4.A.1 & 4.B.1 Value Chain Analysis

Employee Commuting

2025

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Value Chain Analysis
Version: 5.0

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1. Introduction

ICT Group has achieved level 5 of the CO_2-Performance ladder. This report contains the results of the chain analysis required to comply with requirement 4.A.1 from the Manual CO_2-Performance Ladder 3.1:

"The organization has demonstrable insight into the most material emissions from scope 3, and can submit at least 2 analyzes of GHG-generating (chains of) activities from these scope 3 emissions.*

And to requirement 4.B.1:
"The organization has formulated CO_2 reduction targets for scope 3, based on 2 analyses from 4.A.1. Or the organization has formulated CO_2 reduction targets for scope 3, based on 2 material GHG-generating (chains of) activities. An accompanying action plan has been drawn up, including the measures to be taken. Objectives are expressed in absolute numbers or percentages in relation to a reference year and within a specified time frame.*

This report contains the qualitative and quantitative chain analysis of Employee Commuting (chapter 2). CO_2-reduction targets are formulated on the basis of the analysis (chapter 3).

1.1. Topic of this analysis: Employee Commuting

Employee commuting was selected as the topic of analysis for the following reasons:

- Employee commuting is an integral part of ICT Group and therefore relates to all Product Market Combinations (PMC).
- Employee commuting was chosen due to the notion that it is a materiality (>5%) and relevant Scope 3 emission in the total carbon footprint of ICT Group. Therefore it is an activity with significant CO_2 reduction potential.
- Employee commuting was chosen due to the fact that the level of influence of ICT Group is high.

Employee Commuting

ICT Group hosts over 2000 employees that almost all commute between home and ICT offices. Since the corona pandemic working on distance has been an increasingly common practice. However, there is still a need to meet with colleagues and work on projects together on location. Commuting is likely to rise as ICT Group aspires to grow in the amount of FTE in the coming years.

Work-related mobility is a recurring topic on the sustainability agenda with many solutions ranging from establishing a fully electric car fleet to nudging workers into using public transportation. The call for green work-related mobility is strengthened by the 'CO2 Reduction Work-related Personal Mobility Decree' [6] which obliges employers with 100 or more employees to provide data on work-related

personal mobility annually. This obligation took effect on July 1st, 2024 and provides insight into and control over CO_2 emissions.

As a software development company, ICT Group does not use extensive amounts of raw materials nor does it deploy large scale production activities. This makes work-related mobility an interesting topic to investigate when it comes to reducing the carbon footprint of ICT Group. As an employer, ICT Group has a major influence on the reduction of these emissions. For this value chain analysis the scope will be solely on employee commuting, while its interrelatedness with business travel and private use of vehicles is recognized and taken into consideration whenever applicable. Based on a Scope 3 inventory from 2019 and 2022, the emissions from employee commuting are relevant.

1.2. Value chain analysis approach

1.2.1. Data collection

The approach as described in the SKAO manual version 3.1; requirement 4.A.1. was followed to determine value chain emissions. The handbook 3.1 says the following about data collection:

"For a chain analysis it is not necessary to immediately request extensive data from all kinds of suppliers. It usually has clear added value to request some crucial data from one or a few suppliers, so selectively. That is often sufficient for a good first version of a chain analysis."

Data about employee commuting was gathered directly from ICT Group and available carbon emission data in the Carbon Manager. When possible, primary data was collected and where necessary they were supplemented with secondary data. Data used for the analysis was updated through a survey among ICT Group's entire Dutch workforce about their commuting behavior in 2024 and again in 2025.

Overview of data source(s)

- ICT Group
- Carbon Manager (www.carbonmanager.nl)
- RWS (2022)[3]
- CBS (2023)[4]
- MJ Hudson (2022)[5]
- Survey 2024
- Survey 2025

1.2.2. Emission factors

For this analysis, the CO_2 emission factors of CO2emissiefactoren.nl are used, as indicated in SKAO manual version 3.1.

2. Value Chain Analysis – Employee commuting

As indicated in Handbook 3.1 of the CO_2 Performance Ladder, the chain analysis follows the structure described in chapter 4 of "A Corporate Accounting and Reporting Standard" (WBCSD, 2004). The analysis consists of the following parts:

- Describe the value chain (section 2.1);
- Determine which scope 3 categories are relevant (section 2.2);
- Identify partners along the value chain (section 2.3);
- Quantify scope 3 emissions (section 2.4).

2.1. Description of the value chain

To start the analysis, a general description of the value chain is provided. We start by identifying the system boundaries. Then we describe the value chain and the process map (figure 1).

