# Rambus GHG Inventory

*(Calendar Year 2022)*

Prepared by

Point B

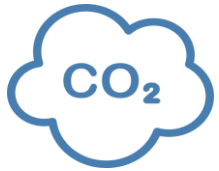
# Greenhouse Gas Overview

Greenhouse Gas (GHG) emissions calculated using global industry standards, including World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD), and in accordance with the GHG Protocol.

Greenhouse Gases

Six greenhouse gases covered by Kyoto Protocol:

- Carbon dioxide (CO2)
- Methane (CH4)
- Nitrous oxide (N2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF6)




**1 MT CO2e or 1,000 kgs CO2e**

=

127,532 Smartphones Charged One Time

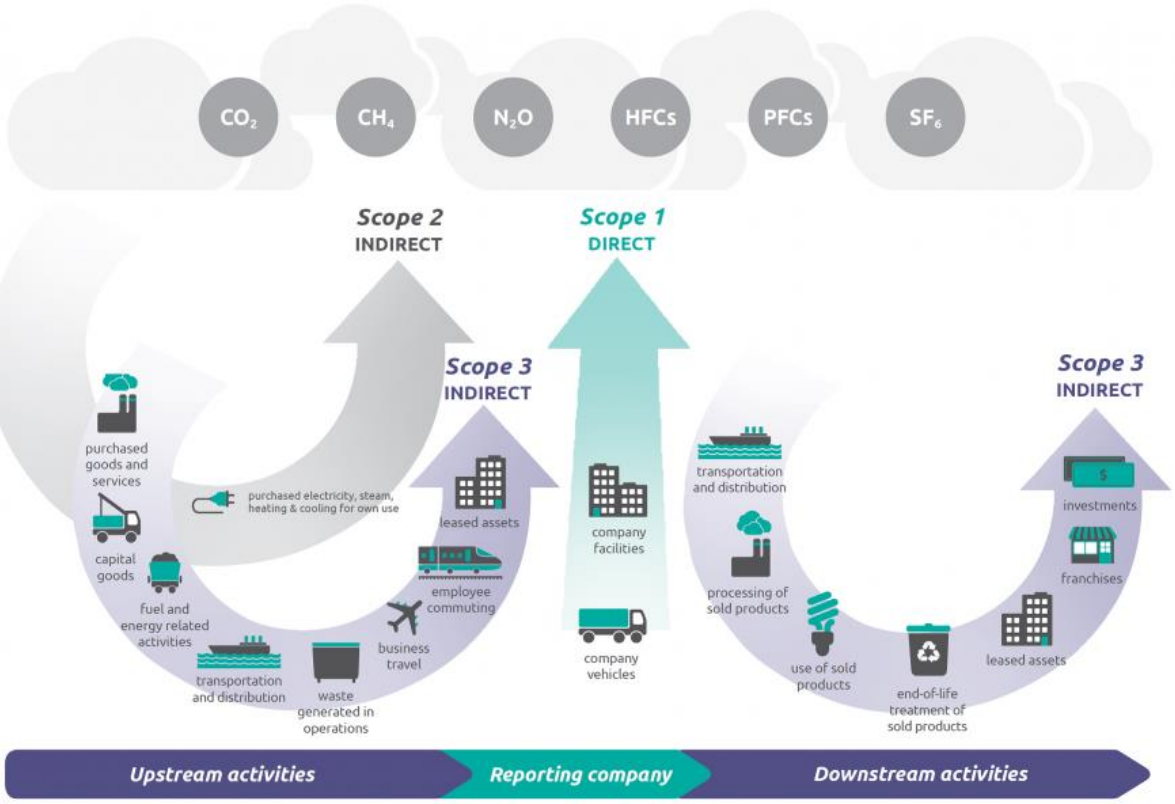
=

Driving from

New York to Los Angeles

# Sources and Scopes of GHG Emissions

- Included
- Relevant, but Excluded Due to Data Not Available
- Not Relevant, Excluded




**Scope 1 & 2**

- Company Energy Use (Natural Gas)
- Company-Owned Vehicles
- Electricity Use

**Scope 3**

- Purchased Goods & Services
- Capital Goods
- Fuel- and Energy-Related Activities
- Waste Generated In Operations
- Business Travel (Air & Ground)
- Employee Commuting
- Investments
- Upstream Transportation & Distribution
- Upstream Leased Assets
- Downstream Transportation And Distribution
- Use of Sold Products
- End-Of-Life Treatment of Sold Products
- Downstream Leased Assets
- Franchises

# GHG Inventory for FY21 and FY22

| Scope/Category | FY21 | FY22 | % change |
|---|---|---|---|
| Scope 1 (Natural Gas + Fugitive Emissions + Diesel Generator) | 1,546 | 1,853 | 20% |
| *Scope 1 (Fleet)* | *0* | *0* | *0%* |
| Scope 2 Location-based (Electricity) | 1,111 | 1,032 | (6%) |
| Scope 2 Market-based (Electricity)) | 379 | 285 | (25%) |
| Scope 3 | 173,435 | 253,902 | 46% |
| *Purchased Goods and Services (incl. contract manufacturing)* | *23,008* | *62,019* | *170%* |
| *Capital Goods* | *9,121* | *4,383* | *(52%)* |
| *Fuel- and Energy- Related Activities Not Included in Scope 1 or Scope 2* | *146* | *136* | *(7%)* |
| *Waste Generated in Operations* | *124* | *8.9* | *(93%)* |
| *Business Travel* | *41* | *521* | *1,171%* |
| *Employee Commuting + WFH energy use* | *122* | *76* | *(38%)* |
| *Upstream and Downstream Shipping* | *658* | *46.95* | *(93%)* |
| *Use and Processing of Sold Products* | *140,216* | *200,387* | *43%* |
| *End of Life Treatment of Sold Products* | *No Data Available* | *No Data Available* | *No Data Available* |
| **TOTAL** | **176,092** | **270,464** | **54%** |

