AECI Ltd Ord - Climate Change 2019

C0. Introduction

C0.1

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

AECI is a diversified Group of 17 companies. It has regional and international businesses in Africa, Europe, South East Asia, North America, South America and Australia. Products and services are provided to a broad spectrum of customers in the mining, water treatment, plant and animal health, food and beverage, infrastructure and general industrial sectors.

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. In line with this strategy, businesses are managed in five growth pillars: 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 are two joint ventures — Crest Chemicals and Specialty Minerals South Africa.

These pillars are AECI's key reporting segments. 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.

MINING SOLUTIONS

These businesses provide a mine-to-mineralsolution 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 treat- ment 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 manu-facturer of agrochemicals and fine chemicals with a European and US footprint. It is the largest 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-basedproducts and drinks, including formulated com-pounds, 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 was registered as a company in South Africa in 1924 and has been listed on the JSE since 1966. At the end of 2018 its market capitalisation was R10,2 billion and it had 8 038 employees.

Extreme and unpredictable weather events and the failure of climate change mitigation and adaptation has been identified by the Group as a top risk. As such, AECI is committed to effective management of climate change risks, energy consumption and associated greenhouse gas (GHG) emissions. Total Scopes 1 and 2 emissions for the 2018 financial year (01 January 2018 to 31 December 2018) were 562 450 tCO2e which represents a decrease of 1% from the prior year. This decrease was largely due to reduced production at AEL's Nitric Acid Plants.

This year, we focused on defining targets to drive emission reductions throughout the business. We have set targets to reduce our scope 1 emissions per tonne production by 15% and our scope 2 emissions per tonne production by 10% from a 2018 baseline by the end of 2022. Targets were set as part of our Going Green Programme which was also revised this year. The aim of our Going Green Programme is to minimise environmental impact and drive a beyond compliance mind-set within AECI's own operations and across the value chain, thereby enabling AECI to be seen as the Company of Choice. The Programme has five key focus areas – GHG emissions, energy, water, waste and green chemistry.

There have been no changes to the reporting period. AECI continues to report in line with its financial year-end reportings. Please note that we have included information for Schirm and Much Asphalt for the first time this year since the acquisitions of both these businesses took effect in the 2018 financial year.

C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Row 1	January 1 2018	December 31 2018	No	<Not Applicable>

C0.3

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

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

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

ZAR

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.

Financial control

C-CH0.7

(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

C1.1

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

Yes

C1.1a

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

Position of individual(s)	Please explain
Board-level committee	The AECI Board has over-arching responsibility for climate-related issues. Responsibility was assigned to the Board in recognition of the potential impact of climate-related risks on the organisation. The Board acknowledges that risk management is an integral part of the Group strategy-setting process and is accountable for risk management. This includes risks related to climate change. The Board has delegated to the Social and Ethics Committee the primary responsibility to consider, recommend and monitor AECI's activities with regard to safety, health and environment and to report accordingly to the full Board. This includes climate-related issues. 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	Please explain
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	The Social and Ethics Committee meets quarterly. It reports back to the Board on climate-related issues at all meetings of the Board. The information conveyed by the Social and Ethics Committee to the Board is used in strategy and action plan development. It is also used to inform target and budget setting. When considering new projects, climate-related risks that have the potential to impact on these projects are identified and considered. This is the case for major capital expenditures, acquisitions and mergers. Climate related issues are also discussed at the Risk Committee where Extreme and Unpredictable Weather Events is recognised as a material issue that could impact the delivery of the businesses' strategy and growth objectives both positively and negatively. One of the main functions of the Risk Committee is to ensure that proper controls and mitigations are in place to manage risk in line with the Board's risk appetite.

C1.2

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

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Quarterly

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 has an overall, primary management and leadership role in the organisation. Included in this is responsibility for climate-related issues. The Chief Executive is supported by the Group Safety, Health and Environment Manager. This Manager has day-to-day responsibility for climate-related issues, with a reporting line to the Chief Executive. This Manager reports back to the Chief Executive and the Social and Ethics Committee on environmental performance and climate-related issues. The Group Safety, Health and Environment Manager is supported by the Group Environmental Specialist who provides environmental support and advice to AECI.

Along with the Chief Executive, the Social and Ethics Committee is also directly responsible for oversight and guidance on climate-related issues. It is a Board-Appointed Committee that sits directly under the Board in the organisational structure and reports back to the full Board. Responsibility for climate-related issues rests within this Committee as it fits within the mandate of this Committee. The Social and Ethics 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

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

Yes

C1.3a

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

Who is entitled to benefit from these incentives?
Director on board

Types of incentives
Recognition (non-monetary)

Activity incentivized
Emissions reduction project

Comment
An environmental award is given to the Managing Director of the company that performs the best in terms of reducing GHG emissions, energy, water and waste. This award acknowledges excelled levels of environmental compliance, the quality of data reporting, the severity and nature of environmental incidents and improvements made in environmental management and Going Green. In the 2018 financial year, ImproChem was the recipient of the award. The award is accepted by the Managing Director on behalf of the company. ImproChem was recognised for environmental compliance at its manufacturing sites, it had no major, serious or moderate environmental incidents, it has excellent housekeeping practices, shows good support for Going Green initiatives, excellent tracking and awareness of environmental performance and it executed complex remediation projects without incident or production interruptions.

Who is entitled to benefit from these incentives?
Environment/Sustainability manager

Types of incentives
Recognition (non-monetary)

Activity incentivized
Other, please specify (SHE Awards)

Comment
Awards were given to Safety, Health and Environmental (SHE) practitioners relating to best SHE performance at the 2018 Annual SHE Conference. Emissions performance is an important component of the environmental aspect of SHE.

Who is entitled to benefit from these incentives?
Process operation manager

Types of incentives
Monetary reward

Activity incentivized
Emissions reduction project

Comment
Operational personnel are rewarded as part of their Key Performance Indicators on successful management of the Clean Development Mechanism (CDM) projects at AEL Modderfontein.

C2. Risks and opportunities

C2.1

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

	From (years)	To (years)	Comment
Short-term	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	10	Long-term is defined as five years or longer This is in line with the other business practice time horizons.

C2.2

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

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

C2.2a

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

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	Given the Group's rapidly evolving external environment, risk management is an ongoing process. Risks, including climate-related risks, are identified and assessed on an ongoing basis in line with Group Risk Management Policy and the Group Enterprise Risk Management Framework. Consideration is given to risks that have the potential to impact on AECI's operations as far into the future as 6 years or more.

C2.2b

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

The Group follows the risk management methodology comprising both bottom-up and top-down processes. The risk management methodology adopts a holistic approach in identifying, analysing, evaluating, treating, monitoring and reviewing risks.

- How climate-related risks are identified and assessed at a site-level (asset-level): Site-level risks are identified and assessed using a bottom-up process. Management teams of the various businesses within the Group are asked to identify risks and quantify the likelihood, timeline and magnitude of each risk. These teams are also asked to provide information on plans in place to manage these risks. Management teams are supported in this risk identification and prioritisation process by the relevant individuals at Corporate Head Office through risk identification and management workshops.

- How climate-related risks are identified and assessed at a company-level: The top-down process (company-level) involves management at Corporate Head Office. Management at Corporate Head Office review the risks identified at site-level and also identify Group-level risks. The identification of risks at Group-level is 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.

- The process you have in place for assessing the potential size and scope of identified risks: 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.

- The process by which your organization determines the relative significance of climate-related risks in relation to other risks: Risks, including climate-related risks, are prioritised on a 5 x 5 rating scale that sets out potential impacts (magnitude of impact) and estimated probabilities (likelihood of occurrence). The potential impacts are classified as minor, moderate, serious, major or severe which are 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 definitions of risk terminologies used (or references to existing risk classification frameworks utilized by your company): The risks assessment process is 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. The risk terminologies align with this international standard and King IV.

- How your organization defines 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 - 120 million (loss or gain)

Score: 3 / Rating: Serious / Financial Impact: R40 - 80 million (loss or gain)

Score: 2 / Rating: Moderate / Financial Impact: R5 - 40 million (loss or gain)

Score: 1 / Rating: Minor / Financial Impact: R0 - 5 million (loss or gain)

A substantive financial impact is considered as a rating of higher than moderate; i.e. serious, major or severe rating.

Opportunities are also identified by employing the same bottom-up and top-down approach. Opportunities are also assessed and prioritised in the same way as risks.

