

C0. Introduction

C0.1

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

Cummins Inc., a global technology leader, is a corporation of complementary business segments designing, manufacturing, distributing and servicing a broad portfolio of power solutions. The company's products range from diesel and natural gas engines to hybrid and electric platforms, as well as related technologies, including transmissions, battery systems, fuel systems, controls, air handling, filtration, emission solutions, and electrical power generation systems. Headquartered in Columbus, Indiana (U.S.), since its founding in 1919, Cummins employs approximately 62,600 people committed to powering a more prosperous world through three global corporate responsibility priorities critical to healthy communities: education, environment and equality of opportunity. Cummins serves customers in approximately 190 countries and territories through a network of approximately 600 company-owned and independent distributor locations, and over 7,600 dealer locations. In 2018, the company earned about \$2.1 billion on sales of \$23.8 billion. See how Cummins is powering a world that's Always On by accessing news releases and more information at <https://www.cummins.com/always-on>. Cummins is on on Twitter at www.twitter.com/cummins and YouTube at www.youtube.com/cumminsinc.

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
Row 1	January 1 2018	December 31 2018	No	<Not Applicable>

C0.3

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

Angola
Argentina
Australia
Belgium
Bolivia (Plurinational State of)
Botswana
Brazil
Canada
China
Colombia
Costa Rica
Cote d'Ivoire
Czechia
El Salvador
France
Germany
Ghana
Honduras
India
Ireland
Italy
Japan
Kazakhstan
Malaysia
Mexico
Mongolia
Morocco
Mozambique
Netherlands
New Zealand
Nigeria
Norway
Panama
Papua New Guinea
Philippines
Poland
Republic of Korea
Romania
Russian Federation
Senegal
Serbia
Singapore
South Africa
Spain
Turkey
United Arab Emirates
United Kingdom of Great Britain and Northern Ireland
United States of America
Zambia

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 consolidation approach to your Scope 1 and Scope 2 greenhouse gas 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
Board Chair	The roles of Board Chairman and Chief Executive Officer are held by the same person at Cummins, and he has direct responsibility for climate-related issues. This is because climate strategy and action are integrated into Cummins overall strategy and operations. The chief administrative officer, who is responsible for facilities, and the vice president of strategy report to the CEO. He views environmental sustainability - including product innovation and facilities and operations - as an important element of Cummins business strategy. He is very engaged in our sustainability work, and meets at least once a year for 4 hours give his thoughts on sustainability strategy and target progress. in addition to regular board updates every other month.
Chief Executive Officer (CEO)	The roles of Board Chairman and Chief Executive Officer are held by the same person at Cummins, and he has direct responsibility for climate-related issues. This is because climate strategy and action are integrated into Cummins overall strategy and operations. The chief administrative officer, who is responsible for facilities and the vice president of strategy report to the CEO. He views environmental sustainability - including product innovation and facilities and operations - as an important element of Cummins business strategy. He is very engaged in our sustainability work, and meets at least once a year for 4 hours give his thoughts on sustainability strategy and target progress in addition to regular board updates every other month.
Board-level committee	The Safety, Environment and Technology committee. This Committee is authorized to assist our Board in its oversight of safety policies, review environmental and technological strategies, compliance programs and major projects and review public policy developments, strategies and positions taken by us with respect to safety, environmental and technological matters that significantly impact us or our products. It met five times in 2018. Its six members have a range of experience including automotive and transportation, manufacturing and supply chain, technology, corporate responsibility and government / regulatory affairs.
President	The President also has direct responsibility for climate-related issues. This is because climate strategy and action are integrated into operations, planning, capital budgeting processes, technology strategy and innovation and carried out by the business unit presidents, which report to the President.

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 – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding business plans Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	The CEO and President, both on the board, provide guidance on strategy and budget and review current climate goal progress. The board SET committee provides overall guidance and insight, and in particular did so for the new environmental sustainability plan to be announced in 2019. The Safety, Environment and Technology committee is authorized to assist our Board in its oversight of safety policies, review environmental and technological strategies, compliance programs and major projects and review public policy developments, strategies and positions taken by us with respect to safety, environmental and technological matters that significantly impact us or our products. It met five times in 2018. Its six members have a range of experience including automotive and transportation, manufacturing and supply chain, technology, corporate responsibility and government / regulatory affairs. In 2019,

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	Quarterly
Other C-Suite Officer, please specify (Chief Technical Officer)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Sustainability committee	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
President	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

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 CEO and President, both who serve on the board, have direct responsibility for all facets of climate-related issues in strategy, operations (manufacturing, facilities and supply chain), planning, budgets and technology and innovation. The staff of the President (the operating team) and the CEO's staff (executive team) meet monthly and the combined teams meet quarterly.

The Environmental Sustainability program office reports up to the the Chief Technical Officer. As such, she is responsible for reviewing sustainability plans and targets, particularly as they related to technology and innovation. The CTO is responsible for Cummins advancement in electrification, low carbon technology and fuel cell technology in addition to meeting all current and emerging regulations for criteria pollutants and greenhouse gas. The CTO also is the senior executive with oversight and overall responsibility for the environmental sustainability plan. This makes the CTO uniquely qualified to lead climate-related program for next generation products including strategy and planning for low carbon transitioning, scenario analysis and product-use greenhouse gas emissions goals. Progress is reported to the Board of Directors at each Board meeting including climate-related issues and progress.

The Action Committee for Environmental Sustainability (ACES), formed in 2012, integrates climate change actions into overall business strategy. The executive sponsor and the head of this group both report up through the Chief Technical Officer. The group is the voice and catalyst for environmental action beyond compliance in the company and provides tools and resources for employees go further and faster in reaching environmental goals. The group meets monthly and reports progress to the CTO through its executive sponsor weekly. ACES directs the development of the environmental sustainability plan and reports out on progress in meeting goals. The corporate ACES team has a global focus includes as its stakeholders nearly all businesses and all functions. The individual stakeholder and goal owner areas of ACES ensure that all aspects of the environment and relevant areas of the business are included and data is collected and reported that inform decision making and goal setting. A major outcome of the working group is that in June 2014, Cummins announced that after several years of study and analysis, it had adopted a comprehensive environmental sustainability plan and since announced 7 public goals. The group has now developed the next sustainability plan, to be announced in late 2019, that include 2050 aspirations with 2030 goals along the glide path. Goals in the areas of addressing climate change and air emissions, natural resource efficiency and the circular economy and sustainability in the communities in which we operate will be included.

C1.3

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

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).

Who is entitled to benefit from these incentives?

Chief Executive Officer (CEO)

Types of incentives

Monetary reward

Activity incentivized

Energy reduction target

Comment

The seven public goals are part of the CEO's workplan, and he reports on the plan's progress to the Board of Directors as part of his performance review. One of those 7 goals is a energy reduction target, a 32% energy intensity reduction by 2020 from a base year of 2010.

Who is entitled to benefit from these incentives?

Environment/Sustainability manager

Types of incentives

Monetary reward

Activity incentivized

Energy reduction target

Comment

A key measure in Cummins' Global Environmental Sustainability Plan is a commitment to transparency and accountability. Environmental goals are now incorporated into the Quarterly Scorecard for the Cummins Leadership Team's review. The scorecard shows progress toward the facilities and operations waste, water, energy, and greenhouse gas goals, products in use goal, and logistics goal. In each of these areas, the scorecard will show progress on the both enterprise-wide goals as well as the progress toward the goal apportioned by each business unit and some area business organizations (regional or country focused.) Progress toward goal achievement is part of an employee's work plan for the year and can result in monetary award through merit increases and meeting the company's ROANA target, which results in a profit sharing bonus for all employees

Who is entitled to benefit from these incentives?

Facilities manager

Types of incentives

Monetary reward

Activity incentivized

Energy reduction target

Comment

A key measure in Cummins' Global Environmental Sustainability Plan is a commitment to transparency and accountability. Environmental goals are now incorporated into the Quarterly Scorecard for the Cummins Leadership Team's review. The scorecard shows progress toward the facilities and operations waste, water, energy, and greenhouse gas goals, products in use goal, and logistics goal. In each of these areas, the scorecard will show progress on the both enterprise-wide goals as well as the progress toward the goal apportioned by each business unit and some area business organizations (regional or country focused.) Progress toward goal achievement is part of an employee's work plan for the year and can result in monetary award through merit increases and meeting the company's ROANA target, which results in a profit sharing bonus for all employees

Who is entitled to benefit from these incentives?

Energy manager

Types of incentives

Monetary reward

Activity incentivized

Energy reduction target

Comment

A key measure in Cummins' Global Environmental Sustainability Plan is a commitment to transparency and accountability. Environmental goals are now incorporated into the Quarterly Scorecard for the Cummins Leadership Team's review. The scorecard shows progress toward the facilities and operations waste, water, energy, and greenhouse gas goals, products in use goal, and logistics goal. In each of these areas, the scorecard will show progress on the both enterprise-wide goals as well as the progress toward the goal apportioned by each business unit and some area business organizations (regional or country focused.) Progress toward goal achievement is part of an employee's work plan for the year and can result in monetary award through merit increases and meeting the company's ROANA target, which results in a profit sharing bonus for all employees

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Recognition (non-monetary)

Activity incentivized

Efficiency project

Comment

Cummins has a global employee recognition framework called the Impact Awards. Employees who led a project, employees who were involved with a project or employees who served as the project sponsor can self-nominate their work and can be judged and

then recognized their work represents an outstanding effort that supports overall business goals. Beginning in 2017, there are now three different Impact Awards that employees can be recognized for: Business Impact; Global Impact; Chairman's Impact. One of the five award area categories is Environmental. Projects included in this category can range from site facility projects to product design to projects in collaboration with a customer. Many of these projects are climate related through greater energy efficiency or increased fuel economy.

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	1	3	For a large global company like Cummins, three years or sooner is a short time horizon, especially for product development. Acquisitions would be included in this timeframe.
Medium-term	3	10	Most of Cummins planning falls into this time horizon, as engine platforms or specific product launches are not short-term.
Long-term	10	30	Cummins PLANET2050 environmental sustainability plan would fall into this category. It contains science-based targets for both 2030 and 2050.

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

Cummins has an integrated company-wide risk identification and assessment process that involves four primary groups 1) Enterprise Risk Management (ERM); 2) Technology Strategy and Planning; 3) Environmental Policy & Strategic Planning (EP&SP); and 4) the Action Committee for Environmental Sustainability (ACES). The frequency of monitoring and the horizon timeframe varies for each group, but it is as frequent as monthly and at least six years into the future.

At a company level, the Enterprise Risk Management (ERM) group maintains a risk map to identify all potential risks the company

faces, including strategic, operational, compliance and financial risks. The significance of the financial impact of identified risks, including climate-related risk, is based on probabilities of both the likelihood of occurrence and potential financial impacts. Generally accepted accounting practices are used to assess the materiality of risks and the degree to which they can be estimated. The financial impact of climate-related risk is based on key assessment aspects including the proportion of business units affected, the size of the impact on those business units and the potential shareholder or customer concern. A substantive financial impact, generally defined to be 10 percent of net income, could occur due to a large change in one of these key aspects or a small change in all three aspects.

Our risk assessment process, in alignment with the COSO (Committee of Sponsoring Organizations of the Treadway Commission) framework, identifies the most critical risks and action plans needed for mitigation. In 2016, Cummins established an Enterprise Risk Council made up of the company's top leaders to manage oversight of risk and provide direction on risk-related matters. Technology Strategy and Planning, EP&SP and ACES meet at least monthly and constantly review climate-related research and trends that could affect our operations, markets, customer preferences and new technology development.

Product related risks are identified on a global basis by experienced internal management at semi-annual meetings, and through external stakeholder engagement including frequent collaborations with partners, suppliers, government agencies and customers to identify risks from increasing regulations, changing customer preferences, new disruptive technology and public policy support for low carbon transportation infrastructure such as vehicle electrification and low carbon fuels.

At the asset level, ERM assesses climate related business risk to our own facilities and operations as part of our Enterprise Risk Management assessment process. The function helps sites within Cummins develop Business Continuity Plans, outlining how they would operate when facing an emergency. More than 800 locations now have plans and many conducted table-top exercises to test their effectiveness. The Enterprise Risk Management team also helped oversee more involved stress tests administered by a third party at the company's 75 sites deemed most critical to Cummins' operations.

The process by which Cummins determines the relative significance of climate-related risks in relation to other risks at Cummins occurs when top risks are presented at each meeting of the Board of Directors; periodically a deep dive into specific risks is presented to the Board. In addition, once a year a state of Enterprise Risk Management update is provided to the Board of Directors. Although the overall governance of the ERM program is monitored by the audit committee, details of the potential impact and mitigation activities for individual risks are reviewed in various sub-committees.

ACES also assesses risk related to climate change. The most recent example, in 2019, is through a materiality assessment, which developed a matrix of risks (and opportunities) that were plotted according to importance to Cummins business and importance to stakeholders. ACES takes a very structured and results-oriented approach to our 10 environmental sustainability principles developed to meet the challenges of climate change (in addition to water, waste management, materials, fuel use that are affected by climate change) going forward - and part of the approach includes discussion and analysis about climate change risk and opportunities at its monthly meetings as well as annual update to the Chairman and CEO. We used these principles as well as the UN Sustainable Development Goals, to develop our next generation environmental sustainability plan.

The process Cummins has in place to assess the potential size and scope of identified risks is through our global scenario planning work as done by Technology Planning and Strategy. This work was undertaken starting in 2016 to understand how climate-related risks stand to impact the markets and customers we serve, and how these risks might impact our business.