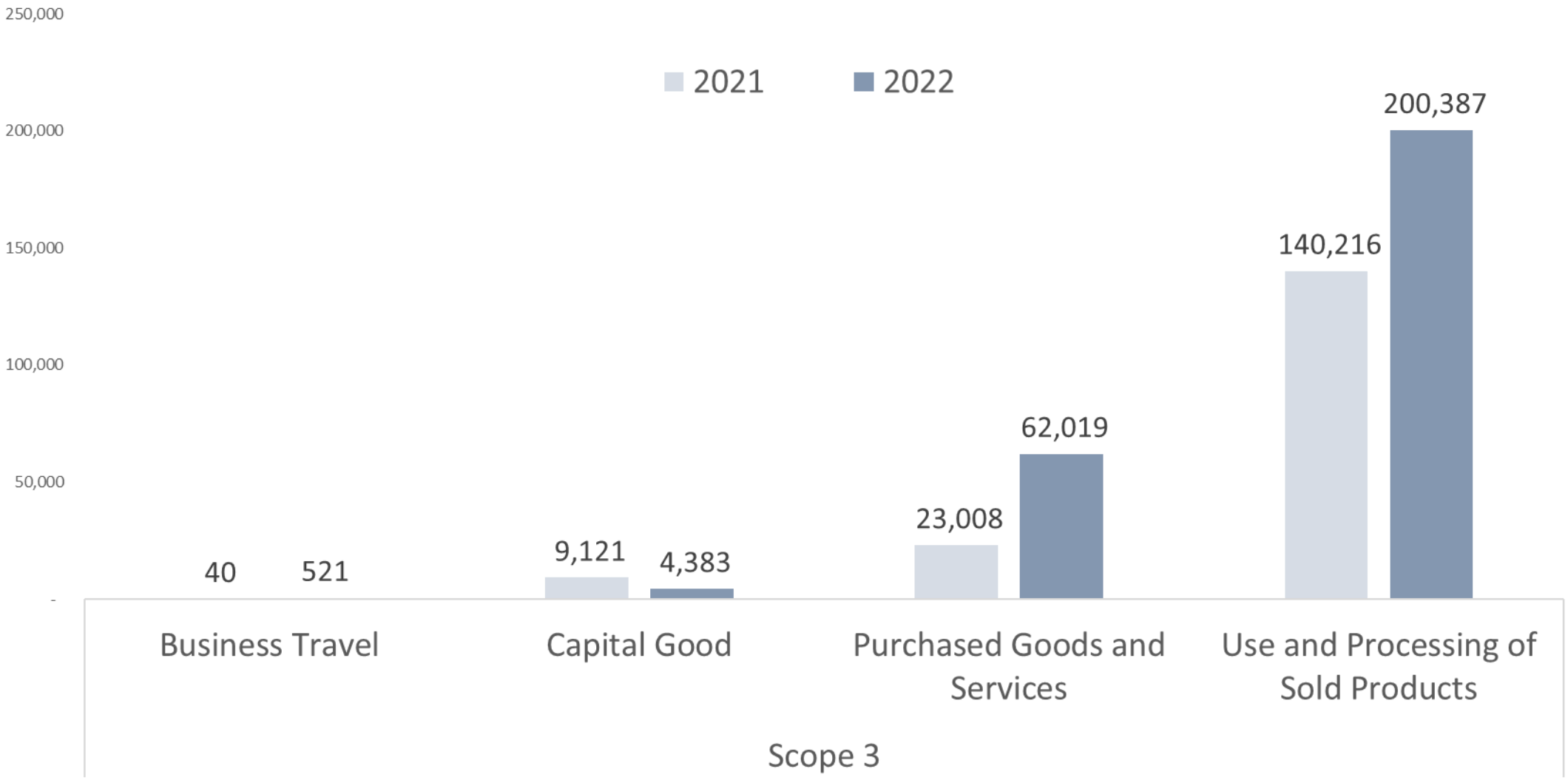
** emissions are displayed in metric ton CO2e*

