AngloAmerican

Real Mining. Real People. Real Difference.

CLIMATE CHANGE: OUR PLANS, POLICIES AND PROGRESS

100 YEARS 1917 - 2017

Image: Anglo American's flagship eMalahleni water reclamation plant in South Africa, the only mining initiative to be endorsed by the United Nations Framework Convention on Climate Change at COP17.

CONTENTS

About this publication 2
Foreword 3
Policy and position 4
Governance 6
Policy engagement 8
Reducing operational emissions and energy use 10
Climate change and our portfolio 12
Adaptation 16
Innovation 17
Working with our suppliers 19
Looking ahead 20
Acronyms 21

Cover image: The look-out area of the concrete plant at Minas-Rio.

ABOUT THIS PUBLICATION

This publication provides an overview of what climate change means to our company, the actions we are currently taking to address its causes and impacts, and how we see our contribution into the future. It responds to society's calls for transparency around climate change, expressed by initiatives such as the 'Aiming for A' coalition and the recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures.

While climate change impacts are interconnected with social and environmental issues, this publication focuses on energy consumption and emissions, as well as some of our portfolio risks and opportunities in the transition to a low-carbon economy.

Unless otherwise stated, data included in this report accounts for relevant factors for the businesses wholly owned and managed by Anglo American, except for De Beers, where 100% of De Beers' joint-venture operations in Namibia and Botswana are also accounted for. A full list of our businesses in our reporting scope is available on page 79 of the **2016 Anglo American Sustainability Report**.

FURTHER INFORMATION

Anglo American climate change position statement
http://www.angloamerican.com/sustainability/approach-and-policies

Anglo American climate change policy
http://www.angloamerican.com/sustainability/approach-and-policies

ICMM statement on climate change
http://www.icmm.com

ICMM principles for climate change policy design position statement
http://www.icmm.com

Anglo American Sustainability Report
http://www.angloamerican.com/investors/annual-reporting

Climate change and energy data spreadsheet
http://www.angloamerican.com/sustainability/performance

Anglo American's response to the CDP climate change questionnaire
http://www.cdp.net

Anglo American newsfeeds /AngloAmerican @AngloAmerican /AngloAmerican
/AngloAmerican /AngloAmerican /company/Anglo-American

FOREWORD

Resilience and innovation: two words that come to my mind as I present this publication on our approach to climate change. To respond to the exceptionally difficult market conditions of the past few years, our business has proven resilient and innovative, showing that with discipline and strategic intent we can successfully respond to great challenges. We believe that climate change is one of the defining challenges of this era. To succeed we will again need to be both resilient and innovative.

Mark Cutifani
Chief Executive, Anglo American

Anglo American has for over a decade made strides to meaningfully contribute to the global effort to reduce emissions while continuing to provide the materials that modern life requires. The 2015 Paris Agreement brought 195 countries to a consensus on the magnitude of the challenge and the steps we need to take to meet it; to protect our future and that of future generations. That same year, the launch of the United Nations Sustainable Development Goals (SDGs) set the path for the future of international development. While there is one goal devoted entirely to climate change (Goal 13), we recognise its effects ripple through many other social and environmental areas. Climate change impacts almost every aspect of human development and conservation.

As a responsible steward of valuable resources, Anglo American recognises the need to make a contribution to the global journey to address climate change and that this is inextricably linked to remaining a successful business into the future.

The metals and minerals that we mine form the base components of modern life. Mining is also both energy- and water-intensive. We therefore have a role to play in the move to a lower-carbon economy, through what we mine and how we mine. As coal producers, we recognise the importance of working with stakeholders in the energy chain to reduce the contribution of GHG emissions from this sector.

Responsible mining is an act of stewardship. It means working with host countries and communities to ensure that their natural capital is put to use to bring them a better future; delivering the critical environmental protection and building resilience in the areas where we mine. We know that our path is transient: mines have a finite life. Our actions to mitigate and adapt to climate change go hand in hand with our ability to deliver on society's expectations on what it means to be a responsible miner.

We also have the ambition and the ability to foster innovative solutions. As we obtain the resources that society needs to move forward – from the platinum in catalytic converters to the copper needed to produce renewable energy – we continue to invest in finding new ways to decouple growth from greenhouse gas (GHG) emissions and energy use.

As you will read in the following pages, we have incorporated our response to climate change into our strategy, our operational performance and our project design. In 2017, Anglo American's Board approved, for the first time, a climate-change-related performance indicator within the executive incentive plan. This action will further drive our commitment to improved performance.

Doing the right thing, even if it is hard or unpopular, is at the heart of who we are as a company. We hope, through this publication and our external reporting suite, to share some of the tangible ways in which we are responding to climate change. Recognising that there is still much to be done, we will continue to play our part in addressing this most pressing challenge.

Mark Cutifani
Chief Executive, Anglo American

POLICY AND POSITION

We see climate change as one of the defining challenges of our era. We recognise the science of climate change and acknowledge that we have a role to play in limiting global warming to 2°C.

Image: The berth deck and pier at Minas-Rio.

We expect climate change and the associated public-policy response to have implications for our business in three principal ways:

- the demand for some of our products will change
- climate regulation and taxation will affect our operations
- the physical and social impacts of a changing climate may affect our operations and host communities.

Anglo American's formal position on climate change is expressed in three formal commitments, including the:

- Anglo American climate change policy
- Anglo American position statement on climate change
- ICMM statement on climate change.

