Welcome to your CDP Climate Change Questionnaire 2020

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Founded in 1870 by George H. Tennant, Tennant Company ("the Company, Tennant, we, us, or our"), a Minnesota corporation incorporated in 1909, began as a one-man woodworking business, evolved into a successful wood flooring and wood products company, and eventually into a manufacturer of floor cleaning equipment. Throughout its history, the Company has remained focused on advancing our industry by aggressively pursuing new technologies and creating a culture that celebrates innovation.

Today, the Company is a recognized leader of the cleaning industry. We are passionate about developing innovative and sustainable solutions that help our customers clean spaces more effectively, addressing various cleaning challenges. The Company operates in three geographic business units including the Americas, Europe, Middle East and Africa (EMEA) and Asia Pacific (APAC).

The Company is committed to empowering our customers to create a cleaner, safer and healthier world with high-performance solutions that minimize waste, reduce costs, improve safety and further sustainability goals.

The Company offers products and solutions consisting of mechanized cleaning equipment, detergent-free and other sustainable cleaning technologies, aftermarket parts and consumables, equipment maintenance and repair service, specialty surface coatings, and business solutions such as financing, rental and leasing programs, and machine-to-machine asset management solutions.

The Company's products are used in many types of environments including: Retail establishments, distribution centers, factories and warehouses, public venues such as arenas and stadiums, office buildings, schools and universities, hospitals and clinics, parking lots and streets, and more. The Company markets its offerings under the following brands: Tennant®, Nobles®, Alfa Uma Empresa Tennant™, IRIS®, VLX™, IPC brands and private-label brands. The Company's customers include contract cleaners to whom organizations outsource facilities maintenance, as well as businesses that perform facilities maintenance themselves. The Company reaches these customers through the industry's largest direct sales and service organization and through a strong and well-supported network of authorized distributors worldwide.

Form 10-K (Annual Report) filed February 27, 2020, for the period January 1, 2019 to December 31, 2019, is available here:
http://investors.tennantco.com/reports/sec-filings/sec-filings-details/default.aspx?FilingId=13961165

Schedule 14A (Proxy Statement Pursuant to Section 14(a) of the Securities Exchange Act of 1934) filed March 19, 2020, is available here:
http://investors.tennantco.com/reports/sec-filings/sec-filings-details/default.aspx?FilingId=14018611

NOTE: For 2019 we have included Scope 1+2 carbon emissions of acquisitions which closed in April 2017 (IPC Group) and January 2019 (Gaomei). We have also included Scope 3 - Category 7 (Employee commuting) and Category 11 (Use of sold products) carbon emissions of the IPC and Gaomei acquisitions.

IPC and Gaomei facilities, vehicle fleets, and product emissions are not yet within the boundary for our existing target base years: 2012 for the Int 1 target; 2016 for the Abs 1 and Int 2 science-based targets. We intend to make 2019 the base year for new, more ambitious science-based targets. These new targets will include IPC and Gaomei facilities, vehicle fleets, and products.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1, 2019	December 31, 2019	Yes	1 year

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

Australia
Belgium
Brazil
Canada
China
France
Germany
India
Italy
Japan
Mexico
Netherlands
Norway

Portugal
Spain
United Kingdom of Great Britain and Northern Ireland
United States of America

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

USD

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	Tennant Company's President and CEO is also a member of the Board of Directors. The CEO is ultimately responsible for overall financial, environmental, and social governance of the business including climate-related issues. The Sustainable Enterprise group reports directly to the CEO, and the CEO provides required oversight for the Sustainable Enterprise group and related initiatives. The CEO also advocates for action toward climate-related objectives and goals across all of the business units, geographic locations, and functional groups which comprise the business. The Sustainable Enterprise group is responsible for setting and making progress

	toward environmental performance targets. These targets include carbon emission reductions for Scope 1+2, along with Scope 3, Category 11 - Use of sold products.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding risk management policies Reviewing and guiding annual budgets Overseeing major capital expenditures, acquisitions and divestitures	The CEO and Senior Management Team prepare and present company strategies and the operating plan to the Board of Directors. Business and functional unit leaders also present specific elements of strategy and plans. As part of the annual planning cycle, consideration is given to whether initiatives match up with our Stewardship Guiding Principle - "We will use our core value of stewardship to guide our actions. We are accountable to our colleagues, our customers, our investors and our communities. We care for one another and work together for our mutual safety." Board review includes strategies, objectives and budgets. The Board guides the strategy and approves the operating plan. Strategy reviews are typically scheduled for the August Board meeting, but are added to the agenda as important matters arise. Operating plan review and approval for the next fiscal year is typically completed at the December Board meeting. The Board reviews the annual Enterprise Risk Assessment (ERA) which identifies, defines, and ranks the company's annual risks. The ERA review is scheduled for the December Board meeting. The Board monitors progress toward specific risk mitigation action plans. For 2019, six of the twelve top risks mapped to climate-related issues. See C2.2a & C2.3a for full detail. With the regularly scheduled August strategy and December ERA reviews, the CEO reports at least half-yearly on items which map to climate-related issues.

		The Board also oversees and approves major capital expenditures, acquisitions and divestitures. Board oversight of major capital expenditures, acquisitions and divestitures is scheduled as important matters arise. As one example, a major real estate transaction was reviewed and approved in 2018. The company then acquired a campus parcel, with a plan to remodel one building as new corporate headquarters (HQ). The HQ project was initiated in 2019 with strong progress on planning, design, and the start of remodeling. This project will be completed in Q3 2020, with employee moves to the new HQ planned for later in 2020. The HQ project enables closing several older, less efficient facilities. It also enables a project to make the Minneapolis manufacturing facility much more efficient. Completion of these projects over 2019-2021 will provide substantial energy savings and emissions reduction. As another example, the acquisition of Gaomei in January 2019 and integration plan will lead to future carbon footprint reduction. The legacy Gaomei production facility in Hefei was closed in Q4 2019. Operations were moved to a new facility, also in Hefei. Our manufacturing operations in Qingpu will be relocated to the new facility in 2020, with energy savings via efficiency. When the Board reviews acquisitions, risks related to the acquired venture's properties and other assets are reviewed. This may include vulnerability to extreme weather events and other potential business disruptions connected to long-term climate change.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues

Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Half-yearly
Other, please specify Director, Sustainable Enterprise	Both assessing and managing climate-related risks and opportunities	As important matters arise

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

The President and Chief Executive Officer (CEO) is ultimately responsible for all aspects of company performance, including climate-related issues. The President and CEO reports directly to the Board of Directors. The President and CEO works closely with the Lead Director to set and approve the agenda of Board meetings, to ensure that there is an appropriate flow of information to and from the Board, and to ensure that management properly and adequately addresses matters of interest to the Board.

Tennant Company recognizes that climate-related issues require the attention of an ***enterprise level team*** working across all company business units and functions. In 2013, we established a strong governance framework by creating a new position, Director of Sustainable Enterprise (SE). This position reports directly to the President and CEO. With the SE Director reporting directly to the CEO, the organization understands the importance of our commitments to reduce carbon emissions.

The Sustainable Enterprise (SE) Director has oversight on climate-related issues because they oversee the SE Team, which is responsible for all climate-related issues within Tennant. With this team, the SE Director has responsibility for monitoring climate-related impacts on the company and is responsible for establishing GHG emission reduction goals and targets, making progress toward these goals, and achieving corporate climate targets.

The SE Director and Team interact with all functional and business units to plan and execute projects which capitalize on climate-related opportunities and mitigate climate-related risks. The SE Director and Team provide periodic updates to the CEO and Senior Management, along with project-specific updates as required. Three specific examples from 2019 are: 1) reviewing and gaining CEO, CFO, General Counsel, and Chief Administrative Officer approval to become a United Nations Global Compact (UNGC) Signatory in Q3; 2) briefing the complete Senior Management Team on ESG trends and the implications of UNGC in Q4; and 3) organizing an ESG current state + roadmap briefing for a new Board Member in Q4 (to occur at Feb 2020 Board Meeting).

Areas of specific responsibility for the SE Director and Team include Tennant Company's four Sustainable Enterprise Focus Areas, one of which is Greenhouse Gas (GHG) Emissions/Energy. This Focus Area includes facility and fleet energy efficiency, energy supply

arrangements, renewable energy purchasing, carbon emissions and emission-reduction targets for Scope 1, 2, and 3.

Our short- and long-term goals for the GHG Emissions/Energy Focus Area include: 1) broadening and accelerating energy and fuel-reduction initiatives; 2) developing and entering into more renewable energy supply arrangements; 3) developing products and technology with reduced environmental impact including carbon emissions; 4) achieving progress toward our approved Science-Based Targets for emission reduction. Progress on all these fronts represents Tennant Company's spectrum of effort toward mitigation of long-term climate-related risks.

The SE Director and Team are also responsible for objectives, goals and metrics in the three other Focus Areas: Products, Waste, and People & Communities.

Climate-related issues within Tennant Company are monitored by the SE Director and addressed by direct engagement with Senior Management on relevant initiatives and projects. Specific examples include reviewing the Annual Operating Plan for climate-related issues addressed by the capital investment profile. Also, capital investment projects are reviewed during the approval cycle for climate-related issues. For projects applicable to climate-related issues, the carbon emission impacts are quantified.

One way climate-related issues and trends which affect Tennant Company from the outside are monitored is by participation in external organizations. Example organizations include SBTi, the Sustainable Growth Coalition, the University of Minnesota Institute on the Environment, and CDP.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity inventivized	Comment
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction target	Tennant Company's executive compensation program is designed to align our short- and long-term operating goals and the interests of our shareholders. We seek to offer a comprehensive compensation package that is competitive with those of similarly sized U.S. durable goods

			manufacturing companies. Our compensation programs take into account that an executive's actual compensation level may be greater or less than average competitive levels based on our annual and long-term financial performance against pre-established goals, the individual's performance and the individual's scope of responsibilities. Specifically, our compensation programs adhere to the following design philosophy and principles: - create a relationship between pay and performance by providing a strong link between our short- and long-term business goals and executive compensation; - attract and retain high-caliber key executive officers who can create long-term financial success for the company and enhance shareholder return; - motivate executive officers to achieve our goals by placing a significant portion of pay at risk; - align the interests of executive officers with those of our shareholders by providing a significant portion of compensation in stock-based awards; and - discourage risk-taking behavior that would likely have a material adverse effect on the company. Our vision is "We will lead our global industry in sustainable cleaning innovation that empowers our customers to create a cleaner, safer and healthier world." To achieve this vision, the CEO takes carbon emissions and climate-related issues into account when considering how to achieve long-term financial success. Science-Based Targets for emission reduction have been set to increase the probability of long-term financial success. With increased probability of long-term company profitability, the CEO is more likely to see enhanced incentive payments.
Other, please specify	Monetary reward	Emissions reduction target	In 2019 the Director, Sustainable Enterprise had performance goals tied to specific objectives and projects in the four Sustainable Enterprise Focus

Director, Sustainable Enterprise			Areas. GHG Emissions/Energy is one Focus Area, along with Products, Waste, and People & Communities. Performance goals are defined annually and reviewed at least quarterly. In 2019, performance goals related to the management of climate-related issues included: - Making progress toward the Scope 1+2 intensity target (Int 1) set in 2014. In 2019 we exceeded this target. At 2019 year-end, we had achieved 128.4% of target progress in 87.5% of time to target. - Making progress toward the Scope 1+2 absolute target (Abs 1) set in 2017. Through 2019 we achieved 81.6% of target progress in 21.4% of time to target. - Completing and gaining approval for the CDP Climate Change Questionnaire 2019 and Supply Chain response. - Evaluating renewable energy options for U.S.-based facilities and expanding Renewable Energy Certificate (REC) purchases. In 2019, U.S.-based REC purchases were increased by more than 400%. - Evaluating renewable energy options for Europe-based facilities and expanding Guaranty of Origin (GO) purchases. In 2019, Europe-based GO purchases were increased by 15%. - Continuing internal accounting for renewable electric energy at our two primary Minneapolis facilities. Supply agreements in the form of Community Solar Garden (CSG) subscriptions were signed in 2016. These subscriptions are tied to our main facility at 701 North Lilac Drive (Headquarters and manufacturing) and the Innovation Center (Engineering) facility at 815 Zane Avenue North. A total of 12 CSGs were on-line at 2019 year-end. These CSGs generated over 8,600 MWh of electricity, providing additional renewable capacity on the grid. Renewable Energy Certificates (RECs) for electricity generated by these CSGs go to the local, fully regulated utility - Xcel Energy.

			More detail on these and other projects appears throughout this response.
All employees	Monetary reward	Other (please specify) Stewardship - Reduce environmental impact	The APPLAUSE program rewards employees for going above and beyond their assigned duties or tasks. One APPLAUSE award category is 'Stewardship,' which is Tennant Company's core value and one of nine Guiding Principles. We define Stewardship as leaving things in better condition than when we found them. In 2019, a total of 594 employees received monetary rewards for Stewardship via APPLAUSE. Total monetary value of these awards was more than $70,000. Each year, some APPLAUSE awards for Stewardship reward employee efforts which reduced company environmental impact or achieved other forms of ESG improvement. As one example, four employees at the Dallas, Texas, RECON Center received awards for environmental stewardship. There was an outdoor fluid leak which did not come from our building or operations. Rather than ignoring the problem, each of them took the time and ownership to solve it. They determined the leak came from a waste hauling truck and then cleaned up the fluid that had leaked from the truck. They were being good stewards for our facility and of the surrounding environment. These employees exemplify our strong Stewardship culture.
All employees	Non-monetary reward	Other (please specify) Stewardship - Reduce environmental impact	Our annual Leading Edge program recognizes employees who have made significant contributions toward Tennant Company’s success and have demonstrated the behaviors we value most as an organization. The Leading Edge award is the highest form of recognition at Tennant. Employee efforts which warrant the Leading Edge award often include elements of good Stewardship.

			More than 200 individuals were nominated for the 2019 Leading Edge awards. Nominated individuals were notified in February 2020. Twenty-eight individuals were then chosen to receive the Leading Edge award, with announcement of the winners planned for late March 2020. The Leading Edge program is recognition based, but does include an element of monetary reward in the form of a three-day trip with partner/spouse to a destination. The 2019 Leading Edge recognition event was planned for Montego Bay, Jamaica, in Q2 2020. The World Health Organization declared the rapidly spreading coronavirus outbreak to be a pandemic on 11 March 2020. Given the pandemic, this incentive trip was cancelled and notification of winners was postponed. An alternative recognition event is tentatively planned for later in 2020, to be held at the new corporate headquarters in Eden Prairie, MN. Winners from other locations will be connected to the event virtually. The 28 individuals chosen as Leading Edge winners are to be notified later in 2020. Unfortunately we cannot provide a specific example of a 2019 Leading Edge award at this point in time. Winner notification has not yet taken place and we make our CDP response public information. In prior years, Leading Edge awards have recognized employees who develop innovative products with reduced environmental footprint; minimize or reduce GHG emissions, energy consumption, and costs; reduce waste; and make positive contributions in our communities. With our core value of Stewardship, similar efforts will undoubtedly be recognized in future years.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	2	
Medium-term	2	5	
Long-term	5	100	

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

Each year the Finance group and internal audit partner Ernst & Young (EY) develop materiality and deficiency reporting thresholds. These thresholds are reviewed annually by the Board of Directors Audit Committee in April and approved. Overall materiality, or "substantive financial impact," is calculated using a combination of 0.5% of revenue and 5% of adjusted pre-tax income and applying judgment to determine the definition of substantive impact. For 2019, substantive financial impact was $4,000,000.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations
Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

Identifying and assessing climate-related risks and opportunities is an ongoing, regular activity - part of the Enterprise Risk Assessment (ERA) process. The ERA is performed annually at the Company (full enterprise) level. Climate-related risks and opportunities are identified and assessed as part of the ERA process. We do not use distinct processes to identify and/or assess any sub-categories of company and asset level risks.

The overall ERA process is led by Internal Audit partner Ernst & Young (EY), who begins by refreshing the enterprise risk assessment framework in Q3. The next step in the process is a survey (process administered by EY), which includes leaders from all business units (geographic and product type) and functions (Finance, Global Engineering, Global Marketing, Operations, Legal, Human Resources, Sustainable Enterprise, etc.). For 2019, approximately 90 senior leaders representing all geographies, business units, and functional units were anonymously surveyed.

Risk information is collected and aggregated by EY, then provided to the internal Risk Committee. Approximately 20 leaders from all relevant areas comprise the Risk Committee. With the survey input and trend information from various sources, the Risk Committee updates the enterprise risk profile. The steps taken include risk prioritization, risk remediation planning, reviews with the Senior Management Team, and reviews with the Board of Directors. Risks, and their associated remediation action plans, are monitored, reviewed, and reassessed quarterly. This process continues until the annual ERA update begins again in August.

Climate-related risks have short- and long-term implications. Consideration beyond six years is important because the long-term implications of today's actions are significant.

The scope of the ERA includes all significant sites or assets. For example, key Operations group employees identify and assess risks associated with individual manufacturing facilities at the asset level (Hefei and Qingpu, China; Holland, MI; Limeira, Brazil; Minneapolis, MN; Uden, The Netherlands; and Venice, Cremona and Reggio Emilia (Province of Padua), Italy.