**** Scope 3 categories not included in this table were not relevant for Rambus during the three fiscal years.*

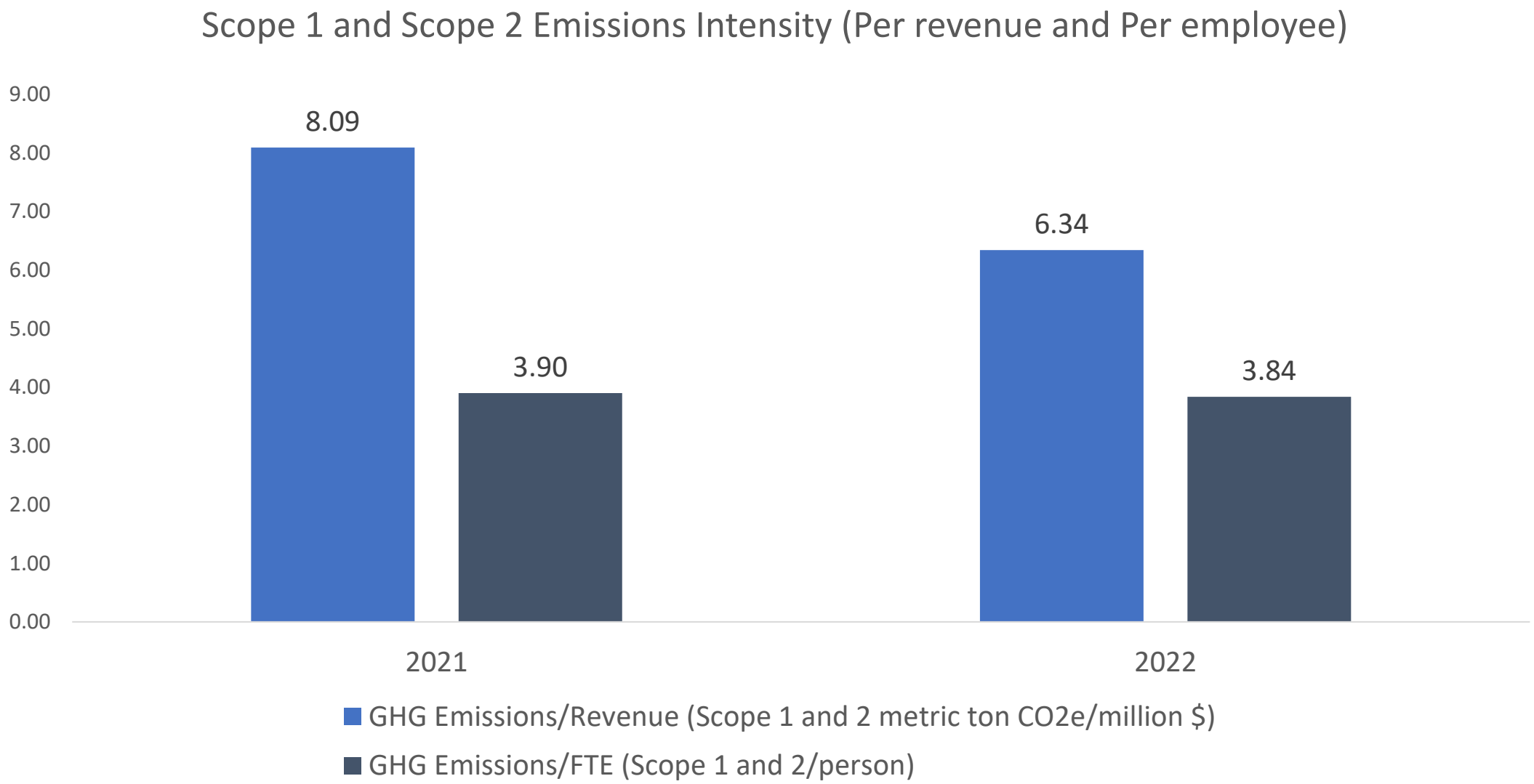
# Categories with biggest changes

| Scope/Category | FY21 | FY22 | % change |
|---|---|---|---|
| Scope 1 (Natural Gas + Fugitive Emissions + Diesel Generator) | 1,546 | 1,853 | 20% |
| *Reasons for change: changes are mainly driven by the increase of natural gas consumption at San Jose headquarters. In 2021, natural gas consumption started in March, while in 2022 full year of consumption was accounted for.* | | | |
| Scope 3: Purchased Goods and Services (incl. contract manufacturing) | 23,008 | 48,342 | 110% |
| *Reasons for change: changes are mainly driven by the increase in spend in contract manufacturing* | | | |
| Scope 3: Business Travel | 41 | 521 | 1,171% |
| *Reasons for change: significant increases in overall travel spend, particularly air travel.* | | | |
| Scope 3: Upstream and Downstream Shipping | 658 | 46.95 | (93%) |
| *Reasons for change: change in data source. In 2021, spend data was used while in 2022, emissions data from the shipping vendors were used.* | | | |
| Scope 3: Use and Processing of Sold Products | 140,216 | 200,387 | 43% |
| *Reasons for change: increases in total number of chip units sold.* | | | |

