

# Annual Sustainability Report



Pacific Northwest Transportation Services

2019

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Completed	4/3/2020

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## Executive Summary

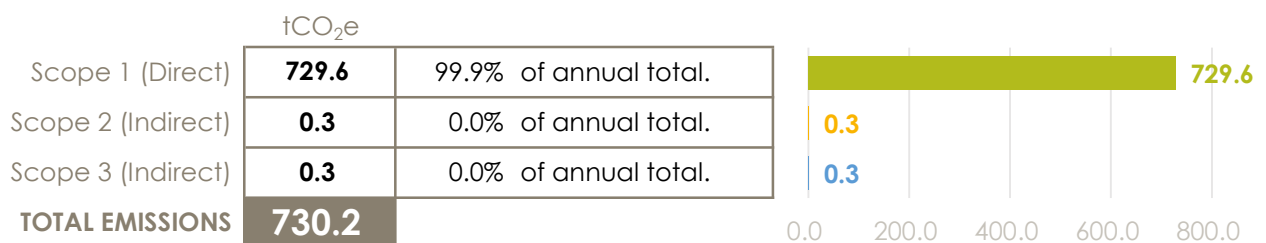
Pacific Northwest Transportation Services (PNWTS) is a wholly owned subsidiary of Western Stevedoring that provides shuttle bus services between Ogden Point Terminal and downtown Victoria. PNWTS focuses on providing sustainable transportation services and is working to decrease the impact of cruise operations on the local neighbourhood. 2019 marks the first year that the company have measured and reported their greenhouse gas (GHG) emissions. This report measures GHG emissions from natural gas, fuel use of buses and shuttles, refrigerants, electricity, and paper.

Total emissions in 2019 come to 730.2 tCO<sub>2</sub>e, 84% of which is from fuel use and 15% from refrigeration used in the vehicles' air conditioning systems. PNWTS had a total of 239,544 passengers and 3,839 trips over the year. These numbers will be used to establish a baseline for future years.

## Company Information

Company Name	Pacific Northwest Transportation Services		
Contact Information	David Roberts	david@pnwts.com	(778) 405-0301
Company Description	One office building, 44 buses, 3 shuttles, 2 electric buses		
Reporting Period	January 1st, 2019 - December 31st, 2019		
Inventory Boundary	<b>Scope 1 (Direct Emissions)</b> - Natural Gas, Gasoline, Diesel, Refrigerants (R134A)		
	<b>Scope 2 (Indirect Emissions from Purchased Electricity)</b> - Purchased Electricity (BC Hydro)		
	<b>Scope 3 (Indirect Emissions from Other Sources)</b> - Stationery Paper		
Consolidation Approach	Operational Control: Accounting for 100% of emissions from operations over which the company has operational control.		
Primary Measurement	Carbon Dioxide Equivalent (CO <sub>2</sub> e)		
Reporting Guidelines	Aligned with those defined in <i>The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition (The GHG Protocol, www.ghgprotocol.org)</i> . Emissions factors reviewed & approved by Offsetters.		