C2.2c

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Product Certification & Compliance, in tandem with our Emissions and Fuel Economy strategist, manage this climate-related risk by monitoring global regulations and climate change sentiment and policy in countries where we sell products. Our engines are subject to extensive statutory and regulatory requirements that directly or indirectly impose standards governing emissions and noise. These standards are imposed by the EPA, the EU, state regulatory agencies (such as the CARB) and other regulatory agencies around the world. We have made, and will be required to continue to make, significant capital and research expenditures to ensure our engines comply with these emission standards. Developing engines and components to meet numerous changing government regulatory requirements, with different implementation timelines and emission requirements, makes developing engines efficiently for multiple markets complicated and could result in substantial additional costs that may be difficult to recover in certain markets. In some cases, we are required to develop new products to comply with new regulations, particularly those relating to air emissions and now increasingly GHG emissions. While we have met previous deadlines, our ability to comply with other existing and future regulatory standards will be essential for us to maintain our competitive advantage in the engine markets we serve.
Emerging regulation	Relevant, always included	Our technology strategy and planning team, working in tandem with environmental (climate) strategy, marketing management and government relations, monitor the likelihood of emerging climate -related regulations in the countries where we sell products. The nature and timing of government implementation and enforcement of increasingly stringent emission standards in emerging markets are unpredictable and subject to change. Any delays in implementation or enforcement could result in the products we developed or modified to comply with these standards becoming unnecessary or becoming necessary later than expected thereby, in some cases, negating our competitive advantage. This in turn can delay, diminish or eliminate the expected return on capital and research expenditures that we have invested in such products and may adversely affect our perceived competitive advantage in being an early, advanced developer of compliant engines.
Technology	Relevant, always included	Our technology strategy and planning team, working in tandem with environmental (climate) strategy and our corporate strategy and growth office, routinely assesses the sentiment about climate change risk and the perception of that risk by our current and potential customers and use that data gathering in product planning. We are investing in new products and technologies, including electrified powertrains, for planned introduction into certain existing and new markets. Given the early stages of development of some of these new products and technologies, there can be no guarantee of the future market acceptance and investment returns with respect to these planned products. The increased adoption of electrified powertrains in some market segments could result in lower demand for current diesel or natural gas engines and components and, over time, reduce the demand for related parts and service revenues from diesel or natural gas powertrains. Furthermore, it is possible that we may not be successful in developing segment-leading electrified powertrains and some of our existing customers could choose to develop their own electrified or alternate fuel powertrains, or source from other manufacturers, and any of these factors could materially adversely impact our results of operations, financial condition and cash flows.
Legal	Relevant, always included	The facilities and operations environmental management group and its associated internal legal counsel monitor and assess environmental and climate-related regulations. Expenditures for environmental control activities and environmental remediation projects at our facilities in the U.S. have not been a substantial portion of our annual expenses and are not expected to be material in 2019. We believe we are in compliance in all material respects with laws and regulations applicable to our plants and operations.
Market	Relevant, always included	Product planners use the intelligence gathered by our environmental sensing network to help plan for market expansion in areas that have emerging climate-related regulation or have need for lower carbon products. Although we conduct market research before launching new or refreshed engines and introducing new services, many factors both within and outside our control affect the success of new or existing products and services in the marketplace. Offering engines and services that customers desire and value can mitigate the risks of increasing price competition and declining demand, but products and services that are perceived to be less than desirable (whether in terms of price, quality, overall value, fuel efficiency or other attributes) can exacerbate these risks. With increased consumer inter-connectedness through the internet, social media and other media, mere allegations relating to poor quality, safety, fuel efficiency, corporate responsibility or other key attributes can negatively impact our reputation or market acceptance of our products or services, even if such allegations prove to be inaccurate or unfounded.
Reputation	Relevant, always included	Cummins marketing, communications, government relations and environmental strategy have developed an energy diversity action plan that helps guide customers in deciding which technology is right for them, and meets their climate goals. Cummins is committed to investing in an energy diverse future where its customers have a broad portfolio of power options – including clean diesel, natural gas, electrified power and even fuel cell technology – so they can choose what works best for them. Cummins believes, for example, that some of its customers may opt for clean diesel as an infrastructure is developed across the country for electrified power. Offering engines and services that customers desire and value can mitigate the risks of increasing price competition and declining demand, but products and services that are perceived to be less than desirable (whether in terms of price, quality, overall value, fuel efficiency or other attributes) can exacerbate these risks. With increased consumer inter-connectedness through the internet, social media and other media, mere allegations relating to poor quality, safety, fuel efficiency, corporate responsibility or other key attributes can negatively impact our reputation or market acceptance of our products or services, even if such allegations prove to be inaccurate or unfounded.
Acute physical	Not relevant, included	Facilities and operations environmental management monitors and assesses climate related water risks and have business continuity plans accordingly. Climate-related risks that are physical in nature are typically water related. We have not recognized any acute water risks. Potential for inadequate or unreliable water supplies in the long-term horizons, which could lead to operational disruptions, increased water pricing, investment in contingency plans, and increased capital expenditures to manage growth within water use allocation limits.
Chronic physical	Relevant, sometimes included	Climate-related risks that are physical in nature are typically water related. We have recognized some chronic but not acute water risks. Potential for inadequate or unreliable water supplies in the long-term horizons, which could lead to operational disruptions, increased water pricing, investment in contingency plans, and increased capital expenditures to manage growth within water use allocation limits. Facilities and operations environmental management monitors and assesses climate related water risks and have business continuity plans accordingly.
Upstream	Relevant, sometimes included	Top suppliers are asked if they are 14001 compliant and to complete the CDP water security assessment. Approximately 20 percent of the direct material in our product designs are single sourced to external suppliers. We have an established sourcing strategy and supplier management process to evaluate and mitigate risk. These processes are leading us to determine our need for dual sourcing and increase our use of dual and parallel sources to minimize risk and increase supply chain responsiveness. Our current target for dual and parallel sourcing is approximately 90 percent of our direct material spend. As of December 31, 2018, our analysis indicates that we have approximately 80 percent of direct material spend with dual or parallel sources. Other important elements of our sourcing strategy include: <ul style="list-style-type: none"> • working with suppliers to measure and improve their environmental footprint; • selecting and managing suppliers to comply with our supplier code of conduct; and • assuring our suppliers comply with Cummins' prohibited and restricted materials policy

	Relevance & inclusion	Please explain
Downstream	Relevant, always included	Cummins is increasingly being asked by customers about our climate-related risks and management of facilities and operations as part of their due diligence. We believe that our expertise in managing climate-related risk is a competitive advantage. Several of our engine customers are truck manufacturers or OEMs that manufacture engines for some of their own vehicles. Despite their own engine manufacturing abilities, these customers have historically chosen to outsource certain types of engine production to us due to the quality of our engine products, our emission compliance capabilities, our systems integration, their customers' preferences, their desire for cost reductions, their desire for eliminating production risks and their desire to maintain company focus. However, there can be no assurance that these customers will continue to outsource, or outsource as much of, their engine production in the future. In fact, several of these customers have expressed their intention to significantly increase their own engine production and to decrease engine purchases from us. In addition, increased levels of OEM vertical integration could result from a number of factors, such as shifts in our customers' business strategies, acquisition by a customer of another engine manufacturer, the inability of third-party suppliers to meet product specifications and the emergence of low-cost production opportunities in foreign countries. Any significant reduction in the level of engine production outsourcing from our truck manufacturer or OEM customers could have a material adverse effect on our results of operations.

C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

During 2016-2017, Cummins performed global scenario planning work to understand how climate-related risks stand to impact the markets and customers we serve, and how these risks might impact our business. Cummins tracks developments in “priority areas” that were determined via a scenario planning process. One priority area that the business monitors is climate change policies.

Within this priority area we monitor policy developments globally relating to national and sub-national climate goals and resulting legislation or regulations. Updates on this priority area are provided to an internal technical strategy team twice a year. The strategy team directs follow up to appropriate groups within the business and business leadership. These priority areas can be indicators of both risks and opportunities. Our Technology Planning function, under our Chief Technical Officer, leads this work, integrating input from our “sensing network” for technical developments, regulatory developments, or market/economic developments.

The scenario planning process was an integral part of Cummins strategy to pursue electrified products and other low-carbon future options identified as a transitional opportunity.. This has resulted, since late 2017, in the acquisition of two battery storage companies and an electrified powertrain company, the development of an electric heavy-duty truck, and the introduction of our first battery electric bus in 2019.

Cummins has done much work on identifying physical climate-related water risk. Cummins conducted detailed watershed assessments to facilities scoring above the 150 ‘at risk’ threshold. Cummins Brasil Ltda, the largest site in Brazil, was added to the risk list due to specific water issues arising in the area. Potential for inadequate or unreliable water supplies in the short- and long-term horizons, which could lead to operational disruptions, increased water pricing, investment in contingency plans, and increased capital expenditures to manage growth within water use allocation limits. This site was recently elevated to high risk based upon facility expansion and recent drought conditions within Brazil. A watershed assessment was conducted to better understand and evaluate water sourcing risks, alternatives, and overall watershed conditions. In addition to continued water conservation measures and technologies, additional response measures may include deployment of additional water storage and low/no water use processes such as air cooled chiller systems where warranted, and upgrades to the wastewater treatment system to allow for 100% reuse. Cummins encourages community engagement projects each year focusing on employee volunteer hours and sustainable projects that will be owned by the community upon completion. Cummins has a grant process to fund these projects and allows sites to fund smaller ones within their budget. Historical data shows these are relatively low cost.

The Action Committee for Environmental Sustainability did a hot spot environmental assessment in 2011 and the resulting data still informs our strategy and planning today. This group has been responsible for identifying opportunities in responsible material consumption and in the creation of a Materials Lifecycle Management team whose objective is to find ways to use less material in the design and manufacture of our products. One successful result in 2018 was the manifold optimization project, which resulted in a 21 percent decrease in material needed in manufacturing, a 336 metric ton CO2 savings and a cost savings of \$222,000 (over a build of 115,000 units).

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?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Technology: Substitution of existing products and services with lower emissions options

Type of financial impact

<Not Applicable>

Company- specific description

The technology substitution is the end result of a number of drivers, among them emerging regulation, shift in consumer preference, increasingly lower cost of ownership and the customers' own sustainability goals. We are investing in new products and technologies, including electrified powertrains, for planned introduction into certain existing and new markets. Given the early stages of development of some of these new products and technologies, there can be no guarantee of the future market acceptance and investment returns with respect to these planned products. The increased adoption of electrified powertrains in some market segments could result in lower demand for current diesel or natural gas engines and components and, over time, reduce the demand for related parts and service revenues from diesel or natural gas powertrains.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

100000000

Potential financial impact figure – maximum (currency)

200000000

Explanation of financial impact figure

2018 revenue from our Engine business was \$10.6 billion. Over the long term, the increased adoption of electrified powertrains in some market segments could result in lower demand for current diesel or natural gas engines and components and, over time, reduce the demand for related parts and service revenues from diesel or natural gas powertrains. This financial impact represents a 1 to 2 percent loss of current (not projected) revenue over the next 3 to 10 years (medium term).

Management method

Cummins Technology Strategy and Planning team is focused on Cummins growth areas beyond our core technical work, examining disruptive and future technologies and enabling us to effectively monitor signposts from our scenario planning work and technology sensing network. Future technology research is carried out in our Research and Technology group. Roughly 10 percent or \$90 million of Cummins research and development budget is devoted specifically to technology innovation that does not yet have a specific customer identified. Roughly 85 percent (or \$766 million) of our total R&D budget is research and development for products launches that already have an end customer. A recent example of being pro-active in introducing a a lower-carbon solution is our May 2019 announcement of the GILLIG zero-emission battery electric bus, powered by Cummins. The zero-emission battery electric bus incorporates the Cummins electrified powertrain.

Cost of management

90000000

Comment

The cost of management reflects the spending on research and technology.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Physical risk

Primary climate-related risk driver

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

Type of financial impact

Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)

Company- specific description

Potential for inadequate or unreliable water supplies in the long-term horizons, which could lead to operational disruptions, increased water pricing, investment in contingency plans, and increased capital expenditures to manage growth within water use allocation limits. The regions we have identified are China (Hai Ho river basin); India (Krishna river basin); Mexico (Panuco river basin) and Brazil (Paraiba Do Sul river basin).

Time horizon

Long-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

1000000

Potential financial impact figure – maximum (currency)

20000000

Explanation of financial impact figure

Cummins conducted detailed watershed assessments to facilities identified as at risk. Overall, 46 percent of Cummins water use is in water stressed areas. Financial implications would be periods of plant inactivity or closure, loss of production and possible customer deadline ramifications. The maximum \$20 million figure would represent the maximum amount of lost revenue due to a high estimate of 5-7 days of plant shutdown due to lack of water for operations.

Management method

To manage this risk, Cummins has established a 2020 50 percent water intensity reduction goal with a baseline year of 2014 and committed to a goal of 15 water neutral sites in water-stressed regions of operations. We report the progress towards Management method varies by site, but can include continued water conservation measures in existing operations, increase in water storage capacity, and deployment of low/no water use processes such as air cooled chiller systems where warranted based upon facility water dependency. These systems increased capital expenditure and increased operating costs related to higher energy use, but off-set the potential risks associated with interruption of operations. However, Cummins is also using technologies such as regenerative dynos to manage the costs associated with the energy impact.

Cost of management

4000000

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Mandates on and regulation of existing products and services

Type of financial impact

<Not Applicable>

Company- specific description

The need to development new technology to meet emissions regulations could result in substantial additional costs that may be difficult to recover in certain markets. In some cases, we are required to develop new products to comply with new regulations, particularly those relating to air emissions. While we have met previous deadlines, our ability to comply with other existing and future regulatory standards will be essential for us to maintain our competitive advantage in the engine markets we serve. The successful development and introduction of new and enhanced products in order to comply with new regulatory requirements are subject to other risks, such as delays in product development, cost over-runs and unanticipated technical and manufacturing difficulties.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

100000000

Potential financial impact figure – maximum (currency)

200000000

Explanation of financial impact figure

2018 revenue from our Engine business was \$10.6 billion. This financial impact represents a 1 to 2 percent loss of current (not projected) revenue over the next 3 to 10 years (medium term).

Management method

Over the past several years we have substantially increased our global environmental compliance presence and expertise to understand and meet emerging product environmental regulations around the world. Our ability to comply with these and future emission standards is an essential element in maintaining our leadership position in regulated markets. We have made, and will continue to make, significant capital and research expenditures to comply with these standards.

Cost of management

10000000

Comment

The \$10 million figure relates to a portion of our typical research and technology budget that we need to be devoted to developing new compliant technology.

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?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Type of financial impact

Increased revenue through demand for lower emissions products and services

Company-specific description

Cummins has been very public with its intent on introducing electrified products, and in 2019 introduced its first battery electric bus. With the unveiling of the Concept Class 7 Urban Hauler EV in 2017, Cummins introduced a state-of-the art battery pack offering, redefining energy-efficiency and density capabilities for the EV market. The lighter, denser battery design allows it to hold a longer charge for improved range and faster charging, reducing down time. The concept truck design includes an Engine-Generator option for extended range capabilities, allowing users to benefit from Cummins B4.5 or B6.7 engines, providing a major advantage over today's hybrid systems. These engine options offer 50 percent fuel savings compared to today's diesel hybrids with zero emissions.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

100000000

Potential financial impact figure – maximum (currency)

150000000

Explanation of financial impact figure

2018 revenue from our Engine business was \$10.6 billion.. Medium duty truck and bus make up 27 percent of engine business revenue and heavy duty truck 35 percent or \$6.6 billion in revenue for both segments The potential impact is represents a 2 percent gain of current (not projected) revenue over the next 3 to 10 years (medium term). due to acceptance of electrified products.