System boundaries

The system boundaries determine which processes and activities are included in the overall analysis. This to define where to stop tracking energy and material uses of processes; otherwise, the analysis would be infinite. The following system boundaries are set:

- This analysis focusses on employee commuting of the Dutch workforce within ICT Group.
- Employee commuting is an ongoing activity with temporary fluctuations depending on the time of year and business events. Therefore, the analysis is performed over the course of one year. The year 2019 will serve as the base year, as it is representative due to the notion that corona measures were not in place yet and are therefore not significantly influencing employee commuting.
- For this analysis the chain of employee commuting is considered, with an emphasis on the transportation movements (use phase of vehicles), because this stage of the chain falls directly under ICT Group's scope of influence and represents therefore the biggest potential for CO_2 reduction.
- For this analysis, the full life cycles of other technologies and infrastructure necessary to make employee commuting function - such as roads, charging stations, cars, public transport, bikes, fuel, spare parts etc. - are outside the scope of this analysis. They are an essential part of the chain of employee commuting, but ICT Group has little influence over the development of these assets. Instead, only the CO_2 eq emissions resulting from the use of fuel and energy related to transportation movements will be taken into account.

Value chain

The chain is shown in simplified form in Figure 1. At each step, energy, materials and labor are added and emissions to the air, soil and water are released. Potentially, transport takes place between the steps. To describe the chain, the names of the life cycle phases have been used as defined in "Greenhouse Gas Protocol Product Life Cycle Accounting and Reporting Standard" (WRI & WBCSD, 2011). For the analysis only CO_2 equivalent (CO_2e) emissions are considered, in accordance with the requirements of the CO_2 Performance Ladder.

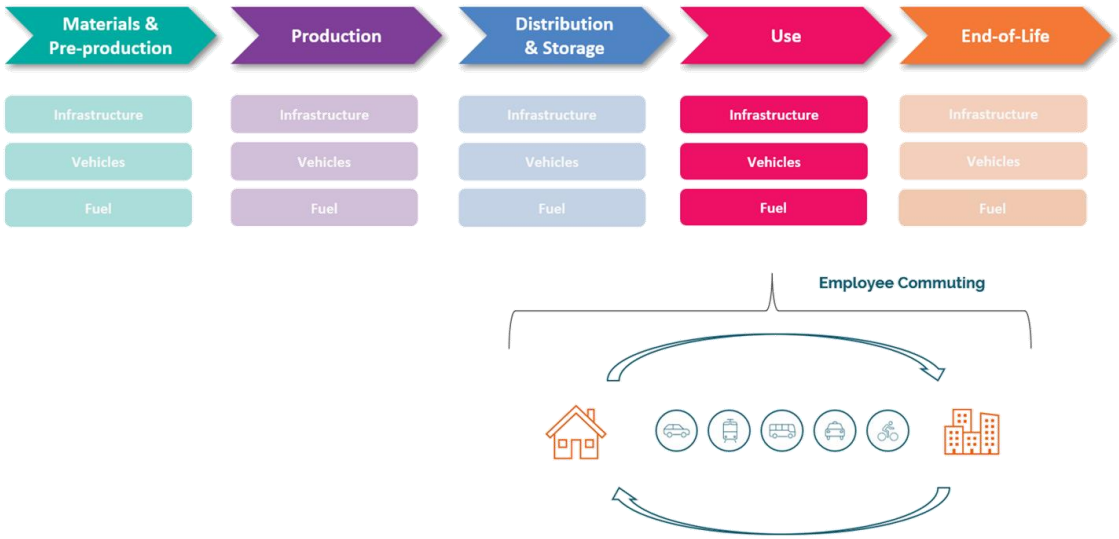

Figure 1: Simplified version of the employee commuting chain

Employee commuting depends on a range of infrastructural assets, vehicles and fuels that ultimately facilitate transportation movements. Mobility products and infrastructure require material inputs and production processes to be created, after which they are distributed and installed for use. Vehicles and infrastructure, such as cars and public transport, are then utilized by employees for the purpose of commuting. After they are used up, they reach their end-of-life and will be processed for the purpose of resource recovery or demolition. Fuels are often used up and rarely have an end-of-life scenario.

Employee commuting can be seen as a utility chain. This means that the scope of the analysis is not set for an actual product or service, but rather for the collective of activities taking place when employees travel between home and the workplace. To conduct a meaningful analysis that generates actionable results, the analysis will focus on the use phase of the generic value chain (visualized in figure 1). The upstream and downstream life cycle stages will be taken into account for those elements within employee commuting that can be directly influenced by ICT Group.

2.2. Relevant scope 3 categories

Table 1 lists the relevant scope 3 categories per step in the chain, in accordance with the GHG Protocol (WRI & WBCSD, 2011). GHG Protocol develops guidelines to provide clarity on how specific industries can apply GHG Protocol standards. We used GHG Protocol, ICT sector guidance (2017) to determine which scope 3 categories are relevant and what we should include in this.

