REDACTED

# Arup
# Rapportage Maatregellijst CO2-Prestatieladder 2022

## Globale maat

| | | |
|---|---|---|
| $CO_2$ uitstoot, scope 1 en 2 | | 209 ton |
| | | |
| Omzet | REDACTED | |
| Personeelsleden | 251 FTE | 0,83 ton/FTE |

## Overzicht maatregelen

### Advies

| **Aandacht voor CO2-reductie in projecten NIET verkregen met gunningsvoordeel**<br>Integrale maatregel | | |
|---|---|---|
| Categorie A | Bij minstens 10% van de omzet in ontwerpopdrachten is er aantoonbare aandacht voor CO2-reductie. | Geïmplementeerd op 01/2019 |
| Categorie B | Bij meer dan 50% van de omzet in ontwerpopdrachten is er aantoonbare aandacht voor CO2-reductie. | Niet ingevuld |
| Categorie C | Bij alle ontwerpopdrachten is er aantoonbare aandacht voor CO2-reductie | Niet ingevuld |

| **CO2-gerelateerd onderzoek en innovatie**<br>Integrale maatregel | | |
|---|---|---|
| Categorie A | 2% tot 10% van onderzoek- en innovatiebudget wordt besteed aan onderwerpen die (mede) CO2 kunnen besparen | Niet ingevuld |
| Categorie B | 10% tot 20% van onderzoek- en innovatiebudget wordt besteed aan onderwerpen die (mede) CO2 kunnen besparen | Geïmplementeerd op 01/2019 |
| Categorie C | Meer dan 20% van onderzoek- en innovatiebudget wordt besteed aan onderwerpen die (mede) CO2 kunnen besparen | Geïmplementeerd op 05/2021<br>participated in SBIR circular viaducts RWS |

| **Dialoog m.b.t. CO2 met grote opdrachtgevers**<br>Integrale maatregel | | |
|---|---|---|
| Categorie A | CO2-reductie is vast agendapunt in periodiek overleg met alle grote opdrachtgevers | Geïmplementeerd op 09/2022<br>Vast agendapunt bij Leveranciersoverleg RWS. |
| Categorie B | CO2-reductie is vast agendapunt in periodiek overleg met alle opdrachtgevers | Niet ingevuld |

| **Kennis en houding medewerkers m.b.t. CO2-reductie in projecten**<br>Integrale maatregel | | |
|---|---|---|
| Categorie A | 5% tot 25% van ingenieurs / ontwerpers / projectleiders heeft een cursus gehad waarin aantoonbaar aandacht voor belang, materialiteit en ontwerpmethoden CO2-reductie is besteed. | Geïmplementeerd op 03/2021<br>DUBOCALC Training in house for 12 engeers |
| Categorie B | 25% tot 75% van ingenieurs/ontwerpers/projectleiders heeft cursus gehad waarin aantoonbaar aandacht voor belang, materialiteit en ontwerpmethoden CO2-reductie is besteed | Geïmplementeerd op 01/2022<br>In december 2021/january 2022 18 out of 50 Business unit members completed 8 courses in the series Sustainable development on the Arup online training site Moodle |
| Categorie C | Meer dan 75% van ingenieurs / ontwerpers/ projectleiders heeft cursus gehad waarin aantoonbaar aandacht voor belang, materialiteit en ontwerpmethoden CO2-reductie is besteed | Niet ingevuld |

### ICT-dienstverlening

| **Erkende Maatregelen datacentra**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Het bedrijf heeft de relevante 'Erkende Maatregelen commerciële datacentra' geïmplementeerd. | Geïmplementeerd op 01/2022<br>Alle relevante maatregelen uit Bijlage 10 geimplementeerd met een TVT van minder dan 5 jaar. |

| **Inkoop groene stroom en/of stroom vergroend met GVO's**<br>Duurzame energie | | |
|---|---|---|
| Categorie A | Meer dan 75% van de gebruikte elektriciteit is groene stroom of vergroend met nationale GVO's | Niet ingevuld |
| Categorie B | Meer dan 98% van de gebruikte elektriciteit is groene stroom of vergroend met nationale GVO's | Gepland voor 01/2023<br>Met ingang van nieuw leasecontract voor Naritaweg 118 is de electriciteit groene stroom met nationaal GVO. |

| **Power Usage Effectiveness (PUE) van netwerken, datacenterhardware en telefoniediensten**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie B | De PUE van netwerken, datacenterhardware en telefoniediensten wordt gemonitord en geëvalueerd met het oog op verbetering. | Niet ingevuld |
| Categorie C | Netwerken, datacenterhardware en telefoniediensten zijn ontworpen met een PUE van maximaal 1,3. | Niet ingevuld |

## Kantoren

| **Actief energie-management kantoren**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Bij minimaal 50% van de kantoren doet de organisatie aan actief energiemanagement, ondersteund door een gebouwbeheer-systeem. | Geïmplementeerd op 09/2022<br>Per 1 september 2022 in het Arup deel van het kantoor gecombineerde temperatuur/CO2/hygrometers opgehangen om temperatuur en ventilatie aan te sturen. |
| Categorie B | Bij minimaal 50% van de kantoren doet de organisatie aan actief energiemanagement, ondersteund door een gebouwbeheer-systeem inclusief terugkoppeling van het energieverbruik naar de gebruikers van het gebouw (bijvoorbeeld een paneel in de hal) | Niet ingevuld |
| Categorie C | Bij minimaal 90% tot 100% van de kantoren doet de organisatie aan actief energiemanagement, ondersteund door een gebouwbeheer-systeem inclusief terugkoppeling van het energieverbruik naar de gebruikers van het gebouw (bijvoorbeeld een paneel in de hal) | Niet ingevuld |

| **Afspraken energieprestatie bij huur**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Bij het afsluiten of wijzigen van huurcontracten voor kantoorruimte is verbetering van de energieprestatie van het gebouw onderdeel van de onderhandelingen. | Niet ingevuld |
| Categorie B | Bij alle nieuwe huurcontracten worden afspraken gemaakt over de verbetering van de energieprestatie van het gebouw, bijvoorbeeld een bonus/malusafspraak ten opzichte van de vooraf afgesproken gebouwgebonden verwarmings- en koelenergie. | Niet ingevuld |
| Categorie C | Bij alle nieuwe huurcontracten wordt een huurprijs inclusief energie inclusief gekwantificeerde besparingsdoelstellingen bedongen, bijvoorbeeld in een GreenLease-overeenkomst. | Niet ingevuld |

| **Benchmarking en optimalisatie energieverbruik**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Van minimaal 75% van de kantoren wordt de hoofdmeterdata geregistreerd en jaarlijks gebenchmarkt met gelijksoortige panden (via Milieubarometer, e-nolis of vergelijkbaar). | Niet ingevuld |
| Categorie B | Bij minimaal 75% van de kantoren worden naast de hoofdmeter ook submeters toegepast en analysesoftware gebruikt om verbeteringsmogelijkheden op het spoor te komen. | Niet ingevuld |
| Categorie C | Bij minimaal 75% van de kantoren past de organisatie software toe die automatisch verbeteringen in de installaties opspoort en toepast. | Niet ingevuld |

| **Beschikbaar maken laadpalen elektrische voertuigen**<br>Electrificeren | | |
|---|---|---|
| Categorie A | Minimaal 1 laadpaal per 20 parkeerplaatsen | Niet ingevuld |
| Categorie B | Minimaal 1 laadpaal per 10 parkeerplaatsen | Geïmplementeerd op 01/2022<br>8 laadpalen voor 50 parkeerplaatsen |
| Categorie C | Minimaal 1 laadpaal per 10 parkeerplaatsen + actieve rol bij optimaliseren energiehuishouding kantoor/elektriciteitsnetwerk | Niet ingevuld |

| **Erkende Maatregelen energiebesparing voor kantoren**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Alle Erkende Maatregelen Energiebesparing kantoren zijn doorgevoerd c.q. voorzover in die lijst aangegeven: worden op natuurlijke momenten doorgevoerd | Geïmplementeerd op 01/2019<br>implemented all Infomil measures with payback time less than 5 years. |

| **Gasloze kantoren**<br>Integrale maatregel | | |
|---|---|---|
| Categorie C | Minimaal 10% van alle kantoren is gasloos. | Geïmplementeerd op 01/2022<br>Kantoor heeft stadsverwarming van de AEB |

| **Gebruik duurzame warmte en/of warmtekoude-opslag (WKO)**<br>Toepassen duurzame energie | | |
|---|---|---|
| Categorie A | Voor 10% tot 50% van het gebruikersoppervlak wordt duurzame warmte toegepast voor ruimteverwarming. | Niet ingevuld |
| Categorie B | Voor 50% tot 80% van het gebruikersoppervlak wordt duurzame warmte toegepast voor ruimteverwarming. | Geïmplementeerd op 01/2019 |
| Categorie C | Voor meer dan 80% van het gebruikersoppervlak wordt duurzame warmte toegepast voor ruimteverwarming. | Niet ingevuld |

| **Inkoop groene stroom en/of stroom vergroend met GVO's**<br>Toepassen duurzame energie | | |
|---|---|---|
| Categorie A | Meer dan 75% van de gebruikte elektriciteit is groene stroom of vergroend met nationale GVO's | Niet ingevuld |
| Categorie B | Meer dan 98% van de gebruikte elektriciteit is groene stroom of vergroend met nationale GVO's | Geïmplementeerd op 09/2022<br>Nieuw leasecontract met Groene Stroom met Nationale GVO. |

| **Inkopen efficiënte hardware**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Het bedrijf heeft bij aankoop van computers, laptops, monitors, voedingen, UPS, servers, reproductieapparatuur en printers aantoonbaar gekozen voor producten met het Energy Star label. | Geïmplementeerd op 01/2022<br>Alle computerapparatuur met Energy Star label |

| **Locatiekeuze bij openbaar vervoer**<br>Integrale maatregel | | |
|---|---|---|
| Categorie A | Tenminste 10% gebouwoppervlak is gelegen nabij openbaar vervoer (maximaal 500m) | Niet ingevuld |
| Categorie B | Tenminste 25% gebouwoppervlak is gelegen nabij openbaar vervoer (maximaal 500m) | Niet ingevuld |
| Categorie C | Tenminste 50% gebouwoppervlak is gelegen nabij openbaar vervoer (maximaal 500m) | Geïmplementeerd op 01/2022<br>Bushalte op 100 meter, treinstation op 1200 meter |

| **Optimalisatie klimaatinstallaties**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Bij alle kantoren die de afgelopen 5 jaar in gebruik zijn genomen is de klimaatinstallatie geoptimaliseerd door een professioneel installatiebedrijf. | Niet ingevuld |
| Categorie B | Bij minimaal 75% van alle kantoren wordt de klimaatinstallatie tenminste elke 5 jaar geoptimaliseerd door een professioneel installatiebedrijf. | Niet ingevuld |

| **Opwekking hernieuwbare elektriciteit (eigendom)**<br>Toepassen duurzame energie | | |
|---|---|---|
| Categorie A | Het electriciteitsgebruik wordt voor 5% tot 25% gedekt door eigen opwekking van hernieuwbare elektriciteit (via eigen investering of lease) | Geïmplementeerd op 05/2022<br>298 zonnepanelen geinstalleerd met een gezamenlijk vermogen van 135,59 kwp. |
| Categorie B | Minstens 25% van het electriciteitsgebruik wordt gedekt door eigen opwekking van hernieuwbare elektriciteit (via eigen investering of lease) | Niet ingevuld |
| Categorie C | Minstens 50% van het electriciteitsgebruik wordt gedekt door eigen opwekking van hernieuwbare elektriciteit (via eigen investering of lease) | Niet ingevuld |

| **Verbeteren Energielabel kantoren**<br>Integrale maatregel | | |
|---|---|---|
| Categorie A | Het gemiddeld Energielabel van kantoren is D of E. | Niet ingevuld |
| Categorie B | Het gemiddeld Energielabel van kantoren is C of B. | Niet ingevuld |
| Categorie C | Het gemiddeld Energielabel van kantoren is minstens A. | Geïmplementeerd op 06/2022<br>Energielabel Naritaweg 118 = A |

| **Verwarming met groen gas met NTA 8080 of ISCC certificaat**<br>Duurzame energie | | |
|---|---|---|
| Categorie B | Minstens één kantoor wordt verwarmd met groen gas met NTA 8080 of ISCC certificaat. | Niet ingevuld |
| Categorie C | >50% van het gebruiksoppervlak wordt verwarmd met groen gas met NTA 8080 of ISCC certificaat. | Niet ingevuld |

## Personen-mobiliteit

| **Aanschaf/lease bedrijfsbusjes obv CO2 emissiemeting uit de praktijk**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Gemiddeld over een jaar ligt de CO2-uitstoot van nieuwe bedrijfsbusjes (aanschaf of lease,volgens in de praktijk gemeten gegevens) lager is dan 200 gr/km. | Niet ingevuld |
| Categorie B | Gemiddeld over een jaar ligt de CO2-uitstoot van nieuwe bedrijfsbusjes (aanschaf of lease, volgens in de praktijk gemeten gegevens) lager is dan 180 gr/km. | Niet ingevuld |
| Categorie C | Gemiddeld over een jaar ligt de CO2-uitstoot van nieuwe bedrijfsbusjes (aanschaf of lease, volgens in de praktijk gemeten gegevens) lager is dan 160 gr/km. | Niet ingevuld |

| **Aanschaf/lease personenauto’s obv CO2 emissiemeting uit de praktijk**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Gemiddeld over een jaar is de CO2-uitstoot van nieuwe personenauto's (aanschaf of lease, volgens in de praktijk gemeten gegevens) lager is dan 160 gr/km. | Niet ingevuld |
| Categorie B | Gemiddeld over een jaar ligt de CO2-uitstoot van nieuwe personenauto's (aanschaf of lease, volgens in de praktijk gemeten gegevens) lager is dan 140 gr/km. | Niet ingevuld |
| Categorie C | Gemiddeld over een jaar ligt de CO2-uitstoot van nieuwe personenauto's (aanschaf of lease, volgens in de praktijk gemeten gegevens) lager is dan 120 gr/km. | Geïmplementeerd op 01/2019 |

| **Beschikbaar stellen fiets, e-bike of e-scooter**<br>Integrale maatregel | | |
|---|---|---|
| Categorie A | Wanneer zinvol stelt het bedrijf fietsen, e-bike of e-scooters beschikbaar op project- of kantoorlocatie voor korte ritten. | Niet ingevuld |
| Categorie B | Het bedrijf biedt een regeling voor de vergoeding van aankoop van een fiets of e-bike voor alle werknemers. | Geïmplementeerd op 01/2019 |

| **Controle juiste bandenspanning auto's die beschikbaar gesteld zijn door de organisatie**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Jaarlijkse controle bandenspanning bij meer dan 50% van de auto's die beschikbaar gesteld zijn door de organisatie. | Niet ingevuld |
| Categorie B | Driemaandelijkse controle bandenspanning bij meer dan 50% van de auto's die beschikbaar gesteld zijn door de organisatie. | Niet ingevuld |
| Categorie C | Driemaandelijkse controle bandenspanning bij meer dan 90% van de auto's die beschikbaar gesteld zijn door de organisatie, of organisatie plaatst bandenpomp of organiseert 3-maandelijks een 'band op spanning' actie op alle locaties. | Niet ingevuld |

| **Gebruik energiezuinige banden**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie B | Bij aanschaf van nieuwe banden worden alleen banden aangeschaft met het label A op het onderdeel brandstofverbruik van het Europees bandenlabel. | Niet ingevuld |
| Categorie C | Alle banden die binnen het bedrijf gebruikt worden hebben het label A op het onderdeel brandstofverbruik van het Europees bandenlabel. | Geïmplementeerd op 01/2019 |

| **Gebruik van hernieuwbare brandstof als vervanging van fosssiele brandstof**<br>Duurzame energie | | |
|---|---|---|
| Categorie B | 10% tot 20% van de brandstof die getankt wordt is aantoonbaar hernieuwbare brandstof. | Niet ingevuld |
| Categorie C | Meer dan 20% van de brandstof die getankt wordt is aantoonbaar hernieuwbare brandstof. | Niet ingevuld |

| **Nieuwe medewerkers**<br>Integrale maatregel | | |
|---|---|---|
| Categorie B | Nieuwe medewerkers krijgen de eerste drie maanden standaard gratis OV-gebruik aangeboden. | Niet ingevuld |

| **Parkeerbeleid**<br>Integrale maatregel | | |
|---|---|---|
| Categorie B | De organisatie biedt alleen (gratis) parkeerruimte aan medewerkers die: - verder dan 10 km van het werk wonen en niet met OV kunnen komen. - uit hoofde van hun functie een auto ter beschikking moeten hebben. | Geïmplementeerd op 01/2022 |
| Categorie C | De organisatie biedt alleen (gratis) parkeerruimte aan medewerkers die: - uit hoofde van hun functie een auto ter beschikking moeten hebben. | Niet ingevuld |

| **Snelheidsbegrenzers op busjes**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie B | Het bedrijf zet snelheidsbegrenzers in op alle nieuwe busjes, ook die waarvoor dat niet reeds verplicht is. | Niet ingevuld |
| Categorie C | Het bedrijf zet snelheidsbegrenzers in op alle nieuwe en bestaande busjes, ook die waarvoor dat niet reeds verplicht is. | Niet ingevuld |

| **Stimuleren carpoolen en gebruik deelauto's**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Bedrijf stimuleert actief carpoolen tussen werknemers en kan dit aantonen. | Niet ingevuld |
| Categorie B | Bedrijf stelt deelauto's beschikbaar voor gezamenlijk vervoer naar kantoor- of projectlocatie. | Niet ingevuld |
| Categorie C | Alle deelauto's rijden op hernieuwbare brandstoffen, aardgas of zijn zero CO2-emissie. | Niet ingevuld |

| **Stimuleren treingebruik voor lange afstanden**<br>Integrale maatregel | | |
|---|---|---|
| Categorie A | De organisatie verplicht het gebruik van de trein voor afstanden onder de 500 km; indien reistijd deur tot deur met trein <150% reistijd vliegreis is. | Geïmplementeerd op 04/2022<br>London, Parijs, Brussel, Dusseldorf per trein |
| Categorie B | De organisatie verplicht het gebruik van de trein voor afstanden onder de 700 km; indien reistijd deur tot deur met trein <150% reistijd vliegreis is. | Niet ingevuld |

| **Stimuleren zuinig rijden: Het Nieuwe Rijden**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Toolbox zuinig rijden ter beschikking stellen aan alle bestuurders | Niet ingevuld |
| Categorie B | Elke chauffeur van een busje heeft (online of praktijk) cursus Het Nieuwe Rijden gevolgd | Niet ingevuld |
| Categorie C | Minstens 90% van de chauffeurs (auto & busje) heeft (online of praktijk) cursus het Nieuwe Rijden gevolgd en krijgt elke 5 jaar opfriscursus. | Niet ingevuld |

| **Stimuleren zuinig rijden: Monitoring**<br>Activiteit efficiënter uitvoeren | | |
|---|---|---|
| Categorie A | Monitoring brandstofgebruik en 3-maandelijkse terugkoppeling naar bestuurders. | Niet ingevuld |
| Categorie B | Black-boxsysteem met directe terugkoppeling naar bestuurders. | Niet ingevuld |
| Categorie C | Black-boxsysteem in combinatie met een financiele prikkel om zuinig rijgedrag te belonen. | Niet ingevuld |

| **Terugdringen autogebruik**<br>Activiteit beperken | | |
|---|---|---|
| Categorie A | Mobiliteitskaart beschikbaar stellen voor personeel met een leaseauto, gericht op het beperken van het aantal autokilometers. | Niet ingevuld |
| Categorie B | Invoering van een persoonlijk mobiliteitsbudget voor al het personeel met een leaseauto gericht op het terugdringen van het aantal leaseauto's en/of het beperken van het aantal autokilometers. | Niet ingevuld |
| Categorie C | Invoering van een persoonlijk mobiliteitsbudget voor al het personeel gericht op het terugdringen van het aantal autokilometers. | Geïmplementeerd op 01/2019<br>Aantal lease auto's teruggebracht naar 12 in 2021 en verdere daling naar 6 in 2024 |

| **Terugdringen personenmobiliteit door thuiswerken en teleconferencing**<br>Activiteit beperken | | |
|---|---|---|
| Categorie A | Gemiddeld aantal vervoersbewegingen (woon-werkverkeer, zakelijke reizen) per medewerker met kantoorfunctie is aantoonbaar met 10% gereduceerd tov pre-corona tijd (2019) | Niet ingevuld |
| Categorie B | Gemiddeld aantal vervoersbewegingen (woon-werkverkeer, zakelijke reizen) per medewerker met kantoorfunctie is aantoonbaar met 20% gereduceerd tov pre-corona tijd (2019) | Geïmplementeerd op 10/2020<br>home working is the norm now until office reopens. After that we expect 20% homeworking. |
| Categorie C | Gemiddeld aantal vervoersbewegingen (woon-werkverkeer, zakelijke reizen) per medewerker met kantoorfunctie is aantoonbaar met 40% gereduceerd tov pre-corona tijd (2019) | Geïmplementeerd op 04/2022<br>Woon-werk verkeer 2019: 1.810.059 km in 2021: 173.026 km. Arup Unbound policy per 1 april van kracht: thuiswerken minstens een dag in de week. |

| **Wedstrijd personenmobiliteit**<br>Integrale maatregel | | |
|---|---|---|
| Categorie B | Bedrijf organiseert tenminste jaarlijks een bewustwordingscampagne om zuinig rijden te bevorderen. | Niet ingevuld |

| **Zero CO2-emissie voertuigen**<br>Elektrificeren | | |
|---|---|---|
| Categorie A | 5% van wagenpark (personen- en bedrijfswagens in eigendom of lease) is zero CO2-emissie. | Niet ingevuld |
| Categorie B | 10% van wagenpark (personen- en bedrijfswagens in eigendom of lease) is zero CO2-emissie. | Niet ingevuld |
| Categorie C | 15% van wagenpark (personen- en bedrijfswagens in eigendom of lease) is zero CO2-emissie. | Geïmplementeerd op 01/2022<br>Alle lease auto's electrisch |

## Niet geselecteerde activiteiten

De volgende activiteiten zijn niet geselecteerd: Onderaannemers en leveranciers, Materiaalgebruik, Waterbouw schepen, Materieel, Logistiek & transport, Bouwplaats, Materiaalgebruik / Scope 3, Afval, Bedrijfshallen en -terreinen, Aanbesteden, Organisatie algemeen, Bedrijfsprocessen, Gebruik van materialen die CO2 opnemen, (INACTIEF) Vermeden emissies bij derden, Groenonderhoud.