## Inventory Results



# Carbon Footprint (Summary)

Pacific Northwest Transportation Services

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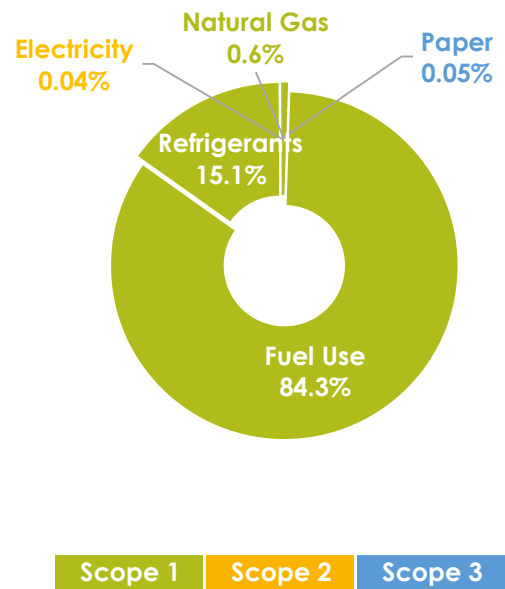
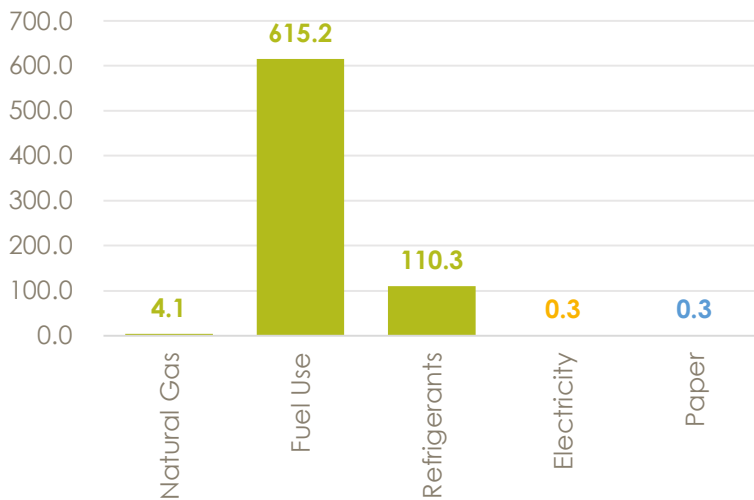
Total emissions: **730.2** tCO<sub>2</sub>e

Offset cost: **\$14,600**

Total emissions for Pacific Northwest Transportation Services (PNWTS) results in 730.2 tCO<sub>2</sub>e. The majority of these emissions come from fuel use and refrigerants for buses and shuttles.

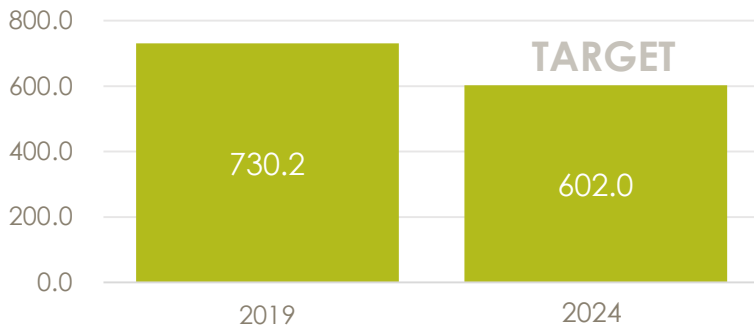
## Carbon Footprint (By Activity)

### Emissions by Activity (tCO<sub>2</sub>e)



## Carbon Footprint (Historical)

### Annual Emissions (tCO<sub>2</sub>e)



	Combined tCO <sub>2</sub> e	Change since Baseline	
		tCO <sub>2</sub> e	Percent
2019	<b>730.2</b>		
2020 Target	<b>602.0</b>	128.2	18%



2,303.4

Barrels of Oil



195.5

Cars per Year



3.0

kgCO<sub>2</sub>e/pax

tCO<sub>2</sub>e  
(Total)

**730.2**

## Intensity Metrics



### Analysis

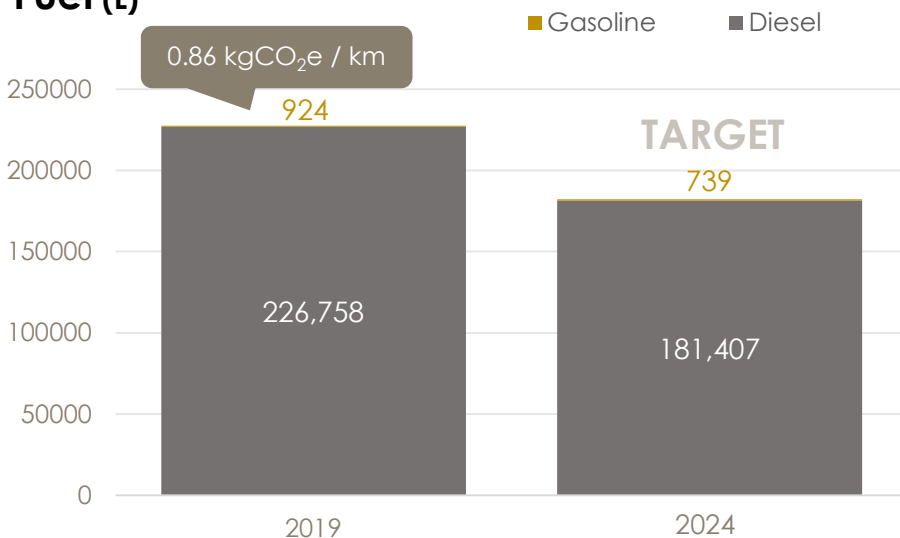
2019 marks the baseline carbon footprint year for Pacific Northwest Transportation Services (PNWTS).

