

Trucost
ESG Analysis

S&P Global

Tennant Company Value Chain Footprint

Financial Year 2020



Table of Contents

Introduction	4
Project Scope	4
Key Findings.....	5
Year-On-Year Comparison	8
Appendix I: Scope 3 Emissions Methodology	9
Appendix II: The Trucost EEI-O Model.....	12
References	13

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About Trucost

Trucost is part of S&P Global. A leader in carbon and environmental data and risk analysis, Trucost assesses risks relating to climate change, natural resource constraints, and broader environmental, social, and governance factors. Companies and financial institutions use Trucost intelligence to understand their ESG exposure to these factors, inform resilience and identify transformative solutions for a more sustainable global economy. S&P Global's commitment to environmental analysis and product innovation allows us to deliver essential ESG investment-related information to the global marketplace.

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Introduction

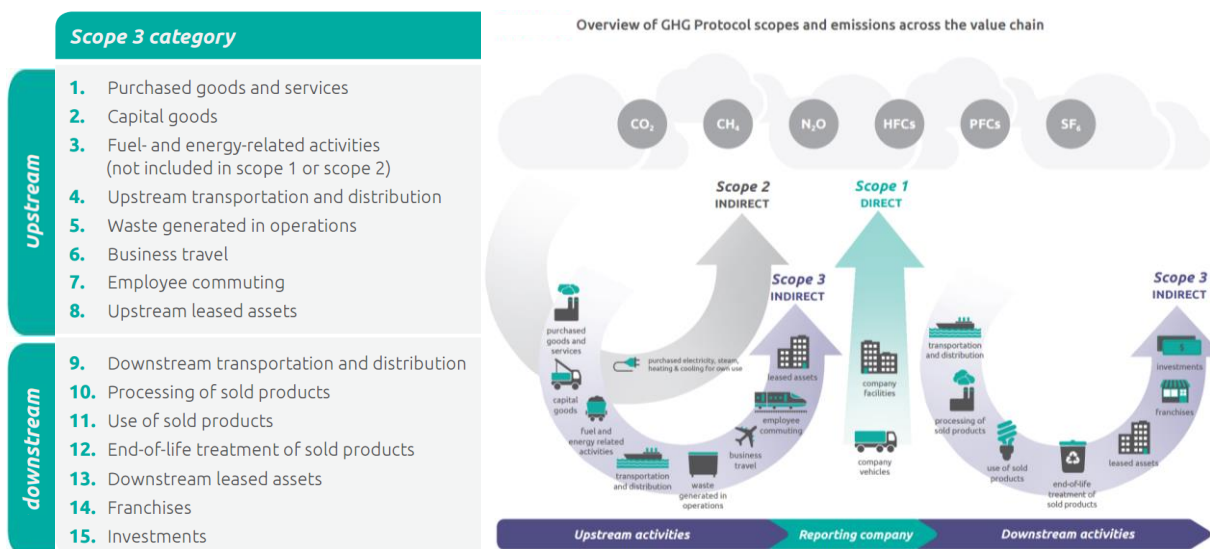
Tennant Company (henceforth Tennant) engaged Trucost to assess its value chain greenhouse gas (GHG) emissions in line with the WRI/WBCSD Corporate Value Chain (scope 3) Guidelines (GHG Protocol). The assessment allows Tennant to report its emissions according to the fifteen scope 3 categories outlined in the Guidelines.

Tennant has already been reporting its GHG emissions to CDP for multiple years. This project supports Tennant's ongoing efforts in GHG emissions disclosure by calculating and modeling its scope 3 emissions. Using data provided by Tennant and Trucost's database of GHG emissions by industry sector and business activity, Trucost calculated the GHG footprint for nine Scope 3 GHG emission categories and combined this with other relevant Scope 3 categories calculated by Tennant independently, to create a value chain emissions profile including all relevant scope 3 categories. Finally, Trucost identified opportunities for potential emission reductions within Tennant's value chain.