ANGLO AMERICAN CLIMATE CHANGE POLICY PRINCIPLES

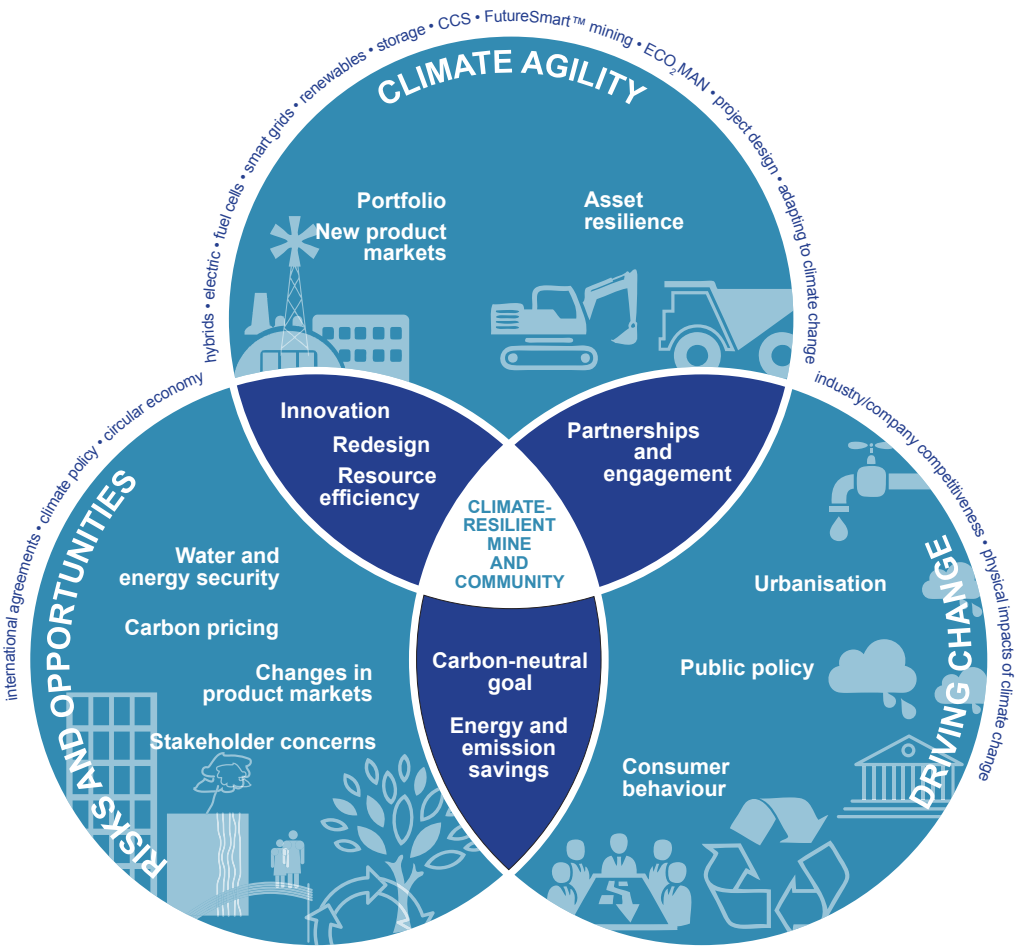
Our people and organisation – building internal agility and ensuring resilience to climate change
Our process – driving energy and carbon savings throughout our business
Our products – understanding and responding to the carbon life-cycle risks and opportunities of our products
Our stakeholders – developing and implementing collaborative solutions with our stakeholders
Informing public policy – contributing our skills and knowledge to the development of responsible public policy

The Anglo American climate change policy, launched in 2011, formalised our commitment to address the causes of climate change and to help protect Anglo American employees and assets, as well as local communities and the environment, against its potential impacts. The policy identifies five principles that highlight areas for action in our business. (See box on page 4.)

Anglo American's position statement on climate change, released in 2015, reaffirmed our commitment to addressing climate change in the run-up to the United Nations climate change negotiations in Paris (COP21). In line with our position statement, we were encouraged that COP21 delivered a clear, global and binding agreement to mitigate the impacts of climate change.

Now our eyes are set on the next challenge: by 2030 we aspire to be in a position to develop a carbon-neutral mine.

OUR APPROACH



See more: The full texts of our policy and position on climate change are available on angloamerican.com

GOVERNANCE

At Anglo American, climate change is the purview of the Sustainability Committee of the Board. The Committee oversees, on behalf of the Board, material policies, processes, and strategies designed to manage sustainability risks and opportunities.

Image: Studying by electric light in Naledi Trust Village, which is powered by a fuel cell installation.

Matters relating to climate change and energy are included in each quarterly report to the Committee, and also feature periodically as stand-alone items on the agenda. Matters discussed by the Committee in 2016 are disclosed on page 18 of the **2016 Anglo American Sustainability Report**. The Chair of the Sustainability Committee provides a summary of the Committee's discussions at the Board, which addresses the most material issues raised by the Committee. The CEO performance scorecard and report to the Board also include performance indicators on energy and GHG emissions.

In addition to the discussions at the Sustainability Committee, the Audit Committee reviews the company's material risks, including climate change, twice a year. The Remuneration Committee takes into account financial as well as sustainability indicators in its decision-making process.

Management structure

Climate change is a key strategic issue and falls under the management responsibility of the Group's technical director, Tony O'Neill, who is a member of the Board and the Group Management Committee. The Group technical director is supported by the Group head of safety and sustainable development, the head of environment and the lead for energy and carbon effectiveness.

The Group director of corporate relations, also a member of the Group Management Committee, Anik Michaud, is responsible for the public policy, social performance and engagement aspects of climate change.

The meetings of the Group Energy/Carbon Forum offer energy and environmental practitioners from across Anglo American an opportunity to share updates on performance, good-practice ideas and policy developments.

Key performance indicators and executive incentives

Anglo American has a target of achieving an 8% improvement in energy use and a 22% saving in GHG emissions by 2020, against our projected 'business as usual' (BAU) consumption. In other words, by 2020 our consumption and emission levels will be 8% and 22% lower than they would have been had we not implemented reduction and efficiency measures.

In 2017, the Board approved the inclusion of these targets within the executive Long-Term Incentive Plan.

A process is under way to develop the Group's Sustainable Development strategy and, subject to management review, it may include longer-term (2030) aspirational energy- and carbon-reduction targets.

Assessing and mitigating climate-change risk

Climate change and extreme weather events represent a material risk to our business in multiple ways: from dealing with the direct impacts on operations located in vulnerable regions, to ensuring a secure supply of both water and energy.

Climate change will also bring opportunities for those who can best adapt to the realities of society's transition to a low-carbon economy. Our risk-management approach enables us to identify and manage both risks and opportunities, helping us ensure the resilience of our portfolio.

Two key processes guide how we manage climate-change risks: the Operational Risk Management (ORM) programme for operations, and the Investment Development Model (IDM) for projects.

The ORM guides operations on how to assess risk at each level of activity, with tools to help identify priority unwanted events and the controls we need to put in place and monitor to prevent those events. By way of example, an increased frequency in extreme rainfall events will require changes in monitoring, infrastructure design and emergency preparedness.

The IDM process and evaluation criteria ensure that climate-change risks and opportunities are embedded in the investment design, including the consideration for alternative low-carbon energy sourcing and the adaptation required for extreme weather and long-term climate change.

