

C0. Introduction

C0.1

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

AECI is a diversified Group of 16 companies. It is based in South Africa and has an international footprint. It operates in 26 countries on six continents — Africa, Europe, Asia's South Eastern region, North America, South America and Australia.

Products and services are essential inputs in the businesses of a broad range of customers as follows:

- the global mining sector
- the plant and animal health industry in Europe, the USA and Africa
- the water treatment market in Africa
- the food and beverage, road infrastructure and general industrial sectors, mainly in Southern Africa. Although we have a presence in 26 countries, we only report in this submission on those countries in which we have manufacturing operations.

In line with this strategy, businesses were managed in five growth pillars in the year under review: Mining Solutions (AEL Intelligent Blasting, Expense and Senmin), Water & Process (ImproChem), Plant & Animal Health (Nulandis and Schirm), Food & Beverage (Lake Foods and Southern Canned Products), and Chemicals (Chemfit, Chemical Initiatives, ChemSystems, Industrial Oleochemical Products, Much Asphalt and SANS Technical Fibers). Included in this pillar is the Specialty Minerals South Africa joint venture. These pillars are AECI's key reporting segments. More information is provided on each of these pillars below:

- **Mining Solutions:** these businesses provide a mine-to-mineral solution for the mining sector internationally. The offering includes surfactants for explosives manufacture, commercial explosives, initiating systems and blasting services right through the value chain to chemicals for ore beneficiation and tailings treatment
- **Water & Process:** ImproChem provides integrated water treatment and process chemicals, and equipment solutions, for a diverse range of applications in Africa. These include, inter alia, public and industrial water, desalination and utilities
- **Plant & Animal Health:** Nulandis manufactures and supplies an extensive range of crop protection products, plant nutrients and services for the agricultural sector in Africa. Schirm, based in Germany, is a contract manufacturer of agrochemicals and fine chemicals with a European and US footprint. It is the premier provider of external agrochemical formulation services in Europe.
- **Food & Beverage:** the businesses in this pillar supply ingredients and commodities to the dairy, beverage, wine, meat, bakery, health and nutrition industries. The other main activity is the manufacture and distribution of a broad range of juice-based products and drinks, including formulated compounds, fruit concentrate blends and emulsions.
- **Chemicals:** AECI's Chemicals businesses supply chemical raw materials and related services for use across a broad spectrum of customers in the manufacturing, infrastructure and general industrial sectors, mainly in South Africa and in other Southern African countries. SANS Technical Fibers is based in the USA.

AECI also has a property division, Acacia Real Estate. Its main activities are the management of the Company's leasing portfolio and the provision of services at the Umbogintwini Industrial Complex in KwaZulu-Natal. Together with Head Office support functions, including the treasury, Acacia Real Estate constitutes the Group's sixth reporting segment, namely Property & Corporate.

All business activities are underpinned by the Group's BIGGER values — of being Bold, Innovative, Going Green and being Engaged and Responsible.

C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1 2019	December 31 2019	No	<Not Applicable>

C0.3

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

Australia  
Botswana  
Burkina Faso  
Congo  
Germany  
Ghana  
Guinea  
Indonesia  
Mali  
Namibia  
Senegal  
South Africa  
United Republic of Tanzania  
United States of America  
Zambia  
Zimbabwe

**C0.4**

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

ZAR

**C0.5**

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

Financial control

**C-CH0.7**

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**(C-CH0.7) Which part of the chemicals value chain does your organization operate in?**

**Row 1**

**Bulk organic chemicals**

Aromatics

**Bulk inorganic chemicals**

Ammonia

Fertilizers

Nitric acid

**Other chemicals**

Specialty chemicals

Specialty organic chemicals

**C1. Governance**

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**C1.1**

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

Yes

**C1.1a**

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**(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-level committee	The AECI Board, in conjunction with management, is ultimately responsible for the execution of the strategy. The Group's strategy is to be the supplier of choice in the markets in which it operates and to continue to grow domestically as well as through ongoing expansion of its footprint within the geographies and markets served. It is acknowledged that strategic goals cannot be achieved without effective management of risks and opportunities, including those which are climate related. Accordingly, climate-related risks are included in some of our most material matters: a) unstable electricity supply in South Africa and elsewhere on the continent b) inadequate supply of water of the requisite quality, leading to production interruptions in South Africa c) compliance risk, including compliance with tax and environmental laws and regulations, and d) extreme or unpredictable weather events. The AECI Board is ultimately responsible for the identification and monitoring of activity in respect of all material matters that could influence the delivery of AECI's strategy and growth objectives both positively and negatively. Accordingly, the Board is the ultimate custodian of climate-related issues. The Board met six times in 2019. SHEQ is the first item on the agenda at every meeting. In April 2019, a special Board meeting was convened and the agenda focused on the Group's approach and practices in regard to environmental management. A detailed action plan was formulated and progress against this has been added as a standing item on the Board meeting agenda. Climate-related decisions made in the reporting year included, amongst others: a) the development of improvement/reduction targets, to be achieved by 2025 b) the decision to develop a dedicated strategy for sustainable development c) the release of a dedicated sustainability report d) the launch of a new Going Green programme The Board has delegated the primary responsibility to consider, recommend and monitor AECI's activities with regard to environmental matters, including climate change, to the Social and Ethics Committee. This Committee reports to the full Board. Where required, the Social and Ethics Committee also draws on the work of the Board-appointed Risk Committee.

**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	Scope of board-level oversight	Please explain
Scheduled – all meetings	<ul style="list-style-type: none"> <li>Reviewing and guiding strategy</li> <li>Reviewing and guiding major plans of action</li> <li>Reviewing and guiding risk management policies</li> <li>Reviewing and guiding annual budgets</li> <li>Reviewing and guiding business plans</li> <li>Setting performance objectives</li> <li>Monitoring implementation and performance of objectives</li> <li>Overseeing major capital expenditures, acquisitions and divestitures</li> <li>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</li> </ul>	<Not Applicable>	<p>The Board met six times in the year. One of the two special meetings convened focused on the Group's approach and practices in regard to environmental management.</p> <p>The Board receives reports from the Social and Ethics Committee to which it has delegated responsibility to consider, recommend and monitor AECI's activities with regard to environmental matters, including climate-related items. The Social and Ethics Committee met quarterly in 2019. It reported to the full Board on its work as it related to climate issues at all meetings of the Board, including the first special meeting. The information conveyed by the Social and Ethics Committee to the Board, in writing, typically comprises the following: a) compliance with climate-related legislation such as the carbon tax in South Africa b) climate-related risk and opportunity identification and management c) performance against emission reduction targets, and d) progress made in terms of key climate-related mitigation and adaptation projects, such as the air emissions abatement projects at Modderfontein. The information is used by Board to ensure that all climate-related material matters have been identified and are being managed effectively. This, in turn, provides the Board with reassurance that AECI will be able to realise its strategy and achieve its growth objectives. It also allows the Board to evaluate whether proper policies, procedures and controls are in place to manage climate-related issues. In 2019 the integration of climate-related issues into risk management was evident in the identification of material matters. One such matter was extreme or unpredictable weather events, as already indicated.</p>

**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)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	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 Chief Executive is the highest management-level position with responsibility for climate-related issues. The Chief Executive has the overall, primary management and leadership role in the organisation. This includes responsibility for climate-related issues. The Chief Executive is ultimately responsible for assessment and monitoring of climate-related issues given their significance for the successful execution of the strategy and the achievement of business objectives. The Chief Executive is responsible for mobilising resources in the organisation for this. The Chief Executive reports to the Board.

The Chief Executive is supported by the Group Safety, Health and Environment Manager. This Manager has day-to-day responsibility for climate-related issues and reports directly to the Chief Executive. This Manager reports also provides feedback to Social and Ethics Committee on environmental performance, including climate-related issues. The Manager is supported by the Group Environmental Specialist who provides environmental support and advice to AECI as a whole.

Along with the Chief Executive, the Social and Ethics Committee is also responsible for oversight and guidance on climate-related issues. It is a Board-appointed Committee that reports back to the full Board. Responsibility for climate-related issues rests in this Committee by virtue of its mandate. The Committee is mandated to consider, recommend, monitor and report to the Board on the environmental impact of AECI's activities, products and services. The Committee is further mandated to provide guidance and advice on sustainability trends and issues relevant to the AECI Group as well as review and approve the Group's Sustainability Policy from time to time. The Committee is informed of the sustainability risks as recorded in the AECI Group risk register and provides related input to the Risk Committee, as appropriate. Further, the Committee reviews Safety, Health and Environmental incident reports.

The Social and Ethics Committee meets on a quarterly basis. In these meetings, the Committee reviews AECI's environmental performance. This includes AECI's mitigation activities and its management of climate-related risks and opportunities.

### C1.3

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

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

### C1.3a

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Director on board	Monetary reward	Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Efficiency project Efficiency target	Commitment to the Going Green programme feeds into the Key Performance Indicators (KPIs) of leadership at this level. The implementation of emission reduction projects and the achievement of emission reduction targets is included, particularly for short-term incentives
Environment/Sustainability manager	Monetary reward	Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Efficiency project Efficiency target	Commitment to the Going Green programme feeds into the KPIs of Safety, Health and Environmental (SHE) Managers at individual Group businesses. The implementation of emission reduction projects and the achievement of emission reduction targets are part of this. More specifically, the impact is on the short-term incentive award.
Director on board	Non-monetary reward	Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Efficiency project Efficiency target	An environmental award is given to the Managing Director/Executive of the business that excels in terms of reducing GHG emissions, energy and water usage, and waste generation. The award acknowledges superior levels of environmental compliance, the quality of data reporting, the severity and nature of environmental incidents, improvements in environmental management and commitment to the Going Green programme.
Corporate executive team	Monetary reward	Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Efficiency project Efficiency target	The short-term incentive is awarded in recognition of Group performance and the achievement of individuals' goals and objectives. The long-term incentive is awarded in recognition of the creation of shareholder value and long-term performance and sustainability. Climate change issues are integrated into both awards. Effective management of climate-related risks and opportunities promotes growth, value creation, performance and sustainability. Effective management of climate-related risks and opportunities requires the reduction of GHG emissions and energy consumption and the improvement of efficiency.

**C2. Risks and opportunities**

**C2.1**

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

Yes

**C2.1a**

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

	From (years)	To (years)	Comment
Short-term	0	2	Short-term is defined as up to two years. This is in line with the other business practice time horizons.
Medium-term	2	5	Medium-term is defined as two to five years. This is in line with the other business practice time horizons.
Long-term	5		Long-term is defined as five years or longer This is in line with the other business practice time horizons.