C2.2c

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Current regulation is included in the climate-related risk assessment. Both business and corporate management are asked to consider whether the business and/or AECI as a whole are exposed to regulatory risks. An example of a risk associated with current regulation is the achievement of the minimum emission standards at AEL Modderfontein. The National Environmental Management Act: Air Quality Act, No. 39 of 2004, specifies Minimum Emission Standards (MES) which will come into effect on 1 April 2020. Certain manufacturing operations at AEL's Modderfontein facility will be unable to meet the 2020 MES immediately. Although the installation of abatement equipment has commenced in these areas, AEL is applying for postponement of the compliance 2020 timeframes to allow the company sufficient time to complete the installation and commissioning of the abatement equipment required to achieve full compliance. Compliance projects in other manufacturing areas at Modderfontein have been completed or are at an advanced state. The total investment is significant, at approximately R200 million.
Emerging regulation	Relevant, always included	As with current regulation, emerging or pending regulation is also considered in the risk assessment process. Both business and corporate management are asked to consider whether the business and/or AECI as a whole are exposed to regulatory risks. In the 2018 financial year, one example was the pending introduction of a carbon tax in South Africa. This carbon tax was implemented on the 1st of June 2019. Our direct carbon tax liability is expected to be in the region of R6.1 million initially. Our indirect carbon tax liability, resulting from the increase in petrol and diesel prices, is expected to be in the region of R1 million. It is important to note that whilst the carbon tax will increase our tax burden, it also presents opportunities for some of our businesses. Biocult, for example, 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 carbon sequestered by the product is permanent provided that the farmer employs conservation farming.
Technology	Relevant, always included	All risks associated with technological improvements or innovations that support the transition to a lower-carbon, energy-efficient economic system are included in the risk assessment process. Management is asked 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 the SupPlant technology. We have a collaboration agreement signed with the Israel-based aggrotech company that developed this technology. It is a sensor-based system that waters crops according to gathered data, while optimising water consumption and alerting farmers of the state of the crops, soil, air, and irrigation in a field, vineyard or orchard. To date, we have deployed the technology at 15 sizeable farms in the Western Cape and the feedback from farmers has been encouraging.
Legal	Relevant, always included	The risk of litigation relating to non-compliance with climate-related regulation is considered in the risk assessment. Management of the various businesses within the Group are asked to identify if the businesses are exposed to risks from litigation. In the 2018 financial year, one of the material risks 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 specifically mentioned under this risk.
Market	Relevant, always included	Market-related risks are factored into the climate-related risk assessment process. Management at business-level is asked to identify if the products and services are exposed to risks from shifts in supply and demand as a result of climate change. Some of the business identified market-related opportunities presented by climate change. One example is ImproChem which 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. It identified an opportunity associated with 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 and has secured service contracts for these plants. The introduction of a carbon tax in South Africa may also result in market changes and increased demand for some goods and services. One example is Biocult. Biocult has developed a Mycorrhizae-based product 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 the farmer continues to apply conservation farming methods. If our customers were to be able to claim for this carbon sequestered, it could reduce their direct carbon tax liability.
Reputation	Relevant, always included	Reputational risks are evaluated at site and Group-level. Reputational risks are anticipated to arise in the event that AECI is unable to meet regulatory requirements and effectively management its greenhouse gas emissions and climate-related risks and opportunities.
Acute physical	Relevant, always included	Increased frequency and severity of extreme weather events resulting from climate change is included in the risk assessment process. Management of the various AECI businesses are asked to identify if these businesses are exposed to acute physical risks. In the 2018 financial 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.' In addition, the severe and persistent drought in the Western Cape curtailed growth in some of the Group's businesses including Nulandis which manufactures and supplies an extensive range of crop production products, plant nutrients and services for the agricultural sector.
Chronic physical	Relevant, always included	Changes in rainfall patterns and ambient temperature are considered by management when identifying risks to the businesses and the Group. Again, relevant examples are the Plant & Animal (Nulandis) and Water & Process (ImproChem) Pillars. Nulandis sells products into the agricultural sector, the success of which is heavily reliant on weather and associated rainfall patterns. On the other hand, changes in rainfall patters could present opportunities for Nulandis who has developed NuWay® which is a sustainable approach to farming. The same is true of ImproChem. Persistent drought effects impacted on the performance of the local water treatment chemicals market. Diminished water flow rates result in lower turbidity and hence lower dosages of purification chemicals. This had a negative effect on ImproChem's revenue. The Chemical Processing and Engineering Solutions businesses within ImproChem, however, performed strongly, with four desalination plants installed in the Western Cape and service contracts for these were secured.
Upstream	Relevant, always included	Risks in the value chain are considered in the risk assessment process with the various businesses being asked to report on any risks relating to supply of raw materials. SCP, for example, manufactures and distributes a broad-range of juice-based products and drinks. Owing to the drought in the Western Cape, it was necessary to purchase strategic consignments of raw materials for the juice business. This ultimately impacted on the trade working capital of the business in the 2017 financial year and, although this was corrected in the 2018 financial year, it is still a risk going forward. Other businesses also have risks in their value chains as a result of climate change.
Downstream	Relevant, always included	Risks relating to our customers and other stakeholders in the value chain are considered in the risk assessment process. This includes risks relating to shifts in customer and consumer attitudes and demands. We attempt to anticipate these shifts through 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 to developing new products and services to meet the ever-evolving needs of our customers. One example is our collaboration with Origin to support the development of renewable technologies. Site work for the construction of a pioneer plant in Ontario, Canada, has commenced and commissioning is anticipated in the first quarter of 2020.

C2.2d

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

Climate-related risks and opportunities as identified by the management teams of the AECI Group's various businesses, are managed at the business -level by these same management teams. These teams prioritise risks and opportunities on a 5 x 5 rating scale and decide whether to mitigate, transfer, accept or control climate-related risks and whether to and how best to capitalise on opportunities. Support is provided by Corporate Head Office in the form of workshops with the management teams of the businesses.

For example, some of the businesses identified risks relating to current or pending regulation. AEL Modderfontein, for example, reports that it was unable to meet all the minimum emissions standards in terms of the National Environmental Management: Air Quality Act, No. 39 of 2004. To manage this risk, an application for postponement was submitted to the South African Department of Environmental Affairs (DEA) and alternative limits were agreed to by the Department. AEL is in the process of installing abatement equipment at a cost of R200 million to reach these proposed limits. More generally, one way in which AECI manages risks relating to current and pending regulation is by regularly engaging with government either directly or through the Chemical and Allied Industries' Association (CAIA).

AECI has also identified risks and opportunities relating to the impact of climate change on rainfall patterns and the increased occurrence and severity of droughts. Nulandis, for example, supplies crop protection products, plant nutrients and services into the agricultural sector in Africa. Any changes in rainfall patterns or any droughts would impact on the sales of Nulandis products. In order to manage this risk, Nulandis is pursuing water use efficiency and preservation of top soil through its NU-Way® Programme. It is developing products and farm management services to support farmers.

At the same time, changes in rainfall patterns could result in increased demand for ImproChem's products and services. In the Western Cape, for example, the drought led to increased demand for desalination plants. In order to capitalise on these opportunities, At the same time, sales of water treatment declined since lower rainfall means less turbidity in rivers, hence lower dosing for purification purposes. ImproChem is focused on assessing and monitoring the broader context, researching trends, considering investment in plant and equipment to serve new and existing markets and developing strong relationships with its customers by delivering high-quality products and services.

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
Transition risk

Primary climate-related risk driver
Policy and legal: Increased pricing of GHG emissions

Type of financial impact
Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description
Our businesses identified a risk associated with the introduction of carbon pricing. A carbon tax was introduced in South Africa in 2019. The tax rate is R120 per tCO_2e on Scope 1 emissions. It is anticipated that 80% of emissions will be tax-exempt for the chemical industry until 2022 to allow for a smooth transition. Not only will AECI be paying a direct tax on its Scope 1 emissions, but there may also be other indirect cost implications as a result of increased prices of fuels and raw materials.

Time horizon
Short-term

Likelihood
Virtually certain

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
6100000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
Under the current design, the carbon tax would cost AECI in the region of R6.1 million. It is expected that this would increase with time as the tax rate increases and the

80% tax-exemption decreases or is removed. The financial impact was calculated by taking the taxable Scope 1 emissions for the 2018 financial year and multiplying it by the anticipated tax rate and the available tax-exemptions.

Management method
The risk of a carbon tax is managed by AECI through the introduction of emission reduction initiatives which reduce its potential carbon tax liability. This is done in line with the Going Green Programme. In 2017, the National Cleaner Production Centre (NCPC) has commenced assessment at AECI facilities in identifying further opportunities to reduce energy consumption and greenhouse gas emissions at the Group's facilities in South Africa.

Cost of management
20000000

Comment
It is expected that the Going Green Programme will require investment from companies in excess of R20 million.

Identifier
Risk 2

Where in the value chain does the risk driver occur?
Direct operations

Risk type
Transition risk

Primary climate-related risk driver
Policy and legal: Exposure to litigation

Type of financial impact
Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

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
Short-term

Likelihood
Virtually certain

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
5000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The financial implications of the impact of uncertainty associated with new regulation are difficult to quantify. New regulation may require various mitigation actions to be taken which may be costly. For example, the recently promulgated pollution prevention plans prompted the AEL business to plan for mitigation in the form of using secondary catalysts in its Nitric Acid Plants from 2020 in order to reduce its N_2O emissions The potential financial impact reported here is the annual cost associated with purchasing the secondary catalyst to reduce N_2O emissions.

Management method
In order to manage the risk associated with uncertainty surrounding new regulation, AECI engages with the regulators through CAIA on an ongoing basis to ensure that we stay ahead of any climate change-related regulation and frameworks and ensure that our concerns are raised with the relevant government departments.

Cost of management
1100000

Comment
The management cost is the annual CAIA membership fee.

Identifier
Risk 3

Where in the value chain does the risk driver occur?
Direct operations

Risk type
Physical risk

Primary climate-related risk driver
Chronic: Changes in precipitation patterns and extreme variability in weather patterns

Type of financial impact
Reduced revenues from lower sales/output

Company- specific description
Changes in precipitation patterns pose a risk to our businesses. Our Agrochemical Business and ImproChem may experience reduced demand for products and services as a result of changes in precipitation patterns. Our operations that rely on a continuous supply of good quality water may also be at risk. Changes in precipitation patterns may disrupt production, reduce revenue and/or increase operating costs.