Strategy to realize opportunity

In early 2018, Cummins announced that the electrification business will be a new reporting segment called Electrified Power (EPBU). This segment posted its first quarter of results as part of Cummins Q1 2018 earnings and is now included in Cummins regulatory filings. Our Electrified Power segment designs, manufactures, sells and supports electrified power systems ranging from fully electric to hybrid. We currently offer the Cummins PowerDrive series of fully electric and hybrid powertrain systems targeting various applications in the Class 4-8 commercial vehicle markets and are developing the Cummins Battery Electric System and the Cummins Hybrid Power Plug-In System for the urban bus market. In mid 2018, Cummins unveiled PowerDrive , an advanced suite of plug-in hybrid electric power train solutions, expanding Cummins' broad portfolio of low emissions and fuel-efficient power solutions. PowerDrive replaces conventional transmissions, switching in real time between two hybrid and two pure electric modes to optimize for the best fuel economy in any driving situation.

Cost to realize opportunity

500000000

Comment

The \$500 million investment for electrification is over a three year period.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Type of financial impact

Reduced operating costs (e.g., through efficiency gains and cost reductions)

Company-specific description

Cummins has a climate-related opportunity in responsible material consumption. Seventy percent of a product's environmental footprint, meaning water and energy use plus in use emissions, is determined during the earliest phases of the design process. The earlier the company can incorporate innovative design for the efficient use of fuel and raw materials, the greater its ability to reduce the environmental footprint (energy, water and waste) of Cummins products both in their design and use. This opportunity includes Cummins functions / businesses of remanufacturing, packaging, advanced manufacturing, material science and product design.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

180000000

Potential financial impact figure – maximum (currency)

270000000

Explanation of financial impact figure

The financial impact is an estimate of long-term savings on raw material required to manufacture our products plus savings from packaging initiatives. Cummins estimates 95 percent of the materials used to produce the organization's primary products are non-renewable (primarily metals, but also oil and plastic). Cummins estimates it uses 900,000 metric tons of metal for one year's production. Estimated savings is based on a 2 to 3 percent reduction in weight as related to our annual spend on direct material.

Strategy to realize opportunity

A dedicated Cummins team for material efficiency was formed in 2018 and is working now on ways to make the company's products more eco-efficient in the future. Many of the concepts of the "circular economy" and its emphasis on reuse and recycling are not new, but this team is connecting with the various functions in charge of materials work at Cummins to elevate their importance. The goal is to use the right amount of material in everything the company makes to avoid unnecessary use of water and energy throughout a product's lifecycle. That means using material optimization tools to ensure structural integrity with minimized material and specifying that raw material is finished as close as possible to the ending net shape of the component. Cummins has had some fundamental designs that have really reduced weight. Our high speed 4,000 HP engine (QSK 95) has much less metal weight than any 4,000 HP engine that is low speed. And, our single module Cummins Emission Solutions system uses much less weight than the previous system it replaced. Packaging leaders at Cummins are working to better understand what metrics and actions will drive consistent and environmentally sound packaging decisions. Their goals for sustainable packaging solutions are to reduce packaging waste and increase reusable solutions as well as the use of recyclable material. Projects involving the substitution of reusable pallets instead of wooden pallets have saved several hundred thousand dollars.

Cost to realize opportunity

1300000

Comment

The cost to realize is primarily related to additional employees required who have expertise in specialized design optimization systems and software as well as costs for the material optimization software and design for lifecycle tools.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Supply Chain

Opportunity type

Resilience

Primary climate-related opportunity driver

Participation in renewable energy programs and adoption of energy-efficiency measures

Type of financial impact

Increased market valuation through resilience planning (e.g., infrastructure, land, buildings)

Company-specific description

Cummins is committed to energy efficiency and renewable energy both for cost savings and resiliency. We are currently working on our third energy efficiency / GHG reduction goal since 2006. We have completed hundreds of energy projects in the last 12 years, now saving the company about \$50 million per year. We have also committed to have 40 sites certified to ISO 50001 energy standard by 2020. We have two public goals : 1) energy intensity reduction of 32 percent by 2020 from a baseline of 2010 and 2) to increase renewable energy opportunities.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

50000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

We have estimated that our annual cost savings from energy efficiency projects (cumulative since 2006) is \$50 million per year.

Strategy to realize opportunity

Cummins employees in its Facilities and Operations Environmental Management group set strategy, objectives and targets, which are carried out through the business units , at site level and through Global Integrated Services. The company's Enterprise Environmental Management System (EMS), created in 2003, plays a critical role in Cummins' global environmental footprint reductions and other improvements. The company adopted a model that includes a common framework to ensure a similar look, feel and fundamental approach throughout the organization. The system has served as the framework for driving continual improvement and efforts beyond compliance at Cummins operations around the world. Our employee engagement program Environmental Champions includes energy as well as water and waste training . The Company also just completed our 6th June Environmental Month, with more than 2/3 of our employees participating in some way in a site, community or personal action. In 2017, Cummins announced that it had entered into a Virtual Power Purchase Agreement (VPPA) to expand a wind farm in Northern Indiana, which went online in December 2018. . The expansion will add 75 megawatts, enough to power approximately 20,000 average Indiana homes, to the existing 600 megawatt capacity at the Meadow Lake Wind Farm complex. When fully operational, the wind farm expansion will generate renewable electricity equivalent to the amount Cummins uses at its Indiana facilities.

Cost to realize opportunity

27000000

Comment

The \$27 million is an our annual spend to achieve our 2020 energy efficiency goal; another \$2.5 million is for onsite renewable energy. The VPPA is a contract for differences, so financial gain or loss is determined each month. Cummins has not disclosed the details of the contract.

Identifier

Opp4

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Markets

Primary climate-related opportunity driver

Access to new markets

Type of financial impact

Increased revenues through access to new and emerging markets (e.g., partnerships with governments, development banks)

Company-specific description

Cummins capability in Micro-grids and Distributed Generation as a result of renewable energy goals and improvement of grid resiliency can provide opportunities.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

120000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

2017 revenue in the Power Systems segment was \$4.1 billion; power generation was 57 percent of that total, or \$2.4 billion. The potential impact would be an estimate of increasing revenue by 5 percent in the power generation product line.

Strategy to realize opportunity

We are managing this by: 1) educating regulators about the positive aspects of combined heat and power plus alternative gas units 2) developing the right microgrid business model that includes innovation beyond the technology 3) educating regulators about using gen sets as a fast-ramping flexible generation solution to address the volatility on the grid with higher penetration of intermittent renewable energy. 4) advanced technology research (high efficiency gensets, power electronics) 5) strategic partnerships with renewable energy companies and Independent Power Producers 6) new hybrid product launches (already have for telecom applications) and 7) development of new business models that combine natural gas generation (as opposed to diesel) for grid firming as a result of higher renewable penetration

Cost to realize opportunity

10000000

Comment

The cost to realize is per year.

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

	Impact	Description
Products and services	Impacted	Description of impact: over time climate-related opportunities will continue to change our business mix. We produce many lower carbon and alternative fuel technologies now, so future impact would be what mix of products our customers or regulations. Magnitude: Medium, as while change may decrease revenue in some products, it could increase in others
Supply chain and/or value chain	Impacted for some suppliers, facilities, or product lines	Description of impact: Impact would be on amount of materials sources for production Magnitude: over time, material costs could decrease. Metal cost alone could decrease by 2 to 3 percent over the next 10 years due to sustainable material efficiency and design for lifecycle efforts.
Adaptation and mitigation activities	Impacted for some suppliers, facilities, or product lines	Description of impact: Carbon footprint reduction due to virtual power purchase agreement. Any profit or loss associated with the VPPA would be far smaller than the estimated \$380 million it would have taken to build an onsite installation with same greenhouse gas benefit. Magnitude: We continue to explore this type of contract, so our footprint could continue to shrink by applying the renewable energy credits. The windfarm expansion related to our virtual power purchase agreement in Indiana produces electricity equal to what our facilities in Indiana use.
Investment in R&D	Impacted	Description of impact: Three quarters of Cummins research and development spending in any given year is related to fuel economy and / or low carbon technology. The percentage of that will likely to grow over time. Magnitude: Neutral to slightly higher. R&D will continue to fluctuate depending on market and customer needs.
Operations	Impacted	Description of impact: monetary savings Magnitude: Our energy spend is 7 percent of net income. We anticipate that as we set new energy reduction goals, we will continue to save costs.
Other, please specify	Please select	

C2.6

(C2.6) Describe where and how the identified risks and opportunities have been factored into your financial planning process.

	Relevance	Description
Revenues	Impacted	Description of impact: over time climate-related opportunities will continue change our business mix, and by extension our revenue. and the way we fund our business. We produce many lower carbon and alternative fuel technologies now. Magnitude: Medium, as while change may decrease revenue in some products, it could increase in others. We typically hold our R&D expense to 3 to 5 percent of earnings before taxes.
Operating costs	Impacted	Description of impact: We expect that operating costs could be maintained or even lowered even as revenue rises due to efficiencies in plant operations. Magnitude: low
Capital expenditures / capital allocation	Impacted	Description of impact: \$27 million in 2019 in an increase over the more typical \$12 million per year for energy efficiency. Spending to reach goals may increase we near goal attainment years. We may need to continue to hire technical expertise in expanded product lines. Magnitude: low
Acquisitions and divestments	Impacted	Description of impact: In the past year, Cummins has acquired two battery storage companies as well as a a company that designs and produces hybrid and fully-electric power solutions for commercial markets Magnitude: A small but strategic magnitude as these acquisitions as to our knowledge base.
Access to capital	Impacted	Description of impact: Cummins ability to gain financing or capital could be impacted if its business if diminished by our inability to respond to market demands. Impact: low. While it could be an impact, Cummins has a strong cash position currently and believe it would have a low impact.
Assets	Impacted for some suppliers, facilities, or product lines	Description of impact: There may be a slight increase in updating plant assets (building and equipment) but much is considered a climate related opportunity would be investments we would already make. Magnitude: Low impact, as much of our spending on assets is already considered part of our climate change strategy.
Liabilities	Not yet impacted	Description of impact: Cummins response to climate change - in strategy, spending and product offering - at this time does not have an impact on liabilities.
Other	Please select	

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

C3.1a

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

Yes, qualitative and quantitative

C3.1c

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

Cummins believes that addressing climate change and managing our limited natural resources does not have to be at odds with our business objectives. In fact, we have demonstrated time and again that what is good for the environment is also good for our business and our customers. Cummins recognizes that the global need to decarbonize the economy will be one of the major trends impacting our business over the next several decades.

Cummins has used scenario planning (as described in the next response) to ensure that the company is looking out far into the future to anticipate and respond to changing indicators, including climate change science, regulations, and societal requirements to mitigate and adapt to climate change. One example of a changing indicator that Cummins monitors is the Paris Agreement and the related NDCs that nations have pledged. While the passage of the Paris Agreement did not change Cummins' business strategy because we were already on a trajectory to reduce carbon emissions, the NDCs provide much more certainty about when and how nations plan to cut their own emissions. As nations ratchet up their mitigation efforts in their NDCs, Cummins will ensure that our strategy is aligned to those NDCs and other frameworks including the Science Based Targets Initiative.

Scenario planning has already helped accelerate Cummins' voluntary sustainability actions and this practice ensures an even closer connection between our environmental strategy and our business strategy. For example, in 2017, Cummins signed on to the Science Based Targets Initiative (SBTI) that uses environmental science to support companies with GHG reduction target setting, consistent with limiting global warming to 2 degrees Celsius or lower.

In the past year, Cummins has greatly expanded our investment in new electrified powertrain products. This \$500 million investment included three acquisitions since February 2017. Cummins acquired two battery companies, Brammo and Johnson Matthey Battery Systems, and a hybrid powertrain company, EDI. Similarly, the investment also means greater R&D and partnerships to improve electrified powertrains and related components including with independent research labs like the Battery Innovation Center. This expanded focus on electrified products is in addition to the nearly $\frac{3}{4}$ of Cummins R&D budget that is already spent on improvements related to fuel efficiency across all of our products.

Cummins' primary climate-related motivation for this focus on electrification and fuel efficiency is the growth opportunities presented by the demand for these lower carbon products globally. Secondly, Cummins foresees regulatory changes at international, national, and sub-national levels eventually driving new requirements and fuel economy regulations to which Cummins will continue adapting its business strategy and product choices to meet the requirements. For example, as cities around the world set their own emissions targets and technology mandates, Cummins will adapt to meet those customer needs with clean technology options. In these instances, it is clear that the companies with the cleanest products paired with the greatest ability to service and support the transition to these new technologies will gain a competitive advantage.

Based on current trends and informed by our own direct engagement with regulatory agencies around the world, Cummins believes that emissions standards and GHG/fuel economy standards will continue to progress around the world across all of our product groups. On-highway Class 8 engines and vehicles are typically the first group of products to see new and more stringent standards. The baseline varies considerably depending on the region implementing a new standard, but we do expect and support greater harmonization of standards as some markets already adopt US EPA or European emissions standards. The progression of these standards globally combined with drivers mentioned above have already motivated Cummins to invest in fully electrified and hybrid technologies in some cases where it is viable today. We see electrification growing in more of our customer applications as the technology improves and costs come down. Fuel cell technology will be of greater interest as a low carbon technology, but much more research is required to improve the technology and major market barriers such as infrastructure must be addressed.