# Emissions in FY21 Compared with FY22



# Emissions Intensity in FY21 Compared with FY22



# Scope 1 + Scope 2 Emissions is 2,885 MT CO2e, which is equal to…

644 passenger vehicles driven for one year

OR

365 homes' energy use for one year

# 2,885 MT CO2e can be sequestered by…

47,853 tree seedlings grown for 10 years

OR

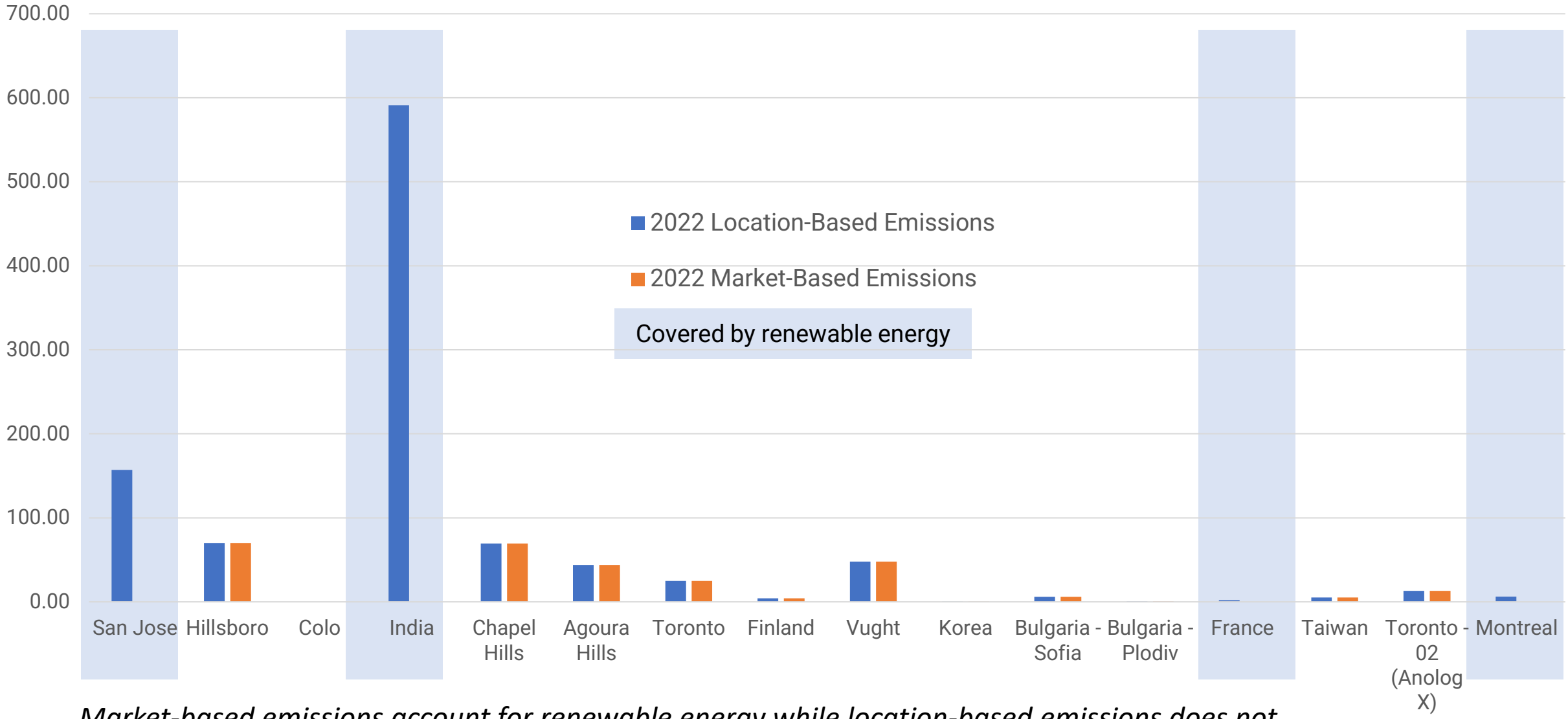
3,451 acres of US forests in one year

https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

# % Contribution to Total by Category

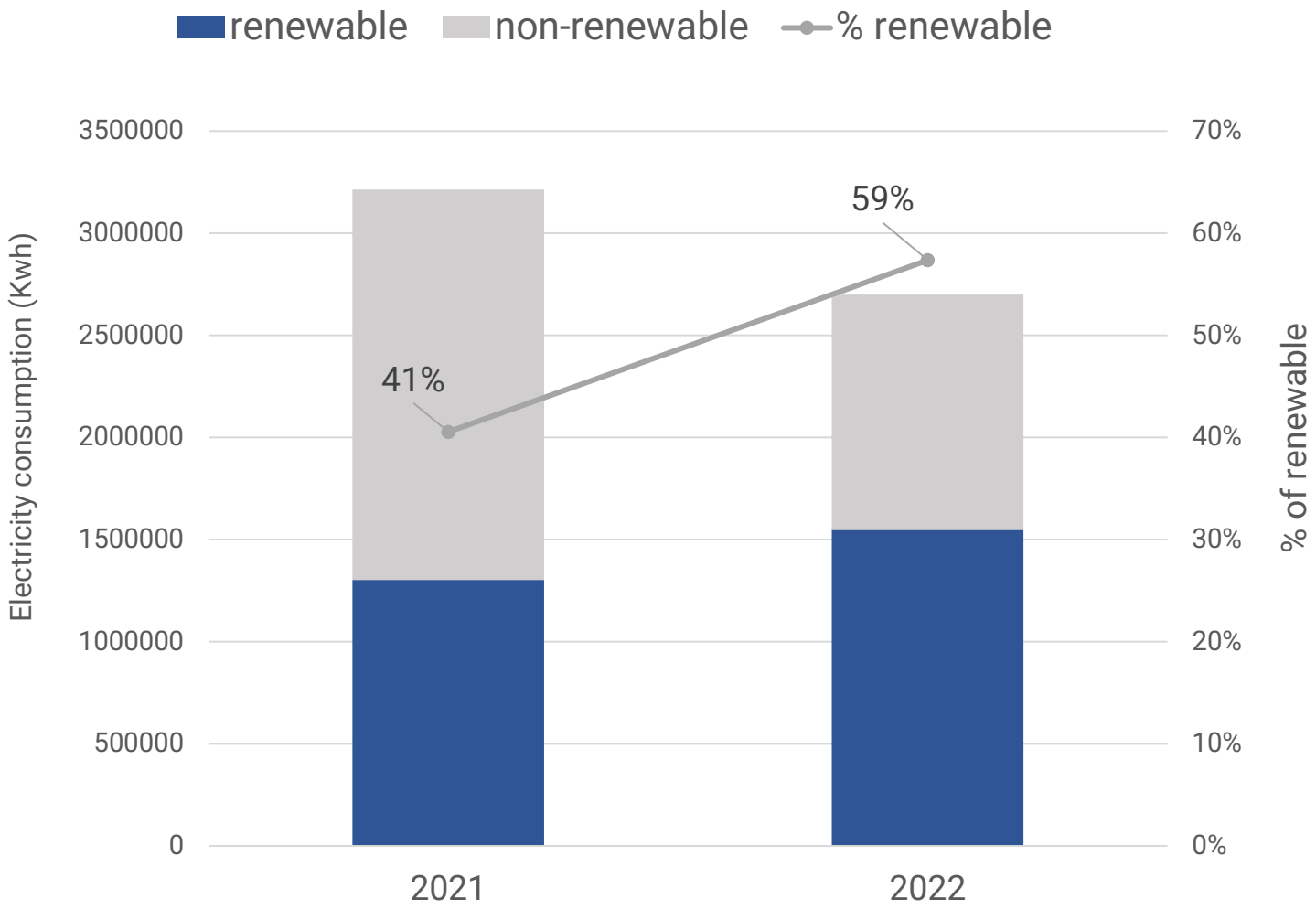
| Scope/Category | FY21 | FY22 |
|---|---|---|
| Scope 1 (Natural Gas + Fugitive Emissions + Diesel Generator) | *0.9%* | *0.7%* |
| *Scope 1 (Fleet)* | - | - |
| Scope 2 (Electricity) | *0.5%* | *0.4%* |
| Scope 3 | *98.5%* | *98.9%* |
| *Purchased Goods and Services* | *13.1%* | *22.9%* |
| *Capital Goods* | *5.2%* | *1.6%* |
| *Fuel- and Energy- Related Activities Not Included in Scope 1 or Scope 2* | *0.1%* | *0.1%* |
| *Waste Generated in Operations* | *0.1%* | *0.0%* |
| *Business Travel* | *0.0%* | *0.2%* |
| *Employee Commuting + WFH energy use* | *0.1%* | *0.0%* |
| *Upstream and Downstream Shipping* | *0.4%* | *0.0%* |
| *Use and Processing of Sold Products* | *79.6%* | *74.1%* |
| *End of Life Treatment of Sold Products* | *No Data Available* | *No Data Available* |

