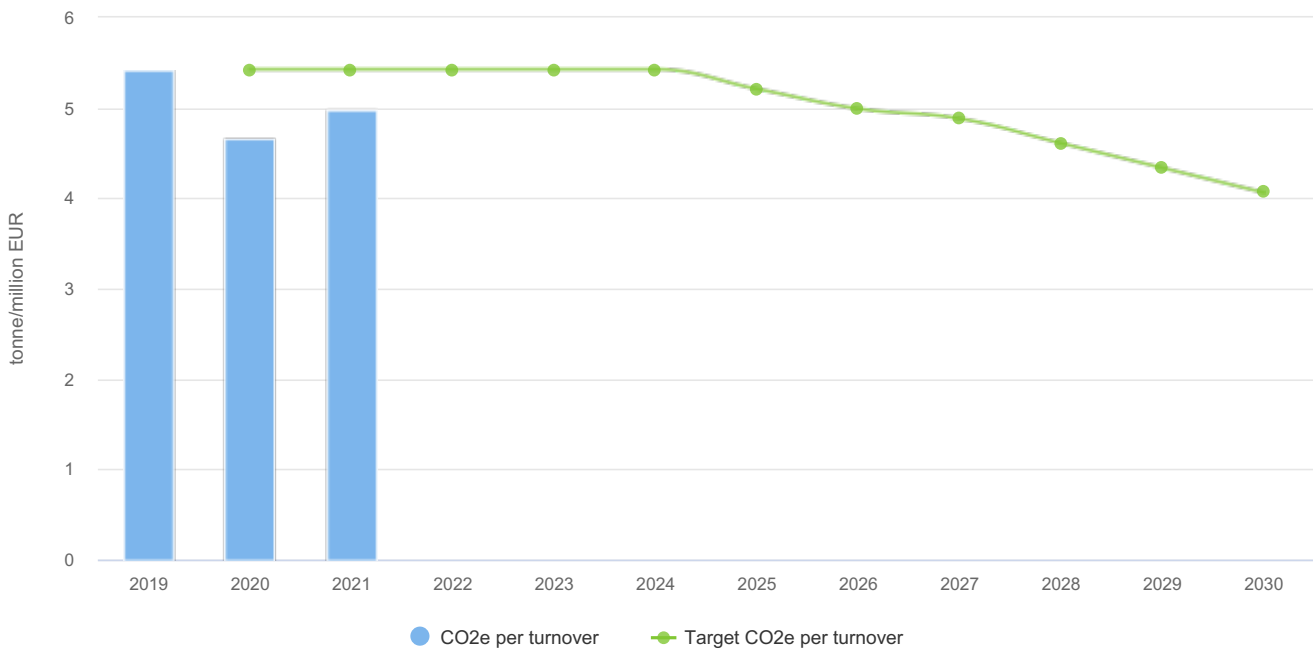
### CO2e emissions owned heavy site equipment per million euro turnover - Organizational Boundary

01/01/2019 until 12/31/2030



### CO2e emissions related to fuel provided by BESIX Infra to its subcontractors heavy site equipment

01/01/2019 until 12/31/2030



# 9. Scope 3 emissions

## 9.1. Carbon footprint scope 3

Based on the updated qualitative scope 3 analysis performed in 2021, the following scope 3 categories were defined as the most relevant and significant within the Organizational Boundary :

- purchased goods and services (in-situ concrete, rebar, (structural) steel, (sheet) piles, MEP, asphalt, façade & exterior finishing, interior finishing....)
- waste generated in operations
- use of sold products, especially for design & build projects
- end-of-life treatment of sold products, especially for design & build projects

Early 2022, the existing quantitative analysis of BESIX Netherland Branch was reviewed and updated for the Organizational Boundary taking into account the data of the last two years. This analysis focused mainly on the following upstream scope 3 emission categories:

- purchased goods and services (= raw materials & goods + subcontracted work)
- waste generated in operations
- hired transport
- commuting with private car and/or public transport
- business travel

The upstream scope 3 emission category 'capital goods' has not been taken into account as the impact of this emission category is embedded in the scope 1 and 2 footprint.