**C2.1b**

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

Substantive financial impact is defined in the consequence scales. A rating ranging from minor to severe is included in the consequence table with an associated financial amount. The table below outlines the ratings and associated financial impact -

**Score: 5 ; Rating: severe; Financial impact: >R120 million (loss or gain)**

**Score: 4 ; Rating: Major; Financial impact: R80 – R120 million (loss or gain)**

**Score: 3 ; Rating: Serious; Financial impact: R40 – R80 million (loss or gain)**

**Score: 2; Rating: Moderate; Financial impact: R5 – R40 million (loss or gain)**

**Score: 1 ; Rating: Minor; Financial impact: R0 – R5 million (loss or gain)**

**C2.2**

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

**Value chain stage(s) covered**

Direct operations

**Risk management process**

Integrated into multi-disciplinary company-wide risk management process

**Frequency of assessment**

More than once a year

**Time horizon(s) covered**

Short-term  
Medium-term  
Long-term

**Description of process**

The Group follows a risk management methodology comprising both bottom-up and top-down processes. The methodology adopts a holistic approach in identifying, analysing, evaluating, treating, monitoring and reviewing risks. This risk assessment process covers all businesses and their value chain, in, all geographies where they operate. Site-level risks are identified, assessed a bottom-up process. Management teams of individual businesses are required to identify risks and quantify the likelihood, timeline and magnitude of each. The teams are also required to formulate risk management plans. The AECI Head Office provides support in the risk identification and prioritisation process through workshops and other forums. The top-down process involves management at Head Office level. Risks identified at site level are reviewed and rolled up to Group level, as appropriate. Risk identification at Group level is also informed by the assessment and monitoring of the broader context in which the Group operates in terms of the political and economic landscape, industry, labour and financial market trends. Work includes the analysis of research materials and industry benchmarking studies by institutions such as the World Economic Forum, the World Bank and Control Risk. These serve as an early warning system or a mechanism for the identification of future risks and opportunities. At site-level, the size and scope of each risk is determined by the management teams of the various businesses. The management teams allocate each risk a rating based on the likelihood of occurrence and the magnitude of impact. These risks are reported up to management at Corporate Head Office who consolidate and prioritise the risks identified by the assigned rating. Risks, including climate-related risks, are prioritised on a 5 x 5 rating scale that sets out potential impact (magnitude of impact) and estimated probabilities (likelihood of occurrence). The potential impact is classified as minor, moderate, serious, major or severe and is linked to both a qualitative and quantitative residual risk value. The estimated probability is classified as almost certain (monthly basis), likely (once in one year), possible (once in three years), unlikely (once in five years) or rare (once in more than five years). Opportunities are also prioritised using a similar approach based on impact and likelihood. The risk assessment process and terminology are underpinned by the Group Risk Management Policy and the Group Enterprise Risk Management Framework which are based on the principles of ISO 31000 and King IV in South Africa. Outcomes of the risk assessment process inform decision-making. In 2019, the following climate-related material matters, amongst others, were identified through the application of the above process – a) Compliance risk, including compliance with tax and environmental laws and regulations (litigation, penalties, criminal prosecution and reputational damage caused by a lack of understanding of the applicable legislative universe). This included compliance with the new South African carbon tax and the 2020 Minimum Emission Standards. b) Extreme or unpredictable weather events (failure to mitigate and adapt to the effects of climate change, leading to drought or floods, water shortages and reduced mining and agricultural output). This included extreme weather events and unreliable rainfall patterns disrupt customers' operations in sectors such as surface mining, agriculture and public water.

**Value chain stage(s) covered**

Upstream

**Risk management process**

Integrated into multi-disciplinary company-wide risk management process

**Frequency of assessment**

More than once a year

**Time horizon(s) covered**

Short-term  
Medium-term

Long-term

**Description of process**

Upstream risks in the value chain are considered in the risk assessment process. The process whereby the risks are identified, analysed, evaluated, treated, monitored and reviewed is the same as that described for risks and opportunities in direct operations. In 2019, for example, an unstable electricity supply in South Africa was identified as our most material matter. Rotational power cuts were instituted again in 2019 and are expected to continue for the foreseeable future. Lack of electricity supply can lead to production interruptions and hamper our ability to meet customers' needs. One way in which this is being managed is the consideration of alternative energy sources. In addition, AEL is registering as an Independent Power Producer to enable the business to function off the grid. We also identified extreme or unpredictable weather events as a risk in the value chain. This was experienced in the juice concentrates business. In 2017, SCP was required to purchase strategic consignments of raw materials owing to extreme weather events (drought in the Western Cape and severe flooding in Argentina). This had a negative impact on trade working capital. Although a correction was evident in 2018, the supply chain remains exposed to climate-related risks. To minimise the impact of this risk, we have made advances in realising a global supply chain for raw materials.

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**Value chain stage(s) covered**

Downstream

**Risk management process**

Integrated into multi-disciplinary company-wide risk management process

**Frequency of assessment**

More than once a year

**Time horizon(s) covered**

Short-term

Medium-term

Long-term

**Description of process**

Downstream risks in the value chain are also considered in the risk assessment process. The process whereby the risks are identified, analysed, evaluated, treated, monitored and reviewed is the same as that described for risks and opportunities in direct operations. For example, extreme weather events and unreliable rainfall patterns can disrupt customers' operations in sectors such as surface mining, agriculture and public water. To manage this risk, we deliver products and services that assist customers to adapt to changing conditions. Examples include intelligent framing solutions and drought-resistant products. We engage closely with customers to improve the quality and speed of our response to their needs when these events occur. There are also risks and opportunities relating to changing customer attitudes and demands. There is a notable shift towards low carbon products. Demand has increased for products that allow customers to decrease emissions and/or remain resilient in the face of climate-related impacts. We attempt to anticipate these shifts by assessing and monitoring the broader context in which the Group operates in terms of the political and economic landscape, industry, labour and financial market trends. This has led us the development of new products and services. One example is our collaboration with Origin, in the USA, to support the development of renewable technologies .

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C2.2a

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Management at business and overall Group level is required to determine any exposure to regulatory risks. An example is the achievement of Minimum Emission Standards under South Africa's Air Quality Act No. 39 of 2004. To manage this risk, AECI is undertaking several abatement projects at certain operating plants in Modderfontein. These abatement projects are on track, with R100 million of the total R180 million investment having been spent by the end of 2019. AECI also applied for and received approval for the postponement of compliance to 2025 for some installations.
Emerging regulation	Relevant, always included	Management at business and overall Group level is also required to determine any exposure to risks associated with emerging regulations. In 2019, carbon tax was introduced in South Africa from 1 June. Our direct carbon tax liability is expected to be approximately of R5.7 million for the period 1 June 2019 to 31 December 2019. It is important to note that although this tax will increase our tax burden, it also presents opportunities for some of Group businesses. Nulandis' Biocult, for example, offers customers a product that sequesters carbon in soil. If claimed, this benefit could reduce customers' carbon tax liabilities.
Technology	Relevant, always included	All risks associated with technological improvements or innovation that support the transition to a lower-carbon, energy-efficient economic system are relevant and are included in the risk assessment process. Management is required to identify risks related to technology and technological advancements that may arise as a result of climate change. Opportunities related to technology are also identified. One example is SupPlant. This technology is a sensor-based system that waters crops according to gathered data, while optimising water consumption and alerting farmers of the state of crops, soil, air, and irrigation in a field, vineyard or orchard. Another opportunity that has been progressed is participation in a disruptive digital farming platform through collaboration and/or direct investment with a third party. This connects AECI's Nulandis to the emerging farmer market in South Africa, a largely unexplored area for the business.
Legal	Relevant, always included	The risk of litigation relating to non-compliance with climate-related regulation is relevant and is always considered in the risk assessment. Management teams of each Group business are required to identify any business risk exposure to litigation. In 2019, one of the material matters identified was 'litigation, penalties, criminal prosecution and reputational damage caused by a lack of understanding of the applicable legislative universe.' Environmental and associated climate-related compliance is referenced directly. One example compliance with the 2020 Minimum Emissions Standards, as specified in South Africa. These standards took effect on 1 of April 2020. It is acknowledged that failure to comply could result in litigation. To avoid this, AECI invested R100 million (of a total of R180 million) in operations at Modderfontein in 2019. Due to the timing of certain projects, postponement of compliance with some standards until 2025 was applied for and granted by the authorities. However, a strategic decision was taken to accelerate related efforts and we intend to be fully compliant before the end of 2021.
Market	Relevant, always included	Management at business level is required to identify whether their products and services are exposed to risks from shifts in supply and demand as a result of climate change. Some Group businesses identified market-related opportunities presented by climate change. An example is ImproChem which provides integrated water treatment for a diverse range of applications in Africa. These include, inter alia, public and industrial water, desalination and utilities. ImproChem noted increased demand for its products and services as a result of the physical effects of climate change. It installed four desalination plants in the Western Cape in 2018 and has secured service contracts for these plants. The introduction of carbon tax in South Africa may also result in market changes and increased demand for some products and services. An example here is Biocult which has developed a Mycorrhizae-based product that assists farmers in increasing crop yields and making plants more resistant to climate-related impacts. The product has the added benefit of sequestering carbon in the soil. This sequestration is permanent. If customers were to claim for this sequestered carbon it could reduce their direct carbon tax liability.
Reputation	Relevant, always included	Reputational risks are evaluated at site and Group levels. They could materialise in the event that AECI were unable to meet regulatory requirements and manage its GHG emissions and climate-related risks and opportunities effectively. For this reason, AECI has launched a new Going Green programme. The aim is to minimise environmental impact and drive a beyond compliance mind-set in the Group's own operations and across the value chain. This will boost AECI's visibility as a Company of Choice. We are also in the process of developing a strategy for sustainable development, including improvement/reduction targets, to be achieved by 2025.
Acute physical	Relevant, always included	Increased frequency and severity of extreme weather events resulting from climate change are relevant and are always included in the risk assessment process. Management teams of all AECI businesses are required to identify whether their own business is exposed to acute physical risks. In the reporting year, one of the material risks to the Group was 'extreme and unpredictable weather events, and failure of climate change mitigation and adaptation, leading to drought or floods, water shortages and reduced agricultural output.' Although drought effects dissipated in certain areas, it is acknowledged that droughts could occur in these same areas or other in future. Some areas remain drought stricken.
Chronic physical	Relevant, always included	Changes in rainfall patterns and ambient temperature are considered by management when identifying risks to individual businesses and the Group as a whole. Nulandis, for example, sells products to the agricultural sector, the success of which is heavily reliant on weather and associated rainfall patterns. Nulandis' performance was adversely affected by drought effects in the Western Cape in 2018. In 2019, performance improved as a result of a more normalised rainfall season in that province. However, in some inland provinces, the late onset of summer rainfall saw some farmers delay planting, particularly maize. Changes in rainfall patterns could present opportunities for Nulandis, however. The business has developed a holistic business offering for farmers, including drought-resistant products and intelligent farming solutions. Changes in rainfall patterns could see an increase in the demand for these products.

