

ENVIRONMENT

Responsible environmental stewardship is about protecting and preserving natural resources for the greater good of all our stakeholders. In this section, we illustrate our impact on natural capital and the value we create in integrating environmental stewardship into our strategic decision making.

Highlights

- Climate change response progressing
 - Published our climate change response strategy aligned to the TCFD recommendations
 - Achieved a B score in the 2020 CDP – two levels better than the coal industry in South Africa
 - Received a management level score for taking coordinated action against climate change
- WULs granted:
 - ECC Forzando West in November 2020
 - Leeuwpans OI West in March 2020
 - Tshikondeni IWUL
- Managing water resources
- Completed phase 1 of the Belfast wetland rehabilitation plan
- Implemented the wetland offset plan for the Matla water treatment plant
- Various tree permits for Grootegeluk were granted
- Reduced the hazardous waste produced from our business units by 63%
- No noise pollution complaints received at either of Cennergi's windfarms.

Lowlights

- A DMRE pre-directive notice was issued to Leeuwpans in January 2020 related to water management and hazardous waste
- Delays in obtaining the Matla WUL renewal due to COVID-19
- Delays in obtaining the ECC Dorstfontein West Expansion authorisations due to COVID-19
- A pre-directive notice was issued to Hlobane in March 2020 by the Department of Human Settlements (DHS) and DWS related to water management
- Two Cape Vulture fatalities recorded at Cennergi's Amakhala Emoyeni windfarm

While we harness natural resources, we endeavour to reduce the impact of environmental pollutants by:

- Ensuring all mining and related activities are appropriately authorised
- Complying with all statutory environmental requirements as a minimum
- Using energy and water as efficiently as possible
- Operating responsibly from the twin perspectives of compliance and natural resource use
- Actively participating in voluntary benchmarks such as the global carbon and water disclosure projects
- Developing innovative policies and programmes to address environmental impacts and the use of natural resources

Our all-encompassing group standards ensure we comply with legal requirements and use natural resources responsibly.

We have embedded management standards for air quality, water, energy, rehabilitation and mine closure, as well as environmental incident management and reporting, into each BUs activities. Our BUs also maintain ISO 14001 certification that outlines effective environmental management requirements.

Our operations in South Africa have environmental management programmes, as required by the MRDPA and the NEMA. These programmes ensure our long-term sustainability. The precautionary principle entrenched in the National Environmental Management Act guides us in evaluating environmental impacts of current activities and future business opportunities. In addition, our operations have at least one integrated water use licence.

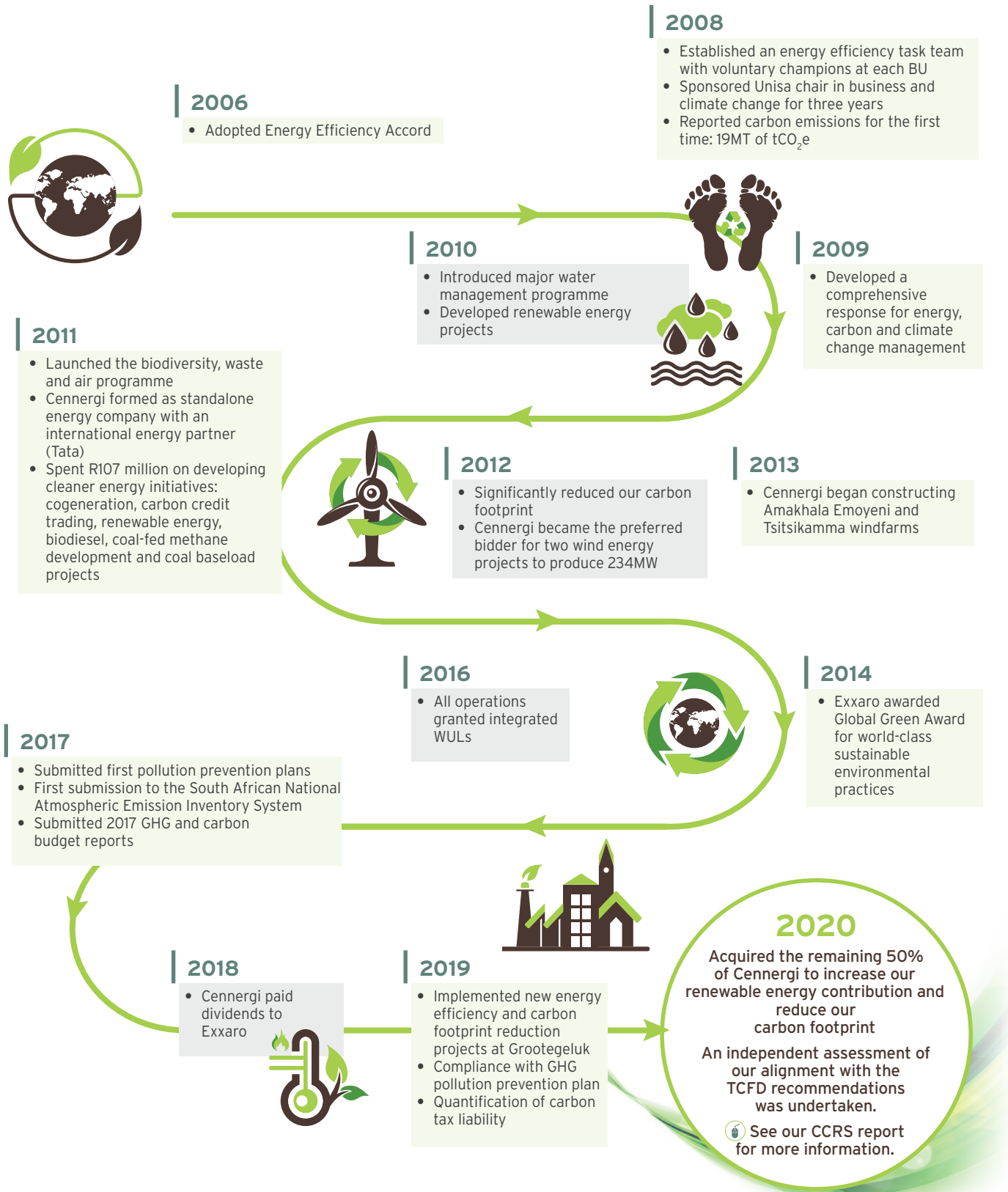
OUTLOOK

Our environmental management challenges include constraints in implementing legislation regulated by the DMRE.

We are exposed to significant risks when permits are delayed. These permits include WULs aligned with mineral rights and environmental licensing procedures. Our endeavours are also constrained while we wait for the integration of complex proposed laws dealing with climate change, pollution prevention and carbon tax. We expect climate change action to restrict the use of fossil fuels by national governments, investors and financial institutions. This will intensify as we approach the Conference of the Parties (CoP) Session 26 in Glasgow, Scotland, later in 2021. We remain focused on transitioning our business portfolio and making it resilient to the 1.5°C world.

EXXARO'S STEWARDSHIP TIMELINE

We are committed to being an environmentally responsible organisation. We continue to drive sustainability throughout our business and build on our track record of delivery.



OUR PROCEDURES

South African mining companies and mining-related activities are strictly regulated. Compliance results in receiving, converting and retaining mining rights and environmental licences.



EXCEEDING MINIMUM REGULATORY REQUIREMENTS

Knowing our key environmental risks, we ensure consistent compliance and endeavour to exceed minimum regulatory requirements. Refer to the business risks and opportunities for growth section in the integrated report for more information about our environmental risks.

At a minimum, to meet legal requirements, two board-mandated committees (sustainability, risk and compliance as well as social and ethics) monitor compliance throughout the business. In addition, our BUs operate in terms of approved environmental management programmes, which provide additional assurance of sustainability and legal compliance. We regularly update our environmental management programmes to include developments in our activities.

We did not receive any environmental stoppage directives in the review period and no fines were issued.

Exxaro regularly engages with relevant government authorities, agencies and other stakeholders throughout the application processes to expedite the licences required for various projects.

ENVIRONMENTAL INCIDENT REPORTING

Our standardised environmental incident reporting system ensures our BUs manage incidents effectively and efficiently to minimise negative impact. We immediately report any incidents and mitigation measures to the relevant authorities.

A record of our environmental incidents over the past three financial years is shown in the table below.