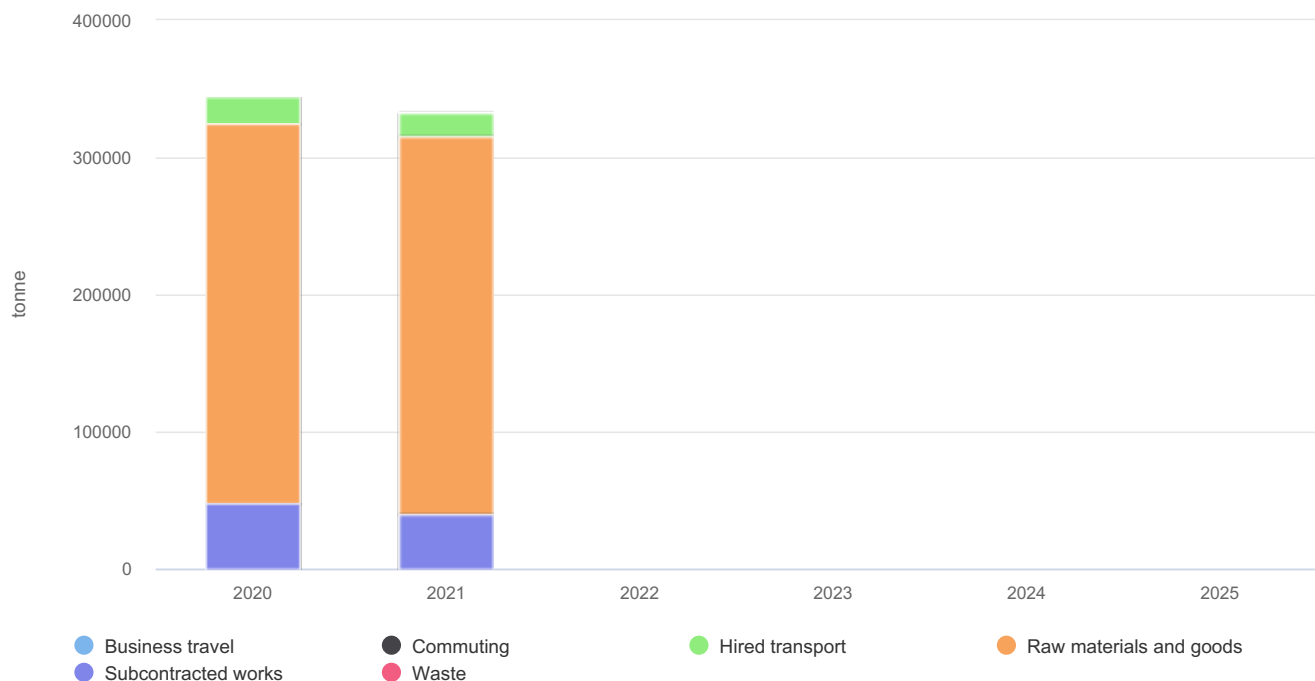
The **downstream** scope 3 emission category 'use of sold products' and 'end of life treatment of sold products' are not yet embedded in the scope 3 footprint calculation due to the complexity and limited availability of data. The objective is to include these emission categories step by step in the coming years in the company's scope 3 carbon footprint with a primary focus on design & build projects where our impact can be maximized. Nevertheless actions are taken in this field - see chapter 9.4.

From 2022 onwards, the scope 3 footprint will be calculated on an annual basis.

Scope 3 reduction opportunities are identified on project level through the application of the CO2 projectplan with a first focus on project with an CO2 award advantage. The results are publicly communicated on [www.co2projectplan.nl](http://www.co2projectplan.nl)

Scope 3 footprint Organizational Boundary

01/01/2020 until 12/31/2025



The different scope 3 emission categories are further detailed in the following chapters. The graph above shows clearly that the emission category 'purchased goods' and 'subcontracted works' represents almost the complete scope 3 footprint.