Time horizon
Short-term

Likelihood
Virtually certain

Magnitude of impact
Medium-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 from Nulandis and ImproChem, primarily as a consequence of the drought in the Western Cape. Nulandis manufactures and supplies an extensive range of crop protection products, plant nutrients and services for the agricultural sector in Africa. Changes in rainfall patterns negatively impact on the agricultural sector. ImproChem manufactures water purification chemicals. Diminished water flow rates from water shortages result in lower turbidity and hence lower dosages of purification chemicals.

Management method
This risk is managed through engagement with customers to understand their climate-related risks and to identify how best AECI can support them. An example would be the provision of agricultural chemicals specifically for water-strained areas. This risk is also managed through investment in research and development which allows our businesses to diversify their product mix. In terms of the risk associated with water use in our own operations, we implement initiatives to reduce water withdrawals, increase recycling and rainwater harvesting. For example, ImproChem has embarked on an effluent reduction and water re-use programme in the Group.

Cost of management
70000000

Comment
AECI's spend on the research and development of new products was in the region of R70 million for 2018. The costs associated with water optimising initiatives implemented within the Group have been estimated to be in excess of R50m.

Identifier
Risk 4

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

Risk type
Physical risk

Primary climate-related risk driver
Acute: Increased severity of extreme weather events such as cyclones and floods

Type of financial impact
Reduced revenue from decreased production capacity (e.g., delayed planning approvals, supply chain interruptions)

Company- specific description
Our supply chain and labour force could be affected by physical climate change risks such as floods and/or extreme weather events. Flash floods could have a knock-on effect on food supply and pose a health risk to the workforce as well as result in damage to road infrastructure in the area which may affect the supply chain. Disrupted access to site and/or disruptions at suppliers' sites due to flooding or extreme weather events can result in supply chain disruption and non-delivery of raw material, a loss of production time and a loss of revenue. Flooding may also disrupt AECI's ability to supply key chemicals to clients, thereby disrupting clients operations.

Time horizon
Long-term

Likelihood
Likely

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
7000000000

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 taken as the cover for flooding per company under AECI's insurance policy.

Management method
In order to manage the risk associated with changes in precipitation extremes and droughts, AECI conducts risk assessments to quantify the potential impacts. AECI implements measures to mitigate the impacts where necessary. In addition, AECI businesses have insurance in place to protect against some of the potential impact of changes in precipitation extremes and droughts.

Cost of management
2000000

Comment
The cost reported is the cost associated with conducting a risk assessment of the impacts of flooding on AECI’s businesses.

Identifier
Risk 5

Where in the value chain does the risk driver occur?
Direct operations

Risk type
Transition risk

Primary climate-related risk driver
Reputation: Increased stakeholder concern or negative stakeholder feedback

Type of financial impact
Reduced revenue from decreased demand for goods/services

Company- specific description
There is a possible reputational risk associated with increased public awareness of and focus on what the industry is doing in response to climate change.

Time horizon
Long-term

Likelihood
Unlikely

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
233000000

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.

Management method
AECI is managing the potential reputational risks by reducing its GHG emissions, actively managing risks and opportunities and reporting on these to stakeholders. An example would be the use of secondary catalysts on its Nitric Acid Plant which is planned for 2020.

Cost of management
10000000

Comment
The management cost is the cost associated with the installation of secondary catalysts on the Nitric Acid Plant.

C2.4

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

C2.4a

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

Identifier
Opp1

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Products and services

Primary climate-related opportunity driver
Development of new products or services through R&D and innovation

Type of financial impact
Increased revenue through demand for lower emissions products and services

Company-specific description
Increasing environmental regulation has resulted in customers looking at ways to minimise their environmental impacts. This has led to a focus on Green Chemistry by AECI. Examples include – 1. Initiation of Ecologika which focuses on specialty products and services for sustainable agriculture; 2. Development of environmentally friendly fertilizer coatings; and 3. Development and sale of a series of emulsions.

Time horizon
Short-term

Likelihood
Very likely

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
100000000

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 will most likely result in increased sales. We have estimated that new products and services are likely to contribute between 2% and 5% of the Group's profits in the next five years which is equivalent to between R40 million and R100 million based on 2018 operating profit numbers.

Strategy to realize opportunity
AECI has placed a high priority on Green Chemistry to encourage the design of products and services that reduce environmental impacts for customers. This is evident in the Going Green Programme where one of the key focus areas is Green Chemistry. Green Chemistry is supported by ongoing research and development at individual business level. AECI also introduced the Ideation Platform during 2018 which allows employees to submit innovative ideas. 27 internally-generated ideas have been launched. Of these, 16 have been implemented (nine commercially-based and seven SHEQ-based). Collectively, R14 million in additional profits or savings was achieved and the target is to increase this to R50 million in 2019.

Cost to realize opportunity
70000000

Comment
AECI's spend on the research and development of new products was in the region of 70 million for 2018.

Identifier
Opp2

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Products and services

Primary climate-related opportunity driver
Development and/or expansion of low emission goods and services

Type of financial impact
Increased revenue through demand for lower emissions products and services

Company-specific description
The rising cost and tighter regulation of water supply, coupled with concerns about adequate long-term availability in many geographies, is prompting companies to view water conservation as an imperative in terms of business sustainability. AECI believes that this is an opportunity especially as the countries in which we operate are considered water scarce. Due to water shortages, water treatment is an attractive option for activities that use water as a raw material and generate significant quantities of effluent. ImproChem, AECI's water treatment business, aims to benefit from increased demand for water treatment. AECI also has the opportunity to reduce its own water usage which could result in a competitive advantage for the Group.

Time horizon
Current

Likelihood
Virtually certain

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
46000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

In the prior financial year, ImproChem's revenue increased by 3.2% to R1.454 billion. The increase in revenue for ImproChem in the 2017 financial year is reported as the financial impact of this opportunity. AECI also has the opportunity to reduce its own water usage which would lower operating costs for the businesses within the Group. An example would be the ImproChem water optimisation project being implemented across AECI businesses.

Strategy to realize opportunity
In order to maximise the opportunities, AECI's businesses are continually conducting research and developing new products and services to offer the market. ImproChem has also embarked on an effluent reduction and water re-use programme within the Group. ImproChem assesses the water and effluent systems at AECI's facilities and facilitate the implementation of optimisation projects to reduce water withdrawals and discharges.

Cost to realize opportunity
70000000

Comment
AECI's spend on the research and development of new products was in the region of R70 million for 2018. The cost associated with water optimisation projects has been greater than R10 million thus far.

Identifier
Opp3

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Products and services

Primary climate-related opportunity driver
Development and/or expansion of low emission goods and services

Type of financial impact
Increased revenue through demand for lower emissions products and services

Company-specific description
The recent drought conditions experienced in Southern Africa have impacted the agricultural sector, resulting in livestock not necessarily getting full nutritional value from the veld grass. AECI has identified this as an opportunity to provide products that supplement the nutrients that the livestock have been lacking due to the drought conditions. This could result in an increased demand for products.

Time horizon
Current

Likelihood
Virtually certain

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
1100000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The financial impact has been quantified as the revenue from the sales of the new Savannah range.

Strategy to realize opportunity
Savannah grazing supplements have been launched Chemfit, a division of AECI, to farmers in the Karoo. The supplement can be used by farmers to counteract the effects of dry, woody stalks in grass which result from the drought.

Cost to realize opportunity
70000000

Comment
AECI's spend on the research and development of new products was in the region of R70 million for 2018.

Identifier
Opp4

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Products and services

Primary climate-related opportunity driver
Development of new products or services through R&D and innovation

Type of financial impact
Increased revenue through demand for lower emissions products and services

Company-specific description
Resource management at the farm-gate level is critical in responding to climate change. Water use efficiency and preservation of top soil are two such strategies being pursued by Nulandis through their NuWay® programme. As part of Nulandis' NuWay® strategy to develop sustainable agricultural practices across its client base, the company has signed a collaboration agreement with Israel-based agrotech company SupPlant to market its technology in South Africa and 14 other countries in Africa. 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. To date, the technology has been deployed at 15 sizeable farms in the Western Cape and the feedback from farmers has been encouraging. This technology is complemented with the application of products such as Biocults' Mycorrhizae to enhance root mass and supply nutrients or Nulandis' Dekompakt to prevent soil crusting and hence water run-off or Genie Boost which assists with the conversion of crop residues into valuable soil humus. All of these products and services aim to build soil structures that give the farmer the best chance to manage the challenges posed by changing climatic conditions. It should be noted that Biocult's Mycorrhizae has the added benefit of sequestering carbon in the soil.

Time horizon
Current

Likelihood
Virtually certain

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
100000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
Nulandis sees massive opportunity to grow the services and products in support of our NU-Way® programme offered to farmers both locally and throughout Africa. Overall, we have estimated that new products and services are likely to contribute between 2% and 5% of the Group's profits in the next three years which is equivalent to between R40 million and R100 million based on 2018 operating profit numbers.

Strategy to realize opportunity
This opportunity is managed by investment in the necessary skills needed to develop new products and investment into research and development activities. Nulandis, a division of AECI, has boosted its crop health capability with the acquisition of a Precision Science Team, which provides a comprehensive range of in-field soil analysis and precision science services. In-house products are built into the solutions offered by this team and our Technical Advisors and Agents. New products are constantly under investigation and testing to broaden the product offering and provide cutting edge technology in crop management.