C3.1d

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

Climate-related scenarios	Details
Other, please specify (Paris climate agreement/science-based targets)	<p>Cummins uses a method known as scenario planning to contemplate different potential future outcomes in order to make more informed decisions. Cummins’ objective in doing scenario planning is to ensure that its investment portfolio is informed and contemplates all major scenarios that would impact the business on an ongoing basis and that looks beyond a short term planning window. Scenarios were developed out to 2035 as a reasonable outlook and timeframe. To do this, Cummins first identified the driving forces behind major changes in the world and the critical uncertainties within each. Based on the themes of those critical uncertainties, plausible scenarios were developed to weave a narrative of potential futures. The three themes that Cummins considered in its scenarios were Climate Change and Carbon Regulations, Evolution of Advanced Technologies, and Economic De-globalization. Potential outcomes and implications to Cummins’ business were then analyzed to understand when and how the most extreme disruptions might occur over time. As part of Cummins’ own scenario planning process, the company benchmarked Shell as an example of how to use scenario planning to inform investment decisions and future business conditions. Cummins uses Shell Scenarios to understand various methods of conducting scenario planning analysis and how to treat various inputs. Cummins does not use Shell Scenarios as a prediction, rather, the Shell Scenarios are one reference point for Cummins as a peer company that uses scenario planning. One scenario that Cummins uses through this planning exercise is a climate-related scenario in which countries around the world take aggressive and globally orchestrated steps to decarbonize their economies. Cummins used a climate-related scenario to understand the extreme limits and major drivers of action within this scenario out to 2035; anything less extreme would be compared to a baseline assumption of how this scenario might play out. Scenario planning has already helped accelerate Cummins’ voluntary sustainability actions. We have developed and have had validated (not yet announced) two science based targets for new products and facilities that meet the threshold to limit global warming to 1.5 degrees Celsius or lower. To keep that analysis relevant, Cummins must continually monitor and respond accordingly to changes against key indicators. Cummins does not view scenario planning as a one-time activity. Rather, it must be used as tool on an ongoing basis to account for real world changes that occur to inform the potential futures that are yet to come. For this reason, Cummins developed a "Signpost Monitoring Process" with assigned owners to key signposts or indicators that are considered most critical to the scenarios. Cummins uses a broad network of external experts and information sources to monitor signposts. Twice a year, signpost owners are required to synthesize their findings and report on any major developments within their priority area. If a trend needs further investigation, a team is assigned to conduct a deep-dive analysis on that topic to understand it better. In line with these annual synthesis reports, C-suite leaders review the findings twice a year and determining a plan of action if that is required. Cummins’ senior-most leaders are actively involved in the review and decision-making for the company’s use of scenario planning. This ensures that alignment regarding developments on external trends, including climate change related trends are fully considered into short and long-term business planning. By using scenario planning and our existing strategies to address climate change and related impacts, Cummins is prepared to more nimbly adapt its business and investment strategy.</p>
Nationally determined contributions (NDCs)	<p>Cummins supports the framework of the Paris Agreement and believes that it gives the world a flexible framework to manage climate change while providing a smooth transition for business. American companies, our suppliers, customers, and communities will benefit from U.S. participation in the Paris Agreement in several ways:</p> <ul style="list-style-type: none"> o It strengthens our competitiveness in global markets. o It benefits American manufacturing as we modernize to new, more efficient technologies. o It supports investment by setting clear goals which enable long-term planning. o It expands global and domestic markets for clean, energy-efficient technologies which will generate jobs and economic growth. o It encourages market-based solutions and innovation to achieve emissions reductions at low cost. <p>Cummins uses Nationally Determined Contributions (NDCs) submitted by each signatory nation through the framework of the Paris Agreement as one input into the Cummins Scenario Planning process. NDCs are a valuable indicator for how ambitious a nation may be in its commitment to mitigate GHG emissions. For this reason, Cummins uses the NDCs and other projections to inform our scenario planning. Because NDCs must undergo an emissions stock-taking and must ratchet up their pledges on five-year cycles, they provide a regular and predictable view for Cummins to understand how a given nation is progressing against its goals, and thus how Cummins may need to shift our own efforts to align to those targets. Cummins has a process in place and internal subject matter experts identified who are responsible for monitoring climate change policy development globally, including the tracking of NDCs. While the initial submission of NDCs in 2015 still present an "ambition gap" that will not achieve the stated mitigation goal of a 2 degree C warming scenario, Cummins uses NDCs as a baseline of what nations are likely to achieve.</p>

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

Scope

Scope 3: Use of sold products

% emissions in Scope

99.24

Targeted % reduction from base year

1.6

Base year

2014

Start year

2015

Base year emissions covered by target (metric tons CO2e)

914000000

Target year

2020

Is this a science-based target?

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

% of target achieved

100

Target status

Achieved

Please explain

Cummins fuel economy teams throughout the world have implemented more than 300 projects since this goal was announced in 2014. The result is that Cummins has already surpassed its goal of a 3.5 million metric ton run rate per year and achieved a 4.3 million metric ton run rate in 2018.

Target reference number

Abs 2

Scope

Scope 3: Use of sold products

% emissions in Scope

99.24

Targeted % reduction from base year

25

Base year

2018

Start year

2019

Base year emissions covered by target (metric tons CO2e)

809000000

Target year

2030

Is this a science-based target?

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

% of target achieved

0

Target status

New

Please explain

Cummins Inc committed to reduce absolute scope 3 GHG emissions from the use of sold products 25% by 2030 from a 2018 base year. On June 21, 2019, the SBTi's Target Validation Team approved the target.

Target reference number

Abs 3

Scope

Scope 1 +2 (market-based)

% emissions in Scope

100

Targeted % reduction from base year

50

Base year

2018

Start year

2019

Base year emissions covered by target (metric tons CO₂e)

878842

Target year

2030

Is this a science-based target?

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

% of target achieved

0

Target status

New

Please explain

Cummins, Inc committed to reduce absolute scope 1 and 2 GHG emissions 50% by 2030 from a 2018 base year. On June 21, 2019, the SBTi's Target Validation Team classified the scope 1 and 2 target ambition and determined that it is in line with a 1.5°C trajectory, and approved the target.

C4.1b

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

Target reference number

Int 1

Scope

Scope 1 +2 (market-based)

% emissions in Scope

95.5

Targeted % reduction from base year

32

Metric

Metric tons CO2e per unit hour worked

Base year

2010

Start year

2016

Normalized base year emissions covered by target (metric tons CO2e)

796255

Target year

2020

Is this a science-based target?

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

% of target achieved

100

Target status

Achieved

Please explain

Cummins in 2016 approved its third GHG goal in 10 years after exceeding its second greenhouse gas (GHG) reduction goal in 2015. The current goal's intensity factor is based on hours worked, not revenue as previously used. All consolidated operations and joint ventures subscribing to Cummins' Enterprise Environmental Management System are included. However, emissions associated with generation of sold electricity (as part of the power solutions business) and mobile sources (emissions associated with onroad vehicles) are not included in the goals. Additionally, it is assumed that 2010 market based emissions to be the same as location based emissions. During the same period (2010 to 2020), based on the hours forecast, a 10% increase in absolute Scope 1+2 emissions is anticipated. This target does not include or impact Scope 3 emissions.

% change anticipated in absolute Scope 1+2 emissions

10

% change anticipated in absolute Scope 3 emissions

0

C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1a/b.

Target

Energy productivity

KPI – Metric numerator

Total Energy [MMBtu]

KPI – Metric denominator (intensity targets only)

Total Hours Worked

Base year

2010

Start year

2016

Target year

2020

KPI in baseline year

0.106

KPI in target year

0.072

% achieved in reporting year

93.75

Target Status

Underway

Please explain

In 2016, Cummins approved its third energy goal in 10 years after exceeding its second energy and greenhouse gas (GHG) reduction goal in 2015. All consolidated operations and joint ventures subscribing to Cummins' Enterprise Environmental Management System are included. However, emissions associated with generation of sold electricity (as part of the power solutions business) and mobile sources (emissions associated with onroad vehicles) are not included in the goals. Additionally, it was assumed that 2010 market based emissions were the same as location based emissions. During the same period (2010 to 2020), based on the hours forecast, a 10% increase in absolute Scope 1+2 emissions is anticipated. This target does not include or impact Scope 3 emissions

Part of emissions target

This includes 90% of the emissions target. Scope 1 items that are excluded from the targets include emissions associated with Generation of sold electricity, Mobile sources and Refrigerant.

Is this target part of an overarching initiative?

Science-based targets initiative

Target

Energy productivity

KPI – Metric numerator

ISO 50001 Certified Sites

KPI – Metric denominator (intensity targets only)

Base year

2010

Start year

2010

Target year

2020

KPI in baseline year

0

KPI in target year

40

% achieved in reporting year

90

Target Status

Underway

Please explain

This ISO 50001 certification target applies to all global facilities and operations under Cummins management control.

Part of emissions target

Not applicable

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

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	0	0
To be implemented*	0	0
Implementation commenced*	0	0
Implemented*	203	33920
Not to be implemented	0	0

C4.3b

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

Initiative type

Energy efficiency: Building services

Description of initiative

Building controls

Estimated annual CO2e savings (metric tonnes CO2e)

942

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

163000

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

233000

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

BMS, 7 projects

Initiative type

Energy efficiency: Building fabric

Description of initiative

Insulation

Estimated annual CO2e savings (metric tonnes CO2e)

68

Scope

Scope 1

Voluntary/Mandatory

Voluntary

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

12000

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

48000

Payback period

4 - 10 years

Estimated lifetime of the initiative

11-15 years

Comment

2 projects

Initiative type

Energy efficiency: Processes

Description of initiative

Compressed air

Estimated annual CO2e savings (metric tonnes CO2e)

384

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

213000

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

516000

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

12 projects

Initiative type

Energy efficiency: Building services

Description of initiative

Building controls

Estimated annual CO2e savings (metric tonnes CO2e)

432

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

68000

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

78000

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

16 projects

Initiative type

Energy efficiency: Building services

Description of initiative

HVAC

Estimated annual CO2e savings (metric tonnes CO2e)

1300

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

243

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

1967

Payback period

4 - 10 years

Estimated lifetime of the initiative

6-10 years

Comment

11 projects

Initiative type

Energy efficiency: Processes

Description of initiative

Other, please specify (Energy recovery from engine test dynamometers)

Estimated annual CO2e savings (metric tonnes CO2e)

10460

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

310000

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

564000

Payback period

1-3 years

Estimated lifetime of the initiative

11-15 years

Comment

Regenerative dynamometers for engine testing; 9 projects

Initiative type

Energy efficiency: Processes

Description of initiative

Compressed air

Estimated annual CO2e savings (metric tonnes CO2e)

391

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

82000

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

1000

Payback period

<1 year

Estimated lifetime of the initiative

3-5 years

Comment

Compressed air system leak detection & repair; 4 projects

Initiative type

Energy efficiency: Building services

Description of initiative

Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

5283

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

1616000

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

3516000

Payback period

1-3 years

Estimated lifetime of the initiative

11-15 years

Comment

Global LED lighting campaign; 59 projects

Initiative type

Process emissions reductions

Description of initiative

Changes in operations

Estimated annual CO2e savings (metric tonnes CO2e)

12556

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

759000

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

1000

Payback period

<1 year

Estimated lifetime of the initiative

3-5 years

Comment

Low cost & no cost energy efficiency improvements through process optimization, power-down programs, etc.; 19 projects

Initiative type

Energy efficiency: Processes

Description of initiative

Machine replacement

Estimated annual CO2e savings (metric tonnes CO2e)

106

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

12000

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

469000

Payback period

>25 years

Estimated lifetime of the initiative

11-15 years

Comment

Process machine upgrades & replacements; 4 projects

Initiative type

Energy efficiency: Building services

Description of initiative

Building controls

Estimated annual CO2e savings (metric tonnes CO2e)

912

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

6000

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

99000

Payback period

16-20 years

Estimated lifetime of the initiative

6-10 years

Comment

Installation of sub-metering for energy and water management; 5 projects

Initiative type

Energy efficiency: Building services

Description of initiative

Motors and drives

Estimated annual CO2e savings (metric tonnes CO2e)

264

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

167000

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

622000

Payback period

4 - 10 years

Estimated lifetime of the initiative

6-10 years

Comment

7 projects

Initiative type

Low-carbon energy installation

Description of initiative

Solar PV

Estimated annual CO2e savings (metric tonnes CO2e)

724

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

101000

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

615000

Payback period

4 - 10 years

Estimated lifetime of the initiative

21-30 years

Comment

2 projects

Initiative type

Energy efficiency: Building services

Description of initiative

HVAC

Estimated annual CO2e savings (metric tonnes CO2e)

9

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

1000

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

101000

Payback period

>25 years

Estimated lifetime of the initiative

11-15 years

Comment

3 ventilation projects

Initiative type

Fugitive emissions reductions

Description of initiative

Refrigerant leakage reduction

Estimated annual CO2e savings (metric tonnes CO2e)

3

Scope

Scope 1

Voluntary/Mandatory

Voluntary

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

1000

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

12000

Payback period

21-25 years

Estimated lifetime of the initiative

11-15 years

Comment

3 projects

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

Method	Comment
Dedicated budget for energy efficiency	Since 2007, Cummins has implemented an energy efficiency capital fund to finance energy-related projects. Cummins has a comprehensive investment plan designed to achieve the Company's 2015 energy and GHG intensity goals, as well as the new 2020 energy and GHG intensity goals. In 2018, Cummins used this fund to complete 203 capital projects, saving 33,920 metric tons of CO2.
Internal price on carbon	\$7 per metric ton CO2e; except where local external price on carbon is higher, in which case the higher price is used
Dedicated budget for other emissions reduction activities	A central budget is provided to fund corporate energy and GHG initiatives, including the Cummins Environmental Champion program (updated Energy Champion program integrating Water and Waste) and implementing ISO 50001 across the Cummins Enterprise. Cummins 2020 goal is to certify 40 sites and by end of 2018 has 36 sites globally certified to ISO 50001. In addition, Cummins has a dedicated budget of \$2.5 million for onsite renewable energy installations.
Employee engagement	In 2018, Cummins continued its successful Environmental Champions program. Environmental Champions take 32 hours of training over five days. Conformance with this program is a requirement for the 50 priority sites that comprise 90 percent of Cummins environmental footprint. In addition, Cummins issues internal newsletters and blogs, and conducts company-wide June environmental month activities where more than two-thirds of the company's employees participate in learning or site activities.
Financial optimization calculations	Cummins uses a model of the internal rate of return to establish a baseline IRR for funded energy efficiency projects. Use of common financial analysis tools and calculators.
Internal incentives/recognition programs	Cummins has conducted company-wide environmental awards since 2005, called the Chairman's Environmental Awards program. Each year, sites are encouraged to submit applications for the awards, using a common template and judged by a panel of Cummins energy and environmental leaders. Award winners are entered into the recognition framework called the Impact Awards. Employees who led a project, employees who were involved with a project or employees who served as the project sponsor can self-nominate their work and can be judged and then recognized their work represents an outstanding effort that supports overall business goals. Beginning in 2017, there are now three different Impact Awards that employees can be recognized for: Business Impact; Global Impact; Chairman's Impact. One of the five award area categories is Environmental. Projects included in this category can range from site facility projects to product design to projects in collaboration with a customer. Many of these projects are climate related through greater energy efficiency or increased fuel economy.
Partnering with governments on technology development	The company's recent portfolio of government co-funded technology development and system integration programs stands at \$351.2 million in total public / private research investment since 2010. A table of the most recent partnerships is found in the attachment to this question. US Department of Energy (DOE) Better Plants Program partner.
Compliance with regulatory requirements/standards	In the UK, meeting the requirements of the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme.
Internal finance mechanisms	In addition to the dedicated capital fund, energy and GHG reduction projects are also implemented through normal channels. Sites implement energy efficiency projects and select energy efficient options for projects by using the same financial tools and investment criteria as are used for the dedicated capital fund.

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

Product

Description of product/Group of products

1) Electric Truck AEOS: Cummins unveiled a revolutionary new all-electric powertrain in a demonstrator truck in August 2017. The demonstrator truck uses a 140 KWh battery pack instead of a 12-liter engine. The weight of the electric powertrain is roughly equal to that of the removed engine, aftertreatment, transmission and fuel tank. The tractor day cab when paired with a trailer has a gross vehicle weight rating limit of 75,000 pounds. The concept truck has a range of about 100 miles on a single charge for city driving that's extendable to 300 miles with additional battery packs. Cummins also acquired the assets of Brammo, Inc., which designs and develops battery packs for mobile and stationary applications. Adding Brammo's battery pack expertise and resources is an important milestone in Cummins' efforts to become a global electrified power leader. In 2018 Cummins launched the new Electric

Power Business Unit which will provide fully electric and hybrid powertrain solutions along with innovative components and subsystems to serve all our markets as they adopt electrification, meeting the needs of OEM partners and end customers.