The ERA completed in Q4 2019 includes twelve top risks, six of which encompass climate-related risks. Climate-related risks and opportunities are identified and embedded within these six ERA risk/opportunity categories: Supply Chain and Operations; Macroeconomic Factors (e.g., Recession, Geopolitical Unrest, Taxes and Tariffs, etc.); Product Development and Technology Innovation; Competition, Disruption, and Market Responsiveness; Business Continuity and Interruption; and Regulatory Compliance. Additional detail on risk mapping follows and more detail is provided in

C2.2a.

Within the Supply Chain and Operations category, we assess upstream and operational risk associated with climate change. This includes current and potential future carbon market mechanisms.

Within Supply Chain and Operations and Business Continuity and Interruption categories, we assess the risks associated with extreme weather that could adversely impact our facilities and employees, as well as those of our supply chain partners.

Within the Macroeconomic Factors category, we assess the positive and negative impact of events which could strengthen or weaken local and global economies.

Within the Product Development and Technology Innovation and Competition, Disruption, and Market Responsiveness categories, we assess the risks and opportunities around Tennant Company's commitment to industry innovation leadership and providing products that clean in a more sustainable, environmentally friendly manner.

Within the Regulatory Compliance category, we assess potential reputation- and litigation-related risks. We also identify and assess risks and opportunities related to changing regulations that may impact our products. Our products use batteries, engines, and other regulated items which are associated with product use-phase carbon emissions. Our Product Regulatory Affairs group, within the Legal Department, is responsible for monitoring this sub-category of regulatory risks and issues.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	We include the Current regulation risk type in the Regulatory Compliance category of our Enterprise Risk Assessment (ERA). Due to the international scope of Tennant Company operations, we are subject to a complex system of commercial, tax and trade regulations around the world. The Company has business entities in many countries including Australia, Belgium, Brazil, Canada, China, France, Germany, India, Italy, Japan, Mexico, The Netherlands, Norway, Portugal, Spain, United Kingdom of Great Britain and Northern Ireland, and the United States of America. Recent years have seen an increase in the development and enforcement of laws regarding carbon taxes and emissions trading

		schemes (ETS), trade, tax compliance, labor & safety, and anti-corruption. For example, the United States (U.S.) Foreign Corrupt Practices Act, and similar laws from other countries. Our numerous foreign subsidiaries & affiliates are governed by laws, rules and business practices that differ from those of the U.S., but because we are a U.S.-based company, oftentimes they are also subject to U.S. laws which can create a conflict. Despite our due diligence, there is a risk that we do not have adequate resources or comprehensive processes to stay current on changes in laws or regulations applicable to us worldwide and maintain compliance with those changes. Increased compliance requirements may lead to increased costs and erosion of desired profit margin. As a result, it is possible that the activities of these entities may not comply with U.S. laws or business practices or our Business Ethics Guide. Violations of U.S. or local laws may result in severe criminal or civil sanctions, could disrupt our business, and result in an adverse effect on our reputation, business and results of operations or financial condition. We cannot predict the manner in which existing laws might be administered or interpreted. In addition to general compliance, we closely monitor product regulatory compliance. The Product Regulatory Affairs (PRA) group assesses, filters, & ranks potential impacts of Current Regulation on our evolving business. Our products are complex, mechanized equipment. One example is the internal combustion powered Model S30 sweeper. A number of regulations apply such as U.S. EPA internal combustion engine regulation 40 CFR Part 1039. If an engine supplier proposed a change, PRA would work with internal stakeholders to quantify impact, determine required actions, and ensure compliance.
Emerging regulation	Relevant, always included	We include the Emerging regulation risk type in the Regulatory Compliance category of Tennant Company's Enterprise Risk Assessment (ERA). Due to the international scope of our operations, we are subject to a changing system of commercial, tax and trade regulations around the world. Recent years have seen an increase in the discussion and development of laws regarding carbon taxes and emissions trading schemes, trade, tax compliance, labor & safety, and anti-corruption. Increased compliance requirements for Emerging regulation may lead to increased costs and erosion of desired profit margin. We cannot predict the nature, scope or effect of future regulatory requirements to which our operations might be subject.

		For example, the reformed EU Emissions Trading System (ETS) will take effect in 2021. Tennant Company's 2017 acquisition of IPC Group resulted in a broader set of EU direct operations including those in Norway and Italy. However, no Tennant Company operations are included in Phase 4 of EU ETS. Assessing the scope of future EU ETS Phases, before they take effect, is an example of considering future or Emerging regulation risk. Tennant Company products are complex, mechanized cleaning equipment. Two examples are the internal combustion powered rider M30 integrated sweeper/scrubber-drier and the battery powered rider T16 scrubber-drier. A number of regulations apply to these products including engine emissions regulations for the M30. Tennant Company monitors Emerging regulations closely. Internal combustion engine regulations like U.S. EPA 40 CFR Part 1039—CONTROL OF EMISSIONS FROM NEW AND IN-USE NONROAD COMPRESSION-IGNITION ENGINES were under review and consideration for several years before they went into effect on 1 January 2019. Another regulation example relevant to battery-powered equipment sold in the EU, like Model T16, is Machinery Directive 2006/42/EC. The Product Regulatory Affairs (PRA) group (Legal Dept.) assesses, filters, and ranks potential impact of Emerging regulation on our business. PRA is closely involved with both technology and product development. PRA contributes to decision making on which emerging regulations should be proactively addressed. We also see Emerging regulation as an area of tremendous opportunity via increased demand for lower emissions products and services. This directive guarantees a high level of protection for EU workers and citizens through a combination of mandatory health and safety requirements.
Technology	Not relevant, explanation provided	No climate-related Technology risk types are currently assessed as relevant. Technological improvements or innovations that support the transition to a lower-carbon, energy-efficient economic system are something Tennant Company sees as an area of tremendous opportunity via increased demand for lower emissions products and services. For example, electrification of our product line portion which employs internal combustion engines is an area of current investment. This could include product models like S30, M30, and 800. Another

		example is the development of the CCV Series of outdoor sweepers with all electric power. This new product line has been publicized and will be introduced by Gaomei in the future.
Legal	Not relevant, explanation provided	No climate-related Legal risk types are currently assessed as relevant, beyond those mentioned in Current and Emerging regulation risk types. Tennant Company's business model is to develop, manufacture, sell, and service capital goods products. This includes mechanized cleaning equipment, detergent-free and other sustainable cleaning technologies, aftermarket parts and consumables, equipment maintenance and repair service, specialty surface coatings, and business solutions such as financing, rental and leasing programs, along with machine-to-machine asset management solutions. Through the 2017 acquisition of IPC Group, our product portfolio expanded to include cleaning tools and supplies, such as multi-purpose cleaning trolleys, window-washing systems, antibacterial microfiber mops and cloths, and a wide array of consumables. Through the 2019 acquisition of Gaomei, our product portfolio expanded again with product categories similar to those described above. Given our business model, we have not identified any climate-related litigation claim risks.
Market	Relevant, always included	We include this risk type in two categories of our Enterprise Risk Assessment (ERA): 1) Competition, Disruption, and Market Responsiveness; and 2) Product Development and Technology Innovation. Climate-related Market risk types may include competitor products and technologies which are market advantaged due to lower carbon emissions or other environmental impact reduction. Tennant Company products range from canister vacuum cleaners like Model V-CAN-10 to rider integrated sweeper/scrubber-drier Model M30. Our products are sold in competitive markets throughout the world. Competition is based on product features and design, brand recognition, reliability, durability, technology, breadth of product offerings, price, customer relationships and after-sale service. These features can include environmental footprint improvements such as reduced carbon emissions and less water use. We believe that the performance and price characteristics of our products will produce competitive solutions for our customers' needs along with lower total cost of ownership. However, our products are generally priced higher than our competitors' products. This is due to

		our dedication to quality, innovation, and continued investment in research, technology, and product development. We segment our market by categories such as Commercial, Industrial, etc. Each category has a cross-functional group responsible for the product line offering, value proposition, and product roadmap. These groups are known as Category Business Teams (CBT). The potential impact of Market type risks on the business is assessed, filtered, and ranked by each CBT. For example, a competitor could launch a lower-cost stand-on scrubber-drier that results in reduced sales of our T350 and Speed Scrub® 350 models. Or a competitor could launch a walk-behind scrubber-drier that results in reduced sales of our Gaomei GM-65RBT or IPC CT 71 models. In such a case, the Commercial CBT would assess and quantify the risk, determine potential responses, and make recommendations. The recommended approaches would be considered and the most appropriate action selected. A project would be scoped and then prioritized by the cross-functional New Product Leadership Team. Resource needs would then be defined and activity scheduled within operating constraints (budgets, etc.).
Reputation	Not relevant, explanation provided	No climate-related Reputation risk types are currently assessed as relevant. Tennant Company's business model is to develop, manufacture, sell, and service capital goods products. This includes mechanized cleaning equipment, detergent-free and other sustainable cleaning technologies, aftermarket parts and consumables, equipment maintenance and repair service, specialty surface coatings, and business solutions such as financing, rental and leasing programs, along with machine-to-machine asset management solutions. Through the 2017 acquisition of IPC Group, our product portfolio expanded to include cleaning tools and supplies, such as multi-purpose cleaning trolleys, window-washing systems, antibacterial microfiber mops and cloths, and a wide array of consumables. Through the 2019 acquisition of Gaomei, our product portfolio expanded again, with product categories similar to those described above. Tennant Company's commitment to science-based targets, demonstrated Scope 1+2 emission reduction progress, and continued investment in eco-advantaged products and technology are actions we believe enhance our strong reputation. Many of our largest customers undertake similar actions. When competing for business, we have

		noted these customers seek business partners that will not detract from their own reputations. We are an actively engaged member in our communities, both in terms of "giving back" and participation in organizations working to mitigate climate change. The Sustainable Growth Coalition (the Coalition) is a good example. Nearly 30 businesses and organizations have formed the Coalition, a business-led partnership harnessing their expertise to advance the next frontier of corporate sustainability — the circular economy. The Coalition is making the business case for collective action, lowering economy-wide greenhouse gas emissions and increasing access to affordable, reliable clean energy to improve racial, economic, social and public health outcomes. Collaborative action across sectors and industries fuels economic growth and regional competitiveness, responsive to the demands of customers, consumers and communities. The Coalition's Business Case for Collective Action - Through clean energy strategies, the Sustainable Growth Coalition has the opportunity to make a substantial impact on greenhouse gas emissions, clean energy, clean water and materials use to advance a thriving circular economy focused on equity and communities.
Acute physical	Relevant, always included	We include this risk type in the Business Continuity and Interruption category of our Enterprise Risk Assessment (ERA). An Acute physical event like a tornado could cause a business disruption. Extreme weather events continue to increase in both severity and frequency. The 14 separate U.S. billion-dollar disasters in 2019 represent the fourth highest total number of events (tied with 2018), and behind only the years 2017 (16 events), 2011 (16) and 2016 (15). The most recent years of 2019, 2018, and 2017 have all been historic in the number of billion-dollar disasters that have impacted the U.S. – totalling 44 separate events. Source: https://www.climate.gov/news-features/blogs/beyond-data/2010-2019-landmark-decade-US-billion-dollar-weather-and-climate Acute Physical risks for facilities are defined by characteristics of their physical location, such as land height above nearby waterways/lakes, tornado or hurricane probability, etc. These risks are quantified by insurance agency ratings and premiums. As examples, our facilities in Texas and Minnesota are exposed to greater tornado risk compared to our facilities in other U.S. states and

		countries. Our facility in Louisville, KY, is exposed to greater flood risk as it is located in the Ohio River floodplain. As such, we must pay for a flood insurance rider on the Louisville facility to mitigate the potential financial impact of flood. We rely on our computer systems, ERP software such as SAP, manufacturing plants, and distribution facilities to efficiently operate our business. If we experience an interruption in the functionality in any of these items for a significant period of time for any reason, including climate-related events, we may not have adequate business continuity planning contingencies in place to continue our normal business operations on a long-term basis. In addition, the increase in customer-facing technology raises the risk of a lapse in business operations. Therefore, significant long-term interruption in our business could cause a decline in sales, an increase in expenses, and could adversely impact our financial results. Extreme weather event risks are low, given location of our facilities and presence of backup computer systems/data centers. But they must be considered and mitigated with both appropriate insurance and strong business continuity plans.
Chronic physical	Not relevant, explanation provided	No climate-related Chronic physical risk types are currently assessed as relevant. We do not believe any Tennant Company direct operations are located in high-risk areas from the Chronic physical risk perspective. For example, no manufacturing or logistics facilities are located in low sea level or subsidence-prone areas; i.e., gradually caving in or sinking. Longer-term shifts in climate patterns (e.g., sustained higher temperatures) that may cause sea level rise or chronic heat waves are not currently as likely to affect our locations as Acute physical risks. This assessment could change over time, so Chronic physical risk types are reviewed for relevance on an ongoing basis.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation

Mandates on and regulation of existing products and services

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Company-specific description

There are many areas of regulation which affect Tennant Company products. Recent regulations from the EPA and EU have affected internal combustion (IC) engines and fuel delivery systems which we use in our products. These regulations have the potential to significantly increase product cost and reduce revenue from the sale of our products. We must monitor the regulatory climate closely and take action in advance to be prepared.

Such regulations also have the potential to impact material selection and costs. Those impacts can apply to all products and all manufacturers in certain industries. The financial impact could be lost sales, along with both cost of compliance and opportunity cost from diversion of key resources from new product development to compliance programs.

As mentioned, some of our products use IC engines. Specific examples include the S20 and M30 models.

A current and specific example of this type of regulatory change occurred in RY2019. On January 1, 2019, Tier 4 and Stage V emissions regulations took effect in the USA and EU, respectively. These standards were adopted to reduce pollution in the form of particulate matter, hydrocarbons, and NOx. Engine manufacturers utilize various combinations of exhaust after-treatment technologies. In order to have our products updated and ready for sale, we needed to work well in advance of the effective date to manage the risk.

Total company revenue from IC products continues to decline slowly due to cost and complexity of maintaining IC equipment, combined with advances in battery and other power source technologies. We are mitigating this decline by developing and introducing lithium-ion powered products such as the Model S16 launched recently. But IC products make up a material portion of our revenue/profit. Certain customer needs and situations (runtime, lack of access to charging, etc.) cannot currently be addressed without an IC

power supply. But battery technology and related regulations are advancing rapidly and must be closely monitored.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

3,525,000

Potential financial impact figure – maximum (currency)

8,460,000

Explanation of financial impact figure

Our M30 product model has an internal combustion engine and is a good company-specific example. The list price for an M30 is $70,500. The cited range of potential revenue impact ($3,525,000 - $8,460,000) reflects selling between 50 and 120 fewer M30 products. This could occur if the engine price increased significantly ($3,000 - $6,000) due to a regulatory mandate. The magnitude of negative revenue impact would highly likely be tied to the magnitude of cost/price increase.

Such a cost increase could make customers decide to temporarily forego new equipment purchases. They could choose a lower-cost option, such as repairing an existing machine, renting equipment for the short term, or purchasing reconditioned equipment.

Precise financial impact would depend on the specific mandate and/or regulation, the product elements affected, and number of models affected.

Cost of response to risk

200,000

Description of response and explanation of cost calculation

Our Director of Product Regulatory Affairs, along with staff members, address product regulatory issues in all regions in which we conduct business. Our management method to address this risk is active engagement. We strive to understand potential regulatory implications well before they take effect. By proactively engaging, alternatives can be developed and tested, before regulatory change takes effect. This ensures compliance

and reduced risk across our value chain. Product Regulatory Affairs (PRA) personnel are involved in each product development project, as well as governance of our product development process and roadmap. Active PRA participation provides good, long-term regulatory insight to our product roadmaps.

Management method examples include ensuring our products are compatible with compliant engines available in the broadest markets. Another method is to seek cost-reduction ideas and concepts to partially or fully offset added costs from more complex internal combustion systems. For example, if a regulatory-driven change causes a $500 increase in engine cost, we would review product design in depth to seek offsetting cost reductions. A more expensive air pollution control system could be offset by improved production efficiency from lean manufacturing or other continuous improvement initiatives. This risk affects a number of our product models with internal combustion engines including S20 (some variants), S30, M20, T20, M30, 800, 1050, 1450, 161 and 191.

Another management method is discontinuing product models affected by regulatory changes. We took this approach in 2019 with the discontinuation of Models 4300 and Sentinel. Both were internal combustion powered. The technical complexity of internal combustion engines, and the regional/country variation in regulation, make this market sub-segment less attractive as each year passes.

Comment

Cost of response to risk noted above is a fraction of Product Regulatory Affairs group budget.

Precise cost of management would include other employee compensation and project costs (hardware, testing, etc.). Precise cost would depend on the exact scope of mandate and/or regulatory change.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation

Carbon pricing mechanisms

Primary potential financial impact

Increased direct costs

Company-specific description

There are externalized, societal costs from the use of fossil fuels. Explicit carbon pricing (carbon tax) along with cap and trade have been implemented in some markets around

the world to address these externalities. Tennant Company expects this trend to continue. Quantifying this risk, and updating the risk picture at least annually, is important work.