Cost to realize opportunity
70000000

Comment
AECI's spend on the research and development of new products was in the region of R70 million for 2018.

Identifier
Opp5

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Products and services

Primary climate-related opportunity driver
Development of new products or services through R&D and innovation

Type of financial impact
Increased revenue through demand for lower emissions products and services

Company-specific description
ImproChem, AECI's water solutions division, provides water treatment chemicals and services to municipalities and water boards such as Rand Water Board. Due to the recent drought, the demand for chemicals required to treat turbidity decreased resulting in reduced revenue for ImproChem in this area. However, opportunities arose due to, for example, an increase in other contaminants causing a concern relating to water taste and odour and treatment of borehole water and grey water due to water restrictions. Opportunities also arose as a result of the drought in the Western Cape. ImproChem secured contracts to install 4 desalination plants in the City of Cape Town as a result.

Time horizon
Current

Likelihood
Virtually certain

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
46000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
In the prior financial year, ImproChem's revenue increased by 3.2% to R1.454 billion. The increase in revenue for ImproChem in the 2017 financial year is reported as the

financial impact of this opportunity.

Strategy to realize opportunity
ImproChem responded to these challenges by setting up a Sustainable Water Solutions service looking at treatment using chlorine dioxide as well as in-house solutions to treat borehole water and grey water.

Cost to realize opportunity
1000000

Comment
The estimated financial implication of setting up the Sustainable Water Solutions service in terms of Research and Development is estimated at approximately R1 million.

Identifier
Opp6

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Resource efficiency

Primary climate-related opportunity driver
Other

Type of financial impact
Reduced operating costs (e.g., through efficiency gains and cost reductions)

Company-specific description
The increasing demand on the grid and rising cost of energy, especially electricity, is driving businesses to consider energy reduction initiatives in their activities.

Time horizon
Current

Likelihood
Virtually certain

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
3600000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The roll out of the new Going Green Programme across businesses within the Group is likely to realise significant cost savings. One example would be the upgrade of AEL Modderfontein's Nitric Acid Plant's process water cooling system by introducing AC drive motor control. This project resulted in a saving of R3 600 000 over the period of one year.

Strategy to realize opportunity
The Going Green programme was refreshed in 2018. In 2018, the National Cleaner Production Centre (NCPC-SA) completed energy audits at some of the AECI facilities. It identified further opportunities to reduce energy consumption at the Group's facilities in South Africa.

Cost to realize opportunity
20000000

Comment
It is expected that the Going Green Programme will require investment from companies in excess of R20 million.

Identifier
Opp7

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

Type of financial impact
Increased revenue through demand for lower emissions products and services

Company-specific description
The Group has the opportunity to invest in new businesses that exist as a result of climate-related issues. One example is the investment into Origin Materials which is a privately-owned company with new technology in renewable chemicals.

Time horizon
Current

Likelihood
Virtually certain

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
100000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
Overall, we have estimated that new products and services are likely to contribute between 2% and 5% of the Group's profits in the next three years which is equivalent to between R40 million and R100 million based on 2018 operating profit numbers.

Strategy to realize opportunity
We are continually looking for new investment opportunities. This is done through our Business of Tomorrow focus.

Cost to realize opportunity
66550000

Comment
This is the quantum invested in Origin Materials.

C2.5

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

	Impact	Description
Products and services	Impacted	Risks and opportunities associated with climate change have the potential to lead to changes in demand for goods and services. In fact, in the reporting year, Nulandis continued to be adversely affected by the depressed trading conditions in South Africa's agricultural sector where output remained curtailed, mainly due to the impact of climate-related challenges. The magnitude of the impact is high, with profit from Nulandis down by 11% from R133 million to R119 million in the 2018 financial year. On the other hand, the drought also created opportunities for ImproChem. ImproChem, with its extensive portfolio of water and process treatment chemicals and equipment is well-placed to make a contribution to alleviating the challenge of water availability of the required quality. It is pursuing the opportunities in public water vigorously. Focus will also be maintained on water treatment technologies of the future. Climate-related opportunities have also given rise to our investment in Origin Materials, which produces bio-based chemicals from sustainable and renewable resources. This year, AECI teamed up with Origin to form an industrial partnership to support the development of renewable technologies. Site work for the construction of a pioneer plant in Ontario, Canada, has commenced and commissioning is anticipated in the first quarter of 2020.The investment into Origin Materials by AECI was R66 550 000. The magnitude of this impact is high.
Supply chain and/or value chain	Impacted	Risks and opportunities associated with climate change have impacted on our supply chain. One clear example of this was the juice business where SCP was required to purchase strategic consignments of raw materials owing to extreme weather events such as the drought in the Western Cape and severe flooding in Argentina. This had a negative impact on trade working capital in the 2017 financial year. Although a correction was evident in 2018, climate change remains a risk to our supply chain. The magnitude of this impact is high.
Adaptation and mitigation activities	Impacted	Climate-related risks and opportunities have led us to implement and plan to implement various mitigation activities. One example is the call by the South African DEA for the submission of pollution prevention plans for GHG emissions. This led to AEL Modderfontein to plan for to install secondary catalysts on its No 9 Nitric Acid Plant. N2O emissions removal efficiency of approximately 70% can be achieved using secondary catalyst. This will reduce AECI Group's Scope 1 emissions by approximately 15%. The magnitude of the financial impact is high. The cost associated with the secondary catalyst is estimated to be in the region of R10 million. The magnitude of this impact is high.
Investment in R&D	Impacted	Climate-related risks and opportunities have increased our investment in R&D. Examples include the investment made by Nulandis, Biocult and AEL into the development of new products. Nulandis, for example, developed 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. Nulandis has signed a collaboration agreement with Israel-based agrotech company SupPlant. It developed a technology to better manage the water requirements of irrigated crops using Growth-Based Irrigation and Big-Data Irrigation Technology. The combination of in-field crop growth monitoring, real-time weather data and irrigation scheduling can promote improved crop production and water savings. The agreement allows Nulandis to market the technology in South Africa and 14 other countries in Africa. To date, the technology has been deployed at 15 sizeable farms in the Western Cape and the feedback from farmers has been encouraging. The financial impact is significant, with AECI spending in the region of R70 million on R&D in the 2018 financial year. The magnitude of this impact is high.
Operations	Impacted	Our operations have been impacted by climate-related risks and opportunities. Our Water & Process Pillar reported reduced revenue in the 2018 financial year due to poor performance of the local water treatment chemicals market as a result of the persistent drought effects. Diminished water flow rates and hence lower dosages of purification chemicals affected the business. The impact is significant, with revenue for this pillar declining by 5% from 1 454 million to 1 376 million in the 2018 financial year. On the other hand, the Chemical Processing and Engineering Solutions businesses performed strongly, with four desalination plants installed in the Western Cape and service contracts for these were secured.
Other, please specify	We have not identified any risks or opportunities	Not applicable

C2.6

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

	Relevance	Description
Revenues	Impacted	Climate-related risks and opportunities are factored into revenue expectations as we understand that they have the potential to impact on our revenues. This was clearly seen in the 2018 financial year with the drought in the Western Cape. Nulandis reports that profit from the operations was 11% lower, from R133 million to R119 million in the 2018 financial year. 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 from the operations owing to the poor performance of the local water treatment chemicals market due to persistent drought effects. The magnitude is again significant. ImproChem's revenue declined by 5%, from R1 454 million to R1 376 million.
Operating costs	Impacted	Operating costs are impacted by climate-related risks. As such, when we forecast operating costs for the business, we consider these risks. 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. The increase in fuel and raw material prices as a result of the carbon tax will also be factored into our financial planning process. The magnitude is significant. In the Western Cape, our operations have seen water prices increase by greater than 100% in the last two years.
Capital expenditures / capital allocation	Impacted	Capital allocation is impacted by climate-related risks and opportunities. As such, we consider these risks and opportunities in the capital allocation process. One example is the call by the South African government for pollution prevention plans which has led to money being allocated to AEL Modderfontein to install secondary catalysts in its No 9. Nitric Acid Plant. The magnitude is significant. An example would be the cost allocated to the secondary catalyst project which is in excess of R10 million.
Acquisitions and divestments	Impacted	AECI's acquisitions and divestments are impacted by climate-related risks and opportunities. AECI assesses all potential divestments, acquisitions or investments through a sustainability lens to ensure that they align with the company's commitment to Green Chemistry and its drive to service new markets opening up as a result of climate change impacts. An example would be the investment in Origin Materials. AECI took the decision to invest given the company's focus on using sustainable and renewable raw materials. The investment was R66 500 000 which is considered significant. In the reporting year, AECI teamed up with Origin to form an industrial partnership to support the development of renewable technologies. Site work for the construction of a pioneer plant in Ontario, Canada, has commenced and commissioning is anticipated in 2020.
Access to capital	Not yet impacted	Access to capital has not yet been impacted. For mitigation and abatement projects, we typically use internal company funds. However, it is acknowledged that access to capital may be impacted should AECI not be seen to be effectively managing its climate change risks and opportunities and/or AECI invests in products or projects that are not considered environmentally-friendly. However, this is not anticipated. If it did occur then the magnitude of the impact would be significant.
Assets	Not yet impacted	We understand assets to be property, plant and equipment in this context. At this stage, AECI's assets have not been significantly impacted by climate-related risks and opportunities. However, with the increased occurrence of extreme weather events brought about by climate change, it is likely that our assets may be impacted going forward. For example, our assets may be damaged from flooding. The impact could be significant. We have insured against this risk and have cover of R1 billion per company under AECI's insurance policy which is a significant monetary value.
Liabilities	Not yet impacted	Our liabilities have not yet been impacted by climate-related risks and opportunities. However, it is possible that this may change going forward if climate change impacts on our ability to repay long-term borrowings etc. This is not anticipated. The magnitude of a potential impact could be high.
Other	We have not identified any risks or opportunities	Not applicable

C3. Business Strategy

C3.1

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

Yes

C3.1a

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

No, but we anticipate doing so in the next two years

C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b

(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.