## 9.2. Purchased goods and services

In the graph below the category 'Purchased goods and products (= raw materials & goods) and subcontracted work' has been further detailed.

For some of the purchased goods and products the emissions also includes the transport and installation (for example for flooring, interior walls, MEP, façade, interior finishing,...).

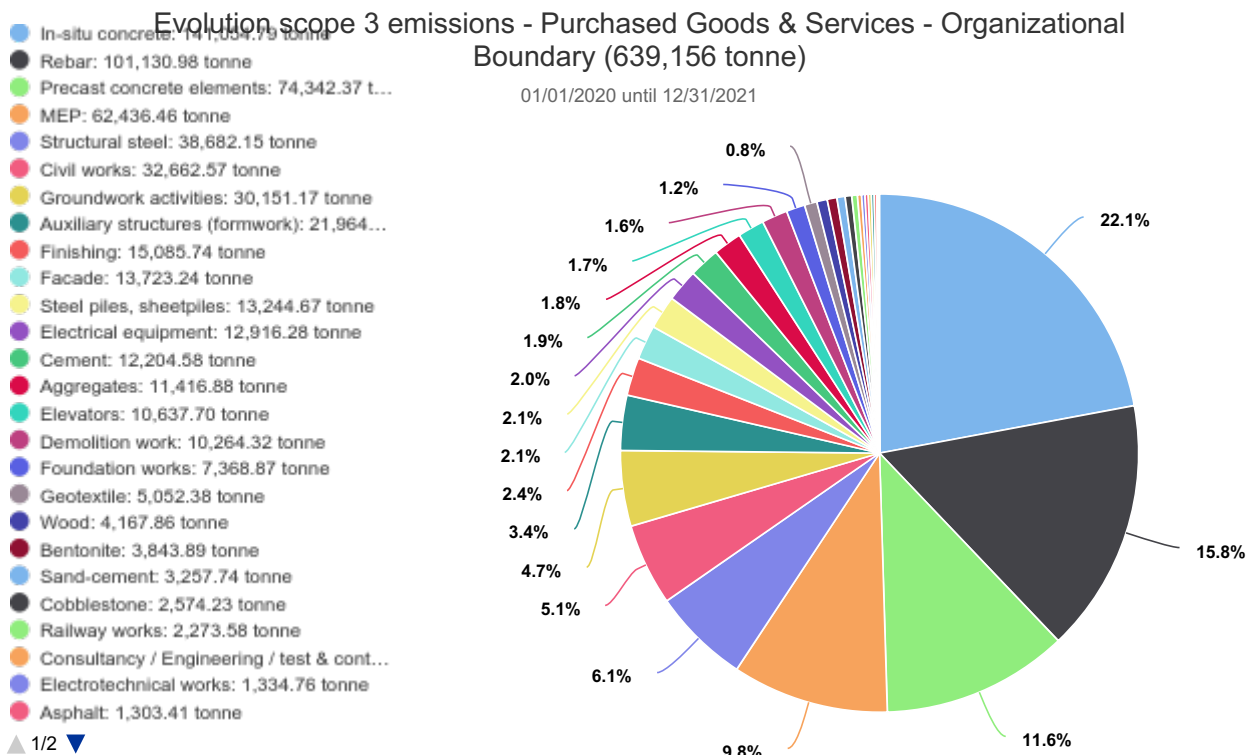
As the scope 3 footprint is calculated based on mainly financial data it is not always possible to make a distinction between the emissions related to production, transport and installation of these purchased goods & products and services. This means that today the margin of error is quite important. Further detailing will be required in order to have a more accurate scope 3 footprint.

Based on the quantitative analysis of the last two years the main emission sources in this scope 3 category are:

- in-situ concrete (22,1%)
- steel / rebar (15,8%)
- precast concrete elements (11,6%)
- MEP (9,8%)
- structural steel and piles & sheet piles (8,3%)
- civil works (5,1%)
- groundwork activities (4,7%)

'Façade & exterior finishing' and 'interior finishing' have been added to the most relevant scope 3 emission sources as these activities have a direct impact on the scope 3 categories 'use of sold products' and 'end-of-life treatment of sold products' which are not taking into account in the consolidated scope 3 footprint calculation.