ARUP

Arup bv

# CO2 Performance Ladder

## Management Review 2022

Reference:

Issue | 12 July 2022



Job number 074764-56

**Arup B.V.**
Beta Building Naritaweg 118
1043 CA
Amsterdam
Netherlands
arup.com

ARUP

# Document Verification

| | |
|---|---|
| **Project title** | CO2 Performance Ladder |
| **Document title** | Management Review 2022 |
| **Job number** | 074764-56 |
| **Document ref** | Memo Directiebeoordeling CO2 Prestatieladder_2022_DRAFT |
| **File reference** | Memo Directiebeoordeling CO2 Prestatieladder_2022 |

| **Revision** | **Date** | **Filename** | Memo Directiebeoordeling CO2 Prestatieladder_2022_DRAFT | | |
|---|---|---|---|---|---|
| Draft | 31 March 2022 | **Description** | Updated to reflect the new year. | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Paul van Horn | Tudor Salusbury |
| | | **Signature** | MTro | PvH | |
| Issue | 12 May 2022 | **Filename** | Memo Directiebeoordeling CO2 Prestatieladder_2022_DRAFT | | |
| | | **Description** | Updated to reflect the new year. | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Paul van Horn | Tudor Salusbury |
| | | **Signature** | MTro | PvH |  |
| Issue | | **Filename** | Memo Directiebeoordeling CO2 Prestatieladder_2022_ISSUE | | |
| | | **Description** | | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | | | |
| | | **Signature** | | | |

Issue Document Verification with Document ☑

Content

## 1. Introduction

As part of the CO2-Performance Ladder (CO2-PL) the board of the organization annually reviews the implementation of the $CO_2$-performance ladder. This document is an overview of our status and progress to inform the management team. It records decisions made to proceed efficiently. The following chapters are an overview of the status of progress, a review of our CO2-portfolio, progress on goals and measures, proposed action and decisions made in the management meeting.

All figures used in this report originate from the source file Environmentaldata 20220413 v7.2. This file contains all historical data and calculations. The file was audited internally on 7 March 2022 and locked after close out. The date and version number reflect the file after closing out the audit remarks. The remarks of the internal audit are included as an appendix.

## 2. Status on actions, mitigation measures and audits

### 2.1 Actions

See Energy Management Plan 2021 for actions.

| Action | Status |
|---|---|
| 1. Full electrification of the lease vehicles and reduction in lease vehicles | see report vehicles |
| 2. Switch Amsterdam office to 100% green energy | see memo |
| 3. Findings from external audit 2021 are closed out | done |
| 4. Validation of historic energy use data | done |
| 5. Findings from internal audit are closed out | done |

### 2.2 Mitigation measures

All required actions are set in motion, completion foreseen within the coming 3 months. Policies are in place to provide a clear outline.

### 2.3 External audit

External audit by Bureau Veritas was planned for 5 April 2022. The following actions have been raised:

| Action | Status |
|---|---|
| 1. Check emission factors for electric lease cars, repair findings | done |
| 2. Implement scope changes regarding lease cars | done |
| 3. Communicate externally at least twice a year | in progress |
| 4. Also audit appendix reports derived from data | done |
| 5. Prepare new ketenanalysis | done |

### 2.4 Internal audit

The internal audit of documents was done on 7 March 2022. All audit findings were closed out. The audit reports are included for reference.

## 3. Changes relevant to CO2-ladder

The main changes relevant to CO2-performance ladder system comparing to 2020 and the previous years are:

1. Reporting shifted to calendar year to improve the quality of data;
2. The Energy management plan includes a forecast until 2030;
3. Reporting includes reference to the Arup Global Net Zero Emissions plan and effect of the measures on the GHG Inventory and Energy Management Plan;
4. Groningen office was closed as per 31-12-2021;
5. Action to rectify change of electricity supplier has been set in motion for Amsterdam office. Closing of Groningen office has made this superfluous for the Groningen location.
6. Business travel was moved to scope 3 by SKAO.
7. Distinction is made between electric- and non-electric lease cars.

For more information, see Energy Management Plan 2021, updated in May 2022.

## 4. Review CO2-portfolio

### 4.1 Communication

An important part of the CO2-ladder is the way we communicate. The communication plan was updated in March 2022.

Current ways of communication: Arup website, Sustainability report, SKAO website, Group meetings.

- Updates on TV screens were halted because the office was closed throughout 2020 and 2021.
- Website information has last been updated in June 2021, this will be updated in June 2022.
- SKAO website has been updated in May 2021 with a new CO2 portfolio 2021 plan. A new update is planned for May 2022 with the new CO2 portfolio 2022 plan.
- Sustainability report 2021 is under preparation and is expected to be published in May 2022.
- Participation in the RWS SBIR Circular Viaducts has been published on LinkedIn and on the website of Arup and Heijmans.

### 4.2 Energy & Emission performance

The years 2020 and 2021 were exceptional years in terms of carbon reduction. We achieved all our goals due to extensive working from home and complete lack of air travel from March 2020 onwards.

For 2021 a slow return to the regular business cycle was expected starting in the summer of 2021, but a new lockdown was imposed in October. To get a full picture refer to the Energy management plan 2021-2030. A summary of carbon emissions per FTE per year below.

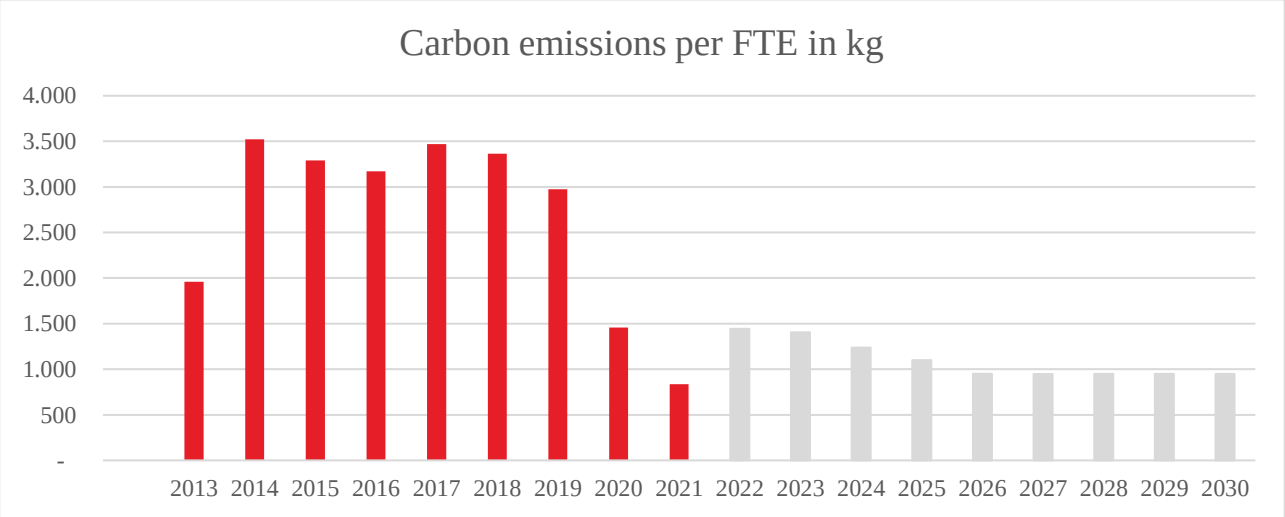



**Figure 1 Total carbon emissions per FTE 2013-2030**

[source Analysis 2021 tab Environmentaldata 20220413 v7.2]

At this moment the reference year for carbon emissions is 2018 and any progress will be measured against those figures. Leaving out 2020 and 2021 as anomalies, the next full regular year of measuring will be 2022. The first three months of 2022 were also influenced by restricted access to the office, as part of the Arup global guidelines. The carbon reduction ambitions of the Arup ER

Net zero emissions plan and the local CO2 Performance ladder have been incorporated into these targets.

| Scope | Source of emission | $CO_2$-emission [kg $CO_2$/FTE]*** | Reduction Target | | |
|---|---|---|---|---|---|
| | | 2018 | 2022 targets relative to 2018 | | 2022 actual |
| **Scope 1** | Lease cars (non-electric, business travel) | 292 | 50% | 117 | 3 |
| **Scope 2** | Electricity | 110 | Equal | 81* | 446 |
| | Heating | 433 | Equal | 489 | 142 |
| **Scope 3** | Commuting | 1 099 | 80% | 59** | 39 |
| | Business travel: private cars | 153 | Equal | 158 | 56 |
| | Air travel | 1 291 | 20% | 1055 | 68 |
| | Business travel: public transport | 14 | 70% | 4 | 0,6 |
| **Total** | | | | | |
| **Scope 1,2 en 3** | | 3 364 | 22 % | 2 661 | 835 |
| | * Assumes green power for Amsterdam office, if not the total for will be 781 tons per year per FTE.<br>** Figures look distorted. Need to improve measurements of commuting.<br>*** Targets per FTE differ slightly from overall targets due to changing number of FTE. | | | | |

**Figure 2 CO2 Emission Reduction Ambition**

For more detailed information on our CO2 emission performance see the CO2-portfolio_GHG Inventory_2022.

The report (CO2-portfolio_GHG Inventory_2022) outlines the CO2 emission performance boundaries, the method, assumptions and data sources used for the calculation of our CO2 footprint, as well as the uncertainties included in the calculation. Moreover, it gives a detailed overview of our CO2 performance in 2021.

### 4.3 Comparison with competitors

The Memo Directiebeoordeling 2019 showed a lower carbon emission than our competitors in 2017. Due to the exceptional circumstances this comparison can't be made for 2020 and 2021. We will again publish a comparison for the year 2022.

### 4.4 Measures list

The SKAO has a list of mitigation measures that can be implemented, with different ambition levels. For our offices and mobility, we are at B level Vooruitstrevend and for our project work we are working at A level Standaard, see CO2-PL Measures List 2021. Relevant targets in this list were

incorporated into the Energymanagementplan. The SKAO report is added as an appendix for reference.

### 4.5 Initiatives

Active participation to chain initiatives related to CO2 reduction is required. Our participation is reported in the CO2-portfolio_Participationplan_2022.

Currently we are involved in the following sector initiatives:

- Duurzaam GWW
- Madaster
- Circulair Economy
- Leeromgeving 'Circulair viaducts & Bridges'
- SBIR Circulaire viaducten (converted into Buyer Group Pianoo)
- Green business club Sloterdijken
- Bouwcampus Materialen met toekomst: Hout in de GWW
- RWS Roadmap naar klimaatneutrale en circulaire kunstwerken in 2030.

## 5. Progress on implementation energy management plan

The focus of the current energy management plan is on our air travel emissions and our commuting emissions. An important action is the implementation of the 2019 mobility plan, which has the goal to set actions and make changes in the way we travel that are in line with our target in the energy management plan.

The current progress is:

- The effects of the Mobility plan introduced in January 2019 have been remarkable, in part also because of the 2020 and 2021 COVID19 crisis. Commuting is at an all-time low, as is airtravel. Overall emissions in 2020 were 63% lower than in 2018.
- The policy regarding short distance business air travel emission is included in the new mobility plan with a steering mechanism for controlling this. Destinations in Belgium, Germany, United Kingdom and France are preferably traveled by train (first class allowed).
- More accurate measurement of commuter emission is developed as part of the new mobility plan (Reisbalans). The figures for 2020 and 2021 provide good data, but the years 2020 and 2021 are not typical years.

| GHG inventory (kg CO2) | 2018=100% | | 2021= 16% |
|---|---|---|---|
| | 2018 | 2021 | 2021 |
| Scope 1 | | | -99% |
| Lease cars (non-electric)* | 82 080 | 806 | -99% |
| Scope 2 | 554 201 | 102 802 | -81% |
| Electricity [1] | 30 874 | 117 982 | +99% |
| Heating | 113 728 | 25 462 | -78% |
| Lease cars (electric) | n/a | 13 448 | N/a |
| Scope 3 | 308 863 | 41 378 | -86% |
| Commuting private car [2] | 308 863 | 9 723 | -97% |
| Commuting public transport | - | 152 | |
| Business travel private car* | 42 966 | 14 203 | -67% |
| Business travel public transport* | 3 984 | 145 | -96% |
| Business travel airplane* | 362 649 | 17 156 | -95% |
| Paper consumption | - | - | |
| Total | 945 144 | 146 922 | -84% |
| * Business travel was moved to scope 3 in 2021 | | | |

**Figure 3 Carbon emissions kg**

[Source: Environmentaldata 20220413 v7.2]

[1] Note: electricity up in 2020 due to shift in energy supplier, from green to grey. Objective is to go back to green energy, saving around 110 tons yearly. The figures for 2020 were lower than 110 tons due to the first 6 months of green electricity.

[2] Note: commuting in 2018 was not split up into private car and public transport. 2020 was an anomaly due to COVID. Further investigation of these figures needed.

# 6. Progress on reduction goals

## 6.1 Reduction goals

Effective from September 2020 Arup has set global carbon reduction goals as part of the Net Zero Carbon Strategy. As part of aligning these goals with the CO2 performance ladder goals we will tackle these as joint efforts. There is some alignment required as to the exact definition of the various scope elements. These will be clarified in the course of 2022.

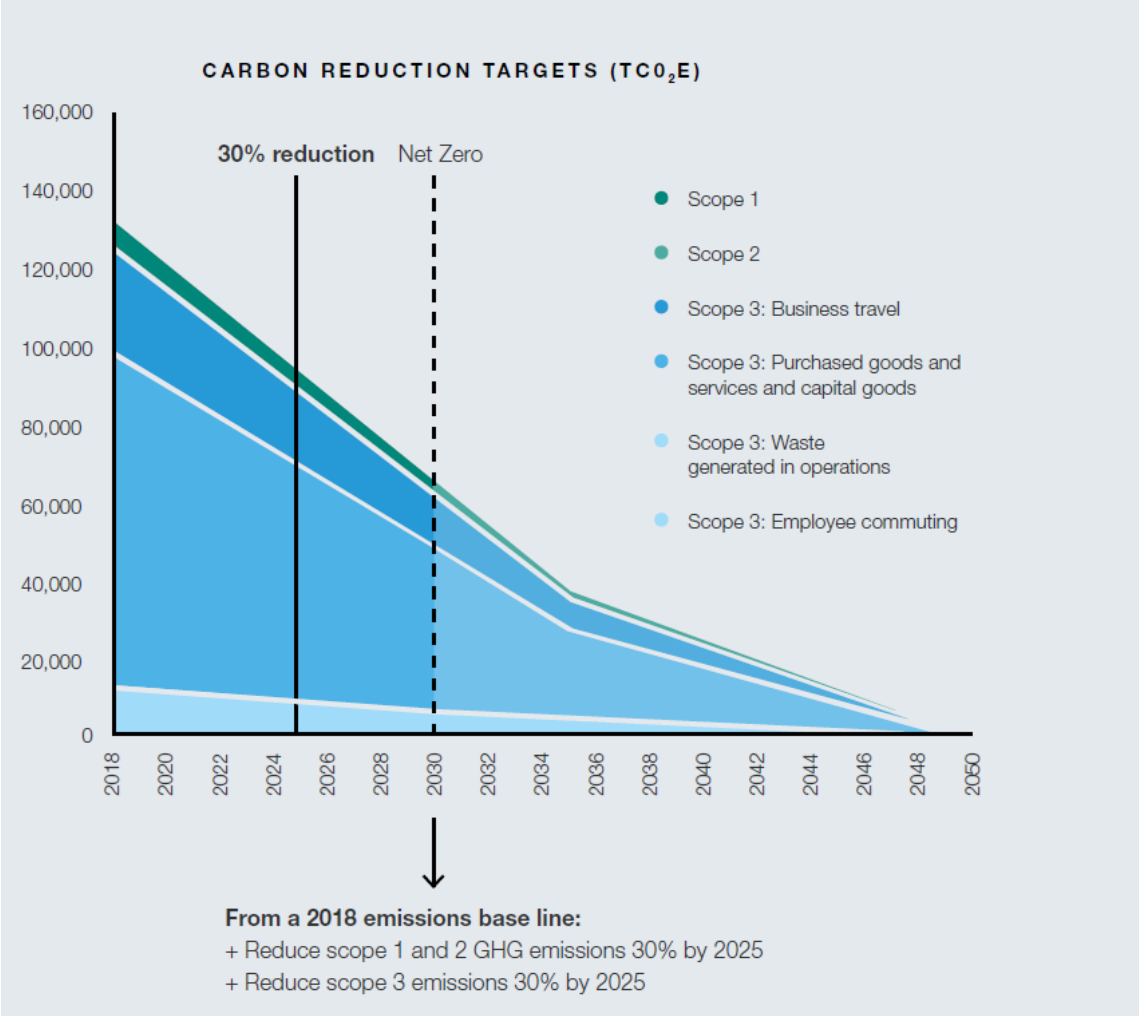



**Figure 4 Net Zero Carbon Strategy goals Arup**

| GHG inventory | | | | 2018=100 | |
|---|---|---|---|---|---|
| Scope 1 | 2018 | 2021 | 2022 (forecast)** | 2021 | 2022 (forecast)** |
| Lease cars* | 82 080 | 806 | 9 031 | -97% | -89% |
| Scope 2 | 554 201 | 102 802 | 187 270 | -81% | -66% |
| Electricity | 30 874 | 92 366 | 100 826 | 151% | 227% |
| Heating | 113 728 | 115 272 | 86 444 | -78% | 180% |
| Lease cars (electric) | n/a | 13 448 | 14 793 | | +2% |
| Business travel private car* | 42 966 | Moved to scope 3 | Moved to scope 3 | -67% | |
| Business travel public transport* | 3 984 | Moved to scope 3 | Moved to scope 3 | -302% | |
| Business travel airplane* | 362 649 | Moved to scope 3 | Moved to scope 3 | -95% | |
| Scope 3 | 308 863 | 41 378 | 339 421 | -87% | -39% |
| Commuting private car | 308 863 | 9 723 | 22 850 | -97% | -93% |
| Commuting public transport | - | 152 | 2 609 | | -99% |
| Business travel private car* | - | 14 203 | 117 181 | -67% | -86% |
| Business travel public transport* | - | 145 | 1 621 | -302% | -99% |
| Business travel airplane* | - | 17 156 | 181 325 | -95% | -50% |
| Paper consumption | - | - | - | - | - |
| Waste generated | | | Landlord serviced | | |
| Purchased goods and services | - | - | - | - | - |
| Total | 945 144 | 146 992 | 535 723 | -84% | -43% |
| * Business travel is moved to scope 3 in 2021 | | | | | |

**Figure 5 GHG Inventory**

** We expect an increase in travel and office use for 2022, now that the covid restrictions have eased up and more is allowed by the regulations. Causing an increase in all scopes.