Tennant Company's largest manufacturing facilities are located in advanced economies such as Italy, The Netherlands, and USA. These facilities use substantial amounts of electricity and natural gas. We have direct Sales and Service operations in many more advanced economies such as Australia, Canada, France, Germany, Italy, Japan, Spain, Portugal, and UK. These operations have vehicle fleets which use substantial amounts of gasoline and diesel fuel.

The IEA has estimated the externalized cost of carbon as $100 / mT CO2 and $140 / mT CO2 for 2030 and 2040, respectively, in advanced economies. Source: "World Energy Model, Scenario analysis of future energy trends, Report — November 2019."

This overall risk (Carbon pricing mechanisms - increased pricing of GHG emissions) has both direct operations (Company) and indirect (Supply chain) implications. Risk 2 captures the direct operations (Company) portion of the overall risk.

Time horizon

Long-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

3,330,900

Potential financial impact figure – maximum (currency)

4,663,260

Explanation of financial impact figure

This operational cost impact estimate is based on 2019 total Scope 1+2 GHG emissions (market-based) of 33,309 mT CO2e and the IEA 2030 and 2040 carbon price estimates in advanced economies.

$3,330,900 = 33,309 mT CO2e * $100
$4,663,260 = 33,309 mT CO2e * $140

Cost of response to risk

0

Description of response and explanation of cost calculation

Our management approach to this risk is monitoring utility usage by facility and focusing more effort on emissions reduction initiatives. These initiatives including energy supply projects, energy efficiency, and fleet fuel use efficiency. Benefits include reduced current operating costs as well as mitigation of this long-term, Emerging regulation risk type.

For example, we achieved a total absolute emission reduction of 3,621 mT CO2e in 2019. The acquisition of Gaomei was an absolute increase of 787 mT CO2e. Therefore, the net reduction achieved in 2019 was 4,408 mT CO2e (3,621 + 787). These reductions resulted from electricity and fuel reduction initiatives along with incremental renewable energy purchases. These initiatives are fully described in C4.3a & C4.3b.

In addition to the carbon emission and risk reduction, annualized savings from projects completed in 2019 are more than $300,000.

Comment

No additional direct cost

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Upstream

Risk type & Primary climate-related risk driver

Emerging regulation

Carbon pricing mechanisms

Primary potential financial impact

Increased direct costs

Company-specific description

There are externalized, societal costs from the use of fossil fuels. Explicit carbon pricing (carbon tax) along with cap and trade have been implemented in some markets around the world to address these externalities. Tennant Company expects this trend to continue. Quantifying this risk, and updating the risk picture at least annually, is important work.

With Tennant Company's complex and broad product line, we have many different direct material supplier groupings. These groupings include batteries, chargers, castings, engines, motors and drives, etc. We have a number of suppliers in most direct material groups, and many of these suppliers have some facilities in advanced economies like the EU, U.S., Japan, etc. Sole source creates risk and more diverse sourcing creates complexity so a strategic supplier approach is required to achieve good balance.

We consider our supply chain partnerships confidential and, in general, chose not to disclose details on specific suppliers. We have supplied this detailed, confidential data to Trucost for calculation of Scope 3 - Category 1, Purchased goods and services carbon emissions. The resulting financial impact ranges are based on detailed confidential data including Tennant Company spend by supplier, supplier names and locations, and items purchased.

The IEA has estimated the externalized cost of carbon as $100 / mT CO2 and $140 / mT CO2 for 2030 and 2040, respectively, in advanced economies. Source: "World Energy Model, Scenario analysis of future energy trends, Report — November 2019."

This overall risk (Carbon pricing mechanisms - increased pricing of GHG emissions) has both direct operations (Company) and indirect (Supply chain) implications. Risk 3 captures the indirect (Supply chain) portion of the overall risk.

Time horizon

Long-term

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

10,845,000

Potential financial impact figure – maximum (currency)

15,183,000

Explanation of financial impact figure

This impact estimate is based on 2019 total Scope 3 - Category 1, Purchased goods and services emissions of 108,450 mT CO2e and the IEA 2030 and 2040 carbon price estimates in advanced economies.

$10,845,000 = 108,450 mT CO2e * $100
$15,183,000 = 108,450 mT CO2e * $140

Cost of response to risk

0

Description of response and explanation of cost calculation

Tennant Company manages this risk via dialogue with our suppliers.

In 2018, Tennant Company created the Operations Center of Excellence group. One benefit of this organizational adjustment is improved risk management. This group is working to achieve global, consistent, disciplined execution in areas such as Global Supply, Global Operations Launch (new products), Global Continuous Improvement, Enterprise Business Improvement, and Global Quality. These centralized resources serve each of our manufacturing facilities.

The Global Supply group is responsible for our global supply chain, which includes: developing and implementing company-specific strategies for direct and indirect supply while driving continuous improvement throughout the supply chain; collaborating with manufacturing location-based groups; coordinating the global transportation network, contracts and spend; and collaborating with global material control teams to manage supplier performance through key performance metrics.

We began dialog with additional suppliers on all aspects of sustainability (including carbon emissions) in 2019, as we expanded the engagement started in 2017. C12.1a includes much more additional detail on supplier engagement.

Comment

No additional direct cost

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Extreme weather events, such as tornadoes, hurricanes, typhoons and flooding, may increase awareness of climate change as a serious issue. In turn, this increased awareness may drive additional demand for Tennant Company products and solutions that offer customers the ability to reduce carbon emissions.

Many of our company-specific products and solutions are proprietary and patented, making them differentiated and unique. These products include battery-powered scrubber-driers, both walk-behind and rider, with patented ec-H2O™ technology. Another company-specific example is IRIS® Asset Manager technology, offered on many types of products. These technologies can help customers avoid carbon emissions through efficiency.

Customers continue to ask for much more detailed information in solicitations and Requests for Proposal as they drive toward their own carbon emission reduction goals and other environmental objectives. Providing environmental and performance advantaged products, with lower total life-cycle cost, is core to Tennant Company's value proposition. We have a broad line of eco-advantaged products (described in company-specific terms above), backed up by independent Life Cycle Assessment data.

Tennant Company products are generally some of the highest performing, highest quality and lower total life-cycle cost in the industry.

Tennant Company sees this as an opportunity for increasing existing product demand, compared to our competitors, as well as higher margins through the development of new, differentiated solutions.

NOTE: We cannot share specific information about products and technology that are in development. The Model 1610 ReadySpace® example provided below is a product we have already introduced.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

2,920,000

Potential financial impact figure – maximum (currency)

11,680,000

Explanation of financial impact figure

We expect to realize incremental sales ranging from $2,920,000 - $11,680,000 for one new, patented product or technology. As an example, we could introduce another eco-advantaged product like ReadySpace® which allows customers to reduce their carbon emissions, water use and waste. The model 1610 ReadySpace product has a list price of $14,600. For a similar new product, between 200 units (volume low end) to 800 units (high end) could be sold, per year. This would yield $2,920,000 - $11,680,000 of incremental revenue.

Cost to realize opportunity

150,000

Strategy to realize opportunity and explanation of cost calculation

Realizing this opportunity was a consideration when our Sustainable Enterprise strategy work identified Products as one of four Focus Areas and we then set objectives, goals, and metrics.

We prioritize technology and product development, which includes carbon emissions avoidance and other environmental improvements in "Use of sold products" (our Scope 3). Examples of eco-advantaged products we developed and commercialized include ec-H2O™ technology, ReadySpace®, and IRIS®. These products help our customers reduce their Scope 1+2 carbon emissions, water use, and waste.

In 2017, we added a dedicated Senior Product Stewardship Engineer (SPSE) who is embedded with the Global Engineering group. The SPSE also works closely with the Global Marketing/Product Management, Product Regulatory Affairs, and Global Supply groups. This additional SPSE resource enhances our ability to pursue and advance technologies which lead to future eco-advantaged products.

Comment

Cost is approximate for additional resource. Total Research and Development investment in 2019 was $32.7 M and this is applied across a broad array of initiatives.

Project level investment is confidential information.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Tennant Company strives to create innovative, new products to meet customer needs. Our existing products are typically lower total life-cycle cost, with both environmental and performance advantages. We have a broad line of eco-advantaged products, backed up by independent Life Cycle Assessment data. These models include ec-H2O equipped scrubber-driers ranging from T300 to T20, ReadySpace 1610 & R14, various models equipped with IRIS, etc. We see this as a continuing opportunity for increased future product demand compared to our competitors.

We have a number of technologies in development with potential to significantly increase revenue. We cannot publicly disclose specific proprietary technologies when they are still in development. A company-specific past example is the ec-H2O™ technology which has generated more than $1,470,000,000 in sales over the past 12 years. Over that same time period, customers have avoided emissions amounting to more than 100,000 mT CO2.

A future company-specific example might be a large, rider integrated scrubber/sweeper with patented features like the Model M30 that also has an electric power system replacing internal combustion. This type of innovation could significantly reduce customer carbon emissions.

NOTE: We cannot share specific information about products and technology that are in development. The provided example is based on the Model M30, a product we have already introduced.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

18,000,000

Potential financial impact figure – maximum (currency)

45,000,000

Explanation of financial impact figure

For example, we introduced an eco-advantaged, large rider scrubber/sweeper like the M30. This product had patented features and includes a lithium-ion power source to replace the current internal combustion power source. This product will enable our customers to reduce their carbon emissions. The current M30 product has a list price of $70,500. A similar size product with new innovation, including lower carbon emissions, would command a higher price, estimated at $90,000. Between 200 and 500 units could be sold. This yields $18,000,000 to $45,000,000 incremental revenue.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Tennant Company's strategy to realize this opportunity is to actively and directly engage with our customers. We determine their evolving needs and expectations and also consider general societal trends. Having direct Sales and Service personnel in the field, in both developing and developed economies, helps this process immensely. Active and direct engagement enables Tennant Company to develop industry-leading products and services as well as continuously develop innovative sustainable solutions for customer facility maintenance needs. For example, new products launched in 2019 like lithium-ion powered versions of T600, T12, T16, T17 (scrubber-driers), and M17 (sweeper-scrubber) will likely result in greater revenue and profit for the company. These products provide customers the opportunity to reduce environmental impacts, including the benefits of the ec-H2O technology family.

Comment

Total Research and Development investment in 2019 was $32.7 M and was applied across a broad array of initiatives.

Project level costs and investment are confidential information.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of new products or services through R&D and innovation

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Tennant Company strives to create innovative, new technologies to meet customer needs. Trend and voice of customer research indicate customers desire more efficient and sustainable products which use fewer chemicals. Developing environmental and performance advantaged technologies, with lower total life-cycle cost, is core to Tennant Company's value proposition. We see this as an opportunity for increased new technology product demand in the future compared to our competitors.

We actively track 'mega-trends' including: population demographics, environmental pressures, new technologies, etc. Observations and potential impacts are fed to Strategic Planning, Business Development, and the Advanced Products and Technology Groups to identify potentially disruptive, far-term business opportunities. This enables development of innovative sustainable solutions for future customer needs.

This work results in new, differentiated technology modules and new product platforms.

We cannot publicly disclose specific proprietary technologies when they are still in development.

Time horizon

Long-term

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

15,000,000

Potential financial impact figure – maximum (currency)

75,000,000

Explanation of financial impact figure

For example, we introduced a new, innovative cleaning technology which could be added across a broad range of existing products. Tennant has accomplished a number of highly successful horizontal technology insertion innovations. With this type of

innovation, a module is added to existing product families. Examples include FaST and ec-H2O. The new technology module has a selling price of $5,000 and between 3,000 and 15,000 units are sold with the new technology. This yields $15,000,000 - $75,000,000 incremental revenue.

For example, Tennant and Nobles branded ec-H2O™ technology is a module that can be added to most of our scrubber-drier models. These models range in size from T300 (17-inch cleaning path) to M30 (64-inch cleaning path). Revenue from this technology has exceeded $1,470,000,000 revenue over a twelve (12) year time period (2008-2019). And customers have avoided emissions amounting to more than 100,000 mT CO2 over that same time period.

Annual sales for the cited example have exceeded $75 M since the third year after introduction.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Tennant Company's strategy to realize this opportunity is to actively and directly engage with our customers and be on track to commercialization before competitors. We determine their evolving needs and expectations and also consider general societal trends. Having direct Sales and Service personnel in the field, in both developing and developed economies, helps this process immensely. Active and direct engagement enables Tennant Company to develop industry-leading products and services as well as continuously develop innovative sustainable solutions for customer facility maintenance needs.

One trend we watch closely is regulations and laws related to climate change. Since 1997, there has been a 20-fold increase in the number of global climate change laws. This is according to a comprehensive database of relevant policy and legislation, produced by Grantham Research Institute on Climate Change and the Environment and the Sabin Center on Climate Change Law. The database includes more than 1,200 relevant policies across 164 countries accounting for more than 95% of global GHG emissions.

Another trend is mobile robotics and autonomous vehicles. We have been working with this technology for several years. The work to integrate Autonomous Mobile Robot (AMR) technologies has enabled new products and services and produced incremental revenue. In Q4 2018, we introduced and began shipments of our first commercial AMR product, the T7AMR. In Q1 2019, we moved into full commercialization in announcing an agreement to supply T7AMR scrubber-driers to a major retailer, Walmart. Walmart has been a leader in carbon emissions reduction across their value chain and worked to shape Project Gigaton along with CDP, the World Wildlife Fund, TSE, and Sustainability Consortium. T7AMR product sales grew dramatically in 2019.

http://investors.tennantco.com/news-and-events/press-releases/press-release-

details/2019/Tennant-Company-Announces-Agreement-with-Major-US-Retailer-to-Supply-Fleet-of-Robotic-Floor-Cleaners/default.aspx

Comment

Total Research and Development investment in 2019 was $32.7 M and was applied across a broad array of initiatives.

Project level costs and investment are confidential information.

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, quantitative

C3.1b

(C3.1b) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
IEA Sustainable development scenario	Tennant Company uses the International Energy Agency (IEA) Sustainable Development Scenario CO2 prices to assess transition risks from the growing trend toward carbon market mechanisms. There are externalized, societal costs from the use of fossil fuels. Explicit carbon pricing (carbon tax) along with cap and trade have been implemented in some markets around the world to address these externalities. We expect this trend to continue. We chose this scenario because the IEA has a global view which matches our global business footprint. The inputs used were our current carbon emissions profile and the assumptions are described below. The IEA has estimated the externalized cost as $100 / mT CO2 and $140 / mT CO2 for 2030 and 2040, respectively, in advanced economies. Source: "World Energy Model, Scenario analysis of future energy trends, Report — November

	2019." According to our defined time horizons this scenario is considered long-term (5-100 years), given the IEA's 2030 to 2040 framework. This time horizon is relevant to our business strategy as it aligns with our long-term 2030 targets approved by SBTi. This scenario has both direct operations (Company) and indirect (Supply chain and Customer) implications. Direct impact ranges from $3,330,900 to $4,663,260 in annual operational cost. This impact estimate is based on 2019 total Scope 1+2 GHG emissions (market-based) of 33,309 mT CO2e and the IEA carbon price estimates. This level of impact represents as much as 10.2% of 2019 net earnings (10.2% = $4,663,260 / $45,800,000). We expect to continue reducing emissions each year, so this annual range of cost is representative for the 2030 to 2040 timeframe. Indirect impact ranges from $10,845,000 to $15,183,000 in operational cost. This impact estimate is based on 2019 total Scope 3, Category 1 emissions of 108,450 mT CO2e and IEA carbon price estimates. This level of impact represents as much as 33.2% of 2019 net earnings. (33.2% = $15,183,000 / $45,800,000). We know this potential impact is understated, since we have not included IPC and Gaomei in Scope 3, Category 1 emissions for 2019. We also expect indirect emissions to increase each year as our business grows, likely faster than our supply chain can reduce emissions. Therefore, this annual range of cost is highly likely to be understated for the 2030 to 2040 timeframe. We intend to include IPC and Gaomei in our 2020 Category 1 emission reporting. We did not consider any changes from the reference scenario. The results are shared internally with the Senior Management Team. Scenario analysis results directly influence our objectives and strategy, with an increased leadership commitment to a long-term view, setting aggressive targets to reduce carbon emissions, and leading the transition to a low carbon future. The scenario analysis results also strengthen internal motivation for setting and achieving aggressive emission reduction targets. We expect the risk defined by this scenario will continue to increase. We therefore plan to begin work in September 2020 toward establishing more ambitious science-based targets. The new targets will include recently acquired businesses (IPC, Gaomei). When our first SBTs were established and approved, with 2016 as base year, IPC and Gaomei were not part of the

	company. Target development will involve significant dialog with all internal stakeholders and key decision makers. This is one example of how scenario analysis results directly affect our business objectives and strategy. We intend to employ broader scenario analysis in the future, including specific emission reduction pro forma assumption sets for our direct and relevant indirect categories.