As mentioned above it was not possible to detail and calculate the emission category 'transport of goods'. The emission of this category is included in the category 'Purchased goods and services' and considered as very relevant.



Based on the above, the scope 3 strategy in relation with purchased goods and services focuses in a first phase on 'in-situ concrete' and steel products (rebar, structural steel and piles & sheet piles) including the transport and installation of these products with a primary focus on 'in-situ concrete' and this in line with the company's commitment to the 'Betonakkoord' in the Netherlands. In a second phase, the scope 3 strategy will also focus on 'façade & exterior finishing' and 'interior finishing'.

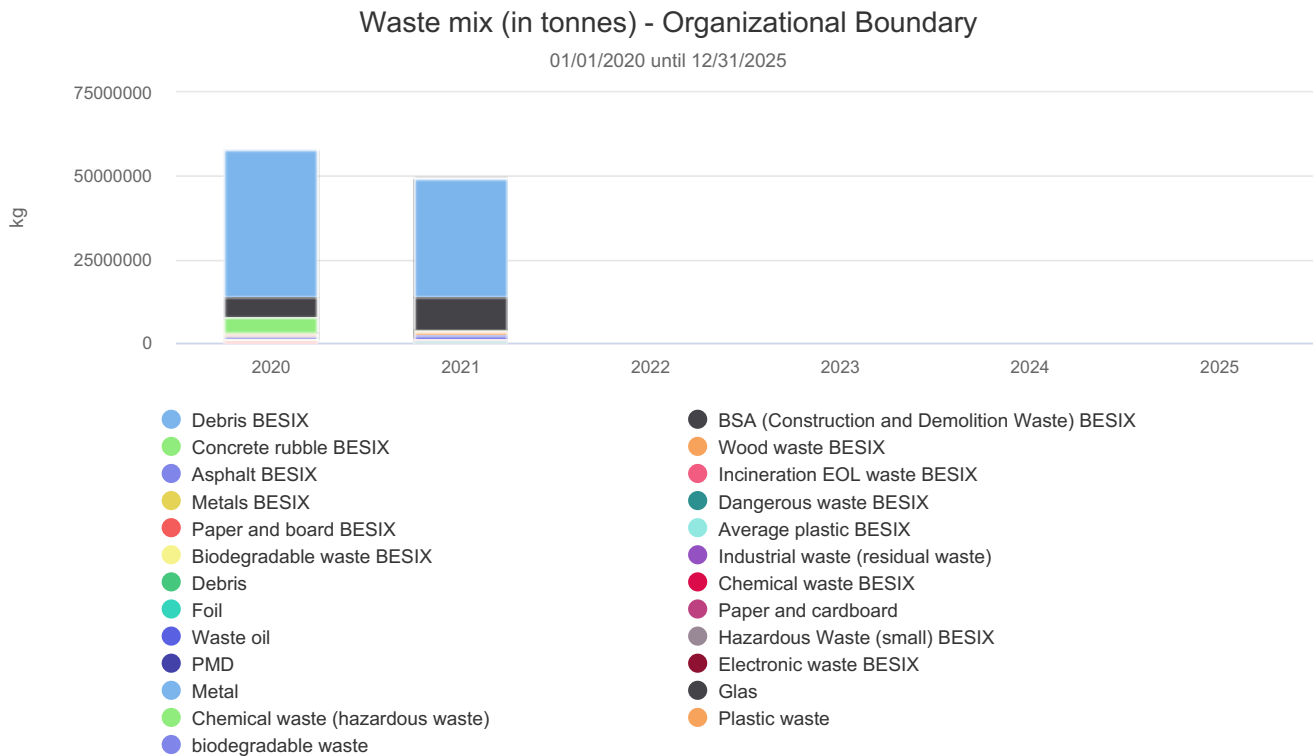
In 2021 the following actions in relation to the emission category 'Purchased goods & services' were undertaken:

- in 2021 Procurement Department executed, together with a number of key suppliers, a detailed analysis on 'in-situ concrete', 'steel (rebar) & structural steel' and 'piles & sheet piles' with the objective to define more sustainable solutions for the above mentioned materials. In 2022 a similar analysis will be executed for 'façade & exterior finishing' and 'hired transport of goods and equipment'.
- in analogy of the commitment to the 'Betonakkoord' in the Netherlands, BESIX, together with BESIX Infra, took up an active role in the Flemish initiative 'Circulair Betonakkoord Vlaanderen'.
- a workgroup (called 'Green Concrete community') related to the development and application of more sustainable concrete has been initiated in 2021 within BESIX in which also the concerned regional entities such as BESIX Infra and Socogetra participates.
- testing of sustainable concrete mixtures at a number of projects (e.g. De Groene Boog)

### 9.3. Waste generated during operations

Based on data from the waste collectors, the waste mix (in tonne) within the Organizational Boundary has been visualized. The most important waste fractions are 'construction & demolition waste' and 'rubble/debris waste'.

Per project an analysis is made to avoid & recycle the waste generated during operations as much as possible.



A number of initiatives were taken on project level:

- a pilot project 'Automatic monitoring of waste containers on construction sites' was executed in 2020 in collaboration with the AI start-up Sagacify and BBRI on the BNP project. The purpose was to test the feasibility and added value of monitoring waste containers with camera's and AI to detect anomalies and filling rate. The application requires a fixed container park (which is not always possible due to limitation of available space and rigid monitoring of a good triage).
- reutilization of materials (e.g. 3.000m2 insulation panels as protection during demolition phase, pavement for the footpath,...)
- recycling in a closed circuit of the water used for cleaning concrete buckets
- study on the feasibility of recycling of waste streams by suppliers (taking back the waste related to their products)

## 9.4. Use of sold products

### 9.4.1. Research groups - New materials

BESIX Group participates in several research projects. These include the creation of sustainable and recycled concretes with the University of Ghent and the Block Research Group of ETH Zurich, innovative concretes (such as the European Smartincs project for self-healing concretes for which BESIX is 'Industrial Mentor') or the recycling of asphalt via BESIX Infra (ReJuvebit project). More information can be found in chapter 9 'Value chain analysis' and chapter 10 '(Sector) initiatives'.

### 9.4.2. Smart Buildings

Since 2018, BESIX has been collaborating with Proximus in the field of Smart Buildings. These buildings integrate new technologies improving their performance, in particular comfort, sustainability, maintenance and hospitality.

In addition to assisting their tenants and owners to be more efficient and comfortable, smart buildings optimize energy consumption and simplify maintenance through remote inspection and by automatically detecting anomalies. All this is enabled by cutting-edge technologies such as digital twins, the Internet of Things, data science and artificial intelligence

The headquarters of the Dutch subsidiary of BESIX, in Dordrecht, is [an example of a next-generation smart building](#) that can be considered as a European reference in this field

### 9.4.3. Embodied CO2 and BESIX Life Cycle Analysis methodology

In 2021 a competence center related to Life Cycle Analysis has been set-up within BESIX Engineering Department with the objective to implement carbon as a controlling parameter in design. In 2022, CO2-impact based on the primary design data/quantities has been implemented in several tenders, allowing for identification of CO2 hotspots. This methodology will be further detailed followed by a try-out on some pilot projects.

## 9.5. End-of-life treatment of sold products

In 2021 BESIX Engineering Department has initiated a research and development project related to material passports with the objective to facilitate the transformation towards a circular economy. This led to the development of the BESIX material passport with a primary focus on finishing materials for buildings but which can be expanded to other construction types. The independent research entities BBRI, OVAM and The Engineering Network were involved as reviewer in the development process.