Table 1: Relevant scope 3 categories

Stage	Relevant scope 3 categories	Relevant
1. Material acquisition & Pre-production	1. Purchased goods and services	No
2. Production	1. Purchased goods and services 2. Capital goods	No
3. Distribution & Storage	4. Upstream transportation and distribution 8. Upstream leased assets	No
4. Use	3. Fuel- and energy-related activities (not included in scope 1 or scope 2) 7. Employee commuting 8. Upstream leased assets	Yes
5. End-of-life	8. Upstream leased assets 12. End-of-life treatment of sold products	No

2.3. Identification of value chain partners

In Table 2 the most relevant value chain partners are listed.

Table 2: Value chain partners Employee Commuting

Stap	Partners
1. Material acquisition & Pre-production	Suppliers
2. Production	Manufacturers
3. Distribution & Storage	Leasing companies Fuel and energy suppliers Manufacturers
4. Use	ICT Group employees (Netherlands) ICT Group (Netherlands) Leasing companies Public transport providers
5. End-of-Life	Leasing companies

2.4. Quantification of scope 3 emissions

The analysis of employee commuting is detailed in table 3. A calculation sheet is also available in Excel, which can be requested for additional information.

Table 3: Analysis of employee commuting

2019		
Modality	**Division**	**Carbon footprint** (ton CO2)
Car - general	56,5%	1370,6
Car – 100% electric	3,5%	1,16
Car passenger	2%	35,2
Other (incl. moped/scooter)	2%	6,8
Bicycle	21%	0
Walking	3%	0
Train	7%	7,6
Bus / tram / metro	5%	24,9
TOTAL	100%	1446,2

2024		
Modality	**Division**	**Carbon footprint** (ton CO2)
Car - total	79,6%	915,9
Car - 100% electric	27%	9,3
Car - (plug-in) hybrid	17,3%	226,4
Car – petrol	32%	618,9
Car - diesel	2,3%	49,8
Car - other fuels	1%	11,6
Motorcycle – petrol/diesel	0,8%	7,1
Moped/scooter – 100% electric	0,4%	0
Bicycle (electric) or walking	12,1%	0
Public transport	7%	14,4
TOTAL	100%	937,4

Results

ICT Group's total emissions for employee commuting in 2019 are 1446,2 ton CO_2e (after recalculation of base year during the 2024 update). The biggest contributor to the carbon footprint comes from commuting by car (94,8%). This can be explained by the majority of employees travelling by car as well as its relatively high emission compared to other means of transportation. Travelling by car as a passenger accounts for only 2,4%. Other significant contributors are means of public transport such as bus, tram, metro (1,7%) and in lesser extend the train (0,5%). Commuting by bicycle or by foot do not cast out any emissions.

ICT Group's total emissions for employee commuting in 2024 are 937,4 ton CO_2e, a reduction of 35,2% compared to 2019. This drop can be contributed to several factors. First of all, the 2024 analysis contains additional primary data from an internal survey on commuting behavior, which resulted in new insights and a deeper understanding of the situation for ICT Netherlands. This allowed for a more detailed analysis, for example in the modality division, distances travelled by employees and an updated FTE count. Furthermore, the drop in carbon footprint can mainly be explained by (1) an increase in working on distance; and (2) electrification of ICT's car fleet.