# Scope 2 Location and Market-based Emissions




*Market-based emissions account for renewable energy while location-based emissions does not.*

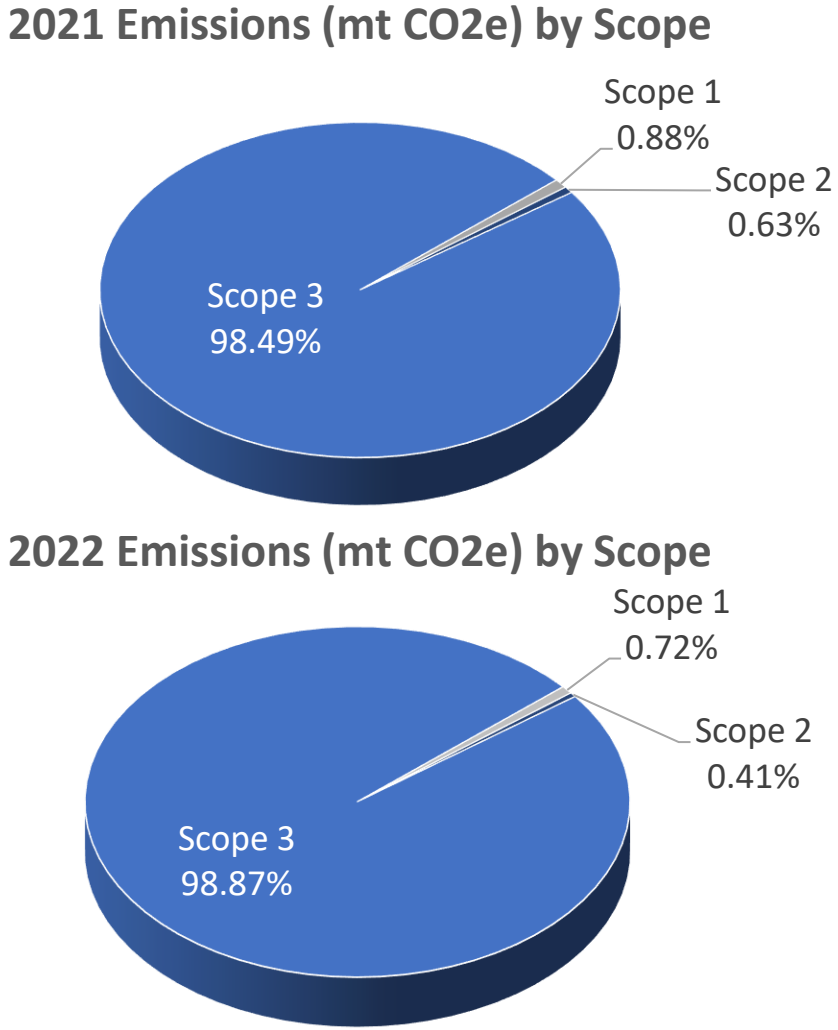
# Renewable Energy Profile




- In 2022, electricity from renewable sources represented **59%** of total electricity consumption, up from 41% in 2021.
- Sites that are already using/purchasing renewable electricity include: **San Jose, India, France and Montreal**

