



Arup BV

CO2 Performance ladder

GHG Report

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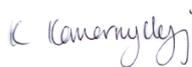
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Contents

1.	Introduction.....	5
1.1	Purpose of this Report.....	5
1.2	Compliance to ISO 14064-1	5
1.3	Organisation.....	8
2.	Method, Scope & Assumptions.....	9
2.1	CO ₂ Emissions Scopes.....	9
2.2	Data Sources	11
2.3	Calculation methods	12
2.4	Uncertainties	12

1. Introduction

1.1 Purpose of this Report

At Arup we aim to contribute towards a more sustainable future. Arup in the Netherlands has adopted the CO₂ Performance Ladder as a tool to map and reduce CO₂ emissions. The aims of the CO₂ Performance Ladder are in line with:

- Arup's Global Net Zero GHG Emission Statement;
- Arup's Global Net Zero Carbon Strategy; and
- Arup's Europe Region GHG Emissions Reduction Plan.

The targets in these documents are set until 2030 with a reference year of 2018.

Reporting within Arup is unusually based on the Arup Financial year which runs April to April. For the sake of CO₂ reporting, the data is reported on a standard calendar year. In this way the data collection is more aligned with standard practice of reporting in energy and mobility. The reporting period for this report is January 2022 until December 2022.

Measuring and reporting of the carbon footprint of our organisation is a fundamental first step in our action cycle. Our footprint is reported every year in accordance with the GHG-protocol and ISO 14064-1, as to comply with our CO₂ Performance ladder certification.

This report should be read in combination with:

- 074764-56-003 Supplier CO₂ Emission Analysis
- 074764-56-004 CO₂ Reduction in Projects
- 074764-56-005 Energy Management Plan
- 074764-56-006 Communication Plan
- 074764-56-007 Participation Plan

1.2 Compliance to ISO 14064-1

This GHG Inventory report is written in accordance with ISO 14064-1 as shown in Table 1.

Table 1: Compliance with ISO 14064-1

§9.3.1 GHG report content shall include the following:	
a) description of the reporting organization;	Section 1.3
b) person or entity responsible for the report;	Document Verification table
c) reporting period covered;	Section 1.1
d) documentation of organizational boundaries ;	Section 1.3.1
e) documentation of reporting boundaries, including criteria determined by the organization to define significant emissions;	Section 2

f) direct GHG emissions, quantified separately for CO ₂ , CH ₄ , N ₂ O, NF ₃ , SF ₆ and other appropriate GHG groups (HFCs, PFCs, etc.) in tonnes of CO ₂ e;	Currently only tracking CO ₂ (equivalent) emissions. Reported in the Energy Management Plan.
g) a description of how biogenic CO ₂ emissions and removals are treated in the GHG inventory and the relevant biogenic CO ₂ emissions and removals quantified separately in tonnes of CO ₂ e;	Not applicable.
h) if quantified, direct GHG removals, in tonnes of CO ₂ e;	Not applicable.
i) explanation of the exclusion of any significant GHG sources or sinks from the quantification;	Not applicable.
j) quantified indirect GHG emissions separated by category in tonnes of CO ₂ e;	Not applicable.
k) the historical base year selected and the base-year GHG inventory;	Section 1.1 and Energy Management Plan.
l) explanation of any change to the base year or other historical GHG data or categorization and any recalculation of the base year or other historical GHG inventory, and documentation of any limitations to comparability resulting from such recalculation;	Not applicable
m) reference to, or description of, quantification approaches, including reasons for their selection;	Section 2.2 and 2.3
n) explanation of any change to quantification approaches previously used;	Not applicable
o) reference to, or documentation of, GHG emission or removal factors used;	Section 2.3
p) description of the impact of uncertainties on the accuracy of the GHG emissions and removals data per category;	Section 2.4
q) uncertainty assessment description and results;	Section 2.4
s) a disclosure describing whether the GHG inventory, report or statement has been verified, including the type of verification and level of assurance achieved;	Verified through internal audit
t) the GWP values used in the calculation, as well as their source. If the GWP values are not taken from the latest IPCC report, include the emissions factors or the database reference used in the calculation, as well as their source.	Not applicable only CO ₂ taken into account Emissions factors from https://www.co2emissiefactoren.nl/wijzigingen-overzicht/ have been used
9.3.2 Recommended information	
The organization should consider including in the GHG report:	
a) description of the organization's GHG policies, strategies or programmes;	Available on www.arup.com Section 1.1
b) if appropriate, description of GHG reduction initiatives and how they contribute to GHG emission or removal differences, including those occurring outside organizational boundaries, quantified in tonnes of CO ₂ e;	Described in CO ₂ Prestatieladder Participation plan 2022.
c) if appropriate, purchased or developed GHG emission reductions and removal enhancements from GHG emission reduction and removal enhancement projects, quantified in tonnes of CO ₂ e;	Not applicable