Environmental incidents	Trend	Level 1			Trend	Level 2			Trend	Level 3		
		2020	2019	2018		2020	2019	2018		2020	2019	2018
Limpopo												
Grootegeeluk	▼	9	15	11	—	0	0	1	—	0	0	0
Tshikondeni	—	0	0	1	—	0	0	0	—	0	0	0
Mpumalanga												
Belfast	▲	15	0	50	—	0	0	5	—	0	0	0
ECC	—	4	293	28	—	0	0	0	—	0	0	0
Leeuwpan	▼	42	55	8	—	0	0	0	—	0	0	0
Matla	▲	21	10	19	—	0	0	0	—	0	0	0
KwaZulu-Natal												
Durnacol	—	0	0	0	—	0	0	0	—	0	0	0
Hlobane	—	0	0	0	—	0	0	0	—	0	0	0
Total		91	373	80		0	0	6		0	0	0

Level 1: Minor impact and/or non-compliance.

Level 2: Intermediate impact and/or non-compliance.

Level 3: Major impact and/or non-compliance.

▲ Negative ▼ Positive — Unchanged

Environmental audit in progress



AIR QUALITY

We uphold our licence to operate through

- Atmospheric emission licence compliance
- Pollution prevention plans
- Stakeholder engagement forums

Air quality management is among our top priorities due to the negative impacts of pollutants, such as dust and particulate matter (PM₁₀ and PM_{2.5}) prevalent in mining areas. Our mitigation measures include:

- Application of chemical dust suppressants on unpaved road
- Adhering to all applicable legislative requirements
- Proactive air quality management planning
- Risk management
- Monitoring, measuring and reporting

During 2020, we focused on going beyond compliance and implemented our reviewed air quality management system at various BUs. Our BUs implemented systematic risk-based air quality management planning to ensure effective application and compliance with regulatory and stakeholder expectations, incorporation of future mine development changes and continuous reassessment. This process included detailed air quality impact assessments and redesigning our air quality monitoring programmes at each BU. We conducted air quality awareness and educational campaigns in our host communities to improve our stakeholders' air pollution awareness.

In 2021, we will continue improving and reviewing our air quality management systems to ensure compliance and emissions reduction.

AIR QUALITY MANAGEMENT INITIATIVES

Objectives	Critical success factors	Method	Progress
Progressively reduce our air quality emissions within our operating boundary	Reduction in dust fallout and PM ₁₀ levels in all our operations	Dust fallout levels and PM ₁₀ concentrations reduced by applying best practice mitigation measures such as wet and chemical suppression of dust with continuous research and development of new dust suppression and air pollution mitigation technologies	A reduction in dust emissions in our operations, with increased compliance with the residential and non-residential dust fallout limits.

GOALS FOR AIR QUALITY MANAGEMENT

Goal	Target	Progress
Continuous dust fallout monitoring at all BUs	100% of all operations	Dust fallout monitoring undertaken as a priority at all BUs including greenfield projects
Initiating and continuously monitoring PM ₁₀ at all BUs	100% of all operations	PM ₁₀ monitoring initiated at some BUs with more monitoring campaigns planned for 2021
Meteorological monitoring to ensure availability of surface data for temperature, wind direction and wind speed (critical for dispersion modelling, baseline characterisation, ambient monitoring design, dust fallout monitoring and reporting, among others)	Third quarter of 2020*	Meteorological stations installed at some BUs
Ensuring compliance with dust fallout limits and air quality standards	Level below the regulated levels	Most BUs currently monitor dust fallout and PM ₁₀ and results are assessed for compliance with National Dust Control Regulations and National Ambient Air Quality Standards for PM ₁₀
Air quality awareness and education campaigns for various stakeholders	Third quarter of 2020*	Stakeholder engagement on air quality undertaken in some communities

* Limited budget for meteorological station installation in 2020. However, this could change in 2021, with stations planned for implementation.

* Third quarter 2020 was the target date based on responses from the BUs on when they would install weather stations.

DUST MITIGATION MEASURES

Our opencast mining activities (drilling, blasting, crushing, screening, transportation, materials handling, and windswept storage piles and exposed areas) unavoidably generate dust. Therefore, we consistently enhance our mitigation measures to reduce the significant impacts on the environment. Enhancements include:

- Applying chemical dust suppressants on primary-haul roads
- Wet suppression on sources such as open areas and secondary unpaved roads
- Vegetation on topsoil stockpiles and overburden material
- Avoiding blasts during high wind conditions
- Blast design optimisation
- Limited drop heights during offloading activities

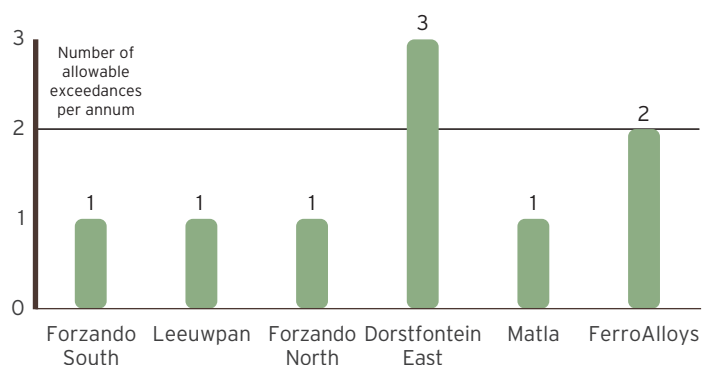
Our mining operations monitor dust fallout rates and the results are assessed in terms of residential and non-residential limits outlined in the National Dust Control Regulations. Although our operations are required to comply with non-residential limits, some activities are close to residential areas or sensitive receptors. Therefore, we aim to minimise the impact of our operations on nearby residents.

In 2020, the dust fallout rate at most of our operations complied with the regulated residential and non-residential limits, as illustrated in the table below. This is due to effective dust suppression measures that are continuously implemented in our operations.

Dust fallout target	2020	2019	2018
Coal: 300 milligrams per square metre per day (mg/m ² /day)	197	206	184

No exceedances of the residential limit were recorded for all our BUs in 2020. However, exceedances of the non-residential limit were recorded in some of the BUs as shown in the graph below.

Number of exceedances of non-residential dust fallout limit (January to December 2020)



Dust suppression at Belfast



CLIMATE CHANGE

CLIMATE CHANGE AND CARBON EMISSIONS FOOTPRINT

To ensure alignment with our carbon emission reduction goals, a steering committee oversees energy management projects and activities. This helps us thoroughly understand risks and opportunities so that our operations can focus on managing energy consumption, carbon emissions and other climate change-related matters.

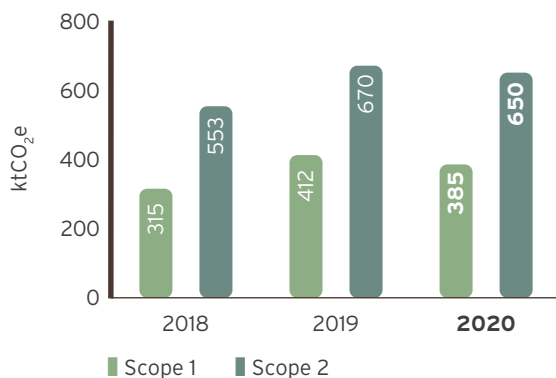
Exxaro measures, manages and reports energy and carbon data in terms of the Greenhouse Gas (GHG) Protocol. Our scope 1, 2 and 3 emissions are monitored and reported annually. We use the operating control accounting approach in reporting emissions.

Scope 1	Direct GHG emissions (measured in tCO ₂ e) from sources owned or controlled by Exxaro using diesel, petrol, gas and anthracite combustion in day-to-day mining operations
Scope 2	GHG emissions from electricity generated by Eskom and purchased by Exxaro
Scope 3	Emissions outside our control but emanating from our products or activities such as customers burning coal sold by Exxaro

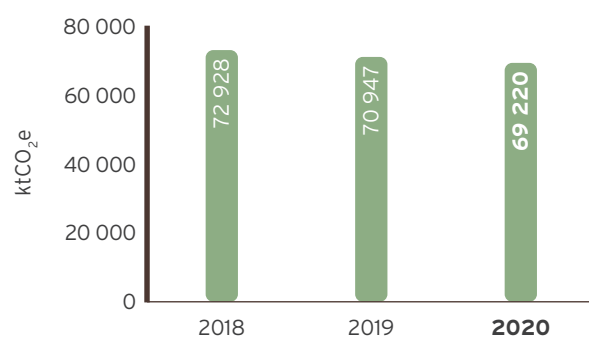
The GHG Protocol provides a standard measurement platform to compare aggregate data nationally and internationally. South Africa has arguably set the most aggressive carbon abatement targets of any developing country. The country aims to reduce emissions by 34% below business as usual by 2020 and 42% by 2025. Our GHG emissions recorded over the past three financial years are shown in the following tables and graphs.