# Emissions by Scope

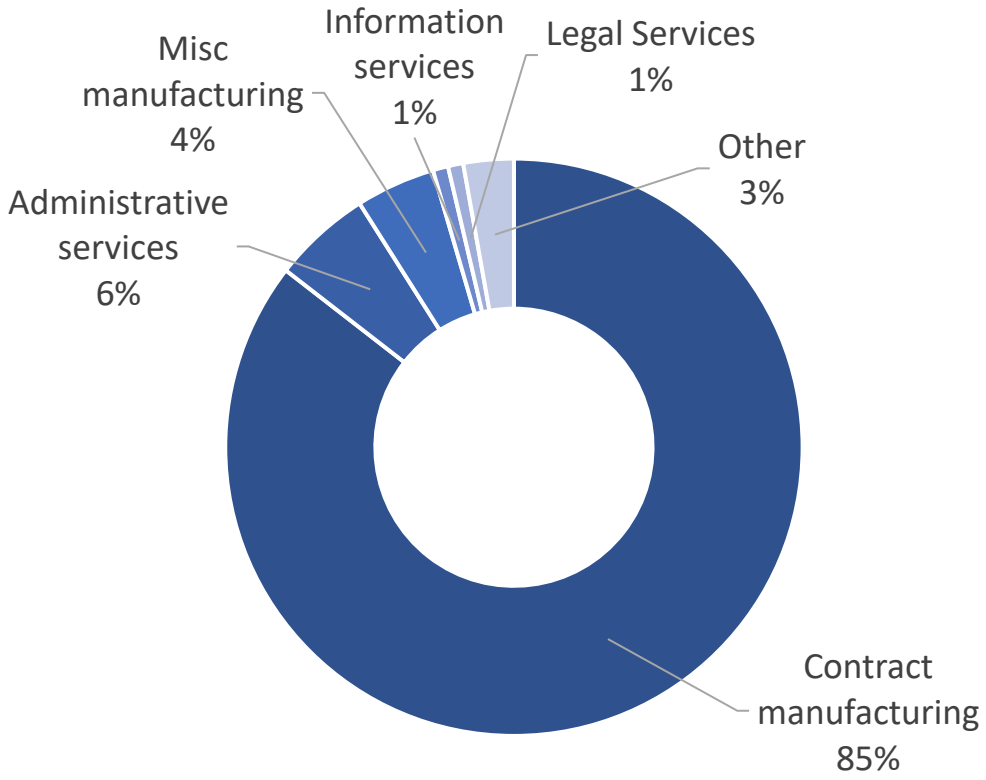
- In both 2021 and 2022, **Scope 3 was the largest source of emissions**.
  - In 2021, Scope 3 emissions contributed to 98.5% of Rambus footprint.
  - In 2022, Scope 3 emissions contributed to 98.9% of Rambus footprint.
  - **Use and processing of sold products** is the largest source of emissions in both 2021 and 2022.



# Purchased Goods & Services Emissions Breakdown

## Insights

1. **Purchased goods and services** was the second largest source of emissions.
2. Total emissions for this category were **48,342 MTCO2e in 2022.**
3. **Contract manufacturing contributed the most to purchased goods emissions** followed by administrative and support services.




| Category | Examples |
|---|---|
| **Administrative services** | Accounting & auditing, consulting, recruiting, etc. |
| **Information services** | Data processing, internet publishing, and other information services |