Anglo American's specialist business assurance services are responsible for the overall monitoring and assurance of the risk-management process.

TARGET-SETTING

Our approach to setting site targets against BAU plans allows us to account for variable operating conditions, as well as acquisitions or disposals. Examples of variable operating conditions include changes to mine plan, production levels, the depth and grade of orebody, and haul distances. Non-operational adjustments are required for emissions from third-party electricity suppliers or changes in regulatory CO_2e conversion factors. As sites make changes, they are required to introduce measurable business-improvement or energy-efficiency measures to ensure they meet the targets.

See more: Matters discussed by the Committee in 2016 are disclosed on page 18 of the 2016 Anglo American Sustainability Report.

POLICY ENGAGEMENT

Anglo American's policy work related to climate change spans well over a decade.

In 2001, we became a founding member of the International Council on Mining and Metals (ICMM), which has since then played a leading role in shaping the industry's response to climate change. ICMM released its first position statement on climate change in 2006, which was followed in 2011 by a set of principles for climate-change policy design. These principles are intended to ensure that climate-change policies are pragmatic and achieve their intended results, while minimising the potentially damaging and unintended consequences of climate-change-related decision-making.

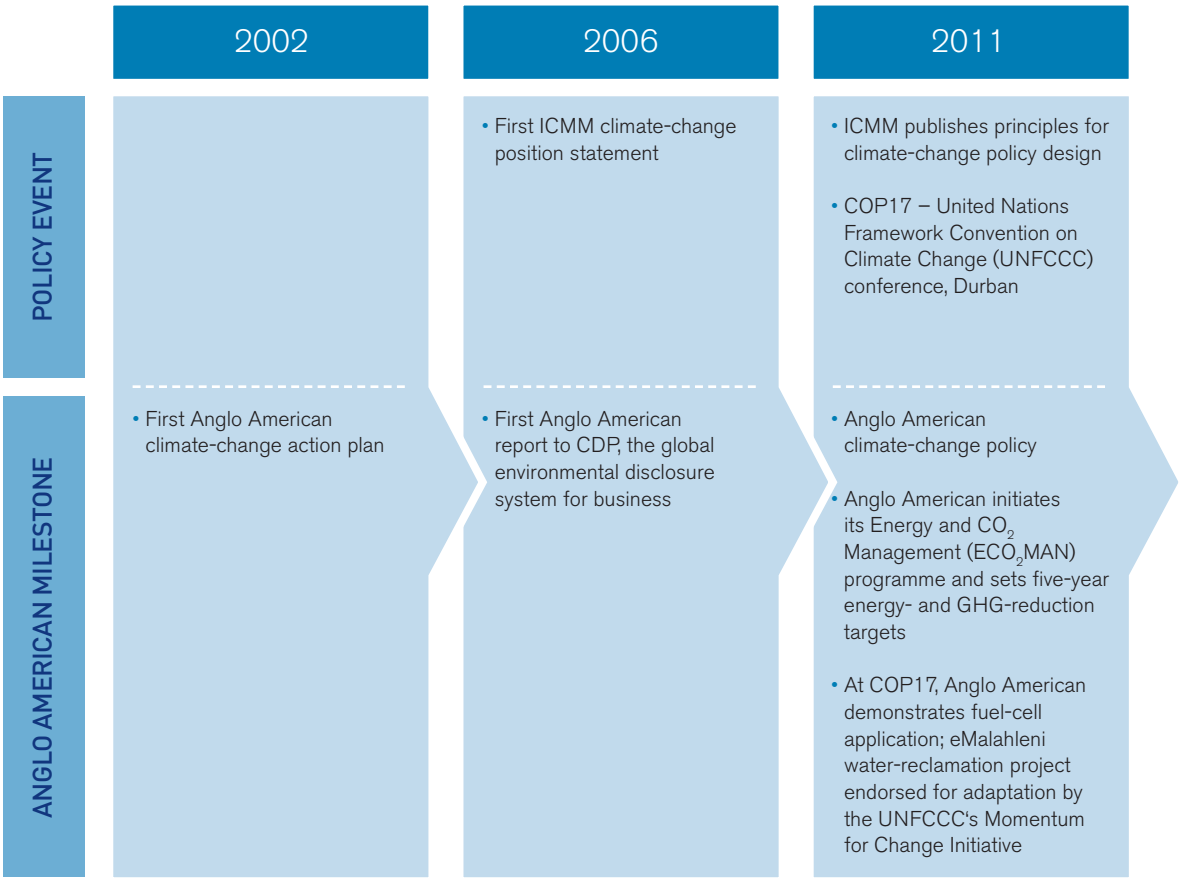
Anglo American engages in policy processes through ICMM, as well as several other local and international fora.

For example, in 2015, Anglo American joined the COP21 Paris Pledge for Action – a statement which gathered momentum in support of the transition to a low-emissions future.

In 2015, the United Nations launched the Sustainable Development Goals (SDGs), many of which are related to climate change. Anglo American was part of the business-sector group giving input into their development and an early champion in promoting their adoption.

Later that year, Anglo American published its own position statement on climate change.

CLIMATE-CHANGE MILESTONES



We also welcomed the Paris Agreement in which 195 countries committed to combating climate change and unleash actions and investment towards a low-carbon, resilient and sustainable future. The ratification of those commitments in Marrakech and the ambition to keep the temperature rise below 2^0C, further solidify the path ahead.

In South Africa, Anglo American participates in a wide spectrum of policy-engagement processes through its membership of the National Business Initiative, Business Unity South Africa and the Industry Task Team on Climate Change.

We recognise the potential for a range of carbon pricing and offset/incentive policies to emerge in the medium term, so we continue to work with governments, industry peers and other stakeholders in developing and implementing effective, efficient and equitable climate-change policies.

In regions where carbon pricing is an emerging government policy, we include carbon pricing in our budget guidance and project evaluations. In South Africa, for example, the government issued a draft bill on carbon tax in 2016. While certain policy and technical aspects remain outstanding, we are evaluating further opportunities to reduce energy use and GHG emissions and options to source carbon offset credits.

As the world moves towards implementing strategies to meet the SDGs – and the Climate Change commitments made in Paris and ratified in Marrakech – Anglo American will continue to contribute to the international discussion and engage with relevant stakeholders.