**C2.3**

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

Yes

**C2.3a**

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

**Identifier**

Risk 1

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

Current regulation	Carbon pricing mechanisms
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**Primary potential financial impact**

Decreased revenues due to reduced production capacity

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

This risk relates to compliance with climate-related regulation in particular (emissions limits and carbon tax, for example). Non-compliance with legislation could result in fines and/or temporary closure of the non-compliant operation. This, in turn, would result in lost production and reputational damage. Examples of regulation relevant to the reporting year included: a) The Minimum Emissions Standards; and b) The South African carbon tax. Inability to meet our obligations under these regulations could result in closure of the non-compliant operation until resolution, and reputational damage.

**Time horizon**

Short-term

**Likelihood**

Virtually certain



**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

114290000

**Potential financial impact figure – minimum (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – maximum (currency)**

&lt;Not Applicable&gt;

**Explanation of financial impact figure**

The financial impact is estimated at 1% of revenue from the Mining Solutions segment, of which AEL forms part.

**Cost of response to risk**

180000000

**Description of response and explanation of cost calculation**

Actions to mitigate this risk include: a) monitoring legislative developments and engaging with authorities on proposed regulation, where necessary. For example, in 2019 a meeting was held to finalise applications for the postponement of compliance with the 2020 Minimum Emission Standards for certain operating plants in Modderfontein. In terms of South Africa's National Environment Management Act: Air Quality Act, the new Standards took effect on 1 April 2020. Postponement of compliance to 2025 was applied for and granted by the Department of Environment, Forestry and Fisheries to allow for abatement projects to be completed b) appointing specialists to assist us in determining the potential impact of new regulations on our businesses and to assist our businesses to implement the necessary processes to ensure compliance c) implementing projects to reduce emissions and carbon tax liability. An example is the capital investment allocated to air emissions abatement projects at AEL Modderfontein. The cost of the response is this capital investment allocation.

**Comment****Identifier**

Risk 2

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

Acute physical	Increased severity and frequency of extreme weather events such as cyclones and floods
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**Primary potential financial impact**

Decreased revenues due to reduced production capacity

**Climate risk type mapped to traditional financial services industry risk classification**

&lt;Not Applicable&gt;

**Company-specific description**

One of the key short-term risks is uncertainty regarding the timing and nature of fiscal, regulatory and legislative frameworks governing climate change in South Africa. The Government recognises the country's responsibility to reduce emissions, and, as such, has and continues to develop climate change-related regulation and frameworks. Examples include the carbon budgeting process, mandatory reporting and pollution prevention plans. Given the number and nature of the climate change-related regulation and frameworks under development, there is a lack of clarity on what will be implemented, the timing thereof and the interaction between various regulations and frameworks. This uncertainty presents a risk to AECI as it does not allow AECI to effectively prepare for and mitigate the effects of the introduction of the regulations and frameworks.

**Time horizon**

Medium-term

**Likelihood**

About as likely as not

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

57220000

**Potential financial impact figure – minimum (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – maximum (currency)**

&lt;Not Applicable&gt;

**Explanation of financial impact figure**

The financial impact is estimated at 1% of the value of the property, plant and equipment as of 2019.

**Cost of response to risk**

110000000

**Description of response and explanation of cost calculation**

One of the ways in which we manage this risk is through the diversification of our portfolio. We invest in businesses that operate in a number of markets and countries. We also manage this risk through insurance in instances where the risk cannot be eliminated by our own actions (i.e. risks beyond our control). The cost of the response is the value of insurance premiums for the reporting year.

## Comment

### Identifier

Risk 3

### Where in the value chain does the risk driver occur?

Downstream

### Risk type & Primary climate-related risk driver

Market	Changing customer behavior
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### Primary potential financial impact

Decreased revenues due to reduced demand for products and services

### Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

### Company-specific description

A shift in our customers' buying preferences as a result of climate change and its impact has been noted. There is a move towards products that are: a) low carbon; b) Avoid the generation of GHG emissions and/or c) enable increased resilience against the effects of climate change. Were we unable to meet these changing demands, customers might look to other suppliers. This would reduce demand for our products and services, impacting negatively on revenue and profitability.

### Time horizon

Medium-term

### Likelihood

Very likely

### Magnitude of impact

High

### Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

### Potential financial impact figure (currency)

297990000

### Potential financial impact figure – minimum (currency)

<Not Applicable>

### Potential financial impact figure – maximum (currency)

<Not Applicable>

### Explanation of financial impact figure

The financial impact is estimated at 1% of our total revenue for the reporting year.

### Cost of response to risk

64000000

### Description of response and explanation of cost calculation

We manage this risk primarily by: a) developing new low-carbon products, and b) investing in businesses that are developing new low-carbon products. To manage this, the AECI Growth Office (AECI.GO) was established in 2017. Its mandate covers two main areas: enhancing the delivery of the Group's current businesses ("Business of Today") and identifying disruptors and customer needs that will shape the Business of Tomorrow. In the Business of Tomorrow, investment in research and development has included products that enable customers to reduce their GHG emissions or increase their resilience in the face of climate change impacts. One example Biocult which has developed a Mycorrhizae-based product that assists farmers in increasing crop yields and making plants more resistant to climate-related impacts. The product has the added benefit of sequestering carbon in the soil. This sequestration is permanent. If customers were to claim for this sequestered carbon it could reduce their direct carbon tax liability. Not only do we invest in R&D, we also look to acquire companies that are developing low-carbon products. For example, we invested R66.55 million in Origin Materials, a start-up based in California, USA. This company has pioneered the development of bio-based chemicals which can be processed into a large number of products for application in global markets. We remain committed to exploring green chemistry and innovative technologies in line with our Going Green value, in line with our risk appetite. The cost of the response is the investment in R&D in the 2019 financial year.

## Comment

### Identifier

Risk 4

### Where in the value chain does the risk driver occur?

Downstream

### Risk type & Primary climate-related risk driver

Chronic physical	Changes in precipitation patterns and extreme variability in weather patterns
------------------	---

### Primary potential financial impact

Decreased revenues due to reduced demand for products and services

### Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

### Company-specific description

This risk relates to disruptions to customers' operations as a result of changing weather patterns. It is acknowledged that any such disruptions could reduce demand for our products and services, resulting in a reduction in revenue and profitability. Nulandis sells products for the agricultural sector, the success of which is heavily reliant on weather and associated rainfall patterns. The drought in the Western Cape had a negative effect on Nulandis' profits in 2018, with results reducing from R133 million in 2017 to R119 million. Persistent drought effects impacted the performance of the local water treatment chemicals market in 2018. Diminished water flow rates result in

lower turbidity and hence lower dosages of purification chemicals. This had a negative effect on ImproChem's revenue in the 2018 financial year (declined from R1 454 million in 2017 to R1 376 million).

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

92000000

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

The potential financial impact is the reduced profit realised by Nulandis and ImproChem in 2018, primarily as a consequence of the drought in the Western Cape.

**Cost of response to risk**

64000000

**Description of response and explanation of cost calculation**

This risk is managed in the following ways: a) Ongoing engagement with customers to understand their needs and to identify how best AECl can meet these needs b) Investment in research and development which allows our businesses to diversify their product mix. Examples include: a) Nulandis developed a holistic product and service plant health offering for sustainable agricultural practices across its customer base. Included in the offering are solutions to reduce water usage and allow crops to better withstand the effects of variable weather patterns associated with climate change. b) We invested in SupPlant. This technology is a sensor-based system that waters crops according to gathered data, while optimising water consumption and alerting farmers of the state of crops, soil, air, and irrigation in a field, vineyard or orchard. The cost of the response is the investment in R&D in the 2019 financial year.

**Comment**

**Identifier**

Risk 5

**Where in the value chain does the risk driver occur?**

Upstream

**Risk type & Primary climate-related risk driver**

Chronic physical	Changes in precipitation patterns and extreme variability in weather patterns
------------------	---

**Primary potential financial impact**

Decreased revenues due to reduced production capacity

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

This risk relates to the unstable electricity supply in South Africa and elsewhere on the continent that is aggravated by changes in weather patterns. Inability to access a stable supply of this resource y could result in lost production and associated revenue and profitability losses. South Africa experienced rotational power cuts in 2019. These are expected to continue for the foreseeable future. They are also anticipated to become more frequent due to changes in precipitation patterns and extreme variability in weather patterns which could disrupt the generation of electricity.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

297990000

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

The financial impact is estimated at 1% of revenue for the reporting year.

**Cost of response to risk**

64000000

**Description of response and explanation of cost calculation**

To manage this risk, AECI has undertaken the following: a) conducted R&D in terms of alternative energy sources. This is ongoing b) registered AEL as an Independent Power Producer to enable the business to function off the grid c) put in place back-up generators at some of its operations. The cost of the response is the investment in R&D in the 2019 financial year.

**Comment**

## 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?**

Downstream

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

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

**Primary potential financial impact**

Increased revenues resulting from increased demand for products and services

**Company-specific description**

Increasingly stringent environmental regulation has resulted in customers exploring ways to minimise their environmental impact and increase their resilience in the face of climate-related challenges. Being able to provide them with products and services that support this presents an opportunity for AECI. For example, ImproChem provides water treatment chemicals and services to municipalities and water boards such as Rand Water. The 2018 drought in the Western Cape saw the demand for chemicals required to treat turbidity decrease. However, opportunities arose due to an increase in other contaminants causing concerns on water taste and odour, and the heightened need for treatment of borehole water and grey water due to water restrictions.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

297990000

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

The focus on Green Chemistry is expected to lead to increased sales. We have estimated that new products and services could contribute 1% of the Group's revenue in the next five years. The value reported is 1% of revenue for the 2019 financial year.

**Cost to realize opportunity**

64000000

**Strategy to realize opportunity and explanation of cost calculation**

To manage this, the AECI Growth Office (AECI.GO) was established in 2017. Its mandate covers two main areas: enhancing the delivery of the Group's current businesses ("Business of Today") and identifying disruptors and customer needs that will shape the Business of Tomorrow. AECI also focuses on Green Chemistry. Examples include – a) our investment in Biocult and its Mycorrhizae-based product that assists farmers in increasing crop yields. It also increases the resilience of crops to climate-related impacts. It has the added benefit of sequestering carbon in the soil. b) our investment in SupPlant. This technology is a sensor-based system that waters crops according to gathered data, while optimising water consumption and alerting farmers of the state of crops, soil, air, and irrigation in a field, vineyard or orchard. The cost to realise this opportunity is the investment in R&D in the 2019 financial year.