## 6.2 Previous results

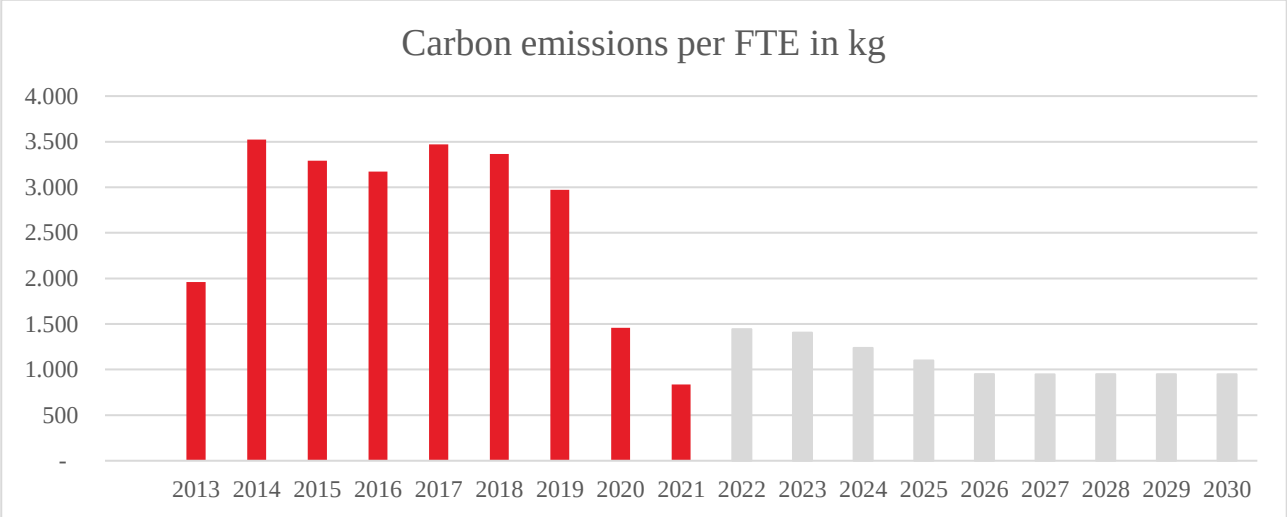



**Figure 6 Total carbon emissions per FTE 2013-2030**

[source Analysis 2021 tab Environmentaldata 20220413 v7.2]

The results for 2013-2021 show a decline in carbon emissions with the lowest emissions in 2021. The year 2022 is projected to show a similar trend although lifting of COVID restriction expected in March 2022 will probably lead to travel increases. The years beyond 2021 are forecast based on existing lease contracts and realistic reduction targets.

## 6.3 Likelihood of success

Carbon reduction achieved in 2021 has shown the viability of reducing carbon emissions whilst maintaining a healthy company. Although the present way of working can't be sustained without adverse effects for a long time, remote working and flexible working hours are now being investigated as an option.

# 7. New proposals

The following actions are proposed to comply with the requirements of the CO2-prestatieladder and to achieve the Arup wide carbon reduction goals.

1. Go back to green electricity through our landlord AroundTown. Main energy can supply Dutch windpower for an extra of 2,50 €/MWh. Our current electricity use is estimated at 275 MWh yearly. This will cost us around € 750 yearly. Our landlord made the condition that all tenants should be switching to green electricity at the same time. A memo outlining the fruitless efforts so far has been made for the MT.
2. Resume creation of yearly Sustainable Development report, showcasing our best national and international projects for internal and external use.

## 8. Recommendations

Reporting on CO2 performance ladder targets and Arup Net Zero Carbon targets is made time-consuming when external parties don't deliver data when requested. To improve this we propose:

- Include a clause in the lease contract stating that the landlord is obligated to provide electricity and heating numbers twice a year: on 31st of July and 31st of January.
- Include a clause in all lease car contracts that data on the usage of the cars is provided twice a year: on 31st of July and 31st of January.

## 9. Decisions

This memo will be shared after the management meeting on 25 May 2022. And will be agreed on in the management meeting 21 June 2022.

The decisions below have been made and will be implemented.

### 9.1 Management plan

Feedback from MT.

### 9.2 Reduction targets, measures and initiatives

1. Reduction target for 2021 and 2022: reduce air travel by 30%
2. Reduction target for 2021 and 2022: reduce commuting with 20% by partially continuing home working one day a week.
3. Reduce carbon from electricity in Amsterdam to zero before end of June by changing supplier. First year additional service cost € 2000, after that € 1000 (based on all tenants accepting green electricity).
4. Involve Business Units in developing participation plans, list out possibilities and provide options to BU leaders.

### 9.3 Improvements

The following improvements have been implemented;

1. Develop PowerBI dashboard sustainability into a useable tool for monitoring sustainability; SD manager

## 10. Conclusions

Due to the exceptional COVID19 conditions we are ahead of reaching our goals, but that has only partially been through our own actions. We need to use the time given to prepare for further reductions.

The CO2-performance ladder functions as intended, driving carbon emssions down by focus on the four aspects.

### 10.1 Efficiency within organization

Data collection and monitoring to be improved. First step was to improve the data collection sheets.

Reisbalans needs to improve reporting and clear lines of communication with Reisbalans have to be established.

### 10.2 Probability of reaching reduction targets

The probability of reaching the reduction targets in the present circumstances is high. In the long run it will depend on the monitoring and reporting of data to all concerned. Air travel is the main focus, since commuting is actively promoted by public transport.

2022

ARUP Arup BV

# CO2 Performance ladder

## GHG inventory 2021

Reference: CO2-portfolio_GHG Inventory_2022

Final | 12 July 2022



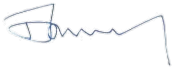
Job number 074764-56

**Arup B.V.**
Beta Building Naritaweg 118
1043 CA
Amsterdam
Netherlands
arup.com

ARUP

# Document Verification

| | |
|---|---|
| **Project title** | CO2 Performance ladder |
| **Document title** | GHG inventory 2021 |
| **Job number** | 074764-56 |
| **Document ref** | CO2-portfolio_GHG Inventory |
| **File reference** | CO2-portfolio_GHG Inventory_2022 |

| **Revision** | **Date** | **Filename** | CO2-portfolio_GHG Inventory_2022 | | |
|---|---|---|---|---|---|
| Draft | 21 March 2022 | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Paul van Horn | Tudor Salusbury |
| | | **Signature** | MTro |  | |
| Draft | 05 May 2022 | **Filename** | CO2-portfolio_GHG Inventory_2022 | | |
| | | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Paul van Horn | Tudor Salusbury |
| | | **Signature** | MTro |  | |
| Final | 12 July 2022 | **Filename** | CO2-portfolio_GHG Inventory_2022 | | |
| | | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Paul van Horn | Tudor Salusbury |
| | | **Signature** | MTro |  |  |

Issue Document Verification with Document ✓

## Contents

# 1. Introduction

At Arup we strongly feel the responsibility to contribute to the transition towards a more sustainable future. We have adopted the $CO_2$ -performance ladder as a tool to map and reduce our $CO_2$-emissions. Measuring and reporting of the carbon footprint of our organization 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 $CO_2$ Performance ladder certification. The reporting period for this report is January 2021 until December 2021.

The targets in the new Energy Management Plan 2020-2030 are set for the calendar year 2020 to 2030, effectively changing the reporting period from Arup Financial year to standard calendar year. In this way the data collection is more aligned with standard practice of reporting in energy and mobility. The reference period will remain the year 2018. This is also the reference year for the Arup internal zero carbon strategy [1].

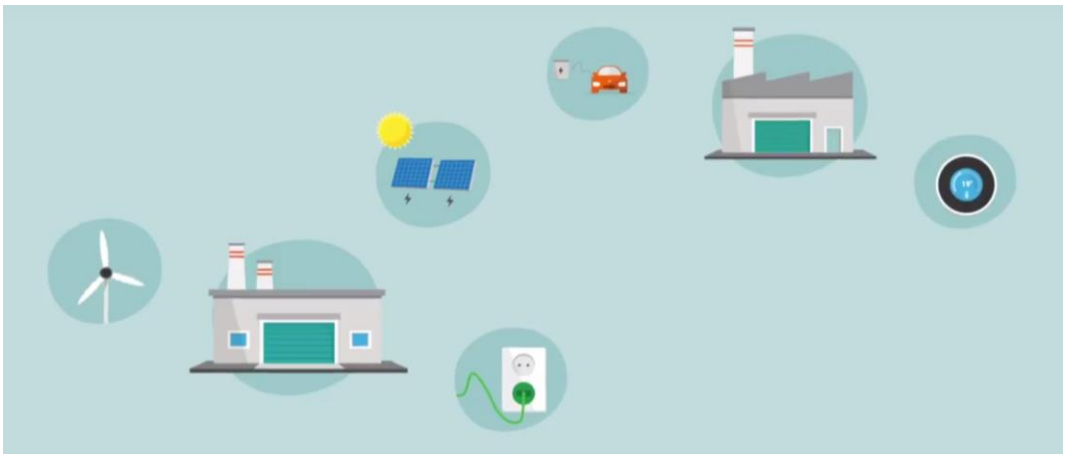


**Figure 1 Identification of the emissions of our organization and chain (Source: SKAO)**

## 1.1 Organization

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 three business units per 1st of April 2022:

- Sustainable Industries
- Sustainable Properties
- Sustainable Cities & Transport

### 1.1.1 Organizational boundaries

The CO2-ladder certification will be applicable to the firm Arup B.V. in the Netherlands. Arup B.V. has a permanent facility in Amsterdam and a facility in Groningen. 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 B.V.

Arup B.V. produced in 2021 a total amount of CO2 emissions below 500 tons a year, and therefore classifies as a small company. The size classification determines the specific set of CO2-ladder certification requirements.

| Arup B.V. | 2021 emissions in kg |
|---|---|
| Total Scope 1 | 806 |
| Total Scope 2 | 167 038 |
| Total Scope 3 | 41 378 |
| Grand total | 209 223 kg |

### 1.1.2 Operational boundaries

Arup B.V. is responsible for the carbon emission related to all activities and projects that fall under its direct **operational control.** Arup utilizes two facilities:

| Facility location | Consolidation | Operational control |
|---|---|---|
| Amsterdam<br><br>(permanent facility) | Equity share | Arup B.V. rents 2 floors.<br><br>Energy and central heating suppliers not chosen by Arup B.V.<br><br>Energy/ climate is controlled centrally for the whole building, not falling under control of Arup B.V.<br><br>Furniture, lighting and all operational devices such as computers and printers are property of Arup B.V. |
| Groningen<br><br>(temporary site office for P500, closed on 31-12-2021) | Equity share | Energy and gas suppliers, furniture, lighting devices are not chosen by Arup B.V.<br><br>Office specific devices such as computers and printers are a property of Arup B.V. |

## 1.2 Conformity to ISO-14064-1

| § 9.3 GHG report content shall include the following: | |
|---|---|
| a) description of the reporting organization; | 1.1 |
| b) person or entity responsible for the report; | 1.1 |
| c) reporting period covered; | 1 |
| d) documentation of organizational boundaries ; | CO2-portfolio H1 |
| e) documentation of reporting boundaries, including criteria determined by the organization to define significant emissions; | CO2-portfolio H1 |
| f) direct GHG emissions, quantified separately for CO2, CH4, N2O, NF3, SF6 and other appropriate GHG groups (HFCs, PFCs, etc.) in tonnes of CO2e; | Only CO2, other not relevant<br>§ 3.2 |
| g) a description of how biogenic CO2 emissions and removals are treated in the GHG inventory and the relevant biogenic CO2 emissions and removals quantified separately in tonnes of CO2e; | n.a. |
| h) if quantified, direct GHG removals, in tonnes of CO2e; | n.a. |
| i) explanation of the exclusion of any significant GHG sources or sinks from the quantification; | n.a. |
| j) quantified indirect GHG emissions separated by category in tonnes of CO2e; | § 3.2 |
| k) the historical base year selected and the base-year GHG inventory; | 2018, base year data included in data sheets and tables. |
| 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; | n.a. |
| m) reference to, or description of, quantification approaches, including reasons for their selection; | 2.2/2.3 |
| n) explanation of any change to quantification approaches previously used; | n.a. |
| o) reference to, or documentation of, GHG emission or removal factors used; | 2.3 |
| p) description of the impact of uncertainties on the accuracy of the GHG emissions and removals data per category; | 2.4 |
| q) uncertainty assessment description and results; | 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. Internal audit of inventory results done. Locations with anomalous numbers were identified. Sanity checks with reference data done. For the next year we will do meter readings ourselfs at set times to improve the data. |
| 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. | n.a. only CO2 taken into account https://co2emissiefactoren.nl/lijst-emissiefactoren/ as registered on 28-01-2020 (Well to Wheel data). |
| | |
| **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 |
| b) if appropriate, description of GHG reduction initiatives and how they contribute to GHG emission or removal differences, including | Described in CO2 prestatieladder Participation plan 2022. |

| | |
|---|---|
| those occurring outside organizational boundaries, quantified in tonnes of CO2e; | |
| c) if appropriate, purchased or developed GHG emission reductions and removal enhancements from GHG emission reduction and removal enhancement projects, quantified in tonnes of CO2e; | n.a. |
| d) as appropriate, description of applicable GHG programme requirements; | n.a. |
| e) GHG emissions or removals disaggregated by the facility; | All scope 3 other than commuting and paper. Business travel with public transportation is considered part of scope 3. |
| f) total quantified indirect GHG emissions; | n.a. |
| g) description and presentation of additional indicators, such as efficiency or GHG emission intensity (emissions per unit of production) ratios; | Two measures proposed: kg CO2e/FTE and kg CO2e/€ turnover. |
| h) assessment of performance against appropriate internal and/or external benchmarks; | Energymanagementplan 2022 |
| i) description of GHG information management and monitoring procedures; | |
| j) GHG emissions and removals from the previous reporting period; | 3.1 |
| 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. | 3.1 |
| **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. | n.a. |
| The organization may report the results of contractual instruments for GHG attributes (market based approach), expressed in GHG emissions (tCO2e) as well as in the unit of transfer (e.g. kWh). The organization may report the amount purchased compared to the amount consumed. | n.a. |
| 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; | n.a. |
| — may add offsets or other types of carbon credits together if they originate from the same GHG scheme and are of appropriate vintage; | n.a. |
| — shall not add or subtract offsets or other types of carbon credits from the organization’s inventory of its direct or indirect emissions. | n.a. |
| The organization may report GHGs stored in GHG reservoirs. | n.a. |

## 2. Method, Scope & Assumptions

### 2.1 $CO_2$-emissions scopes

The inventory reports its $CO_2$-emissions for direct and indirect emissions:

Direct emissions

Scope 1

Only non-electric lease cars

Indirect emissions

Scope 2

Facility energy and heating consumption

Electric lease cars

Scope 3 (upstream)

Commuting Paper use Business Travel (air, private car and public transportation)

## 2.2 Data Sources

The main sources of data used to calculate the $CO_2$ emissions are:

| Aspect | Data | Source |
|---|---|---|
| Total surface facility [m2] | The office facility is part of a building managed by an external party. The surface occupied by Arup B.V. is based on the rent contract, plus a portion of the shared space. | Building owner |
| Number of FTEs | Full -time equivalent for direct employment contracts as well as under secondment conditions, both full- and part-time and free-lancers. | Ovaview system, Centre Financial Report on number of FTE. |
| Scope 1 | | |
| Non-Electric Lease Cars [L] | Up to 2019 the fuel consumption is tracked through the lease company refuelling records. Starting 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 2 | | |
| Facility heating [Gjoules] | Heating is centrally measured and then paid for through the service costs based on square meters used. In 2020 Arup used 3000 m2 in a building of 6000m2 (50%) with an additional 0,8% for the hallway. | Building Owner |
| Facility electricity [kWh] | Measurement devices are linked to each rented space unit. Electricity meters in the hallways, but up to 2021 no records kept by ourselves only by the landlord. In 2022 a request was made to the landlord to have access as well for meter checks at set times. | Building Owner |
| Electric Lease cars [kWh] | Up to 2019 the fuel consumption is tracked through the lease company refuelling records. Starting 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 |

| | | |
|---|---|---|
| Upstream Scope 3 | | |
| Commuting travel<br>[km]<br>% | As per January 1st, 2020<br>Commuting distances per transport mode for the employees that have accepted the new mobility plan, effective as per January 01, 2019, are recorded by using GPS-tracking or manual registration. | Reisbalans |
| | Commuting distances for employees (21) that have not accepted the new mobility plan, effective as per January 01, 2019 are calculated. | 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] | As per January 1st, 2019<br>Mileage for business travel for the employees that have accepted the new mobility plan, effective as per January 01, 2019, is recorded by using GPS-tracking or manual registration through Reisbalans. | Finance |
| | 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. | External service provides |
| | The calculation is based on the 'Car fuel and weight unknown' factors in the Emissiefactoren. | Finance |
| Business travel by public transport [km] | As per January 1st, 2019<br>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 by using GPS-tracking or manual registration through Reisbalans | External service provider |
| | 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. | Finance |
| | Travel destinations are tracked for international business travel by train. | External travel agency |

| | | |
|---|---|---|
| Paper consumed [kg] | Purchased paper | Paper suppliers |

## 2.3 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.<br>= 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 [L/kWh] | = Total fuel reported x Conversion factor per fuel type |
| 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

For improvements regarding the uncertainties we found, we have addressed mitigation in chapter 2.5 where possible.

| Aspect | Uncertainty/ influence |
|---|---|
| Lease car | The data delivered by the lease company consists of fuel per lease car. This will include private trips. |
| The heating / electricity data for Groningen office | Consumption is measured for the whole building; Arup consumption is derived from % rented office space for heating.<br>Floor space and number of employee changes between 2018 and 2021, only partially recorded. The measurements for the 2nd floor extension start from February 2018. There are no earlier measurements available. Contract for office is ended per 31-12-2021. |

| | |
|---|---|
| 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).<br><br>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. Meeting with the landlord was held in 2022 to gain access to the meters for meter checks at set times |
| 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. |
| Business travel by private cars | There are now two ways to declare travel miles: through Reisbalans and through Finance. Reisbalans is detailed, although some elements are odd. Finance is financially accurate, but needs assumptions to be converted into carbon emissions. |
| Business travel by public transport | Up to 31st December 2018, an assumption was made for the distances travelled for business by public transport. This assumption involved large uncertainties.<br><br>From 2020 onwards Reisbalans also reports on business trips by public transport. |
| Commuting travel | As per January 1st, 2020<br><br>Number of people not on Reisbalans: Calculation made:<br><br>1. Average commuting distance and mode for all Reisbalans users, 2. then applying this average distance and mode to all 21 non-Reisbalans users. |