In 2019, PNWTS had a total of 239,544 passengers and 3,839 trips.\* This equates to 3.0 kgCO<sub>2</sub>e per passenger and 190.2 kgCO<sub>2</sub>e per trip.

\* Note: Vehicle trips during the maintenance/non-operating season are not included in the total number of trips.

## Fuel

### Fuel (L)



### Analysis

Fuel for PNWTS includes diesel for the buses and gasoline for reimbursed company travel and accounts for 84% of the overall carbon footprint. At 226,758 litres, diesel accounts for 99.6% of total fuel use. During the operating season, this equates to 592 tCO<sub>2</sub>e and 0.91 litres of fuel per passenger.

\* Note: The average gasoline retail price in 2019 was used to convert total gasoline purchases (\$) into litre amount.

Litres / Trip

**59.3**

tCO<sub>2</sub>e **615.2**

% of Total

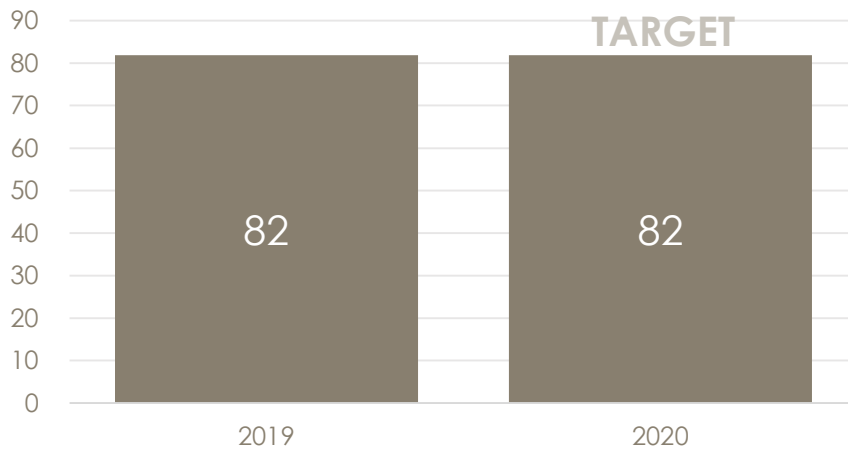
**84%**



**164.8**  
Cars per Year

## Natural Gas

### Natural Gas (GJ)



### Analysis

Natural gas contributes 0.6% of total carbon emissions at 4.1 tCO<sub>2</sub>e. This is equivalent to heating 1 household for the year.

Highest natural gas use took place during the winter months (December, January, February and March), averaging 10.9 GJ.