C3.1d

(C3.1d) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	One climate change opportunity Tennant Company has seen in products and services is increased demand for technologies that reduce emissions. One company-specific example is our proprietary, patented ec-H2O™ category of eco-advantaged products and services. This technology can be added to most of our scrubber-driers including models ranging in size from T300 (17-inch cleaning path) to M30 (64-inch cleaning path). Revenue from this technology has exceeded $1,470,000,000 revenue over a 12-year time period (2008-2019). Profit margins for this technology have been greater than company average margins. Next generation ec-H2O NanoClean® was added to some models in 2015. Sales of the ec-H2O product category for 2019 were about 78% of peak year sales. This type of sales vs. time curve is an indication of true, customer-valued innovation. Cumulative revenue ($1.47 B) over the technology lifetime is 29% greater than total 2019 company revenue ($1.1376 B). We estimate our customers have avoided more than 100,000 mT CO2 emissions from all ec-H2O™ and ec-H2O NanoClean® equipped scrubber-driers sold to date, in comparison to packaged chemicals. Avoided emissions are

		the result of significant reductions of input materials, elimination of packaging, and elimination of emissions from transportation. In 2019 alone, we estimate our customers avoided more than 13,200 mT CO2 emissions by using this group of products. These estimates are based on independent LCAs performed by EcoForm, total ec-H2O™ and ec-H2O NanoClean® equipped scrubber-drier units sold to date, and the installed base operating in 2019.
Supply chain and/or value chain	Yes	Customer use of Tennant Company products is the largest element of our 2019 Scope 1 & 2 & 3 value chain carbon emissions at more than 75%. Many customers have realized emission reduction by adapting eco-advantaged products like ec-H2O™ and ec-H2O NanoClean®, which are patented and unique to the Company. We estimate our customers have avoided more than 100,000 mT CO2e emissions from all ec-H2O™ and ec-H2O NanoClean® equipped scrubber-driers sold to date, in comparison to packaged chemicals. This estimate is based on independent LCAs performed by EcoForm and total unit sales. Avoided emissions are the result of significant reductions of input materials, elimination of packaging, and elimination of emissions from transportation. In 2019 alone, we estimate our customers avoided more than 13,200 mT CO2e emissions by using this group of products. This estimate is based on independent LCAs performed by EcoForm and the installed base operating in 2019.
Investment in R&D	Yes	Tennant Company has a history of developing innovative technologies to create a cleaner, safer, healthier world. The Company is committed to its innovation leadership position through fulfilling its goal to annually invest approximately 3% of annual sales to research and development. The Company's innovation efforts are focused on solving our customers' needs holistically by addressing a broad array of issues, such as managing labor costs, enhancing productivity, and making cleaning processes more efficient and sustainable. Through core product development, partnerships and technology enablement, we are creating

		new growth avenues for the Company. These new avenues for growth go beyond cleaning equipment into business insights and service solutions. A climate change related opportunity we realized came from reduced product development cycle time and faster time to market for eco-advantaged products. For example, ec-H2O NanoClean® technology was accelerated to replace the original ec-H2O™ technology on certain product models. After Tennant introduced proprietary ec-H2O™ technology in 2008, advances in nanobubble technology led to ec-H2O NanoClean®. This technology delivers next-generation cleaning with nano-scale bubbles that break down dirt, food greases, and other challenging soils, then suspend them in the cleaning water where the squeegee can easily remove soil from the floor. ec-H2O NanoClean® cleans more soils in more applications than the original ec-H2O™. The impact of faster time to market for ec-H2O NanoClean® was sustained sales and profit for a technology already in market for over seven years. A typical product might reach peak sales in four to five years, then begin to decline. The ec-H2O product family reached peak sales in Year 8, also the same year next-generation NanoClean was introduced. The result has been sustained high sales and profit. In 2019 (Year 12), ec-H2O product family sales remain about 78% of peak sales.
Operations	Yes	Tennant Company has reduced operating costs for both manufacturing facilities and sales/service vehicle fleets by adapting energy- and fuel-saving technologies. Achieving these improvements results in both reduced current operating cost and mitigation of the longer-term climate-related risk. For example, we achieved 3,717 mT CO2e absolute emission reduction in 2019 to 25,855 mT CO2e, 12.6% less than 2018 emissions (29,572 mT CO2e). The reduction noted here is for our SBTi approved target (Abs 1) reporting boundary, which does not include 2017 IPC or 2019 Gaomei acquisitions. One company-specific example is the installation of LED lighting at our Holland, MI, manufacturing facility. The project was completed in 2019 and will reduce annual electricity consumption by more than 190,000 kWh. The

		resulting Scope 2 emission reduction will be more than 110 mT CO2e.

C3.1e

(C3.1e) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Capital expenditures Capital allocation	Revenues - When deciding where to invest for revenue growth, Tennant Company considers eco-advantaged technologies and products, (including those which reduce carbon emissions) as favorable. For example, the category of eco-advantaged products and services known as ec-H2O™ and ec-H2O NanoClean® has exceeded $1.47 billion in revenue over a 12-year time period (2008-2019). Developing this solution was a strategic investment which we began in late 2005. The revenue impact has been significant. The revenue and unit sales shift away from internal combustion products for our portfolio continues. For 2019, internal combustion unit sales were 1.03% of total unit sales. The percentage of revenue is larger, since internal combustion models are disproportionately larger in size and more complex. The percentage of carbon emissions is also larger, at around 20% of total Scope 3 - Category 11, Use of sold products emissions. Therefore, we will continue to focus on efficiency of all our products, including those that are internal combustion powered. We expect the current trend toward electrification and other carbon emission reducing solutions will continue. We consider trends, the current level of customer interest, and the competitive playing field when deciding where to invest. Anticipated revenue gains are an important consideration in both our financial planning and R&D investment decision making process. Direct costs - Tennant Company's work to reduce carbon emissions has resulted in significant electricity, natural gas and vehicle fuel cost savings. Impacts include reduced current operating costs and mitigating the longer-term risk. We have reduced operating costs for both manufacturing facilities and sales/service vehicle fleets by adapting energy- and fuel-saving technologies. A company-specific example is the new Headquarters project. A decision

		was taken in late 2019 to demolish an inefficient, existing building which we had no intention to occupy in the near term. We estimate this decision will reduce our future annual carbon emissions by at least 540 mT CO2e. Annual cost savings on energy alone are estimated at more than $140,000. Anticipated direct cost savings are an important consideration in our financial planning. Capital Allocation & Expenditures - Tennant Company considers long-term energy and fuel cost savings in capital expense financial analysis. This is part of the financial model required for capital planning and approval. One company-specific example is the replacement of electrical switchgear at our Minneapolis, MN, facility. A rigorous cost benefit analysis was conducted to define the best system in terms of total cost and ROI. The first phase of the project was approved in December 2016 and the long lead time gear was ordered in Q2 2017. The final detailed engineering plan was approved in February 2018. The project was completed in Q2 2019. This multimillion-dollar investment has reduced facility risk and provided much greater insight on energy usage. We estimate the switchgear investment will reduce carbon emissions by more than 57 mT CO2e per year. Future cost savings and emission reductions are an important consideration in our financial planning.

C3.1f

(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Both absolute and intensity targets

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Year target was set

2017

Target coverage

Other, please specify

Target includes at least 99% of the company's total, global gross Scope 1+2 emissions for base year 2016. Explanation below provides complete detail on target coverage.

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2016

Covered emissions in base year (metric tons CO2e)

32,480

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

99

Target year

2030

Targeted reduction from base year (%)

25

Covered emissions in target year (metric tons CO2e) [auto-calculated]

24,360

Covered emissions in reporting year (metric tons CO2e)

25,855

% of target achieved [auto-calculated]

81.5886699507

Target status in reporting year

Underway

Is this a science-based target?

Yes, this target has been approved as science-based by the Science-Based Targets initiative

Please explain (including target coverage)

The 25% absolute reduction target (Abs 1) was approved by Science Based Targets initiative (SBTi) in early 2018. The reduction achieved through 2019, compared to base year 2016, was 20.4% ((32,480 - 25,855) / 32,480). As of 12/31/19, we had achieved 81.6% (20.4% / 25%) of progress toward the Abs 1 target in 21.4% (3 / 14 years) of time to target.

This target includes at least 99% of the company's total, global gross Scope 1+2 emissions for base year 2016.

What is not covered by this target are small facilities and facilities scheduled for demolition. We reassess our operational control boundary annually and did so in Q1 2020. We have a number of small facilities along with several unoccupied facilities scheduled for demolition. All emissions from these facilities are less than 1% of total emissions covered by the target reporting boundary. When conducting the annual boundary assessment, if we identify relevant emissions not previously reported we restate prior year emissions to include them. No boundary-related restatements are included in our CDP Climate Change 2020 response.

IPC Group (acquired in April 2017) emissions are reported as part of 2019 total Scope 1+2 emissions. IPC Group represents 20% of our 2019 market-based Scope 1+2 emissions, but IPC is not part of 2016 base year emissions for the Abs 1 target.

Gaomei (acquired in January 2019) emissions are reported as part of 2019 total Scope 1+2 emissions. Gaomei represents 2% of our 2019 market-based Scope 1+2 emissions, but Gaomei is not part of 2016 base year emissions for the Abs 1 target.

We intend to make 2019 the base year for new SBTs which include both IPC and Gaomei. Work on these new SBTs is scheduled to begin in September 2020.

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Year target was set

2013

Target coverage

Other, please specify

Target includes at least 99% of the company's total, global gross Scope 1+2 emissions for base year 2012. Explanation below provides complete detail on target coverage.

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Intensity metric

Metric tons CO2e per unit revenue

Base year

2012

Intensity figure in base year (metric tons CO2e per unit of activity)

42.6

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

99

Target year

2020

Targeted reduction from base year (%)

25

Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]

31.95

% change anticipated in absolute Scope 1+2 emissions

-25

% change anticipated in absolute Scope 3 emissions

0

Intensity figure in reporting year (metric tons CO2e per unit of activity)

29

% of target achieved [auto-calculated]

127.6995305164

Target status in reporting year

Achieved

Is this a science-based target?

No, but we are reporting another target that is science-based

Please explain (including target coverage)

The 25% revenue intensity reduction (Int 1) is our first target and was set in early 2014. As of 12/31/19, we had achieved a 32.1% reduction in revenue-based emissions intensity. We had achieved 128% (32.1% / 25%) of progress toward the Int 1 target in 87.5% (7 / 8 years) of time to target. Since this target was achieved one year early, we intend to retire the target.

As of 12/31/19, an absolute emissions reduction of 18% and 5,660 mT CO2e had been achieved, compared to base year 2012. 18% = ((31,515 - 25,855)) / 31,515). We expect to achieve a 25% absolute emissions reduction by 12/31/20 for the Int 1 target boundary, based on 2020 YTD activity and a pro forma estimate.

This target includes at least 99% of the company's total, global gross Scope 1+2 emissions for base year 2012.

What is not covered by this target are small facilities and facilities scheduled for demolition. We reassess our operational control boundary annually and did so in Q1 2020. We have a number of small facilities along with several unoccupied facilities scheduled for demolition. All emissions from these facilities are less than 1% of total emissions covered by the target reporting boundary. When conducting the annual boundary assessment, if we identify relevant emissions not previously reported we restate prior year emissions to include them. No boundary-related restatements are included in our CDP Climate Change 2020 response.

IPC Group (acquired in April 2017) emissions are reported as part of 2019 total Scope 1+2 emissions. IPC Group represents 20% of our 2019 market-based Scope 1+2 emissions, but IPC is not part of 2012 base year emissions for the Int 1 target.

Gaomei (acquired in January 2019) emissions are reported as part of 2019 total Scope 1+2 emissions. Gaomei represents 2% of our 2019 market-based Scope 1+2 emissions, but Gaomei is not part of 2012 base year emissions for the Int 1 target.

We intend to make 2019 the base year for new SBTs which include both IPC and Gaomei. Work on these new SBTs is scheduled to begin in September 2020.

Target reference number

Int 2

Year target was set

2017

Target coverage

Other, please specify

Target includes at least 95% of the company's total, global gross Scope 3, Cat 11 emissions for base year 2016. Explanation below provides complete detail on target coverage.

Scope(s) (or Scope 3 category)

Scope 3: Use of sold products

Intensity metric

Other, please specify

Metric tons CO2 per unit of new product revenue

Base year

2016

Intensity figure in base year (metric tons CO2e per unit of activity)

814

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

95

Target year

2030

Targeted reduction from base year (%)

50

Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]

407

% change anticipated in absolute Scope 1+2 emissions

0

% change anticipated in absolute Scope 3 emissions

-36

Intensity figure in reporting year (metric tons CO2e per unit of activity)

656

% of target achieved [auto-calculated]

38.8206388206

Target status in reporting year

Underway

Is this a science-based target?

Yes, this target has been approved as science-based by the Science Based Targets initiative

Please explain (including target coverage)

NOTE: The unit of measure for Use of sold products emissions is Metric tons CO2, not CO2e. When setting the Science-Based Target for Use of sold products we determined N2O & CH4 contributors were not material for our types of products. This approach was approved by SBTi.

The 50% equipment revenue intensity target (Int 2) covers Scope 3 - Category 11 (Cat 11), Use of sold products. The Int 2 target was approved by Science Based Targets initiative (SBTi) in early 2018.

2019 emissions intensity was 656 mT CO2 / $ M in equipment revenue (322,184 mT CO2 / $ 491 M).

2016 base year emissions intensity was 814 mT CO2 / $ M in equipment revenue (371,798 mT CO2 / $ 457 M). The intensity reduction achieved as of 12/31/19 was 19.4% ((814 - 656) / 814)).

As of 12/31/19, we had achieved 39% (19.4% / 50%) of progress toward the Int 2 target in 21.4% (3 / 14 years) of time to target.

We expect to achieve a 36% absolute emissions reduction by 12/31/30 for the Int 2 target boundary, based on progress to date and updated pro forma estimate.

If we identify mis-categorized products or other errors when calculating Scope 3 - Cat 11, Use of sold products, we restate prior year emissions. We discovered that a few third-party products were mis-categorized in prior years and therefore restate 2016, 2017, and 2018 Cat 11 emissions under the Int 2 target to 371,798, 349,323, and 356,464 mT CO2, respectively.

This target includes at least 95% of the company's total, global gross Scope 3 - Cat 11 emissions in base year 2016. The target does not include intermediate products, floor coatings, reconditioned equipment, or third-party products which are outside of our design control.

IPC Group (acquired in April 2017) emissions are reported as part of 2019 Scope 3 - Cat 11, Use of sold products emissions (see Section C6.5). IPC Group represents 32.7% of our total 2019 Scope 3 - Cat 11 emissions, but IPC is not part of 2016 base year emissions for the Int 2 target.

Gaomei (acquired in January 2019) emissions are reported as part of 2019 Scope 3 - Cat 11, Use of sold products emissions (see Section C6.5). Gaomei represents 9.3% of our 2019 Scope 3 - Cat 11, but Gaomei is not part of 2016 base year emissions for the Int 2 target.

We intend to make 2019 the base year for new SBTs which will include both IPC and Gaomei. Work on these new SBTs is scheduled to begin in Sept. 2020.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

No other climate-related targets

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	17	
To be implemented*	9	1,116
Implementation commenced*	6	2,572
Implemented*	18	4,944.6
Not to be implemented	4	

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in buildings
Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

111.4

Scope(s)

Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

16,574

Investment required (unit currency – as specified in C0.4)

29,530

Payback period

1-3 years

Estimated lifetime of the initiative

16-20 years

Comment

LED lighting for facility in Holland, Michigan

Initiative category & Initiative type

Energy efficiency in buildings
Insulation

Estimated annual CO2e savings (metric tonnes CO2e)

42.9

Scope(s)

Scope 1
Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

3,870

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

21-30 years

Comment

New roof for facility in Holland, Michigan. New roof has both improved insulation and a light colored membrane replacing dark.

Initiative category & Initiative type

Low-carbon energy consumption
Wind

Estimated annual CO2e savings (metric tonnes CO2e)

3,805

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

0

Investment required (unit currency – as specified in C0.4)

13,905

Payback period

No payback

Estimated lifetime of the initiative

Ongoing

Comment

10,300 MRETS Wind RECs for two facilities in Minneapolis, Minnesota

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Initiative category & Initiative type

Energy efficiency in production processes

Compressed air

Estimated annual CO2e savings (metric tonnes CO2e)

38.5

Scope(s)

Scope 2 (location-based)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

6,577

Investment required (unit currency – as specified in C0.4)

13,500

Payback period

1-3 years

Estimated lifetime of the initiative

11-15 years

Comment

New compressor for facility in Louisville, Kentucky

Initiative category & Initiative type

Energy efficiency in buildings

Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

94.7

Scope(s)

Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

16,200

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

LED lighting for facility in Louisville, Kentucky, as a lease renewal stipulation

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Initiative category & Initiative type

Energy efficiency in buildings
Other, please specify
Replace switchgear

Estimated annual CO2e savings (metric tonnes CO2e)

117.4

Scope(s)

Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

32,288

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

21-30 years

Comment

Replace switchgear and upgrade internal distribution at main facility in Minneapolis, Minnesota

Initiative category & Initiative type

Energy efficiency in production processes
Machine/equipment replacement

Estimated annual CO2e savings (metric tonnes CO2e)

29.8

Scope(s)

Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

8,200

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

Replaced press brake at main facility in Minneapolis, Minnesota. New press brake has advanced controls and automatically activates idle mode to save energy.