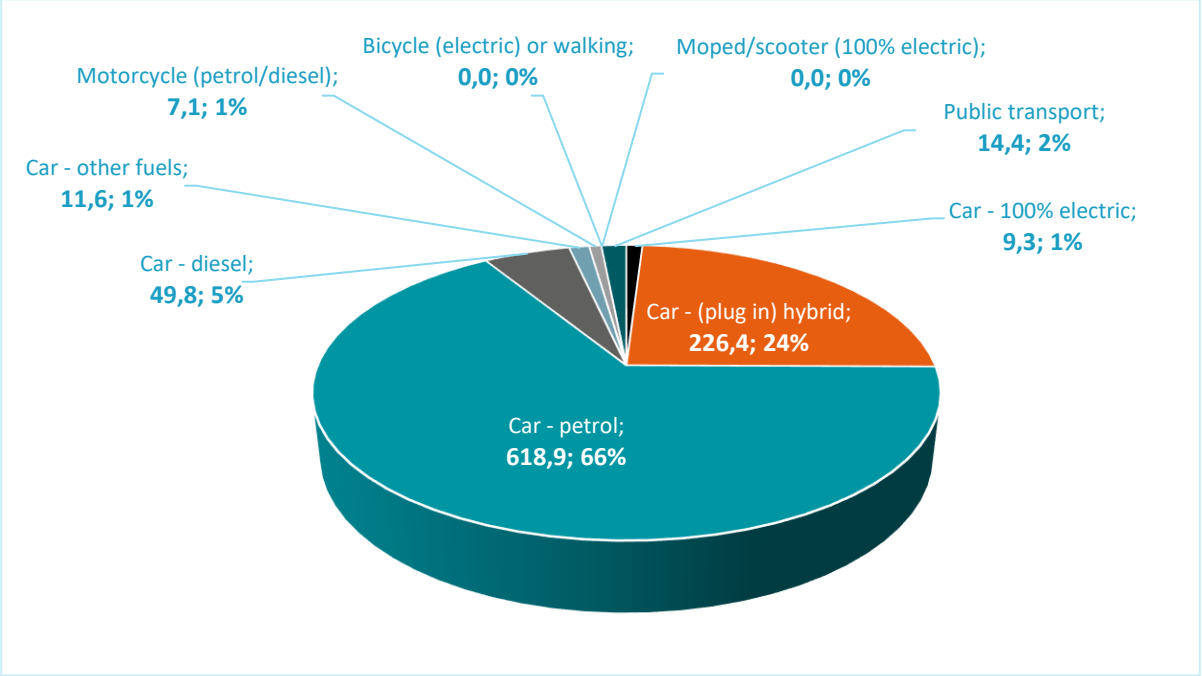

Figure 2: Overview results Employee Commuting 2024 in ton CO_2e

3. Reduction targets (4.B.1)

For requirement 4.B.1 we have drawn up the following reduction targets. The requirements for this are as follows:

"The organization has formulated CO_2 reduction targets for scope 3 on the basis of 2 analyses from 4.A.1. Or the organization has formulated CO_2 reduction targets for scope 3, based on 2 material GHG-generating (chains of) activities. An associated action plan has been drawn up, including the measures to be taken. Objectives are expressed in absolute numbers or percentages in relation to a reference year and within a defined period." (CO2 performance ladder manual 3.1)

3.1. Targets

Four targets have been identified that would achieve significant CO_2 reduction in employee commuting. Findings are supported by a worksheet that contains the calculations and assumptions made.

1. **One day less commuting per week | 20-30% reduction**
   Reducing the amount of kilometers in commuting can contribute greatly to lowering the carbon footprint. This can be accomplished by limiting travel between home and office to a minimum, without compromising the quality of work and cohesion of the workforce. Commuting one day less per week (from 3,8 days to 2,8 days on average) is estimated to result in an annual carbon footprint reduction of 380 ton CO_2e (26,3% reduction).

2. **Fully electric car fleet (renewable energy powered) | 30-35% reduction**
   Commuting by car is the biggest contributor to the footprint and therefore this category represents the largest potential for footprint reduction. ICT Group's ambition is to realize a fully electric car fleet that is powered by renewable energy. In 2019 a share of the car fleet (14,5%) was already electric. Meaning that 85,5% of the car fleet can still be swapped for electric models. In total, the potential CO_2 reduction of switching to fully electric car fleet is estimated to be 492 ton CO_2e (34% reduction).

3. **10% more use of public transport instead of car | 10-15% reduction**
   A target to decrease commuting by car is to switch to other means of transportation such as public transport. An increase of 10% commuting by public transport instead of the car would result in an annual footprint reduction of 174 ton CO_2e (12% reduction). For lasting impact it is advised to stimulate this behavioral change among the group of employees that do not drive a lease vehicle, due to the ICT Group's ambition to swap these for electric vehicles anyway sooner or later.

4. **10% more ride sharing instead of own car | ± 5% reduction**
   Another way to reduce the amount of kilometers by car in commuting is to simply share a vehicle among employees. An increase in ride sharing of 10%, instead of using their own car, will result in an estimated annual drop of 67 ton CO_2e (4,6% reduction).

   When all reduction targets are met the carbon footprint from base year 2019 can be reduced with an estimated 60-70%.

3.2. Measures

These measures help ICT Group to reach their targets.

Measure 1 **Maintain the support for working on distance**

- Set a directive on the amount of office days available for employees.
- Provide a personal budget for decorating a home office.
- Additionally, services such as heating/cooling/lighting of office space can be provided selectively based on the amount of employees coming into the office.

Measure 2 **Drive fully electric (powered by renewable energy)**

- Only introduce electric vehicles when renewing the car fleet.
- Provide sufficient charging stations to supply the car fleet with electricity from renewable sources.
- Promote electric driving among private car owners, for example by making charging stations available or increasing the kilometer allowance.