## 2.5 Checks proposed

| Category | Action |
|---|---|
| Lease Cars | People are encouraged to use Reisbalans to register their milage, for all possibilities: business/commute/private. |
| Facility energy consumption (electricity/heating) [kWh/Gj] | Cross validate historical data reviewing the yearly service cost summaries for both AMS and GRO office. [20210504: done and included in the base figures, AMS figures accurate, GRO figures might be too high, especially heating] |
| | GRO office is no longer in use per 31-12-2021. |
| | Record electricity on two set dates on both floors to make own estimate of use. |
| Paper [kg] | Review historical data |
| | Improve way of capturing use, now too inaccurate. Very limited impact as kg of paper equals kg emission. In the last two years paper use has dropped to very low levels. |
| Business air travel | Staff are encouraged to book international through the reception/facilities. |
| Business travel by private cars | People are encouraged to use Reisbalans to register their milage, for all possibilities: business/commute/private. Those who have refused this are continuing to register it through declarations to finance. |
| Business travel by public transport | From 2020 onwards Reisbalans also reports on business trips by public transport. |
| Commuting travel | Number of people have refused Reisbalans as a method of getting travel reimbursed. We propose to make calculations for those staff members: |
| | 1. Average commuting distance and mode for all Reisbalans users,<br>2. then applying this average distance and mode to all 21 non-Reisbalans users. |

## 3. Carbon Footprint 2021 and forecast 2022

### 3.1 Distribution emissions 2018-2020-2021 [kg]

| | | | | | % contribution to total emissions per year | | |
|---|---|---|---|---|---|---|---|
| Scope 1 | | 2018 | 2020 | 2021 | 2018 | 2020 | 2021 |
| Lease cars (non-electric) | | 82 080 | 27 982 | 806 | 9% | 8% | 0% |
| Scope 2 | | | | | | | |
| Electricity | | 30 874 | 92 366 | 117 982 | 3% | 26% | 56% |
| Heating | | 113 728 | 115 272 | 35 608 | 12% | 33% | 17% |
| Lease cars (electric) | | | | 13 448 | | | 6% |
| Business travel with private car | | 42 966 | 27 243 | Moved to scope 3 | 5% | 8% | Moved to scope 3 |
| Business travel with public transport | | 3 984 | 1 270 | Moved to scope 3 | 0.4 % | 0.4% | Moved to scope 3 |
| Business travel airplane | | 362 649 | 55 369 | Moved to scope 3 | 38% | 16% | Moved to scope 3 |
| Scope 3 | | | | | | | |
| Commuting private car | | 308 863 | 25 352 | 9 723 | 33% | 7% | 5% |
| Commuting public transport | | - | 4 567 | 152 | 0% | 1% | 0% |
| Business travel with private car | | | | 14 203 | | | 7% |
| Business travel with public transport | | | | 145 | | | 0% |
| Business travel airplane | | | | 17 156 | | | 8% |
| Total emissions (kg) | | 945 144 | 349 421 | 209 223 | | | |
| Per FTE | | 3 364 kg | 1 457 kg | 835 kg | | | |

[source: Analysis 2021 tab in worksheet Environmentaldata 20220413 v7.2]

With the exceptional circumstances of the last years in mind, we present the figures for three years to enable a meaningful comparison. Anomalies are briefly discussed below.

**Lease cars** emissions in absolute sense went down due to electrification and reduction in numbers.

Emissions due to use of **electricity** went up because of the sale of Amsterdam office and change of supplier, from green electricity to grey electricity. This will be rectified, effectively ensuring return to the 2019 numbers. This is the last year reporting will be done on the Groningen office, since the lease contract ended in December 2021.

**Heating** emissions of the Groningen office seem out of line with benchmarks, presumably due to mistakes in reporting. Figures in the past seem overstated by a factor 3. Most probably connected to a correction factor linked to the floor space used. For 2021 an average calculation based on 2 credible sources (CBS & Milieubarometer) is made, since no information was received from the landlord at the time of the audit. The Groningen office was closed on 31 December 2021 and will not be reported on after 2021.

The landlord shared the data for the Amsterdam office on 20 April 2022.

**Business travel with private car** went down from 2018-2020 but shows a spike in 2019. Reported figures from 2019 seem overstated.

**Business travel airplane** went down drastically. The number for 2020 reflects three months of travel in early 2020. For the months after March 2020 until the end of 2021 the effective airplane travel was nearly zero due to pandemic restrictions. The targets for the coming years reflect a transition to more videoconferencing, in line with the Arup global carbon reduction strategy.

The figures for **commuting by private car** show a decline, assumed to be the effect of the new Mobility policy in 2019. The 2020 and 2021 figures are non-representative due to the covid19 lockdown. In previous years this figure was reported to be around 20% of all carbon emissions.

**Paper consumption** was not correctly monitored, will be updated in the coming year. The overall impact is negligible. Carbon emissions of paper taken to be equal to the weight of the paper.

ARUP

Arup BV

# CO2 Performance Ladder

## Energy Management Plan 2021-2030

Reference: CO2-portfolio_Energymanagementplan

Final | 12 July 2022

REDACTED



Job number 074764-56

**Arup B.V.**
Beta Building Naritaweg 118
1043 CA
Amsterdam
Netherlands
arup.com

ARUP

# Document Verification

| | |
|---|---|
| **Project title** | CO2 Performance Ladder |
| **Document title** | Energy Management Plan 2021-2030 |
| **Job number** | 074764-56 |
| **Document ref** | CO2-portfolio_Energymanagementplan |
| **File reference** | CO2-portfolio_Energymanagementplan_2022 |

| **Revision** | **Date** | **Filename** | CO2-portfolio_EnergyManagementplan_2022 | | |
|---|---|---|---|---|---|
| Draft | 21 March 2022 | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Paul van Horn | Tudor Salusbury |
| | | **Signature** | MTro |  | |
| Draft | 05 May 2022 | **Filename** | CO2-portfolio_EnergyManagementplan_2022 | | |
| | | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Paul van Horn | Tudor Salusbury |
| | | **Signature** | MTro |  | |
| Final | 12 July 2022 | **Filename** | CO2-portfolio_EnergyManagementplan_2022 | | |
| | | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Paul van Horn | Tudor Salusbury |
| | | **Signature** | MTro |  |  |

Issue Document Verification with Document ☑

## Contents

## 1. Introduction

At Arup we aim to contribute towards a more sustainable future. Arup in the Netherlands have adopted the $CO_2$ -performance ladder as a tool to map and reduce $CO_2$-emissions. The aims of the CO2 performance ladder are in line with the Arup global Net Zero Carbon Strategy released in 2020.

This Energy Management Plan combines our global company aims and strategies to reduce $CO_2$-emissions and the local CO2 performance ladder aims. Reduction targets and measures are set-up for emissions of scopes 1, 2 and 3 on the basis of the insight gained through the documents: GHG-inventory report, analysis of downstream scope 3 emissions and the chain analysis.

Due to the abnormal business conditions in 2020 and 2021 and the uncertainty of business conditions in 2022, this plan will have an intermediate status. For most of 2020 and 2021 the Arup offices have been closed except for business-critical reasons. In the Netherlands this has meant a very limited office presence of staff. Reception services continued during this period and regular lighting and heating in the office was provided.

The plan is set for the period from 2021 to 2030, with an update by the end of 2021. The present assumption is that in the second half of 2022, business as usual will slowly start to resume. In the rest of the plan we will discuss the post-COVID measures we aim to take in order to achieve our carbon reduction goals. The present COVID-induced carbon reduction is assumed to be temporary. The plan is written according to the ISO 50001 standard, as to comply to the $CO_2$-ladder certification.

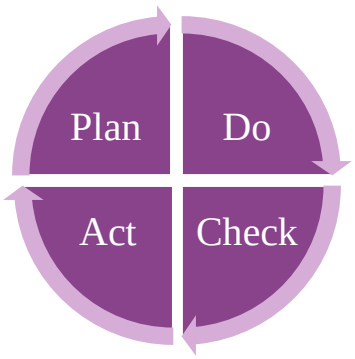
The energy management planning is intended to be a process of continuous improvement, on the basis of a Plan, Do, Check and Act system:

**Plan:** Set energy management targets and measures

**Do:** Implement the $CO_2$ strategy.

**Check:** Measure and monitor performance

**Act:** Analyse the variances, recommend improvements



## 1.1 Organizational boundaries

The $CO_2$-ladder certification will be applicable to the firm Arup B.V. in the Netherlands. Arup B.V. has a permanent facility in Amsterdam and a temporary facility in Groningen. The Groningen facility is no longer in use from 31-12-2021. 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 B.V.

Arup B.V. produced in 2021 a total amount of $CO_2$ emissions below 500 tons a year classifies as a small company. The size classification determines the specific set of $CO_2$-ladder certification requirements.

## 1.2 Responsibilities

The energy management team and organizational framework is introduced in the tables below. The team is also responsible for the yearly document maintenance.

| Role | Name | Tasks |
|---|---|---|
| Sustainable Development Director (SDD) | Tudor Salusbury | Sets priorities and goals for the next 3 years<br>Reviews governance policies<br>Discusses with management team for approval of plans and implementation policies<br>Audits if new projects meet the goals set by European board<br>Yearly evaluates the goals |
| Sustainable Development Manager (SDM) | Paul van Horn, supported by Kayley Komarnyckyj, AMSFacilities, AMSFinance and junior PM. | Researches future scenarios<br>Coordinates if goals meet CO2-prestatieladder<br>Manages implementation of plans<br>Checks governance with sustainability objectives<br>Measures and monitors the effect of plans<br>Analyses measurements<br>Assists PM's of projects won with CO2-prestatieladder<br>Reports to SDD |

The responsible collaborators for project specific targets are:

| Role | Name | |
|---|---|---|
| Project Director (PD) | - | Includes EC review the sustainability objectives<br>Monitors progress on the sustainability objectives |
| Project Manager (PM) | - | Implementation sustainability objectives projects<br>Measures and monitors CO2-footprint on project<br>Measures and monitors the project objectives<br>Analyses non-conformances and advises PD<br>Update of sector- initiatives relevant for project |

Additional collaborators within the office are:

| Role | Name | Tasks |
|---|---|---|
| Quality control | Kayley Komarnyckyj | Organisation audits |
| Human Resources | Esther de Vreugd | Mobility plan, input for Environmental reporting |
| Marketing / Com. | Hester Duijndam | Communication strategy |
| Facility manager | Diede van Graas/Robin Langelaar | Facility management |
| Finance | Mathijs Lammertse | Input for Environmental reporting |

# 2. Reduction plan own organization

In this section, the reduction strategy is outlined for emission categories associated with the operational activities of our own organization (scope 1 + scope 2 + upstream scope 3). The main areas of influence are defined in GHG-inventory report.

## 2.1 Evaluation reduction targets

### 2.1.1 Scope 1

The scope reduction is linked to the reduction of number of lease vehicles and the electrification of the lease fleet. These measures were put in place in early 2019 with an evaluation of these measures set for early 2021.

First item to note is the reduction in lease companies from 6 to 3, this will make it easier to produce reliable information.

Second trend is the one towards electrification of the vehicle fleet, from 0 in 2015 to 12 in 2020. Note that the amount of lease vehicles spikes in 2020 due to some temporary contracts (< 3 months) for the Groningen office. These were included in the totals. For 2021 the number of non-electrical lease contracts is 3.

Per 2021, Scope 1 only entails non-electric lease cars. Electric lease care are measured in scope 2.

| Scope 1 [kg CO2] | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|
| Business travel | | | | | | | |
| Lease cars gasoline | 49 106 | 41 538 | 11 500 | 507 | 4 392 | 4 392 | 4 392 |
| Lease cars diesel | 31 866 | 9 110 | 3 696 | 299 | 2 086 | 2 086 | 2 086 |
| Lease cars hybrid | | | | | | | |
| Lease cars fully electric | 1 108 | 1 640 | 12 787 | Moved to scope 2 | Moved to scope 2 | Moved to scope 2 | Moved to scope 2 |
| Total carbon lease cars | 82 080 | 52 289 | 27 982 | 806 | 6 478 | 6 478 | 6 478 |
| Total Scope 1 | 82 080 | 52 289 | 27 982 | 806 | 6 478 | 6 478 | 6 478 |

[Source: Carbon per FTE tab in Environmentaldata 20220413 v7.2 xl sheet]

The numbers from 2020 and 2021 might give a distorted view, there was limited travel due to covid restrictions. For 2022 and onwards a flexible working agreement is in place, so we expect numbers to remain lower than in 2019.

The target for the coming years is a full electrification of the leave vehicles and a reduction in lease vehicles. This is reflected in the targets, with a total of 12 fully electric lease vehicles being used for forecasting. The current lease contracts for non-electrical vehicles will expire in the coming years, with the last one in 2023. The target for 2024 is the target for a fully electric lease vehicle fleet. After 2024 the only way to reduce carbon in our vehicle use is to ensure 100% renewable energy for charging and/or reduction of number of lease vehicles.

### 2.1.2 Scope 2

**Electricity buildings Amsterdam and Groningen:**

With the sale of the Arup office building the electricity supplier has changed as well. From 100% wind energy between September 2017 and July 2020, Arup is since July 2020 using grey electricity (average mix of fuels of electricity on the Dutch market). Negotiations are underway to revert to green electricity. The Groningen office is closed per 31-12-2021.

| Scope 2 [kg CO2] | | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|
| Electricity | | | | | | | |
| AMS Building | Grey | 47 866 | | | 80 066 | 111 958 | 84 682 |
| AMS Building | Wind | 0 | 0 | 0 | 0 | 0 | 0 |
| Total carbon AMS building Electricity | | 47 866 | - | - | 80 066 | 111 958 | 84 682 |

[Source: Carbon per FTE tab in Environmentaldata 20220413 v7.2 xl sheet]

The estimated reduction of carbon emissions in 2021 and beyond are estimated at 168 tons yearly.

| Scope 2 [kg CO2] | | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|
| Electricity | | | | | | | |
| GRO Building | Grey | 17 308 | 30 874 | 23 112 | 12 300 | 6 024 | 0 |
| Total carbon AMS building Electricity | | 17 308 | 30 874 | 23 112 | 12 300 | 6 024 | - |

[Source: Carbon per FTE tab in Environmentaldata 20220413 v7.2 xl sheet]

The Groningen office is currently using grey electricity. Switching to green electricity could reduce carbon emissions by 20 tons yearly. The office was closed per 31-12-2021, so this will be the last year reporting.

**Heating buildings Amsterdam and Groningen:**

The Amsterdam building is heated by the AEB incinerator providing the whole western harbour area. No other supplier of heating possible.

The Groningen building is heated by using natural gas. The exact amount for our own office is not known, the costs are included in the service-costs. In 2021 the Groningen office space is closed, no reporting to be expected for 2022.

In general there is not much gain to be had in reduction of heating because it’s adjustable per office section, only in reduction in the amount of space leased. This will affect the heating requirements directly. An assessment of space requirements is presently undertaken for the Amsterdam office.

| Heating | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|
| AMS Building | 8 061 | 10 511 | 10 281 | 20 424 | 10 281 |
| GRO Building | 105 667 | 79 398 | 104 990 | 15 184 | 0 |
| Total carbon Heating AMS and GRO | 113 728 | 89 909 | 115 272 | 35 608 | 10 281 |

Source: Carbon per FTE tab in Environmentaldata 20220413 v7.2 xl sheet]

**Lease cars (electric):**

Per 2021, Scope 1 only entails non-electric lease cars. Electric lease care are measured in scope 2.

| Scope 2 [kg CO2] | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|
| Business travel | | | | | | | |
| Lease cars fully electric | 1 108 | 1 640 | 12 787 | 13 448 | 14 793 | 14 793 | 14 793 |
| Total carbon lease cars | 1 108 | 1 640 | 12 787 | 13 448 | 14 793 | 14 793 | 14 793 |

[Source: Carbon per FTE tab in Environmentaldata 20220413 v7.2 xl sheet]

**Business travel with private car:**

The numbers on the use of a private car for business travel (not commuting) vary over the years and are assumed to be mainly influenced by the P500 project in Groningen. Staff from Groningen regularly visited Amsterdam and vice versa. Changes in the operational setup have changed the mileage claimed, showing a decline in 2019. The mobility plan aims to have business travel done by public transport.

| Business travel with private car | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|
| Gasoline | | | | | |
| Diesel | | | | | |
| Hybrid | | | | | |
| Fully electric | | | | | |
| Total carbon business travel with private car | 44 062 | 42 966 | 117 891 | 27 243 | 14 203 |

Source: Carbon per FTE tab in Environmentaldata 20220413 v7.2 xl sheet]

**Business travel with public transport:**

The mobility plan aims to have business travel done as much as possible by public transport of by using electric lease vehicles.

The public transport numbers are strongly influenced by the energy sources of the public transport companies. With effect from 2021 all public transport companies use 100% green electricity in their operations. This means travel on public transport in WtW analysis means zero emissions. This is

reflected in the falling numbers over the years. Only bus travel will be producing a limited amount of carbon emissions from 2021 onwards.

The blacked out sections in the table below show the total numbers only derived from earlier calculations. The modal split has only been possible since 2019.

| Business travel with public transport | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Bus | | | | | | | 1 105 | 356 | 35 | 370 |
| Metro | | | | | | | 584 | 188 | 0 | 0 |
| Tram | | | | | | | 2 | 2 | 0 | 0 |
| National train | | | | | | | 2 249 | 724 | 0 | 340 |
| International train | | | | | | | 456 | 0 | 110 | 912 |
| Total carbon business travel with public transport | 14 048 | 14 048 | 27 529 | 31 140 | 33 000 | 12 251 | 3 984 | 4 395 | 1 270 | 145 |

Source: Carbon per FTE tab in Environmentaldata 20220413 v7.2 xl sheet]

**Business travel airplane:**

The main source of carbon emissions in the past has been business travel by airplane. From 37% of total emissions in 2013 to 22% of all emissions in 2026. These percentage partially hide a wide variety of absolute emissions, from 80 914 kg in 2013, through a peak of 362 648 kg in 2018 to a targeted 108 975 kg (a 70% reduction compared to 2018). For the internal Arup net zero strategy the year 2018 is used as a reference. To compensate for the high reference of 2018, the reduction percentage has been increased.

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Business travel airplane | 37% | 28% | 30% | 27% | 35% | 38% | 42% | 16% | 8% | 58% | 60% | 55% | 50% | 43% |

[Source: Analysis 2020 tab in Environmentaldata 20220413 v7.2 xl sheet]

Airplane travel is done for project reasons or for internal Arup reasons, mostly training and meetings.

Projects will be charged an additional $US40 per ton of calculated emission. These amounts will be used to buy verified carbon offsetting certificates. The effect of this needs to be monitored closely. Project airplane travel is estimated to constitute around 50% of all airplane travel.