Initiative category & Initiative type

Energy efficiency in buildings
Other, please specify
Seasonal shutdown

Estimated annual CO2e savings (metric tonnes CO2e)

28.5

Scope(s)

Scope 1
Scope 2 (location-based)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

1,607

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Developed and implemented a seasonal shutdown protocol for heated, winterized outdoor test track at facility in Minneapolis, Minnesota

---

Initiative category & Initiative type

Energy efficiency in production processes
Machine/equipment replacement

Estimated annual CO2e savings (metric tonnes CO2e)

0.9

Scope(s)

Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

256

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

Replaced spot welder at main facility in Minneapolis, Minnesota. New welder has a "soft-touch" mode which requires less electrical energy.

Initiative category & Initiative type

Energy efficiency in production processes
Electrification

Estimated annual CO2e savings (metric tonnes CO2e)

4.6

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

2,892

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Replaced three internal combustion powered material handling trucks with electric at facility in Chicago, Illinois

Initiative category & Initiative type

Energy efficiency in production processes
Machine/equipment replacement

Estimated annual CO2e savings (metric tonnes CO2e)

86.8

Scope(s)

Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

13,152

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

Replace two press brakes at facility in Uden, The Netherlands. New press brakes have advanced controls and automatically activate idle mode to save energy.

Initiative category & Initiative type

Energy efficiency in production processes

Electrification

Estimated annual CO2e savings (metric tonnes CO2e)

1.3

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

526

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Replaced two internal combustion powered material handling trucks with electric at facility in Uden, The Netherlands

Initiative category & Initiative type

Energy efficiency in production processes

Compressed air

Estimated annual CO2e savings (metric tonnes CO2e)

14.1

Scope(s)

Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

2,138

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Compressed air fitting upgrades and leak repair at facility in Uden, The Netherlands

---

Initiative category & Initiative type

Low-carbon energy consumption
Wind

Estimated annual CO2e savings (metric tonnes CO2e)

85

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

0

Investment required (unit currency – as specified in C0.4)

316

Payback period

No payback

Estimated lifetime of the initiative

Ongoing

Comment

300 incremental Italy Wind GOs for facility in Cremona, Italy

---

Initiative category & Initiative type

Transportation

Other, please specify

Driver behavior modification

Estimated annual CO2e savings (metric tonnes CO2e)

202.4

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

130,000

Investment required (unit currency – as specified in C0.4)

20,000

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Implemented driver awareness program for vehicle fleet in France

---

Initiative category & Initiative type

Energy efficiency in buildings

Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

0.2

Scope(s)

Scope 2 (location-based)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

1,371

Investment required (unit currency – as specified in C0.4)

1,721

Payback period

1-3 years

Estimated lifetime of the initiative

Ongoing

Comment

Completion of LED re-lamping project for facility in Sao Paulo, Brazil

---

Initiative category & Initiative type

Energy efficiency in buildings

Other, please specify

Facility consolidation

Estimated annual CO2e savings (metric tonnes CO2e)

16.8

Scope(s)

Scope 2 (location-based)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

4,610

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Integrated processes and capabilities at one Minneapolis facility into other existing facilities

---

Initiative category & Initiative type

Transportation

Company fleet vehicle replacement

Estimated annual CO2e savings (metric tonnes CO2e)

264.3

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

72,000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Continued deployment of more efficient vehicles in U.S. Sales & Service fleet

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Regulatory requirements and standards related to energy and fuel efficiency continue to help drive emissions reduction. The Renewable Energy Standard (RES) in Minnesota is a good example. The RES has significantly increased the percentage of renewable energy sources on the grid supplying our largest electrical demands (Minneapolis campus). We also see electricity demand reduction benefit from standards driven upgrades to devices we regularly replace. These devices include computers, monitors, printers, etc.
Employee engagement	Employees are encouraged to submit all improvement ideas, including energy reduction and efficiency, through various Continuous Improvement (CI) programs. One example CI program is the Value Stream Tier Boards at our largest manufacturing facility in Minneapolis, MN. Value streams include fabrication, assembly, etc. All employees in each particular value stream can add improvement ideas to the Tier Board. Ideas are then evaluated and prioritized by a Manufacturing or Process Engineer.

	Another representative CI example is the suggestion box for safety improvement ideas. Suggestions are evaluated and prioritized by the Minneapolis Safety Committee, which is led by the Senior Safety & Environment Specialist. There are many different CI programs globally, each is tailored to specific function and/or location activities. At our facility in Uden, The Netherlands, there was an idea to revisit the "turn it off" program in 2019. This program was due for an update and the work started in 2019. Shutting off any and all devices for overnight, weekend, and holiday periods generates significant energy savings. Energy reduction ideas are considered at each of our global facilities. These ideas contribute to our progress on emission reduction.
Financial optimization calculations	Estimating energy/fuel reduction for building upgrades, new equipment and process investments was added to the Annual Operating Plan-Capital Planning template in 2014. The list of Capital projects is routed to the Director, Sustainable Enterprise during planning process, who advocates for investment toward efficiency projects. Additional detail is required in Capital Expenditure Requests (CERs), via a template update made in 2015. The CER is used to analyze and justify capital investments. Each CER is routed through required approvers before a project can start. CER routing includes the Director, Sustainable Enterprise who can advocate for investment toward efficiency projects, help quantify total cost savings, and manage the total portfolio of emission reduction initiatives.
Internal incentives/recognition programs	Employees can be nominated by their peers and leadership for APPLAUSE and Leading Edge Awards. These programs continue to provide both recognition and monetary rewards for work toward energy/fuel efficiency and emissions reductions.
Internal finance mechanisms	The Annual Operating Plan process was revised so Capital Equipment projects which yield GHG emission reductions are distinctly identified. Beginning in Q4 2014, all Capital Equipment projects are viewed as a company-wide portfolio to ensure we are making the best investments.
Internal price on carbon	We use an internal price on carbon (shadow price) to assess current and future enterprise risk from market mechanisms addressing external costs of fossil fuels. These market mechanisms are expanding globally and we expect this expansion to continue over the long term. We currently use $80 / mT CO2e as uniform, current internal carbon price. We use the uniform price for capital investment decisions and

	revisit the price annually. The High-Level Commission on Carbon Prices estimated that carbon prices of at least US$40–80 / mT CO2 by 2020 and US$50–100 / mT CO2 by 2030 are required to cost-effectively reduce emissions in line with the temperature goals of the Paris Agreement, while the IEA Sustainable Development Scenario states that a carbon price ranging between US$75 / mT CO2 and US$100 / mT CO2 is needed stay on track with a Paris-compatible trajectory. For business strategy analysis, we use evolutionary pricing per International Energy Agency (IEA) Sustainable Development Scenario. The IEA has estimated the externalized cost of carbon as $100 / mT CO2 and $140 / mT CO2 for 2030 and 2040, respectively, in advanced economies. Source: "World Energy Model, Scenario analysis of future energy trends, Report — November 2019."
Other	We employ independent energy assessment organizations to identify energy reduction and efficiency opportunities. For example, there is a Process Efficiency program administered by Xcel Energy in Minnesota. We have engaged in this program for more than 10 years. An independent assessment of our major facilities has been performed by Graphet Data Mining, to identify the most promising opportunities for energy reduction. We also regularly engage our business partners, including utilities (like Xcel Energy, CenterPoint Energy, Holland Board of Public Works, etc.) and fleet management companies. Through this engagement we identify new opportunities and best practices around energy/fuel efficiency improvements and emissions reductions.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Group of products

Description of product/Group of products

Detergent-free products including ec-H2O and ec-H2O NanoClean® scrubber-driers.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Product Life Cycle Assessments (LCAs)

% revenue from low carbon product(s) in the reporting year

10.8

Comment

We estimate our customers have avoided more than 100,000 mT CO2 emissions from all ec-H2O and ec-H2O NanoClean® equipped scrubber-driers sold to date, in comparison to packaged chemicals. This estimate is based on independent LCAs performed by EcoForm and total unit sales. Avoided emissions are the result of significant reductions of input materials, elimination of packaging and elimination of emissions from transportation.

In 2019 alone, we estimate our customers avoided more than 13,200 mT CO2 emissions by using this group of products. This estimate is based on independent LCAs performed by EcoForm and the installed base operating in 2019.

These estimates are extremely conservative. They are based on LCAs for T3 & T300 size machines, which are the smallest models sold with ec-H2O and ec-H2O NanoClean® options. The range of machine sizes sold with these options runs from a 17-inch (430 mm) cleaning path on T300 to 64-inch (1625 mm) on M30. All larger machine models sold and used by customers have greater quantitative environmental impact reductions, including carbon emissions. There are 15 models larger than T3 & T300 including Tennant branded T350, T500, T600, T7, T7AMR, T12, T16, T17, T20, M17, M20, M30, plus Nobles branded SS350, SS500, and SpeedScrub Rider.

The larger models mentioned above represent at least 60% of the units sold in 2019. The "by size of machine" distribution of units sold is similar in prior years. Those units remain part of the operating installed base.

Level of aggregation

Group of products

Description of product/Group of products

Reconditioned equipment (RECON)

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Product Life Cycle Assessments

% revenue from low carbon product(s) in the reporting year

2.4

Comment

We completed a screening level process Life Cycle Assessment (LCA) in 2018 on Certified Pre-Owned and Used RECON variants of the T300 product. The avoided emissions estimate below is based on findings of the screening LCA and total RECON unit sales for 2019. The estimate is conservative because most RECON machines sold are larger and more complex than the T300.

When compared to new equipment, reconditioned (RECON) equipment avoids carbon emissions from the following areas: Scope 1 & 2 (production and refurbishment activities); upstream (Category 1, Purchased goods and services); and to a lesser extent downstream (Category 12, End-of-life treatment of sold products). We estimate that Tennant Company and our customers avoided more than 950 mT CO2e emissions from all RECON machines sold in 2019, in comparison to purchasing new equipment.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1, 2012

Base year end

December 31, 2012

Base year emissions (metric tons CO2e)

21,062.5

Comment

2012 is base year for Int 1, our 2020 Scope 1+2 intensity target. This target is market-based.

NOTE: 2016 is base year for Abs 1 and Int 2, our 2030 Science-Based Targets. Both 2030 targets are market-based. 2016 base year emissions are reported in C6 - Emissions Data.

Scope 2 (location-based)

Base year start

January 1, 2012

Base year end

December 31, 2012

Base year emissions (metric tons CO2e)

14,034.5

Comment

2012 is base year for Int 1, our 2020 Scope 1+2 intensity target. This target is market-based.

NOTE: 2016 is base year for Abs 1 and Int 2, our 2030 Science-Based Targets. Both 2030 targets are market-based. 2016 base year emissions are reported in C6 - Emissions Data.

Scope 2 (market-based)

Base year start

January 1, 2012

Base year end

December 31, 2012

Base year emissions (metric tons CO2e)

10,452.9

Comment

2012 is base year for Int 1, our 2020 Scope 1+2 intensity target. This target is market-based.

NOTE: 2016 is base year for Abs 1 and Int 2, our 2030 Science-Based Targets. Both 2030 targets are market-based. 2016 base year emissions are reported in C6 - Emissions Data.

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

The Climate Registry: General Reporting Protocol
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
The Greenhouse Gas Protocol: Scope 2 Guidance

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

26,686

Start date

January 1, 2019

End date

December 31, 2019

Comment

2019 reported emissions include all relevant IPC and Gaomei vehicle fleets and facilities.

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)

23,059

Start date

January 1, 2016

End date

December 31, 2016

Comment

2016 is base year for Abs 1 and Int 2, our 2030 Science-Based Targets.

Abs 1 and Int 2 targets are market-based and do not include the IPC or Gaomei acquisitions, as they were not part of the company in 2016. We will set new SBTs which include these acquisitions using 2019 as base year. We plan to start work on the new targets in September 2020.

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

14,310

Scope 2, market-based (if applicable)

6,623

Start date

January 1, 2019

End date

December 31, 2019

Comment

2019 reported emissions include all relevant IPC and Gaomei vehicle fleets and facilities.

Past year 1

Scope 2, location-based

13,204

Scope 2, market-based (if applicable)

9,421

Start date

January 1, 2016

End date

December 31, 2016

Comment

2016 is base year for Abs 1 and Int 2, our 2030 Science-Based Targets.

Abs 1 and Int 2 targets are market-based and do not include the IPC or Gaomei acquisitions, as they were not part of the company in 2016. We will set new SBTs which include these acquisitions using 2019 as base year. We plan to start work on the new targets in September 2020.

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source

Small facilities and facilities scheduled for demolition

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why this source is excluded

We reassess our operational control boundary annually and did so in Q1 2020. We have a number of small facilities along with several unoccupied facilities scheduled for demolition. All emissions combined from such facilities are less than 1% of total reported 2019 emissions.

When conducting the annual boundary assessment, if we identify relevant emissions not previously reported we restate prior year emissions to include them. No boundary-related Scope 1 or 2 restatements are included in our CDP Climate Change 2020 response.

C6.5

(C6.5) Account for your organization’s gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

108,450

Emissions calculation methodology

Trucost, part of S&P Global, used its Environmentally Extended Input-Output (EEI-O) model to calculate the supply chain GHG emissions through all tiers up to and including raw material extraction, based on Tennant's spend data for FY2019. The data input for this calculation was supplier expenditure in the form of accounts payable sub-ledger payments.

There was a change in the methodological approach for reporting year 2019 for Purchased goods and services. The analysis for reporting year 2018 used aggregate expenditure to quantify emissions in this category. In the 2019 analysis, emissions from purchased goods and services were quantified based on a detailed analysis of every spend item from Tennant's various business units. The emissions result for 2019 is therefore considered more accurate as it is based on more granular data. Purchased goods and services emissions as quantified for reporting years 2018 and 2017 included emissions from Capital goods which were allocated to this category. Dis-aggregation of spend data was not done for reporting years 2018 and 2017.

NOTE: The boundary for this category does not include IPC or Gaomei acquisitions.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

1.2

Please explain

100% of the emissions are calculated using supplier spend data.

For all of our suppliers, 1.2% of the suppliers' Scope 1 & 2 emissions are obtained from publicly disclosed data.

Capital goods

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

2,464.2

Emissions calculation methodology

Trucost, part of S&P Global, used its Environmentally Extended Input-Output (EEI-O) model to calculate the supply chain GHG emissions through all tiers up to and including raw material extraction, based on Tennant's spend data for FY2019 and the previous analyses. The data input for this calculation was supplier expenditure in the form of accounts payable sub-ledger payments.

The Capital goods category falls below the relevance threshold of 1% of total Scope 1+2+3 emissions.

0.33% = 2,464.2 mT CO2e / 753,187.1 mT CO2e

Capital goods also falls below the 1% threshold of Scope 3 total emissions.

0.34% = 2,464.2 mT CO2e / 719,878.1 mT CO2e

NOTE: The boundary for this category does not include IPC or Gaomei acquisitions.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

1.2

Please explain

100% of the emissions are calculated using supplier spend data.

For all of our suppliers, 1.2% of the suppliers' Scope 1 & 2 emissions are obtained from publicly disclosed data.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Not relevant, explanation provided

Please explain

Working with Trucost, we calculated emissions from the Fuel-and-energy-related activities category for 2014. We determined this category is not relevant (less than 1% of total GHG emissions), based on quantitative analysis of 2014 data. There have been no significant changes in our business models since this 2014 analysis.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

20,494.3

Emissions calculation methodology

Trucost used Tennant’s transportation-related services expenditures as data input for this calculation, along with Trucost sector estimation factors.

NOTE: The boundary for this category does not include IPC or Gaomei acquisitions.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Waste generated in operations

Evaluation status

Not relevant, explanation provided

Please explain

Working with Trucost, we calculated emissions from the Waste generated in operations category for 2014. We determined this category is not relevant (less than 1% of total GHG emissions), based on quantitative analysis of 2014 data. There have been no significant changes in our business models since this 2014 analysis.

Business travel

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

521.4

Emissions calculation methodology

Trucost EEI-O model and sector estimation factors (including emissions of all supply chain tiers up to and including raw material extraction)

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

The data input for this calculation was supplier expenditure in the form of accounts payable sub-ledger payments.

The Business travel category falls below the relevance threshold of 1% of total Scope 1+2+3 emissions.

0.07% = 521.4 mT CO2e / 753,187.1 mT CO2e

Business travel also falls below the 1% threshold of Scope 3 total emissions.

0.07% = 521.4 mT CO2e / 719,878.1 mT CO2e

NOTE: The boundary for this category does not include IPC or Gaomei acquisitions.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

8,019.1

Emissions calculation methodology

Trucost estimated employee commuting emissions using Tennant's global employee head count and OECD's published country averages for commuting time, transportation mode and distance as well as transportation factors from US EPA and Defra (2019) - UK Government GHG Conversion Factors for Company Reporting.

The Employee commuting category is slightly above the relevance threshold of 1% of total Scope 1+2+3 emissions.

1.1% = 8,019.1 mT CO2e / 753,187.1 mT CO2e

For 2019, we expanded the reporting boundary for Employee commuting to include IPC (acquired in April 2017) and Gaomei (acquired in January 2019).