GJ/ft<sup>2</sup>

**0.07**

tCO<sub>2</sub>e

**4.1**

% of Total

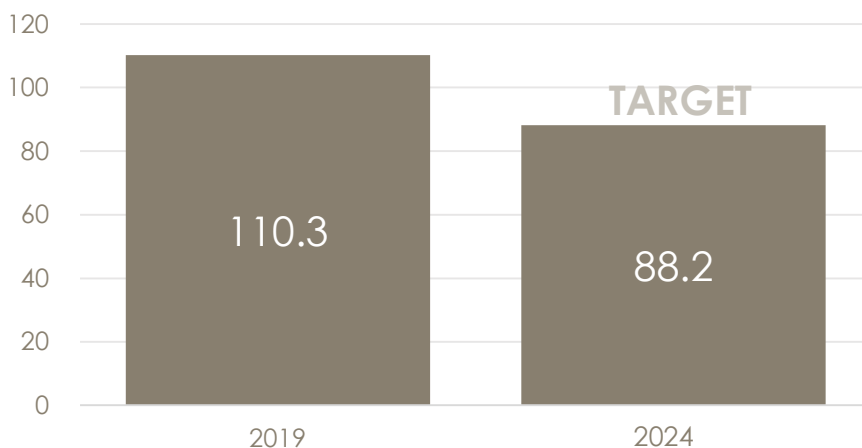
**0.6%**



**0.9**  
Houses

## Refrigerants

### Emissions (tCO<sub>2</sub>e)



### Analysis

R134A/HFC-134A refrigerants are used for air conditioning in PNWTS' fleet. Refrigerants are the second highest source of emissions at 110.3 tCO<sub>2</sub>e, contributing 15.1% of the overall carbon footprint.

It is recommended that PNWTS replace its refrigerants with HFO-1234yf if possible.

tCO<sub>2</sub>e / bus

**2.25**

tCO<sub>2</sub>e

**110.3**

% of Total

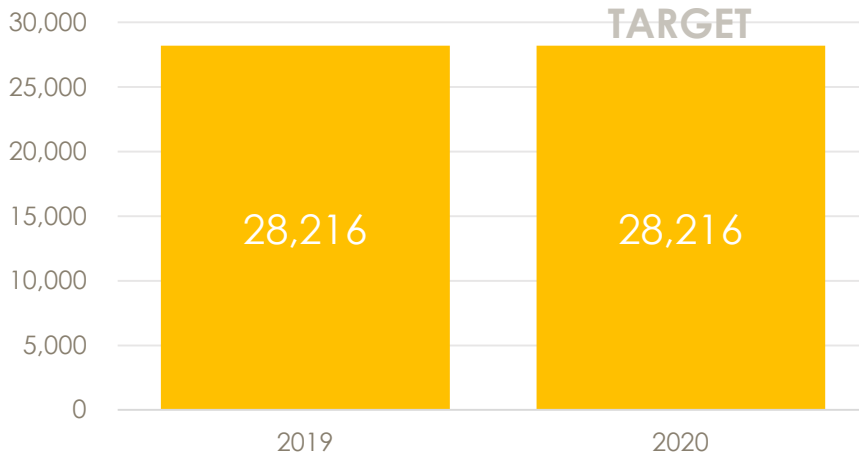
**15.1%**



**29.5**  
Cars / Year

# Electricity

## Electricity (kWh)



### Analysis

Electricity is used for lighting and office equipment. In 2019, electricity use came to 28,216 kWh. This is equivalent to powering 3 households per year.

Due to the prevalence of BC hydro power, emissions from electricity over the year were minimal, resulting in 0.3 tCO<sub>2</sub>e.

kWh /  
ft<sup>2</sup>

**24**

tCO<sub>2</sub>e

**0.3**

% of  
Total

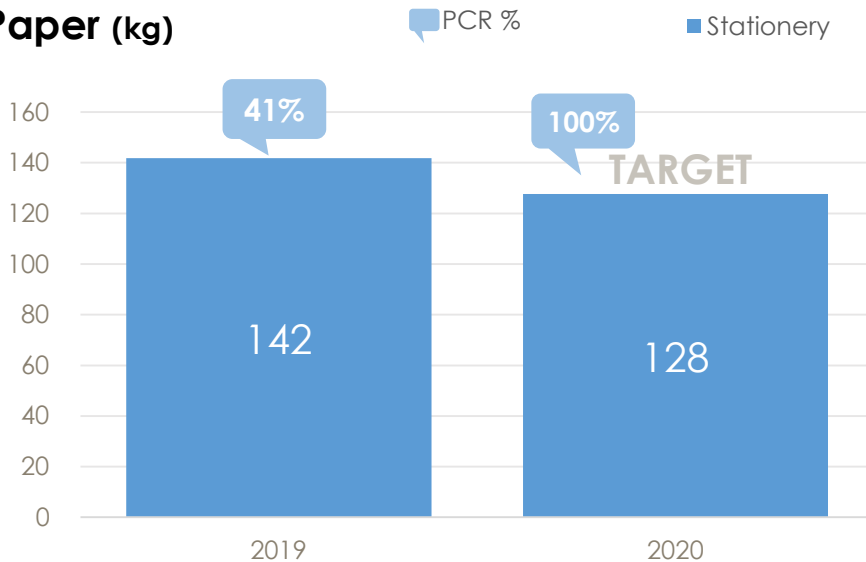
**0.04%**



**2.6**  
Houses

# Paper

## Paper (kg)



### Analysis

Stationery paper includes all office paper and accounts for 0.05% of total emissions. Of the six boxes of paper purchased, one was 100% post consumer recycled (PCR) content while the other five were only 30%. This resulted in the use of 2.2 trees this year.