2012	2015	2016	2017
• The United Nations Conference on Sustainable Development (Rio+20), Rio de Janeiro	• COP21 – Paris Agreement • Launch of UN SDGs		
• Anglo American participates as part of the sustainable partnerships forum at Rio+20.	• Anglo American publishes climate-change position statement • Anglo American achieves its 2015 ECO_2MAN targets, (7% savings in energy and 19% GHG emissions), and sets targets for 2020 • Anglo American gives input to the development of the SDGs and participates at launch in New York	• Anglo American shareholders approve the 'Aiming for A' special Board resolution on climate change • The resolution requires Anglo American to report on an annual basis its response to the long-term challenge posed by climate change	• Anglo American's Remuneration Committee of the Board approves climate-change-performance indicator within the executive remuneration scheme

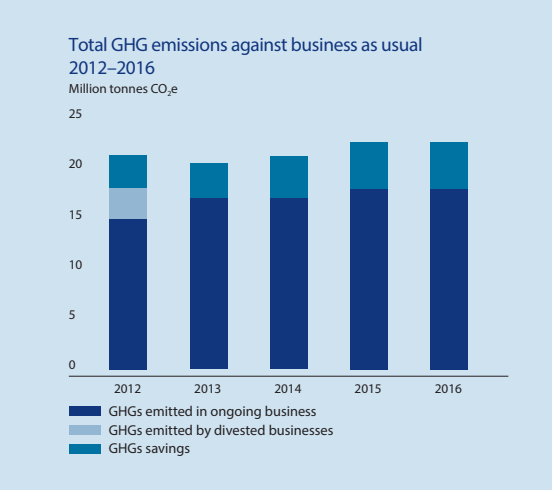
REDUCING OPERATIONAL EMISSIONS AND ENERGY USE

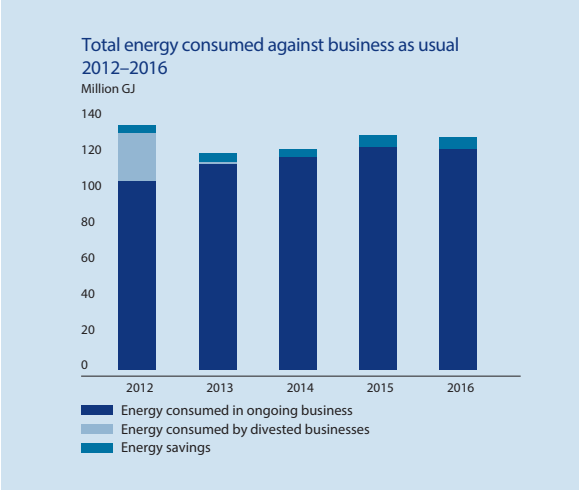
The Anglo American climate-change strategy focuses on: operating more efficiently; applying technology; and partnering with key stakeholders. Through our emphasis in these three areas, we aim for operations to progress along our climate-change-journey model. (See page 16.)

At the core of our current approach to climate change is the ambition to achieve the maximum economically sustainable energy and carbon savings at our operations. In 2011, we launched the Energy and CO_2 Management programme (ECO_2MAN), which has enabled us to analyse our activities and identify opportunities at operations to reduce energy consumption and GHG emissions. The energy-efficiency projects we have implemented have a typical payback time of three years.

In 2016, a total of 320 energy-efficiency and business improvement projects saved 5.8 million GJ in energy consumption, with the avoided energy cost estimated at $90 million. The cumulative avoided energy costs under the ECO_2MAN programme over the past three years is estimated at $260 million based on 2016 energy prices. GHG emissions savings in 2016 amounted to 4.5 million tonnes (Mt) CO_2e.

Several of our South African operations will benefit from tax-deduction incentives, estimated at $15.4 million (R200 million), for measurable energy savings. Kumba Iron Ore, in particular, has achieved significant energy savings through a range of emission-reduction initiatives across its haulage fleet. This included improving payload management systems, expanding the implementation of its diesel energy-efficiency management programme, optimising the loading of haul trucks, and adjusting haul truck engines.





A large portion of our GHG-emission savings is achieved through the capture and use of coal mine methane for power generation at our metallurgical coal operations in Australia. The Moranbah North and Capcoal methane-fired power stations together generate more than 100 MW of electricity. The power stations are owned and operated by clean-energy provider, Energy Developments Limited. Their combined environmental benefit is a reduction in GHG emissions of 3.7 Mt of CO_2e emissions a year.

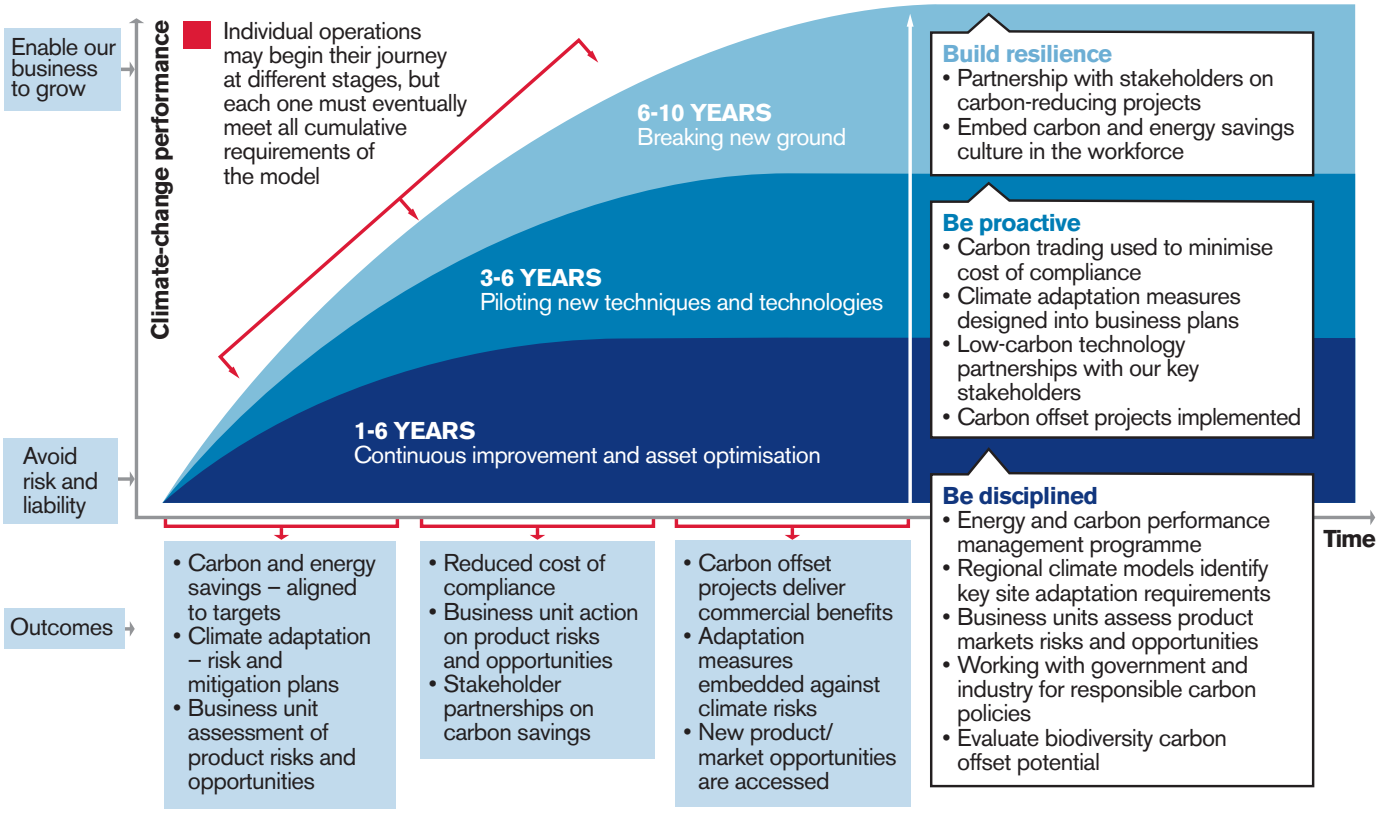
From the total indirect Scope 3 emissions associated with our activities, the most significant contribution comes from the use of sold products, in particular thermal coal. In 2016, we estimated it at 109 Mt CO_2e.