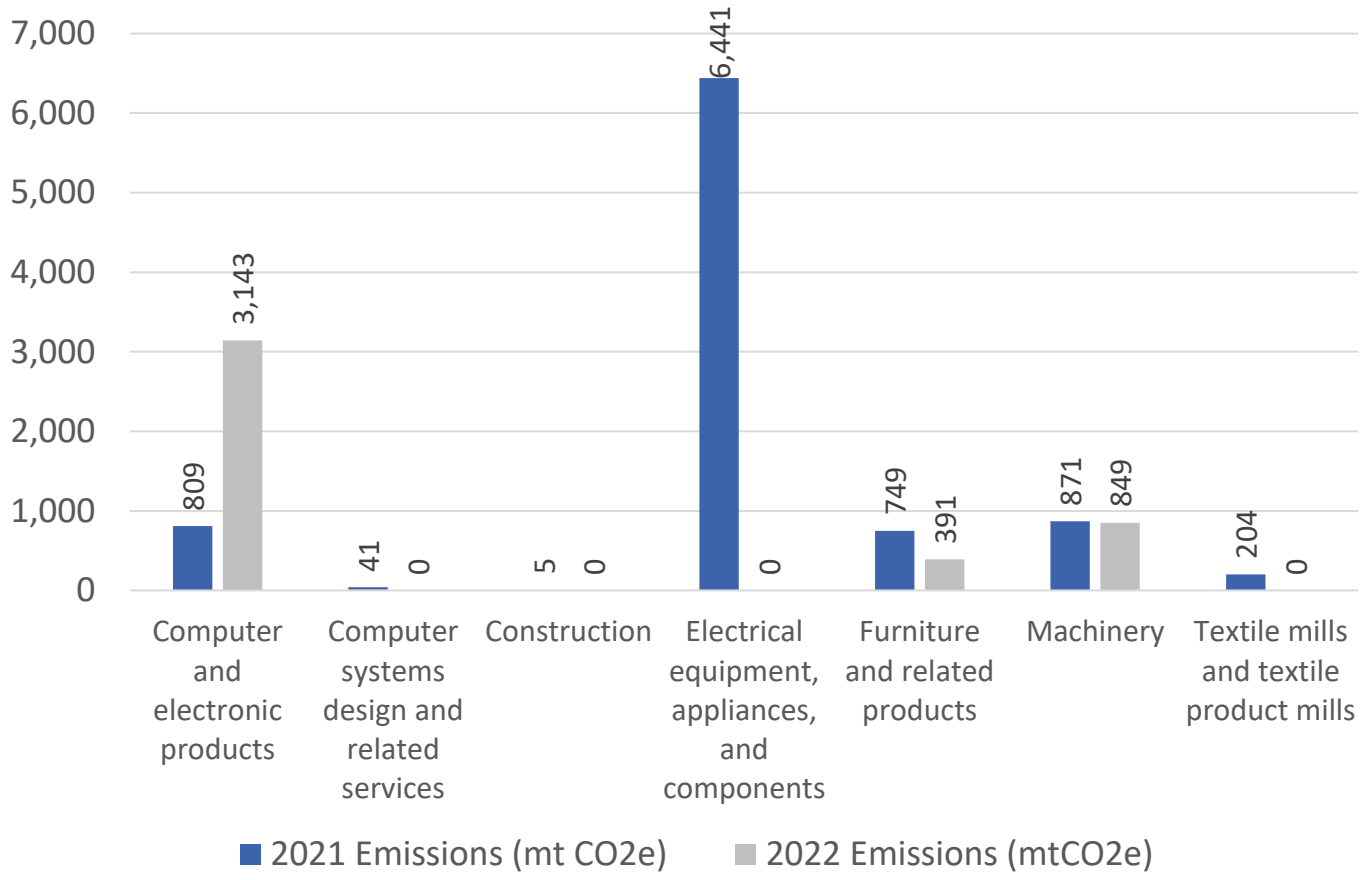
# Capital Goods Emissions Breakdown

## Insights

1. **Capital goods** was the third largest source of emissions.

2. Total emissions for this category were **4,383 MTCO2e in 2022.**

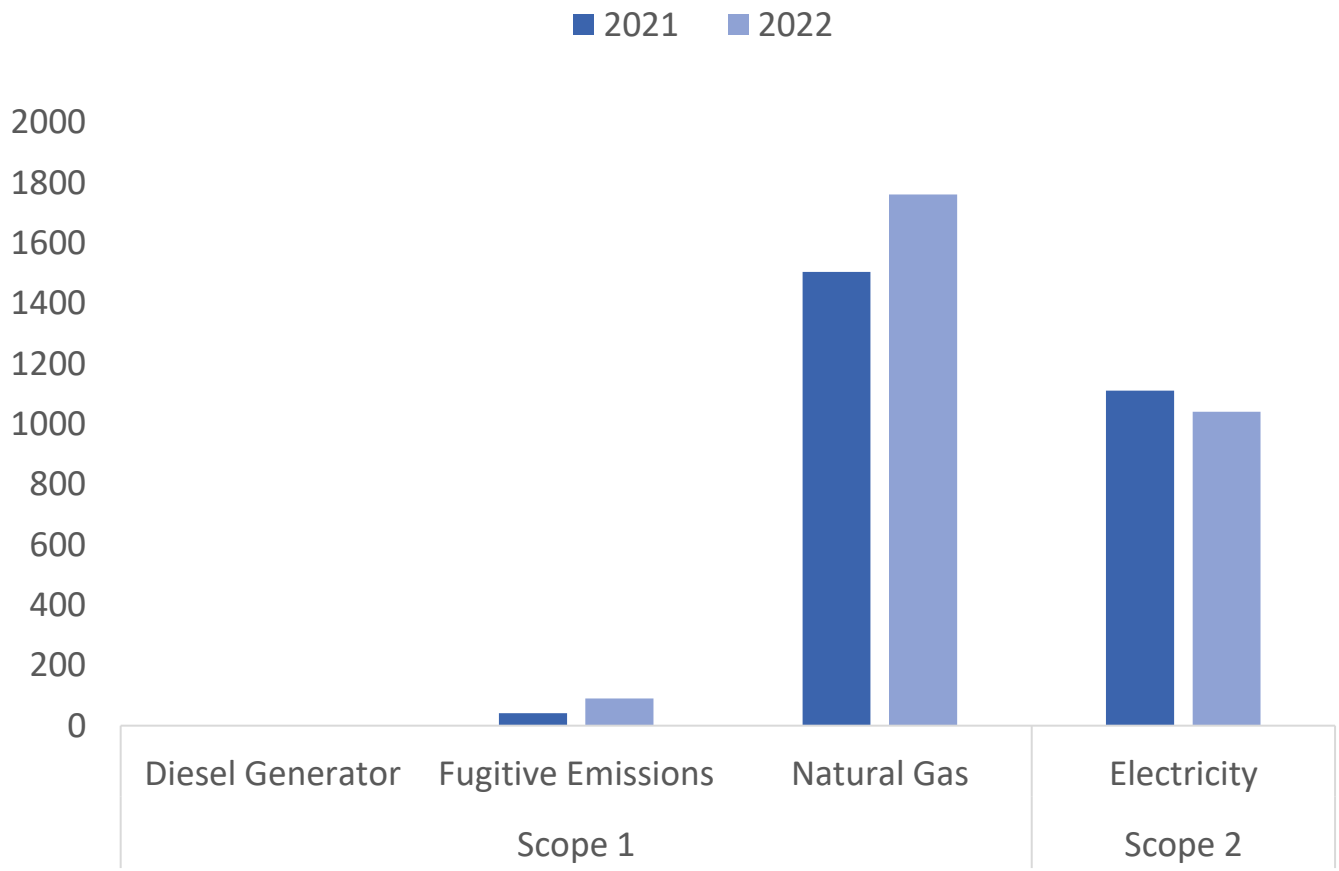
3. Capital goods emissions decreased an overall **52% from FY21 to FY22**, mainly attributed to depletion of the *Electrical equipment, appliances and components* category in 2022.