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

Low-carbon product and avoided emissions

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

Other, please specify (Company's own fuel consumption model)

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

Comment

Cummins is currently developing the Cummins Electric Power Battery and the Cummins Hybrid Plug-In systems for urban bus, which are expected to launch in 2019 and 2020, respectively. Cummins also design and manufacture battery modules, packs and systems for commercial, industrial and material handling applications using a range of cell chemistries which are suitable for pure electric, hybrid and plug-in hybrid applications. In addition to electrified powertrains for urban bus, Cummins intends to deliver product offerings to future markets, including pick-up and delivery applications and other markets as they adopt electric solutions. Cummins is actively investing in and utilizing the internal research and development capabilities, along with strategic acquisitions and partnerships to meet objectives.

Level of aggregation

Group of products

Description of product/Group of products

Cummins introduced many new products or product updates in 2018, a natural outgrowth of the company's emphasis on innovation. Many involved helping customers meet their own environmental goals, either through reducing emissions or achieving greater fuel efficiency. For the engine business, products classified as low carbon products or that enable a third party to avoid GHG emissions are our wide range of new fuel efficient engines, natural gas engines and engines that run on renewable fuels.

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

Low-carbon product and avoided emissions

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

Other, please specify (Company's own fuel consumption model)

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

Comment

More than 40% but less than or equal to 60%

Level of aggregation

Group of products

Description of product/Group of products

For the power generation business, natural gas generator sets, distributed generation, combined heat and power, micro-grids.

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

Low-carbon product and avoided emissions

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

Other, please specify (Company's own fuel consumption model)

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

Comment

Less than or equal to 10%

Level of aggregation

Group of products

Description of product/Group of products

For the turbocharger and emissions solutions businesses, Single Module aftertreatment system for midrange off-highway engines offer up to a 30 percent reduction in weight and up to a 50 percent reduction in size. Cummins Filtration FleetguardFit™ offers complete real-time filtration monitoring system providing full visibility to filter and oil life through intelligent sensing and advanced data analytics which can help maintain fuel economy.

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 (Company's own fuel consumption model)

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

Comment

Less than or equal to 10%

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 2010

Base year end

December 31 2010

Base year emissions (metric tons CO2e)

249097

Comment

Scope 1 emissions include (1) Stationary combustion, (2) Generation of sold electricity, (3) Fugitive SF6, CO2, (4) Mobile sources and (5) Refrigerant emissions

Scope 2 (location-based)

Base year start

January 1 2010

Base year end

December 31 2010

Base year emissions (metric tons CO2e)

547158

Comment

Scope 2 emissions include (1) Electricity, (2) Hot Water, (3) Steam

Scope 2 (market-based)

Base year start

January 1 2010

Base year end

December 31 2010

Base year emissions (metric tons CO2e)

547158

Comment

Scope 2 emissions include (1) Electricity, (2) Hot Water, (3) Steam

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.

ISO 14064-1

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

US EPA Climate Leaders: Indirect Emissions from Purchases/ Sales of Electricity and Steam

US EPA Climate Leaders: Direct Emissions from Stationary Combustion

US EPA Climate Leaders: Direct Emissions from Mobile Combustion Sources

US EPA Mandatory Greenhouse Gas Reporting Rule

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)

305970

Start date

January 1 2018

End date

December 31 2018

Comment

Scope 1 emissions include (1) Stationary combustion, (2) Generation of sold electricity, (3) Fugitive SF₆, CO₂, (4) Mobile sources and (5) Refrigerant emissions.

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

Cummins reports both Scope 2 location based and market based figures

C6.3

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

Reporting year

Scope 2, location-based

566875

Scope 2, market-based (if applicable)

572872

Start date

January 1 2018

End date

December 31 2018

Comment

The following sources were used to calculate location-based emissions: 1) US EPA eGRID 2016, February 15, 2018. 2) International Sources (unless mentioned separately) Year 2014 factors from "CO2 Emissions from Fuel Combustion (2016 Edition)", IEA, Paris. 3) CH4/N2O: International Electricity Emission Factors by Country, 1999-2002.xls. International Energy Agency, as cited by EIA for 1605b. http://www.eia.doe.gov/oiaf/1605/emission_factors.html. 4) Australia: Latest estimated scope 2 emission factors for consumption of purchased electricity from the grid; Source: National Greenhouse Gas Accounts (NGA) Factors, July, 2018. 5) Brazil: Year 2018 factors from the Ministry of Science, Technology, and Innovation, "Fator médio - Inventários corporativos." 6) Canada: "National Inventory Report, 1990-2016: Greenhouse Gas Sources and Sinks in Canada" Annex 13: Emission Factors, Table A13-2 - A13-13. 7) India: CO2 factors from India Central Electricity Authority: CO2 Baseline Database for the Indian Power Sector, Version 13.0, June 2018. 8) UK: 2018 Government GHG Conversion Factors for Company Reporting: Methodology Paper for Emission Factors. Year 2016 Factors. From July 2018 Release. For market-based calculations, Cummins used residual mix factors for European facilities. Source: European Residual Mixes 2017; Association of Issuing Bodies; Version 1.13, 2018-07-11. As residual mix factors are not currently available for facilities outside of Europe, the calculations default to location-based emissions for purchased electricity.

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?

No

C6.5

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

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

4269000

Emissions calculation methodology

Cummins total spend data for direct purchasing (including raw materials - metals and commodities usage) as well as total 2018 indirect purchase expenses (including IT, supply chain services, real estate, engineering, corporate services, etc.) were used to estimate the associated Scope 3 emissions. For purchased raw materials, cradle to gate approach was used to estimate the scope 3 emissions using the 2011 purchase data and was calculated for 2018 based on revenue change factor. For indirect purchasing goods and services, UK DEFRA's SIC Codes closest to the spend category and 2009 emission factors were utilized to estimate the scope 3 emissions (Reference/Source of Emission factors: Environmental Reporting Guidelines: Including mandatory greenhouse gas emissions reporting guidance; June 2013; pb13944-env-reporting-guidance.pdf; defra.uk). We assume that 20% of the commodities used are MRO/Chemicals that is part of the indirect purchasing. Also we assume 50 percent of the IT and engineering purchases come under this category and rest in the capital goods category. We assume that the CMI spend on Corporate services is comprised of the following SIC categories: Insurance and pension funds - 10 percent; Auxiliary financial services - 10 percent; and Legal, consultancy, other business activities - 80 percent. The purchase expenses not tracked through the centralized database is assumed to be of the same proportion for purchase goods and services as that from the centralized tracking database.

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

100

Explanation

Used 2018 indirect purchase data and also emissions estimated during Cummins environmental hot spot analysis study conducted in 2012 based on 2011 data adjusted to 2018 revenue. The hot spot analysis also includes the direct purchases of metals and other raw materials that go into the manufacturing of engines.

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

450000

Emissions calculation methodology

Cummins total 2018 spend data for capital goods purchases in facilities & construction, IT, engineering and machinery was used to estimate the scope 3 emissions. UK DEFRA's SIC Codes closest to the spend category and 2009 emission factors were utilized to estimate the scope 3 emissions (Reference/Source of Emission factors: Environmental Reporting Guidelines: Including mandatory greenhouse gas emissions reporting guidance; June 2013; pb13944-env-reporting-guidance.pdf; defra.uk). We assume that 100 percent of the indirect purchasing on facilities and construction is towards capital goods purchases.

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

100

Explanation

Used 2018 indirect spend data to update the calculations as described in the calculation methodology.

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

Evaluation status

Relevant, calculated

Metric tonnes CO2e

176000

Emissions calculation methodology

The activity data used to quantify these activities emissions are the quantity of energy consumed for each energy type, such as electricity or natural gas. Consumption by fuel type is then multiplied by emission factors for each of the activities included in this category. Emission factors for upstream emissions of purchased fuels are based on life-cycle analysis software. Emission factors for upstream emissions of purchased electricity are based on life-cycle analysis software for the US, and on UK Defra 2012 Guidelines for other countries. Emission factors for T&D losses are based on EPA's eGRID database for the US, and on UK Defra 2012 Guidelines for other countries. GWPs are IPCC Second Assessment Report (SAR - 100 year).

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

100

Explanation

Includes scope 3 emissions from fuel and energy related activities from owned and operated facilities, 50:50 joint ventures subscribed to Cummins Enterprise Environmental Management System and 50:50 manufacturing joint venture where Cummins has significant influence on operations.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

765000

Emissions calculation methodology

The 2018 spend data for transportation and distribution was assumed to be equal to 80 percent of the expenses on supply chain services. It was also assumed that 70 percent of the logistics was through road, 10 percent through rail, 10 percent through water and 10 percent through air. UK DEFRA's SIC Codes for Rail, Road, Water and Air categories and 2009 emission factors were utilized to estimate the scope 3 emissions (Reference/Source of Emission factors: Environmental Reporting Guidelines: Including mandatory greenhouse gas emissions reporting guidance; June 2013; pb13944-env-reporting-guidance.pdf; defra.uk).

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

100

Explanation

Used 2018 indirect spend data for Supply Chain Services - Transportation and Distribution to calculate the upstream transportation and distribution emissions, as described in the methodology.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

8000

Emissions calculation methodology

The Waste Reduction Model (WARM) created by the U.S. Environmental Protection Agency (EPA) was used to quantify the scope 3 emissions for the landfilled waste, combusted waste and composted waste from Cummins global facilities for the year 2018. As there were no separate categories available for incinerated waste and waste that was burned for energy recovery, both were included in the combusted waste category and default factors in the tool were used to calculate the GHG emissions. Due to non-availability of exact categories, the general refuse / garbage generated was categorized as Mixed Organics as it includes primarily food waste from canteen, grass clippings from lawn etc. and the process derived industrial waste was categorized as Mixed MSW. Composted waste data from global facilities and the same was included in the emissions analysis (Reference/Source: EPA WARM Model).

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

100

Explanation

In 2018, Cummins recycled about 90 percent of the global waste generated. This includes metals, electronic items, paper, plastics and corrugated boxes. As the model shows a GHG reduction for recycled product categories, the same was not included in the WARM model.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

40800

Emissions calculation methodology

All air travel data are tracked through a service provided to Cummins by AmEx. Emissions are calculated using US EPA EF Hub November 2015 v2 Table 8, as per short, medium, and long-haul air travel categories and the associated emission factors. Car rental mileage is provided by rental car companies (Hertz and Enterprise). The total emissions are calculated using US EPA EF Hub Passenger Car factors. Used 2018 FY mileage data from Enterprise. For Hertz used the 2016 FY data and adjusted based on the 2016-17 and 2017-2018 YoY increase in air travel.

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

100

Explanation

Provided to Cummins by American Express, the air travel services provider, and the car rental providers Enterprise and Hertz. This data is emissions from air travel for more than 12,500 flights and 17,500,000 miles in rented cars worldwide.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

124000

Emissions calculation methodology

Calculations derived from general country (outside of US) direct data and assumptions plus per state employee headcount data. Some direct and some derived assumptions of commuter mileage and mode of transportation. (Source of Emission factors: US EPA (2008); Greenhouse Gas Inventory Protocol Core Module Guidance - Direct Emissions from Mobile Combustion Sources, EPA Climate Leaders, Tables A-6 and A-7).

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

75

Explanation

Cummins employees outside of the US tend to use transportation modes other than single-passenger personal vehicles more than their US counterparts. While it results in fewer GHG emissions, it is harder to track. This data represents the estimates conducted in 2012 by the regional environmental leaders and adjusted for 2018 employee headcount.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO2e

27300

Emissions calculation methodology

Cummins leased facilities exempt from environmental reporting that are shared facilities with no operational control, separate meter and utility bills is considered under this category. Based on the Area Business Organization (ABO), Business Unit (BU) and facility type (e.g. office, warehouse, etc.), scope 1 and scope 2 emissions intensity were estimated and applied based on the occupied square footage. The total square footage is assumed to be the same as 2012. The Scope 1 and Scope 2 intensity is based on the average country specific Scope 1 and Scope 2 emission intensities at CMI owned/managed facilities.

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

90

Explanation

The list of facilities that are included in this category is maintained by the facilities real estate and the utility charges are included in the lease amount. We applied the country specific intensity factor for scope 1 and scope 2 and multiplied by the area of the leased facility in each country to get the totals.

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

765000

Emissions calculation methodology

Most Cummins customers pay for the transportation of products sold to them, either directly or via part of an overall invoice. Since separate data was not available, it was assumed that downstream transportation and distribution emissions associated with the shipping and distribution of final products to customers were same as those from upstream transportation and distribution of parts and input materials.

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

0

Explanation

Most Cummins customers pay for the transportation of products sold to them, either directly or via part of an overall invoice. There's no separate dollar spend available. Hence an assumption was made that downstream transportation and distribution emissions of shipping and distribution of final products to customers were the same as upstream transportation and distribution of parts and input materials.

Processing of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

3000

Emissions calculation methodology

Engine weights used in the general categories of mid-range, heavy-duty and high-horsepower were derived by updating the 2012 calculation of weighted-average by volume of the various engine families within those three categories. Custodial engine volumes were taken from annual report Form 10-K and JV engine volumes were estimated using year over year JV revenue growth. Assumptions were made on the power of the power tools / hoist used and the time taken to install each unit.

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

100

Explanation

Based on engines shipped as detailed in Cummins 2018 Annual Report on Form 10-K and JV volumes were estimated applying revenue growth factor.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

809000000

Emissions calculation methodology

Cummins use of sold product emissions were calculated using overall volumes by segment and engine model, which were then multiplied by the attrition rates to determine the volumes in operation each year moving forward. 2018 emissions were calculated by adjusting overall 2018 engine volumes against 2015 volumes. We used the long-standing Cummins New and Recon parts proprietary parts consumption model as well as customer engineering analysis to determine the attrition rate. We then multiplied each of these yearly figures by an age factor (i.e., a 10 year old truck will not operate the same number of hours or miles as a brand new truck) and then converted miles per gallon or gallons per hour to million metrics tons of CO2. The CO2e conversion factor for Diesel was applied based on the EPA's EF Hub and AR 4.

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

100

Explanation

The lifetime CO2 emissions of more than 1 million engines produced by Cummins and its joint ventures in 2018. Overall volume of engines for custodial plants was down in 2018, the associated GHG emissions went down due to product mix: • Sharp drop in engines for off-highway (construction & agriculture), HHP (mining, O&G, rail, military, etc.) & PowerGen more than off-set the increase in on-highway • MMT of CO2 was up 32 for on-hwy, down 32 for off-hwy, down 36 for HHP and down 70 for PowerGen.