Further details of our Scope 1, Scope 2 and Scope 3 emissions can be found in the **sustainability performance section** of our website.

In addition to our focus on GHG management, we continue to investigate opportunities for carbon-offset partnerships. We have identified options for implementation once a compliance carbon trading market develops.

We are developing the Group's Sustainability Strategy and, subject to management review, it may include longer-term (2030) aspirational energy- and carbon-reduction targets aligned with our end goal for a carbon-neutral mine.

CLIMATE-CHANGE AND ENERGY STRATEGY – A PREFERRED FUTURE



This framework guides our journey and actions on climate change. Our strategy framework allows for operations to begin their journey at different stages, but each must eventually achieve the key objectives set. While there have been periods of setback, on a consolidated basis, Anglo American has implemented measures in each of the stages.

See more: Making each kilowatt hour count - an interview with our lead for climate change.

CLIMATE CHANGE AND OUR PORTFOLIO

Image: Greenside colliery's solar farm in South Africa consists of 376 photovoltaic panels, adding up to an installed capacity of 90.2 kW at peak.

We are a globally diversified mining business with interests in diamonds (through De Beers), platinum group metals (PGMs), copper, nickel, iron ore, thermal and metallurgical coal. Of particular importance to climate change is our role as a producer of copper, nickel and PGMs – critical products in enabling low-carbon technologies – as well as a producer of thermal coal.

Our portfolio and future scenarios

In 2015, we conducted an assessment of the climate-related scenario risks and opportunities for the thermal coal market to 2030 and beyond. The exercise highlighted the continued role of thermal coal in the global energy mix, even within the 2^{0}C Scenario, with an increasing contribution from alternative low-carbon energy sources, and the great need for deployment of carbon capture and storage (CCS) technologies.

Aligned with the 'Aiming for A' disclosure commitments, in 2016 we undertook a qualitative analysis of the climate-change signposts and indicators affecting copper and PGM demand to 2035. This analysis served as a first step to assess the financial implications for the Anglo American portfolio in our transition to a low-carbon economy. For this analysis, we used long-term scenarios: the International Energy Agency (2^{0}C Scenario) and models with progressively higher GHG emissions paths (Autonomy, Rivalry and Vertigo) from IHS Markit – a strategic information and analytics company. The qualitative analysis explored key uncertainties regarding:

- disruptive-technology threats and opportunities
- end-user-behaviour impact on product demand
- the influence of climate policies on product markets
- the implications for mining operations and investments.

The analysis showed that in the transition to a low-carbon economy, and under increasing climate constraints, demand for both metals is positive and is particularly attractive for copper.

Our intention is to complete a quantitative analysis of the scenario-related impacts on copper, nickel, PGMs, iron ore and metallurgical coal.

THE HYDROGEN COUNCIL: COLLABORATION FOR THE FUTURE

In January 2017, at the World Economic Forum's Annual Meeting, 13 leading energy, transport and industry companies launched a global initiative – the Hydrogen Council – to voice a united vision and long-term ambition for hydrogen to foster the energy transition.

During the launch, members of the Hydrogen Council confirmed their ambition to accelerate their significant investment in the development and commercialisation of both hydrogen and fuel-cell sectors. These investments currently amount to an estimated total value of €1.4 billion ($1.5 billion) a year. This acceleration will be possible if the key stakeholders increase their backing of hydrogen as part of the future energy mix with appropriate policies and supporting schemes.

The Hydrogen Council is made up of 13 CEOs and chairpersons from different industries and energy companies, including our chief executive Mark Cutifani. All are committed to help achieve the ambitious goal of reaching the 2^{0}C target, as agreed in the 2015 Paris Agreement.

Read more: How Hydrogen empowers the energy transition

This aligns with shareholder expectations, particularly with the recently issued draft recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures.

Platinum group metals (PGMs)

Anglo American Platinum is the world's leading primary producer of PGMs.

Demand for PGMs – platinum, palladium, rhodium, ruthenium, iridium and osmium – is currently linked to the automotive and jewellery industries. We expect the ongoing trend towards cleaner emission vehicles, driven by increasingly stringent global emissions legislation, to sustain demand for PGMs in catalytic converters.

Our business is also well positioned to proactively shape demand for platinum and its sister metals, including through direct investment in a number of companies developing new technologies that are expected to drive industrial demand for PGMs. Many of these technologies address environmental issues such as pollution and global warming. Our investments include numerous hydrogen and fuel-cell companies, including Johnson Matthey Fuel Cells; Hydrogenious Technologies; Ballard Power Systems; Greyrock Energy; Primus Power; Altergy Systems; and hydrogen distributor United Hydrogen Group (UHG).