GHG emissions	Year-on-year change	2020 (ktCO ₂ e)	2019 (ktCO ₂ e)	2018 (ktCO ₂ e)
Scope 1	-6%	385	412	315
Scope 2 ¹	-3%	650	670	553
Total scope 1 and 2	-5%	1 035	1 082	867
Year-on-year change (%)		-5	25	0
Scope 3 ²	-2.4%	69 220	70 947	72 928
Year-on-year change (%)		+2.5%	+2.7%	5

| Scope 1 and 2 GHG emissions



| Scope 3 GHG emissions



¹ Scope 2: Electricity-based emissions are derived from the grid emission factor for South Africa, which is 1.06tCO₂e per megawatt hour (MWh).

² Scope 3: Reported emissions based on use of product sold by Exxaro (representing over 96% of Exxaro's scope 3 emissions).

Carbon emissions by source	Year-on-year change	2020	2019	2018
Electricity (ktCO₂e)	-3%	650	670	553
Year-on-year change (%)		3	18	2
Source proportion (%)		63	62	64
Diesel (ktCO₂e)	-3%	261	268	218
Year-on-year change (%)		3	19	3
Source proportion (%)		25	25	25
Fugitive emissions (ktCO₂e)	-14%	117	136	93
Year-on-year change (%)		14	32	2
Source proportion (%)		11	13	11
Other sources (ktCO₂e)	-11%	8	9	0
Year-on-year change (%)		11	96	74
Source proportion (%)		1	1	1

Carbon disclosure

The CDP, a UK-based organisation overseeing a global environmental disclosure system, receives data that provides valuable insights into corporate strategies and the journey towards environmental leadership. The system also helps channel investment to companies adhering to sustainable carbon and emissions management.

We have participated in the CDP climate change programme since 2008, supporting our reporting with a central data repository that records our energy consumption and intensity, carbon emissions measurement and cost performance at BU and group levels. The database is audited and assured externally every year. We have also participated in the CDP Water programme since 2010.

Reducing our energy consumption and improving our energy efficiency remains a high priority.

Therefore, we continue focusing on lowering our carbon footprint. In a fast-changing legislative environment, with the promulgation of carbon tax from 1 June 2019, reducing GHGs is a business imperative as it could affect our financial performance. Our carbon intensity continues to show a decreasing trend as we focus on managing our electricity and diesel consumption. We expect this trend to continue as we implement initiatives to support 2050 our carbon-neutrality target.

GHG emissions in 2020	Scope 1 (ktCO ₂ e)	Scope 2 (ktCO ₂ e)	Scope 3 (ktCO ₂ e)	Total (ktCO ₂ e)
Mpumalanga	208	243	19 120	19 573
Belfast	55	3	233	291
Dorstfontein East	24	18	95	137
Dorstfontein West	9	15	353	377
Forzando North	3	46		49
Forzando South	11		414	58
Leeuwpan	54	27	3 622	3 704
Mafube	16	28	3 220	3 264
Matla	36	106	11 182	11 324
Limpopo	177	396	50 100	50 674
Reductants			77	77
Grootegeeluk	177	394	50 023	50 364
Tshikondeni	0.03	2	0	2
Gauteng	0.1	8		8
Corporate Centre, the conneXXion	0.02	1.6		2
FerroAlloys	0.1	6		6
KwaZulu-Natal	0.2	0.1		0.3
Durnacol	0.1	0.05		0.2
Hlobane	0.1	0.02		0.1

During 2020, the carbon intensity was 4.9ktCO₂e/TTM compared to 5.4ktCO₂e/TTM in 2019. This translates to a 9% decrease in carbon intensity due to energy efficiency projects at our BUs. The reduction in the number of employees working from the office due COVID-19 also contributed to the reduction.

Electricity and diesel intensities decreased in 2020, mainly due to energy efficiency projects in our operations, particularly at our largest operation, Grootegeeluk. Based on production tonnages in 2020, electricity intensity decreased by 7% to 13MWh/kt (14MWh/kt in 2019) and diesel intensity decreased by 6% to 2 042 litres (L)/kt (2 183l/kt in 2019). The following projects currently underway at Grootegeeluk avoided 1 088tCO₂e in 2020:

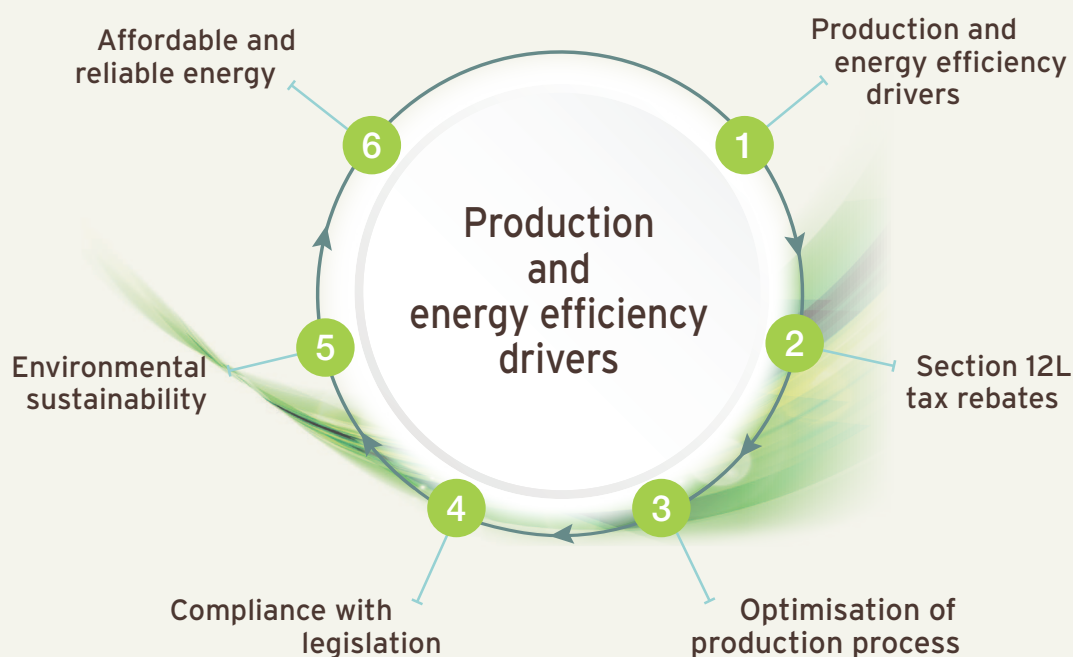
- In pit crushing and conveying
- Haul truck out of cycle time reduction
- Pantograph Trolley utilisation improvement

The focus to 2021 will be to roll out energy management projects across the group to ensure that we can leverage on the direct benefits on the GHG reduction.

ENERGY MANAGEMENT

We uphold our licence to operate through

- Energy management
 - Energy efficiency plans and reports
 - Energy intensity target setting
- Climate change response strategy
 - Responsible resource usage
 - CO₂ emission reports



Our BUs' primary sources of energy in 2020 were electricity (63%) and diesel (25%). In 2019, the primary sources of energy were also diesel and electricity (25% and 62% respectively). Total energy consumed decreased by 0.3% in 2020 to 5 162 650 gigajoules (GJ), compared to 5 179 561GJ in 2019, attributable mainly to energy efficiency projects implemented in our BUs.

Our energy and carbon management programme aims to reduce energy consumption and increase efficient diesel and electricity consumption. Our technology and engineering department's projects aim to reduce diesel consumption at all our operations use fuel additives and payload management. Planned projects include developing a consolidated dashboard for fuel and electricity at various BUs. The dashboard will provide routine energy usage and source apportionment information. These initiatives support the transition to a low-carbon economy and enable our operations to improve energy efficiency by striving to achieve low-carbon footprints and optimise energy consumption.

We set energy intensity targets every year, based on each operation's performance over the previous years, and monitor these targets monthly. A review of targets at the end of 2017 proposed long-term (five-year) targets to facilitate our energy-saving initiatives. We implemented these targets in the second half of 2019.

Electricity and diesel intensities decreased in 2020, mainly due to energy efficiency projects in our operations, particularly at our largest operation Grootegeeluk. Based on an increase of 5% in production tonnages in 2020, electricity intensity decreased by 7% to 13MWh/kt and diesel intensity decreased by 6% to 2 042 litres (L)/kt.