Training will be increasingly held on-line. To that effect Arup University has made great strides in transforming training resource material to on-line variants.

| Business travel airplane | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| distance <700 km | | | 55 170 | 73 340 | 126 797 | 101 908 | 79 194 | 15 825 | 2 458 | 71 336 | 61 145 | 50 954 | 40 763 | 2 458 |
| 2500< distance >700 | | | 93 792 | 71 145 | 108 524 | 115 130 | 104 602 | 16 839 | 5 127 | 80 591 | 69 078 | 57 565 | 46 052 | 5 127 |
| distance >2500 km | | | 109 144 | 91 738 | 125 938 | 145 611 | 102 978 | 22 705 | 9571 | 101 928 | 87 367 | 72 806 | 58 244 | 9 571 |
| Total carbon [kg] | 80 914 | 215 426 | 258 106 | 236 224 | 361 260 | 362 649 | 286 773 | 55 369 | 17 156 | 253 855 | 217 590 | 181 325 | 145 060 | 17 156 |

Source: Carbon per FTE tab in Environmentaldata 20220413 v7.2 xl sheet]

### 2.1.3 Scope 3

In 2021 Business travel is moved from scope 2 to scope 3 by SKAO.

| **Commuting private car** | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|
| **Fuel and Weight unknown** | | | | | | 88 798 | 25 352 | 9 723 | 37 927 |
| **Diesel** | | | | | | | 0 | 0 | 0 |
| **Hybrid** | | | | | | | 0 | 0 | 0 |
| **Fully electric** | | | | | | | 0 | 0 | 0 |
| **Total carbon commuting private car** | 262 733 | 259 500 | 259 427 | 332 271 | 308 863 | 88 798 | 25 352 | 9 723 | 37 927 |

Source: Carbon per FTE tab in Environmentaldata 20220413 v7.2 xl sheet]

| **Commuting public transport** | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|
| **Bus** | | | | | | 3 978 | 1 281 | 152 | 1 340 |
| **Metro** | | | | | | 2 103 | 677 | 0 | 0 |
| **Tram** | | | | | | 0 | 0 | 0 | 0 |
| **Train** | | | | | | 8 098 | 2 608 | 0 | 1 269 |
| **Total carbon commuting public transport** | | | | | | 14 178 | 4 567 | 152 | 2 609 |

Source: Carbon per FTE tab in Environmentaldata 20220413 v7.2 xl sheet]

The scope 3 figures are almost all related to commuting. The amount of commuting has been difficult to establish because in earlier years there was no distinction between private car and public transport. The advent of Reisbalans now allows for more accuracy.

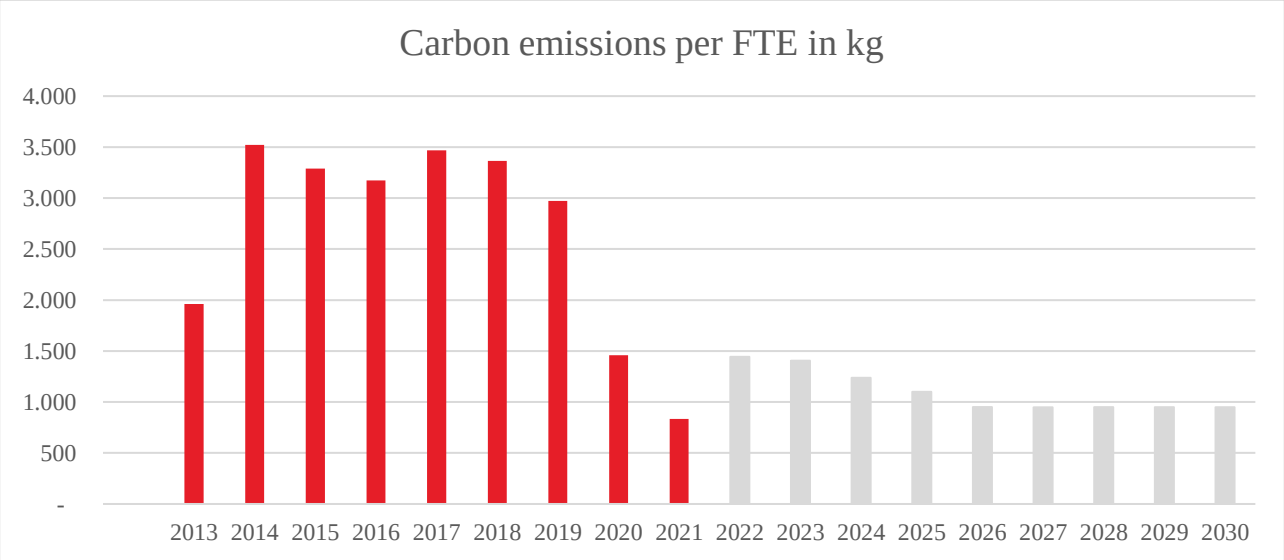
For 2020 and 2021 the amount of commuting was limited due to the COVID19 restrictions. These conditions will continue well into 2021. With regular business conditions expected to open up in the 2nd quarter of 2022, commuting will likely bounce back to almost pre-COVID19 levels.

Home-working in 2020 has shown that productivity doesn't necessarily suffer. This has made it more realistic to introduce regular home-working as a way to push down commuting, either by public transport or private car. The aim for 2022 is 20% less commuting per FTE than in 2018.

For the commuting by public transport there is little to be gained in limiting carbon emissions, since all means of public transport are now run on sustainable energy. All commuting miles with public transport are basically zero emission.

Another possible outcome could be the re-evaluation of office size. With a 20% less attendance in the office, there is scope for hotdesking and reducing the amount of office space. This will have a positive impact on the energy use per FTE. The effects are now being studied, but are not expected to be the same 20%.

**Figure 1 Yearly carbon emissions per FTE in kg**




[source Analysis 2020 tab Environmentaldata 20220413 v7.2]

## 2.2 Reduction strategy

The focus of the carbon emissions reduction strategy for the period 1-4-2018 – 1-4-2021 has been to reduce the impact of 2 main emission drivers:

- air travel;
- commuting by fossil fuel driven cars.

The Arup mobility policy was adopted in early 2019, designed to tackle the issue of air travel and commuting.

Arup Mobility Policy 2019

The policy had the explicitly stated goal to steer towards more sustainable travel behaviour, both in business travel and in commuting.

Topics covered were:

// Commuting arrangement // Business trips arrangement // Cycling arrangement // Relocation arrangement // Parking policy // Leasing policy

The aim of the policy was to achieve a 35% reduction in carbon emissions. This goal has been met, but not through the sole application of the policies. [see figure 1].

Emission reductions compared to 2018 were 36% reduction in 2019 and 56% reduction in 2020 compared to 2018. These figures are hard to replicate in non-COVID times because they imply a total absence of travel. This is not realistic.

### 2.3 Reduction targets

In the past years (2020-2021) air travel has literally dropped to zero due to Covid-induced travel restrictions. Commuter travel has dropped significantly from March 2020 onwards as office presence of staff became restricted and employees started to work from home.

As stated before, the current Covid travel restrictions make it very hard to set realistic targets. Generally speaking most of 2021 has shown the same restricted travel patterns as 2020. After that travel is projected to gradually pick up and be fully possible in 2022, most probably not reaching pre-2020 levels.

One of the main lessons from the Covid lockdown was the apparent effectiveness of remote working and online working. Whereas before this was never considered a viable option, it has now become a daily reality.

This will also affect travel patterns in the future as online conferencing and remote working will become more accepted. It is not realistic to think all work can be productively done online. The targets for reduction below take this into account.

Reduction targets for 2021 will be greatly affected by the low levels of travel and commuting in 2021. Realistically speaking any reduction target should only start in 2022.

For this reason we take the reduction target for 2022 to be the following:

1. Each FTE to work from home 1 day a week, effectively reducing commuting mileage by 20%. This will bring commuting emissions lower if public transport is used. From 2021 onwards all public transport (except busses) has zero emissions.
2. Air travel to Arup meetings and Arup internal conferences to be reduced by 20% in 2022 compared to 2018 due to availability of online alternatives. Arup internal travel assumed to be 50% of all business flights. This reduction will be continued until a 70% reduction is reached compared to 2018. This will bring Arup bv close to net zero in 2026, assuming the compensation of flight with offsetting certificates.

Taking these two targets into account the 2022 reduction will be:

| Scope | Source of emission | $CO_2$ -emission [kg $CO_2$/FTE] | Reduction Ambition | |
|---|---|---|---|---|
| | | 2018 | 2022 | 2022 target |
| **Scope 1** | Lease cars (non-electric, business travel) | 292 | 50% | 117 |
| **Scope 2** | Electricity | 110 | Equal | 81* |
| | Heating | 433 | Equal | 489 |
| **Scope 3** | Commuting | 1 099 | 80% | 59** |
| | Business travel: private cars | 153 | Equal | 158 |
| | Business travel: public transport | 14 | 70% | 4 |
| | Air travel | 1 291 | 20% | 1055 |
| **Total** | | | | |
| **Scope 1,2 en 3** | | 3 391 | 22 % | 2.661 |

[Source Carbon per FTE tab Environmentaldata 20220413 v7.2]

** Assumes green power for Amsterdam office, if not the total for Amsterdam and Groningen will be 781 tons per year per FTE.*

*** Figures look distorted. Need to improve measurements of commuting.*

## 2.4 Potential reduction measures

The following definitive set of reduction measures were implemented as part of the new mobility plan, effective as per January 1st, 2019. The assumed changes in work patterns as discussed above have also been included.

| Category | Measure | Potential % total emissions | Progress | Responsible |
|---|---|---|---|---|
| Scope 1:<br>Self assessment energy audit. | Use the toolkit of InfoMill http://www.infomil.nl/kantoren to identify possible office energy saving measures. | Estimated 1% of Scope 2. Done mainly to verify completeness of measures identified | ● ● ● | SDM |
| Scope 1: Office energy use | Office energy audit by Main Energy, identifying potential areas of saving. | Estimated 1% of Scope 2. Done mainly to verify completeness of measures identified | ● ● | SDM |

| | | | | |
|---|---|---|---|---|
| Scope 2: Business travel – air  | Incentives setup in Net Zero Carbon plan.<br>Training move on-line.<br>Incentives for train set up in new mobility plan<br>Provide alternative travel guideline: Our travel agency is instructed to provide travel by train as the first option for travelling within the EU (Germany, Belgium, UK or France).<br>For flights to/from these destinations, an additional supervisor approval will be needed. | ▼ 20% in 2022 compared to 2018 | ● ● ● | SDM |
| Scope 3: Commuting  | Incentives in new mobility plan<br>Use of Reisbalans<br>OV business cards/ mobility cards<br>Free OV bike to and from train station<br>Aim for 1 day home-working<br>Reduction of number of lease vehicles from 12 | ▼ 20% reduction compared to 2018 | ● ● ● | SDD |

Besides focussing on the main reduction measures of scope 1,2, and 3 to decrease the CO2 emissions of our operations, Arup as a company has put effort into increasing awareness amongst employees.

| Category | Measure | Potential % | Progress | Responsible |
|---|---|---|---|---|
| Awareness  | Sustainable development Learning path | Tbd | ● ● ● | SDM |

## 3. Reduction for projects downstream scope 3

In this section, the reduction strategy is outlined for emission categories associated to our projects, downstream scope 3. The main areas of influence are defined in the downstream scope 3 analysis and the chain analyses.

### 3.1 Reduction strategy

Through our design and consultancy practice we stimulate sustainable decisions in the design process. To assist project managers in setting sustainability objectives a tool will be developed to give insight in the driver for sustainability and help them set and monitor objectives in projects. A focus on energy targets in projects is priority.

The objectives are recorded in the Arup internet Project Plan (IPP)


**Figure 2 UNSDGs (Source: United Nations)**

Both in the CRM system and the IPP project plan system data on sustainability is captured but up to now without follow up action.

Starting in 2021 there is a Power BI dashboard capturing all projects that have environmental aspects. In the course of 2021 the actions that will spring from this dashboard will be defined and set in motion. The most obvious would be to have an environmental audit of the project to assess the potential for sustainability measures to be taken into account, carbon emissions reduction being one of them.

REDACTED

Further work will follow on outlining example projects and project-level interventions and suggestions to lower carbon emissions.

In 2021 work will begin on tracking the carbon emission performance of our suppliers. Initial work will be done in identifying the main suppliers and setting up a questionnaire on their carbon emissions, possibly offering to do a carbon analysis of their operations.

### 3.2 Reduction targets

In compliance with Arup European Objectives:

50% of projects with a fee > €150k are setting sustainability objectives.

Performance 2018/19: 34% achieved. Goal 1-4-2021: 50%

### 3.3 Reduction measures

| Target | Category | Measure | Progress | Responsible |
|---|---|---|---|---|
| 1  | Projects – Objectives | Sustainability objectives in projects > €150k fee are recorded in the IPP | ● ● ○ | PM |
| 2  | Projects – Objectives | Development of Sustainability objectives tool | ● ● ○ | SDM |
| 2  | Projects – design - Energy | Verify if projects comply with Dutch regulation in relation to the 'Energieprestatie' of a building. (EPC) | ● ● ○ | PM |
| 3  | Projects – design - Materials | Verify if projects comply with Dutch regulation in relation to the 'Milieuprestatie' of a building. (MPG) | ● ○ ○ | PM |
| 4  | Projects - Communication | Each year a selection of our projects will be presented in the 'How We Shape a Better World' report | ● ● ● | SDM |

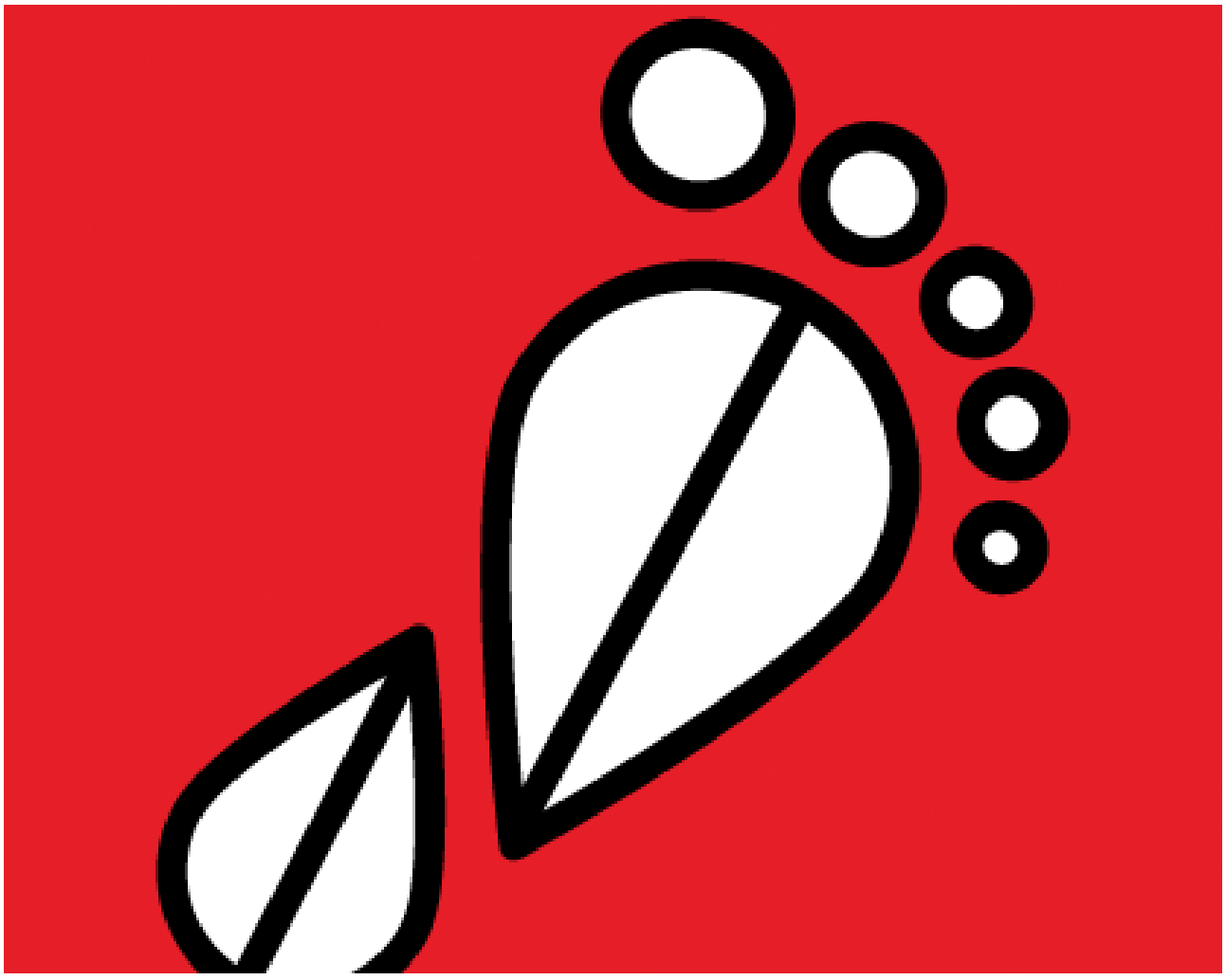
ARUP

# Upstream CO2 Emissions Analysis

## Arup Netherlands Group

Reference:

P01 | 11 November 2022





Job number

**Arup B.V.**
Beta Building Naritaweg 118
1043 CA
Amsterdam
Netherlands
arup.com

ARUP

# Document Verification

| | |
|---|---|
| **Project title** | Upstream CO2 Emissions Analysis |
| **Document title** | Arup Netherlands Group |
| **Job number** | |
| **Document ref** | |
| **File reference** | |

| **Revision** | **Date** | **Filename** | | | |
|---|---|---|---|---|---|
| P01 | 11/11/2022 | **Description** | First revision | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | K. Komarnyckyj | P van Horn | P van Horn |
| | | **Signature** |  | | |
| | | **Filename** | | | |
| | | **Description** | | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | | | |
| | | **Signature** | | | |
| | | **Filename** | | | |
| | | **Description** | | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | | | |
| | | **Signature** | | | |

Issue Document Verification with Document ☑

# Contents



## Tables



## Figures



## Appendices

# 1. Introduction

Arup has made a commitment to be a net zero organisation by 2030. As part of this goal, the Europe Region has produced "Achieving Net Zero - ER GHG Emission Reduction Plan" dated August 2020 and the Netherlands Group has achieved $CO_2$-Prestatieladder level 5. The CO2-prestatieladder handbook considers Arup NL to be a small business. Section 6.2.1 therefore has appliable two requirements (5.A.1 and 5.A.2) regarding analysis of supply chain emissions, see Figure 1.

| | | | | |
|---|---|---|---|---|
| 5A | Alle* | De organisatie heeft portefeuille breed inzicht in scope 3. | 5.A.1. De organisatie heeft inzicht in de materiële scope 3 emissies van de organisatie en de meest relevante partijen in de keten die daarbij betrokken zijn. | 10 |
| | Alle* | | 5.A.2-1. De organisatie beschikt over een portefeuille-brede, onderbouwde analyse van mogelijkheden van de organisatie om de materiële scope 3 emissies te beïnvloeden. | 5 |
| | M/G | | 5.A.2-2. De organisatie heeft inzicht in mogelijke strategieën om deze materiële emissies te reduceren. | 5 |
| | M/G | | 5.A.3. De organisatie dient van directe (en potentiële) ketenpartners die relevant zijn voor de uitvoering van de scope 3 strategie, over specifieke emissiegegevens te beschikken die afkomstig zijn van deze ketenpartners. | 5 |
| | | Doelstelling: De organisatie verbreedt en verdiept haar inzicht in scope 3 en in de wijze waarop de organisatie emissies in scope 3 kan reduceren. | | |

**Figure 1: CO2-prestatieladder handbook 6.2.1**

This document records the Upstream Supply Chain CO2 emissions analysis for Arup NL where we aim to address requirements 5.A.1 and 5.A.2 from the CO2-prestatieladder handbook.

A comparison has also been made between the Arup NL office data and the emissions presented in the August 2020 Europe Region Net Zero GHG Reduction Plan.

# 2. Methodology

The following methodology has been used to identify relevant suppliers and calculate the associate CO2 emissions.