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Working with Trucost, we determined the Upstream leased assets category is not applicable to Tennant Company's business activities.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

Given a change in methodological approach adopted in 2017, Category 9 - Downstream transportation and distribution is not relevant.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Working with Trucost, we determined the Processing of sold products category is not applicable to Tennant Company's business activities.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

579,929.1

Emissions calculation methodology

We developed a product portfolio emissions calculator tool, which estimates product life emissions based on a set of assumptions for each product category. The assumptions include: product life (in years); number of uses per year; and energy per use (kWh or fuel volume). These assumptions are combined with appropriate emission factors. For cord and battery products, we use the electric grid emission factor for sold-to country. For internal combustion products, we use standard emission factors for each fuel type (gasoline, diesel, or LPG). We also include an indirect emission factor which represents indirect emissions required for wastewater treatment, water use, and maintenance activities. The indirect emissions factor is based on Life Cycle Assessment data for a representative product (T300). The indirect emissions factor is adjusted up/down based on relative product category complexity/simplicity.

Our calculated 2019 emissions for Use of sold products have been verified by Trucost.

For 2019, we expanded the Use of sold products reporting boundary to include IPC (acquired in April 2017) and Gaomei (acquired in January 2019).

NOTE: Reported Use of sold products emissions:
1) Units are Metric tons CO2 (not Metric tons CO2e). When setting the Science-Based Target for Use of sold products, we determined N2O and CH4 contributors were not material for our types of products.
2) Includes third-party products. The Int 2 target (see C4.1b) boundary does not include third-party products as they are outside of our design control.

RESTATEMENT NOTE: We discovered a product mis-categorization for RY2018 and therefore restate RY2018 Use of sold products emissions to 367,529 mT CO2. We are also restating RY 2017 and RY 2016 Use of sold product emissions to 369,060 and 384,743 mT CO2, respectively. None of these restated values are materially different from what was previously reported. Emission quantities previously reported were 386,804 for RY RY2016, 367,060 for RY 2017, and 364,812 for RY 2018.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

In developing the product portfolio emissions calculator tool, we used sales/service machine life data along with hour-meter and IRIS® usage frequency data. This data

comes directly (or indirectly) from the value chain partner - customers. Our reported Scope 3 - Category 11, Use of sold products emissions do not include intermediate products, floor coatings, or reconditioned equipment.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Working with Trucost, we calculated emissions from the End-of-life treatment of sold products category for 2014. We determined this category is not relevant (less than 1% of total GHG emissions), based on quantitative analysis of 2014 data. There have been no significant changes in our business models since this 2014 analysis.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Working with Trucost, we determined the Downstream leased assets category is not applicable to Tennant Company's business activities.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

Working with Trucost, we determined the Franchises category is not applicable to Tennant Company's business activities.

Investments

Evaluation status

Not relevant, explanation provided

Please explain

Working with Trucost, we determined the Investments category is not applicable to Tennant Company's business activities.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Please explain

Beyond Purchased goods and services, Upstream transportation, and Employee commuting we have not identified any other upstream activities that are relevant.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

Beyond Use of sold products we have not identified any other downstream activities that are relevant.

C-CG6.6

(C-CG6.6) Does your organization assess the life cycle emissions of any of its products or services?

	Assessment of life cycle emissions	Comment
Row 1	Yes	We have a Science Based Target for Scope 3 - Category 11, Use of sold products. To establish this target and gain SBTi approval, we developed a product portfolio emissions calculator tool. The tool estimates product life cycle carbon emissions based on a set of assumptions for each product category. Assumptions include: product life (in years); number of uses per year; and energy per use (kWh or fuel volume). These assumptions are combined with appropriate emission factors. For cord and battery products, we use the electric grid emission factor for sold-to country. For internal combustion products, we use standard emission factors for each fuel type (gasoline, diesel, or LPG). We also include an indirect emission factor which represents indirect emissions required for wastewater treatment, water use, and maintenance activities. The indirect emissions factor is based on Life Cycle Assessment (LCA) data for a representative product (T300). The indirect emissions factor is adjusted up/down based on relative product category complexity/simplicity. Using this tool, we calculate and report the carbon emissions of each and every product we sell, if use-phase carbon emissions are material. We have also used this tool when responding to customer requests on the emissions of specific products and/or competitive tenders - when carbon emissions are considered. The frequency of customer requests for this level of product detail increases each year. PE International (now Sphera) performed an in-depth LCA for the T300 product (see C-CG6.6a for more detail). Through this LCA we learned that customer use is the most significant life cycle impact phase for our products, as is typical for capital goods type products. Quantification of impacts and relative impact measurements from this LCA have been the basis for significant action over the 2015-2019 time period, including driving

		sustainability strategies for new product development projects. We have also assessed, through LCA, the environmental impacts of returned, used products which become an input to our reconditioned equipment (RECON) business. In this case we used the T300 baseline LCA model and combined it with several reconditioning scenarios.

C-CG6.6a

(C-CG6.6a) Provide details of how your organization assesses the life cycle emissions of its products or services.

	Products/services assessed	Life cycle stage(s) most commonly covered	Methodologies/standards/tools applied	Comment
Row 1	Representative selection of products/services	Cradle-to-grave	GHG Protocol Product Accounting & Reporting Standard Other, please specify GaBi software	We have performed a number of screening level (and beyond) Life-Cycle Assessments (LCAs) with business partners EcoForm and PE International (now Sphera). Product and technology LCAs completed include ec-H2O, ec-H2O NanoClean®, water recycling system concepts, T300, and reconditioned equipment. If and when we make product environmental marketing claims based on an LCA, we make that LCA public information. Company-specific examples include: LCA for ec-H2O available here: https://www.tennantco.com/content/dam/tennant/tennantco/products/Innovations/ec-H2O%20Ecoform%20Report.pdf LCA Summary for ec-H2O NanoClean®, available here: https://www.tennantco.com/content/dam/tennant/tennantco/products/Innovations/ec-h2o-nanoclean-

				ecoform-flyer.pdf The LCA performed on the T300 is representative of a large portion of our product line. We have used knowledge gained from this LCA in a number of ways. This includes reorganizing the Sustainable Enterprise function in 2016-7, re-allocating resources for dedicated staff to focus on products, and determining where to focus the efforts of the Senior Product Stewardship Engineer.

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

29.3

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

33,309

Metric denominator

Other, please specify

unit total revenue, in $ M

Metric denominator: Unit total

1,137.6

Scope 2 figure used

Market-based

% change from previous year

10.9

Direction of change

Decreased

Reason for change

Reasons for the 10.9% Intensity decrease are efficiency projects completed and increased renewable energy purchases.

The 10.9% decrease was achieved despite added Scope 1 and 2 emissions from the Gaomei acquisition. The Gaomei business added 787 mT CO2e of Scope 1 & 2 emissions (2.1% absolute emissions increase). Gaomei RY2019 sales were $15.8 M, as inferred from data included with our 10-K filing. The acquired business was more carbon intense than RY2018 Tennant Company. Gaomei alone Intensity for RY2019 is 49.8 = (787 mT / $15.8 M). This greater intensity is largely due to the electricity grid emission factor for China being significantly higher than other countries where we have manufacturing operations. Without the acquisition of Gaomei, Tennant Company Intensity for RY2019 would be 29 = (33,309 - 787) / (1,137.6 - 15.8) and the percentage change from previous year would be an 11.9% decrease.

NOTE: RY2018 Intensity was reported to CDP last year as 32.9 = (37,011 mT CO2e / $1,123.51 M). We have restated RY2018 gross global combined Scope 1 & 2 emissions to 36,930 mT CO2e, but RY2018 Intensity remained 32.9.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	26,592.5	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	11.8	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	81.7	IPCC Fifth Assessment Report (AR5 – 100 year)

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)

Australia	469
Belgium	143
Brazil	500
Canada	861
China	214
France	1,012
Germany	1,508
Japan	165
Mexico	348
Netherlands	1,203
Portugal	173
Spain	663
United Kingdom of Great Britain and Northern Ireland	1,460
United States of America	16,077
Italy	1,792
Norway	97
India	1

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By business division

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Americas - North, Central, and South America	17,786
EMEA - Europe, Middle East, and Africa	8,051
APAC - Asia Pacific	849

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based	Scope 2, market-based	Purchased and consumed electricity, heat,	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in

	(metric tons CO2e)	(metric tons CO2e)	steam or cooling (MWh)	Scope 2 market-based approach (MWh)
Australia	205	205	248.17	0
Belgium	19	18	97.86	0
Brazil	21	21	298.91	0
Canada	3	3	76.58	0
China	1,196	1,196	1,560.92	0
France	18	15	289.26	0
Germany	97	147	202.8	0
Japan	35	35	71.12	0
Mexico	28	28	55.36	0
Netherlands	770	973	1,893.84	100
Spain	61	100	207.47	0
United Kingdom of Great Britain and Northern Ireland	85	86	191.59	0
United States of America	9,377	1,905	16,805.62	12,852.76
India	37	37	42.69	0
Italy	2,350	1,696	5,809.05	2,300
Norway	8	158	480.74	0

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By business division

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Americas - North, Central, and South America	9,429	1,957
EMEA - Europe, Middle East, and Africa	3,408	3,193
APAC - Asia Pacific	1,473	1,473

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	3,890	Decreased	10.5	-10.5% = -3,890 / 36,930 In 2019, we purchased 10,300 incremental MRETS wind RECs and 300 incremental European GOs (increase from 2,000 in 2018). The 10,300 MRETS wind RECs are of Minnesota origin. We used these RECs for electricity consumed at our two largest facilities in Minneapolis, MN. We changed origin of GOs purchased for Europe from The Netherlands (2018) to Italy (2019). With the acquisition of IPC, our sites in Italy now total to the largest electricity consumption by country in Europe. We used the 2,300 GOs for our largest manufacturing plant in Italy. We slightly reduced our purchase of ERCOT wind RECs from 2,525 (2018) to 2,500 (2019) based on efficiency gains. The reduction in electricity use achieved by our Louisville, KY, facility was greater than anticipated at approximately 72,000 kWh. Therefore, we used only 2,493 of the 2,500 ERCOT wind RECs for 2019. We intend to use

				the remaining seven (7) 2019 vintage RECs for 2020. We reduced our purchase of Ohio-compliant RECs from 575 to 60 with divestment of the Waterstar business in 2018. The 60 RECs were applied to Parkman, OH, electrical use in the RFCW eGRID area. We retained the Parkman facility lease into 2019. NOTE: RY2018 gross global Scope 1 & 2 emissions are restated to 36,930 from 37,011 mT CO2e
Other emissions reduction activities	1,054.6	Decreased	2.86	-2.86% = -1,054.6 / 36,930 We completed implementation of 16 emission reduction initiative projects in 2019. The total net emission reduction achieved was 1,054.6 mT CO2e. This count of 16 does not include two renewable energy based projects. Those two projects are described above in the "Change in renewable energy consumption" section. In Sections C4.3b, these 16 projects are described in full detail. NOTE: RY2018 gross global Scope 1 & 2 emissions are restated to 36,930 from 37,011 mT CO2e
Divestment	25	Decreased	0.07	-0.07% = -25 / 36,930 We divested the Waterstar business in 2018, but retained a facility lease into 2019. The facility is located in Parkman, OH. Nearly all electricity consumed at Parkman in 2018 was covered by 2018 vintage Ohio-compliant RECs. The exception was 760 kWh at 0.4 mT CO2e. All electricity consumed in 2019

				was covered by 59.76 Ohio-compliant RECs. 2019 natural gas use at Parkman was reduced through adjustment of heating system and water heaters. The reduction was 4,644 therms, which is equivalent to 25 mT CO2e. With the facility lease now complete, there will be an additional reduction in natural gas use (3,100 therms) and carbon emissions for 2020 of 16.5 mT CO2e. NOTE: RY2018 gross global Scope 1 & 2 emissions are restated to 36,930 from 37,011 mT CO2e
Acquisitions	787	Increased	2.13	+2.13% = +787 / 36,930 Gaomei was acquired in January 2019 and the associated emissions are 787 mT CO2e. NOTE: RY2018 gross global Scope 1 & 2 emissions are restated to 36,930 from 37,011 mT CO2e
Mergers	0	No change	0	Not applicable for 2019
Change in output	0	No change	0	No material change in output for 2019
Change in methodology	0	No change	0	Not applicable for 2019
Change in boundary	0	No change	0	Not applicable for 2019
Change in physical operating conditions	0	No change	0	Not applicable for 2019
Unidentified	561.6	Increased	1.52	+1.52% = +561.6 / 36,930 This relatively small unidentified change in gross global Scope 1 & 2 emissions is most likely due to shifts in output

				between global locations. While there was no material change in total overall output, there are always output shifts between manufacturing sites. These shifts depend on regional market demand, manufacturing site capacities, and order timing. NOTE: RY2018 gross global Scope 1 & 2 emissions are restated to 36,930 from 37,011 mT CO2e
Other	0	No change	0	Not applicable for 2019

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

C-CG7.10

(C-CG7.10) How do your total Scope 3 emissions for the reporting year compare to those of the previous reporting year?

Increased

C-CG7.10a

(C-CG7.10a) For each Scope 3 category calculated in C6.5, specify how your emissions compare to the previous year and identify the reason for any change.

Purchased goods and services

Direction of change

Decreased

Primary reason for change

Change in methodology

Change in emissions in this category (metric tons CO2e)

13,447

% change in emissions in this category

11

Please explain

11% = (121,897 - 108,450) / 121,897

2018 Purchased goods and services emissions were 121,897 mT CO2e.

2,464.2 mT CO2e of this reduction is due to data dis-aggregation and the segregation of Capital goods spend. The analysis for reporting year 2018 used aggregate expenditure to quantify emissions in this category. Some Capital goods spend was included in the data set and categorized as Purchased goods and services for RY2018 and 2017. Dis-aggregation of spend data was not done for reporting years RY2018 and 2017.

There was a change in the methodological approach for reporting year 2019 for Purchased goods and services. In the 2019 analysis, emissions from Purchased goods and services were quantified based on a detailed analysis of every spend item from our various business units. The emissions result for 2019 is therefore considered more accurate as it is based on more granular data.

Capital goods

Direction of change

Increased

Primary reason for change

Change in methodology

Change in emissions in this category (metric tons CO2e)

2,464.2

% change in emissions in this category

100

Please explain

This 2,464.2 mT CO2e is not an actual increase in emissions. Capital goods emissions were included with Purchased goods and services emissions, as quantified for reporting years 2018 and 2017. Dis-aggregation of spend data was not done for reporting years 2018 and 2017. There was a change in the methodological approach for reporting year 2019, which allowed segregation of Capital goods data.

Upstream transportation and distribution

Direction of change

Decreased

Primary reason for change

Other, please specify

Change in transportation modes

Change in emissions in this category (metric tons CO2e)

5,409.7

% change in emissions in this category

20.9

Please explain

20.9% = (25,904 - 20,494.3) / 25,904

2018 Upstream transportation and distribution emissions were 25,904 mT CO2e.

Our Logistics group is shifting to more efficient modes of transportation whenever possible, which also reduces cost. The initiatives contributing to this decrease include reducing expedited air shipments by improving material planning and shifting to sea transport modes. A good specific example is shipments to Brazil. Over several months, the Brazil team reduced air shipment total weight from about 1,800 pounds to less than 400 pounds per week. Over the July-September 2019 time frame, the shift from air to sea mode yielded a reduction of at least 70 mT CO2e.

Business travel

Direction of change

Increased

Primary reason for change

Change in methodology

Change in emissions in this category (metric tons CO2e)

521.4

% change in emissions in this category

100

Please explain

This 521.4 mT CO2e is not an actual increase in emissions.

There was a change in the methodological approach for reporting year 2019, which allowed segregation of some Business travel data. Some Business travel emissions were included with Purchased goods and services emissions as quantified for reporting years 2018 and 2017. Dis-aggregation of spend data was not done for RY2018 and 2017.

Employee commuting

Direction of change

Increased

Primary reason for change

Acquisitions

Change in emissions in this category (metric tons CO2e)

3,434.1

% change in emissions in this category

74.9

Please explain

74.9% = (8,019.1 - 4,585) / 4,585

2018 Employee commuting emissions were 4,585 mT CO2e.

The increase is largely due to the acquisitions of IPC and Gaomei and added employees.

IPC was acquired in 2017 and approximately 1,100 employees are included in 2019 Employee commuting reporting boundary. These employees were not included for 2017 or 2018 reporting years.

Gaomei was acquired in 2019 and approximately 200 new employees are included in 2019 Employee commuting reporting boundary.

Use of sold products

Direction of change

Increased

Primary reason for change

Acquisitions

Change in emissions in this category (metric tons CO2e)

212,400.1

% change in emissions in this category

57.8

Please explain

57.8% = (579,929.1 - 367,529) / 367,529

2018 Use of sold products emissions were 367,529 mT CO2.

The increase is due to the acquisitions of IPC and Gaomei and the additional sold products from these brands. The product lines for both acquired businesses are included in 2019 Use of sold products reporting boundary.

NOTE: Reported Use of sold products emissions:
1) Units are Metric tons CO2 (not Metric tons CO2e). When setting the Science-Based Target for Use of sold products, we determined N2O and CH4 contributors were not material for our types of products.
2) Includes third-party products. The Int 2 target (see C4.1b) boundary does not include third-party products as they are outside of our design control.

RESTATEMENT NOTE: We discovered a product mis-categorization for RY2018 and therefore restate RY2018 Use of sold products emissions to 367,529 mT CO2. Our prior statement was 364,812 mT CO2.