**Comment****Identifier**

Opp2

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Resilience

**Primary climate-related opportunity driver**

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

**Primary potential financial impact**

Reduced indirect (operating) costs

**Company-specific description**

Unreliability of supply from the national grid and rising electricity costs, are driving businesses to consider energy reduction and renewable energy initiatives in their activities. This enables lower operating costs.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Low

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

20000000

**Potential financial impact figure – minimum (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – maximum (currency)**

&lt;Not Applicable&gt;

**Explanation of financial impact figure**

Initiatives flowing from roll-out of the new Going Green Programme Group-wide is expected to enable significant cost savings (estimated in excess of R20 million)

**Cost to realize opportunity**

20000000

**Strategy to realize opportunity and explanation of cost calculation**

The new Going Green programme will support realisation of this opportunity. . The purpose of the programme is to: a) drive innovative environmental solutions in current and future operations b) create awareness of Going Green among internal and external stakeholders c) drive a culture of good environmental practice and a beyond compliance mind-set in the workplace d) improve market competitiveness through Green Chemistry and best available technology in AECI's products and services e) reduce AECI's environmental impact through measurement and target setting f) improve the visibility of the Going Green programme among external stakeholders g) align Going Green with the UN SDGs. This is part of AECI's broader Sustainable Development strategy in development and due for finalisation in 2020. It is expected that the Going Green Programme will require investment in excess of R20 million. This is reported as the cost to realise this opportunity.

**Comment****Identifier**

Opp3

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Ability to diversify business activities

**Primary potential financial impact**

Increased revenues through access to new and emerging markets

**Company-specific description**

The Group has the opportunity to invest in new businesses associated with climate-related issues. One such investment already completed is that in Origin Materials, as already described.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

297990000

**Potential financial impact figure – minimum (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – maximum (currency)**

&lt;Not Applicable&gt;

**Explanation of financial impact figure**

The focus on Green Chemistry is expected to ultimately result in increased sales. It is estimated that new products and services could contribute 1% of the Group's revenue in the next five years. The value reported is 1% of total revenue for the 2019 financial year.

**Cost to realize opportunity**

66550000

**Strategy to realize opportunity and explanation of cost calculation**

New investment opportunities are identified and assessed on an ongoing basis by the AECI.GO. The cost to realise opportunities is the quantum of our investment, such as that in Origin Materials for example.

**Comment**

**C3. Business Strategy**

**C3.1**

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

Yes

**C3.1a**

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

Yes, qualitative, but we plan to add quantitative in the next two years

**C3.1b**

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

Climate-related scenarios and models applied	Details
2DS	<p>AECI acknowledges the need to limit the increase in global average temperature to below 2°C above pre-industrial levels. For this reason, climate change has been integrated into our company-wide business strategy in the short-, medium- and long-term to support growth and sustainability in a low carbon economy. The impact of the consideration of 2DS in our business strategy is demonstrated by the following: a) our commitment to Going Green as a corporate value. This value underpins all our business activities as we drive solutions for a sustainable future. More specifically, we provide sustainable alternatives for our customers, we work smarter and conserve resources and energy and we take into account how our work and processes impact on people and the environment b) the launch of the new Going Green programme, with the objective to minimise environmental impact and drive a beyond compliance mind-set in the Group's own operations and across the value chain. Its purpose is – • drive innovative environmental solutions in current and future operations • create awareness of Going Green among internal and external stakeholders • drive a culture of good environmental practice and a beyond compliance mind-set in the workplace • improve market competitiveness through Green Chemistry and best available technology in AECI's products and services • reduce AECI's environmental impact through measurement and target setting • improve the visibility of the Going Green programme among external stakeholders • align Going Green with the UN SDGs This is part of AECI's broader Sustainable Development Strategy in development and due for finalisation in 2020. Changes to our business strategy as a result of the consideration of climate change is demonstrated by the following investments and initiatives, as already described: a) investment in Origin Materials, a start-up based in California, USA. This company has pioneered the development of bio-based chemicals which can be processed into a large number of products for application in global markets. b) investment in SupPlant which is a sensor-based system that waters crops according to gathered data, while optimising water consumption and alerting farmers of the state of crops, soil, air, and irrigation in a field, vineyard or orchard. c) Nulandis' development of a holistic plant and soil health strategy d) establishment of and mandate for AECI.GO to enhance delivery of the Group's current businesses ("Business of Today") and identifying dis-ruptors and customer needs that will shape the Business of Tomorrow.</p>

**C3.1d**

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

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Climate-related risks and opportunities have influenced our business strategy in terms of our products and services for the short, medium and long term. Nowhere is this more clearly seen than in the focus we place on Green Chemistry. Examples include: a) our investment of R66 550 000 in Origin Materials, which produces bio-based chemicals from sustainable and renewable resources. b) our investment in Biocult and its Mycorrhizae-based product that assists farmers in increasing crop yields. It also increases the resilience of crops to climate-related impacts. It has the added benefit of sequestering carbon in the soil. c) our investment in SupPlant. The technology is a sensor-based system that waters crops according to gathered data, while optimising water consumption and alerting farmers of the state of crops, soil, air, and irrigation in a field, vineyard or orchard.
Supply chain and/or value chain	Yes	Climate-related risks and opportunities have influenced our business strategy in terms of both suppliers and customers. This influence is reflected in our short-, medium- and long-term business strategy. For example: a) we identified a material risk relating to unstable electricity supply in South Africa. We acknowledge that this could be further aggravated by the impacts of climate change. As such, we are positioning ourselves to be Independent Power Producers (IPPs). For example, AEL is registering as an IPP to enable the business to function off the grid. b) our customers are impacted by climate change. In the reporting year, we identified a material risk relating to extreme or unpredictable weather events (failure to mitigate and adapt to the effects of climate change, leading to drought or floods, water shortages and reduced mining and agricultural output). Given this, we have adopted 'Going Green' as one of our values which underpins all our business activities. Under this value, we look to provide sustainable alternatives for our customers.
Investment in R&D	Yes	Climate-related risks and opportunities have influenced our strategy in terms of investment in R&D, both internally and through third parties. This influence can be seen in our short-, medium- and long-term business strategy. Nowhere can this be more clearly seen than in the creation of AECI.GO, the AECI Growth Office. Over the past year, this office has made strong progress in increasing both awareness and the effectiveness of innovation in AECI. The mandate of the AECI.GO applies in two main areas: enhancing the delivery of the Group's current businesses ("Business of Today") and identifying disruptors and customer needs that will shape the Business of Tomorrow. In terms of the Business of Tomorrow, over the past few years, we have invested in R&D to develop products that allow our customers to reduce their GHG emissions or increase their resilience in the face of climate change impacts. One example is the Mycorrhizae-based fertilizer, developed by Biocult, that assists farmers in increasing crop yields and making plants more resistant to climate-related impacts. It also has the added benefit of sequestering carbon in the soil. This sequestration is permanent. If our customers were to be able to claim for this carbon sequestered, it could reduce their direct carbon tax liability. Not only do we invest in R&D, we also look to acquire companies that are developing low-carbon products. For example, we invested R66.55 million in Origin Materials, a start-up based in California, USA. This company has pioneered the development of bio-based chemicals which can be processed into a large number of products for application in global markets. We remain committed to exploring green chemistries and innovative technologies in line with our Going Green value, in line with the Company's risk appetite.
Operations	Yes	Climate-related risks and opportunities have influenced our short-, medium, and long-term strategy for our operations. Our new Going Green programme exemplifies this. Its objective is to minimise environmental impact and drive a beyond compliance mind-set in the Group's own operations and across the value chain. Its purpose is – a) drive innovative environmental solutions in current and future operations b) create awareness of Going Green among internal and external stakeholders c) drive a culture of good environmental practice and a beyond compliance mind-set in the workplace d) improve market competitiveness through Green Chemistry and best available technology in AECI's products and services e) reduce AECI's environmental impact through measurement and target setting f) improve the visibility of the Going Green programme among external stakeholders g) align Going Green with the UN SDGs This is part of AECI's broader Sustainable Development Strategy in development and due for finalisation in 2020.

**C3.1e**

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

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Indirect costs Capital expenditures Capital allocation Acquisitions and divestments Access to capital Assets Liabilities	Climate-related risks and opportunities have influenced financial planning elements. Examples of this are reflected as follows: a) climate-related risks and opportunities impact on our revenues in the short-, medium- and long-term. As such, we consider them in revenue expectations. This was most clearly seen in the 2018 financial year. As a result of the drought in the Western Cape, Nulandis reported that profit from the operations was 11% lower, from R133 million to R119 million. Profit declined due to depressed trading conditions in South Africa's agricultural sector where output remained curtailed, mainly due to the impact of climate-related challenges. ImproChem also reported a reduction in revenue and profit in 2018. This resulted from poor performance of the local water treatment chemicals market due to persistent drought effects. ImproChem's revenue declined by 5%, from R1 454 million to R1 376 million. b) climate-related risks and opportunities also impact our operating costs in the short-, medium- and long-term. Examples include the increased price of water as a result of the water restrictions in the Western Cape and the higher-than-inflation electricity price increases. In the Western Cape, our operations have incurred water prices increases greater than 100% between 2016 and 2018. The South African carbon tax has also increased our operating costs and this is factored into our financial planning process c) mitigating climate-related risks can require capital investment and hence are considered in the capital allocation process. One example is the R180 million allocated for air emissions abatement projects at Modderfontein to achieve full compliance with environmental regulations d) acquisitions and disposals are impacted by climate-related risks and opportunities. Sustainability considerations align with the company's commitment to Green Chemistry and its drive to service new market opportunities presented by the effects of climate change. The investment in Origin Materials is an example. AECI took the decision to invest given the company's focus on using sustainable and renewable raw materials. In the reporting year, AECI teamed up with Origin to form an industrial partnership to support the development of renewable technologies.

**C3.1f**

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

**C4. Targets and performance**

**C4.1**

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

No target

C4.1c

(C4.1c) Explain why you did not have an emissions target, and forecast how your emissions will change over the next five years.

	Primary reason	Five-year forecast	Please explain
Row 1	We are planning to introduce a target in the next two years	We anticipate that our Scope 1 emissions will decrease by 15%, to 303 205 tCO2e by 2022. This decrease is expected to result from secondary abatement at No. 9 Nitric Acid Plant at Modderfontein and the implementation of other emission reduction projects. We anticipate that our Scope 2 emissions will also decrease by an estimated 10%, to 247 030 tCO2e by 2022. This decrease is expected to result from the implementation of initiatives flowing from our new Going Green programme.	In prior years, we have had active emission reduction targets in place. However, these have all come to an end. For this reason, in the reporting year, we focused on setting new targets that will take us to 2025. These targets will be active in the 2020 financial year. As such, we will report on the progress towards achieving these targets in our next CDP Response. Active emission reduction targets were in place in prior years. However, the applicable timeframes have lapsed. For this reason, in 2019 we focused on setting new targets to 2025. These targets will be active in 2020 and progress against them will be included in our 2020 CDP Response. In setting the new targets, significant focus has been placed on selecting a base year and ensuring that data on GHG emissions for this base year is accurate. For this reason, our base year GHG emissions are currently being assured by a third party. Although we did not have an active target in 2019, we continued to implement emission reduction initiatives. As already indicated, we also launched our new Going Green programme. The purpose of this programme is to – a) drive innovative environmental solutions in current and future operations b) create awareness of Going Green among internal and external stakeholders c) drive a culture of good environmental practice and a beyond compliance mind-set in the workplace d) improve market competitiveness through Green Chemistry and best available technology in AECI's products and services e) reduce AECI's environmental impact through measurement and target setting f) improve the visibility of the Going Green programme among external stakeholders g) align Going Green with the UN SDGs This is part of AECI's broader Sustainable Development Strategy in development and due for finalisation in 2020. In Going Green programme, all employees are encouraged to identify ways in which AECI's environmental impact can be minimised. We also have goals in place to optimise our emissions and minimise our environmental impact. The goals are applicable to all Group businesses in all geographies of operation. Progress towards meeting the goals is measured and monitored at Group level. The measurement of progress is simplified through the use of information that is already collated at Group level as indicators.