End of life treatment of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

64500

Emissions calculation methodology

Cummins conducted a hot spot analysis to evaluate the impact of the end of life treatment of sold products. The waste related to sold product is primarily iron and steel (more than 90%). The estimates are based on landfilling, processing, and recycling of the generated wastes associated with those products. The assumption is 5% of the products are scrapped – 90% is melted / processed. The emissions were adjusted based on the change in the number of engine units shipped between 2011 and 2018.

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

100

Explanation

The emissions reported here are the estimated emissions from the scrap of all products in use in the year 2011. This is different from the forward-looking end of life emissions from all products sold in the year 2018. Heavy-duty truck engine sales decreased \$673 million primarily due to lower demand in the North American heavy-duty truck market with decreased engine shipments of 38 percent. Medium-duty truck and bus sales decreased \$235 million primarily due to lower demand in most global medium-duty truck markets with decreased engine shipments of 17 percent – primarily in North America, Brazil and Mexico. Off-highway sales decreased \$64 million primarily due to decreased engine shipments in several North American industrial markets, partially offset by increased unit shipments of 25 percent in international construction markets.

Downstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO2e

52000

Emissions calculation methodology

This represents our rental generator fleet. We have made assumptions on generator use - as some generators are used as backup power and others operate full time. The total number of rental fleet generators at North American distributor locations were collected for 2012. Total fuel usage was estimated based on the number of generators from each kW category, efficiency and monthly average run time. The emissions were adjusted to change in the power solutions business.

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

100

Explanation

This calculation is from 1,340 units rented through our North American distributors during 2012 and doesn't include similar fleets outside North America. The total emissions were adjusted proportionate to the drop-in power solutions business in 2015 compared to 2012. In 2018, since no separate power solutions sales were available (similarly to the prior year), change in the power systems business was used as a proxy. Power systems business saw a 14 percent increase in business in 2018 as compared to 2017 and it was assumed that this was reflected in power solutions as well.

Franchises

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Explanation

This is not applicable for Cummins as Cummins business model doesn't have franchises.

Investments

Evaluation status

Relevant, calculated

Metric tonnes CO2e

54300

Emissions calculation methodology

Emissions from 50:50 joint venture investments in China and India are included in Scope 1 and Scope 2 based on operational control scope. The rest of the minority and unconsolidated joint venture operations where Cummins doesn't have operational or administrative control are included in this category. Cummins holds minority stakes (<20% and 20-50% equity investee) in several distributor businesses and manufacturing operations especially in North America and Rest of the World (excluding India and China). Emissions are calculated using unconsolidated revenue data and proportionate emissions from the consolidated and 50:50 JV revenues.

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

0

Explanation

Emissions from 50:50 joint venture investments in China and India are included in Scope 1 and Scope 2 based on operational control scope. Rest of the minority and unconsolidated joint venture operations where Cummins doesn't have operational or administrative control are included in this category.

Other (upstream)

Evaluation status

Not evaluated

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Explanation

Cummins has not evaluated other upstream scope 3 emissions.

Other (downstream)

Evaluation status

Not evaluated

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Explanation

Cummins has not evaluated other upstream scope 3 emissions.

C6.7

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

Yes

C6.7a

(C6.7a) Provide the emissions from biologically sequestered carbon relevant to your organization in metric tons CO2.

Row 1

Emissions from biologically sequestered carbon (metric tons CO2)

23.09

Comment

Calculated using the percentage of biodiesel in diesel fuel and ethanol in gasoline. The 23.09 metric tons CO2e reported for 2018 is a slight increase from the 17.8 metric tons CO2e emitted in 2017. Note that the 2018 CDP report (for calendar year 2017) erroneously listed these emissions as 1,526 metric tons CO2e instead of 17.8 metric tons.

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

0.00003787

Metric numerator (Gross global combined Scope 1 and 2 emissions)

878842

Metric denominator

unit total revenue

Metric denominator: Unit total

23208600000

Scope 2 figure used

Market-based

% change from previous year

9.1

Direction of change

Decreased

Reason for change

Revenue (inflation adjusted to 2010\$) increased by 14.7% in 2018 while emissions only increased by 3.9%. This resulted in a net decrease in the revenue based gross global combined Scope 1 and 2 emissions. Cummins continues to use a facility investment plan approach to reduce emissions, with a focus on test cell energy recovery and investments in on-site renewable projects to offset electricity purchased from the grid. Ongoing site projects include "smart" lighting and improvements to building exteriors, and heating and cooling systems. Cummins invested \$15 million in 140 energy efficiency and onsite solar photovoltaic capital projects during 2018, towards achieving its energy and greenhouse gas goals with projected cost savings of \$5.2 million per year. Global campaigns were launched for LED lighting and compressed air efficiency. Note that emission intensity was calculated in prior years as metric tons CO2 per million dollars of revenue. This has been corrected to metric tons of CO2 per dollar of revenue (i.e. "per unit of currency" rather than "per million units of currency"). This is the reason for the significant change in the reported intensity.

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	290318	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	205	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	505	IPCC Fourth Assessment Report (AR4 - 100 year)
HFCs	14919	Other, please specify (Methodology based on Facility Sq Footage)
Other, please specify ((Fugitive SF6, CO2))	23	IPCC Fourth Assessment Report (AR4 - 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)
United States of America	184279
Australia	4802
Brazil	3737
China	38658
India	17771
Mexico	6378
South Africa	1667
United Kingdom of Great Britain and Northern Ireland	26452
Other, please specify (Rest of World)	22227

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)
Engine Business Unit	116104
Power Systems Business Unit	82773
Distribution Business Unit	64863
Components Business Unit	23515
Supply Chain (New & ReCon Parts and Logistics)	9550
Shared Services	9049
Electrified Power Business Unit	116

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
United States of America	272507	272507	552133	0
Australia	6759	6759	7905	0
Brazil	1915	1915	25750	0
China	124282	124282	171803	0
India	102581	102581	124887	0
Mexico	24106	24106	124887	0
South Africa	3216	3216	3170	0
United Kingdom of Great Britain and Northern Ireland	14449	18712	51054	0
Other, please specify (Rest of World)	17059	18793	48524	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 emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Engine Business Unit	267507	268318
Power Systems Business Unit	77529	80447
Distribution Business Unit	48056	48356
Components Business Unit	121251	123218
Supply Chain (New & ReCon Parts and Logistics)	29232	29094
Shared Services	23038	23145
Electrified Power Business Unit	261	294

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?

Increased

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	297	Decreased	0.04	On-site electricity generation from renewable sources (e.g. on-site solar panels) where Cummins retained the renewable energy certificates (RECs) increased from 407 MWh in 2017 to 950 MWh in 2018. The difference between the existing amount of on-site electricity generation from renewable sources at the beginning of 2018 (407 MWh) and the amount at the end of the year (950 MWh) was determined to be the amount by which energy generation within this category increased in 2018 (543 MWh). The metric tons of CO2e that this increase represented was determined by multiplying 543 MWh by the ratio of Scope 2 location-based emissions in 2018 to MWh of electricity used (i.e. metric tons CO2e per MWh), yielding 297 metric tons CO2e. The change in emissions attributed to these activities was then calculated by dividing 297 MT CO2e by the combined Scope 1 and Scope 2 location-based emissions in the prior year (2017) and multiplying by 100. The percent by which increased on-site electricity generation from renewable sources (for which Cummins retained RECs) reduced CO2e was calculated to be 0.04%.
Other emissions reduction activities	33920	Decreased	4.01	Cummins implemented 203 emission reduction initiatives in 2018, resulting in an estimated CO2e savings of 33,920 metric tons. This was a reduction of 4.01% as compared to the total Scope 1 and Scope 2 location-based emissions in 2017 (845,472 MT CO2e). The change in emissions attributed to these activities was calculated by dividing the sum of the emission reductions achieved through the projects implemented in 2018 (33,920 MT) by the total emissions in 2017 (845,472 MT Scope 1 + Scope 2 location-based). This value was then multiplied by 100 to yield the percent by which initiatives in 2018 reduced CO2e.
Divestment	0	No change	0	No divestment that significantly impacted emissions.
Acquisitions	0	No change	0	No acquisitions that significantly contributed to the emissions.
Mergers	0	No change	0	No mergers that significantly contributed to the emissions
Change in output	61590	Increased	7.28	Increased production and business activities in 2018 resulted in a change in CO2e output of 61,590 metric tons. This value was calculated such that the emission reduction activities implemented in 2018 were excluded, thereby showing how the output of emissions would have changed without the introduction of those measures. This was an increase of 7.28% as compared to the total Scope 1 and Scope 2 location-based emissions in 2017 (845,472 MT CO2e). The percent increase was calculated by dividing the change in CO2e output in 2018 (61,590 MT) by the total emissions in 2017 (845,472 MT Scope 1 + Scope 2 location-based). This value was then multiplied by 100 to yield the percent by which CO2e output would have increased without emission reduction measures.
Change in methodology	0	No change	0	No change in methodology
Change in boundary	0	No change	0	No change in boundary
Change in physical operating conditions	0	No change	0	No change in physical operating conditions
Unidentified	0	No change	0	No unidentified changes
Other	0	No change	0	No changes other than what is listed above

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?

Location-based

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 undertakes this energy-related activity
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	Yes
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

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 MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	1311470	1311470
Consumption of purchased or acquired electricity	<Not Applicable>	5203	1044641	1049845
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	0	14533	14533
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	1924	<Not Applicable>	1924
Total energy consumption	<Not Applicable>	7127	2370644	2377771

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	Yes
Consumption of fuel for the generation of heat	Please select
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

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

Fuels (excluding feedstocks)

Fuel Oil Number 2

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

527634

MWh fuel consumed for self-generation of electricity

89318

MWh fuel consumed for self-generation of heat

3041

MWh fuel consumed for self-generation of steam

3041

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Natural Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

567993

MWh fuel consumed for self-generation of electricity

26673

MWh fuel consumed for self-generation of heat

377653

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

31404

Comment

Fuels (excluding feedstocks)

Propane Liquid

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

13480

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

326

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Other, please specify (Stationary Gasoline)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

782

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

64197

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Diesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

118031

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment**Fuels (excluding feedstocks)**

Jet Kerosene

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

19353

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment**C8.2d****(C8.2d) List the average emission factors of the fuels reported in C8.2c.****Diesel****Emission factor**

10.21

Unit

kg CO2 per gallon

Emission factor source

US EPA Emission Factors for Greenhouse Gas Inventories Last Modified: 4 April 2014 Solid, gaseous, liquid and biomass fuels: Federal Register (2009) EPA; 40 CFR Parts 86, 87, 89 et al; Mandatory Reporting of Greenhouse Gases; Final Rule , 30Oct09, 261 pp. Tables C-1 and C-2 at FR pp. 56409-56410. Revised emission factors for selected fuels: Federal Register (2010) EPA; 40 CFR Part 98; Mandatory Reporting of Greenhouse Gases; Final Rule, 17Dec10, 81 pp. With Amendments from Memo: Table of Final 2013 Revisions to the Greenhouse Gas Reporting Rule (PDF) to 40 CFR part 98, subpart C: Table C-1 to Subpart C—Default CO2 Emission Factors and High Heat Values for Various Types of Fuel and Table C-2 to Subpart C—Default CH4 and N2O Emission Factors for Various Types of Fuel. The CH4 and N2O are calculated using Climate Leaders Mobile Sources Guidance, Table 3; Global warming potential Source: Intergovernmental Panel on Climate Change (IPCC), Fourth Assessment Report (AR4), 2007.

Comment

This is used for Scope 1 mobile source emissions and Scope 3 Use of Sold Products emission calculations.

Fuel Oil Number 2

Emission factor

74.21

Unit

kg CO₂e per million Btu

Emission factor source

Solid, gaseous, liquid, and biomass fuels: Federal Register (2009) EPA; 40 CFR Parts 86, 87, 89 et al; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, 261 pp. Tables C-1 and C-2 at FR pp. 56409-56410. Revised emission factors for selected fuels: Federal Register (2010) EPA; 40 CFR Part 98; Mandatory Reporting of Greenhouse Gases; Final Rule, 17Dec10, 81 pp. With Amendments from Memo: Table of Final 2013 Revisions to the Greenhouse Gas Reporting Rule (PDF) to 40 CFR part 98, subparts C and AA: Table C–1 to Subpart C—Default CO₂ Emission Factors and High Heat Values for Various Types of Fuel, Table C–2 to Subpart C—Default CH₄ and N₂O Emission Factors for Various Types of Fuel, and Table AA–1 to Subpart AA of Part 98—Kraft Pulp Mill Liquor Emissions Factors for Biomass-Based CO₂, CH₄, and N₂O.

Comment

This is used for Scope 1 Stationary Combustion emissions.

Jet Kerosene

Emission factor

9.75

Unit

kg CO₂ per gallon

Emission factor source

Federal Register (2009) EPA; 40 CFR Parts 86, 87, 89 et al; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, 261 pp. Tables C-1 and C-2. Climate Leaders Greenhouse Gas Inventory Protocol Core Module Guidance - Direct Emissions from Mobile Combustion Sources, Table B-5. The CH₄ and N₂O are calculated using Climate Leaders Mobile Sources Guidance, Table 3; Global warming potential Source: Intergovernmental Panel on Climate Change (IPCC), Fourth Assessment Report (AR4), 2007.

Comment

This is used for calculating Scope 1 mobile source emissions.

Motor Gasoline

Emission factor

8.78

Unit

kg CO₂ per gallon

Emission factor source

Federal Register (2009) EPA; 40 CFR Parts 86, 87, 89 et al; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, 261 pp. Tables C-1 and C-2. Climate Leaders Greenhouse Gas Inventory Protocol Core Module Guidance - Direct Emissions from Mobile Combustion Sources, Table B-5. The CH₄ and N₂O are calculated using Climate Leaders Mobile Sources Guidance, Table 3; Global warming potential Source: Intergovernmental Panel on Climate Change (IPCC), Fourth Assessment Report (AR4), 2007.

Comment

This is used for calculating Scope 1 mobile source emissions.

Natural Gas

Emission factor

53.11

Unit

kg CO₂e per million Btu

Emission factor source

Solid, gaseous, liquid and biomass fuels: Federal Register (2009) EPA; 40 CFR Parts 86, 87, 89 et al; Mandatory Reporting of Greenhouse Gases; Final Rule , 30Oct09, 261 pp. Tables C-1 and C-2 at FR pp. 56409-56410. Revised emission factors for selected fuels: Federal Register (2010) EPA; 40 CFR Part 98; Mandatory Reporting of Greenhouse Gases; Final Rule, 17Dec10, 81 pp. With Amendments from Memo: Table of Final 2013 Revisions to the Greenhouse Gas Reporting Rule (PDF) to 40 CFR part 98, subpart C: Table C–1 to Subpart C—Default CO₂ Emission Factors and High Heat Values for Various Types of Fuel and Table C–2 to Subpart C—Default CH₄ and N₂O Emission Factors for Various Types of Fuel.