Copper

Anglo American has a world-class position in copper, with the potential to establish a global-leadership position built around our interests in two of the world's largest copper mines – Los Bronces and Collahuasi in Chile – and our feasibility phase Quellaveco project in southern Peru.

Copper is the non-precious metal with the highest conductivity rating. It has been used in electrical wiring since the 19th Century and remains a key driver to increased efficiency in all electrical equipment. Society's rising global access to electricity combined with the demand to provide it through renewable sources will rely on the use of copper as one of the most efficient conductors of electricity. According to the Intergovernmental Panel on Climate Change (IPCC), close to 70% of the world's power demand could be met by renewables by 2050 – a positive signal for copper demand in the transition to a low-carbon economy.

Coal

We have high-quality assets in Australia, Colombia and South Africa, producing the particular products our diverse customers need, in both metallurgical coal (for steel manufacture) and thermal coal (for electricity generation) applications.

As part of our portfolio restructure, we have divested our Callide and Foxleigh coal mines in Australia, entered into a sale agreement for Dartbrook, closed Drayton thermal coal mine and have announced the sale of our South African Eskom-tied domestic thermal coal operations. The latter transaction is expected to be completed by the end of 2017.

Coal plays a key role in the global provision of energy and electricity and is an indispensable element of steel production, which is a critical material in the provision of renewable energy. At present, we do not believe that there is any viable alternative to metallurgical coal.

Independent forecasters foresee coal as an important part of the energy mix up to 2040, even in those scenarios that successfully limit global warming to 2^0C. Coal, primarily through its role in electricity production, has a critical role in supporting poverty alleviation and sustaining prosperity. It would be detrimental to the development prospects of many of the world's emerging economies and poorest countries, to simply stop mining coal. That said, fossil fuels will be increasingly contested by society and, as a result, the role of thermal coal will decline. We are therefore unlikely to make any significant future commitments to thermal coal in the long term.

However, we will continue to manage our coal mines ensuring that value is optimised for all our stakeholders.

While we believe base metals, precious metals and precious minerals are better positioned for our future, and intend to make a material change in this direction, this change will be over the long term, without destroying shareholder value.

Our responsible approach focuses on collaborating in the development and uptake

See more: Anglo American's PGM investment programme.

of technology solutions. We are committed to being part of that drive, and to engaging with governments and industry for an effective climate-change response.

We believe that the road map to reduced GHG emissions from coal-fired power generation involves two steps: more efficient coal combustion, and the deployment of carbon (CCS) technologies. Through the World Coal Association and the Coal Industry Advisory Board, we engage with governments to inform policy for the effective uptake of new technologies for coal that will reduce related GHG emissions and improve local air quality.

LONG-TERM SCENARIOS

Anglo American has examined long-term scenarios from the International Energy Agency (IEA) and IHS Markit, a strategic information and analytics company, to identify the climate-change-related scenario triggers/signposts and their possible implications for thermal coal, copper and PGM markets.

	SCENARIOS			
	IHS MARKIT			IEA
	RIVALRY	VERTIGO	AUTONOMY	2°C
DESCRIPTION	Increasing competition for political and economic power translates to inter-fuel and developing/ developed world competition	A volatile future in which frequent economic and financial tremors cause instability – global GHG emissions exceed those of Rivalry	Strong stable GDP growth. Market and social forces transform the global energy system. GHG emissions are below that of Rivalry; however, these fall short in delivering reductions aligned with the 2°C emissions path	The transition to low carbon is at an accelerated pace and consistent with at least a 50% chance of limiting the average global temperature increase to 2°C
IMPLICATIONS *	A gradual and consistent decline in thermal coal demand Copper gains on reducing cost of renewables	A gradual increase in copper and PGM demand, mainly due to increases in: • the number of internal combustion engine vehicles; • heating and ventilation; and in • building automation systems The demand for thermal coal, however, remains flat	A significant growth in renewables for power generation. Increasing demand for electric cars allows for fuel cell participation. Overall good for Copper and PGM demand Coal in power generation declines substantially	Renewables are central to power generation. Rapid electrification of the energy infrastructure, together with the broader uptake of new technology applications, underpin growth in copper and PGM demand Coal for power generation is largely restricted to utilities with CCS technology

* Internal Anglo American assessment

ADAPTATION

The mine-project investment decisions we make today could be significantly affected by weather variability associated with long-term climate change. Anglo American seeks to understand the physical implications of climate change for our operations and neighbouring communities and to implement appropriate adaptation responses.

Key elements of our approach include:

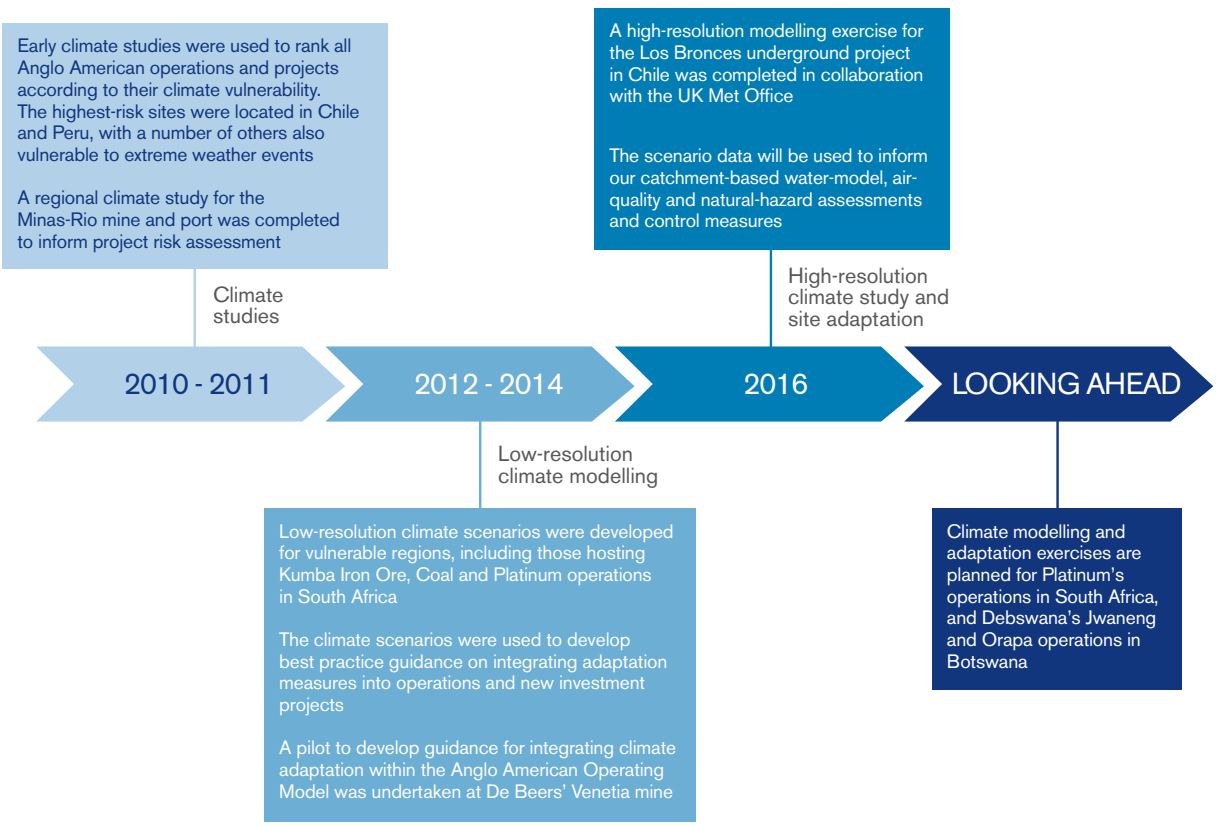
- building climate-change scenarios using the best available science
- using our operating models to identify vulnerability and exposure
- integrating critical controls into operational risk management.