C4.2

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

No other climate-related targets

C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	2	100687
Implementation commenced*	0	0
Implemented*	3	909
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 category & Initiative type

Energy efficiency in production processes	Process optimization
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Estimated annual CO2e savings (metric tonnes CO2e)

489

Scope(s)

Scope 2 (location-based)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

1512908

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

0

Payback period

No payback



**Estimated lifetime of the initiative**

>30 years

**Comment**

SANS Technical Fibers, in the USA, converted the heater programming on its VB machines. This project started in April 2019 and was completed by August of the same year.

**Initiative category & Initiative type**

Energy efficiency in production processes	Process optimization
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**Estimated annual CO2e savings (metric tonnes CO2e)**

420

**Scope(s)**

Scope 2 (location-based)

Scope 2 (market-based)

**Voluntary/Mandatory**

Voluntary

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

3238168

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

0

**Payback period**

No payback

**Estimated lifetime of the initiative**

>30 years

**Comment**

Schirm, in Germany, implemented a project to reduce heating costs by converting heating chambers from electricity to steam and isolating dissolvers/intermediate containers. The investment was part of the normal cost of business and was not recorded separately.

**Initiative category & Initiative type**

Energy efficiency in buildings	Lighting
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**Estimated annual CO2e savings (metric tonnes CO2e)****Scope(s)**

Scope 2 (location-based)

Scope 2 (market-based)

**Voluntary/Mandatory**

Voluntary

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

0

**Payback period**

No payback

**Estimated lifetime of the initiative**

21-30 years

**Comment**

SCP and Lake Foods implemented light replacement projects. Existing bulbs were replaced with energy efficient LED equivalents. The projects commenced in June 2019. The investment was part of the normal cost of business and was not recorded separately. The savings generated by these projects were not quantified separately.

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

Method	Comment
Financial optimization calculations	Under the new Going Green programme umbrella, several resource efficiency assessments were conducted at Group sites and potential projects for savings were identified. Business cases have been developed for them and will drive the selection and prioritisation of initiatives for implementation. The business cases include calculation of financial indicators such as net present value (NPV), return on investment (ROI), payback periods and others.
Employee engagement	All employees are encouraged to participate in the new Going Green programme by identifying ways in which AECI's environmental impact can be minimised.
Compliance with regulatory requirements/standards	The need for compliance drives investment in emission reduction activities. For example, the South African Department of Environment, Forestry and Fisheries (DEFF) declared GHG emissions as priority pollutants, requiring certain companies to put in place five-year plans to reduce these emissions. At the time, AECI prepared and submitted its plan. It continues to implement emission reduction activities in line with the plan.
Internal price on carbon	With the introduction of the carbon tax in South Africa, we have implemented an internal price on carbon. This price is aligned with the tax rate in the carbon tax. Factoring this carbon price into the business case can increase the NPV and ROI and decrease payback periods for emission reduction projects.

## C4.5

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**(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

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

**Level of aggregation**

Group of products

**Description of product/Group of products**

Several Group businesses manufacture products that reduce customers' GHG emissions or improve their resilience to the impact of climate change. Examples include: 1. AEL By tailoring explosives and initiating systems to suit a mine's process requirements, AEL has achieved improved blast results that add value to mine operations by reducing shovel cycle times, increasing haul truck fill factors and improving the efficiency of crushing and milling operations. By creating the best fragmentation distribution for a specific mill and by inducing internal micro-fractures in the rocks, the mill power consumption can be reduced dramatically. The replacement of conventional shock tube initiation with an electronic detonating system has also resulted in significant savings. At a quarrying customer, for example, total mining cost increased by 2% but the productivity of earth-moving equipment increased by 24.7% and the crusher throughput went up by 14.7%. As a result, the operation would have realised a 33% reduction in its GHG emissions (i.e. a reduction of 4 500 tonnes CO<sub>2</sub>e per annum). 2. Nulandis Nulandis has developed a holistic and sustainable offering for the agricultural sector. Products in the offering build healthy soils that better retain nutrients and water to buffer against environmental stresses and recycle nutrients from soil organic matter. This approach assists farmers in coping with the effects of droughts, floods and other weather-related changes brought about by climate change. 3. Biocult Biocult has developed a Mycorrhizae-based product that increases the robustness and yields of crops. Not only does it assist crops to weather droughts, floods and changes in rainfall patterns, but it also sequesters carbon in the soil. This carbon remains in the soil permanently. 4. ImproChem ImproChem provides water management solutions to customers, including treatment and re-use to reduce discharges. It also assists customers in implementing water security solutions such as water desalination plants. At one such customer, the site is now self-sufficient in terms of its potable water requirements. This reduces pressure on the municipal water network thus allowing the resource to be used elsewhere. At the same customer's operations, an energy recovery device was installed to reduce electricity consumption per m<sup>3</sup>.

**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 (Internal company expertise)

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

5

**% of total portfolio value**

<Not Applicable>

**Asset classes/ product types**

<Not Applicable>

**Comment**

5% of total revenue is estimated to have been generated through sales and application of low-carbon products in 2019. Internal company experts classify the products as low-carbon and calculate the potential avoided emissions.

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## C5. Emissions methodology

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### C5.1

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

**Scope 1**

**Base year start**

January 1 2018

**Base year end**

December 31 2018

**Base year emissions (metric tons CO2e)**

308216

**Comment**

**Scope 2 (location-based)**

**Base year start**

January 1 2018

**Base year end**

December 31 2018

**Base year emissions (metric tons CO2e)**

254234

**Comment**

**Scope 2 (market-based)**

**Base year start**

January 1 2018

**Base year end**

December 31 2018

**Base year emissions (metric tons CO2e)**

254234

**Comment**

We have operations that purchase electricity from a specific supplier. As such, we have supplier-specific emission rates/regional or subnational grid average emission factors. For 2019, however, the value for Scope 2 emissions calculated using the market-based approach was the same as the value for the Scope 2 emissions calculated using the location-based approach. The reason is that supplier-specific emission factors were used for electricity purchased when calculating the emissions using the location-based approach.

**C5.2**

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

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

**C6. Emissions data**

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**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)**

356712

**Start date**

<Not Applicable>

**End date**

<Not Applicable>

**Comment**

Scope 1 emissions reported here will be slightly different to those reported in our 2019 integrated report due to some adjustments made to activity data after the publication of the integrated report.

**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**

We have operations in the United States of America and Australia that purchase electricity from a specific supplier and, therefore, have supplier specific emission rates/regional or subnational grid average emission factors.

---

**C6.3**

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

**Reporting year**

**Scope 2, location-based**

290624

**Scope 2, market-based (if applicable)**

290624

**Start date**

<Not Applicable>

**End date**

<Not Applicable>

**Comment**

Scope 2 emissions reported here will be slightly different to those reported in our 2019 integrated report due to some adjustments made to activity data after the publication of the integrated report.

---

**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 gross global Scope 3 emissions, disclosing and explaining any exclusions.**

**Purchased goods and services**

**Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

249310

**Emissions calculation methodology**

For ammonia, GHG emissions were calculated using the IPCC 2006 Guidelines, Volume 3, Chapter 3. The calculation assumes conventional reforming using natural gas.

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

100

**Please explain**

This includes the GHG emissions associated with the production of ammonia as used by the Group in product manufacture.

**Capital goods**

**Evaluation status**

Relevant, not yet calculated

**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>

**Please explain**

AECI has not yet calculated the GHG emissions associated with the purchase of capital goods.

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

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

36778

### Emissions calculation methodology

Fuel and electricity consumption values were multiplied by DEFRA 2019 GHG conversion factors. The exception to this would be electricity consumed in South Africa. The electricity consumed in South Africa was multiplied by an emission factor obtained from Eskom's 2019 Integrated Annual Report.

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

100

### Please explain

This includes well-to-tank GHG emission from fuels used by AECL and GHG emissions from transmission and distribution losses associated with the electricity consumed by AECL.

## Upstream transportation and distribution

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

451

### Emissions calculation methodology

Our distance travelled was multiplied by DEFRA 2019 GHG conversion factors.

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

100

### Please explain

This includes the GHG emissions from the transport by rail of ammonia as used by the Group in product manufacture.

## Waste generated in operations

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

8631

### Emissions calculation methodology

Effluent and waste volumes were multiplied by DEFRA 2019 GHG conversion factors.

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

100

### Please explain

This refers to GHG emissions from treatment and disposal of our effluent and waste.

## Business travel

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

4965

### Emissions calculation methodology

Kilometres travelled were multiplied by DEFRA 2019 GHG conversion factors.

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

100

### Please explain

AEL, ImproChem, Much Asphalt and SCP reported business travel. It is estimated that this reporting covers approximately 75% of our total business travel.

## Employee commuting

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO<sub>2</sub>e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Employees choose where to live in relation to their workplace. The emissions are not deemed to be relevant as they are most likely insignificant in relation to total emissions.

#### Upstream leased assets

##### Evaluation status

Not relevant, explanation provided

##### Metric tonnes CO<sub>2</sub>e

<Not Applicable>

##### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

##### Please explain

AECI does not have upstream leased assets.

#### Downstream transportation and distribution

##### Evaluation status

Relevant, calculated

##### Metric tonnes CO<sub>2</sub>e

1823

##### Emissions calculation methodology

Distance travelled was multiplied by DEFRA 2019 GHG conversion factors.

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

100

##### Please explain

This includes the GHG emissions from the transport of our explosives to customers.

#### Processing of sold products

##### Evaluation status

Relevant, not yet calculated

##### Metric tonnes CO<sub>2</sub>e

<Not Applicable>

##### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

##### Please explain

AECI has not yet calculated the GHG emissions associated with processing of sold products.

#### Use of sold products

##### Evaluation status

Relevant, calculated

##### Metric tonnes CO<sub>2</sub>e

1977209

##### Emissions calculation methodology

The GHG emissions are calculated using the carbon content of our explosives and assuming 100% oxidation.

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

100

##### Please explain

This is our most significant source of Scope 3 emissions. It pertains to emissions from the use of the explosives in our customers' operations. AEL is focused on reducing these emissions through product changes.