Although emissions from paper are minimal, it is recommended that all office paper be switched to 100% PCR.

Treeless  
Content

**41%**

tCO<sub>2</sub>e

**0.3**

% of  
Total

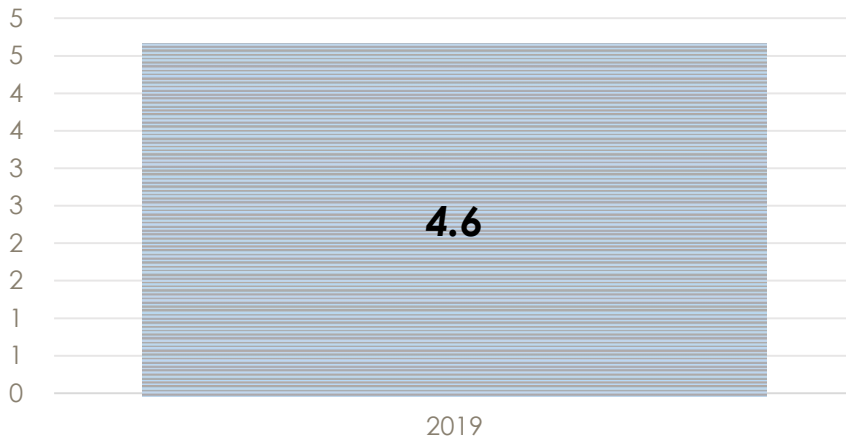
**0.05%**



**2.2**  
Trees / Year

# Commuting

## Emissions (tCO<sub>2</sub>e)



## Analysis

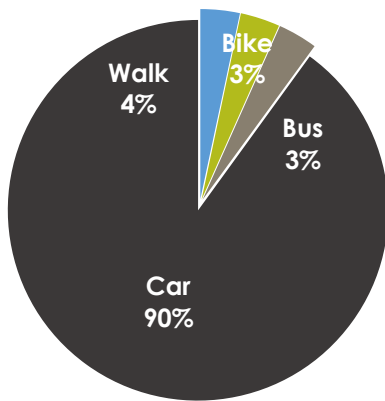
Staff commuting emissions have been excluded from the total emissions due to a low survey response rate.\*

The following analysis is being shown for information purposes only.

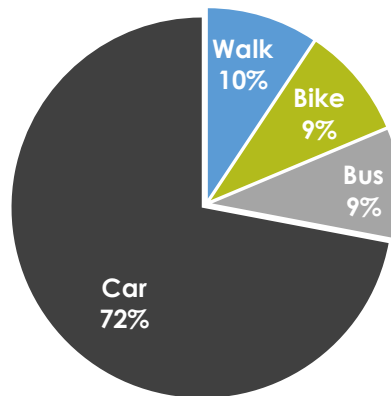
Based on the gathered data, commuting emissions contributed 4.6 tCO<sub>2</sub>e. This is equivalent to 1.2 cars on the road per year.

\* Note: The staff commuting survey received a 7% response rate. Increased participation is recommended for more accurate representation of staff commuting habits.

## Commuting Percentages by Method per Day



Baseline (2019)



Target (2020)

Average kgCO <sub>2</sub> e/km	<b>0.187</b>
Low-Emission Commuting %	<b>10%</b>

Average kgCO <sub>2</sub> e/km	<b>0.156</b>
Low-Emission Commuting %	<b>28%</b>

## Analysis (Breakdown)

10% of PNWTS' staff commute by low-emission methods including walking, biking and taking public transport to work. The average commute distance is 8.4 km.