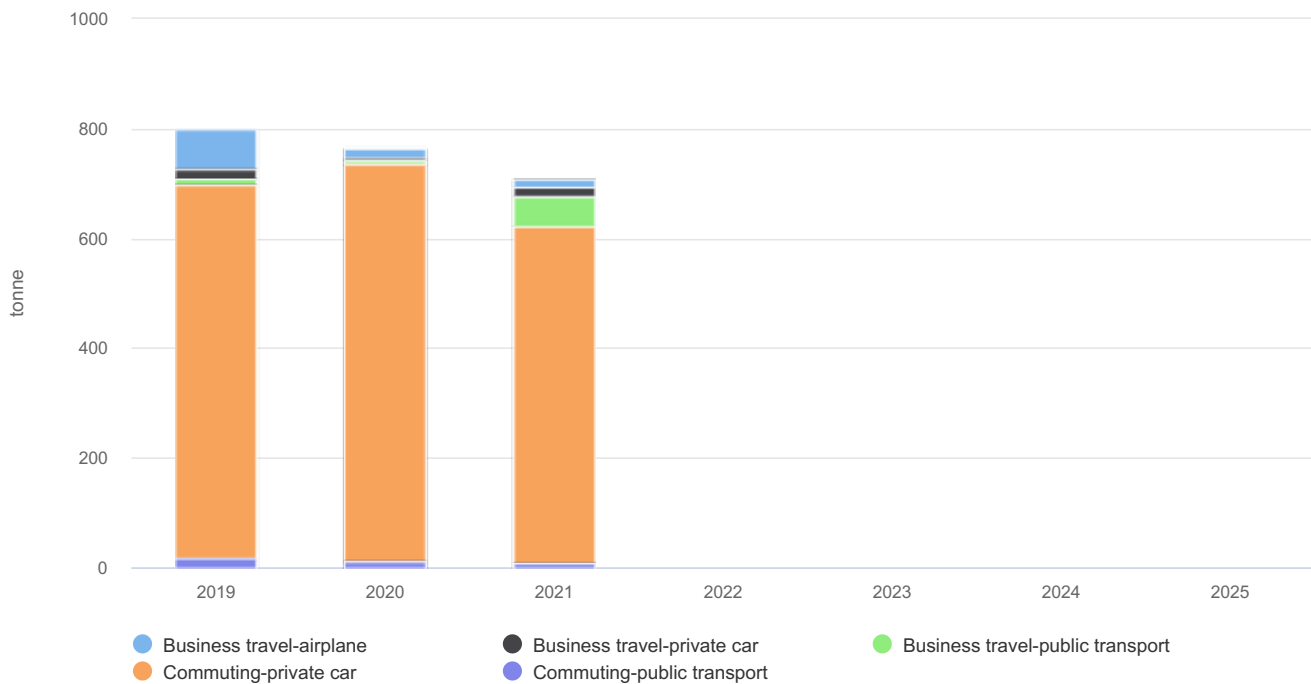
In 2022 the research development project will continue with the development of a 'Material Passport' procedure, the integration into BIM, the implementation of a training program and the try-out on some pilot projects.

## 9.6. Commuting and business travel



## CO2 emissions commuting and business travel - Organizational Boundary

01/01/2019 until 12/31/2025



## 10. Value-chain analysis

### 10.1. In-situ concrete - circular pedestrian bridge Lage Bergse Bos

BESIX, as member of the Joint Venture 'De Groene Boog', aims to construct a circular funicular construction bridge with knitted formwork in Rotterdam, the Netherlands.

The design of the bridge focuses on the principles of "strength through geometry", which means that no reinforcement is needed. For the construction, it is intended to use a flexible formwork system, a textile made of recycled and natural fibres, which is easy and quick to assemble.



The concrete mixture which will be applied will be "green concrete", meaning made from recycled concrete. Thanks to its structure, building the bridge will require less material, thus reducing the addition of cement.

The value chain analysis will be executed in 4 different phases:

Phase	Item	Planning	Status
1	- Basis of design - Architectural design - Communication plan internal & external stakeholders	Q2/Q3-2021	- Basis of design has been executed (May 2021) - Paper on the project (in development) - Presentation of the project foreseen on the IABSE Congress Ghent (September 2021)
2a	- Stability study - Determination of execution methodology and materials - Drawings	Q1/Q3-2022	
2b	- Realization of prototype - Testing of prototype - Decision for phase 3	To be defined in phase 2a	
3	- Fine-tuning execution methodology - Realization pedestrian bridge - Carbon reduction calculation	To be defined after approval at the end of phase 2b	

## 10.2. Sustainable heavy site equipment

The use of heavy site equipment is an important contributor to the carbon footprint of a construction project. Most of this heavy site equipment belongs to our subcontractors and/or suppliers.