Project Scope

Exhibit 1 below outlines the GHG Protocol's fifteen upstream and downstream scope 3 categories. Trucost estimated the GHG emissions of each category using the Trucost Environmentally Extended Input-Output (EEI-O) model along with primary data, where available, for upstream and downstream categories. Primary data included Tennant's spend combined with the EEI-O model to estimate impacts, as well as existing research conducted by Tennant related to its GHG emissions. Please refer to Appendix I for details on the methodology associated with calculating GHG emissions for each scope 3 category, and Appendix II for details on the EEI-O model.

Exhibit 1: Scope of value chain GHG emissions footprint¹



¹ GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

Trucost calculated the GHG footprint for nine Scope 3 GHG emission categories, namely:

- 1: Purchased goods and services
- 2: Capital goods
- 3: Fuel and energy related activities
- 4: Upstream transportation and distribution
- 5: Waste generated in operations
- 6: Business travel
- 7: Employee commuting
- 8: Upstream leased assets
- 12: End of life treatment of sold products

Furthermore, scope 1 and 2, and scope 3 category 11 Use of sold products were calculated by Tennant and incorporated by Trucost into the total figures.

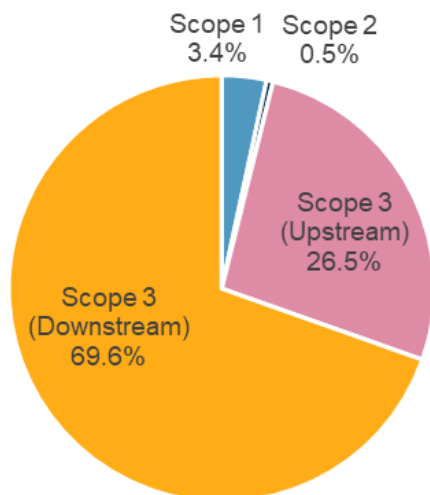
Key Findings

In FY2020, Tennant's value chain (scope 3) was responsible for an estimated 641,159 metric tons of GHG emissions (tCO₂e), which is approximately 96% of its total estimated GHG inventory of 667,071 tCO₂e.

Exhibit 2 below displays the emissions split amongst scopes 1, 2, 3 (upstream and downstream). Scope 1 emissions were approximately 22,582 tCO₂e, Scope 2 market based emissions were 3,329 tCO₂e. In addition, Scope 3 upstream and downstream emissions were 176,942 tCO₂e and 464,217 tCO₂e respectively.

Tennant calculated its emissions for scope 1, scope 2 and scope 3 category 11 and shared them with Trucost. Consequently, Trucost assured these emissions. Detailed figures per scope can be seen in Exhibit 3.

Exhibit 2: Tennant value chain emissions, by scope



The GHG Protocol Corporate Standard classifies a company's GHG emissions into three 'scopes':

- **Scope 1** emissions are direct emissions from owned or controlled sources
- **Scope 2** emissions are indirect emissions from the generation of purchased energy
- **Scope 3** emissions are all indirect (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions

Exhibit 3: Tennant value chain emissions, by scope – Details

Source of emissions	2020 GHG emissions (tCO ₂ e)	Percentage contribution (%)	Calculated by
Scope 1	22,582	3.4%	Tennant
Scope 2 Market based	3,329	0.5%	Tennant
Scope 3 Upstream	176,942	26.5%	Trucost
Scope 3 Downstream	464,217	69.6%	Tennant and Trucost
Total	667,071²	100%	Trucost

Exhibit 4 presents the breakdown of Tennant's GHG emissions per scope 3 category, highlighting the hotspots with the greatest emissions. Tennant and Trucost identified five of the fifteen scope 3 categories as relevant, based on its business activities and related GHG emissions. The relevant scope 3 categories found were:

- Purchased goods and services
- Upstream transportation and distribution
- Employee commuting
- Upstream leased assets
- Use of sold products

There is a number of changes in the methodological approach adopted in this year's GHG footprint accounting:

- Scope 3 categories 1 and 2: in 2020 Tennant provided the mapping for each spend item for purchased goods and services and capital goods. In 2019 the mapping was undertaken by Trucost. Thus, 2020 results are therefore considered refined as they are based on more accurate data. Furthermore, in 2020 IPC and Gaomei were also included for categories 1 and 2, while in 2019 only Legacy Tennant and Alfa were part of the analysis.
- Scope 3 category 6: in 2020 the data received for business travel was Tennant's spend on business travel related activities per mode of transport (for example, rail transport and air transport). This allowed Trucost to apply enhanced emission factors associated with the mode of transport for each spend item. In 2019, the data received for category 6 related to the spend per supplier. Thus, 2020 results are therefore considered more accurate as they are based on more granular data.
- Scope 3 category 11: in 2020 emissions included the use of sold products from Tennant legacy, IPC, Gaomei and Vaclensa. In 2019 emissions only included the use of sold products from Tennant legacy, IPC and Gaomei.