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	No

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	69	116,473.1	116,542.1

Consumption of purchased or acquired electricity		15,253	13,079	28,332
Total energy consumption		15,322	129,552.1	144,874.1

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Natural Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

50,488.4

Emission factor

53.06

Unit

kg CO2e per million Btu

Emissions factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for manufacturing processes and facility heating

Fuels (excluding feedstocks)

Diesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

23,085.4

Emission factor

10.21

Unit

kg CO2 per gallon

Emissions factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for Sales and Service vehicle fleets

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

41,991.8

Emission factor

8.78

Unit

kg CO2e per gallon

Emissions factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for Sales and Service vehicle fleets

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

779.3

Emission factor

5.68

Unit

kg CO2 per gallon

Emissions factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for material handling equipment and manufacturing process.

NOTE: In 2019, a significant quantity of LPG was used for facility heating at the Minneapolis, MN, manufacturing plant. When temperatures are extremely low, there is a risk of insufficient natural gas supply. Large industrial customers are required to have a backup fuel system, which can then be used if necessary. In Jan-Feb 2019, a natural gas curtailment event occurred which lasted 3 1/2 days. The backup fuel system used about 19,000 gallons of LPG.

Fuels (excluding feedstocks)

Propane Liquid

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

128.2

Emission factor

5.72

Unit

kg CO2e per gallon

Emissions factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for material handling equipment and manufacturing process

Fuels (excluding feedstocks)

Bioethanol

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

69

Emission factor

6.213

Unit

kg CO2e per gallon

Emissions factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

NOTE: Emission factor used is for E85.

Comment

Fuel used for Sales and Service vehicle fleets

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method

Unbundled energy attribute certificates, Guarantees of Origin

Low-carbon technology type

Wind

Country/region of consumption of low-carbon electricity, heat, steam or cooling

Italy

MWh consumed accounted for at a zero emission factor

2,300

Comment

2,300 Wind GOs
Retired via certiq Registry
Domain: Italy
Production device ID: 803255132001517869
Certificate IDs: 80325513200000000000538243655 - 80325513200000000000538245954
Vintage: 2019
For Tennant Company Operations in Italy (Soteco plant)

Sourcing method

Unbundled energy attribute certificates, Renewable Energy Certificates (RECs)

Low-carbon technology type

Wind

Country/region of consumption of low-carbon electricity, heat, steam or cooling

Other, please specify

Ohio, USA

MWh consumed accounted for at a zero emission factor

59.76

Comment

60 Wind RECs (0.24 REC unused)
Retired via PJM-GATS Registry
Ohio Facility Name: AEP Blue Creek 3 WF-3
Unit ID: MSET89532803
Vintage: 2019
Certificate Serial Numbers: 5229466-15149 to 15208.
For Tennant Company Operation in Parkman, Ohio, USA

Sourcing method

Unbundled energy attribute certificates, Renewable Energy Certificates (RECs)

Low-carbon technology type

Wind

Country/region of consumption of low-carbon electricity, heat, steam or cooling

United States of America

MWh consumed accounted for at a zero emission factor

2,493

Comment

2,493 Wind RECs
Retired via ERCOT Registry
Facility ID: 01362
Certificate Serial Numbers: 00108424 - 00110916
Vintage: 2019
For Tennant Company Operations in Grand Prairie, Texas; Louisville, Kentucky; and Chicago, Illinois, USA

Sourcing method

Unbundled energy attribute certificates, Renewable Energy Certificates (RECs)

Low-carbon technology type

Wind

Country/region of consumption of low-carbon electricity, heat, steam or cooling

Other, please specify
Minnesota, USA

MWh consumed accounted for at a zero emission factor

10,300

Comment

10,300 Wind RECs
Retired via M-RETS Registry
M-RETS IDs: M583 & M1912
Generator Locations: Minnesota
Certificate Serial Numbers:
583-MN-01-2019-4CAF3C4A-1-6 (6 RECs)
583-MN-03-2019-313AEBDE-1-172 (172 RECs)
583-MN-04-2019-DB3FB097-1-155 (155 RECs)
583-MN-07-2019-C823F318-1-17 (17 RECs)
583-MN-08-2019-90053892-1-45 (45 RECs)
1912-MN-08-2019-73E5CA7A-11378-21282 (9,905 RECs)
Vintage: 2019
For Tennant Operations in Minneapolis, Minnesota, USA

Sourcing method

Unbundled energy attribute certificates, Guarantees of Origin

Low-carbon technology type

Wind

Country/region of consumption of low-carbon electricity, heat, steam or cooling

Netherlands

MWh consumed accounted for at a zero emission factor

100

Comment

100 Wind GOs
Retired via certiq Registry
Domain: The Netherlands
Vintage: 2018
For Tennant Company Operations in Uden, The Netherlands

C-CG8.5

(C-CG8.5) Does your organization measure the efficiency of any of its products or services?

	Measurement of product/service efficiency	Comment
Row 1	Yes	We measure the efficiency of all sold products where we have design control, as part of our Science-Based Target for Scope 3, Category 11 - Use of Sold Products. The target is “reduce use of sold products emissions 50% per $USD of equipment revenue by 2030 from a 2016 base year.” In order to track progress toward this target, we quantify the carbon emissions of sold products. We also assess and review the energy consuming components, subsystems, and actions of our equipment very closely. This work is integral to all new product development projects.

C-CG8.5a

(C-CG8.5a) Provide details of the metrics used to measure the efficiency of your organization's products or services.

Category of product or service

Other, please specify

Mechanized equipment for cleaning industrial and commercial floors

Product or service (optional)

New equipment sold of several main brands (Tennant, Nobles, Alfa, VLX, IPC, and Gaomei) with hundreds of different product models.

Product model examples include: Tennant T16, Tennant S20, Nobles S300, Alfa A140, Alfa Fox, VLX 838R, IPC CT90, IPC PT15, IPC CT71, Gaomei GM50B, Gaomei S-1900, etc.

% of revenue from this product or service in the reporting year

56.7

Efficiency figure in the reporting year

900

Metric numerator

tCO2

Metric denominator

unit revenue

Comment

Efficiency is reported in units of mT CO2 / $M of product revenue.

The boundary for this group includes legacy Tennant, IPC, and Gaomei new products including third-party products.

NOTE: For reported Scope 3 - Category 11, Use of sold products emissions:
1) Units are Metric tons CO2 (not Metric tons CO2e). When setting the Science-Based Target for Category 11, we determined N2O and CH4 contributors were not material for our types of products.
2) Total emissions include third-party products. The Int 2 target (see C4.1b) boundary does not include third-party products as they are outside of our design control.

NOTE: We have this data for every product model. That level of breakdown would be more than 4,000 line items given the breadth of our product lines. It is not practical to include that information in the CDP response. We do share such information with customers on request and also as part of competitive tenders when the information is considered. The frequency of customer requests for this level of detail increases each year.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description

Energy usage

Metric value

53.5

Metric numerator

Renewable electricity attributes purchased in MWh

Metric denominator (intensity metric only)

Total electricity purchased in MWh

% change from previous year

298.9

Direction of change

Increased

Please explain

We report the % of renewable electricity metric in our annual CSR. The most recently published CSR is attached to this CDP response at C12.4.

We purchased 15,160 MWh of renewable electricity attributes, either GOs or RECs, in 2019.

We purchased 28,331.974 MWh total electricity in 2019.
53.5% = 15,160 / 28,331.974

The percentage of renewable electricity purchased increased from 17.9% in 2018 to 53.5% in 2019.
298.9% = 53.5% / 17.9%

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	The Company has a history of developing innovative technologies to create a cleaner, safer, healthier world. The Company is committed to its innovation leadership position through fulfilling its goal to annually invest approximately 3% of annual sales to research and development. The Company's innovation efforts are focused on solving our customers' needs holistically by addressing a broad array of issues, such as managing labor costs, enhancing

		productivity, and making cleaning processes more efficient and sustainable. Through core product development, partnerships and technology enablement, we are creating new growth avenues for the Company. These new avenues for growth go beyond cleaning equipment into business insights and service solutions. With an approved science-based target for Scope 3 – Category 11, Use of sold products carbon emissions (Int 2), we make product energy use a cornerstone consideration in our research and development (R&D) activities. Our Senior Product Stewardship Engineer is a party to all product development projects. Environmental footprint reduction strategies and target-setting activities have been integrated into our Advanced and New Product Development processes and project templates. These strategies and targets include energy use and carbon emission reduction, along with circular economy methods like water use and waste reduction in use-phase and other portions of our value chain.

C-CG9.6a

(C-CG9.6a) Provide details of your organization's investments in low-carbon R&D for capital goods products and services over the last three years.

Technology area

Unable to disaggregate by technology area

Stage of development in the reporting year

Average % of total R&D investment over the last 3 years

21 - 40%

R&D investment figure in the reporting year (optional)

32.7

Comment

We invest in a significant number of Technology areas listed in the drop-down including: Electromobility components, Hydrogen power, Machinery automation, Other energy efficient products or efficiency drivers, Recycling, Remanufacturing, and Smart systems.

We have also been investing significantly in alternative power sources and product architecture related to electrification. As a company-specific example, we launched lithium-ion battery and fuel cell versions of our T17 and M17 large rider scrubber-drier and sweeper/scrubber models in 2019.

A lithium-ion version is also now available with our new S16 rider sweeper. The S16 product was in development during 2019 and prior years, so we did not disclose this

low-carbon investment activity. The S16 launched in July 2020. A press release titled "Tennant Company Introduces New High-Performance S16 Battery-Powered, Compact Ride-On Sweeper" was issued on 14 July 2020. Quote from press release: "For facilities looking to reduce their carbon footprint by moving toward battery-operated equipment, the S16 battery-powered sweeper offers lithium-ion battery technology in select markets."

Another company-specific example is continued investment in our IRIS® Asset Manager platform, a smart system providing a number of customer benefits including environmental footprint reduction:
- Take Action on Critical Issues Faster: Push reports and critical alerts show your most important data, so you can take immediate action on potential fleet issues.
- Ensure Cleaning Consistency: Track machine usage and compare side-by-side usage for your entire fleet to drive consistent cleaning performance that meets all cleaning requirements.
- Increase Productivity: Identify under-performing sites to provide additional training and implement best practices. Ensure optimal battery maintenance and extend battery life to minimize machine downtime.
- Optimize Fleet Deployment: See your true usage needs to “right-size” your fleet.
- Lower Cost to Clean: Optimize fleet deployment, increase productivity, maximize battery life and minimize battery replacement and maintenance costs, lowering your overall cost to clean across your entire fleet.

The average % of total R&D investment over the last three years is an estimate.

We do not disclose specific information about our technology and/or product development projects or investments.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Moderate assurance

Attach the statement

Tennant Company RY2019 Assurance_Statement_Final.pdf

Page/ section reference

GHG Scope 1 (2019) -- on Page 1 of attachment: "Tennant Company RY2019 Assurance_Statement_Final"

Verified by Trucost ESG Analysis, S&P Global

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Moderate assurance

Attach the statement

Tennant Company RY2019 Assurance_Statement_Final.pdf

Page/ section reference

GHG Scope 2 Location-based (2019) -- on Page 1 of attachment: "Tennant Company RY2019 Assurance_Statement_Final"

Verified by Trucost ESG Analysis, S&P Global

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

Scope 2 approach

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Moderate assurance

Attach the statement

Tennant Company RY2019 Assurance_Statement_Final.pdf

Page/ section reference

GHG Scope 2 Market-based (2019) -- on Page 1 of attachment: "Tennant Company RY2019 Assurance_Statement_Final"

Verified by Trucost ESG Analysis, S&P Global

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3: Use of sold products

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Moderate assurance

Attach the statement

Tennant Company RY2019 Assurance_Statement_Final.pdf

Page/section reference

GHG Scope 3 Use of sold products (2019) -- on Page 1 of attachment: "Tennant Company RY2019 Assurance_Statement_Final"

80.7% = 579,929.1 / 718,878.1

718,878.1 mT CO2e is total Scope 3 for RY2019 - all categories

Verified by Trucost ESG Analysis, S&P Global

NOTES:
- Trucost rounded Use of sold products emissions from 579,929.1 to 579,929 in the attached assurance statement.
- Use of sold products emissions are 80.7% of our total Scope 3 emissions.

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

80.7

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module	Data verified	Verification standard	Please explain

verification relates to			
C7. Emissions breakdown	Year on year change in emissions (Scope 3)	AA1000AS (2008 with 2018 addendum) Type 2, moderate level assurance	GHG Scope 3 Use of sold products (2018) -- on Page 1 of attachment: "Tennant Company RY2019 Assurance_Statement_Final" Scope 3 Use of sold products (Category 11) is by far the largest portion of our value chain carbon footprint. Prior year (2018) Use of sold products emissions were verified as 367,529 mT CO2 by Trucost ESG Analysis, S&P Global. See attachment: "Tennant Company RY2019 Assurance_Statement_Final" Reporting year (2019) emissions were also verified by Trucost as 579,929.1 (rounded to 579,929) mT CO2. See attachment: "Tennant Company RY2019 Assurance_Statement_Final" The year-on-year change in Use of sold products emissions is calculated using these verified 2019 and 2018 figures. 579,929.1 - 367,529 = 212,400.1 The resulting 212,400.1 mT CO2 year-on-year absolute change is a 57.8% year-on-year increase. Regarding this increase, 243,798 mT CO2 comes from acquired IPC and Gaomei Use of sold products (inside the boundary for the first time in RY2019). 579,929.1 - 243,798 = 336,131.1 Making a constant boundary comparison of 2019 to 2018 shows an absolute decrease of 31,397.9 mT CO2, a 8.5% year-on-year absolute decrease. - 8.5% = (336,131.1 - 367,529) / 367,529 RESTATEMENT NOTE: 2018 Use of sold products emissions were previously reported as 364,812 mT CO2. Since our 2019 CDP response, we discovered several products were mis-categorized. Therefore, we have restated 2018 Use of sold products

			emissions to 367,529 mT CO2. Our prior statement was 364,812 mT CO2. 1

[1]Tennant Company RY2019 Assurance_Statement_Final.pdf

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

Other carbon tax, please specify

UK Climate Change Levy (CCL)

C11.1c

(C11.1c) Complete the following table for each of the tax systems you are regulated by.

Other carbon tax, please specify

Period start date

January 1, 2019

Period end date

December 31, 2019

% of total Scope 1 emissions covered by tax

0.26

Total cost of tax paid

1,866

Comment

The UK Climate Change Levy (CCL) is one example of a carbon tax applied to our business.

The CCL is applied to electricity used at our Northampton and Bolton, UK, locations.

In April 2019, the CCL was increased from 0.583 to 0.847 p/kWh, a 45.3% increase.

In 2019, the additional cost for electricity due to CCL was 1,477 GBP * ($1.277 / GBP) = $1,886.

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

We comply by paying carbon taxes as a cost of business. Carbon taxes currently apply to some portions of our global business. We do not separately track carbon taxes paid in each country where we operate. These taxes are not always easy to identify separately and some are passed on to end users indirectly.

One example of a carbon tax directly applied to our business is The UK Climate Change Levy (CCL). The CCL is applied to electricity used at our Northampton and Bolton, UK, locations. In 2019, the additional cost for electricity due to CCL was 1,477 GBP * ($1.277 / GBP) = $1,886. This cost was quantified by examining invoice detail, including the CCL rate increase from 0.583p/kWh to 0.847p/kWh in April 2019.

Emissions Trading Schemes (ETS) do not apply to any portion of our global business today, but could potentially apply in the next 2-5 years. We monitor ETS and other regulatory developments in the areas we operate, both to ensure compliance and minimize risk.

Our highest priority strategies are efficiency improvement and low-carbon energy purchasing, which result in reduced carbon emissions.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Change internal behavior
Drive energy efficiency
Drive low-carbon investment
Other, please specify

Quantify risk

GHG Scope

Scope 1
Scope 2
Scope 3

Application

We use an internal price of carbon to quantify risk and understand full potential impacts of our energy use changes. Risk application is explained in "Impact & implication" below. We qualitatively and quantitatively consider carbon price in long-term capital investments. This aids decision making, especially for larger facility projects. In 2019 we continued investing in equipment to lower our energy use. Three 2019 examples are LED lighting in Holland, MI, plus LED lighting and a high-efficiency compressor in Louisville, KY. Estimated annual savings are 475,000 kWh and ~ $50,000.

In Table C3.1e we describe how climate-related risks and opportunities influence our financial planning, including capital allocation and spend.

Actual price(s) used (Currency /metric ton)

80

Variance of price(s) used

We currently use $80 / mT CO2e as uniform, current internal carbon price.

"The High-Level Commission on Carbon Prices estimated that carbon prices of at least US$40–80 / mT CO2 by 2020 and US$50–100 / mT CO2 by 2030 are required to cost-effectively reduce emissions in line with the temperature goals of the Paris Agreement, while the IEA Sustainable Development Scenario states that a carbon price ranging between US$75 / mT CO2 and US$100 / mT CO2 is needed to stay on track with a Paris-compatible trajectory." Citation from: State and Trends of Carbon Pricing 2020, May 2020, World Bank Group.

A full value chain assessment has been completed for each of the past six years, 2014-2019. We will publish "Tennant Value Chain Footprint - Financial Year 2019" shortly. The report will be available to the public here:

https://www.tennantco.com/en_us/about-us/corporate-citizenship/sustainability.html

We use uniform pricing for capital investment decisions and revisit the price annually. For business strategy analysis, we use evolutionary pricing per International Energy Agency (IEA) Sustainable Development Scenario.