We are working with recognised experts on climate science, such as the UK Met Office, to better understand and prioritise adaptation controls to future climate and extreme weather risks. (See diagram below.)

For vulnerable operations, we use the Anglo American ORM process to evaluate climate risks and critical controls. We also consider adaptation measures in new project stage-gate evaluations.

Among the key adaptation measures are the considerations for catchment impacts, including long-term water supply security, the community exposure and changes in mine and equipment design (for example, stormwater drainage, slope stability and ventilation), and in hazard monitoring and emergency preparedness.

OUR JOURNEY ON CLIMATE-CHANGE ADAPTATION



INNOVATION

FutureSmart™ mining is Anglo American's approach to innovation. It means bringing cutting-edge technological advances and broad, innovative ideas to address mining's intractable challenges, including climate change. Through collaborative partnerships, we are connecting people to find safer, more efficient and more sustainable ways to mine the precious metals and minerals that the world needs.

The FutureSmart™ Open Forums focus specifically on global challenges around mining, processing and sustainability. So far, we have held four forums – Water, Processing, Mining and Energy – where we worked directly with world-class experts from a variety of industries; entrepreneurs; research and non-governmental institutions; as well as suppliers, to explore creative solutions, and potentially collaborate to solve them.

Our road map was given impetus following the FutureSmart™ Open Forum on Energy held in December 2016. We identified four main themes from the exercise:

- a mosaic of modular renewable energy solutions, including solar thermal applications in ore processing
- biomass applications to generate power from waste and also to generate jobs
- data analytics supporting intelligent energy use
- a group of new-idea technology solutions that will be driven through SmartPath, our internal method for rapid development of innovative ideas.

Throughout the Open Forums, some common themes have emerged. The need for robust, low-cost pervasive sensing of physical and chemical attributes – such as flow rate, temperature and density – was a topic raised at all of them.

As a result, a project initiated in 2015 is already at the demonstration phase and delivering reliable flow measurements. Expanding this work to include energy-related attributes is under way.

Also, around the Group we seek to implement best-available technologies on an ongoing basis, particularly regarding underground ventilation, fuel use and slurry pumping. Innovative water technologies that promote efficient water use are driving energy- and GHG-emission savings. This is fundamental to climate adaptation at our operations in water-stressed areas. We have also invested in the harnessing and re-use of energy, such as waste-heat recovery from Platinum's Waterval smelter in South Africa, and Coal South Africa's solar photovoltaic projects.

Other partnership projects include research in Australia to use algae to sequester carbon and for bioremediation.

We voluntarily contribute to the Australian Coal 21 Fund for the development of low-emission technologies. In South Africa, we are founding members of the Centre for Carbon Capture and Storage (SACCCS). The SACCCS involves international collaboration and funding with the

CLEAN FUELS AT ANGLO AMERICAN

In mining, ensuring hydrocarbon cleanliness can reduce fuel consumption by 3-7%. Clean fuel reduces our emissions and results in improved life of the components and reduced equipment downtimes. In 2015, the implementation of cleaner fuel, haul management and engine control units by Coal Australia resulted in a decrease in diesel consumption, helping us achieve our scope 1 and 2 emission reduction targets. Clean fuels have also resulted in efficiency gains in Minas-Rio and are being rolled out across the Group. In 2015, the initiative helped us avoid 23,211 tonnes of CO_2e and save up to $4 million. With regular planned maintenance, this initiative is expected to last to the end of life of mine or until new technology is developed.

aim to pilot CO_2 storage for commercial application by 2025. Anglo American was also a member of the FutureGen CCS project in the United States. The project was terminated, however, when government funding was withdrawn in 2015. To date, we have invested approximately $10 million in clean-coal technology.

Through De Beers, we have started investigating the potential for mineral carbonation of kimberlite tailings as a CCS-technology solution. (See box below.)

We have investigated commercial use of discard coal for power generation, using circulating fluidised-bed combustion (CFBC) technology. In 2016, the 450 MW Khanyisa Discard-Coal Project, located at Kwezela colliery, secured preferred bidder status in the South African government's Coal Baseload Independent Power Producer (IPP) Procurement Programme. The plant will see the introduction of CFBC technology in South Africa, with long-term environmental benefits, including avoiding negative impacts on water and air quality. Other independent power projects we have initiated include the 100 MW Kathu Solar Thermal Project located at our Sishen operation.

At our Moranbah North and Capcoal underground metallurgical coal operations in Australia, waste mine methane is used to generate more than 100 MW of electricity. The combined environmental benefit from the two power stations is a reduction of 3.7 Mt of CO_2e emissions a year.

CARBON-CAPTURING ROCK

Mineral carbonation is a naturally occurring process, which effectively binds CO_2 to rock as carbonate minerals. The natural rate of formation of these carbonate minerals is too slow to offset human-produced CO_2 emissions. However, if we could accelerate the rate of formation of carbonate minerals, we could achieve an increase in the amount of CO_2 that is captured. The possibility of accelerating carbonate mineral formation in kimberlite, the rock type mined for diamonds, shows great promise. De Beers has started investigating the potential to use the formation of carbonate minerals in kimberlite tailings, the waste rock from diamond mining, as a CCS-technology solution.