In addition, the scope of 2020 value chain assessment has been expanded. For the first time, for all the Scope 3 categories included in the analysis the emissions from all of Tennant's business units were accounted for. See Appendix I for details on the scope.

² Due to rounding rules, the total emissions stated does not match the sum of the scopes.

Exhibit 4: Tennant value chain emissions, by scope 3 category

Value chain (Scope 3) category	2020 GHG emissions (tCO ₂ e)	Scope 3 (%)	Materiality ³	GHG social cost (\$million) ⁴
1) Purchased goods and services	123,120	19.20%	Relevant, calculated	18.90
2) Capital goods	4,120	0.64%	Not relevant, calculated	0.63
3) Fuel and energy related activities	2,793	0.44%	Not relevant, calculated	0.43
4) Upstream transportation and distribution	14,629	2.28%	Relevant, calculated	2.25
5) Waste generated in operations	65	0.01%	Not relevant, calculated	0.01
6) Business travel	818	0.13%	Not relevant, calculated	0.13
7) Employee commuting	7,595	1.18%	Relevant, calculated	1.17
8) Upstream leased assets	23,801	3.71%	Relevant, calculated	3.65
9) Downstream transportation and distribution	-	-	Not calculated	-
10) Processing of sold products	-	-	Not calculated	-
11) Use of sold products	464,012	72.37%	Relevant, calculated	71.24
12) End of life treatment of sold products	205	0.03%	Not relevant, calculated	0.03
13) Downstream leased assets	-	-	Not calculated	-
14) Franchises	-	-	Not calculated	-
15) Investments	-	-	Not calculated	-
Total	641,159	100%		98.44

The categories not included in the analysis were found to be not relevant by Tennant due to the nature of the company and its business activities. Thus, Trucost did not estimate the associated GHG emissions.

As it has been apparent in previous years, the majority of GHG emissions from Tennant's value chain are related to downstream sources, most significantly the use of sold products which accounts for 72% of the footprint.

³ Relevance based on 1% threshold relative to total scope 3 emissions inventory.

⁴ GHG Social Costs account for the societal impacts of GHG emissions; priced at \$154/tCO₂e in 2020 terms. Derived from: US EPA: https://www.epa.gov/sites/production/files/2016-12/documents/social_cost_of_carbon_fact_sheet.pdf

Year-On-Year Comparison

Tennant strives to refine the methodological approach and improve its performance each year. There is a number of changes in the methodological approach adopted in this year's GHG footprint accounting:

- Scope 3 categories 1 and 2: in 2020 Tennant provided the mapping for each spend item for purchased goods and services and capital goods. In 2019 the mapping was undertaken by Trucost. Thus, 2020 results are therefore considered refined as they are based on more accurate data. Furthermore, in 2020 IPC and Gaomei were also included for categories 1 and 2, while in 2019 only Legacy Tennant and Alfa were part of the analysis.
- Scope 3 category 6: in 2020 the data received for business travel was Tennant's spend on business travel related activities per mode of transport (for example, rail transport and air transport). This allowed Trucost to apply enhanced emission factors associated with the mode of transport for each spend item. In 2019, the data received for category 6 related to the spend per supplier. Thus, 2020 results are therefore considered more accurate as they are based on more granular data.
- Scope 3 category 11: in 2020 emissions included the use of sold products from Tennant legacy, IPC, Gaomei and Vaclensa. In 2019 emissions only included the use of sold products from Tennant legacy, IPC and Gaomei. Additionally, slight changes to product use phase assumptions led to a retrospective adjustment of 2019 category 11 emissions.