#### End of life treatment of sold products

##### Evaluation status

Not relevant, explanation provided

##### Metric tonnes CO<sub>2</sub>e

<Not Applicable>

##### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

##### Please explain

There are no emissions from the end-of-life treatment of explosives which are one of our major products. Explosives are consumed in the reaction. Relevant Scope 3 emissions include use of sold products.

#### Downstream leased assets

**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>

**Please explain**

AECI accounts for all emissions from downstream leased assets under its Scope 1 and 2 emissions. A good example of this is the emissions associated with provision of services by Acacia Real Estate at the Umbogintwini Industrial Complex in KwaZulu-Natal.

#### 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>

**Please explain**

AECI does not have any franchises.

#### Investments

**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>

**Please explain**

AECI's investments are accounted for under its Scope 1 and 2 emissions.

#### Other (upstream)

**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>

**Please explain**

No other relevant upstream emissions have been identified.

#### Other (downstream)

**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>

**Please explain**

No other relevant downstream emissions have been identified.

---

## C6.7

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

No

**C6.10**

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

**Intensity figure**

0.000026

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

647335

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

24799000000

**Scope 2 figure used**

Location-based

**% change from previous year**

8

**Direction of change**

Increased

**Reason for change**

Scope 1 and 2 emissions increased by 15% due to increased production at AEL's nitric acid plants at Modderfontein, resulting in higher N2O emissions, as well as the inclusion of Much Asphalt's data for the full year. Some of the increase was partly offset by emission reduction initiatives implemented by the Group in the year. Revenue increased by 6%. As such, emissions intensity increased by 8% between the 2018 and 2019.

**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	353033	IPCC Third Assessment Report (TAR - 100 year)
CH4	96	IPCC Third Assessment Report (TAR - 100 year)
N2O	808	IPCC Third Assessment Report (TAR - 100 year)
HFCs	2775	IPCC Third Assessment Report (TAR - 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)
South Africa	335011
Africa	9298
United States of America	369
Indonesia	4415
Australia	2323
Germany	5296

**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)
Pillar 1: Mining Solutions	274606
Pillar 2: Water & Process	673
Pillar 3: Plant & Animal Health	6085
Pillar 4: Food & Beverage	2642
Pillar 5: Chemicals	57467
Property & Corporate	15239

**C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4**

**(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.**

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions, metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	338830	<Not Applicable>	This includes Scope 1 emissions from Mining Solutions, Water & Process, Plant & Animal Health and Chemicals. It excludes Scope 1 emissions from Food & Beverage and Property & Corporate.
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

**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 for in Scope 2 market-based approach (MWh)
South Africa	237976	237976	261184	0
Africa	6071	6071	5838	0
United States of America	12827	12827	41482	0
Indonesia	615	615	288	0
Australia	303	303	135	0
Germany	32832	32832	69520	0

**C7.6**

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

By business division

**C7.6a**

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

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Pillar 1: Mining Solutions	155305	155305
Pillar 2: Water & Process	4816	4816
Pillar 3: Plant & Animal Health	37581	37581
Pillar 4: Food & Beverage	5989	5989
Pillar 5: Chemicals	82562	82562
Property & Corporate	4371	4371

**C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7**

**(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.**

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	280263	280263	This includes Scope 2 emissions from Mining Solutions, Water & Process, Plant & Animal Health and Chemicals. It excludes Scope 2 emissions from Food & Beverage and Property & Corporate.
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

**C-CH7.8**

**(C-CH7.8) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.**

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology
Ammonia	100	The GHG emissions were calculated using the IPCC 2006 Guidelines, Volume 3, Chapter 3. The calculation assumes conventional reforming using natural gas.

**C-CH7.8a**

**(C-CH7.8a) Disclose sales of products that are greenhouse gases.**

	Sales, metric tons	Comment
Carbon dioxide (CO2)		
Methane (CH4)		
Nitrous oxide (N2O)		
Hydrofluorocarbons (HFC)		
Perfluorocarbons (PFC)		
Sulphur hexafluoride (SF6)		
Nitrogen trifluoride (NF3)		

**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		<Not Applicable >		There were no changes to renewable energy consumption in the year.
Other emissions reduction activities	909	Decreased	0.16	This relates to the decrease in GHG emissions realised as a result of implementation of emission reduction projects. The decrease was calculated as the emission reductions achieved divided by total Scope 1 and 2 emissions for AECI in 2018: % decrease = -909 tonnes CO2e / (308 216 tonnes CO2e + 254 234 tonnes CO2e)
Divestment		<Not Applicable >		There were no changes in greenhouse gas emissions as a result of divestments in the reporting year.
Acquisitions	13753	Increased	2.45	This relates to the increase in GHG emissions resulting from the inclusion of data from Much Asphalt for the full year. Much Asphalt was acquired in April 2018. The increase was calculated as the difference in Much Asphalt's GHG emissions between the 2018 and 2019 divided by total Scope 1 and 2 emissions for AECI in 2018: % increase = 13 753 tonnes CO2e / (308 216 tonnes CO2e + 254 234 tonnes CO2e)
Mergers		<Not Applicable >		There were no changes in greenhouse gas emissions as a result of mergers in the reporting year.
Change in output	72041	Increased	12.81	The increase results from an increase in production. Increased production at AEL's nitric acid plants at Modderfontein resulted in higher N2O emissions. The increase was calculated as the difference in GHG emissions resulting from production changes between the 2018 and 2019 divided by total Scope 1 and 2 emissions for AECI in 2018: % increase = 72 041 tonnes CO2e / (308 216 tonnes CO2e + 254 234 tonnes CO2e)
Change in methodology		<Not Applicable >		There were no changes in greenhouse gas emissions as a result of changes in methodology in the reporting year.
Change in boundary		<Not Applicable >		There were no changes in greenhouse gas emissions as a result of changes in boundary in the reporting year.
Change in physical operating conditions		<Not Applicable >		There were no changes in greenhouse gas emissions as a result of changes in physical operating conditions in the reporting year.
Unidentified		<Not Applicable >		There were no unidentified changes in the reporting year.
Other		<Not Applicable >		There were no other changes in the reporting year.

## 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 undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	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 (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	633057	633057
Consumption of purchased or acquired electricity	<Not Applicable>	0	265748	265748
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	0	112699	112699
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	0	1011504	1011504

**C-CH8.2a**

**(C-CH8.2a) Report your organization's energy consumption totals (excluding feedstocks) for chemical production activities in MWh.**

	Heating value	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	548495
Consumption of purchased or acquired electricity	<Not Applicable>	256408
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	112699
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0
Total energy consumption	<Not Applicable>	917602

**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	Yes
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	No

**C8.2c**

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

**Fuels (excluding feedstocks)**

Coal

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

151179

**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**

151179

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**Emission factor**

0.0951

**Unit**

metric tons CO2e per GJ

**Emissions factor source**

IPCC 2006 Guidelines

**Comment**

---

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

167069

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

164265

**MWh fuel consumed for self-generation of steam**

2804

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**Emission factor**

0.0562

**Unit**

metric tons CO2e per GJ

**Emissions factor source**

IPCC 2006 Guidelines

**Comment**

---

**Fuels (excluding feedstocks)**

Methane

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

68146

**MWh fuel consumed for self-generation of electricity**

**MWh fuel consumed for self-generation of heat**

**MWh fuel consumed for self-generation of steam**

68146

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

<Not Applicable>

**Emission factor**

0.0562

**Unit**

metric tons CO2e per GJ

**Emissions factor source**

**Comment**

This is for methane rich gas

---

**Fuels (excluding feedstocks)**

Diesel

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

108436

**MWh fuel consumed for self-generation of electricity**

41874

**MWh fuel consumed for self-generation of heat**

66562

**MWh fuel consumed for self-generation of steam**

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

---

<Not Applicable>

**Emission factor**

0.0759

**Unit**

metric tons CO2e per GJ

**Emissions factor source**

IPCC 2006 Guidelines

**Comment**

The emission factor is for mobile combustion of diesel. An emission factor of 0.0743 tCO2e/GJ is used for stationary combustion of diesel.

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**Fuels (excluding feedstocks)**

Petrol

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

1191

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

1191

**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**

<Not Applicable>

**Emission factor**

0.071

**Unit**

metric tons CO2e per GJ

**Emissions factor source**

IPCC 2006 Guidelines

**Comment**

---

**Fuels (excluding feedstocks)**

Liquefied Petroleum Gas (LPG)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

4204

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

4204

**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**

<Not Applicable>

**Emission factor**

0.0632

**Unit**

metric tons CO2e per GJ

**Emissions factor source**

IPCC 2006 Guidelines

**Comment**

The emission factor is for mobile combustion of LPG. An emission factor of 0.0631 tCO2e/GJ is used for stationary combustion of LPG.

---

**(C8.2d) 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	16750	16750	0	0
Heat	332149	332149	0	0
Steam	117703	117727	0	0
Cooling	0	0	0	0

C-CH8.2d

**(C-CH8.2d) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.**

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity	16750	16750
Heat	285317	285317
Steam	119990	68389
Cooling	0	0

C8.2e

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

**Sourcing method**

None (no purchases of low-carbon electricity, heat, steam or cooling)

**Low-carbon technology type**

<Not Applicable>

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

<Not Applicable>

**MWh consumed accounted for at a zero emission factor**

<Not Applicable>

**Comment**

Not applicable

C-CH8.3

**(C-CH8.3) Does your organization consume fuels as feedstocks for chemical production activities?**

No

C9. Additional metrics

C9.1

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

C-CH9.3a

**(C-CH9.3a) Provide details on your organization's chemical products.**

**Output product**

Nitric acid

**Production (metric tons)**

253441

**Capacity (metric tons)**

306000

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

0.74

**Electricity intensity (MWh per metric ton of product)**

0.25

**Steam intensity (MWh per metric ton of product)**

0.5

**Steam/ heat recovered (MWh per metric ton of product)**

0

**Comment**

We have reported on nitric acid as this production activity is the most GHG emissions-intensive of all of our products. Please note that electricity and steam consumed data used in the calculation were for the entire site (i.e. AEL Modderfontein) and not only for the nitric acid production process. It is challenging to isolate data on the steam and electricity used by this facility from that used for other chemicals produced on-site.

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

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

	Investment in low-carbon R&D	Comment
Row 1	Yes	

**C-CH9.6a**

**(C-CH9.6a) Provide details of your organization's investments in low-carbon R&D for chemical production activities over the last three years.**

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
Other, please specify (Products that reduce customers' GHG emissions, improve their resilience in the face of climate change impacts and sequester carbon)	Large scale commercial deployment	81 - 100%	64000000	To manage this, the AECI Growth Office (AECI.GO) was established in 2017. Its mandate covers two main areas: enhancing the delivery of the Group's current businesses ("Business of Today") and identifying disruptors and customer needs that will shape the Business of Tomorrow. In the Business of Tomorrow, investment in research and development has included products that enable customers to reduce their GHG emissions or increase their resilience in the face of climate change impacts. One example Biocult which has developed a Mycorrhizae-based product that assists farmers in increasing crop yields and making plants more resistant to climate-related impacts. The product has the added benefit of sequestering carbon in the soil. If customers were to claim for this sequestered carbon it could reduce their direct carbon tax liability. Not only do we invest in R&D, we also look to acquire companies that are developing low-carbon products. For example, we invested R66.55 million in Origin Materials, a start-up based in California, USA. This company has pioneered the development of bio-based chemicals which can be processed into a large number of products for application in global markets. We remain committed to exploring green chemistries and innovative technologies in line with our Going Green value, in line with our risk appetite.