No, we do not have a low-carbon transition plan

C3.1c

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

i. A company-specific explanation of how business objectives and strategy have been influenced by climate-related issues: AECI's business strategy focuses on domestic growth as well as ongoing expansion outside South Africa in the Group's chosen strategic areas of Mining Solutions, Water & Process, Plant & Animal Health, Food & Beverage and Chemicals. AECI understands that its business strategy can only be fully achieved if environmental risks such as climate change-related risks are identified and addressed. For this reason, management of climate change-related risks, reduction of GHG emissions and partnerships with stakeholders underpin the business strategy. Not only does management of climate change support the business strategy, but climate change, in terms of Green Chemistry, has had a significant influence on the business strategy. One of AECI's key focus areas is Green Chemistry which is focused on encouraging the design of products and processes that minimise the use and generation of hazardous substances. AECI aims to provide products that are not only superior in terms of functionality and quality, but also exert minimal impact on the environment.

ii. Explanation of whether your business strategy is linked to an emissions reductions target or energy reduction target: AECI recently introduced new targets under its Going Green Programme for reduction of its Scope 1 and 2 emissions. We plan to reduce our scope 1 and scope 2 emissions per tonne production by 15% and 10%, respectively, from 2018 baseline by end 2022. Part of the business strategy will include a focus on realising this new target.

iii. What have been the most substantial business decisions made during the reporting year that have been influenced by the climate change driven aspects of the strategy: In the reporting year, we teamed up with Origin to form an industrial partnership to support the development of renewable technologies. Site work for the construction of a pioneer plant in Ontario, Canada, has commenced and commissioning is anticipated in 2020. Origin was a company in which we invested US$5 million in 2017. This company has new technology in renewable chemicals. It uses underutilised feedstocks to invent better materials and its production processes are more efficient with higher yields and fewer processing steps than traditional approaches.

iv. What aspects of climate change have influenced the strategy: Various aspects of climate change have influenced the business strategy. Perhaps the aspect that has most influenced the business strategy is the focus on opportunities to develop green products and services that allow customers to reduce emissions and/or minimise the impact of climate change-related risks. One example would be Biocult. Biocult is the leading producer and distributor of Mycorrhizae in Africa. Mycorrhizae is a completely natural product that promotes sustainable agriculture through soil health. It sequesters carbon in the soil. This carbon sequestration is permanent if the soil is left undisturbed. AECI has also made a concerted effort to minimise its impact by improving efficiencies in production processes, logistics management, offerings to customers, office activities etc. There has also been a renewed focus on our Going Green Programme which was refreshed in the year in question.

v. How the short-term strategy has been influenced by climate change: Short-term is defined as up to 2 years in this context. In the short term, AECI focuses on reducing its GHG emissions. This year, AECI refreshed its Going Green Programme. It introduced targets to reduce its Scope 1 and 2 emissions. The National Cleaner Production Centre (NCPC-SA) completed energy audits of some of our facilities. The energy efficiency initiatives identified out of this exercise are currently being tabled with management for approval. In addition, AEL Modderfontein is planning to implement secondary catalyst on its No. 9 Nitric Acid Plant, to reduce GHG emissions, in 2020 in response to a call by the South African Government for pollution prevention plans from companies conducting specific processes.

vi. How the long-term strategy has been influenced by climate change: Long-term is defined as 5 to10 years in this context. The long-term strategy has been influenced primarily through the focus on Green Chemistry and Innovation with the objective of developing products and services that have a minimal impact on the environment. One example is the water treatment products and processes offered by AECI's Nulandis and ImproChem Businesses that assists companies in reducing their water withdrawals and maximising their use of water. This is particularly important for customers in countries that are experiencing water scarcity which is likely to be further exacerbated by climate change. The long-term strategy has also been influenced by a focus on investing in sustainable businesses. One example is the industrial partnership with Origin to support the development of renewable technologies AECI chose to invest in this company given its use of sustainable and renewable raw materials.

vii. How this is gaining a strategic advantage over your competitors: AECI's drive towards Green Chemistry provides AECI with a competitive advantage. Examples where this can be seen are –

a. The eco-emulsions and 'green blasting' products offered by the Mining Solutions Pillar;

b. Nulandis' NuWay® offering in the agricultural sector; and

c. Improchem's ability to provide water solutions to customers (i.e. desalination plants in the Western Cape).

viii. How the Paris Agreement has influenced the business strategy: AECI understands that the South African Government has made commitments to reduce GHG emissions under the Paris Agreement. These commitments has led to the introduction of regulation governing GHG emissions such as the Carbon Tax Act. Our business strategy is influenced by opportunities to develop new products that have a minimal impact on the environment and opportunities within our operations to reduce our impact. These opportunities will be further driven by South Africa's commitments under the Paris Agreement.

C3.1g

(C3.1g) Why does your organization not use climate-related scenario analysis to inform your business strategy?

Although climate-related scenario analysis is not used to inform our business strategy, climate-related risks and opportunities are considered in the development of our strategy. We understand the importance of limiting the rise in average global temperature to below 2°C and the important role that business plays in this regard. As such, we have implemented and will continue to implement projects that reduce our GHG emissions. This will be done through our Going Green Programme and also through the use of secondary catalysts in the No. 9 Nitric Acid Plant. We anticipate a reduction in the region of 10 to 15% in both our Scope 1 and 2 emissions over the next few years. It is important to note that our strategy does consider various scenarios that may occur in the future to allow for agility should the environment in which we operate change. We are likely to include climate-related scenarios in this going forward, possibly in the next two years. We have already started to make progress in this regard, having held a workshop to discuss climate-related scenario analysis and identify possible scenarios relevant to our pillars.

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 do not have 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% between 2018 and 2022. Our recently introduced emission reduction target reflects this (15% reduction by 2022 from 2018 baseline). It is anticipated that this decrease in scope 1 emissions will result from emission reduction activities, including the use of secondary catalysts at AEL Modderfontein's No. 9 Nitric Acid Plant. We anticipate that our scope 2 emissions will also decrease due to the implementation of initiatives under our Going Green Programme. It is expected that we will see a reduction of an estimated 10 to 15% off an adjusted baseline.	We have recently introduced new targets for our scope 1 and 2 emissions. These targets are to reduce our Scope 1 and 2 emissions by 10% and 15%, respectively, from a 2018 baseline by 2022. We will report on the progress towards achieving these targets in our next CDP Response as the targets will be active in our 2019 financial year. Although our new targets were not active in the 2018 financial year, we still prioritised mitigation activities. In the year in question, we implemented – a) SCP's new warehouse was fitted only with LED lighting and there was sequential replacement of conventional lightbulbs to LEDs across the Group; b) Automatic shutdown of forklifts if idling longer than three minutes, at Nulandis' facilities; c) Schirm sites in Germany: reduction in compressed air leaks and installation of a more energy-efficient compressor; insulation of water pipelines; replacement of defective steam traps; d) Change from aged power-consuming machine technology to more energy-efficient techno- logy at ImproChem; and e) AEL, Modderfontein: installation of variable speed drives at the Nitric Acid facility, enabling noteworthy energy savings.

C4.2

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

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*	3	255
Implementation commenced*	0	0
Implemented*	5	4539.01
Not to be implemented	0	0

C4.3b

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

Initiative type

Energy efficiency: Processes

Description of initiative

Other, please specify (AEL Modderfontein's Nitric Acid Plant upgraded its process water cooling system by introducing AC drive motor control.)

Estimated annual CO2e savings (metric tonnes CO2e)
4108.75

Scope
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
3600000

Investment required (unit currency – as specified in C0.4)
5500000

Payback period
1-3 years

Estimated lifetime of the initiative
16-20 years

Comment

Initiative type
Energy efficiency: Building services

Description of initiative
Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

Scope
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

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

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

Payback period
1-3 years

Estimated lifetime of the initiative
16-20 years

Comment
SCP's new warehouse was fitted only with LED lighting and there was sequential replacement of conventional lightbulbs to LEDs across the Group

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Initiative type
Other, please specify (Energy efficiency: vehicles)

Description of initiative
<Not Applicable>

Estimated annual CO2e savings (metric tonnes CO2e)
14

Scope
Scope 1

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
73000

Investment required (unit currency – as specified in C0.4)
0

Payback period
<1 year

Estimated lifetime of the initiative
16-20 years

Comment
Automatic shutdown of forklifts of idling longer than three minutes, at Nulandis' facilities

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Initiative type
Energy efficiency: Processes

Description of initiative
Compressed air

Estimated annual CO2e savings (metric tonnes CO2e)
416.26

Scope
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

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

Investment required (unit currency – as specified in C0.4)
1885688

Payback period
1-3 years

Estimated lifetime of the initiative
16-20 years

Comment
Schirm sites in Germany reduced compressed air leaks and installed a more energy efficient compressor. It also insulated water pipelines and replaced defective steam traps.