The most commonly cited reasons for driving often were lack of transit infrastructure and excessive distance. Providing incentives for car pooling, busing, walking and biking are recommended to reduce future emissions from staff commuting.

tCO<sub>2</sub>e / FTE **0.053**

tCO<sub>2</sub>e **4.6**

% of Total **0.6%**

 **1.2**  
Cars / Year

# Carbon Reduction Strategy

2019 marks the first year that PNWTS have measured and reported their carbon emissions. Total emissions from activities including fuel use, natural gas, refrigerants, electricity, and paper come to 730.2 tCO<sub>2</sub>e.

The largest source of emissions came from fuel use in buses and shuttles at 615.3 tCO<sub>2</sub>e. Seeking opportunities to introduce more electric buses could have a positive impact in reducing PNWTS' carbon emissions. Refrigerants had the second highest carbon footprint impact at 110.3 tCO<sub>2</sub>e. PNWTS could replace current HFC-134a refrigerants with HFO-1234yf to reduce emissions, or explore purchasing buses fitted with CO<sub>2</sub> refrigeration.

Offsetting these emissions to become carbon neutral comes at an investment cost of ~\$14,600. However, it is recommended that company-wide emission areas be addressed first.

## Achievements

- > First year measuring and recording the company carbon footprint
- > Purchased two electric buses that drove 1,217 km over the year
- > Started conversion of one bus to hydrogen fuel cell

## Moving Forward

- > Measure and report carbon footprint for 2020
- > Introduce more electric buses to the PNWTS fleet
- > Explore options to replace refrigerants with HFO-1234yf if possible.
- > Ensure all office paper is 100% PCR
- > Encourage staff participation to complete the commuting survey

## Information on Inventory Uncertainty

\* Staff commuting data was only collected for six of the 87 staff. It was not included in the total as the sample size was too small.



## Emissions References

1. 2016/17 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions  
<http://www2.gov.bc.ca/gov/content/environment/climate-change/policy-legislation-programs/carbon-neutral-government/measure>
2. Environment Canada's National Inventory Report (1990-2015); Part 2 & 3.  
[http://unfccc.int/files/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/application/zip/can-2017-nir-13apr17.zip](http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/can-2017-nir-13apr17.zip)
3. Department for Environment, Food & Rural Affairs (UK) Carbon Factors  
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2017>
4. Intergovernmental Panel on Climate Change (Global Warming Potentials)  
[http://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/ch2s2-10-2.html](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html)

All emissions factors are reviewed and approved by Offsetters ([www.offsetters.ca](http://www.offsetters.ca)) on an annual basis.

#### Policy for Base Year Recalculation:

Base year emissions, and other previous emissions, shall be retroactively recalculated if a change in organizational structure or data quality is expected to exceed a significance threshold of 10% of base year emissions. These changes may arise from structural changes such as mergers, acquisitions, divestments, outsourcing or insourcing, changes in calculation methodology and improvements in accuracy, or discovery of significant errors.

## Glossary of Terms

Term	Description
CFL	<b>Compact Fluorescent Light</b>
GHG	Greenhouse Gas (emissions): Atmospheric gasses contributing to the greenhouse effect, including Carbon Dioxide (CO <sub>2</sub> ), Methane (CH <sub>4</sub> ), Nitrous Oxide (N <sub>2</sub> O), etc.
GJ	<b>Gigajoule:</b> Unit of natural gas equal to 26.137 m <sup>3</sup> or 0.947 MMBtu
HVAC	<b>Heating, Ventilation &amp; Air Conditioning</b>
kWh	<b>Kilowatt-Hour:</b> Common unit for measuring electrical consumption
LED	<b>Light Emitting Diode:</b> A form of highly efficient lighting technology
m <sup>3</sup>	<b>Cubic Meter:</b> Unit of measurement equal to 1,000 Litres
PCR%	<b>Post-Consumer Recycled Content</b> (as a percentage)
psg-km	<b>Passenger-Kilometer:</b> Unit separating total emissions between passengers per km
Ream	Standard unit of paper measurement equal to 500 sheets (with 10 reams in one box)
tCO <sub>2</sub> e	<b>Tonnes of Carbon Dioxide Equivalent:</b> GHGs have different warming potentials, measured collectively as CO <sub>2</sub> equivalent (hence "e")
t-km	<b>Tonne-kilometer:</b> A unit of measurement used in shipping

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