**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	No third-party verification or assurance



## C10.1a

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

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

AECI full-iar 2019.pdf

**Page/ section reference**

Page 56

**Relevant standard**

ISAE3000

**Proportion of reported emissions verified (%)**

100

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## C10.1b

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

**Scope 2 approach**

Scope 2 location-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

**Page/ section reference**

Page 56

**Relevant standard**

ISAE3000

**Proportion of reported emissions verified (%)**

100

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**Scope 2 approach**

Scope 2 market-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

**Page/ section reference**

Page 56

**Relevant standard**

ISAE3000

**Proportion of reported emissions verified (%)**

100

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## C10.2

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**(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

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## 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
C7. Emissions breakdown	Year on year change in emissions (Scope 1)	ISAE 3000	Third-party assurance is in place for Scope 1 emissions and the comparison to last year. See our integrated report for more detail <a href="https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf">https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf</a> .
C7. Emissions breakdown	Year on year change in emissions (Scope 2)	ISAE 3000	Third-party assurance is in place for Scope 1 emissions and the comparison to last year. See our integrated report for more detail <a href="https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf">https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf</a> .
C7. Emissions breakdown	Year on year change in emissions (Scope 1 and 2)	ISAE 3000	Third-party assurance is in place for Scope 1 emissions and the comparison to last year. See our integrated report for more detail <a href="https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf">https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf</a> .
C7. Emissions breakdown	Change in Scope 1 emissions against a base year (not target related)	ISAE 3000	Third-party assurance is in place for our Scope 1 emissions and the comparison to last year. See our integrated report for more detail <a href="https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf">https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf</a> .
C7. Emissions breakdown	Change in Scope 2 emissions against a base year (not target related)	ISAE 3000	Third-party assurance is in place for our Scope 1 emissions and the comparison to last year. See our integrated report for more detail <a href="https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf">https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf</a> .
C8. Energy	Energy consumption	ISAE 3000	Third-party assurance is in place for our Scope 1 emissions and the comparison to last year. See our integrated report for more detail <a href="https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf">https://www.aeciworld.com/reports/ar-2019/pdf/full-iar.pdf</a> .

## 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.**

South Africa carbon tax

### C11.1c

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

#### South Africa carbon tax

**Period start date**

June 1 2019

**Period end date**

December 31 2019

**% of total Scope 1 emissions covered by tax**

85

**Total cost of tax paid**

5717538

**Comment**

Payment is due in October 2020 for the carbon tax liability from 1 June 2019 to 31 December 2019. The percentage of Scope 1 emissions covered by the tax has been determined over the full 2019 financial year.

### C11.1d

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

To ensure compliance, we require adherence to the Group SHEQ Policy, the standardised SHEQ Framework and supporting procedures by all Group businesses. The Managing Directors/Managing Executives of the businesses confirm that their businesses are in compliance with AECI's SHEQ Standards and Policy. Where such confirmation cannot be given, the level of non-compliance is described and details of the plans in place to achieve compliance are provided.

AECI also has a Compliance Framework and various related processes in place. These are monitored by the Board and its Committees to ensure ongoing improvements. The compliance universe is refined continually, considering all related developments in the regulatory context. This includes environmental regulation. The Board, via the Risk Committee, has implemented risk mitigations and controls for significant compliance risk areas. A balanced approach to compliance is adopted and takes into account the Company's obligations, rights and related costs.

Where regulation impacts on a number of the Group's businesses, management at Corporate Head Office will assist the businesses to understand the regulation and its impact. Specialists may be appointed to assist, where necessary. For example, in terms of the South African carbon tax, the Group Environmental Specialist, along with other external carbon tax specialists, assisted the various businesses to understand if they were liable for the carbon tax. Management at Corporate Head Office is also assisting those that are liable to license for the carbon tax with the South African Revenue Service and to complete the necessary carbon tax returns.

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**C11.2**

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

No

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**C11.3**

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

Yes

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**C11.3a**

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

**Objective for implementing an internal carbon price**

Navigate GHG regulations  
Drive low-carbon investment  
Stress test investments  
Identify and seize low-carbon opportunities

**GHG Scope**

Scope 1  
Scope 2

**Application**

The price is applied to all businesses in South Africa. It is applied when making investment decisions.

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

120

**Variance of price(s) used**

The price is aligned with the South African carbon tax. As such, it will increase by Consumer Price Inflation (CPI) plus 2% each year to end-2022. Thereafter, it will increase at CPI.

**Type of internal carbon price**

Shadow price

**Impact & implication**

The internal carbon price is applied when making investment decisions. Our businesses include this price in the business case for emission reduction and energy efficiency initiatives. We include this price when considering possible acquisitions.

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**C12. Engagement**

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**C12.1**

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

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

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**C12.1b**

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

**Type of engagement**

Collaboration & innovation

**Details of engagement**

Other, please specify (Collaborate with customers on the development of new products and services to meet their needs)

**% of customers by number**

100

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

0

**Portfolio coverage (total or outstanding)**

<Not Applicable>

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

We collaborate with all our customers (100%) to develop new products that reduce their GHG emissions or enhance their resilience to the impact of climate change. Examples include: a) the development of new products to reduce water usage and preserve topsoil that are being pursued by Nulandis through its NU-Way® programme. These products and other farm management services are being developed to support farmers. b) the development of a Mycorrhizae-based fertilizer by Biocult which can be applied to soils to aid plant growth. Not only does the product increase yields for farmers, but it also sequesters carbon in the soil. c) the implementation of desalination plants by ImproChem in response to the drought. Areas for collaboration are identified through ongoing interaction with customers. This interaction occurs in the normal course of business in the form of meetings, written correspondence and calls. We have not included GHG emissions associated with the use of our products by customers in the Scope 3 emissions disclosed as they are difficult to estimate.

**Impact of engagement, including measures of success**

We measure success by whether we are able to develop new products that adequately address challenges experienced by customers. We also measure success by sales of new products. Some examples include: a) Biocult has developed and offers its customers a product that can sequester carbon in soil. This could, if claimed under the carbon tax, reduce the customer's carbon tax liability. The product also increases the resilience of crops to climate-related impacts like droughts. b) Nulandis has launched NuWay® which is a strategy to develop sustainable agricultural practices across its client base. It offers a holistic solution for plant health that reduces water usage and also allows crops to better withstand the effects of climate change. c) We have invested in SupPlant. The technology is a sensor-based system that waters crops according to gathered data, while optimising water consumption and alerting farmers of the state of crops, soil, air, and irrigation in a field, vineyard or orchard. It will reduce our customers' water usage and increase their resilience in times of reduced rainfall.

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**C12.1d**

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

*AECI engages with a broad spectrum of stakeholders. Key stakeholders include employees, trade unions, internal and external auditors, shareholders and fund managers, financiers, customers, suppliers, technology and business partners, local and national government structures, industry bodies, neighbouring communities, special interest groups and the media. All engagements are viewed as being significant. Our engagement with government and communities is discussed below*

*· Government: legal compliance is of utmost importance to AECI and, as such, engaging with relevant authorities is a business imperative. Such engagement may range from advocacy initiatives associated with the development of legislation and standards, to cooperative work with those regulators who have the responsibility of governing the Group's activities through the application of these laws and standards. To facilitate engagement, AECI and/or its businesses may choose to develop relationships with relevant government and regulatory entities in a proactive manner.*

*Engagement typically takes place in meetings or through the provision of written commentary on policies and regulations. We also engage with government through CAIA, the industry association for the chemicals industry. In the reporting year, a significant step was taken to enhance engagement with this stakeholder Group and others. A Strategic Relationships Manager was appointed. The experienced incumbent in this new senior role was tasked with reviewing the strategies, structures and processes in place and for recommending changes or improvements, as required, and for overseeing the execution thereof.*

*The success of engagement is measured through our understanding of the regulations, our preparedness to comply and our compliance with the regulations. It is also measured through the consideration that government gives to feedback on various pieces of legislation.*

*· Communities: we engage with communities neighbouring our operations on climate-related issues. Engagement is typically through meetings with community members. At Modderfontein and Chloorkop, in Gauteng, a number of Group businesses play active roles in a Community Awareness and Emergency Response Committee. At the Umbogintwini Industrial Complex, and under the auspices of the Umbogintwini Industrial Association, issue-specific stakeholder and community liaison forums deal with water quality, air emissions and other matters of interest and/or concern to communities.*

*Engagement with communities is also through organised projects and programmes. We participate in various community-related projects. One example in the reporting year was a project in Hammanskraal, northern Gauteng. A report released by the South African Human Rights Commission in August 2019 confirmed that water in that area was not fit for human consumption and did not comply with South Africa's drinking water standards. The AECI Community Education and Development Trust (CEDT), ImproChem and Nulandis stepped in. ImproChem contributed a world-class water filtration solution that is benefiting five schools, a clinic and the wider community. Nulandis established food gardens at each school, as well as plant and soil health products and training in their application for optimal results. The CEDT, in partnership with Gift of the Givers, the Wildlife and Environment Society of South Africa and others provided boreholes and water education programmes at each location. Approximately 5 000 beneficiaries were impacted directly.*

*Success is typically measured by whether the communities are comfortable with the actions we take to minimise our impact on the environment. Success is also measured by participation by community members in meetings, projects and programmes. We strive to establish constructive relationships with these stakeholders through regular engagement and by addressing their concerns where possible.*

*All engagement by AECI employees is subject to the Group's Code of Ethics and Business Conduct as approved by the AECI Board. This Code is designed to provide clear guidelines for engaging with all stakeholders in an open and honest manner.*