Electricity consumption in coal operations	Electricity (MWh)			Production (kt)			Electricity intensity (MWh/kt)		
	2020	2019	2018	2020	2019	2018	2020	2019	2018
Total	605 770	624 240	553 100	47 008	44 813	41 671	13	14	13
Change (%)	3	11	3	5	7.0	6	7	7	7
Mpumalanga									
Belfast	2 904	30		2 850	1 029		1		
Dorstfontein East	17 286	18 254		909	1 345		19	14	
Dorstfontein West	14 393	18 013		1 104	816		13	22	
Forzando North	43 795	47 511		84	403		26	23	
Forzando South ¹				1 594	1 671				4
Leeuwpans	25 927	26 435	26 225	3 720	4 396	4 220	7	6	6
Mafube	26 237	22 970	15 924	1 818	1 808	1 145	14	13	14
Matla	100 358	103 037	105 757	6 153	5 991	6 609	16	17	16
Arnot ²	1 366	13 901	22 041						
Limpopo									
Grootegeeluk	371 785	372 149	381 480	28 776	27 757	29 698	13	13	13
Tshikondeni	1 651	1 849	1 550						
KwaZulu-Natal									
Durnacol	50	77	107						
Hlobane	18	14	16						

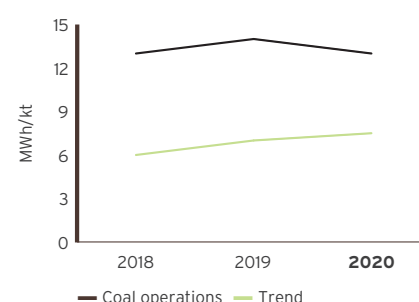
¹ Electricity consumption at Forzando South is included in the Forzando North figure (consumption is for Forzando North and Forzando South hence the calculated electricity intensity reflected for Forzando North is based on production figures for both operations).

² Arnot was transferred to Arnot Opco Proprietary Limited during Q1 2020.

The decrease in electricity intensity (by 7%) in 2020 compared to 2019 is attributed to energy efficiency projects implemented at our operations.

Employee energy-saving behaviour has also contributed towards reductions in energy consumption. Energy efficiency programmes will be continuously implemented in our operations to ensure further reductions in energy consumption.

Electricity intensity



Diesel consumption in coal operations	Diesel (kL)			Production (kt)			Diesel consumption intensity (L/kt)		
	2020	2019	2018	2020	2019	2018	2020	2019	2018
Total	96 131	98 702	73 804	47 008	44 813	41 671	2 042	2 203.00	1 771
Change (%)	3	25	1	5	7	6	6	20	6
Mpumalanga									
Belfast	13 100	5 020		2 850	1 029		4 596	4 879	
Dorstfontein East	7 154	9 598		909	1 345		7 874	7 136	
Dorstfontein West	409	463.9		1 104	816		371	569	
Forzando North	763	813.9		84	402.8		9 059	2 020	
Forzando South	240	218.7		1 594	1 671		151	130	
Leeuwpans	19 480	21 924	19 847	3 720	4 396	4 220	5 326	4 987	4 618
Mafube	4 571	6 768	5 556	1 818	1 808	1 145	2 514	3 744	4 853
Matla	2 073	2 194	2 503	6 153	5 991	6 609	337	366	379
Arnot	56	902	989						
Limpopo									
Reductants			56						
Grootegeeluk	48 189	50 720	44 520	28 776	27 757	29 697	1 675	1 827	1 412
Tshikondeni	10	13.7	16						
KwaZulu-Natal									
Durnacol	39	13	34						
Hlobane	47	52	42						

Diesel consumption at FerroAlloys in 2020 was 12kL and 0.05kL at our corporate centre, the coneXXion.

WATER MANAGEMENT

We uphold our licence to operate through

- Our water management standard
- Water authorisations
- Site-specific water management plans:
 - Water-related risk assessment
 - Water efficiency plans and reporting
 - Stormwater controls
 - Security of supply
 - Water monitoring
 - Water balance simulations

Water is a strategic natural resource for South Africa and our business. We are committed to responsible and sustainable water use as enshrined in our water management policy that focuses on efficient water reuse and recycling. The policy aligns with the legislated environmental framework mainly governed by the National Water Act, 1998 (Act 36 of 1998), supported by the integrated water resource management hierarchy issued by the DWS to prioritise mine and waste management decisions and actions. The hierarchy informs our policy and strategy on mine and wastewater management by:

- Preventing pollution
- Minimising environmental impacts
- Maximising water reuse and reclamation
- Responsible water discharge and disposal
- Water treatment

We are committed to implementing this policy with a management standard on water for mining and industrial use. The standard articulates an effective integrated water and waste management plan across a mine's lifecycle, including planning, construction, operation, decommissioning, closure and rehabilitation phases. The standard also reflects management's vision to:

- Ensure a cost-effective integrated approach to water management
- Environmental responsibility
- Ecological sustainability

GROUP WATER STRATEGY

Our group water strategy was approved in 2017, aiming for excellence in:

- Compliance
- Operational water efficiency
- Policies, standards and processes
- Water technologies
- Stakeholder partnerships

A comprehensive programme entrenches responsible and sustainable water management throughout our BUs, concentrating on water use and related risks – from security of supply to water efficiency and cost management – in terms of current and anticipated regulatory compliance. We support the programme with research and skills development as well as water issues awareness through ongoing communication and training.

We manage water-related risks, minimise impacts and operate efficiently by reducing, reusing and recycling water in line with water conservation plans that support the national strategy. Equitable distribution of water resources considers business growth and sustainable consumption.

We are also committed to protecting and improving water quality by discharging water treated in our BUs through our reverse-osmosis water treatment plant at Matla. The plant has been operating since 2015 and can treat 10ML of water per day.

We continue collaborating with other mining houses and universities through the Coaltech research initiative in projects that provide guidelines on sustainable mine water management and mine closure. Our collaboration also affords accurate final land-use planning.

The Mine Water Coordinating Body, formed in 2017, further strengthens our public-private collaboration by providing a platform to align our mine water management plans with the National Water Resource Strategy and investigate regional solutions in the Olifants River catchment of Mpumalanga.

Water use

We refined our water intensity targets in 2020 and developed a new five-year target in line with industry norms and site-specific conditions. We lowered our previous aggregated target of 200L/t to 180L/t. This target is well below the coal industry average of 380L/t. It supports our strategy to reduce water intake in line with the DWS's drive to increase water conservation and reclamation. Our overall water efficiency rate deteriorated by 39% due to the ramp-up of our Belfast operation and changes to in-pit conditions at Grootegeluk.

Water intensity	Target (L/t) 2025	Water intensity (L/t)			Water withdrawal (kL)		
		2020	2019	2018	2020	2019	2018
Mpumalanga							
Belfast	200	132	28	—	416 628	29 501	—
Dorstfontein East	280	116	168	249	219 140	383 541	444 057
Dorstfontein West	130	66	88	98	111 798	112 009	99 172
Forzando	140	124	70	135	406 326	281 797	434 315
Leeuwpan	100	38	25	55	228 085	165 241	363 694
Matla	220	190	159	181	1 168 683	950 292	1 197 247
Limpopo							
Grootegeeluk	170	150	99	91	8 198 145	5 364 282	5 187 375

Water recycling

Exxaro introduced a water recycling ratio in 2020 and set a target of 38% for 2025. We define our water recycling ratio as the total water recycled divided by total water used (including recycled water). Our overall water recycling ratio is 45%. The coal industry average is 6%, as outlined in the national water use efficiency benchmarks of the DWS.

Water recycling ratio	2020 (%)
Mpumalanga	
Belfast	38
Dorstfontein East	86
Dorstfontein West	39
Forzando	69
Leeuwpan	30
Matla	44
Limpopo	
Grootegeeluk	40

GRI water standards

Our alignment with the GRI standards for water reporting is outlined below. (Includes Mafube's 50% numbers)

GRI standards water reporting	2020 (ML)	2019 (ML)	2018 (ML)
Total water withdrawal	11 798	9 021	10 164
Surface water	8 877	5 869	6 587
Groundwater	1 368	2 072	2 353
Third-party water	1 553	1 081	1 224
Total water discharged	874	1 339	1 953
Water consumption	10 924	7 682	8 211

Tailings storage facilities

Exxaro's dam assets contain both clean and polluted water. Dams with a wall height of more than 5m and with a capacity of more than 50 000m³ are considered as dams with a safety risk according to the South African Dam Safety Legislation. Only a few clean and dirty water dams meet above minimum requirements to be classified with the DWS as dams with a safety risk. Once classified, the dams are categorised in categories I, II and III according to their risk potential. A category III dam has the highest hazard potential. The table below shows all dams categorised as dams with a safety risk by DWS.