In addition, the scope of 2020 value chain assessment has been expanded. For the first time, for all the Scope 3 categories included in the analysis the emissions from all of Tennant's business units were accounted for. See Appendix I for details on the scope. These methodological changes should be considered in the comparisons of GHG emissions across 2019 and 2020 reporting years. Exhibit 5 shows the evolution of Tennant value chain GHG emissions from 2019 to 2020. As it can be derived, overall emissions decreased by 10% from 2019 to 2020, and this is mainly driven by a decrease in emissions from the use of sold products (19% reduction from 2019 to 2020).

Exhibit 5: Tennant value chain GHG emissions, year-on-year

Scope 3 Category	Emission Source	2020 GHG Emissions (tCO ₂ e)	2019 GHG Emissions (tCO ₂ e)
Category 1	Purchased goods and services	123,120	108,450
Category 2	Capital goods	4,120	2,464
Category 3	Fuel and energy related activities	2,793	-
Category 4	Upstream transportation and distribution	14,629	20,494
Category 5	Waste generated in operations	65	-
Category 6	Business travel	818	521
Category 7	Employee commuting	7,595	8,019
Category 8	Upstream leased assets	23,801	-
Category 9	Downstream transportation and distribution	-	-
Category 10	Processing of sold products	-	-
Category 11	Use of sold products	464,012	575,256
Category 12	End of life treatment of sold products	205	-
Category 13	Downstream leased assets	-	-
Category 14	Franchises	-	-
Category 15	Investments	-	-
Total		641,159	715,204

Appendix I: Scope 3 Emissions Methodology

Exhibit 6 outlines the process for evaluating each scope 3 category, along with the estimated emissions for each category. Tennant can use this information to complete its CDP questionnaire for scope 3 emissions and/or for other reporting purposes.

Exhibit 6: Tennant scope 3 methodology and findings – Suitable for external reporting

SOURCE OF SCOPE 3 EMISSIONS	EVALUATION STATUS ⁵	GHG (tCO ₂ e)	EMISSIONS CALCULATION METHODOLOGY	SCOPE 3 EMISSIONS (%)
1) Purchased goods and services	Relevant, calculated	123,120	In order to estimate emissions for purchased goods and services and capital goods, Trucost used Tennant's FY2020 supplier spend combined with supplier disclosed emissions data from Trucost Environmental Register and the Trucost EEI-0 model. The results represent Tennant's supply chain emissions through all tiers up to and including raw material extraction. Suppliers with relatively small expenditures (contributing to the bottom 5% of the total expenditure) were excluded because their environmental impact is considered not material.	19.20%
2) Capital goods	Not relevant, calculated	4,120		0.64%
3) Fuel- and energy-related activities	Not relevant, calculated	2,793	For fuel- and energy related activities, emissions were calculated based on Tennant's actual electricity and fuel usage data. Energy consumption data was combined with Transmission & Distribution and Well To Tank Defra emission factors. Input data was provided for the countries that represent 95% of total employees as a minimum (emissions for less relevant countries were excluded from the analysis due to data availability).	0.44%
4) Upstream transportation and distribution	Relevant, calculated	14,629	Trucost used its EEI-0 model to calculate GHG emissions for upstream transportation and distribution, based on Tennant's logistics related spend split by mode of transport (for example, truck transportation and water transportation). For some low spend entries (representing less than 1% of the logistics spend) no data per mode of transport was available, and thus the average logistics transportation mode split for the US was used and sourced from the US Department of Transportation. Input data was provided for the countries that represent 95% of total employees as a minimum (emissions for less relevant countries were excluded from the analysis due to data availability).	2.28%

⁵ Relevance based on 1% threshold relative to total scope 3 emissions inventory.