d) as appropriate, description of applicable GHG programme requirements;	Not applicable
e) GHG emissions or removals disaggregated by the facility;	Section 2.1
f) total quantified indirect GHG emissions;	See Energy Management Plan
g) description and presentation of additional indicators, such as efficiency or GHG emission intensity (emissions per unit of production) ratios;	Two measures proposed: kg CO ₂ e/FTE and kg CO ₂ e/€ turnover.
h) assessment of performance against appropriate internal and/or external benchmarks;	Energy Management Plan
i) description of GHG information management and monitoring procedures;	Section 2.2
j) GHG emissions and removals from the previous reporting period;	See Energy Management Plan
k) if appropriate, explanation of GHG emissions differences between the present inventory and the previous one. The organization may aggregate direct emissions and direct removals.	See Energy Management Plan
9.3.3 Optional information and associated requirements	
The organization may report optional information separately from the required information and the recommended information. Each type of optional information described below should be reported separately from the others.	-
The organization may report the results of contractual instruments for GHG attributes (market based approach), expressed in GHG emissions (tCO ₂ e) as well as in the unit of transfer (e.g. kWh). The organization may report the amount purchased compared to the amount consumed.	-
The organization may report offsets or other types of carbon credits. If so, the organization:	
— shall disclose the GHG scheme under which they were generated;	Not applicable
— may add offsets or other types of carbon credits together if they originate from the same GHG scheme and are of appropriate vintage;	Not applicable
— shall not add or subtract offsets or other types of carbon credits from the organization's inventory of its direct or indirect emissions.	Not applicable
The organization may report GHGs stored in GHG reservoirs.	Not applicable

1.3 Organisation

Arup B.V. was established in the Netherlands, Amsterdam in 2001. From 2019 onwards the group leader has been Tudor Salusbury. The management structure was divided into the following three business units since 1st of April 2022:

- Sustainable Industries
- Sustainable Properties
- Sustainable Cities & Transport

1.3.1 Organisational boundary

The CO₂ Performance Ladder certification will be applicable to the firm Arup BV in the Netherlands. In 2022, Arup BV has one permanent office in Amsterdam. Prior to 2022, there was also a small office in Groningen but that office is no longer used as an Arup office. The firm operates as a consultant for the planning, design, management and research of architectural and engineering related projects, primarily in the building and infrastructure sector. There are no sub-companies operating under the control of Arup BV

In 2022, Arup BV produced a total amount of CO₂ emissions below 500 tons a year, classifying it as a small company according to the CO₂ Performance Ladder. The size classification determines the specific set of CO₂-ladder certification requirements.

Table 2: 2022 CO₂ Emissions for Arup B.V.

Scope	2022 CO ₂ emissions in kg
Total Scope 1	12,102
Total Scope 2	134,869
Total Scope 3 ¹	162,344
Grand total	309,316

1.3.2 Operational boundaries

Arup B.V. is responsible for the carbon emission related to all activities and projects that fall under its direct **operational control**. In 2022, Arup B.V. leased one office facility as described in Table 3

Table 3: Arup B.V. Locations

Location	Consolidation	Operational control
Amsterdam office (permanent leased facility)	Equity share	Arup B.V. rents a floor area of 3040m ² out of a building with a total floor area of 6080m ² . The building also has a communal atrium which is shared with the other building tenants. Energy and district heating suppliers not chosen by Arup B.V. Energy/climate is controlled centrally for the whole building, not falling under control of Arup B.V.

¹ Excluding Scope 3 Categories 1 and 2 as emissions calculated are unreliable. See Supplier Emissions Analysis for details.

Location	Consolidation	Operational control
		Furniture, lighting and all operational devices such as computers and printers are property of Arup B.V.

2. Method, Scope & Assumptions

2.1 CO₂ Emissions Scopes

The inventory reports its CO₂-emissions for direct and indirect emissions as described in Table 4.