Together with some important subcontractors, a number of initiatives have been launched with the objective to make our heavy site equipment more sustainable:

- in 2020 a workgroup has been created with Franki Foundations and S.M.D. to search for innovative solutions. This workgroup has made a market analysis with the objective to define opportunities in relation with the use of alternative fuels (HVO, biogas,...), electrification of equipment and the use of battery systems. In the second half of 2021, this workgroup will be expanded with some of the regional entities (BESIX Infra, Van den Berg,...) belonging to BESIX Group.
- testing the use of Hydro Treated Vegetable Oil (HVO) as fuel for the concrete mixers on the Groene Boog project in collaboration with the in-situ concrete supplier. In the meantime more than 3 million liter of HVO has been used resulting in avoiding 10.000 ton CO<sub>2</sub>.
- launch of a pilot project involving 12 electrically powered heavy site equipment on the project 'De Groene Boog' with the objective to learn how these types of equipment can be standardized within the construction sector.

## 11. Initiatives

Apart from initiating change in our own organizations, we are also participating in or leading a number of (sector) initiatives. We can't mention them all but below you'll find the most exciting ones. A full list of (sector) initiatives can be found on the CO2 performance ladder webpage on the BESIX website ([www.besix.com](http://www.besix.com)).

### 11.1. CO2 performance ladder in Belgium

Through the VBA-ADEB (Association of Belgian Contractors), a working group has been set up in Belgium with, among others, the federal and regional authorities, to promote the CO2 performance ladder in the Belgian construction industry. BESIX is a founding member and part of the steering committee of this working group.

More information on <https://www.echelledeperformanceco2.be/en/news-item/co2-prestatieladder-gaat-de-grens-over-ook-bel..> and <https://www.co2-prestatieladder.be/nl>

BESIX is a member of the steering committee and plays an active role in the promotion of the CO2 performance ladder in Belgium.

In 2021,

- BESIX participated in several meetings of the workgroup 'CO2 performance ladder Belgian Companies'
- several meetings were held with representatives of the federal authorities (State Secretary of Economic Recovery T. Derminne, Chancellery of the Prime Minister,...).
- BESIX presented the CO2 performance ladder at VOKA (Flemish network of companies) and the branch organization of the Belgian Electromechanical Installation Companies (AIEB-VBEI)

## 11.2. CO2 projectplan

The CO2 Project Plan is a sector initiative led by BESIX Nederland gathering all large Dutch construction companies. The CO2 project plan is used on CO2 awarded projects to analyze the foreseen carbon emissions, including scope 3, of the project and to take measures to reduce these carbon emissions by, for example, application of saving energy measures, use of sustainable energy, design optimization, use of more sustainable materials and optimization of execution and transport methodologies.

Experiences by the members of the initiative are shared publicly and form a basis for dialogue on sustainability. By sharing experiences and inspiring each other, the members of the initiative strive for a joint carbon reduction within the construction sector and its supply chain. It is our objective to also include our Belgian CO2 awarded projects in this initiative

### 11.3. 3D2B Green Concrete

3D2BGreen (2019-2022) is a research project on 3D printing of concrete, set up by Ghent University, BESIX, the start-up ResourceFull and the engineering company Witteveen+Bos. The research focuses on the development of sustainable concrete mixes suitable for printing units specifically for marine works.

The project is being developed under the aegis of SIM Flanders (Strategisch Initiatief Materialen) and is subsidised by the Flemish Region (VLAIO). It will improve knowledge about sustainable and cost-effective mixtures for 3D printing.