**Stage 1 – Identification of relevant suppliers within an organisation boundary:**

1. A list of suppliers and invoices was provided by the Finance Team for the 2020/21 financial year (1st April 2020 to 31st March 2021), see Appendix A.
2. Suppliers have been categorised as suppliers of goods or services
3. Suppliers of services have been further categorised into those where the service is provided/used within the Arup office (inhouse) or at an external location.
4. Services that are categorised as "inhouse" have been excluded from the supply chain analysis as their CO2 emissions have already been included within the existing Arup Netherlands CO2 emission analysis. Including them here would lead to double counting of these emissions. See Appendix B for a list of removed suppliers. These include agency staff, lease cars, energy providers etc.
5. Four suppliers have been excluded from the analysis because the invoices were negative (i.e. payments/refunds were made to Arup), see Appendix B.
6. CO2-Prestatieladder Handboek 3.1 section 4.1 "Methode 2: de laterale methode" has been used to identify which suppliers fall within the organisational boundary. To do this, the suppliers were first ranked from largest (highest spend) to smallest (lowest spend) as shown in Figure 2. The cumulative

purchase value of suppliers was then calculated and the top 80% of suppliers was identified, see Figure 3. Appendix C contains a list of the ranked suppliers.

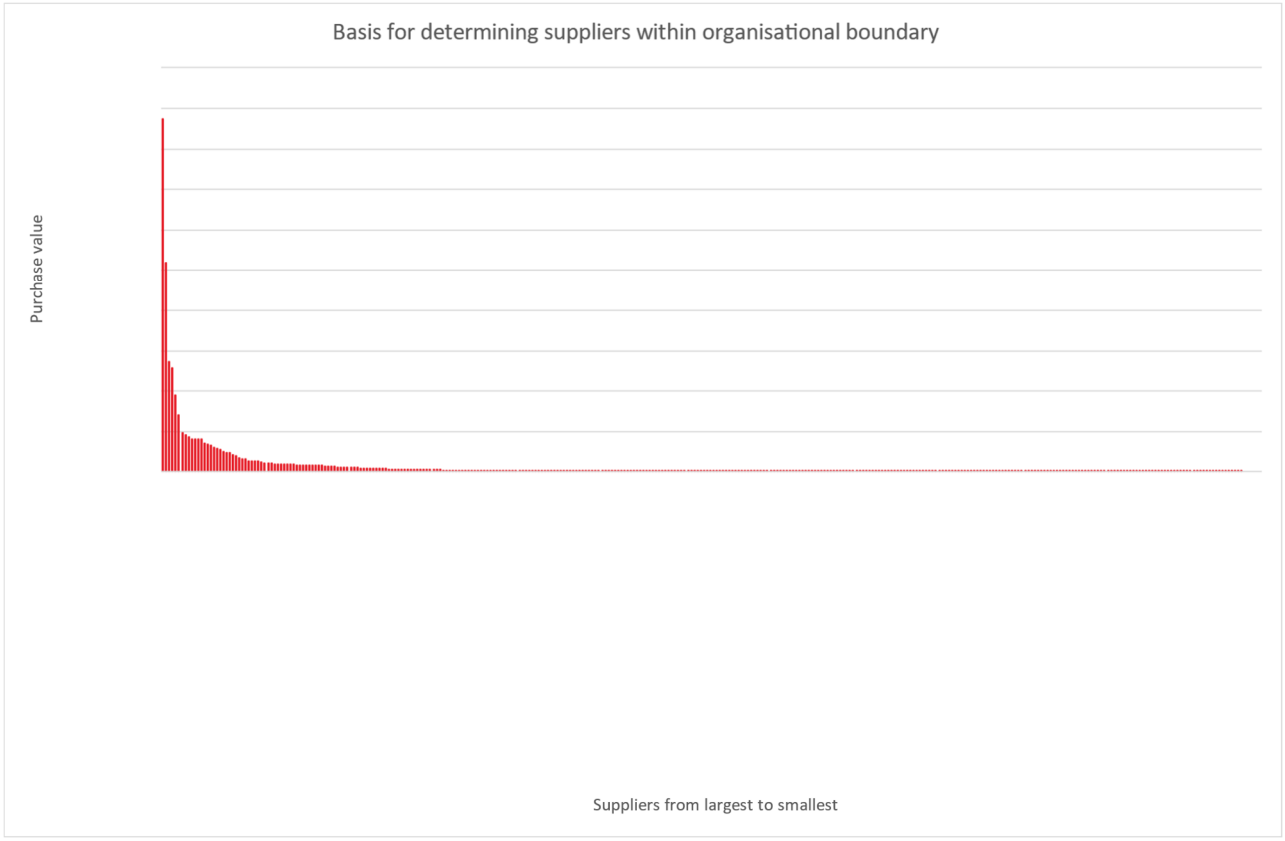



**Figure 2: Suppliers ranked by purchase value**

The cumulative purchase value of suppliers was then calculated and the top 80% of suppliers was identified, see Figure 3.

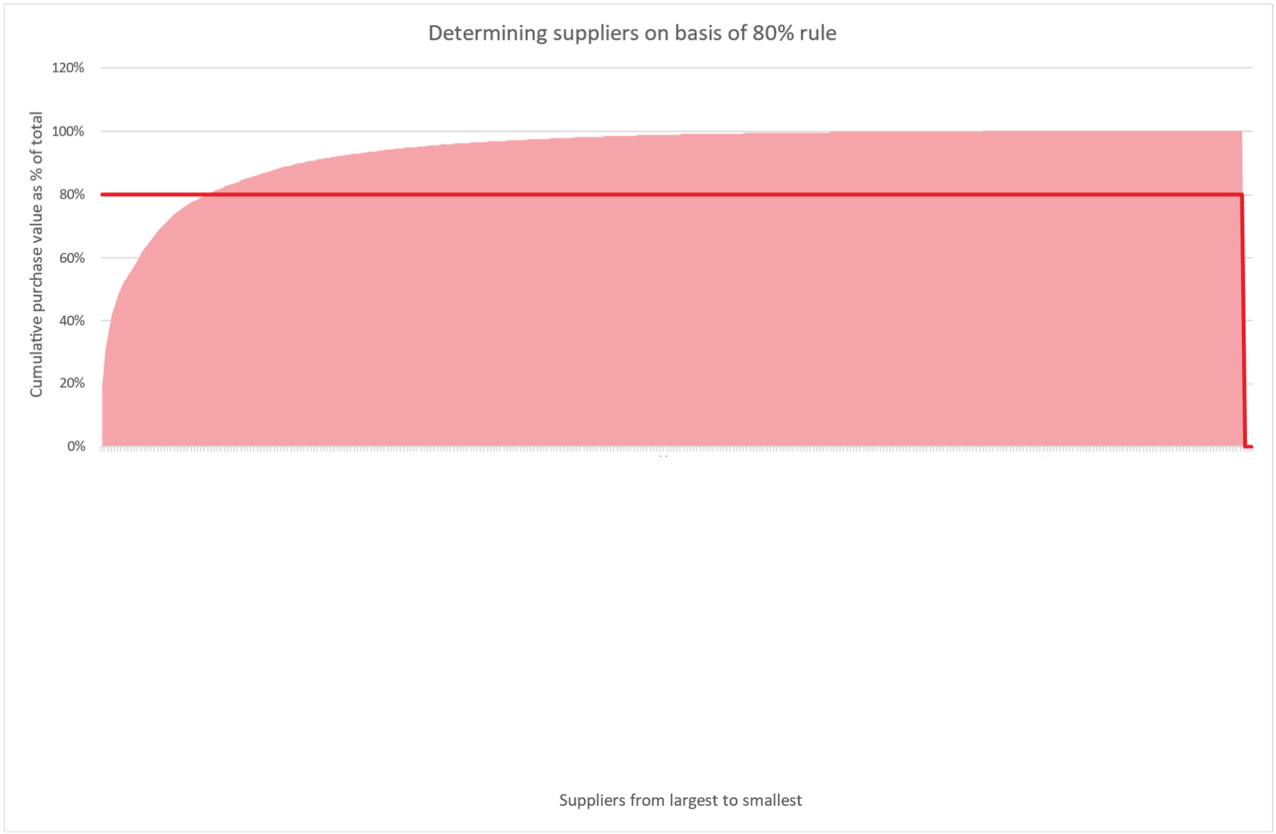


**Figure 3: Identification of top 80% of suppliers**

This results in the 33 suppliers shown in Table 1 being included in the analysis.

**Table 1: : List of Suppliers included in analysis**

| Supplier | Total Spend with Supplier | Description | Supplier of Goods or Services |
|---|---|---|---|
| | | Architects | Services |
| | | Pension Fund | Services |
| | | Engineering | Services |
| | | Landlord | Services |
| | | Project Collaborator - Architect | Services |
| | | Subconsultant | Services |
| | | Subconsultant | Services |
| | | Subconsultant | Services |
| | | Client | Services |
| | | Contractor | Services |
| | | Architect | Services |
| | | M&E Services | Services |
| | | Accountancy Services | Services |
| | | Project Collaborator | Services |
| | | Engineering | Services |
| | | Consortium Partner | Services |
| | | IT Equipment | Goods |
| | | Subconsultant | Services |
| | | Outside Consultants Project | Services |
| | | Archaeologist | Services |
| | | IT Services | Services |
| | | Catering Services | Services |

| Supplier | Total Spend with Supplier | Description | Supplier of Goods or Services |
|---|---|---|---|
| | | Subconsultant | Services |
| | | Subconsultant | Services |
| | | Contractor | Services |
| | | Project Collaborator | Services |
| | | Subconsultant | Services |
| | | Insurance | Services |
| | | Project Collaborator | Services |
| | | Engineering | Services |
| | | Outside Consultants Project | Services |
| | | HR Automation Services | Services |
| Total | | | |

**Stage 2 – Calculation of CO2 emissions**

A database of UK Department for Environment, Food and Rural Affairs (DEFRA) emissions factors developed by the Centre of Sustainability Accounting (CenSA) has been used to estimate CO2 emissions based on the cost of the goods and services. See Appendix D for details. These emissions factors are based on data from 2011, at this time there is not a more recent update to the data so costs have been indexed accordingly.

7. Each supplier has assigned a product category according to the Standard Industrial Classification (SIC) Codes 2007.
8. The total kg of CO2 per £ is read from the DEFRA emissions factor database for each product category.
9. The spend per supplier has been indexed from 2021 to 2011 prices[1] and then converted to GBP using an average exchange rate for 2011[2] to calculate a 2011 £ equivalent spend per supplier.
10. The total kg of CO2 per £ is then multiplied by the 2011 £ equivalent spend to estimate the CO2 emissions per supplier.

This calculation is shown in Appendix E.

Table 2 gives the CO2 emissions for the goods suppliers. The total CO2 emissions for the goods suppliers identified within the top 80% of suppliers is 37,390.81kg from a total of 1 goods supplier.

[1] 1:1.17 from 2011 to 2021 (https://www.worlddata.info/europe/netherlands/inflation-rates.php)

[2] 0.8678 average exchange rate in 2011 (https://www.exchangerates.org.uk/EUR-GBP-spot-exchange-rates-history-2011.html#:~:text=Average%20exchange%20rate%20in%202011,GBP%20on%2009%20Jan%202011)

**Table 2: CO2 emissions for Goods Suppliers**

| Good Supplier | 2011 £ Equivalent Spend | SIC Code | Product Category SIC Code (SIC 2007) | kg CO2e/£ | Total kg CO2e |
|---|---|---|---|---|---|
| | | 26 | Computer, electronic and optical products | 0.41 | 37,390.81 |
| | | | | Total | **37,390.81** |

Table 3 gives the CO2 emissions for each services supplier. The total CO2 emissions for the services suppliers identified within the top 80% of suppliers is 999,700 kg CO2e from a total of 31 services suppliers.

**Table 3: CO2 emissions for Service Suppliers**

| Service Supplier | 2011 £ Equivalent Spend | SIC Code | Product Category SIC Code (SIC 2007) | kg CO2e/£ | Total kg CO2e |
|---|---|---|---|---|---|
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 65.1-3 | Insurance, reinsurance and pension funding services, except compulsory social security & Pensions | 0.18 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 68.1-2 | Real estate services, excluding on a fee or contract basis and imputed rent | 0.13 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 68.1-2 | Real estate services, excluding on a fee or contract basis and imputed rent | 0.13 | |
| | | 41-43 | Construction | 0.37 | |

| Service Supplier | 2011 £ Equivalent Spend | SIC Code | Product Category SIC Code (SIC 2007) | kg CO2e/£ | Total kg CO2e |
|---|---|---|---|---|---|
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 81 | Services to buildings and landscape | 0.25 | |
| | | 64 | Financial services, except insurance and pension funding | 0.15 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 62 | Computer programming, consultancy and related services | 0.18 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 62 | Computer programming, consultancy and related services | 0.18 | |
| | | 56 | Food and beverage serving services | 0.40 | |
| | | 80 | Security and investigation services | 0.24 | |
| | | 74 | Other professional, scientific and technical services | 0.16 | |
| | | 41-43 | Construction | 0.37 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 70 | Services of head offices; management consulting services | 0.17 | |
| | | 65.1-3 | Insurance, reinsurance and pension funding services, except compulsory social security & Pensions | 0.18 | |

| Service Supplier | 2011 £ Equivalent Spend | SIC Code | Product Category SIC Code (SIC 2007) | kg CO2e/£ | Total kg CO2e |
|---|---|---|---|---|---|
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 71 | Architectural and engineering services; technical testing and analysis services | 0.18 | |
| | | 66 | Services auxiliary to financial services and insurance services | 0.15 | |
| | | | | Total | **999,700** |

# 3. Analysis of the data

## 3.1 Comparison with ER Net GHG Reduction Plan

Striving towards Net Zero, in August 2020 the Europe Region produced the ER Net GHG Reduction Plan. The plan identifies purchased goods and services to account for 63% of Arup's global emissions and 68% of the Arup Europe Region emissions based on 2018 data, see Appendix G. The plan goes on to set out actions including:

- Reduce purchases like catering, stationery and events by 50%
- Reduce emissions of goods from top 20 suppliers by 20%

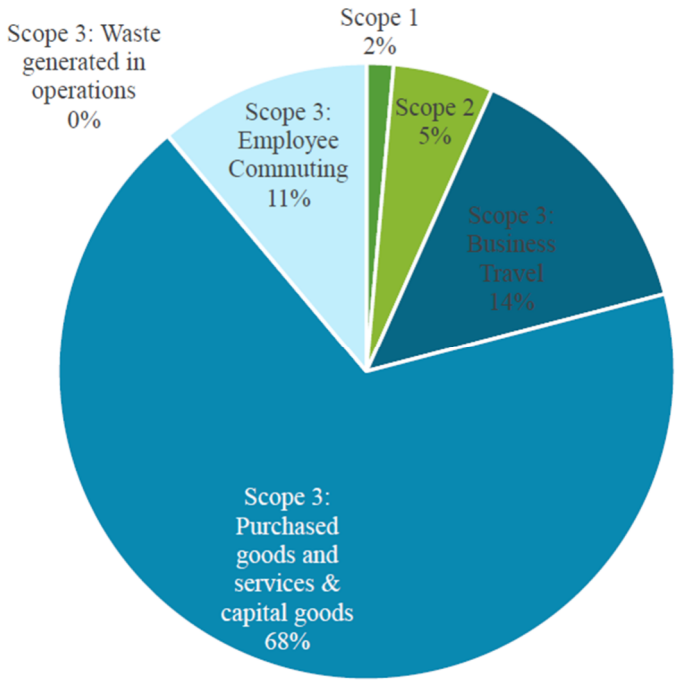



**Figure 4: Distribution of Europe Region CO2 Emissions from ER GHG Reduction Plan (2018 data)**

Intuitively the proportion of emissions from purchased good and services appears very high. The analysis in this report can be used to interrogate this. For 2021 the Arup Netherlands emissions are as seen in Table 4 and Figure 5.

**Table 4: Arup Netherlands 2021 CO2 Emissions**

| Scope | Emissions (kg CO2e) |
|---|---|
| Scope 1 | 806 |
| Scope 2 | 167,038 |
| Scope 3: Employee Commuting | 9,874 |
| Scope 3: Business Travel | 31,504 |
| Scope 3: Purchased goods & services | 1,037,090 |

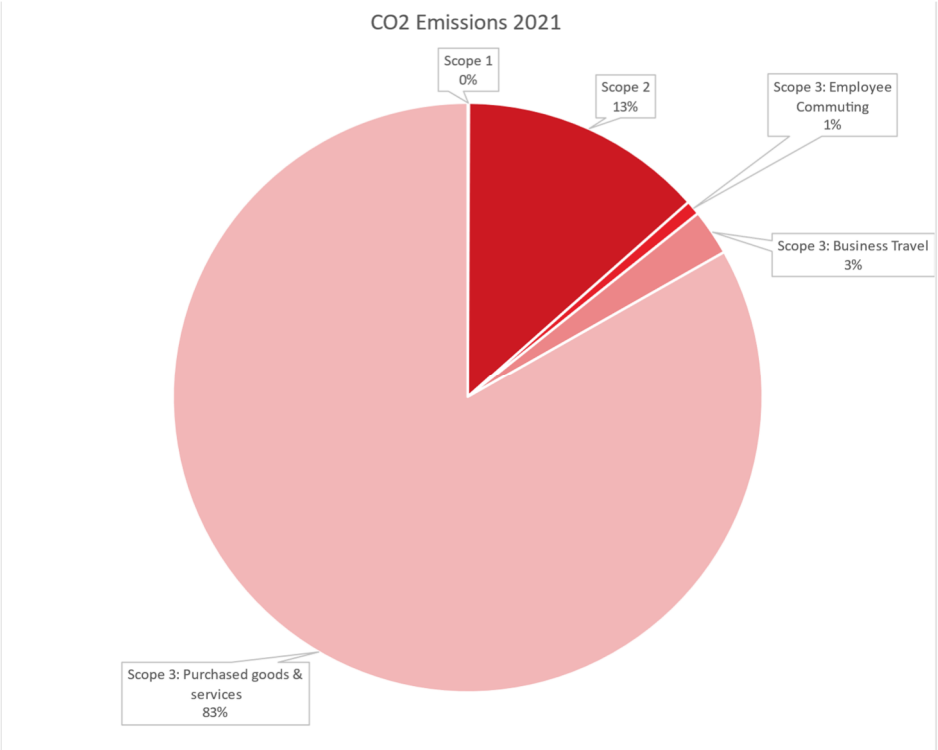



**Figure 5: Arup Netherlands CO2 Emissions 2021**

This shows the emissions from purchased goods and services to be 83%, considerably higher than the ER figure of 68%. One possible explanation for this is the influence that the pandemic has had on the way we now work, in particular the impact on office occupancy, commuting and business travel. For a more accurate comparison between the Netherlands data and the ER data, the Netherlands 2019 emissions have also been considered. For ease of calculation, the emissions from purchased goods and services have been converted to 2019 values using the currency exchange rate whereas actual emissions values for the other categorises have been used. It is assumed that the value of purchased goods in 2019 is similar to those in 2021.

**Table 5: Arup Netherlands 2019 CO2 Emissions**

| Scope | Emissions (kg CO2e) |
|---|---|
| Scope 1 | 52,289 |
| Scope 2 | 113,021 |
| Scope 3: Employee Commuting | 102,976 |
| Scope 3: Business Travel | 409,060 |
| Scope 3: Purchased goods & services | 1,167,850 |

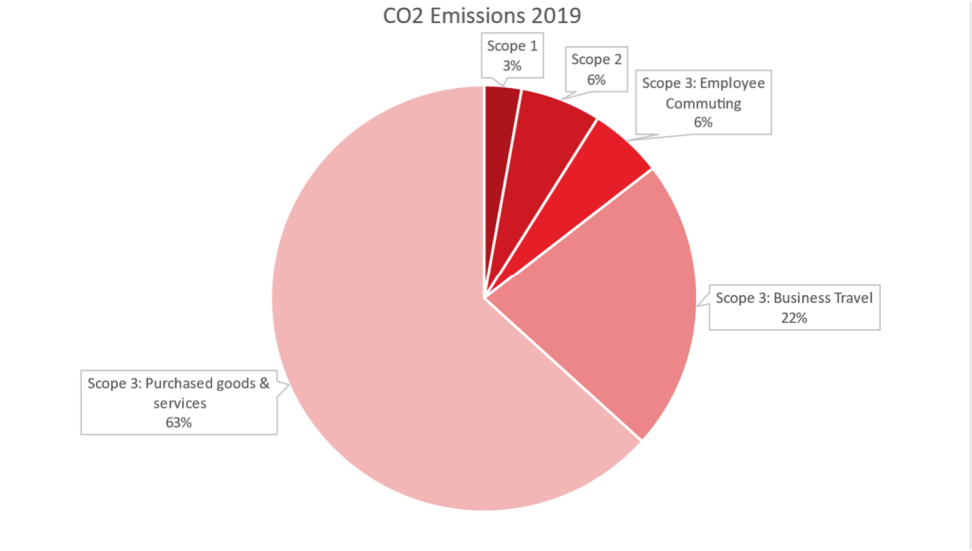



**Figure 6: Arup Netherlands CO2 Emissions 2019**

In 2019, pre-pandemic, office occupancy, commuting and business travel emissions were higher than in 2021. However the contribution to emissions from purchased goods and services was still considerable at 63%.