Type of internal carbon price

Shadow price

Impact & implication

We expect carbon taxes to be used more broadly and subsidies for fossil fuels to be eliminated over time. We use an internal carbon price to assess short- and long-term economic risks from climate change driven policy. In 2016, we assessed the potential impact of eliminating pre-tax fossil fuel subsidies, combined with new carbon taxes, to address externalities. That analysis quantified potential FY2014 impact as more than $100 M. The assessment was at the enterprise level and covered our full value chain. We broke potential impacts down to Geographic Business Units and Functional Groups. The information was communicated to the Global Leadership Team to increase awareness and provide motivation to pursue both energy/fuel use reductions and renewable energy. The Global Leadership Team includes all leaders at the Director level and above.

For FY2019, we estimate the total costs of our Scope 1, 2, and 3 GHG emissions at more than $60 million. That amount is greater than 5% of our 2019 Revenue and more than 103% our Net Earnings.

2019 Revenue = $1,137,600,000
2019 Net Earnings = $45,800,000

Total Scope 1 + 2 + 3 emissions = 753,187.1 = 26,686 + 6,623 + 108,450 (Category 1) + 2,464.2 (Cat 2) + 20,494.3 (Cat 4) + 521.4 (Cat 6) + 8,019.1 (Cat 7) + 579,929.1 (Cat 11)

$60,254,968 = 753,187.1 mT CO2e x $80 / mT CO2e

NOTE: This calculation includes Scope 1+2 emissions for acquired IPC and Gaomei businesses. Also included are the Scope 3 Categories of Employee commuting and Use of sold products. All other Scope 3 category emissions do not include IPC and Gaomei. Therefore, the calculated $60+ M impact is understated.

This potential financial impact significantly exceeds $4,000,000, our definition of "substantive" for reporting year 2019.

In addition to quantifying/managing risks to Tennant Company, we consider how new technologies and products can reduce our customer's emissions and related risks. We use Life Cycle Assessment to quantify environmental impacts - including carbon emissions. Potential customer cost of future carbon taxes can be quantified and included as part of total cost and value proposition discussions.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, our customers

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Innovation & collaboration (changing markets)

Details of engagement

Run a campaign to encourage innovation to reduce climate impacts on products and services

% of suppliers by number

2

% total procurement spend (direct and indirect)

6

% of supplier-related Scope 3 emissions as reported in C6.5

8

Rationale for the coverage of your engagement

Planning for this campaign began in 2017. One direct material supplier group was selected for targeted supplier engagement. The selected group provided a good opportunity for Scope 3 - Category 1, Purchased goods and services emission reduction, based on upstream data from our full value chain assessment. Based on the 2017 campaign planning, the group represented about 10% of Scope 3 - Category 1 emissions and about 2% of total Scope 3 carbon emissions.

The selected direct material group provides an even larger opportunity for Scope 3 - Category 11, Use of sold products emission reduction. Category 11 is more than 80% of our total 2019 Scope 3 emissions. A primary criteria in selecting this first direct material group for engagement was how much each material group affects Use of sold products carbon emissions.

In 2018, we began direct engagement with three specific suppliers in the selected group. Discussions were held on two general areas of opportunity: 1) how we might help the supplier reduce their direct carbon emissions; and 2) how the supplier’s component designs and emerging technologies might help us improve our products and reduce Scope 3, Use of sold products carbon emissions.

In 2019, we continued the engagement with these suppliers, but also added new suppliers from other categories to this effort. Primary topics have been energy efficiency, carbon calculations, end-of-life treatment, repairability of components, and bio-based or recycled content within plastics. In addition to current suppliers, we have

also started engaging with potential new suppliers who offer sustainable technologies to help us embrace the circular economy.

Additional discussions and site visits are planned for 2020 and we plan to add more suppliers to the campaign.

NOTE: The initial group of direct material suppliers engaged represents 2% by number of our leading suppliers. The “leading suppliers” are a pareto based sub-group of all suppliers. The “leading suppliers” sub-group represents 92% of total spend.

Impact of engagement, including measures of success

This direct material supplier group offers the largest long-term opportunity for both Categories 1 and 11 emission reductions. The components provided by this supplier group are major energy consumers in a broad range of our products. The particular range of products represents about 78% of our total 2019 Scope 3 - Category 11, Use of sold products emissions and 60% of all 2019 Scope (1+2+3) emissions.

Our 2019 engagement activities with these suppliers included some onsite visits. After one particular presentation, the supplier declared “this is important and we need to start looking at this right away.” A few months later, they confirmed via email they had started a project focused on sustainability policies for their products and facilities. Our efforts to build a more circular economy through our suppliers will help to keep our products in use, design out waste and pollution, and avoid embodied carbon of our products.

We consider achieving material emission reduction to be the measure of success for this initiative.

Comment

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Education/information sharing

Details of engagement

Run an engagement campaign to educate customers about the climate change impacts of (using) your products, goods, and/or services

% of customers by number

100

% of customer - related Scope 3 emissions as reported in C6.5

80.6

Please explain the rationale for selecting this group of customers and scope of engagement

We communicate product and technology environmental advantages broadly, through all sales channels, and in a variety of ways. We choose to engage with all customers since Use of sold products (Scope 3 - Category 11) is the largest portion of our value chain emissions. We feel it is important to raise customer awareness around how they can reduce all environmental impacts, including carbon emissions.

As an example, below are excerpts from our 21 Nov 2019 blog post titled: "How Sustainability Practices Improve Business."

"Sustainability is a global megatrend that has been in play for many years. Businesses and consumers are increasingly looking for products that are produced using processes and materials that minimize environmental harm. Environmentalists define it as 'meeting the needs of the present generation without compromising the ability of future generations to meet their own needs.' If your organization is considering how to implement sustainable practices we listed several tips to improve sustainability in your operations and quickly see a positive return on investment (ROI): .....
- Improve energy efficiency. Install LED lighting in office, manufacturing and warehouse areas; invest in more fuel-efficient vehicles; and shift to electrification away from internal combustion engines. Local utilities and state and local governments may offer rebates or incentives that improve ROI.
.....Once these easier, less expensive sustainability practices have been adopted, consider investing in developing eco-advantaged products and services that help your customers achieve lower total cost in their operations. At Tennant, a good example of this is our ec-H2O™ Technology. ec-H2O technology electrically converts water into an innovative, detergent-free cleaning solution that cleans effectively, saves money, improves safety, and reduces environmental impact compared to traditional cleaning chemicals and methods."

This type of engagement helps customers understand how to reduce their Scope 1 & 2 emissions, by providing specific and concrete actions which are proven to work. Outcomes from this engagement also help reduce our 579,929.1 mT CO2 of Scope 3 - Category 11, Use of sold products emissions, which is more than 80% of total Scope 3 emissions (C6.5).

Impact of engagement, including measures of success

Tennant Company's detergent-free ec-H2O technologies have been very successful in the market. These technologies and products help customers achieve significant environmental footprint reduction, including avoided carbon emissions. We have used Life Cycle Assessment model results to show our customers how ec-H2O can provide significant carbon emission reduction, among other environmental benefits.

We consider this product family a tremendous success. It continues to produce both

environmental impact reductions and strong revenue and profit contributions to our business.

Since the introduction of ec-H2O in 2008, our customers' cumulative carbon emission reduction is more than 100,000 mT CO2. Total ec-H2O revenue exceeds $1.47 B in the 12 years since introduction.

In 2019 alone, customer-avoided emissions were more than 13,200 mT CO2. Total sales for the ec-H2O product family were more than 10% of 2019 Total Revenue.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Trade associations
Funding research organizations

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

EUnited - The European Engineering Industries Association.

EUnited provides a channel for companies to communicate with the European Institutions and partner organisations and to articulate the role of equipment suppliers in technical standards development, policy formulation, trade issues and legislation. Within this single European trade association, member companies are organised in four sectors which are Cleaning, Municipal Equipment, Robotics and Vehicle Cleaning. EUnited Cleaning focuses on the industry sector producing cleaning systems for commercial and industrial use.

A Tennant Company employee is on the EUnited Cleaning board and we are EUnited members.

We do not provide funding beyond membership dues.

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

In 2019, EUnited began developing a position on artificial intelligence (AI). The European Commission (EC) was considering how to regulate AI technology. The EC developed a consensus-based position, in which EUnited had a stakeholder voice. On 19 Feb 2020, the EC issued a White Paper stating: "By investing in AI, Europe's machinery and equipment suppliers can make significant contributions to Europe's Green and Digital transformation. ..... Artificial intelligence (AI) is a strategic technology that offers many benefits for citizens and the economy. It will change our lives by improving healthcare (e.g. making diagnosis more precise, enabling better prevention of diseases), increasing the efficiency of farming, contributing to climate change mitigation and adaptation, ... and in many other ways that we can only begin to imagine."

https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf

The position was noted in Mar 2020 EUnited news posting: "The Commission's White Paper on Artificial Intelligence – a European approach to excellence and trust - shows that the European Commission wants the EU to play a leading role in AI by developing an AI ecosystem which benefits society and the economy. EUnited wholeheartedly supports this objective. ..... By investing in AI, Europe's machinery and equipment suppliers can make significant contributions to Europe's Green and Digital transformation. Therefore, it is vital that any regulation in this area is clear, avoids any legal uncertainty and leaves room for innovation in companies of all sizes."

How have you influenced, or are you attempting to influence their position?

Tennant Company has taken a position on climate change. We have committed to long-term, science-based targets for emission reduction. We are taking aggressive action to reduce our value chain emissions.

Tennant Company supports the EUnited position on AI, including those benefits which will arise from climate change mitigation and adaptation. EUnited members "can make significant contributions to Europe's Green and Digital transformation."

NOTE: Tennant Company does not typically take positions on specific legislation.

Trade association

Electro Chemical Activation (ECA) Consortium A/S.

ECA Consortium A/S is an International Non-Profit Association dedicated to promoting the use of ECA technology. The shareholding companies cooperate in matters concerning ECA applications that are regulated by the European Biocidal Products Regulation (BPR, Regulation (EU) No 528/2012). This includes ECA manufacturers, liquid suppliers and other associations. Shareholders of the ECA Consortium are also

initiating and supporting the development of technical standards in the field of ECA treatment and are providing standardization bodies and associations with technological expertise.

A Tennant Company employee was on the ECA Consortium A/S board and we were ECA Consortium A/S members for 2019.

We do not provide funding beyond membership dues.

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

ECA Consortium A/S works to gain regulatory approvals for less harmful and hazardous biocidal products.

ECA Consortium A/S has not taken an explicit position on climate change.

How have you influenced, or are you attempting to influence their position?

Tennant Company has taken a position on climate change. We have committed to long-term, science-based targets for emission reduction. We are taking aggressive action to reduce our value chain emissions.

Some, but not all, ECA Consortium members hold a similar position on climate change. Tennant Company would support ECA Consortium taking a position on climate change similar to our position.

NOTE: Tennant Company does not typically take positions on specific legislation.

Trade association

Cremona Energy Consortium.

The Cremona Energy Consortium is a buying group of companies who collaborate to gain better energy tariffs. The companies are located around the city of Cremona, Italy. The consortium is part of the Italian Industrial Association.

A Tennant Company employee is President of the Cremona Energy Consortium and we are members.

We do not provide funding beyond membership dues.

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

Cremona Energy Consortium has not taken a specific position on climate change.

How have you influenced, or are you attempting to influence their position?

Tennant Company has taken a position on climate change. We have committed to long-term, science-based targets for emission reduction. We are taking aggressive action to reduce our value chain emissions.

Tennant Company would support Cremona Energy Consortium taking a position on climate change similar to our position.

NOTE: Tennant Company does not typically take positions on specific legislation.

Trade association

American Association of Cleaning Equipment Manufacturers (AACEM).

AACEM is a subsidiary of the International Sanitary Supply Association (ISSA). AACEM exists to serve and represent the interests of manufacturers of commercial and industrial powered cleaning equipment.

A Tennant Company employee is on the AACEM Executive Committee (board) and we are AACEM members.

We do not provide funding beyond membership dues.

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

ISSA works to educate member companies and society on environmental issues like air quality and climate change. ISSA also advocates for green cleaning, which results in carbon emission reduction. Many ISSA members, including Tennant Company, have ambitious carbon reduction targets.

AACEM and ISSA have not taken an explicit position on climate change.

How have you influenced, or are you attempting to influence their position?

Tennant Company has taken a position on climate change. We have committed to long-term, science-based targets for emission reduction. We are taking aggressive action to reduce our value chain emissions.

Some, but not all, AACEM members hold a similar position on climate change. Tennant Company would support AACEM and ISSA taking a position on climate change similar to our position.

NOTE: Tennant Company does not typically take positions on specific legislation.

C12.3d

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

Yes

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Tennant Company has an internal policy named: ***Political Contributions and Public Policy Activities***.

"It is the Company's policy not to make direct Political Contributions and to only engage in public policy activities where there are legal and support issues that directly affect our business objectives and protect or enhance the interests of our stakeholders. If the Company should determine that direct Political Contributions are warranted to support our business and stakeholders' interests, it must submit its recommendation to the Governance Committee for approval in advance of making such Political Contribution. The Company's management will report to the Governance Committee of the Company's Board of Directors any direct lobby efforts and direct Political Contributions."

"Nothing in this Policy shall prohibit the Company from participating in trade associations, professional societies, industry groups and other tax-exempt organizations that represent the industries and business communities in which the Company operates."

Direct activities are an exception and must be reviewed and approved by the Board of Directors.

When we are determining whether to engage in an indirect activity, one consideration is whether the organization's mission is consistent with our vision, business strategies and Stewardship guiding principle: "We will use our core value of stewardship to guide our actions. We are accountable to our colleagues, our customers, our investors and our communities. We care for one another and work together for our mutual safety." Another consideration is whether the organization is focused on sustainability issues including climate change. These considerations in our engagement process have led us to partner with many organizations that educate and advocate for responsible energy/resource use and other changes which benefit the environment.

In addition to trade associations disclosed in C12.3c, we engage with many trade and research organizations (indirect activities). Those where we maintain organizational membership include: The United Nations Global Compact (UNGC), the Sustainable Growth Coalition (SGC), Environmental Initiative (EI), Canada Green Building Council (CaGBC), U.S. Green Building Council (USGBC), Twin Cities Conflict Minerals Task Force, Waste Wise Minnesota, NorthStar Initiative for Sustainable Enterprise (NiSE), ECA Consortium, EUnited Cleaning, International Sanitary Supply Association (ISSA), Building Service Contractors Association (BSCAI),

Professional Retail Store Maintenance Association (PRSM/CONNEX), Association for the Healthcare Environment (AHE), American Rental Association (ARA), National Beer Wholesalers Association (NBWA), SEAC, ABRALIMP, ABIMAQ, Shanghai Environment Cleaning Association, China Cleaning and BSC Industry Association, Hefei Real Estate Property Management Association, Beijing Building Facility Management Service Association, Beijing Cleaning Industry Association, Dongguan Environment Cleaning Association, Foshan Environment Cleaning Association, Guangzhou Environment Cleaning Association, Zhuhai Environment Cleaning Association, Hunan Province Environment Cleaning Association, Fujian Province City Environment Cleaning Association, Jiangxi Province Environment Cleaning Association, Nanning Environment Cleaning Association, Wuhan Environment Cleaning Association, Cleaning Industry Research Initiative (CIRI), CEB/Gartner Human Resources Practice Group, Minnesota Chamber of Commerce, Minnesota Business Partnership, and National Association of Corporate Directors (NACD).

In addition to company organizational memberships, many of our employees have individual professional association or research organization memberships.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In voluntary sustainability report

Status

Complete

Attach the document

2019-TNC-CSR-Web.pdf
2018_TNC_CSR_FINAL.pdf

Page/Section reference

Both the 2019 & 2018 Corporate Sustainability Reports (CSR) are attached.

The 2019 CSR contains our RY2018 carbon emissions data and CDP score. Given CDP's typical July month-end due date, we decided to decouple publication of CSR and carbon emissions data. This decoupling makes our CSR more timely and relevant. As soon as our CDP response is submitted, we make it public here: https://www.tennantco.com/en_us/about-us/corporate-citizenship/sustainability.html

Content elements

Governance

Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

Publication
In voluntary communications

Status
Complete

Attach the document

RY2019 Tennant Value Chain Footprint_Public_Final.pdf
Tennant Company RY2019 Assurance_Statement_Final.pdf

Page/Section reference
Our organizational response to climate change and GHG emissions performance is regularly made public here:
https://www.tennantco.com/en_us/about-us/corporate-citizenship/sustainability.html
Documents listed below detail our response and are in the GHG Emissions section on website. The first two documents listed are also attached here:
- RY 2019 Assurance Statement for Scope 1, 2, & 3 Emissions
- RY 2019 Value Chain GHG Emissions Inventory
- CDP Response
- CDP Score Report

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	President and Chief Executive Officer Also member of the Board of Directors	Director on board

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission	Are you ready to submit the additional Supply Chain Questions?
I am submitting my response	Investors Customers	Public	Yes, submit Supply Chain Questions now

Please confirm below

I have read and accept the applicable Terms