BU	Category I	Category II
Matla	-	Matla Brine Ponds
Grootegeeluk	-	Grootegeeluk Cyclic Ponds
ECC	-	Dorsfontein East PCD 1, 2 and 3
Leeuwpan	-	Witklip Dam
Durnacol	Durnacol dam no 4	Durnacol dam no 7 Langley dam no 2 Langley dam no 3
Tshikondeni	Unwa dam	-

HAZARDOUS WASTE MANAGEMENT

We uphold our licence to operate through

- Management procedures (including waste classification and reporting)
- Authorisation (waste management licences)
- Waste handling, transportation and disposal methods
- Waste efficiency reports
- Waste classification

Cradle-to-grave management of waste is critical to maintain our licence to operate. We developed a group environmental policy and waste management standard for hazardous and non-hazardous waste. Our waste management standard enforces a waste management hierarchy that promotes prevention, minimisation, reuse, recycling and energy recovery while ensuring safe waste disposal in line with the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) and supporting legislation. The environmental policy introduced initiatives such as waste prevention, reuse, recycling, energy recovery and safe waste disposal to reduce environmental and health risks with sustainability in mind. Exxaro's BUs receive a rebate to be provided for recycling waste such as paper, used oil and scrap metals.

Our BUs capture hazardous waste volumes monthly including contaminated soil, medical waste, used PPE and sewage. If a BU produces more than 20kg of hazardous waste daily, it is registered with the South African Waste Information System and must comply with its registration certificate.

KPIs, aligned with the FTSE Russell sustainability and ESG indices, drive continuous improvements.

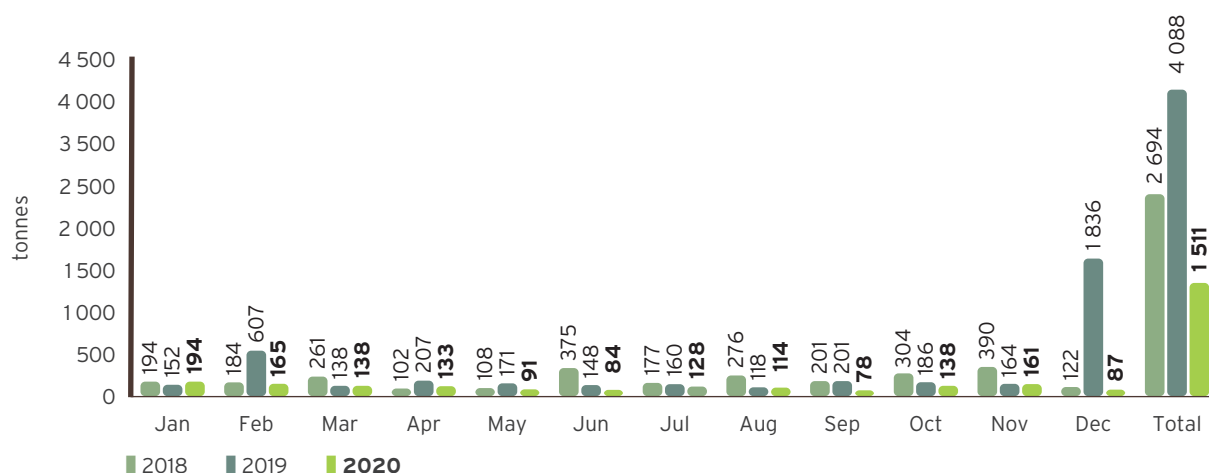
Exxaro's operations do not have on-site waste treatment processes. Contractors clean oil and hydrocarbon spills, and remove the waste to hazardous landfills. Medical professionals manage waste produced by our Matla and Grootegeeluk on-site clinics.

We also participate in waste management initiatives of the Department of Environment, Forestry and Fisheries, Business Unity South Africa and the Minerals Council.

Exxaro collaborates with government, research institutes and industrial partners to monitor technological developments of waste stream conversions that address climate change and job creation.

 The total weight of hazardous waste generated at our managed coal operations in 2020 decreased by 63% to 1 511t (2019: 4 088t) due to recycling initiatives and inactivity induced by COVID-19.

Hazardous waste sent to landfill



CASE STUDY

GROOTEDELUK WASTE TYRE PROJECT



OUR GROOTEDELUK COMPLEX HAS AROUND 1 000 OFF-THE-ROAD (OTR) WASTE TYRES IN A DESIGNATED AREA WITH CONTROLLED ACCESS, STOCKPILE AND STACKING PLANS, AND FIRE PREVENTION MEASURES.

Expected to double in size within two years as the Grooteegeluk complex expands, the waste tyre storage facility was built in response to a notice of non-compliance with regulations in 2016.

After the appointment of a waste tyre reprocessing contractor, the following benefits were realised:

- Waste tyres were transported to the processing facility in Klerksoord, Pretoria
- The waste stream was stopped by producing a coal substitute, tyre derived fuel (TDF), from waste tyre chips
- TDF was transported to a cement kiln in Port Shepstone, KwaZulu-Natal
- Exxaro's environmental performance was evaluated in line with triple bottom line reporting
- A waste manifest was issued for each load of OTR tyres (signed by Exxaro as the waste generator, the transporter and the beneficiation facility) – the manifest is Exxaro's "safe disposal" certificate

The project is a first for the local mining industry with the potential for Exxaro to lead peers in sustainable environmental liability management on an operating mine. It will be rolled out at Exxaro's other BUs across South Africa over time.

BIODIVERSITY

One of the fundamental goals for Exxaro is to be a low-impact, high-value organisation for this generation and the ones to follow. A key aspect of achieving this goal is to ensure that all Exxaro Mines coexist and find harmony with the natural surrounding environment in which they operate. This is achieved through the many positive biodiversity initiatives and programmes being implemented at the various mines. These various initiatives and programmes will not only protect all indigenous flora and fauna species, but also ensure the expansion of such species to support ecosystems within and beyond the various areas Exxaro operates in. Exxaro is committed to exceeding its biodiversity goals and plans a legacy in which both current and future generations can enjoy the benefits of a clean and flourishing natural environment.

We uphold our licence to operate through

- Biodiversity management plans, monitoring and reporting
- Biodiversity standards
- Ecological efficiency reporting
- Environmental research and authorisations

We are committed to environmental excellence, including maintaining a healthy relationship between our operations and the natural environment with projects such as an alien invader eradication programme, pan research, wetland rehabilitation and offset, and biodiversity relocation.

ALIEN PLANT ERADICATION

We monitor, control and eradicate invasive alien plant species found on our sites to avoid:

- Species diversity (biodiversity) decline
- Fauna changes as indigenous animals cannot feed or nest in the area
- Extinction of indigenous species (loss of genetic pool): pine, wattle and hakea trees prevent fynbos species from growing
- Greater risk of catastrophic events (fire and flooding) due to ecological imbalance
- Lower productivity of rangeland due to selective grazing
- Invasive alien plants causing soil erosion and consequent siltation of dams and rivers by consuming more water than indigenous flora
- Sandy and nitrogen-poor natural soil

Expected outcomes:

- Improved water quality and surface water run off
- Flourishing of indigenous vegetation
- Increase in species diversity
- Ensuring productive land is available

We are implementing alien management and monitoring programmes at Matla, Leeuwpán and ECC to measure the success of control and eradication, recording the distribution of categories 1a, 1b, 2 and 3 listed invasive species on our sites.

Land cleared of invaders to date	ha
Matla	70
Leeuwpán	146
ECC	4
Total	220

We began the first phase of the alien control plan at Grootegeluk in the fourth quarter of 2020. The second phase, involving the physical eradication of the alien species in the identified control units, will begin in 2021.

Belfast plans to implement its invader management plan in 2021 with the training and employment of local community members to implement the project.

PAN RESEARCH

Our Belfast operation appointed the CSIR to determine natural hydrological drivers and anthropogenic stressors of pans in the vicinity of the mine in 2019. We conducted wet season sampling in January 2020 in the mining right area to monitor this. A total of 10 pans were sampled and analysed for physicochemical and chemical isotope parameters while the benthic phytoplankton samples were analysed for diversity and dominance. Findings from the 2020 assessment, when compared to the 2019 report, indicate that no deprivation occurred.

WETLAND REHABILITATION

Rehabilitation of the wetland system adjacent to the Belfast operation began on 15 October 2019 and was completed on 14 July 2020. The primary rehabilitation interventions included establishing concrete and high density polyethylene (HDPE) liner walls, construction of concrete drop inlet weirs and backfilling of the main channel, the Klein Komati River, to re-establish a channelled valley-bottom wetland. All interventions in the original rehabilitation plan were implemented and the process to recover the system is underway. Continuous monitoring of the system's functioning and the performance of implemented interventions are planned for 2021.

At Grootegeluk, the offset study for the seasonal pans in the life of mine (LoM) footprint area was finalised and submitted to the DHS and the DWS as per the WUL requirement. The methodology for the concept study, aimed at determining the viability of recreating or relocating seasonal pans, was also finalised. Project funding was approved in 2020 but implementation was delayed due to the COVID-19 lockdown and early rains. The concept study will be implemented in the dry season (from May to September 2021).

Matla began implementing a wetland offset project in February 2020 in line with commitments made to the DHS and DWS, for the operation of its water treatment plant. Zitholama implemented wetland offset interventions handed over to the operation in December 2020 when the project was completed. Ongoing monitoring is planned for 2021 to evaluate the performance of the implemented interventions, and to monitor the status of the wetland and habitat.