SOURCE OF SCOPE 3 EMISSIONS	EVALUATION STATUS ⁶	GHG (tCO ₂ e)	EMISSIONS CALCULATION METHODOLOGY	SCOPE 3 EMISSIONS (%)
5) Waste generated in operations	Not relevant, calculated	65	Trucost used its EEI-O model to calculate GHG emissions for waste generated in operations, based on Tennant's spend on waste treatment and disposal activities.	0.01%
6) Business travel	Not relevant, calculated	818	Trucost used its EEI-O model to calculate GHG emissions for business travel, based on Tennant's spend on business travel activities split by mode of transport (for example, rail travel and air travel). Input data was provided for the countries that represent 95% of total employees as a minimum (emissions for less relevant countries were excluded from the analysis due to data availability).	0.13%
7) Employee commuting	Relevant, calculated	7,595	Trucost estimated employee commuting emissions using Tennant's global employee headcount and country averages for commuting time, transportation mode and distance. For locations where country level data was not available, global averages were used.	1.18%
8) Upstream leased assets	Relevant, calculated	23,801	Emissions from Tennant's leased assets cover building assets, vehicle assets and equipment assets. Using Tennant's area for leased floor space per country, Trucost applied average intensities for energy consumption from the US Energy Information Administration (EIA) to obtain the total energy consumption by energy source. Emissions were calculated using country-specific electricity grid factors from the International Energy Agency (IEA), and fuel emission factors from Defra. Using Tennant's fuel consumption for leased vehicles, Trucost applied Defra emission factors per type of fuel. Finally, using Tennant's spend on leased equipment, Trucost used its EEI-O model to calculate the associated emissions. Input data was provided for the countries that represent 95% of total employees as a minimum (emissions for less relevant countries were excluded from the analysis due to data availability).	3.71%

⁶ Relevance based on 1% threshold relative to total scope 3 emissions inventory.

SOURCE OF SCOPE 3 EMISSIONS	EVALUATION STATUS ⁷	GHG (tCO ₂ e)	EMISSIONS CALCULATION METHODOLOGY	SCOPE 3 EMISSIONS (%)
9) Downstream transportation and distribution	Not calculated	N/A	N/A	N/A
10) Processing of sold products	Not calculated	N/A	N/A	N/A
11) Use of sold products	Relevant, calculated	464,012	Calculated by Tennant.	72.37%
12) End-of-life treatment of sold products	Not relevant, calculated	205	The emissions associated with the end-of-life treatment of T300 family of products (T300, T300e, SS300) was estimated. The weight of T300 products sold in FY2020 and the weight of the associated packaging materials were provided by Tennant. Trucost calculated emissions for T300 products using Tennant's data and emission factors from Defra by disposal route and material type. Disposal routes from the World Bank were used as a proxy, and it was assumed that 50% of the products were sold and disposed in the US and the rest globally. These T300 units sold represent 10% of the total units sold in 2020 by Tennant.	0.03%
13) Downstream leased assets	Not calculated	N/A	N/A	N/A
14) Franchises	Not calculated	N/A	N/A	N/A
15) Investments	Not calculated	N/A	N/A	N/A

The categories not included in the analysis were found to be not relevant by Tennant due to the nature of the company and its business activities. Thus, Trucost did not estimate the associated GHG emissions.

⁷ Relevance based on 1% threshold relative to total scope 3 emissions inventory.

Appendix II: The Trucost EEI-O Model

Since its founding in 2000, Trucost developed an environmental economic input output (EEI-O) life cycle based model for quantifying environmental impacts. The EEI-O model uses an economic modelling technique based on extensive government census data to analyze the products used and produced by over 464 business activities or sectors. The model also describes the economic interactions between each sector.

Trucost has improved upon standard EEI-O models in several ways, resulting in what we believe is a best in class model for analyzing environmental performance. These improvements include the following:

- Trucost has integrated the use and emissions of over 700 environmental resources. By applying a price to each environmental resource, based on the environmental impact of that resource, the model is able to analyze, in financial terms, the economic and environmental performance of each sector. This environmental performance measure incorporates the indirect, supply chain impacts by using the information on the interactions between sectors.
- Trucost maintains and updates its model annually to reflect market commodity flows. We annually update our sector revenue for all sectors, producer prices and annual production quantities for all primary sectors in our model.
- Environmental intensities for all sectors are also reviewed annually against companies' public disclosures from our annual engagement programs. Trucost engages with more than 6,000 companies directly to obtain environmental performance metrics, which are then considered against sector environmental intensity.

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