Measure 3 **Support public transport**

- Provide OV business cards for employees.
- When moving offices ensure accessibility through public transport.
- Reward people to come once per week/month with public transport, for example with an increased kilometer allowance.
- Introduce shuttle bus at peak hours to cover the distance from local public transport stations to the office

Measure 4 **Support carpooling**

- Allow car passengers to also receive a kilometer allowance.
- Providing insight into information about colleagues' routes so that a more targeted search for a carpool partner can be made. Potentially utilize applications such as Blablacar.
- Reserved parking spaces for carpool cars close to the entrance.
- Research and tackle barriers among employees with reasons for not wanting to carpool or cycle to work.

- Research and tackle employee uncertainty of not having direct control over travel times. Providing homecoming guarantees through a public transport card, use of a company car, a declaration of travel expenses, or the option to easily arrange another lift, can help them overcome this hurdle.

Measure 5 **Make biking more attractive**

- Supply (electric) bikes for employees
- Provide parking spots for bicycles close to the office entrance
- Reward for biking through an extra kilometer allowance
- Provide showers and lockers
- Emphasize the benefits of biking (e.g. combine with employee health program)

3.3. Approach

ICT Group can improve the value chain analysis and realize CO_2 reduction when engaging in the following activities:

- Conduct a survey to gather more accurate data about present day commuting behavior among the Dutch workforce.
- Engage with mobility related NGOs and initiatives to optimize the sustainability aspect within employee commuting.
- Select the most promising measures from section 3.2 for implementation.

4. Progress

The analysis of employee commuting is detailed below. A sheet with background calculations is also available, which can be requested for additional information.

In 2025, CO_2 emissions from ICT Group Netherlands employee commuting amount to 920 ton of CO_2e. This represents a slight decrease of 17 ton (-1,8%) compared to 2024. This development takes on extra significance in light of the organization's growth: the number of employees increased from 1117 to 1201 FTE (+7,5%). Adjusted for this growth, the improvement becomes clearly visible as the CO_2 intensity decreased from 0,839 to 0,766 ton per FTE (-8,7%), confirming that emissions per employee are structurally decreasing. Compared to 2019, total emissions have even decreased by 36% (–526 ton). ICT Group Netherlands is thereby continuing a clear reduction trend.

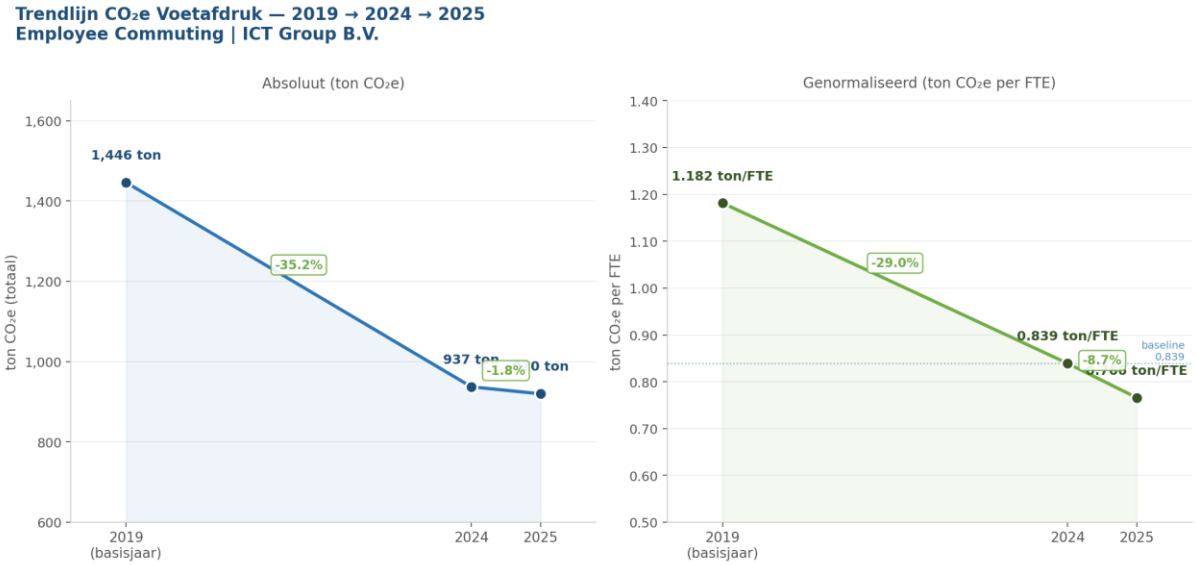

Figure 3: Carbon footprint development 2019-2025 for ICT Group Netherlands

The reduction in 2025 is the result of three underlying effects (figure 4). On the one hand, the growth of the workforce leads to an upward effect of approximately +70 ton of CO_2. In contrast, there is a behavioral shift towards more sustainable modes of transporting such as EVs and public transport that result in a reduction of approximately –184 ton of CO_2. This is by far the most important driver. At the same time, the updating of emission factors – particularly for plug-in hybrids – creates a counteracting effect of approximately +97 ton of CO_2.