The COVID-19 lockdown delayed implementing the approved offset strategy at Leeuwpans as part of the Block OI project. It will begin in 2021.

The wetland offset strategy planned for ECC in 2020, as part of the Dorstfontein East expansion project, is under review pending a decision on the way forward in 2021.

CASE STUDY

BELFAST WETLAND REHABILITATION

EXXARO'S BELFAST IMPLEMENTATION PROJECT WAS COMPLETED WITH REHABILITATION OF AN ADJACENT WETLAND SYSTEM ON 14 JULY 2020 AT A COST OF AT LEAST R20 MILLION.

Expansion of our Belfast operation was allowed by the DHS and DWAS on condition that we rehabilitate the natural environment in terms of a "net gain" approach.

We had to mitigate any impacts of Belfast's expansion by enhancing the functioning and integrity of identified wetland ecosystems impacted by agriculture, disturbed water flow, alien vegetation, artificial drainage channels, dams and roads.

Rehabilitation interventions included construction of engineered solutions such as concrete and HDPE liner check walls, concrete drop inlet weirs and backfilling of the main channel (the Klein Komati River) to re-establish a channelled valley-bottom wetland, among others. Our strategy achieved a net gain of approximately

1.6 hectare (ha) equivalents within the landscape. It will be used as the base case for future wetland rehabilitation projects by Exxaro and lessons learnt will be shared at various forums to inform our peers.

BIODIVERSITY RELOCATION

We relocated four protected plant species at Belfast in 2018: *Brunsvigia radulosa*, *Dierama cf pauciflorum*, *Dierama sp* and *Watsonia cf pulchra*. On a site visit in March 2020, an ecologist noted that the plants had recovered.

Khadia carolinensis (threatened species on the International Union for Conservation of Nature Red List) and *Harpactira hamiltoni* (baboon spiders) will be relocated to a suitable site as mining progresses at Belfast. We applied to the Mpumalanga Tourism and Parks Agency for a permit to relocate the *Khadia* and *Harpactira* in December 2020. Further screening is planned for 2021 to verify and update data collected in 2018 about the number and type of species to be relocated.



BELFAST IMPLEMENTATION PROJECT: Phase 1 Wetland Rehabilitation Implementation

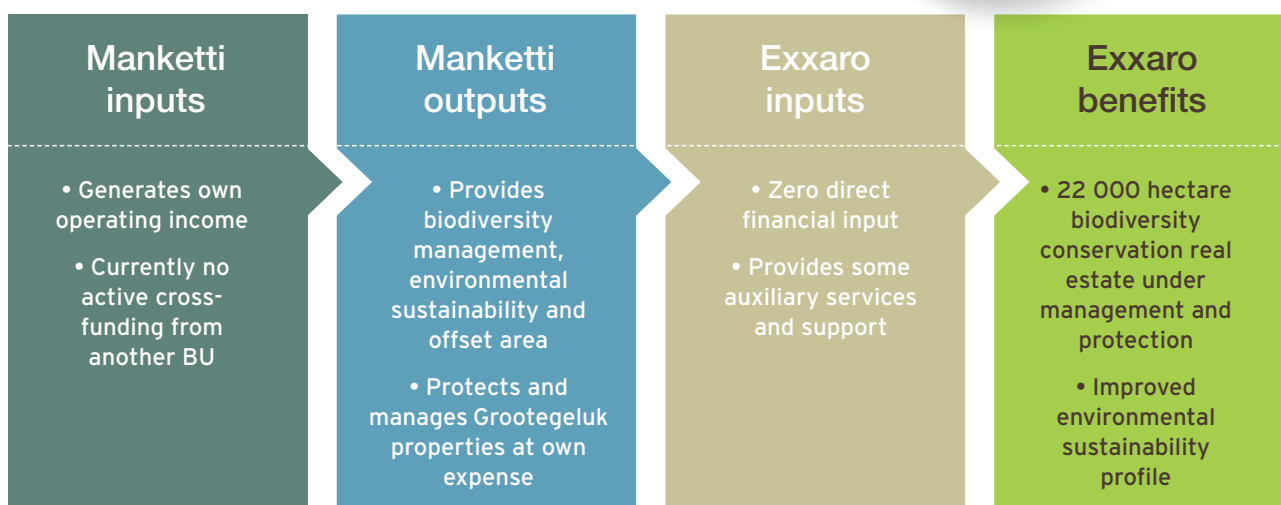
BIODIVERSITY continued

CASE STUDY

MANKETTI GAME RESERVE

THE 22 000HA MANKETTI GAME RESERVE AROUND OUR GROOTEDELUK OPERATION OPTIMISES LAND USE WHILE PROTECTING THE OPERATION'S SUSTAINABILITY.

Managed by Ferroland Grondtrust, a wholly owned subsidiary of Exxaro, the land was a cattle farm until 18 years ago when indigenous wildlife species were introduced. The thriving game reserve generates income from commercial hunting and game trading as well as accommodation provided by the Manketti Lodge.



Manketti is managed according to a protected area management plan – updated annually with assessments of vegetation condition, alien plant control and animal population.

The game reserve is home to a variety of large predators, including leopard, lion and cheetah. It is one of the Endangered Wildlife Trust's "cheetah safe spaces". Smaller predators include the black-backed jackal, bat-eared fox, civet, African wildcat, caracal and honey badgers, among others. Reptiles include the African rock python, black mamba, striped skink and leopard tortoise. Birds include vulture species, the orange-breasted bush shrike and raptors. Invertebrates include the baboon and trap-door spiders as well as scorpions. Amphibians are represented by the giant African bullfrog. We partner with Reptile Rescue to capture and release reptiles into their natural habitat.

Animal and floral species (manketti, marula, shepherd's, camelthorn, violet, leadwood and tamboti trees as well as succulents, bush lilies and the desert rose) are monitored and managed in terms of provincial and national regulations.

Our Thabametsi mining and power generation projects would have impacted a significant number of protected trees without an offset on 4 000ha of protected woodland in the Manketti game reserve.

Erosion control and topsoil protection are also managed in the game reserve.

Depressions in soils with high clay content become natural wetlands when it rains. These pans are managed as part of larger wetland systems. Manketti also participates in conservation of critically endangered vultures. We aim to limit powerline collision-related deaths, provide safe feeding sites and tag vultures for research.

EDUCATION AND INTERNSHIPS

Manketti's future includes further education of Waterberg communities. Young Lephalale learners already visit the game reserve every year and engage positively with rangers. A nature conservation and wildlife management internship is also available since 2019 for employment in most conservation fields.



ENVIRONMENTAL LIABILITIES AND REHABILITATION

We uphold our licence to operate through

- Mine closure and ongoing rehabilitation procedures
- Integrated mine closure plans
- Financial provision
- Closure objectives (management plans)
- Mine closure impact assessments
- Ongoing rehabilitation, monitoring and reporting
- Closure and ongoing efficiency reports
- Land management procedures
- Operational land management plan
- Land disposal strategy
- Land management efficiency reports

Our business operations review mine closure and rehabilitation financial provisions every year. Rehabilitation plans and closure objectives are amended after environmental management programme performance assessments. Cost estimates of activities in the concurrent and final closure rehabilitation programme are reviewed and adjusted. External auditors visit our sites, review documents and audit the provisions twice a year.

In 2020, we appointed consultants to compile reports on financial provisions for mine closure and rehabilitation. Except for ECC and Leeuwpán, our operations were assessed in line with the regulation (GNR 1147) published in December 2015 and amended in September 2018 by the Department of Environment, Forestry and Fisheries to extend the transition period to June 2021.