### 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
Carbon tax	Oppose	Engagement on the proposed South African carbon tax is via correspondence and meetings with CAIA.	This tax was introduced in South Africa from 1 June 2019. AECI has prioritised energy efficiency and GHG emission reduction for both its own operations and its customers. The Group will continue to do so. As already explained, AECI has developed products and services that assist its customers to reduce emissions and/or minimise the impact of climate change. This imperative is integrated into the business strategy and day-to-day operations of AECI as part of its corporate citizenship and good governance. However, AECI did not support the introduction of a carbon tax at this time in South Africa with the already onerous legislative burden on companies and the existing voluntary efforts being made by companies to reduce GHG emissions. In addition, we proposed that the way in which companies are benchmarked under the carbon tax change. The way in which benchmarking is currently structured under the carbon tax is not feasible as there are only a small number of companies that fall within a specific sector and there is a risk of market-sensitive information being shared with competitors. As an alternative, AECI proposed that companies who can show that they have undertaken acceptable mitigation activities to reduce CO2 emissions (e.g. CDM projects) should be exempt from the tax.
Mandatory carbon reporting	Support with minor exceptions	Engagement on mandatory reporting of GHG emissions in South Africa is via correspondence and meetings with both CAIA and the South African Department of Environment, Forestry and Fisheries.	This concerns mandatory reporting of GHG emissions in South Africa. AECI has and will continue to report its GHG emissions in the public domain through both the Climate Change CDP and the Integrated Annual Report. As such, AECI is not opposed to the introduction of mandatory reporting. However, there are some concerns regarding the boundaries, thresholds, process for reporting and the penalties associated with the regulation. Currently, reporting of greenhouse gas emissions takes place at facility-level through the National Atmospheric Emissions Inventory System (NAEIS) and at group-level directly to government. We propose that reporting takes place at a national level only as climate change and greenhouse gas emissions are a global issue. We also propose that the reporting is done at legal entity-level to align with the carbon tax that has recently been introduced in South Africa. We have, however, registered for mandatory reporting and submitted our greenhouse gas emissions report to the South African Department of Environment, Forestry and Fisheries for the third year running.
Cap and trade	Support with major exceptions	Engagement on carbon budgets in South Africa is via correspondence and meetings with both CAIA and the South African Department of Environment, Forestry and Fisheries	This concerns carbon budgets in South Africa. AECI has been engaging with the South African Department of Environment, Forestry and Fisheries on the first phase of the carbon budgeting process which is voluntary and runs up to the end of 2020. Whilst AECI is committed to reducing its GHG emissions and has made great strides in this regard, we are concerned about the risk of market-sensitive information being shared with competitors, the setting of the budget and the introduction of penalties for exceeding an allocated budget. We propose that there is alignment between the various policy instruments that have been proposed or implemented by national government. We are of the opinion that the carbon budgets and carbon tax need to be aligned so that a company is only taxed for emissions exceeding the allocated budget.
Other, please specify (Emissions)	Support with minor exceptions	Engagement on emissions limits with the South African Department of Environment, Forestry and Fisheries via correspondence and meetings	In the reporting year, a meeting was held with the South African Department of Environment, Forestry and Fisheries to finalise applications for the postponement of compliance with the 2020 Minimum Emission Standards for certain operating plants in Modderfontein. In terms of South Africa's National Environment Management Act: Air Quality Act, the new Standards took effect on the 1st of April 2020. Postponement of compliance to 2025 was applied for and granted to allow for abatement projects to be completed. Completion is nonetheless expected in the third quarter of 2020.

### 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**

Chemical and Allied Industries Association (CAIA)

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

AECI is a founder member of CAIA and its Chief Executive Officer sits on the Board. Members of CAIA seek to engage constructively with Government on the issues at hand in order to reach an acceptable outcome for industry. It must be acknowledged that an acceptable outcome may be a compromise. For the members, it is important that there is acknowledgement by Government on the voluntary investments made by businesses towards mitigating emissions and the associated impacts of climate change. It is also important that businesses' concerns with regards to existing and pending regulation are acknowledged. Reduction targets should be achievable with acceptable risk and levels of investment. Unachievable emission reduction targets place industry at significant risk for tax liability, further regulatory and economic action, loss of competitiveness, as well as reputational damage. Constructive engagements must acknowledge that achievements by companies in reducing their emissions profiles have been as a result of responsible self-regulation through the Responsible Care initiative to which signatories remain committed. Market forces should also be recognised as playing an important and increasing role in placing pressure on companies to reduce emissions.

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

As a CAIA member, AECI is well aware that a business-as-usual approach is not feasible. AECI is committed to playing an active role in implementing the National Climate Change Response Policy that places South Africa on a low carbon growth path whilst at the same time addressing developmental imperatives. To this end, AECI participates actively via CAIA in terms of engagement with policy makers through formal meetings, dialogues, written submissions and comments on proposed policies, participation in sector specific workshops etc.

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**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?**

*AECI ensures that all of its direct and indirect activities that influence policy are consistent in terms of messaging through the following –*

- a) Adherence to the Group SHEQ Policy, a standardised SHEQ Framework and supporting procedures by all of the Group's businesses. The Managing Directors of the businesses confirm that the businesses are in compliance with AECI's SHEQ Standards and Policy. Where such confirmation cannot be given, the level of non-compliance is described and details of the plans in place to achieve compliance are provided.*
- b) AECI engages with its businesses to obtain feedback, consolidates this feedback and relays the message to government and/or industry associations as required. All engagement with government and industry associations such as CAIA takes place at Group-level.*
- c) AECI ensures consistent messages are conveyed to stakeholders through central coordination of stakeholder engagement. This is done in collaboration with the Group Communication and Investor Relations Manager.*
- d) AECI has introduced programmes such as the Going Green programme to drive consistent messaging. The Going Green programme focuses on environmental targets and production efficiencies to reduce energy and water usage. All processes related to the Going Green programme are directly linked to AECI's vision and values and are reviewed on a regular basis to ensure relevancy and consistency not only with the AECI strategy, but also with the constantly evolving regulatory and business regime. Performance on Going Green programme is regularly reported to the Executive Committee as well as the Social and Ethics Committee meetings.*

*Going forward, consistency and alignment will also be achieved through the dedicated strategy for sustainable development. The development of this strategy is currently underway.*

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**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

**Status**

Complete

**Attach the document**

**Page/Section reference**

3, 5, 7, 9, 13, 17, 29, 49, 52, 54, 55, 56, 57, 62, 67, 108

**Content elements**

Governance  
Strategy  
Risks & opportunities  
Emissions figures  
Emission targets

**Comment**

Note that a separate sustainability report will be published in the second half of 2020. That report will also be made available electronically and in print.

## C15. Signoff

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### C-FI

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

### C15.1

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

	Job title	Corresponding job category
Row 1	Chief Executive Officer	Chief Executive Officer (CEO)

## SC. Supply chain module

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### SC0.0

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

AECI is a diversified Group of 16 companies. It is based in South Africa and has an international footprint. It operates in 26 countries on six continents — Africa, Europe, Asia's South Eastern region, North America, South America and Australia.

Products and services are essential inputs in the businesses of a broad range of customers as follows:

- the global mining sector
- the plant and animal health industry in Europe, the USA and Africa
- the water treatment market in Africa
- the food and beverage, road infrastructure and general industrial sectors, mainly in Southern Africa. Although we have a presence in 26 countries, we only report in this submission on those countries in which we have manufacturing operations.

In line with this strategy, businesses were managed in five growth pillars in the year under review: Mining Solutions (AEL Intelligent Blasting, Experse and Senmin), Water & Process (ImproChem), Plant & Animal Health (Nulandis and Schirm), Food & Beverage (Lake Foods and Southern Canned Products), and Chemicals (Chemfit, Chemical Initiatives, ChemSystems, Industrial Oleochemical Products, Much Asphalt and SANS Technical Fibers). Included in this pillar is the Specialty Minerals South Africa joint venture. These pillars are AECI's key reporting segments. More information is provided on each of these pillars below:

- **Mining Solutions:** these businesses provide a mine-to-mineral solution for the mining sector internationally. The offering includes surfactants for explosives manufacture, commercial explosives, initiating systems and blasting services right through the value chain to chemicals for ore beneficiation and tailings treatment
- **Water & Process:** ImproChem provides integrated water treatment and process chemicals, and equipment solutions, for a diverse range of applications in Africa. These include, inter alia, public and industrial water, desalination and utilities
- **Plant & Animal Health:** Nulandis manufactures and supplies an extensive range of crop protection products, plant nutrients and services for the agricultural sector in Africa. Schirm, based in Germany, is a contract manufacturer of agrochemicals and fine chemicals with a European and US footprint. It is the premier provider of external agrochemical formulation services in Europe.
- **Food & Beverage:** the businesses in this pillar supply ingredients and commodities to the dairy, beverage, wine, meat, bakery, health and nutrition industries. The other main activity is the manufacture and distribution of a broad range of juice-based products and drinks, including formulated compounds, fruit concentrate blends and emulsions.
- **Chemicals:** AECI's Chemicals businesses supply chemical raw materials and related services for use across a broad spectrum of customers in the manufacturing, infrastructure and general industrial sectors, mainly in South Africa and in other Southern African countries. SANS Technical Fibers is based in the USA.

AECI also has a property division, Acacia Real Estate. Its main activities are the management of the Company's leasing portfolio and the provision of services at the Umbogintwini Industrial Complex in KwaZulu-Natal. Together with Head Office support functions, including the treasury, Acacia Real Estate constitutes the Group's sixth reporting segment, namely Property & Corporate.

All business activities are underpinned by the Group's BIGGER values — of being Bold, Innovative, Going Green and being Engaged and Responsible.

### SC0.1

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

	Annual Revenue
Row 1	24799000000

SC0.2

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

No

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**

L'Oréal

**Scope of emissions**

Scope 1

**Allocation level**

Facility

**Allocation level detail**

The Chemical Initiatives Facility in Chloorkop manufacture products for Loreal

**Emissions in metric tonnes of CO2e**

2.1

**Uncertainty (±%)**

10

**Major sources of emissions**

Major sources of scope 1 emissions: 1. Natural gas used in boilers 2. Refrigerants

**Verified**

No

**Allocation method**

Other, please specify (Allocation is based on the amount of product produced for Loreal)

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

We identified all sources of fuel used for heating and calculated GHG emissions using IPCC factors

**Requesting member**

L'Oréal

**Scope of emissions**

Scope 2

**Allocation level**

Facility

**Allocation level detail**

Allocation is based on the amount of product produced for Loreal

**Emissions in metric tonnes of CO2e**

12.07

**Uncertainty (±%)**

10

**Major sources of emissions**

The only source of GHG emissions is electricity which is purchased from Eskom. A grid emission factor is used to calculate the emissions.

**Verified**

No

**Allocation method**

Other, please specify (Allocation is based on the amount of product produced for Loreal)

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

The only source of GHG emissions is electricity which is purchased from Eskom. A grid emission factor is used to calculate the emissions.

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	AECI provides products and services to a wide range of customers due to the diversity of our business. It would make sense to allocate our emissions in terms of significance of emissions; i.e. reporting emissions relating to those operations emitting the highest tonnes of CO2 emissions.

### 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.**

Emissions will be allocated to those customers associated with our operation that contribute to the most significant emissions. Materiality will be taken into account due to the broad diversity of our products.

### 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 2020-2021 CDP Action Exchange initiative?**

No

### SC3.2

**(SC3.2) Is your company a participating supplier in CDP's 2019-2020 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**

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

**Please confirm below**

I have read and accept the applicable Terms