Scope	Category	Activities	Reporting
Scope 1	Company facilities	Direct emissions from own installations such as own gas use (e.g. boilers, heating systems, ovens etc)	Refrigerant losses will be reported for the first time in 2022. See section 3.1.1 of the Energy Management Plan.
Scope 1	Company vehicles	Emissions from non-electric company cars (lease vehicles)	Reported in Energy Management Plan.
Scope 2	Purchased electricity, steam, heating and cooling for own use	Emissions from generation of energy and district heating used by the Arup B.V. office. Emissions from electricity generated to power the electric lease vehicles.	Reported in Energy Management Plan.
Scope 3	Category 1 – Purchased goods and services	Emissions from goods and services purchase by Arup B.V. Goods include for example office supplies, paper etc. Services include catering, subconsultants, events etc.	Reported in Supplier Emissions Analysis.
Scope 3	Category 2 – Capital goods	Emissions from purchase of capital goods including computers, plotter and other electronic equipment, lease vehicles (excluding emissions from fuel), office furniture	Reported in Supplier Emissions Analysis.
Scope 3	Category 3 – Fuels and energy related activities (not included in scope 1 or 2)	Emissions related to the production of fuels and energy purchased and consumed that are not included in scope 1 or scope 2.	Not reported. Arup B.V. does not these types of emissions.
Scope 3	Category 4 – Upstream transport and distribution	Emissions from transportation of purchased goods and capital goods from tier 1 supplier to Arup B.V. E.g. catering deliveries, postal deliveries, delivery of gifts to staff etc	Not currently reported. The emissions from goods purchased by Arup (and therefore transport emissions of these goods) is comparatively low compared to emissions in other areas. Therefore this has not been a focus area to date.
Scope 3	Category 5 – Waste generated in operations	Emissions from office waste and recycling.	Not currently reported. Waste disposal by a third party is managed by the landlord for the whole building. Volume of waste produced has been estimated (see section 3.3.1 of the Energy Management Plan) but insufficient information has been provided by the landlord to determine the associated emissions.

Scope	Category	Activities	Reporting
Scope 3	Category 6 – Business travel	Emissions from business travel including air, private car, nation and international rail and other forms of public transport.	Reported in Energy Management Plan.
Scope 3	Category 7 – Employee commuting	Emissions from commuting travel via car and public transport.	Reported in Energy Management Plan.
Scope 3	Category 8 – Upstream leased assets	Emissions from leased assets such as coffee machines, printers etc.	Not Applicable. Energy from this equipment is already included in Scope 2 emissions.
Scope 3	Category 9 – Downstream transportation and distribution	Emissions from sold products.	Not reported. Arup B.V. does not produce products which require transportation. Arup B.V. primarily delivers services which can involve digital products such as documentation of software however there are no transportation emissions associated with these products.
Scope 3	Category 10 – Processing of sold products	Emissions from processing of sold intermediate products by third parties (e.g., manufacturers) subsequent to sale by the reporting company.	Not reported. Arup B.V. does not process sold products.
Scope 3	Category 11 – Use of sold products	Emissions from the use of goods and services sold by the reporting company in the reporting year.	Not reported. Arup B.V. does not produce physical products.
Scope 3	Category 12 – End-of-life treatment of sold products	Emissions from the waste disposal and treatment of products sold by the reporting company at the end of their life.	Not reported. Arup B.V. does not sell products.
Scope 3	Category 13 – Downstream leased assets	Emissions from the operation of assets that are owned by the reporting company (acting as lessor) and leased to other entities	Not reported. Arup B.V. does not lease assets.
Scope 3	Category 14 - Franchises	Emissions from the operation of franchises not included in scope 1 or scope 2	Not reported. Arup B.V. does not operate franchises.
Scope 3	Category 15 - Investments	Emissions associated with investments. This category is applicable to investors and companies that provide financial services.	Not reported. Arup B.V. is not an investor and does not provide financial services.

Table 4: CO2 Emissions per Category

2.2 Data Sources

The main sources of data used to calculate the CO₂ emissions are:

Table 5: Sources for data collection

Aspect	Data	Source
Total surface facility [m ²]	The office facility is part of a building leased from and managed by the landlord AroundTown. The area occupied by Arup B.V. is based on the rent contract, plus a portion of the shared space.	Landlord, AroundTown
Number of FTEs	Full -time equivalent for direct employment contracts as well as under secondment conditions, both full- and part-time and free-lancers.	Arup HR (Ovaview system)
Scope 1		
Non-Electric Lease Cars [litres or km]	Up to 2019 the fuel consumption is tracked through the lease company records. Starting in 2020, the records state the mileage during the year from the lease company data (verified during exchange of tires from winter to summer tires and vice versa). Quality of data expected to improve due to reduction of lease companies from 6 to 3.	Arup Facilities (Lease companies)
Scope 2		
Facility heating [Gjoules]	Heating is centrally measured and then paid for through the service costs based on square meters used. Arup leases 3040 m ² of office space in a building of 6080m ² (50%) with an additional 0,8% for the communal hallway.	Landlord, AroundTown
Facility electricity [kWh]	Measurement devices are linked to each rented space unit. Electricity meters are located in the hallways, but up to 2021 no records kept.	Building Owner
Electric Lease cars [kWh]	Up to 2019 the fuel consumption is tracked through the lease company refuelling records. Starting in 2020 the records state the mileage during the year from the lease company data (verified during exchange of tires from winter to summer tires and vice versa). Quality of data expected to improve due to reduction of lease companies from 6 to 3.	Lease companies
Scope 3		
Capital good and purchased goods and services	Since 2022 invoices provided by the finance team have been provided for analysis.	Finance
Commuting travel [km] %	As per January 1 st , 2020, commuting distances per transport mode for the employees that have accepted the mobility plan, are recorded in Reisbalans. Commuting distances for employees that have not accepted the mobility plan, are calculated as described in Table 7.	HR (Reisbalans) Calculated
Business air travel [km]	Flight distances are tracked for the categories <700 km, <2500 and >2500 km.	External travel agency
Business travel by private cars [km]	Mileage for business travel for the employees that have accepted the new mobility plan, effective as per January 01, 2019, is recorded through Reisbalans. Mileage for business travel for employees that have not accepted the new mobility plan, effective as per January 1, 2019: declared mileage for business travel.	HR (Reisbalans) HR Finance

Aspect	Data	Source
	The calculation is based on the 'Car fuel and weight unknown' factors in the Emissiefactoren.	
Business travel by public transport [km]	As per January 1 st , 2019 Mileage for national business travel per transport mode for the employees that have accepted the new mobility plan, effective as per January 01, 2019, are recorded through Reisbalans Mileage for national business travel for employees that have not accepted the new mobility plan (21 employees), effective as per January 1, 2019: declared mileage for business travel. Travel destinations are tracked for international business travel by train.	HR (Reisbalans) Finance External travel agency
Paper consumed [kg]	Paper supply is counted and recorded by facilities.	Facilities

2.3 Calculation methods

The calculation methods used for reporting the emissions factors are described in Table 6. For calculation of emissions from purchased (capital) goods and services the calculation method is described in the separate Supply Chain CO2 Emissions Analysis report.

Table 6: Calculation Methods

GHG emission	Quantification method
Facility energy consumption (electricity/heating) [kWh/Gj]	= Total measured energy consumption (Gj) x % Arup floor space x conversion factor. = Total measured electricity consumption to calculate common space use (elevator etc), based on area in use. Metered consumption for each floor added to this. Total amount used. Close to half the use of the total building.
Business air travel [km]	= Total Mileage per category distance (≤ 700 km, > 2500 km, etc.) x conversion factor
Business travel by private cars [km]	= Total (declared) mileage x Average Conversion factor for cars of unknown weight and fuel type.
Business travel by public transport [km]	= Mileage / transport mode (TM) x conversion factor TM
Business travel by lease cars [km]	= Total km reported x Conversion factor per fuel type for km travelled
Commuting [km]	= Total amount of reported commuting km per mode (public transport and private car) x Conversion factor per mode.
Paper [kg]	= Total kgs x conversion factor

2.4 Uncertainties

There are a number of uncertainties associated with the data collection and reporting as described in Table 7.

Table 7: Uncertainties

Aspect	Uncertainty/ influence
Lease car	The data delivered by the lease company will include private usage as well as commuting and business usage.
Electricity Amsterdam office	Consumption is measured for the whole building; Arup consumption is derived from % rented office space. For electricity it is a mixed system. Metered on each floor with a occupied space % applied to the common use (elevator, cooling, air ventilation). Actual consumption is said by the landlord to be annually checked through the service costs. Attempts to verify this were difficult as the energy costs were not separated from the rest.
Business air travel	Included are all flights booked through the designated travel agency. This also includes staff that sit in our office but are part of the Europe Region. Any self-booked flights that are declared through expenses or other means of flights booked are not included. Note that these instances should be anomalies.
Business travel by private cars	There are now two ways to declare travel miles: through Reisbalans and through Finance.
Business travel by public transport	Up to 31 st December 2018, an assumption was made for the distances travelled for business by public transport. This assumption involved large uncertainties. From 2020 onwards Reisbalans also reports on business trips by public transport.
Commuting travel	As per January 1 st , 2020 Number of people not on Reisbalans: Calculation made: 1. Average commuting distance and mode for all Reisbalans users, 2. then applying this average distance and mode to all 21 non-Reisbalans users.