Comment

This is used for Scope 1 Stationary Combustion emissions.

Propane Liquid

Emission factor

61.96

Unit

kg CO₂e per million Btu

Emission factor source

Solid, gaseous, liquid and biomass fuels: Federal Register (2009) EPA; 40 CFR Parts 86, 87, 89 et al; Mandatory Reporting of Greenhouse Gases; Final Rule , 30Oct09, 261 pp. Tables C-1 and C-2 at FR pp. 56409-56410. Revised emission factors for selected fuels: Federal Register (2010) EPA; 40 CFR Part 98; Mandatory Reporting of Greenhouse Gases; Final Rule, 17Dec10, 81 pp. With Amendments from Memo: Table of Final 2013 Revisions to the Greenhouse Gas Reporting Rule (PDF) to 40 CFR part 98, subpart C: Table C–1 to Subpart C—Default CO₂ Emission Factors and High Heat Values for Various Types of Fuel and Table C–2 to Subpart C—Default CH₄ and N₂O Emission Factors for Various Types of Fuel.

Comment

This is used for Scope 1 Stationary Combustion emissions and Mobile Emissions

Other

Emission factor

70.47

Unit

kg CO₂e per million Btu

Emission factor source

Solid, gaseous, liquid and biomass fuels: Federal Register (2009) EPA; 40 CFR Parts 86, 87, 89 et al; Mandatory Reporting of Greenhouse Gases; Final Rule , 30Oct09, 261 pp. Tables C-1 and C-2 at FR pp. 56409-56410. Revised emission factors for selected fuels: Federal Register (2010) EPA; 40 CFR Part 98; Mandatory Reporting of Greenhouse Gases; Final Rule, 17Dec10, 81 pp. With Amendments from Memo: Table of Final 2013 Revisions to the Greenhouse Gas Reporting Rule (PDF) to 40 CFR part 98, subpart C: Table C–1 to Subpart C—Default CO₂ Emission Factors and High Heat Values for Various Types of Fuel and Table C–2 to Subpart C—Default CH₄ and N₂O Emission Factors for Various Types of Fuel.

Comment

This is used for Scope 1 Stationary Combustion emissions.

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	99745	89318	7127	7127
Heat	381019	381019	0	0
Steam	3041	3041	0	0
Cooling	0	0	0	0

C8.2f

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

Basis for applying a low-carbon emission factor

No purchases or generation of low-carbon electricity, heat, steam or cooling accounted with a low-carbon emission factor

Low-carbon technology type

<Not Applicable>

Region of consumption of low-carbon electricity, heat, steam or cooling

<Not Applicable>

MWh consumed associated with low-carbon electricity, heat, steam or cooling

<Not Applicable>

Emission factor (in units of metric tons CO₂e per MWh)

<Not Applicable>

Comment

No low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.

C9. Additional metrics

C9.1

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

Description

Waste

Metric value

89.6

Metric numerator

Total Waste Recycled

Metric denominator (intensity metric only)

Total Waste Generated

% change from previous year

0.12

Direction of change

Increased

Please explain

Cummins has committed to increasing its recycling rate to 95% as one of its 2020 Sustainability Goals. In 2018, Cummins recycled 89.6% of the total waste generated globally at its facilities and operations.

Description

Energy usage

Metric value

0.08

Metric numerator

Total Energy Used [MMBtu]

Metric denominator (intensity metric only)

Total Hours Worked

% change from previous year

4.8

Direction of change

Decreased

Please explain

Cummins 2020 Sustainability Goals include a commitment to reducing energy intensity [MMBtu/hours worked] by 32% from a 2010 baseline. By the end of 2018, Cummins had reduced its global energy intensity by 29%

C-TO9.6/C-TS9.6

(C-TO9.6/C-TS9.6) What is your investment in research and development (R&D), equipment, products and services and which part of it would you consider a direct investment in the low-carbon transition?

Activity

Heavy Duty Vehicles (HDV)

Investment start date

August 29 2017

Investment end date

December 31 2020

Investment area

Products

Technology area

Other, please specify (Drivetrain, Electrification)

Investment maturity

Pilot demonstration

Investment figure

500000000

Low-carbon investment percentage

0-20%

Please explain

Cummins unveiled a revolutionary new all-electric powertrain in 2017 for a demonstrator truck. The electric powertrain uses a 140 kWh battery pack instead of a 12-liter engine and is roughly equal in weight to the engine, after treatment, transmission and fuel tank that was removed from the truck. The tractor day cab has a gross vehicle weight rating limit of 75,000 pounds when paired with a trailer. The concept truck has a range of about 100 miles on a single charge for city driving that's extendable to 300 miles with additional battery packs. The powertrain and truck will enable Cummins to learn more about the potential electrification holds for larger vehicles. The \$500 million investment will be spent over a three-year period.

Activity

Heavy Duty Vehicles (HDV)

Investment start date

October 1 2016

Investment end date

September 30 2021

Investment area

R&D

Technology area

Other, please specify (55% engine Brake Thermal Efficiency (BTE). Strong focus on commercial viability. Greater than 125% freight efficiency improvement versus 2009 product)

Investment maturity

Pilot demonstration

Investment figure

9000000

Low-carbon investment percentage

0-20%

Please explain

SuperTruck II will fund four projects to develop and demonstrate cost-effective technologies that more than double the freight efficiency of Class 8 trucks, commonly known as 18-wheelers. For SuperTruck II, the Energy Department has selected the four SuperTruck II teams for projects of \$20 million in federal funding, and each recipient will match that amount, dollar-for-dollar. Cummins and its partners were one such team and will design and develop a new more-efficient engine and advanced drivetrain and vehicle technologies.

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 and/or Scope 2 emissions and attach the relevant statements.

Scope

Scope 1

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Cummins 2018 - GHG Verification Statement Limited Assurance.pdf

Page/ section reference

Page 1, Scope 1 Emissions Bureau Veritas North America, Inc (BVNA) Verification Statement GHG Emissions for Cummins in 2018. Boundary: Operational Control, Worldwide. Reporting protocols: WRI/WBCSD GHG Protocol, Corporate Accounting and Reporting Standard, Revised Edition (Scope 1 and 2) and the GHG Protocol Scope 2 Guidance. GHG verification protocols: ISO 14064-3: Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of GHG assertions.

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Cummins 2018 - GHG Verification Statement Limited Assurance.pdf

Page/ section reference

Page 1, Scope 2 Emissions - Location Based Bureau Veritas North America, Inc (BVNA) Verification Statement GHG Emissions for

Cummins in 2018. Boundary: Operational Control, Worldwide. Reporting protocols: WRI/WBCSD GHG Protocol, Corporate Accounting and Reporting Standard, Revised Edition (Scope 1 and 2) and the GHG Protocol Scope 2 Guidance. GHG verification protocols: ISO 14064-3: Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of GHG assertions.

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Cummins 2018 - GHG Verification Statement Limited Assurance.pdf

Page/ section reference

Page 1, Scope 2 Emissions – Market Based Bureau Veritas North America, Inc (BVNA) Verification Statement GHG Emissions for Cummins in 2018. Boundary: Operational Control, Worldwide. Reporting protocols: WRI/WBCSD GHG Protocol, Corporate Accounting and Reporting Standard, Revised Edition (Scope 1 and 2) and the GHG Protocol Scope 2 Guidance. GHG verification protocols: ISO 14064-3: Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of GHG assertions.

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.1b

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

Scope

Scope 3- all relevant categories

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Attach the statement

Cummins 2018 - GHG Verification Statement Limited Assurance.pdf

Page/section reference

Page 1 & 2, Scope 3 Emissions Bureau Veritas North America, Inc (BVNA) Verification Statement GHG Emissions for Cummins in 2018. Boundary: Operational Control, Worldwide. GHG reporting protocols: WRI/WBCSD Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (Scope 3). Verification protocols: ISO 14064-3: Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions.

Relevant standard

ISO14064-3

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 verification relates to	Data verified	Verification standard	Please explain
C9. Additional metrics	Other, please specify (Waste)	Verification protocols used to conduct the verification: International Standard on Assurance Engagements (ISAE) 3000 Revised, Assurance Engagements Other than Audits or Reviews of Historical Financial Information (effective for assurance reports dated on or after Dec. 15, 2015), issued by the International Auditing and Assurance Standards Board.	Bureau Veritas North America, Inc. (BVNA) was engaged to conduct an independent verification of the waste data reported by Cummins, Inc. (Cummins) for the calendar year 2018. This Verification Statement applies to the related information included within the scope of work described below. The determination of the waste quantities is the sole responsibility of Cummins. BVNA's sole responsibility was to provide independent verification on the accuracy of the waste quantities reported, and on the underlying systems and processes used to collect, analyze and review the information. Boundaries of the reporting company waste activities covered by the verification: Operational Control, Worldwide. Cummins 2018 - Waste Verification Statement Limited Assurance.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 CRC Energy Efficiency Scheme (CRC))

C11.1c

(C11.1c) Complete the following table for each of the tax systems in which you participate.

Other carbon tax, please specify

Period start date

April 1 2018

Period end date

March 31 2019

% of emissions covered by tax

5

Total cost of tax paid

534182.86

Comment

Cummins facilities in the UK generated 45,164 metric tons of CO₂e in 2018 (scope 1 and scope 2 market-based). Cummins paid \$534,182.86 to meet the requirements of the Carbon Reduction Commitment Energy Efficiency Scheme (CRC) during the most recent reporting period, less than the \$668,002.78 paid in the prior year.

C11.1d

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

The strategy to comply with the UK CRC regulations is to first minimize emissions through energy efficiency and low-carbon energy sources. We use our corporate database to track energy consumption and associated emissions that is validated against each energy related utility invoice for accuracy.

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

GHG Scope

Scope 1
Scope 2

Application

The internal carbon price is built into the Cummins financial analysis tool, which is mandatory for all energy and GHG emission projects at both the corporate and business unit level.

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

7

Variance of price(s) used

The Cummins carbon price is applied for all projects, except where local carbon taxes exceed the corporate price; in these cases, the local price is applied.

Type of internal carbon price

Shadow price

Impact & implication

The internal carbon price is built into the Cummins financial analysis tool, which is mandatory for all energy and GHG emission projects.

C12. Engagement

C12.1

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

Yes, our suppliers
Yes, our customers
Yes, other partners in the value chain

C12.1a

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

Type of engagement

Compliance & onboarding

Details of engagement

Included climate change in supplier selection / management mechanism
Code of conduct featuring climate change KPIs
Climate change is integrated into supplier evaluation processes

% of suppliers by number

25

% total procurement spend (direct and indirect)

80

% Scope 3 emissions as reported in C6.5

1

Rationale for the coverage of your engagement

Cummins spends approximately \$9 billion per year in goods and services with its supplier partners. This translates into thousands of tons of material, which must be mined, milled, packaged and shipped to the company's facilities. Therefore being good stewards of Cummins' spend means taking responsibility for the environmental footprint of the company's supply chain. Cummins has introduced five initiatives as expectations of its supply base. Cummins currently maintains policies and procedures to support these initiatives and has also established goals that suppliers are expected to join the company in achieving. The company is introducing its goals to the top suppliers by spend. They are the approximately top 250 suppliers, which represent about 50 percent of Cummins' direct material spend. The company is setting the expectation that these suppliers comply with the company's transportation management programs, its disposable packaging waste requirements, Cummins' responsible mineral sourcing requirements, prohibited materials disclosures, and participate in energy/water management programs to reduce their consumption and costs. The company gives them the tools to meet its requirements and provides an email address (supplier.compliance@cummins.com) so that they may ask questions as necessary.

Impact of engagement, including measures of success

Cummins has asked its top 100 suppliers to conform to ISO14001 standard as well as complete the CDP water Security assessment. In 2018, we conducted 423 Eyes Open Audits in 2018 to ensure compliance with the company's Supplier Code of Conduct which includes a commitment to reducing climate-related impacts.

Comment

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

1

% total procurement spend (direct and indirect)

1

% Scope 3 emissions as reported in C6.5

1

Rationale for the coverage of your engagement

Cummins believes that partnerships with suppliers can yield ways to reduce our environmental footprint in creative ways. In our two Environmental Gateway Challenges, one in the US in 2019 and one in the UK in 2017, businesses and entrepreneurs pitched their ideas to help Cummins meet its environmental goals around water, waste, and energy. This is an innovative way to engage suppliers and gather environmental solutions in a unique way. The judges for the "Shark Tank" like competition, included leaders from Cummins and sustainability experts from outside the company.

Impact of engagement, including measures of success

In the weeks leading up to the US competition, Cummins received 66 proposals from companies large and small to reduce the water and energy it uses and the waste it produces. Those were narrowed down to the nine finalists who got a chance to make their 10-minute pitch in person April 8, 2019 at the Gateway's Finalist Day. Ideas that made it all the way to the finals included re-purposing carbon-containing waste into sustainable energy and chemicals, employing reverse osmosis to reuse the most challenging industrial waste water, and applying advanced analytics to connect building and manufacturing systems to business results.

Comment

C12.1b

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

Type of engagement

Collaboration & innovation

Details of engagement

Other – please provide information in column 5

% of customers by number

20

% Scope 3 emissions as reported in C6.5

5

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

Greenhouse gas (GHG) emissions from Cummins products in use are the company's largest environmental impact and represent an estimated 99 percent of Cummins' GHG footprint due to fossil fuel use. Cummins' biggest opportunity to expand its product stewardship beyond the upfront design of its products is in working with customers to improve the efficiency of the company's products in use. One of Cummins' sustainability plan goals is to partner with its customers to improve the fuel efficiency of the company's products in use, and by extension reduce carbon dioxide (CO2).

Impact of engagement, including measures of success

Cummins fuel teams throughout the world implemented 76 new products in use projects in 2018, bringing the total number of initiatives with customers since 2014 to close to 300. The company surpassed its 2020 goal of achieving an annual run rate reduction of 3.5 million metric tons of CO2. The 2018 rate was 4.3 million metric tons. Performance in 2018 built on global momentum, with the launching of new initiatives, better fuel economy improvements and an increase in Distribution segment projects. Global fuel economy teams have been building functional capability via fuel economy forums, training and tools. In meeting this goal, the company expect to cut CO2 emissions by nearly 24 million metric tons, saving customers up to \$7 billion through greater fuel efficiency, by the end of 2020. By 2020, Cummins expects to work with 20 percent of its customer base, touching nearly 2 million engines as it tailors engine specifications to customer applications. The company wants to ensure customers have the latest tools to improve fuel efficiency.

C12.1c

(C12.1c) Give details of your climate-related engagement strategy with other partners in the value chain.