Initiative type
Energy efficiency: Processes

Description of initiative
Machine replacement

Estimated annual CO2e savings (metric tonnes CO2e)

Scope
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

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

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

Payback period
Please select

Estimated lifetime of the initiative
16-20 years

Comment
ImproChem changed from aged power-consuming machine technology to more energy-efficient technology.

C4.3c

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

Method	Comment
Financial optimization calculations	Under the Going Green Programme, several resource efficiency assessments are being conducted at various sites within the Group. As part of the assessments, possible projects for achieving savings are being identified, business cases developed and the plan is to implement several projects where the business cases make sense. The business cases will include the calculation of the financial indicators such as Net Present Value (NPV), Return on Investment (ROI), opportunity cost, payback periods etc. Identified projects will be prioritised for implementation based on these financial indicators.
Employee engagement	As part of the Going Green Programme, SHE Practitioners within the various businesses will be regularly involved in initiatives aimed at achieving the targets set under the programme. Employees will also be engaged by means of awareness training sessions. The approach followed is likely to be in line with the train-the-trainer concept. This will involve training of SHE Practitioners so that they could train their respective businesses.
Compliance with regulatory requirements/standards	AECI is committed to complying with all legislation pertaining to GHG emissions. Regulatory compliance is a top priority for the Group. AECI submitted its first Pollution Prevention Plan to the South African DEA in December 2017. This Plan outlines mitigation measures to reduce CO2e emissions by 2020. It will also drive investment in emission reduction and abatement projects.

C4.5

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

C4.5a

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

Level of aggregation
Group of products

Description of product/Group of products
Several of the businesses within the Group are manufacturing products that will reduce environmental impacts for customers. Examples include – 1. AEL The provision of improved blasting services initiatives at AEL to minimise the customer's carbon footprint. These initiatives include – (i) The mine to mill concept is a well-known method for increasing profitability of mining operations. By tailoring the explosives and initiating systems to suit the mine's process requirements, improved blast results are achieved 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. (ii) The replacement of conventional shock tube initiation with an electronic detonating system can result in significant savings. By using this approach, a quarry realised carbon footprint savings of 4 500 tonnes CO2e per annum. (iii) AEL has developed a simple model to relate the change in blasting parameters to the savings in energy consumption, electricity demand and GHG emissions. 2. Nulandis Nulandis has developed a sustainable approach to agriculture called 'NuWay®.' NuWay® seeks to 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 to better weather droughts and floods and changes in rainfall patterns 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 permanently in the soil provided that the farmer practices conservation farming. 4. ImproChem ImproChem provides water management solutions to customers. It assists customers to treat and reuse water, thereby reducing discharges. It provides customers with the chemicals necessary to treat water. It also assist customers to implement water security solutions such as water desalination plants.

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

Comment
5% of revenue is an estimate of the revenue from low-carbon products for the 2018 financial year. Internal company expertise is used to classify the products as low-carbon and to calculate the potential avoided emissions.

C5. Emissions methodology

C5.1

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

Scope 1

Base year start
January 1 2017

Base year end
December 31 2017

Base year emissions (metric tons CO2e)
351317

Comment

Scope 2 (location-based)

Base year start
January 1 2017

Base year end
December 31 2017

Base year emissions (metric tons CO2e)
216971

Comment

Scope 2 (market-based)

Base year start
January 1 2017

Base year end
December 31 2017

Base year emissions (metric tons CO2e)
216971

Comment

C5.2

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

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

C6. Emissions data

C6.1

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

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

308216

Start date

January 1 2018

End date

December 31 2018

Comment

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

254234

Scope 2, market-based (if applicable)

254234

Start date

January 1 2018

End date

December 31 2018

Comment

For this year, the value for the Scope 2 emissions calculated using the market-based approach is the same as the value for the Scope 2 emissions calculated using the location-based approach. The reason for this is that a supplier-specific emission factor was used for electricity purchased in the United States of America when calculating the emissions under the location-based approach.

C6.4

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

No

C6.5

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

Purchased goods and services

Evaluation status
Relevant, calculated

Metric tonnes CO2e
334840

Emissions calculation methodology
For ammonia - Calculated using the IPCC 2006 Guidelines, Volume 3, Chapter 3. The calculation assumes conventional reforming using natural gas. Ammonium Nitrate - Calculated on a mass balance - one mole of ammonia reacts with one mole of nitric acid to make one mole of ammonium nitrate This includes emissions associated with production of ammonia and nitric acid used to produce the ammonium nitrate. These emission factors were sourced from the IPCC 2006 Guidelines, Volume 3, Chapter 3. The emission factor for ammonium nitrate was from another external publication.

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Explanation
This includes the emissions associated with the production of ammonia and ammonium nitrate as used by AECI in the production of chemicals.

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>

Explanation

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

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>

Explanation
All fuel and energy related activities have been accounted for in Scope 1 and 2 emissions.

Upstream transportation and distribution

Evaluation status
Relevant, calculated

Metric tonnes CO2e
6782

Emissions calculation methodology
2013 Guidelines to DEFRA/DECC's GHG Conversion Factors for Company Reporting

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Explanation
This is applicable to well-to-tank fuels associated with extraction, refining and transportation of the raw fuel sources (petrol & diesel) to AECI Group companies prior to their combustion.

Waste generated in operations

Evaluation status
Relevant, calculated

Metric tonnes CO2e
793

Emissions calculation methodology
2013 Guidelines to DEFRA/DECC's GHG Conversion Factors for Company Reporting

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Explanation
This refers to effluent or wastewater from our operations being treated by the municipality

Business travel

Evaluation status
Relevant, calculated

Metric tonnes CO2e
5409

Emissions calculation methodology
2013 Guidelines to DEFRA/DECC's GHG Conversion Factors for Company Reporting

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Explanation
AECI's Property, Explosives and ImproChem from the Specialty Chemicals segment reported business travel. It is estimated that reporting covers 75% of Group operations.

Employee commuting

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
Employees decide on where to live in relation to their work place. The emissions are not deemed to be relevant as they are most likely insignificant in relation to the total emissions.

Upstream 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>

Explanation
AECI does not have any upstream leased assets.

Downstream transportation and distribution

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
AECI does not have financial or management control over transportation.

Processing of sold products

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>

Explanation

Use of sold products

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>

Explanation

End of life treatment of sold products

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>

Explanation

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>

Explanation
AECI does not have downstream leased assets.

Franchises

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
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>

Explanation
AECI does not have any investments.

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>

Explanation
No other upstream emissions.

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>

Explanation
No other downstream emissions.

C6.7

(C6.7) Are carbon dioxide emissions from biologically sequestered 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
0.000024

Metric numerator (Gross global combined Scope 1 and 2 emissions)
562450

Metric denominator
unit total revenue

Metric denominator: Unit total
23314000000

Scope 2 figure used
Location-based

% change from previous year
22

Direction of change
Decreased

Reason for change
Scope 1 and 2 emissions decreased by 1% as a result of emission reduction activities and reduced production at AEL's Nitric Acid plants, at Modderfontein, Revenue increased by 26%. As such, emissions intensity decreased by 22% between the 2017 and 2018 financial years.

Intensity figure
70

Metric numerator (Gross global combined Scope 1 and 2 emissions)
562450

Metric denominator
full time equivalent (FTE) employee

Metric denominator: Unit total
8038

Scope 2 figure used
Location-based

% change from previous year
20

Direction of change
Decreased

Reason for change
Scope 1 and 2 emissions decreased by 1% as a result of emission reduction activities and reduced production at AEL's Nitric Acid plants, at Modderfontein, The number of employees increased by 23%. As such, emissions intensity decreased by 20% between the 2017 and 2018 financial years.

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	167283	IPCC Third Assessment Report (TAR - 100 year)
CH4	96	IPCC Third Assessment Report (TAR - 100 year)
N2O	138704	IPCC Third Assessment Report (TAR - 100 year)
HFCs	2133	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	292253
Africa	8168
United States of America	45
Indonesia	2287
Australia	1182
Germany	4279

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	237399
Pillar 2: Water & Process	2004
Pillar 3: Plant & Animal Health	4667
Pillar 4: Food & Beverage	2835
Pillar 5: Chemicals	48652
Property & Corporate	12658

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	308216	<Not Applicable>	
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility generation 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 (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 in market-based approach (MWh)
South Africa	206118	206118	237445	0
Africa	6630	6630	6979	0
United States of America	16839	16839	35356	0
Indonesia	288	288	303	0
Australia	149	149	157	0
Germany	24210	24210	64146	0

C7.6

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

By business division

C7.6a

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

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Pillar 1: Mining Solutions	132488	132488
Pillar 2: Water & Process	5316	5316
Pillar 3: Plant & Animal Health	31515	31515
Pillar 4: Food & Beverage	4933	4933
Pillar 5: Chemicals	76471	76471
Property & Corporate	3511	3511

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	254234	254234	
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 (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	Calculated using the IPCC 2006 Guidelines, Volume 3, Chapter 3. The calculation assumes conventional reforming using natural gas.
Other (please specify) (Ammonium Nitrate Solution)	100	Calculated on a mass balance - one mole of ammonia reacts with one mole of nitric acid to make one mole of ammonium nitrate This includes emissions associated with production of ammonia and nitric acid used to produce the ammonium nitrate. These emission factors were sourced from the IPCC 2006 Guidelines, Volume 3, Chapter 3. The emission factor for ammonium nitrate was from another external publication.
Other (please specify) (Ammonium Nitrate Porous Prill)	100	Assumed to be the same as Ammonium Nitrate Solution for the purpose of calculating the emissions.