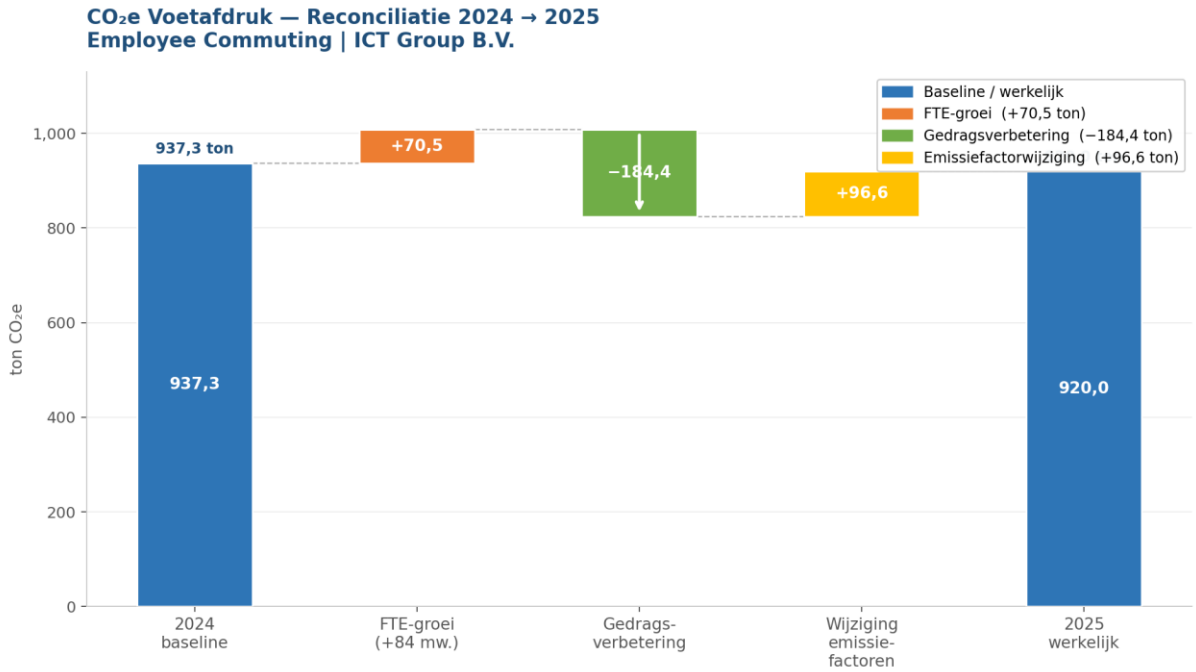

Figure 4: Carbon footprint development 2024-2025 for ICT Group Netherlands

The electrification of the vehicle fleet shows clear progress (from 14,5% to 58,9% full electric), but is not yet fully effective due to the relatively large share of plug-in hybrids. Promoting public transport and other alternatives shows a positive trend, but still contributes only to a limited extent in absolute terms. This analysis makes it clear that ICT Group is well underway to achieving great behavioral gains, however further reduction may benefit from more targeted, data-driven management.

The update of emission factors (co2emissiefactoren.nl) as of 2025 resulted in a net increase of 96,6 ton. This effect is dominated by the substantial increase in the plug-in hybrid factor (+48%, from 0,124 to 0,183 kg/km), which caused an increase of +134,6 ton. Decreases in emission factors of EVs (−12,1 ton), public transport (−5,5 ton), and petrol (−20,7 ton) only partially compensate for this. Without the hybrid factor adjustment, the net effect of the emission factors would have been negative (approximately −38 ton).