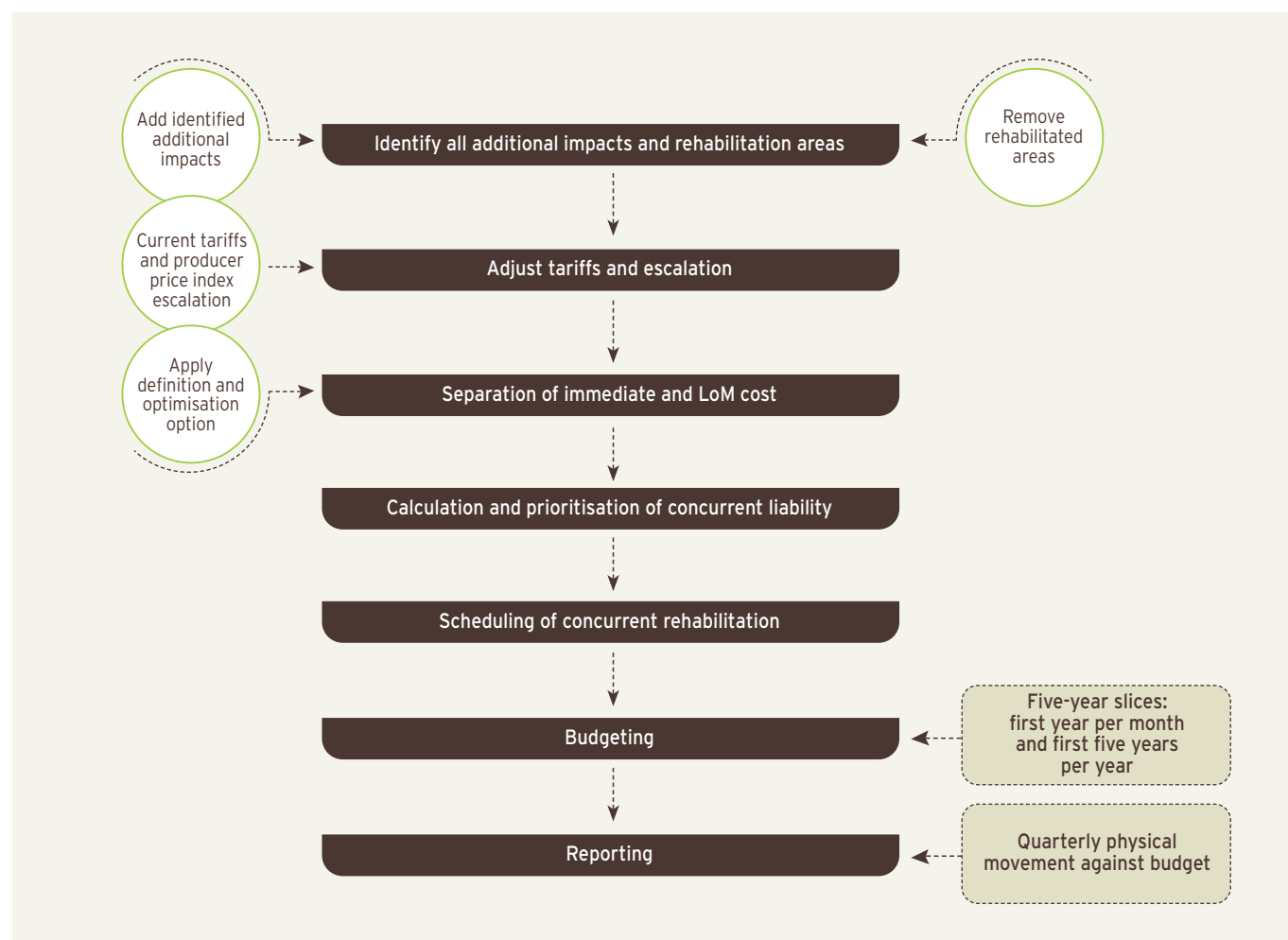
Assessments of ECC and Leeuwpán, assessed in 2019, will be conducted again in 2021. From 2022, all BUs will be assessed annually.

CONCURRENT REHABILITATION PLANS

Each BU has five-year conceptual concurrent rehabilitation plans, schedules and associated budgets to:

- Set measurable targets
- Avoid backlogs and related liabilities
- Enable managers to implement plans without cash flow constraints
- Include concurrent rehabilitation in operational tracking

The annual environmental liabilities update is illustrated below.

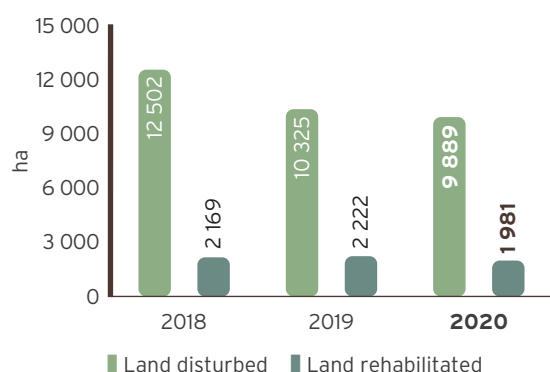


Land disturbed versus land rehabilitated ¹	Land disturbed (ha)			Land rehabilitated (ha)		
	2020	2019	2018	2020	2019	2018
Mpumalanga						
Arnot		830	830		241	226
Belfast	679	479	145			
Dorstfontein East	556	544	551	17	17	17
Dorstfontein West	61	61	61			
Forzando North	275	275	275			
Forzando South	209	209	209			
Leeuwpan	1 294	1 202	3 739	56	56	47
Matla	1 163	1 073	1 073	356	356	356
Strathrae	223	223	223	161	161	161
Limpopo						
Grootegeluk	3 677	3 677	3 544			
Tshikondeni	198	198	298	139	139	115
KwaZulu-Natal						
Durnacol	334	334	334	147	147	142
Hlobane	1 220	1 220	1 220	1 105	1 105	1 105
Total	9 889	10 325	12 502	1 981	2 222	2 169

¹ Arnot is excluded in 2020 due to the divestment process to Arnot OpCo Proprietary Limited.

Disturbed area is the footprint of disturbed area and includes all buildings, roads and mining areas that need to be rehabilitated according to the Environmental Management Programme (EMPR). Rehabilitated area is the area rehabilitated up to the required standard of the EMPR and the final Land Use Plan, at which point only maintenance and monitoring is needed.

Land disturbed versus land rehabilitated



LIABILITIES

We are committed to rehabilitation beyond compliance. We believe it is our moral responsibility to conduct concurrent rehabilitation in a changing regulatory, economic and operating landscape.

At 31 December 2020, total land disturbed was 9 889ha and total rehabilitated 1 981ha. Exxaro's Environmental Rehabilitation Fund (EERF) and additional bank guarantees provide for new developments and cover shortfalls in financial provisions.

The EERF's assets are managed in terms of asset and liability modelling aligned with risk, return and liability on each site. The objective is to maximise investment growth in the cost of liability provisions. An external specialist supports EERF trustees with technical skills required to profile and identify suitable structures for assessment by the trustees.

Current implementation includes:

- Two income building blocks benchmarked to cash rates and investing in government treasury bills, banks and corporate paper
- Three growth building blocks targeting inflation-linked returns and investment in insurance and bank-guaranteed products
- Equity-driven portfolios without explicit investment guarantees but portfolio managers controlling capital risk by managing volatility

Quarterly contributions to the trust are based on closure cost estimates at LoM without considering any guarantees in place.

The trust funds earned R249 million in 2020, including cash contributions, interest on investments and fair value adjustments. The fund has grown by 12.1% from an opening balance of R2 052 million in January 2020 to R2 301 million in December 2020. In addition, Exxaro had bank guarantees of R4 242 million in place at year end. Updating these provisions twice a year highlights potential rehabilitation alternatives that could decrease the long-term closure liabilities of operations.

ESTIMATED CLOSURE COSTS PER OPERATION

Calculation of rehabilitation cost is governed by relevant legislation (GNR 1147). It is conducted by independent technical and financial specialists, and our internal sustainability and finance departments, with expertise and experience in environmental management.

In 2020, our total closure costs were R9 536 million.

ENVIRONMENTAL LIABILITIES AND REHABILITATION continued

Operations in annual financial statements at 31 December 2020	DMRE office	Estimated immediate closure cost (Rm)	Estimated residual liability (Rm)	Trust fund balance (Rm)	Guarantee (Rm)	Immediate shortfall to be covered over remaining LoM (Rm)	Remaining life (years)
COAL							
Limpopo							
Grootegeluk (including reductants area)	Limpopo	3 713	321	594	1 226	2 214	37
Thabametsi	Limpopo	1		156	885	(1 040)	
Tshikondeni	Limpopo	10	22	197	49	(215)	
Mpumalanga							
Belfast	Mpumalanga	484	49		133	400	11
Dorstfontein East	Mpumalanga	909	41	275			16
Dorstfontein West	Mpumalanga	51	95	184	239	397	20
Eerstelingsfontein	Mpumalanga				3	(3)	
Forzando North	Mpumalanga	53	272	101			5
Forzando South	Mpumalanga	141	18	94	304	(15)	5
Inyanda	Mpumalanga	5				5	
Leeuwpan mining rights 157 and 171	Mpumalanga	655	79	162	277	296	8
Paardeplaats	Mpumalanga				88	(88)	
Strathrae	Mpumalanga	29	69	103		(4)	
Tumelo	Mpumalanga	9	1	14	3	(6)	
Matla Eskom-tied mine:		642	294	89	972	(125)	18
KwaZulu-Natal							
Durnacol	KwaZulu-Natal	263	14			277	
Hlobane	KwaZulu-Natal	131	93			224	
Newcastle	KwaZulu-Natal	1	7			8	
TOTAL OPERATIONAL MINES		6 017	877	1 581	3 154	2 158	
Coal mines in closure		438	206	300	52	291	
COAL TOTAL		7 097	1 376	1 970	4 206	2 296	
OTHER							
Gravelotte	Limpopo				35	(35)	
Headquarters: Inactive sites		37	10	34	1	13	
Cennergi: Amakhala	Western Cape	52				52	26
Cennergi: Tsitsikamma	Eastern Cape	31				31	26
FerroAlloys	Gauteng	5				5	
OTHER TOTAL		124	9	34	1	13	
EXXARO TOTAL		7 221	1 386	2 004	4 242	2 362	

MINE CLOSURE

Five Exxaro operations were in active closure in 2020: Tshikondeni, Durnacol, Hlobane, Strathrae and Gravelotte.