C-CH7.8a

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

	Sales, metric tons	Comment
Carbon dioxide (CO2)	0	Not applicable
Methane (CH4)	0	Not applicable
Nitrous oxide (N2O)	0	Not applicable
Hydrofluorocarbons (HFC)	0	Not applicable
Perfluorocarbons (PFC)	0	Not applicable
Sulphur hexafluoride (SF6)	0	Not applicable
Nitrogen trifluoride (NF3)	0	Not applicable

C7.9

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

Decreased

C7.9a

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

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	0	No change	0	
Other emissions reduction activities	4539	Decreased	1	Decrease resulting from the implementation of emission reduction projects. This included the following – • SCP's new warehouse was fitted only with LED lighting and there was sequential replacement of conventional lightbulbs to LEDs across the Group; • Automatic shutdown of forklift s if idling longer than three minutes, at Nulandis' facilities; • Schirm sites in Germany: reduction in compressed air leaks and installation of a more energy-efficient compressor; insulation of water pipelines; replacement of defective steam traps; • Change from aged power-consuming machine technology to more energy-efficient technology at ImproChem; • AEL, Modderfontein: installation of variable speed drives at the Nitric Acid facility, enabling noteworthy energy savings. The decrease is calculated as the emissions reduced from the implementation of the projects in 2018 divided by the total Scope 1 and 2 Emissions for AECI in 2017 – % decrease = -4 539 tonnes CO2e / (351 317 tonnes CO2e + 216 971 tonnes CO2e)
Divestment	0	No change	0	
Acquisitions	81869	Increased	14	Increase emissions due to the acquisition of Schirm in January 2018 and the acquisition of Much Asphalt in April 2018. The increase is calculated as the emissions from Schirm and Much Asphalt in 2018 divided by the total Scope 1 and 2 Emissions for AECI in 2017 – % increase = 81 869 tonnes CO2e / (351 317 tonnes CO2e + 216 971 tonnes CO2e)
Mergers	0	No change	0	
Change in output	89397	Decreased	16	This relates to the reduced production at AEL's Nitric Acid plants, at Modderfontein, and hence lower nitrous oxide emissions. The decrease is calculated as the emissions associated with reduced production in 2018 divided by the total Scope 1 and 2 Emissions for AECI in 2017 – % decrease = - 89 397 tonnes CO2e / (351 317 tonnes CO2e + 216 971 tonnes CO2e)
Change in methodology	0	No change	0	
Change in boundary	0	No change	0	
Change in physical operating conditions	0	No change	0	
Unidentified	0	No change	0	
Other	6229	Increased	1	The other small increases and decreases in emissions were due to other factors (i.e. day-to-day operational changes). The increase is calculated as the emissions associated with the changes in 2018 divided by the total Scope 1 and 2 Emissions for AECI in 2017 – % decrease = 6 229 tonnes CO2e / (351 317 tonnes CO2e + 216 971 tonnes CO2e)

C7.9b

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

Location-based

C8. Energy

C8.1

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

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

C8.2

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

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

C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	605827	605827
Consumption of purchased or acquired electricity	<Not Applicable>	0	257788	257788
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	0	86598	86598
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	950212	950212

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)	605827
Consumption of purchased or acquired electricity	<Not Applicable>	257788
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	86598
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>	950212

C8.2b

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

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	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)
Bituminous Coal

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
209095

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
209095

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
<Not Applicable>

Comment

Fuels (excluding feedstocks)

Petrol

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
2250

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
2250

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>

Comment

Fuels (excluding feedstocks)
Diesel

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
110437

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
65434

MWh fuel consumed for self-generation of steam
45003

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
<Not Applicable>

Comment

Fuels (excluding feedstocks)
Natural Gas

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
159500

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
159500

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
<Not Applicable>

Comment

Fuels (excluding feedstocks)
Liquefied Petroleum Gas (LPG)

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
1175

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat

815

MWh fuel consumed for self-generation of steam
360

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
<Not Applicable>

Comment

Fuels (excluding feedstocks)
Kerosene

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
36934

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
36934

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
<Not Applicable>

Comment

Fuels (excluding feedstocks)
Residual Fuel Oil

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
86406

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
86406

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
<Not Applicable>

Comment

Fuels (excluding feedstocks)
Acetylene

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
31

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
31

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>

Comment

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Acetylene

Emission factor
2860

Unit
kg CO2e per metric ton

Emission factor source
IPCC 2006 Guidelines

Comment

Bituminous Coal

Emission factor
2.45

Unit
metric tons CO2e per metric ton

Emission factor source
IPCC 2006 Guidelines

Comment

Diesel

Emission factor
2.72

Unit
kg CO2e per liter

Emission factor source
IPCC 2006 Guidelines

Comment
A factor for 2.87 kg CO2e per litre was used for combustion of diesel in mobile applications.

Kerosene

Emission factor
2.37

Unit
kg CO2e per liter

Emission factor source
IPCC 2006 Guidelines

Comment

Liquefied Petroleum Gas (LPG)

Emission factor
2990

Unit
kg CO2e per metric ton

Emission factor source
IPCC 2006 Guidelines

Comment
A factor of 0.92 kg CO2e per kg was used for combustion of LPG in mobile applications.

Natural Gas

Emission factor
0.0019

Unit
kg CO2e per m3

Emission factor source
IPCC 2006 Guidelines

Comment

Petrol

Emission factor
2.43

Unit
kg CO2e per liter

Emission factor source
IPCC 2006 Guidelines

Comment

Residual Fuel Oil

Emission factor
2.93

Unit
kg CO2e per liter

Emission factor source
IPCC 2006 Guidelines

Comment

C8.2e

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	0	0	0	0
Heat	68529	68529	0	0
Steam	280268	280268	0	0
Cooling	0	0	0	0

C-CH8.2e

(C-CH8.2e) 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	0	0
Heat	68529	68529
Steam	280268	280268
Cooling	0	0

C8.2f

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

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

Low-carbon technology type
<Not Applicable>

Region of consumption of low-carbon electricity, heat, steam or cooling
<Not Applicable>

MWh consumed associated with low-carbon electricity, heat, steam or cooling
<Not Applicable>

Emission factor (in units of metric tons CO2e per MWh)
<Not Applicable>

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

C-CH8.3

(C-CH8.3) Disclose details on your organization's consumption of feedstocks for chemical production activities.

Feedstocks
No consumption of fossil fuel feedstocks for chemical production activities

Total consumption
<Not Applicable>

Total consumption unit
<Not Applicable>

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit
<Not Applicable>

Heating value of feedstock, MWh per consumption unit
<Not Applicable>

Heating value
<Not Applicable>

Comment

C-CH8.3a

(C-CH8.3a) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

	Percentage of total chemical feedstock (%)
Oil	
Natural Gas	
Coal	
Biomass	
Waste	
Fossil fuel (where coal, gas, oil cannot be distinguished)	
Unknown source or unable to disaggregate	

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)
272738

Capacity (metric tons)
306000

Direct emissions intensity (metric tons CO2e per metric ton of product)
0.51

Electricity intensity (MWh per metric ton of product)
0.24

Steam intensity (MWh per metric ton of product)
1.82

Steam/ heat recovered (MWh per metric ton of product)
0

Comment
We have reported on nitric acid as this activity is the most GHG emissions-intensive of all of our chemical products. Please note that electricity and steam consumed used in the calculation is for the entire site and not only for the Nitric Acid Production process alone. It is challenging to isolate the steam and electricity used only for Nitric Acid Production from that used for other chemicals produced on-site.

C-CH9.6

(C-CH9.6) Disclose your organization’s low-carbon investments for chemical production activities.

Investment start date
January 1 2020

Investment end date
January 1 2022

Investment area
Property, plant and equipment

Technology area
Other, please specify (Use of secondary catalyst on No.9 Nitric Acid Plant to achieve approximately 70% removal efficiency of N2O emissions.)

Investment maturity
Large scale commercial deployment

Investment figure
10000000

Low-carbon investment percentage
81 - 100%

Please explain
AEL Modderfontein will make use of secondary catalyst in its No. 9 Nitric Acid Plant to reduce its N2O emissions. The investment is estimated at R10 million. It is expected to reduce AECI’s Scope 1 emissions by 15%. There is no anticipated payback or return on capital, but it will assist AECI in achieving its commitment under the pollution prevention plan and also reduce its carbon tax liability when the carbon tax is implemented.

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

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

Scope
Scope 1

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
AECI External Auditor Report.pdf

Page/ section reference
Page 58 of the Integrated Annual Report, but we have attached only the statement by the external auditors for ease of reference.

Relevant standard
ISAE3000

Proportion of reported emissions verified (%)
100

Scope
Scope 2 location-based

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
AECI External Auditor Report.pdf

Page/ section reference
Page 58 of the Integrated Annual Report, but we have attached only the statement by the external auditors for ease of reference.