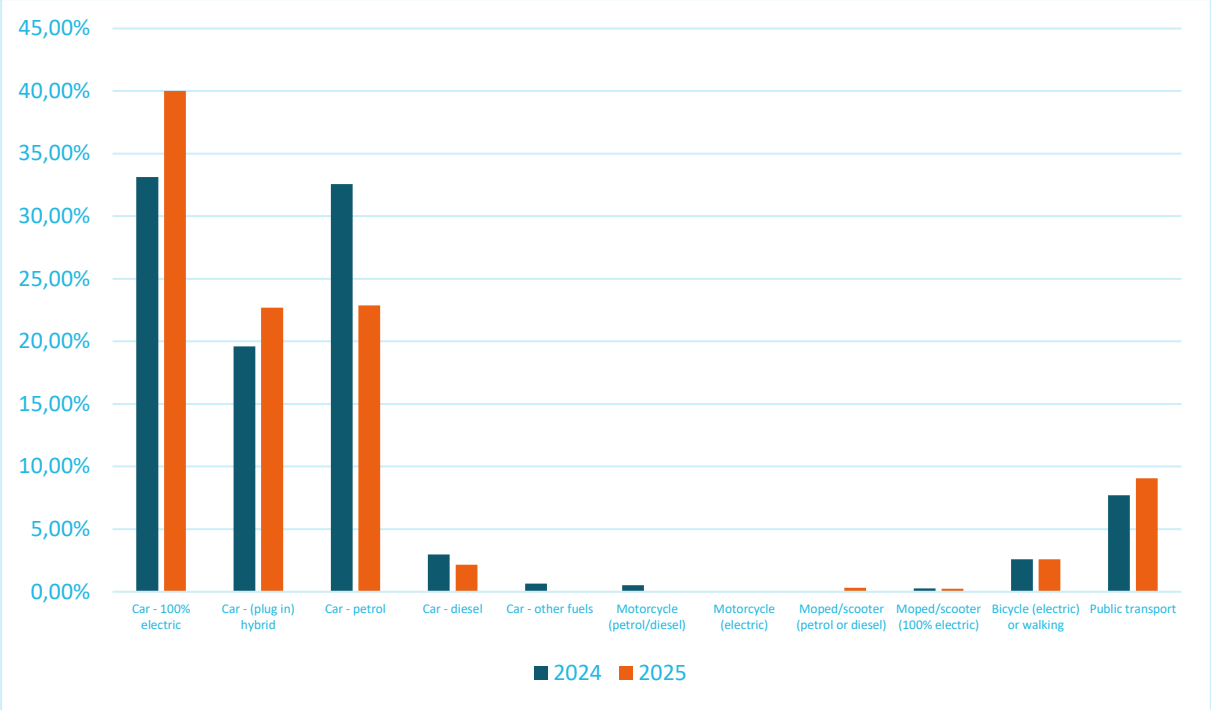

Figure 5: Division in modality by distance covered

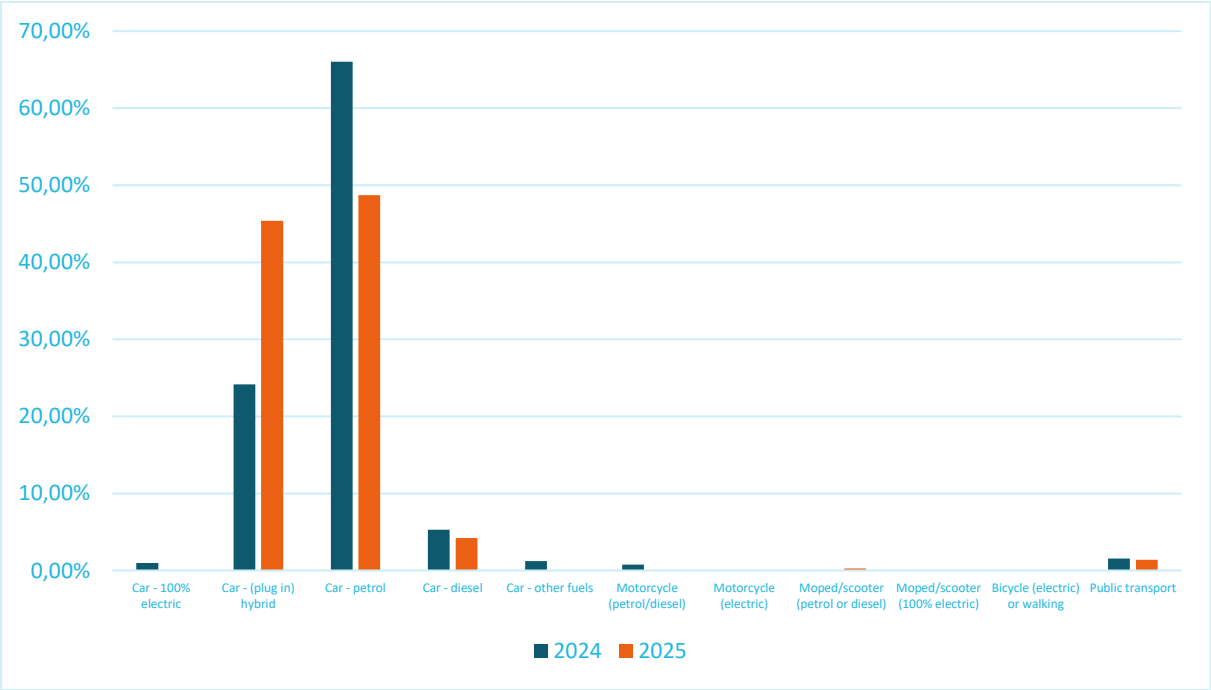

Figure 6: Division in modality by carbon footprint

4.1. Targets

Four targets have been identified in 2019 that showed potential for significant CO_2 reduction within employee commuting. Findings are supported by a worksheet that contains the calculations and assumptions made.