## 3.2 Accuracy of the DEFRA Emissions Factors

The DEFRA emissions factor database was used in both sets calculations. These factors are based on data from 2011 and may no longer be accurate. This can be tested with the Arup 2021 office data.

**Table 6: Calculation of an emissions factor based on Arup office 2021 data**

| | | |
|---|---|---|
| 2021 emissions for Arup NL (excluding purchasing) | 209223 | kg Co2e |
| FTE 2021 | 251 | FTE |
| Average hourly rate | 100 | €/hr |
| 2021 turnover | 38,391,000 | € |
| 2021 € to £ exchange rate | 0.8597 | |
| Converted 2021 turnover | 33,004,642 | £ |
| **Arup 2021 emissions factor** | **0.006** | **kg Co2e / £** |

Arup is categorised as SIC Code 71 “Architectural and engineering services; technical testing and analysis services” which has a DEFRA emissions factor of 0.18 kg CO2e per £. This is almost 30 times higher than the actual emissions factor calculated using the Arup office 2021 data.

Assuming that all emissions factors are similarly over estimated the actual emissions produced, say conservatively by 25 times, the overall emissions from purchased goods and services would be 1,037,090 / 25 = 41,484 kg CO2e. In this case Scope 3 purchased good and services would be 16% of the overall CO2 emissions, as shown in Figure 7.

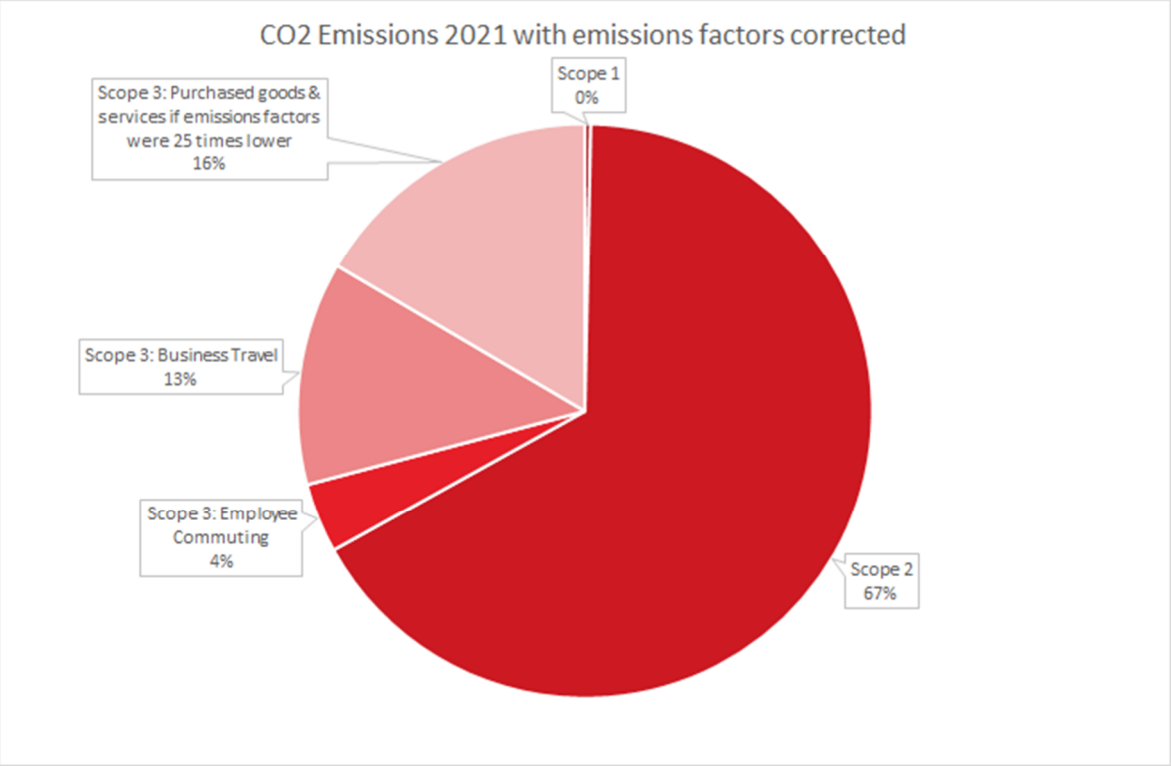



**Figure 7: Arup Netherlands CO2 Emissions 2021 with emissions factors corrected**

# 4. Findings

The key findings from this Upstream CO2 emissions analysis are:

- Service suppliers make up the majority of the assessment boundary of the Arup Netherlands Upstream Supply Chain.
- is the only goods supplier that is included in the assessment boundary. The is essential for the operation of Arup. measures and reports their sustainability impact[3] and have various awards and accreditations nationally and internationally such as 2021 Energy Star Partner of the Year.
- CO2 emission contributions from purchased good and services are very difficult to calculate. Section 3 of this report shows that the emissions can be calculated as between 16% and 83% depending on the dataset and emissions factors used.
- A crude comparison of the DEFRA emissions factors with a calculated Arup NL office emissions factor show that the DEFRA emissions factors are likely to be highly inaccurate although there is no better alternative calculation method at this time.
- CO2-Prestatieladder requirement 5.A.1 is satisfied through this report.
- Regarding CO2-Prestatieladder requirement 5.A.2, at this time it is not considered possible to influence the emissions of our upstream supply chain further. Our proposal is to investigate a number of our service providers to determine whether we can calculate their carbon footprint to doublecheck the current figures.

[3]

- A final option is to contact the DEFRA or its successors to determine if new factors are available.

# Appendix A

## Summary of Invoices - Financial Year 2020/21

Redacted

# Appendix B

## Suppliers removed from the analysed supplier list

The following suppliers were removed from the analysis because their emissions are already included within the existing Arup Netherlands CO2 emission analysis:

| Removed Suppliers |
| --- |

The following suppliers were removed from the analysis because they had negative invoices:

| Removed Suppliers |
| --- |

# Appendix C

## List of ranked suppliers and cumulative purchase values

Redacted

# Appendix D

## DEFRA Emissions Factors

## Department for Environment, Food and Rural Affairs

## "Table 13" Indirect emissions from the supply chain

| Last updated: | Mar/14 | Version: | 2.00 |
|---|---|---|---|

*This* table only covers indirect emissions from the supply chain and include $CO_2$, $CH_4$, $N_2O$ and F-gas emissions. Indirect emissions are those which are generated by other organisations as part of the process of providing goods and services to your company.

**How to use this table**

This table is intended to be used primarily as a high-level diagnostic tool/for initial scoping/estimating. **If you have more specific information about the supply chain emissions of any particular product then that source should be used instead.** Such adjustments should be clearly documented.

This table also includes a number of activities that are also covered in other models, such as coal, fuels refined from crude oil, mains electricity, gas, water and for various modes of transport. **If you have more specific/detailed information for such activities that will enable you to make calculations of emissions using the emission factors in the other models these should be used in preference to the factors in this table as they will be more specific.** However, the information in this table may still be useful for a rough initial calculation of the relative importance of these activities in the first instance.

The table below provides emission factors for spending on different groups of products:

1) Identify the amount spent on different product groups (in actual prices in £s, including VAT).

2) Multiply the amount of spending by the conversion factor to get total emissions in kilograms of carbon dioxide equivalent (kg $CO_2e$). The excel spreadsheet does this automatically following your entry of the amount of spending into the appropriate box.

For example, if £1000 is spent on 'textiles' (in purchasers' prices) in 2011, then the table calculates that 963 kilograms of $CO_2e$ were released during all stages of the production of these goods, including raw material extraction, processing, manufacturing, transportation, packaging etc. As a result, these emissions factors are different from the emission factors shown in the other annexes. They are similar to life-cycle emissions, but do not take into account direct emissions by your company, which may be included in life-cycle estimates (e.g. from the actual combustion of fuel by your company).

**Key information:**

This table can be used to produce indicative estimates of the Greenhouse Gas emissions relating to the production of goods and services purchased by your company. The estimates can only be indicative as they represent the average emissions relating to each product group, and the emission factors relating to specific products within the group may be quite different. If you have specific information about the supply chain emissions of any particular product then this source should be used instead.

The information derived from this table can be combined with data on direct emissions, i.e. those relating to actual fuel use (e.g. litres of fuel used, or derived from mileage estimates). The footnotes to the table give more information about what the factors shown in the table mean in terms of purchases of energy products and transport services.

**Are these factors directly comparable to those in the other models?**

No. The emission factors provided in this table are for the supply chain emissions of GHG resulting from the production and transportation of broad categories of goods and services. They express Scope 2 and 3 emissions as defined by the GHG Protocol. Because they encompass all the supply chain impacts (i.e. indirect emissions), these emission factors are **not directly comparable** with those from other models, which generally **only** include emissions from the point of use.
See also

http://www.ukconversionfactorscarbonsmart.co.uk/

https://www.gov.uk/measuring-and-reporting-environmental-impacts-guidance-for-businesses

**Which products are included in which categories?**

Some guidance is available in the comment boxes in the Table. The categories are based upon the Standard Industrial Classification (SIC): further information on the SIC 2007 is available here:

UK Standard Industrial Classification 2007 (UK SIC 2007) - ONS

**Do the factors take into account emissions relating to imported goods, and those relating to the formation of capital assets used in making the products?**

The factors are for products supplied for consumption in the UK but do take account of the emissions relating to the production of products imported for intermediate consumption (i.e. those products that are used by UK industries in the process of supplying products for consumption in the UK. The estimates do not incorporate any allowance for emissions relating to the formation of capital assets, whether in the UK or overseas.

**How were these factors calculated?**

The factors are based on a model of the economy, known as the input-output model, which describes in monetary terms how the goods and services produced by different sectors of the economy are used by other sectors to produce their own output. These monetary accounts are linked to information about the greenhouse gas emissions of different sectors of the economy. For the factors in this Annex an input-output model of the world economy was used with two distinct regions - the UK and the Rest of World.

By using the input-output model, the industrial emissions are then attributed to final products bought by consumers. The result is an estimate of the total upstream emissions associated with the supply of a particular product group.

The supply chain emission factors are expressed on a purchasers' price basis in real terms (i.e. the actual sales price in that year including taxes on products and distribution margins). It may be advisable to take subsequent price changes into account when using the factors shown below. It should also be noted that emissions in more recent years may have changed because of subsequent changes in the structure and emissions intensity of the supply chain since 2011.

| Table 13 | Supply chain emission factors for spending on products: kgCO | 2011 per £ | | Scope 3 Total GHG | |
|---|---|---|---|---|---|
| SIC code (SIC 2007) | Product category | Amount spent by product category 2011 (£) | x | Total kg $CO_2e$ per £ | Total kg $CO_2e$ |
| 01 | Agriculture products[2] | | x | 3.10 | |
| 02 | Forestry products | | x | 0.75 | |
| 03 | Fish products[2] | | x | 0.93 | |
| 05 | Coal, lignite, peat[3] | | x | 2.97 | |
| 06 & 07 | Crude petroleum and natural gas & Metal ores | | x | 0.66 | |
| 08 | Other mining and quarrying products | | x | 0.81 | |
| 09 | Mining support services | | x | 0.24 | |
| 10.1 | Preserved meat and meat products | | x | 1.40 | |
| 10.2-3 | Processed and preserved fish, crustaceans, molluscs, fruit and vegetables | | x | 0.97 | |
| 10.4 | Vegetable and animal oils and fats | | x | 0.99 | |
| 10.5 | Dairy products | | x | 1.82 | |
| 10.6 | Grain mill products, starches and starch products | | x | 1.33 | |
| 10.7 | Bakery and farinaceous products | | x | 0.78 | |
| 10.8 | Other food products | | x | 0.96 | |
| 10.9 | Prepared animal feeds | | x | 1.27 | |
| 11.01-6 | Alcoholic beverages | | x | 0.74 | |
| 11.07 | Soft drinks | | x | 0.60 | |
| 12 | Tobacco products | | x | 0.56 | |
| 13 | Textiles | | x | 0.96 | |
| 14 | Wearing apparel | | x | 0.68 | |
| 15 | Leather products | | x | 0.54 | |
| 16 | Wood and wood products | | x | 1.02 | |
| 17 | Paper and paper products | | x | 1.18 | |
| 18 | Printing and recording services | | x | 0.58 | |
| 19 | Coke and refined petroleum products | | x | 1.69 | |
| 20A | Industrial gases, inorganics and fertilisers (all inorganic chemicals) - 20.11/13/15 | | x | 0.72 | |
| 20B | Petrochemicals - 20.14/16/17/60 | | x | 0.69 | |
| 20C | Dyestuffs, agro-chemicals - 20.12/20 | | x | 1.02 | |
| 20.3 | Paints, varnishes and similar coatings, printing ink and mastics | | x | 1.66 | |
| 20.4 | Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations | | x | 1.44 | |
| 20.5 | Other chemical products | | x | 1.57 | |
| 21 | Basic pharmaceutical products and pharmaceutical preparations | | x | 0.35 | |
| 22 | Rubber and plastic products | | x | 0.96 | |
| 23OTHER | Glass, refractory, clay, other porcelain and ceramic, stone and abrasive products - 23.1-4/7-9 | | x | 2.19 | |
| 23.5-6 | Manufacture of cement, lime, plaster and articles of concrete, cement and plaster | | x | 1.27 | |
| 24.1-3 | Basic iron and steel | | x | 2.59 | |
| 24.4-5 | Other basic metals and casting | | x | 1.56 | |
| 25OTHER | Fabricated metal products, excl. machinery and equipment and weapons & ammunition - 25.1-3/25.5-9 | | x | 0.57 | |
| 25.4 | Weapons and ammunition | | x | 0.68 | |
| 26 | Computer, electronic and optical products | | x | 0.41 | |
| 27 | Electrical equipment | | x | 0.62 | |
| 28 | Machinery and equipment n.e.c. | | x | 0.56 | |
| 29 | Motor vehicles, trailers and semi-trailers | | x | 0.62 | |
| 30.1 | Ships and boats | | x | 0.76 | |
| 30.3 | Air and spacecraft and related machinery | | x | 0.59 | |
| 30OTHER | Other transport equipment - 30.2/4/9 | | x | 0.49 | |
| 31 | Furniture | | x | 0.64 | |
| 32 | Other manufactured goods | | x | 0.45 | |
| 33.15 | Repair and maintenance of ships and boats | | x | 0.69 | |
| 33.16 | Repair and maintenance of aircraft and spacecraft | | x | 0.56 | |
| 33OTHER | Rest of repair; Installation - 33.11-14/17/19/20 | | x | 0.41 | |
| 35.1 | Electricity, transmission and distribution | | x | 3.62 | |
| 35.2-3 | Gas distribution[3] | | x | 2.01 | |
| 36 | Natural water; water treatment and supply services | | x | 0.57 | |
| 37 | Sewerage services; sewage sludge | | x | 0.81 | |
| 38 | Waste collection, treatment and disposal services; materials recovery services | | x | 1.36 | |
| 39 | Remediation services and other waste management services | | x | 0.27 | |

| | | | | | |
|---|---|---|---|---|---|
| 41-43 | Construction[4] | | x | 0.37 | |
| 45 | Wholesale and retail trade and repair services of motor vehicles and motorcycles | | x | 0.30 | |
| 46 | Wholesale trade services, except of motor vehicles and motorcycles | | x | 0.35 | |
| 47 | Retail trade services, except of motor vehicles and motorcycles | | x | 0.31 | |
| 49.1-2 | Railway transport[5] | | x | 0.56 | |
| 49.3-5 | Road transport[5] | | x | 0.78 | |
| 50 | Water transport[5] | | x | 1.90 | |
| 51 | Air transport[5] | | x | 3.00 | |
| 52 | Warehousing and support services for transportation | | x | 0.28 | |
| 53 | Postal and courier services | | x | 0.35 | |
| 55 | Accommodation services | | x | 0.45 | |
| 56 | Food and beverage serving services | | x | 0.40 | |
| 58 | Publishing services | | x | 0.23 | |
| 59-60 | Motion picture, video and TV programme production services, sound recording & music publishing & programming and broadcasting services | | x | 0.22 | |
| 61 | Telecommunications services | | x | 0.32 | |
| 62 | Computer programming, consultancy and related services | | x | 0.18 | |
| 63 | Information services | | x | 0.18 | |
| 64 | Financial services, except insurance and pension funding | | x | 0.15 | |
| 65.1-3 | Insurance, reinsurance and pension funding services, except compulsory social security & Pensions | | x | 0.18 | |
| 66 | Services auxiliary to financial services and insurance services | | x | 0.15 | |
| 68.1-2 | Real estate services, excluding on a fee or contract basis and imputed rent | | x | 0.13 | |
| 68.2IMP | Owner-Occupiers' Housing Services | | x | 0.11 | |
| 68.3 | Real estate services on a fee or contract basis | | x | 0.09 | |
| 69.1 | Legal services | | x | 0.10 | |
| 69.2 | Accounting, bookkeeping and auditing services; tax consulting services | | x | 0.12 | |
| 70 | Services of head offices; management consulting services | | x | 0.17 | |
| 71 | Architectural and engineering services; technical testing and analysis services | | x | 0.18 | |
| 72 | Scientific research and development services | | x | 0.24 | |
| 73 | Advertising and market research services | | x | 0.20 | |
| 74 | Other professional, scientific and technical services | | x | 0.16 | |
| 75 | Veterinary services | | x | 0.20 | |
| 77 | Rental and leasing services | | x | 0.23 | |
| 78 | Employment services | | x | 0.14 | |
| 79 | Travel agency, tour operator and other reservation services and related services | | x | 0.16 | |
| 80 | Security and investigation services | | x | 0.24 | |
| 81 | Services to buildings and landscape | | x | 0.25 | |
| 82 | Office administrative, office support and other business support services | | x | 0.18 | |
| 84 | Public administration and defence services; compulsory social security services | | x | 0.27 | |
| 85 | Education services | | x | 0.17 | |
| 86 | Human health services | | x | 0.25 | |
| 87-88 | Social care services | | x | 0.29 | |
| 90 | Creative, arts and entertainment services | | x | 0.24 | |
| 91 | Libraries, archives, museums and other cultural services | | x | 0.25 | |
| 92 | Gambling and betting services | | x | 0.17 | |
| 93 | Sports services and amusement and recreation services | | x | 0.29 | |
| 94 | Services furnished by membership organisations | | x | 0.15 | |
| 95 | Repair services of computers and personal and household goods | | x | 0.22 | |
| 96 | Other personal services | | x | 0.27 | |
| 97 | Services of households as employers of domestic personnel | | x | 0.04 | |
| | **TOTAL** | | | | **0** |

Source Calculated by Centre for Sustainability Accounting (CenSA), Leeds, http://www.censa.org.uk
Defra (enviro.statistics@defra.gsi.gov.uk) should be the first point of contact.