Relevant standard
ISAE3000

Proportion of reported emissions verified (%)
100

Scope
Scope 2 market-based

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
AECI External Auditor Report.pdf

Page/ section reference
Page 58 of the Integrated Annual Report, but we have attached only the statement by the external auditors for ease of reference.

Relevant standard
ISAE3000

Proportion of reported emissions verified (%)
100

C10.2

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

C10.2a

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C7. Emissions breakdown	Year on year change in emissions (Scope 1)	ISAE3000	Third-party assurance is in place for our Scope 1 Emissions and the comparison to last year. See our Integrated Annual Report for more detail https://www.aeciworld.com/reports/ar-2018/index.php.
C7. Emissions breakdown	Year on year change in emissions (Scope 2)	ISAE3000	Third-party assurance is in place for our Scope 2 Emissions and the comparison to last year. See our Integrated Annual Report for more detail https://www.aeciworld.com/reports/ar-2018/index.php.
C7. Emissions breakdown	Year on year change in emissions (Scope 1 and 2)	ISAE3000	Third-party assurance is in place for our Scope 1 and 2 Emissions and the comparison to last year. See our Integrated Annual Report for more detail https://www.aeciworld.com/reports/ar-2018/index.php.
C7. Emissions breakdown	Change in Scope 1 emissions against a base year (not target related)	ISAE3000	Third-party assurance is in place for our Scope 1 Emissions and the comparison to last year. See our Integrated Annual Report for more detail https://www.aeciworld.com/reports/ar-2018/index.php.
C7. Emissions breakdown	Change in Scope 2 emissions against a base year (not target related)	ISAE3000	Third-party assurance is in place for our Scope 2 Emissions and the comparison to last year. See our Integrated Annual Report for more detail https://www.aeciworld.com/reports/ar-2018/index.php.

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)?

No, but we anticipate being regulated in the next three years

C11.1d

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

To comply with the carbon tax in South Africa, we have been active in reviewing and commenting on the various drafts of the Carbon Tax Bill, prior to finalisation. Commentary is typically submitted through CAIA on behalf of the industry. Closely following the development of the carbon tax has put us in a good position to ensure compliance. We have also been reporting our greenhouse gas emissions to the Department of Environmental Affairs under the regulation governing mandatory reporting on greenhouse gas emissions. It is government's intention that this regulation will be aligned with the carbon tax. Our businesses are also looking at opportunities to reduce emissions. One example is AEL Modderfontein where a call by the South African government for pollution prevention plans has led to money being allocated to install secondary catalysts in its No 9. Nitric Acid Plant which will reduce AECI's Scope 1 emissions by an estimated 15%.

C11.2

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

No

C11.3

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

No, but we anticipate doing so in the next two years

C12. Engagement

C12.1

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

Yes, our customers

Yes, other partners in the value chain

C12.1b

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

Type of engagement
Education/information sharing

Details of engagement
Run an engagement campaign to education customers about your climate change performance and strategy

% of customers by number
50

% Scope 3 emissions as reported in C6.5
0

Please explain the rationale for selecting this group of customers and scope of engagement
We engage with our customers to share information on what we are doing in relation to identifying and managing climate-related issues. This is done through completing questionnaires given to us on behalf of some of our customers. The questionnaires ask us to disclose information on our greenhouse gas emissions and provide details on how we are managing climate-related risks. We also provide information to customers on our management of climate-related issues in our integrated annual report.

Impact of engagement, including measures of success
We estimate that we complete questionnaires for approximately 50% of our customer base. However, we communicate with all of our customers on climate change through our integrated annual report. We have not included greenhouse gas emissions associated with the use of our products by our customers in the Scope 3 emissions disclosed as they are difficult to estimate. We measure the success of these engagements by whether our customers are comfortable to continue engaging with us as a company.

Type of engagement
Collaboration & innovation

Details of engagement
Other – please provide information in column 5

% of customers by number
50

% Scope 3 emissions as reported in C6.5
0

Please explain the rationale for selecting this group of customers and scope of engagement
We collaborate with our customers to develop new products that address challenges experienced by our customers. Examples include – 1. The development of new products to reduce water usage and preserve top soil that are being pursued by Nulandis through its NU-Way® programme. These products and other farm management services are being developed to support farmers. 2. The development of a Mycorrhizae-based product 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. 3. The implementation of desalination plants by ImproChem in Western Cape in response to the drought.

Impact of engagement, including measures of success
Although we collaborate with many of our customers, we have estimated that we have engaged with approximately 50% of them in our development of new products. We have not included greenhouse gas emissions associated with the development of new products in the Scope 3 emissions disclosed as they are difficult to estimate. We measure the success of the collaboration on new products developed by us that are able to adequately address challenges experienced by our customers. Our businesses have developed several new products and service offerings over the years that assist our clients to manage the impacts of climate change.

C12.1c

(C12.1c) 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. Our engagement with government and communities is further 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. This engagement typically takes place in meetings or through the provision of written commentary on various policies and regulations. We also engage with government through CAIA, the industry association for the chemicals industry. The success of our 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 our feedback on various pieces of legislation.

· Communities - We engage with our communities on climate-related issues. At Modderfontein, AEL oversees the functioning of a Community Awareness and Emergency Response Committee. At the Umbogintwini Industrial Association, issue-specific stakeholder and community liaison forums deal with water quality, air emissions etc. Engagement with communities is also typically done through organised projects and programmes. In the 2018 financial year, for example, four campaigns were implemented to address key Socio-Economic Development (SED) challenges in South Africa. One of the campaigns focused on drought relief. We were also involved in the Wize Wayz Water Care (WWWC) Project which aimed to create sustainable livelihoods through food security, water resource management and monitoring, and environmental conservation. The project has 122 volunteers who keep a 30km stretch of the eZimbokodweni River Catchment Area clean of litter and debris. They have also helped rehabilitate a local wetland.

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.'

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 concerns the carbon tax introduced in South Africa from 1st of June 2019. AECI has and continues to prioritise energy efficiency and GHG emission reduction for both its own operations and its customers. AECI has developed products and services that assist its customers to reduce emissions and/or minimise the impacts of climate change. This 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 Africa DEA.	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 DEA for the second 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 South African DEA.	This concerns carbon budgets in South Africa. AECI has been engaging with DEA 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.

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. In the 2017 and 2018 financial years, AECI worked with CAIA to establish a greenhouse gas emissions baseline for nitric acid production for use under the carbon tax in South Africa.

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.

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 –

i) 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.

ii) 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.

iii) 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.

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
AECI IAR.pdf

Page/Section reference
pg 15, 23, 26, 27, 39, 53, 54, 55 and 57

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

C14. Signoff

C-FI

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

C14.1

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

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

SC. Supply chain module

SC0.0

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

AECI is a South African-based company focused on providing products and services to a broad spectrum of customers in the mining, water treatment, plant and animal health, food and beverage, infrastructure and general industrial sectors. It has regional and international businesses in Africa, South East Asia, the USA and Australia. AECI was registered as a company in South Africa in 1924 and has been listed on the JSE since 1966. The Group has five growth pillars. The focus of four of the growth pillars is on domestic growth as well as ongoing expansion outside South Africa in the Group's chosen strategic areas of Mining Solutions, Water & Process, Plant & Animal Health, and Food & Beverage. The fifth growth pillar focuses on the proactive management of a portfolio of Chemicals business. Mining Solutions comprises AEL Mining Services ("AEL"), Senmin and Experse, Water & Process is anchored in ImproChem and Plant & Animal Health in Nulandis and Schirm. Lake Foods ("Lake") and Southern Canned Products ("SCP") constitute the Food & Beverage pillar. Extreme and unpredictable weather events and the failure of climate change mitigation and adaptation has been identified by the Group as a top risk. As such, AECI is committed to effective management of climate-related risks, energy consumption and associated greenhouse gas (GHG) emissions.

SC0.1

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

	Annual Revenue
Row 1	23314000000

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
Scope 1 emissions for Loreal link to the Chemical Initiatives Business Unit of AECI. Within the Chemical Initiatives (C.I.) Business Unit, the C.I. Chloorkop facility manufactures products for Loreal.

Emissions in metric tonnes of CO2e
1.4

Uncertainty (±%)
5

Major sources of emissions
The major source of emissions is from the boiler that uses natural gas a fuel. Natural gas is cleaner than most other fuels.

Verified
No

Allocation method
Other, please specify (Allocation based on mass of products produced at the facility sold to Loreal in 2018.)

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
The GHG source is identified based on the combustion activity at the facility. This is the only activity that generates GHG emissions.

Requesting member
Please select

Scope of emissions
Scope 2

Allocation level
Facility

Allocation level detail
Scope 1 emissions for Loreal link to the Chemical Initiatives Business Unit of AECI. Within the Chemical Initiatives (C.I.) Business Unit, the C.I. Chloorkop facility manufactures products for Loreal.

Emissions in metric tonnes of CO2e
14.5

Uncertainty (±%)
5

Major sources of emissions
Scope 2 emissions are from purchased electricity from Eskom.

Verified
No

Allocation method
Other, please specify (Allocation based on mass of products produced at the facility sold to Loreal in 2018.)

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Scope 2 emissions are only from purchased electricity from the electricity provider in South Africa, Eskom.

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 signifcant emissions.

SC2.1

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

SC2.2

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

No

SC3.1

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

No

SC3.2

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

No

SC4.1

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

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

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

Please confirm below

I have read and accept the applicable Terms