4.1.1. Measure 1 — Fewer travel days (working from home)

Status: target achieved and completed.

In 2019, employees traveled to the office an average of 3,8 days per week; in 2024 and 2025, this decreased to an average of 2,5 days. Consequently, the reduction target of one day less per week was already exceeded by 134% in 2024. The associated CO_2 savings amounted to over 509 ton on an annual basis in 2024. This reduction target is considered achieved and therefore is no longer pursued.

4.1.2. Measure 2 — Fully electric vehicle fleet (lease)

Status: in progress — 44,4% of physical target achieved, 11% in CO_2 terms.

The share of fully electric lease cars rose from 14,5% in 2019 to 49,3% in 2024 and 58,9% in 2025. In terms of CO_2, however, progress within the lease category is only 11%, due to a sharp increase in the emission factor for plug-in hybrids (from 0,124 to 0,183 kg/km, +48%). Hybrids now dominate 33% of the lease fleet and account for 45% of the total footprint. The remaining reduction potential of full electrification amounts to 438 ton of CO_2 per year — by far the largest untapped opportunity. ICT already adopted the policy to no longer lease plug-in hybrids from June 2026.

4.1.3. Measure 3 — 10% more public transport

Status: positive trend of +1,35% (since 2024)

Public transport use rose from 7,72% in 2024 to 9,07% of the total number of kilometers driven in 2025 — an increase of 1,35 percentage points. The share of cars (petrol + diesel) decreased from 35,5% in 2024 to 25,0% in 2025, indicating a structural modal shift. Based on a 2025 baseline, the reduction potential of a 10% shift from car (petrol or diesel) to public transport amounts to approximately 41 ton of CO_2. Progress calculated from the 2019 baseline is inaccurate, which relates to changing datasets; data in 2024 and 2025 were established more accurately based on an internal survey, whereas in 2019 generic data was still partly used.

4.1.4. Measure 4 – 10% more carpooling

Status: reduction target is no longer pursued

4.2. Measures in 2025

The first step is to increase the reliability and specificity of the data. Currently the analysis is mainly based on the systematic use of individual survey data as the primary source. By linking this data to HR data (FTE, location, working days) and to lease and expense claim data, a more consistent and richer database is created. Additionally, the use of postal code or municipality data offers the possibility to determine travel distances more accurately and make regional patterns visible.

In addition to better data, more detail is also needed in the calculation of emissions. The most important step in this regard is linking the fleet to the RDW database. By linking license plates to RDW data, insights are gained at the vehicle level, including fuel type, CO_2 emissions, vehicle segment, and electric range. This makes it possible to switch from average emission factors to vehicle-specific emissions.

This link makes it possible to:

- segment the fleet by fuel type, weight, and vehicle class;
- gain insight into the actual usage of plug-in hybrids (in combination with charging behavior);
- visualize differences between leased and private vehicles;
- and create CO_2 profiles per user type.

Additionally, further refinement can take place by:

- breaking down public transport by train and bus/tram/metro;
- segmenting employees by distance, location, and mode of transport;
- and providing a better picture of the actual use of electric kilometers in plug-in hybrids.

With these improved insights, it becomes possible to steer more effectively. Whereas policy is currently largely generic, the opportunity arises to apply measures per target group, vehicle type, or travel profile.

The existing measures remain relevant:

- fewer travel days (*no longer actively pursued*);
- electrification of the vehicle fleet;
- promotion of public transport;
- and carpooling (*no longer actively pursued*).

However, the new insights make it possible to refine these and supplement them with more targeted interventions, such as:

- maximizing electric driving for plug-in hybrids;
- differentiation in teleworking standards per job group;
- use of travel allowances as a steering instrument;
- promotion of bicycle use for short distances;
- and tightening of lease policy based on CO_2 profiles per vehicle category.

4.3. Conclusion

The 2025 analysis shows that ICT Group is successful in reducing CO_2 emissions from commuting, despite organizational growth. The greatest gains have been achieved through behavioral changes such as driving EVs, using public transport and working on distance.

However, the next step does not primarily lie only in new measures, but in better data and more detail. The connection with the RDW database, in particular, holds a key position in this regard: it makes it possible to move from generic assumptions to vehicle-specific control and to link policy directly to actual CO_2 impact.

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Making the world a little smarter

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