Notes

[1] Agricultural and fish products are those bought direct from farmers or the fisheries industry. Where products have been prepared for consumption they should be treated as products from the food and

[2] These emissions relate to the activities of the industries engaged in the extraction of energy carriers. Where fuels are processed before use then the factors identified by footnote 3 should be used.

[3] These emission factors relate to the supply and distribution of energy products for general consumption, and take into account emissions relating to the extraction and processing of the energy carriers (e.g. oil refineries). Except in the case of electricity, they do not include emissions relating to your company's use of the energy. In the case of electricity, these factors include the emissions relating to the production of the fuels used to generate the electricity, whereas those shown in Annex 3 of the 2009 Defra / DECC GHG Conversion Factors are limited just to emissions from the use of those fuels by the electricity producers.

[4] These factors relate to spending on construction projects, not to emissions relating to construction projects in the supply chain.

[5] These factors relate to transport services for hire or reward (including public transport services), not to emissions from vehicles owned by your company (for which estimates of actual fuel use should be used).

# Appendix E

## Calculation of kg CO2 emissions per supplier

Redacted

# Appendix F

## Arup Netherlands Office CO2 Emissions 2021

Redacted

# Appendix G

## Extract from ER GHG Emissions Reduction Plan

Redacted

ARUP

Arup BV

# CO2 Performance ladder

## Communication plan 2022

Reference: CO2-Portfolio_Communications plan

Final | 12 July 2022



Job number 074764-56

**Arup B.V.**
Beta Building Naritaweg 118
1043 CA
Amsterdam
Netherlands
arup.com

ARUP

# Document Verification

| | |
|---|---|
| **Project title** | CO2 Performance ladder |
| **Document title** | Communication plan 2022 |
| **Job number** | 074764-56 |
| **Document ref** | CO2-Portfolio_Communications plan |
| **File reference** | CO2-Portfolio_Communications plan_2022 |

| **Revision** | **Date** | **Filename** | CO2-Portfolio_Communications plan_2022 | | |
|---|---|---|---|---|---|
| Draft | 21 March 2022 | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Hester Duijndam | Tudor Salusbury |
| | | **Signature** | MTro | | |
| Draft | 05 May 2022 | **Filename** | CO2-Portfolio_Communications plan_2022 | | |
| | | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Hester Duijndam | Tudor Salusbury |
| | | **Signature** | MTro | | |
| ISSUE | 12 July 2022 | **Filename** | CO2-Portfolio_Communications plan_2022 | | |
| | | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Hester Duijndam | Tudor Salusbury |
| | | **Signature** | MTro | | |

Issue Document Verification with Document ☑

## Contents

## 1. Introduction

Our Arup Strategy states clearly that sustainable development is our central purpose. 'If what we are doing does not contribute to sustainable development, we should ask ourselves whether we should be doing it.' This applies to all of us, and everyone has a role to play in making sustainable development business as usual over the next three years. There are many aspects to sustainable development but action to combat climate change and its impacts is our no.1 priority.

### 1.1 Key objectives

1. Projects: Adopt climate action as an integral part of our design and advisory services on all existing and new projects, aligned with national and industry commitments to limit global warming to 1.5 degrees and future climate projections.

   Demonstrate what is possible through our projects, pushing boundaries, delivering demonstrator projects, defining best practice and evaluating outcomes.

2. Data & Digital: Prioritise investments in data and digital technology that accelerate innovation, support informed design decisions, and enable us to measure and demonstrate impact.

   Business & Services: Prioritise climate action within existing businesses and develop new services within and between businesses that respond to climate change challenges and opportunities guided by the six principles.

3. Policy, Finance & Standards: Influence climate-related policy, legislation and finance, industry procurement and standards in our priority countries, and establish the implications for our core markets, businesses and services.

4. Organisation & Structure: Build capacity and organise ourselves better to win and deliver progressive projects and incorporate climate expertise on all projects.

In this document Arup B.V. outlines its communication plan for the years 2021and 2022 within the framework of its sustainability strategy and the $CO_2$ -Performance ladder. This document is an update of the draft plan 2019-2020, never officially released due to COVID-19 related disruptions of work patterns.

Arup uses both internal and external channels to communicate the implementation of the CO2-performance ladder. The earlier communication strategy based on quarterly $CO_2$-performance updates, half yearly awareness weeks and yearly CO2-target updates have been adjusted to reflect the new reality of working from home.

At the moment of writing this plan, working from home is the norm and no change is expected in this regard in the foreseeable future. Updates on the CO2-performance using the screens in the office are now obsolete for now, due to the COVID-19 related disruptions of work patterns.

Annual calendar:

| Period | Internal $CO_2$-ladder | | $CO_2$-awareness | | External | |
|---|---|---|---|---|---|---|
| | Topic | Method | Topic | Method | Topic | Method |
| Q1 | Update $CO_2$-performance | Group meeting presentation at the end of Q1 (March) | | | Update CO2-performance for previous calender year | Arup site |
| Q2 | | | Report Sustainability in projects | | websites | SKAO |
| Q3 | Update CO2-performance | Update in group meeting for half year results Q1+Q2. | | | | Arup site |
| Q4 | | | Sustainability day | External speaker | | |

**Figure 1 Yearly communication calendar**

## 2. Communication strategy

The goal for the communication plan is to achieve a general understanding of what we do as Arup in the field of sustainability, decarbonization and how we want to achieve a more sustainable future in the built environment. As a firm, in our projects and in our advice to clients. Sustainable Development is everything. The leadership has an important role in leading the way towards net zero in 2050. They lead by example to help ensure we make the best effort in running our business in the most sustainable way possible and advise our clients on how they can be more sustainable.

## 2.1 Target groups

| | Target Group |
|---|---|
| Internal | • Employees<br>• Project managers<br>• Business units Leaders<br>• Management team |
| External | • Arup Global and Arup companies<br>• Clients: public and private sector<br>• Sector / network associations and knowledge exchange platforms:<br>• SKAO "Stichting Klimaatvriendelijk Aanbesteden en Ondernemen:<br>• Project partners: architects and engineering firms<br>• Students and potential employees |

## 2.2 Content per Target Group

In the table below, we explain the content of communication for each target group:

| Target group | Content of communication |
|---|---|
| General | • Reduction target and progress of Arup B.V. in meeting these targets |
| Internal | • Actual footprint, reduction goals and measures to be taken to reduce emissions (All internal target groups)<br>• Measured progress in reducing emissions (All internal target groups)<br>• Expected / measured environmental performance of projects using Power BI dashboard (Project Managers, Business Unit Leaders & Management team)<br>• Environmental audits on projects (Project Managers, Business Unit Leaders & Management team) |
| Arup Global and Arup companies | • Progress of Arup Netherlands in complying with Arup Regional and Global sustainability strategy and plans.<br>• Progress of Arup B.V. in meeting reduction goals |
| Clients, Sector and knowledge exchange platform | • Carbon footprint, reduction targets and measures (to be) taken.<br>• Progress in meeting reduction targets<br>• Our measures and visions about a collaborative progress towards more sustainable designs |
| SKAO | • Documents and links required according to certified level requirements of CO2-performance ladder<br>• Valid certificates |
| Partners and clients | • Continuous reporting on design propositions, feasibility studies and decisions to increase the sustainability outcome of a project |

### 2.3 Responsibility and planning

Within the Arup Management System people have been appointed and are responsible to inform people on and carry out our Environmental policies. This extents into the responsibility for maintaining and communication around the CO2-performance ladder. At least twice a year information will be given to all internal and external target groups, see Figure 1.

## 3. Internal communication channels

To making sure we are aligned and practice what we preach we use multiple channels to convey our message and information and reasoning about the $CO_2$-performance ladder to employees.

### 3.1 Group meetings

The prime channel for internal communication is the group meeting. These meetings are recorded and widely shared within Arup. Twice a year [March and September] the results of the carbon emissions inventory is shared in the group meeting. There is room for discussion and questions.

In 2021 the following group meetings were held regarding our sustainability ambitions:

| Date | Topic | Link |
|---|---|---|
| 14 december 2021 | Sustainability concepts in projects | \\global\europe\Amsterdam\Office\09 QHSE\03 ENVIRONMENTAL\02_CO2-registratie\C_Communicatie plan\2022\Group cafe 2021\ |
| 2 november 2021 | Sustainable Development – Toolkit | |
| 28 september 2021 | Buy nothing new month challenge | |
| 22 june 2021 | Measuring Circularity | |
| 8 june 2021 | Sustainable Development plan 2021 | |
| 11 may 2021 | Sustainable Development policy | |
| 2 march 2021 | Sustainable Development update | |
| 5 january 2021 | Sustainable Development update | |

### 3.2 Sustainable development in our projects-report

From 2021 onwards we yearly publish a summary of sustainable development aspects used in our projects. This showcases our capabilities in the field of sustainability and helps to improve our own understanding of sustainability in a project context.

The first sustainable development report was scheduled for June 2021. An update version is scheduled for June 2022.

### 3.3 Training

In February 2021, we organised a DuboCalc training course for all staff members, on a subscription basis, in order to link up with the standard sustainability measurement tool used by RWS.

For the infra team, there is specific attention for sustainability in the projects for Rijkswaterstaat and from Arup there is a strong focus on supporting Rijkswaterstaat in achieving sustainability targets. Together, we can achieve climate objectives.

In November and December 2021 we initiated a Sustainability training drive within the Infrastructure team with the intention to upskill the team in sustainability. Participants were encouraged to complete 8 online modules to participate in a lottery for small prizes. In total 18 participants completed the modules, effectively doubling the number of trained staff.

The Infra-initiative was followed up in January-March 2022 with an Arup bv level initiative along the same lines.

Sustainable development is at the heart of our Arup Strategy. It is our purpose. It is how we will shape a better world. We train our people to making sure that they can deliver this complex task.

The way we train our people is based on four pillars:

**Act**: Deliver projects, products, services and solutions that create shared value and drive innovation.

**Influence**: Use our knowledge and networks to lead the way and shape the markets in which we work.

**Learn**: Build capability and deep expertise through research, learning, knowledge management and communications.

**Enable**: Integrate sustainable development in our operations and business practices.

All staff members can enroll through our internal training system Moodle in the Learning Path Global Sustainability Practitioner with 5 knowledge streams on sustainability on three levels – Knowledgeable, Skillfull, Expert.

1. Climate change-
2. Health and wellbeing-
3. ESG responsible business-
4. Sustainable/regenerative design and tools-
5. Sustainability/Frameworks and Certification)

### 3.4 GIKI

In December 2021 Giki Zero was made available to all staff, to evaluate their personal carbon footprint one step at a time. Giki Zero is an app which provides you with your own personal path to reach zero carbon emissions based on several factors such as food choices and travel habits. With our working unbound policy the boundaries between work and home become less clear, this app will allow people to improve their personal carbon footprints along the improving of our corporate carbon footprint.

## 4. External communication

Our work and our solutions are communicated externally in various ways. Through national media and trade platforms/ magazines we convey our vision and our inventive approach to achieve sustainable outcomes for our clients or to inspire the public to change their ways to help achieve a more sustainable future.

## 4.1 Arup website

Arup communicates its participation in the CO2-performance ladder system through the website of Arup. One of the significant changes in the past year on the Arup Group policy on CO2 has been our commitment to be carbon neutral in 2030 and to achieve a 30% reduction in carbon footprint in five years. These goals are reported and measured on European and global level within Arup.

Following COP26 last November in our role as sustainability advisor during the event we committed ourselves to undertaking whole lifecycle carbon assessments for all its buildings projects – new and retrofit – from next year. The firm has also announced it will not be taking on any new energy commissions involving the extraction, refinement, or transportation of hydrocarbon-based fuels.

Read more here

## 4.2 SKAO

- On the SKAO, Arup B.V. shares the information according to the requirements of the audit checklist. The information stays available on the website for at least 2 years. Arup is listed on the website of SKAO as a level 5 certified company.
- https://www.skao.nl/gecertificeerde-organisaties/Arup

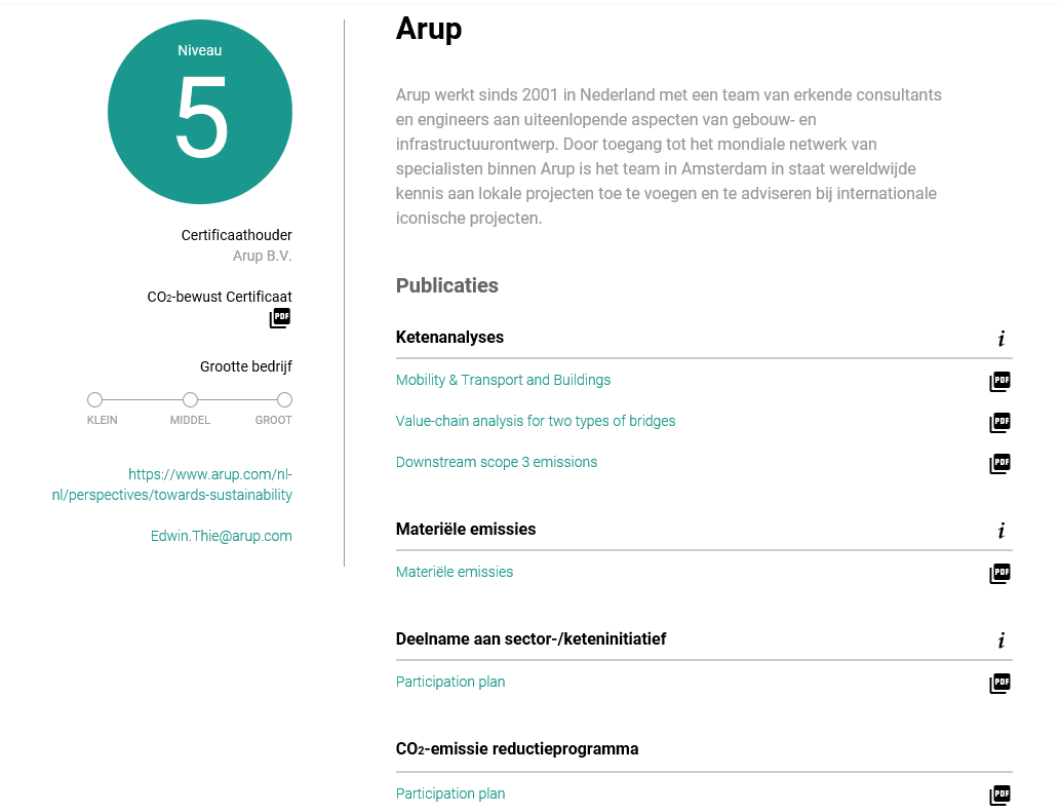



**Figure 2 Arup information on the SKAO website (obtained on 31/05/2019)**

## 4.3 Clients

As part of our client relationship management with RWS we yearly discuss sustainability issues in our annual suppliers meeting also known as ‘Leveranciersgesprek’. Part of the Samenwerkingsovereenkomst 4 with Rijkswaterstaat is the stated intention to collaborate on sustainability. Arup has confirmed this intention.

### Other communication channels

Throughout the year we organize various events, lectures, and meetings with and for clients to inspire, update and motivate. Together we are responsible for delivering a more sustainable future. In sharing our knowledge, learnings and delivered projects we lead the way.

ARUP

Arup BV

# CO2 Performance ladder

## Participation plan

Reference: CO2-portfolio_Participation plan

Final | 12 July 2022



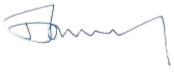
Job number 074764-56

**Arup B.V.**
Beta Building Naritaweg 118
1043 CA
Amsterdam
Netherlands
arup.com

ARUP

# Document Verification

| | |
|---|---|
| **Project title** | CO2 Performance ladder |
| **Document title** | Participation plan |
| **Job number** | 074764-56 |
| **Document ref** | CO2-portfolio_Participation plan |
| **File reference** | CO2-portfolio_Participation plan_2022 |

| **Revision** | **Date** | **Filename** | CO2-portfolio_Participation plan_2022 | | |
|---|---|---|---|---|---|
| Draft | 21 March 2022 | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Hester Duijndam | Tudor Salusbury |
| | | **Signature** | MTro | | |
| Draft | 05 May 2022 | **Filename** | CO2-portfolio_Participation plan_2022 | | |
| | | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Hester Duijndam | Tudor Salusbury |
| | | **Signature** | MTro | | |
| Final | 12 July 2022 | **Filename** | CO2-portfolio_Participation plan_2022 | | |
| | | **Description** | Yearly update | | |
| | | | **Prepared by** | **Checked by** | **Approved by** |
| | | **Name** | Marlissa Trompert | Hester Duijndam | Tudor Salusbury |
| | | **Signature** | MTro |  |  |

Issue Document Verification with Document ☑

## Contents

# 1. Introduction

As part of the overall Arup sustainability strategy Arup B.V. is committed to the active participation in initiatives in the field of sustainability in general and $CO_2$-reduction in particular. This entails performing in-house research and establishing partnerships with academic and industry partners.

The previous report was issued in 2019 with the intention to update it after the closure of the Arup financial year in March 2020. Things didn't quite work out that way. New working patterns had to be established to facilitate the social distancing required to combat COVID-19. The pandemic continued on with restrictions in most of 2022.

Webinars and podcasts proofed to be a popular way to divulge the Arup message on sustainability and participate in sector initiatives.

# 2. In-house research

## 2.1 Completed research

In the past years have funded internal research. In February 2020 we held 3 internal workshops on **circular economy** based on three principles: re-use, biobased and modular. The outcomes of these workshops resulted in our focus on Timber. The workshops were funded with internal Business Unit development funds. We also have partnered with Heijmans, a Dutch contractor, to develop a proposal for the first round of the **SBIR call**. From October 2020 to March 2021 we worked on the development of the design of the timber bridge, the environmental impact and the business case. We submitted our report on 16$^{th}$ of March 2021.

## 2.2 Invest in Arup

In support of the SBIR CIVI internal Arup research funds were allocated to the Timber bridge initiative. This made it possible to involve the wider Arup community in the undertaking. These funds are also used to translate the original Dutch report to make it easier to distribute internationally.

## 3. Initiatives

Arup B.V. participates in a number of initiatives aiming to reduce CO2-emissions.

### 3.1 CB-23

The Circular Building initiative hosted by Bouwcampus has since 2019 been working on ways to measure circularity. From mid 2019 to mid 2020 Arup participated in the workgroup Measuring Circularity. This participation will be continued in the year to come.

### 3.2 Green business club Sloterdijken

Arup is a founding membership of a green business club Sloterdijken, aiming to help the local business deploy sustainable development initiatives.

### 3.3 Memberships

- Arup is a member of the Sustainability Committee TC1 of the Dutch Steel Association
- Arup is a Member of Madaster, the circularity initiative for building materials
- Arup is a Member of Circle economy, the circular building initiative. As part of this membership Arup twice hosted a webinar on timber building, showcasing the work on Haut.
- Arup has signed the Staalakkoord. This covenant, intended for the entire national steel construction chain, provides for further improvements in the sustainable use of steel in Dutch construction and infrastructure by 2030.


**Figure 1: Arup signed the Staalakkoord (source: Bouwakkoord Staal)**

### 3.4 Sector initiatives

- Arup is a Knowledge Partner of the Ellen MacArthur Foundation. Whilst most of the effort is geared towards Arup global, there have been a number of calls for input from Arup in Amsterdam.

- Arup is participating in the RWS initiative Roadmap naar klimaatneutrale en circulaire kunstwerken in 2030.
- Arup is participating and contributing to the Bouwcampus series Materialen met Toekomst: Hout in de GWW. The aim of this series is to produce a manual for local and provincial authorities helping them to make informed choices on the use of timber.
- Arup participates in events of the Buyer Group Circulaire Bruggen en Viaducten van Pianoo. Members gather each month to exchange knowledge, establishing a shared market vision and strategy on circular viaducts and bridges and within 2 years requests are placed for circular viaducts and bridges on the market by participants of the Buyer Group.

## 4. Future plans

The future plans will mostly be geared towards involving a wider internal audience from Arup in the efforts to promote sustainable solutions.