Cummins believes in partnering with others to achieve innovation in its products. We partner with many academic institutions, non-governmental organization and government entities on new product technology and policy advocacy. Some current examples of partnership with the U.S. Department of Energy are 1) the SuperTruck II program with Peterbilt and Eaton to demonstrate advanced engine, drivetrain, and vehicle technologies for Class 8 line-haul trucks and 2) an advanced platooning project (in conjunction with National Renewable Energy Laboratory, Michelin and Clemson University) to assess real-world fuel savings potential and actively address barriers to widespread market acceptance of platooning.

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?

Direct engagement with policy makers
Trade associations

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Clean energy generation	Support	Cummins is building coalitions among various stakeholders, working with customers on solutions using clean burning energy and waste to energy and renewable energy and educating policymakers.	Cummins government relations department represents Cummins solutions of combined heat and power as well as waste to energy solutions.
Energy efficiency	Support	Cummins is a member of Department of Energy Better Buildings, Better Plants Program and is active in various industrial energy efficiency groups, both sector specific and general at national and regional levels.	We promote and model industrial energy efficiency practices and are active with several government programs for energy efficiency.
Energy efficiency	Support	Cummins pledged support for a new Energy Management Campaign. This campaign is an effort of CEM and the International Partnership for Energy Efficiency Cooperation to spur international collaboration with a goal of 50,001 global certifications by 2020. Cummins will achieve ISO 50001 certification at a total of 40 sites by 2020. These 40 sites represent 90 percent of Cummins' energy footprint.	This campaign is an effort of CEM and the International Partnership for Energy Efficiency Cooperation to spur international collaboration with a goal of 50,001 global certifications by 2020.
Other, please specify (Product Efficiency)	Support	Cummins is building coalitions among various stakeholders globally, working with customers, government and other stakeholders as well as educating policymakers globally.	Cummins' government relations efforts in the United States include working with Congress, the White House, state governments, trade associations and industry to support the Environmental Protection Agency (EPA) in developing greenhouse gas regulations in the U.S. for heavy-duty vehicles, and to broadly educate policy makers about how regulations, economic development and competitiveness can co-exist if developed properly. Government relations also advocates for power generation systems using renewable energy

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

Advanced Energy Economy

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

AEE is an organization of businesses using policy advocacy, analysis, and education to bring about a prosperous economy based on secure, clean, affordable energy.

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

We are in agreement with their position.

Trade association

China Internal Combustion Engine Industry Association

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

Without comprehensive national climate change legislation, the Company cannot determine the association's position at this time. The association supports national efforts to reduce fuel consumption.

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

Cummins has worked within CICEIA on fuel consumption activities, NS VI emission standard readiness and how to ensure industry-wide compliance in China.

Trade association

Confederation of Indian Industry

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The trade association supports international cooperation on climate change with nationally-determined pledges. Without comprehensive national climate change legislation, the Company cannot determine this group's position at this time.

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

Cummins works actively within the Confederation of Indian Industry (CII) to build consensus about the business value of addressing climate change and to advocate for stricter emissions standards. The Company's Vice President and Chairman of Cummins India Limited chairs CII's Manufacturing Committee and the Vice President of Indian Government Relations serves on CII's National Committee on the Environment, both of which influence the association's position. CII advocates for the industry's viewpoint on climate change to the Indian Foreign Ministry and Ministry of Environment, Forest and Climate Change through direct lobbying opportunities such as the COP21 negotiations in Paris in 2015.

Trade association

The Diesel Technology Forum

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

Without comprehensive climate change legislation, the Company cannot determine this group's position at this time.

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

Cummins works actively in the DTF to encourage it to be supportive of fuel economy in vehicles and of energy efficiency programs in our sector

Trade association

The Engine Manufacturers Association

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

Without comprehensive climate change legislation, the Company cannot determine this group's position at this time.

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

Cummins works actively in the EMA to encourage it to be supportive of engine efficiency and of energy efficiency programs in our sector.

Trade association

The National Association of Manufacturers

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

Without comprehensive climate change legislation, the Company cannot determine this group's position at this time.

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

Cummins works actively in NAM to encourage it to be supportive of fuel economy in vehicles and of industrial energy efficiency programs in our sector. The company is encouraging the organization to work more collaboratively with the EPA. Cummins' chief operating officer is on the board of directors.

Trade association

U.S. Chamber of Commerce

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

Without comprehensive climate change legislation, the Company cannot determine this group's position at this time.

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

Cummins works actively with the US Chamber to encourage them to be supportive of fuel economy in vehicles and of energy efficiency programs in our sector.

Trade association

The American Trucking Association

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

Without comprehensive climate change legislation, the Company cannot determine this group's position at this time.

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

Cummins works actively in the ATA to encourage it to be supportive of fuel economy in vehicles and of energy efficiency programs in our sector

Trade association

The Business Roundtable

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

Without comprehensive climate change legislation, the Company cannot determine this group's position at this time.

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

Cummins has been a regular contributor to Roundtable's annual sustainability report, including the 2017 report "Create.Grow.Sustain." Cummins' CEO chairs the International Engagement Committee and serves on the Executive Committee.

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?

The Company has several groups and processes in place to ensure that our advocacy is consistent with our environmental and climate strategies. A Cummins team called Environmental Policy & Strategic Planning exists to analyze major environmental strategic opportunities and risks that affect the company globally; direct work with internal and external stakeholders to shape stances and positions on environmental affairs that impacts Cummins; and coordinate efforts across complex environmental issues to ensure consistency and adherence to our environmental and climate strategies across all activities including public policy advocacy. This team uses robust processes and guiding principles to direct Cummins' environmental policy actions. Whether the policy we are influencing is a regulation that focuses on reducing criteria pollutants, greenhouse gas emissions (GHG) or improving fuel efficiency, Cummins' policy principles ensure that we always advocate for tough, clear, and enforceable policy. These principles and our environmental mission apply to all direct and indirect activities including external relations, partnerships, and advocacy.

In addition to our environmental policy principles and processes, the Action Committee for Environmental Sustainability (ACES) shapes the activities and goal-setting of the stakeholder areas for product in use and in design, facilities and operations, internal supply chain (logistics and packaging), employee engagement and communications and marketing. Through processes such as monthly meetings, goal tracking, and disclosure, ACES ensures that the 10 environmental sustainability principles listed below are used to develop and adhere to Cummins' climate strategy, whether internal Company actions or external engagement.

The Company has 10 environmental sustainability principles - with the last four focusing on policy:

- Develop clean, efficient products
- Grow and develop new businesses
- Develop environmentally sustainable supply chains
- Make work spaces green spaces.
- Harness the energy of employees
- Engage in the community
- Help develop responsible regulations.
- Promote technology development.
- Advocate for incentives to accelerate progress
- Support a balanced global approach.

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 mainstream reports, incorporating the TCFD recommendations

Status

Complete

Attach the document

cmi-2018-10-k-as-filed-2-11-19.pdf

Page/Section reference

pages 12-13

Content elements

Governance

Strategy

Risks & opportunities

Emission targets

Comment

Annual Report on Form 10-K

Publication

In voluntary sustainability report

Status

Complete

Attach the document

2018_Sustainability_Progress Report.pdf

Page/Section reference

pages 6, 15-26

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

Sustainability Progress Report

Publication

In mainstream reports

Status

Complete

Attach the document

2018_SR_Data Book_Final_0705.pdf

Page/Section reference

27-39

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

This is the report according to the Global Reporting Initiative.

Publication

In voluntary communications

Status

Complete

Attach the document

cummins-2018-product-stewardship-07012019.pdf

Page/Section reference

pages 2-11

Content elements

Emissions figures
Emission targets
Other metrics
Other, please specify (Description of product stewardship including in use emission, circular economy and remanufacturing)

Comment

This is a special report we have issues that gives more information about product goals including reducing CO2 and material

Publication

In voluntary communications

Status

Underway – previous year attached

Attach the document

2017_SR_ScenarioPlanning_0730.pdf

Page/Section reference

pages 2-5

Content elements

Governance

Strategy

Risks & opportunities

Other, please specify (Description of our scenario planning process)

Comment

Scenario planning special issue report. Once we are ready to announce our science based targets for products and facilities, we will update this document to reflect these targets as result our scenario planning process.

Publication

In voluntary communications

Status

Complete

Attach the document

Cummins Executive Promotes Energy Diversity to Address Climate Change.docx

Page/Section reference

Pages 1-4

Content elements

Strategy

Other, please specify (Testimony given to the House Select Committee on Climate Crisis.)

Comment

Cummins Executive Promotes Energy Diversity to Address Climate Change

Publication

In voluntary sustainability report

Status

Complete

Attach the document

2019_Cummins_Sustainability_Overview.pdf

Page/Section reference

pages 2-4

Content elements

Emissions figures

Emission targets

Other metrics

Comment

Sustainability summary

C14. 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.

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1		Please select

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	23771000000

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

Yes

SC0.2a

(SC0.2a) Please use the table below to share your ISIN.

	ISIN country code (2 letters)	ISIN numeric identifier and single check digit (10 numbers overall)
Row 1	US	2310211063

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in

this reporting period.

Requesting member

Alphabet, Inc.

Scope of emissions

Scope 3

Allocation level

Business unit (subsidiary company)

Allocation level detail

Emissions in metric tonnes of CO2e

650000

Uncertainty (±%)

10

Major sources of emissions

fossil fuel burned while product is in use by customer

Verified

No

Allocation method

Allocation based on the number of units purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

In the calculation, Cummins used volumes by segment and engine model, which were then multiplied by the attrition rates to determine the volumes in operation each year moving forward. Cummins used their long-standing New and Recon parts proprietary parts consumption model as well as customer engineering analysis to determine the attrition rate. These factors were multiplied each of these yearly figures by an age factor (i.e., a 10 year old truck will not operate the same number of hours or miles as a brand new truck) and then converted miles per gallon or gallons per hour to million metrics tons of CO2e. The CO2e conversion factor for Diesel was applied based on the EPA's EF Hub and AR 4.

Requesting member

AT&T Inc.

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

26322

Uncertainty (±%)

5

Major sources of emissions

transmission of voice and data services

Verified

No

Allocation method

Allocation not necessary due to type of primary data available

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

The estimate is based on two types of spend data: Direct and Indirect. This spend category was used to estimate the scope 3 emissions (Reference/Source of Emission factors: Environmental Reporting Guidelines: Including mandatory greenhouse gas emissions reporting guidance; June 2013; pb13944-env-reporting-guidance.pdf; defra.uk).

Requesting member

CNH Industrial NV

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

310500

Uncertainty (±%)

5

Major sources of emissions

fossil fuel burned while product is in use by customer

Verified

Please select

Allocation method

Please select

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

In the calculation, Cummins used volumes by segment and engine model, which were then multiplied by the attrition rates to determine the volumes in operation each year moving forward. Cummins used their long-standing New and Recon parts proprietary parts consumption model as well as customer engineering analysis to determine the attrition rate. These factors were multiplied each of these yearly figures by an age factor (i.e., a 10 year old truck will not operate the same number of hours or miles as a brand new truck) and then converted miles per gallon or gallons per hour to million metrics tons of CO2e. The CO2e conversion factor for Diesel was applied based on the EPA's EF Hub and AR 4.

Requesting member

Fiat Chrysler Automobiles NV

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

Emissions in metric tonnes of CO2e

10827000

Uncertainty (±%)

5

Major sources of emissions

fossil fuel burned while product is in use by customer

Verified

No

Allocation method

Allocation based on the number of units purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

In the calculation, Cummins used volumes by segment and engine model, which were then multiplied by the attrition rates to determine the volumes in operation each year moving forward. Cummins used their long-standing New and Recon parts proprietary parts consumption model as well as customer engineering analysis to determine the attrition rate. These factors were multiplied each of these yearly figures by an age factor (i.e., a 10 year old truck will not operate the same number of hours or miles as a brand new truck) and then converted miles per gallon or gallons per hour to million metrics tons of CO2e. The CO2e conversion factor for Diesel was applied based on the EPA's EF Hub and AR 4.

Requesting member

Ford Motor Company

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail**Emissions in metric tonnes of CO2e**

0

Uncertainty (±%)**Major sources of emissions****Verified**

No

Allocation method

Allocation not necessary due to type of primary data available

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

unable to obtain data

Requesting member

Nokia Group

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail**Emissions in metric tonnes of CO2e**

0

Uncertainty (±%)**Major sources of emissions****Verified**

No

Allocation method

Allocation not necessary due to type of primary data available

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

unable to obtain data

Requesting member

U.S. General Services Administration - OMB ICR #3090-0319

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail**Emissions in metric tonnes of CO2e**

1103220

Uncertainty (±%)

Major sources of emissions

fossil fuel burned while product is in use by customer

Verified

No

Allocation method

Allocation based on the number of units purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

In the calculation, Cummins used volumes by segment and engine model, which were then multiplied by the attrition rates to determine the volumes in operation each year moving forward. Cummins used their long-standing New and Recon parts proprietary parts consumption model as well as customer engineering analysis to determine the attrition rate. These factors were multiplied each of these yearly figures by an age factor (i.e., a 10 year old truck will not operate the same number of hours or miles as a brand new truck) and then converted miles per gallon or gallons per hour to million metrics tons of CO2e. The CO2e conversion factor for Diesel was applied based on the EPA's EF Hub and AR 4.

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges
Customer base is too large and diverse to accurately track emissions to the customer level	Customer base is too large and diverse to accurately track emissions to the customer level Cummins and its joint venture partners sell more than one million engines per year. While our GHG model is sophisticated, it must make assumptions about the in use mileage and application of each engine it sells. What could help overcome challenges would be a device on the engine that would report fuel burned to both the user and the manufacturer.

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

Yes

SC1.4a

(SC1.4a) Describe how you plan to develop your capabilities.

Cummins is using the convergence of telecommunications and information technology to provide customers the information they need to work more efficiently, increasing uptime and decreasing costly downtime.

Cummins' Connected Diagnostics™, for example, enables the company to communicate with its engines to recommend actions the moment an engine system fault occurs.

Launched in 2014, Connected Diagnostics instantly transmits key engine and GPS data through a telematics connection, immediately applying Cummins' analytics to transform the data into actionable information.

A diagnosis of the fault, and clear recommendations regarding the continued vehicle operation are sent instantly to the operator or fleet manager.

Connected Diagnostics is part of a suite of products Cummins offers through the use of telematics. Connected Advisor™, a service enabled by Connected Diagnostics, helps fleet managers and operators prioritize recommendations to determine whether something requires immediate attention or can be scheduled a few days out.

Connected Software Updates™ deliver secure software updates for engine calibrations over-the-air, without a trip to the repair shop.

Over time it is possible that telematics will be able to precisely track fuel burned by each Cummins engine out in the field.

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

No

SC3.1

(SC3.1) Do you want to enroll in the 2019-2020 CDP Action Exchange initiative?

No

SC3.2

(SC3.2) Is your company a participating supplier in CDP's 2018-2019 Action Exchange initiative?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

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

Please confirm below

I have read and accept the applicable Terms