More information is available on [3D2BGreen | SIM-Flanders](#)

### 11.4. Betonakkoord Nederland and Circular Betonakkoord Vlaanderen

BESIX Infra, via Groen Beton Vert (FPRG vzw en GBV vzw) and BESIX are participating in the initiative “Circular Betonakkoord Vlaanderen” and BESIX also in the Dutch initiative “Betonakkoord”. Both initiatives have as objective to make the complete concrete value chain more sustainable.

More information can be found on [www.betonakkoord.nl](http://www.betonakkoord.nl) and [Circulair beton: naar een betonakkoord voor Vlaanderen \(vlaanderen-circulair.be\)](http://Circulair beton: naar een betonakkoord voor Vlaanderen (vlaanderen-circulair.be)).

### 11.5. Rejuvebit

BESIX Infra en Belasco, in collaboration with the University of Antwerp, the Belgian Road Research Centre (BBRC) and the Administration Roads & Traffics (AWV), participated in the TETRA-project REjuveBIT.

The overall aim of the project was to assess the application of rejuvenating agents in the asphalt sector so that their innovative use leads to an increase in the recycling percentage of reclaimed asphalt. This assessment includes a technical, economic and environmental part. The innovative character is demonstrated for the sector by means of test tracks with new applications (surface courses) and increased recycling percentages (base courses).

To conclude the project, a study day was organized on January 28th, 2021. You can find the presentation of the study day [here \(PowerPoint-presentatie \(uantwerpen.be\)\)](#).

### 11.6. District heating network Vlaanderen

As a member of the branch organization ‘Warmtenetwerk Vlaanderen’ Van den Berg supports the development and implementation of district heating – and cooling networks in Flanders.

Van den Berg developed recently a new technique, the ‘thermal prestressing’ method for the installation of the transport pipes. This is a technique that involves preheating the pipes when they are laid and allows installation to be carried out flexibly, while guaranteeing quality, a reduced risk of leaks over the long term and which required less heavy pump installations to transport the heating/cooling water.

As also BESIX Infra is involved in the installation process of these networks this is a another perfect example of co-creation between 2 companies of BESIX Group.

### 11.7. Carbon calculator deep foundations

As a member of the European Federation of Foundation Contractors (EFFC) Franki Foundations assisted in the development of a carbon calculator. This tool calculates the carbon footprint of deep foundation and ground improvement works. The tool can be downloaded on [EFFC/DFI Carbon Calculator Task Group - EFFC](#)

This is only a selection of the many internal and external initiatives we participate in. If you want to know more, just keep an eye on our media channels for more information about the sustainable initiatives we’re taking in our Group.

### 11.8. Hydrogen Industry Cluster (Waterstofnet)

BESIX is a member of the Hydrogen Industrie Cluster which is an industrial collaborative partnership, uniting companies, knowledge institutions, governments and authorities that want to collaborate on projects involving hydrogen as a storage medium for renewable energy and its use for zero-emission mobility, heat or industrial applications.

## 11.9. Sponsorship Eco-runner team Delft

As BESIX strongly believes in the importance of hydrogen in the energy transition, BESIX Nederland partnered as a crystal partner with TU Delft (NL) for the development of the most efficient hydrogen powered city car. The ECO-runner XII was publicly revealed in May 2022.



More information can be found on <https://www.ecorunner.nl/>

## 11.10. Belgian Alliance for Climate Action

BESIX Group is a signatory of the Belgian Alliance for Climate Action (<https://www.belgianallianceforclimateaction.org/members>), launched by the non-governmental organizations The Shift and WWF Belgium in October 2020. The signatory members of the Belgian Alliance for Climate Action are thereby aligning their activities with the objectives of the Paris Agreement, i.e. to limit the rise in global temperature to a maximum of 1.5°C.

## 12. More information

More information can be found on:

- the following CO2 webpage (<https://www.besix.com/en/about/co2performancescale>) of the BESIX website . This webpage is also accessible via the website of each company belonging to the Organizational Boundary.
- the SKAO website (<https://www.co2-prestatieladder.nl/nl/certificaathouders>)

In case of questions and/or suggestions, feel free to contact us on [QHSE@besix.com](mailto:QHSE@besix.com)