We understand that operational closure, concurrent rehabilitation and land management activities directly connect employees, communities, the environment, government and infrastructure.

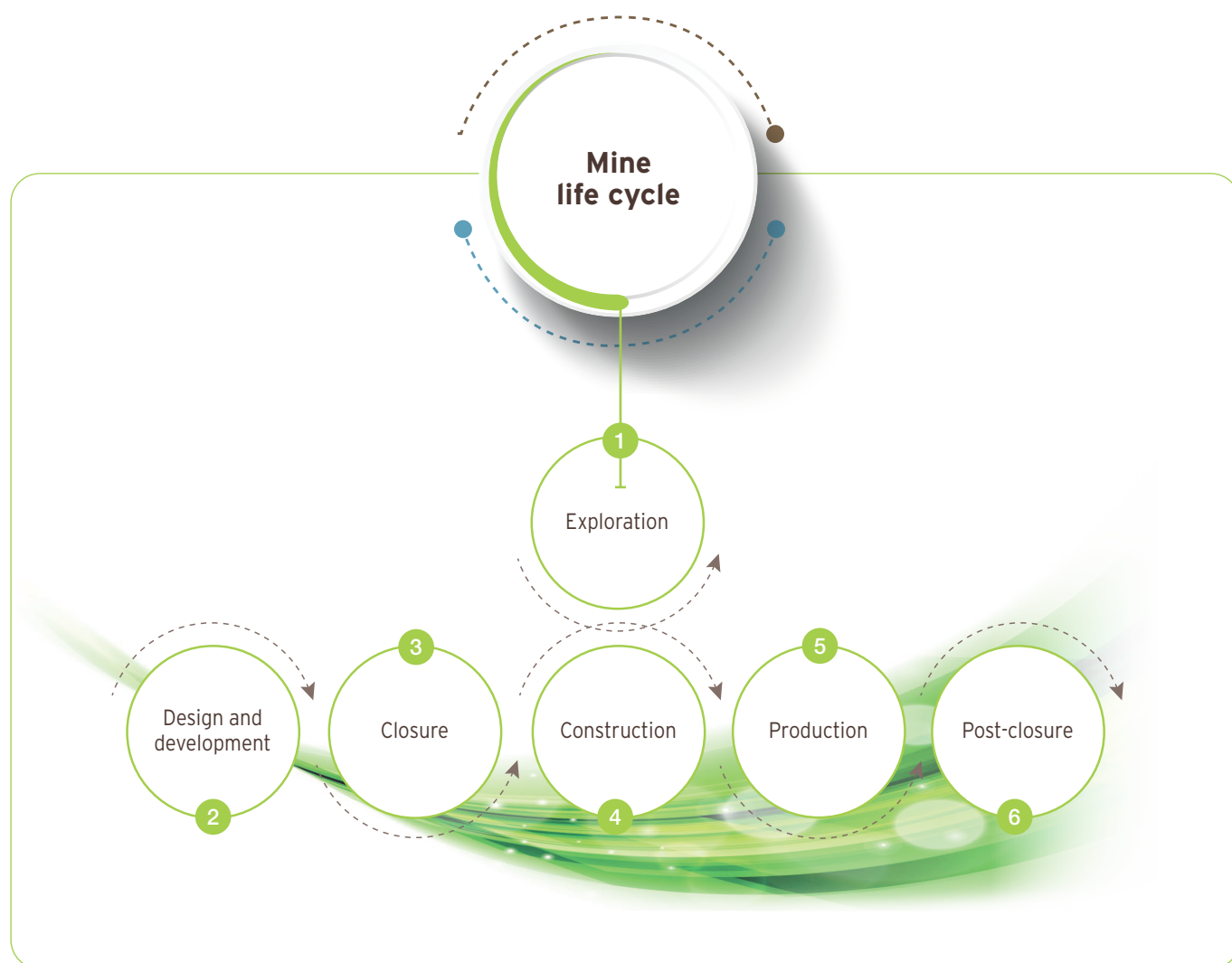
**We are
committed
to**

- Ensuring operational closure is inclusive and within legal framework parameters
- Proactively managing environmental impacts to minimise residual liabilities
- Leaving a positive legacy of alternative sustainable land use for employees and local communities
- Allocating financial resources required to ensure process conclusion
- Managing Exxaro land according to agreed strategy

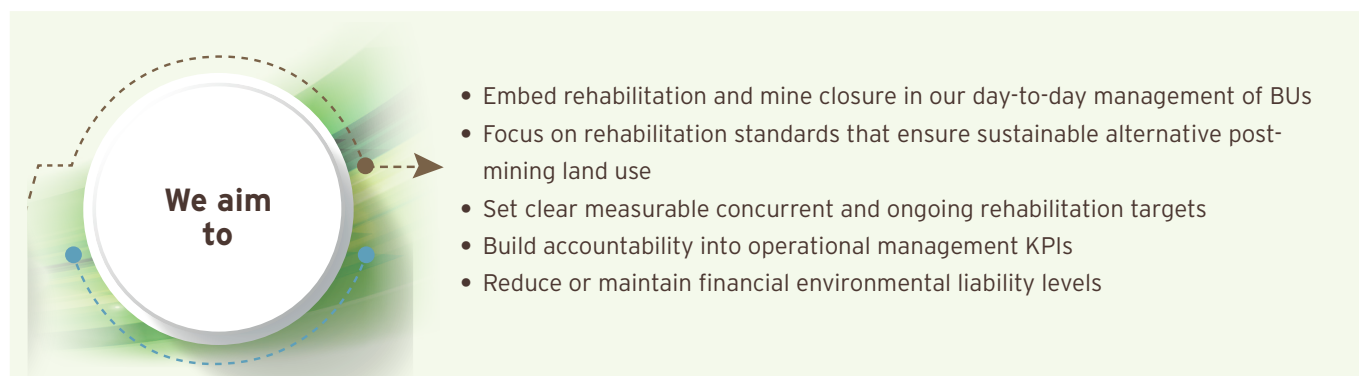
Our land management goals for 2020 included transferring 90% of post-mining land to emerging farmers in local communities by 2026. We continued to create strategic partnerships with farmers to advance agri-economies in support of government's land redistribution policies.

Integrated stages of mining and mine closure planning

Operational closure, concurrent rehabilitation and land management are part of Exxaro's operating philosophy and moral responsibility. We actively plan our operations with closure in mind, ensuring adequate financial resources are available to meet our rehabilitation commitments.



ENVIRONMENTAL LIABILITIES AND REHABILITATION continued



We also strive to integrate land and liability management in day-to-day mine planning. We thus minimise final closure costs for each operation and optimise final land use after closure. All operations report concurrent rehabilitation KPIs every month on Exxaro's Middle Eye platform.

The diagram below shows the 11 aspects that must be taken into account when closing a mine.



Social closure principles

The social aspects of mine closure are among our engineering and associated financial planning considerations:

- Equip employees with portable skills to pursue alternative employment and participation in meaningful economic activity
- Develop and implement a communication plan for employees
- Employee training to implement and manage mine closure plans
- Address health and safety issues as well as employment opportunities for communities
- Socio-economic activities that must continue after mine closure
- Identify the needs and expectations of stakeholders and socio-economic impacts
- Assist host communities to acquire skills for commercial activities and infrastructure use after mine closure
- Ensure opportunities are available to improve quality of life
- Align closure with community expectations to honour SLPs commitments
- Develop and implement plans for engagement with communities, government and NGOs among others
- Help mine owners and operators achieve liability-free closure within a reasonable timeframe
- Management committed to implementing the closure plan

Cennergi

Cennergi reviews their financial provisions for facility closure and rehabilitation every year, and consider amendments to rehabilitation plans and closure objectives based on periodic environmental management programme performance assessments. The cost estimates of activities in the concurrent and final closure rehabilitation programme are reviewed and adjusted where necessary.

Leeuwpan plant