# Scope 1+2 Emissions Breakdown

## Insights

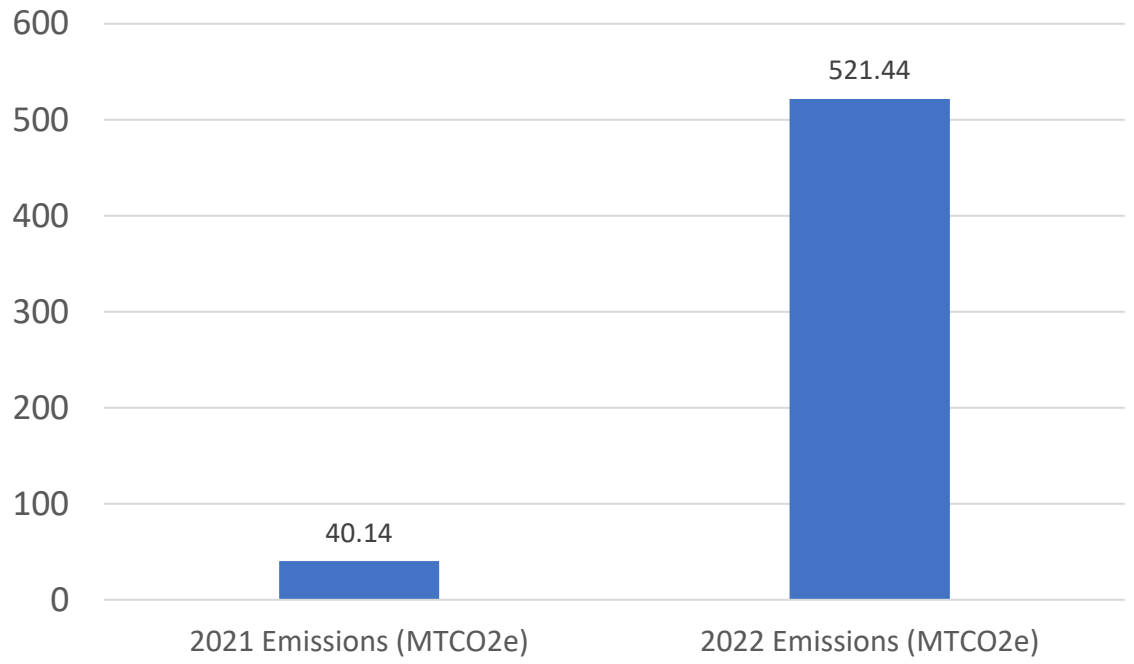
1. **Natural gas** and **electricity** were the fourth and fifth largest sources of emissions.
2. Total emissions for this category were **2,885 MTCO2e in 2022.**
3. Scope 1+2 emissions increased an overall **9% from FY21 to FY22**, mainly attributed to *the increase in natural gas consumption* in 2022.



# Business Travel Emissions Breakdown

## Insights

1. Business travel had the largest percentage increase of GHG emissions at **1,119%.**
2. Emissions from business travel includes **air travel, hotel, car rental, and business meals.**



# GHG Impact Equivalences

## CY22: 270,464 MT CO2e

**30 million gallons**
of gasoline consumed

**693 million miles** driven by a passenger vehicle

**33 billion smartphones**
charged

**34 thousand homes' energy use**
for one year

https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

# Emission Sources & Methodology

| Scope/Category | Sources of Emissions | Methodology & Estimations |
|---|---|---|
| Scope 1 & 2<br>Energy use in offices | • Natural Gas<br>• Electricity<br>• Diesel Generator<br>• Refrigerants | • Actual electricity consumption data was provided for San Jose, Oregon, India, Chapel Hills, Agoura Hills, Toronto, Finland, Vught, Korea, Bulgaria – Sofia, Bulgaria – Plodiv, France, Taiwan and Toronto - Analog x. Only San Jose has natural gas consumption. Only Chapel Hill had diesel consumption used in generator.<br>• Refrigerant data was provided for India, Vught and San Jose. Average capacity was used based on equipment type.<br>• Emissions were calculated as per most updates EPA e-Hub Emission Factors for US locations and IEA Emissions Factors for international. |
| Scope 3<br>Business Travel | • Air Travel<br>• Train & Public Transport<br>• Car Rental, Taxi | • Mix of mileage and spend based data provided<br>• Emissions were calculated as per most updates EPA e-Hub Emission Factors |
| Scope 3 Commuting, including work from home energy use | • Employee travel to and from work<br>• Electricity (at home)<br>• Natural Gas (at home) | • Commute survey results was provided for San Jose, Bangalore, Agoura hills, Chapel Hill, Toronto, Espoo, Vught, and Hillsboro. |
| Scope 3<br>Upstream and Downstream Shipping | • Shipping from suppliers<br>• Shipping to customers | • Shipping emissions was provided by the vendors for 2022<br>• Assume all spend is attributed to upstream shipping and downstream shipping is negligible. |

# Emission Sources & Methodology (Cont.)

| Category | Sources of Emissions | Methodology & Estimations |
|---|---|---|
| Scope 3<br>Purchased goods and services & Capital goods | • Purchased materials<br>• Purchased services | • Spend data was provided for purchased materials and services.<br>• Emissions calculated using US EPA's Supply Chain GHG Emission Factors for US Industries and Commodities. |
| Scope 3<br>Waste generated in operations | • Waste management and disposal | • Actual consumption data was provided for landfill, recycling and composting for each location.<br>• Emissions were calculated based on type of waste and disposal method. |
| Scope 3<br>Fuel- and Energy-Related Activities | • Upstream transmission and distribution (T&D) losses of electricity used | • T&D loss % in the each of the region is used where the facility is located.<br>• T&D losses induced emissions per kwh from International Energy Agency (IEA) is used for international locations based on the country. |
| Scope 3<br>Use and processing of sold products | • Energy consumption from use of chips | • 0.75 Watt is assumed for all chips<br>• Systems are assumed to run 24 hours everyday<br>• Average US electricity emission factor is used |