In 2016, De Beers completed a review of previous mineral-carbonation studies at mine sites. Currently, a group of expert employees is working with external experts from the University of British Columbia, Monash University, and the University of Queensland to assess if CO_2 could be stored in kimberlite tailings at Venetia mine in South Africa and at Gahcho Kué mine in Canada. In addition, De Beers is supporting academic-focused research at Voorspoed mine in South Africa, to better understand carbonation pathways and rates, as well as carbonate-mineral preservation, in kimberlite tailings in a southern African climate over a long time period.

FROM FUMES TO FUEL

Anglo American, through the PGM Investment Programme, is investing in technology that could change the game when it comes to climate change. Greyrock Energy, a company in which we have made an investment, has developed a technology that converts waste gas, which is routinely flared, directly into liquid fuels. According to the World Bank, billions of cubic metres of natural gas are flared annually at oil-production sites around the globe. Flaring gas wastes a valuable energy resource that could be used to support economic growth and progress. If Greyrock's solution addresses just 5% of the natural gas that is flared worldwide, it would offset Anglo American's entire Scope 1 and Scope 2 emissions.

WORKING WITH OUR SUPPLIERS

We have a large and diverse base of 12,000 suppliers around the world. Through our responsible sourcing programme, we aim to ensure that the goods and services we procure do not cause harm to individuals or the environment. At a minimum, we expect suppliers to demonstrate compliance with all local laws and regulations, as well as good practices, in all areas, including climate change.

Our approach is guided by the Anglo American Responsible Sourcing Standards for Suppliers and various supporting policies.

Based on a risk ranking, we ask our most material suppliers to complete a self-assessment questionnaire, which includes questions on each supplier's environmental performance, climate change risks, GHG data, air-quality management, and GHG-reduction strategies. We may also ask suppliers to provide proof of statements made and demonstrate that they follow the supplier code, as well as conduct site visits and audits to verify compliance. If a supplier does not meet certain aspects of the standard, they need to implement corrective action plans. In certain circumstances we may terminate the contracts of suppliers who fail to comply with the standards or any legislated requirements. To date, we have audited more than 300 suppliers.

In 2015, we started working to harmonise supplier sustainability standards, simplify auditing protocols and agree on principles of mutual recognition for suppliers. This approach will ultimately reduce duplication in cost and effort. Examples of successful measures to work with our supply chain to reduce our direct and indirect risks include:

- shifting a fuel contract from one supplier to another. This decision was driven by a number of considerations, one being that the new fuel includes an additive that improves fuel efficiency and reduces related GHG emissions.
- requiring that service providers transporting employees meet requirements regarding the specification, operation and maintenance of buses. This requirement incorporates efficiency targets (with emissions benefits) in addition to the primary safety objectives.
- working with suppliers to source more efficient products that minimise operating costs and reduce GHG and other emissions.

In 2017, for the first time, the CDP evaluated organisations on their ability to engage with suppliers on climate change based on the disclosure of more than 3,000 companies. Anglo American received a B- score, ahead of the world average of C-.

Image: Minas-Rio Plant, Conceição do Mato Dentro, Minas Gerais State, Brazil.

LOOKING AHEAD

Innovation and resilience: these are key concepts for Anglo American – and the mining industry – if we are to thrive in a low-carbon economy and successfully contribute to mitigating the planet's rising temperature. There are reasons to be optimistic. As we set our eyes on 2030, the year when we will measure success against the SDGs and our timeframe for developing a carbon-neutral mine, we must build on the efforts already under way and catalyse a step-change in our approach. The forthcoming Anglo American Sustainability Strategy will be the compass that will guide our work and underpin our efforts.

We see seven areas of work that will continue to help us meet this challenge:

1. **FutureSmart™ mining Open Forums, Anglo American's platform for innovation.** The Open Forums on Water, Processing, Mining and Energy have stimulated ideas that are progressing into tangible collaborative solutions.

2. **Climate-smart procurement** will see us buying more high-efficiency equipment and working with suppliers on innovation and technology change.

3. **ECO_2MAN.** The programme will continue to evolve, using the data we capture from our mines to better adjust our energy consumption and reduce our emissions. We strive to source more from renewable sources and capture, where possible, energy from mining processes and waste.

4. **Climate-change risk and adaptation.** We will strengthen the resilience of our operations and host communities to physical climate change and extreme weather.

5. **Partnerships and stakeholder engagement.** We expect carbon offsets and, in particular, international forestry (REDD+) credits, to play a significant role in meeting emission caps. Anglo American is considering options for long-term partnerships, which will enhance our efforts in the transition to the future low-carbon economy. We will continue to engage in multi-stakeholder initiatives and contribute to a well-designed carbon pricing scheme.

6. **Sustainability reporting.** There are further calls for companies to disclose climate-change-related costs and benefits in financial terms, and we are preparing to integrate this into our mainstream reporting. Our intention is to complete a quantitative analysis of the scenario-related impacts and align with shareholder expectations, in particular the recently issued draft recommendations of the Task Force on Climate-related Financial Disclosures.

7. **Financial incentives.** This responsibility has driven Anglo American to incorporate our response to climate change into our strategy, operational solutions and project design. In 2017, Anglo American's Board approved, for the first time, a climate-change-related indicator to our executive financial remuneration.

Addressing the climate-change challenge will require a collaborative approach across all sectors of society. Anglo American will continue to partner with others to drive innovation, engage openly and transparently with our stakeholders and lead by example.

ACRONYMS

BAU	Business as usual
BUSA	Business Unity South Africa
CCS	Carbon capture and storage
CDP	The global environmental disclosure system for business and sub-national governments
CO_2e	Carbon dioxide equivalent
ECO_2MAN	Anglo American Energy and CO_2 management programme
GHG	Greenhouse gas
ICMM	International Council on Mining and Metals
ITTCC	Industry Task Team on Climate Change
NBI	National Business Initiative
NGO	Non-governmental Organisation
ORM	Anglo American Operational Risk Management
PGMs	Platinum group metals
REDD+	Reducing Emissions from Deforestation and Degradation
SACCCS	South African Centre for Carbon Capture and Storage
SDGs	United Nations Sustainable Development Goals
UNFCCC	United Nations Framework Convention on Climate Change

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