



ENVIRONMENT FACT SHEET



“In the production of so-called ‘green metals’, Implats is involved in the exploration, extraction and processing of mineral resources resulting in the unavoidable disturbance of land, the consumption of resources, and the generation of waste and atmospheric and water pollutants. It is important that we demonstrate responsible stewardship.”





Implats' environmental mitigation activities include:

- Minimising water use and pollution.
- Minimising negative impacts on air quality.
- Responding to climate change risks and opportunities, and promoting responsible energy management.
- Managing waste streams.
- Promoting responsible land management and biodiversity practices.
- Managing exploration, mining, processing and refining operations in an environmentally responsible manner, and ensuring the wellbeing of stakeholders.
- All Implats' operations are ISO 14001 certified, and are required to identify and report on all environmental incidents.



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Air quality management

- The most significant air quality emission for the Group relates to the sulphur dioxide (SO₂) emissions from our smelting and refining operations in Zimplats, Rustenburg and Impala Springs.
- In August 2014, Implats received the new Atmosphere Emission Licence (AEL) required for Impala Rustenburg. This expires in July 2019 when new permit conditions are anticipated.
- Impala Springs received their AEL in February 2014. This is scheduled for renewal in 2018.
- Both Impala Rustenburg and Impala Springs are located within priority areas as promulgated by the National Environmental Management Air Quality Act.
- At Impala Springs, a R250 million project to address airborne emissions from the coal-fired boilers is due for completion during 2016.

2015 performance on air quality

- In 2015, direct Group emissions of SO₂ totalled 27 706 tonnes, down from 30 735 tonnes in 2014.
- Zimplats operations contributed 79% of total direct SO₂ emissions, while Rustenburg and Refineries operations contributed 18% and 3% respectively.
- At Zimplats, SO₂ emissions decreased by 18% from the previous year, primarily due to a furnace break-out incident.

Air quality focus for 2016 and beyond:

In South Africa Implats aims to:

- Maintain adherence to Atmospheric Emission Licences
- Complete the coal-fired boilers emission project in 2016 at Impala Springs

In Zimbabwe Implats aims to:

- Conduct and complete the higher stack definitive study for the SO₂ management plan in Zimplats.

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Water stewardship

- Water is a critical input into Implats's mining, processing and refining operations. Implats recognises its obligations in terms of maintaining water quality, and not compromising the access rights of other users.
- Implats' water stewardship strategy focuses on water consumption and quality management, and proposes a framework for operation-specific water conservation strategies in line with the strategic commitment to reduce the use of potable water and increase recycled-water usage.
- Implats' recycled water target is 40%.
- Implats has implemented various projects to reduce potable water consumption, optimise industrial use and increase water recycling.
- Surface and groundwater monitoring programmes are in place, and the Group reviews water risk assessments annually.
- Implats engages regularly with the South African and Zimbabwean regulatory authorities in an effort to ensure that all appropriate water-use licences are in place, and that due consideration is given to proposals for water-use amendments.
- The Integrated Water and Waste Management Plan and Rehabilitation Strategy and Implementation Plan are reviewed and submitted to the Department of Water and Sanitation annually.
- Water management continues to receive a particular focus at Impala Rustenburg. The persistently dry conditions experienced in the north-west of South Africa, together with municipal potable water supply problems, continue to present challenges and highlight the strategic long-term importance of effective water management practices. Implats has also been implementing a groundwater and surface-water treatment project to remediate the pollution plume around its tailings dam.

2015 performance on water:

- Total water consumption at Implats in 2015 was 39 701 megalitres, including both water withdrawn and water recycled.
- The 14% increase in water consumption levels (2014: 34 775 megalitres) is largely attributable to the return to full production levels in 2015 following the termination of the 2014 five-month strike
- 14 325 megalitres of water was recycled in 2015, equating to 36% of all water consumed.

Water focus for 2016 and beyond:

In South Africa Implats aims to:

- Continue efforts to increase the ratio of recycled water versus the volume of water withdrawn.
- Continue to engage with local authorities and communities on water-related issues to ensure Implats meets regulatory and social expectations.
- Investigate feasibility of water-treatment facilities.
- Update the Rustenburg operations water strategy and to investigate the options available for Water Conservation and Water Demand Management.
- Increase the use of grey-water sources by utilising fissure water emanating from Rustenburg operations' 2, 2A and 5 Shaft into the water circuit.
- Continue with the water projects at the Rustenburg operation where scavenger boreholes are drilled close to the operating tailings dam and floating wetlands constructed at the Rockwall dam.
- Continue lining the old BMR pond at Impala Springs operation by installing double lining with leak detection.

In Zimbabwe Implats aims to:

- Achieve 40% recycling of water within the Zimplats operations.
- Improve water accounting at Selous Metallurgical Complex by installing water metres to account for recycled Sewage effluent and storm water.
- Conduct internal water and energy audits to ensure efficient use of resources at Mimosa.





- Implats' short-term goal is to ensure that all aspects of rehabilitation are defined at the project-planning phase. In support of this, determination of the closure cost liability and the associated financial provision remains a priority.
- Rehabilitation activities are focused on ecosystem functionality, which is essential in ensuring sustainability beyond mine closure.

Biodiversity

- Given the potential of mining activities to affect habitats through land disturbance, land-use change and pollution, biodiversity monitoring and management is a requirement at our operations.
- All operations have site-specific procedures and standards to manage the impacts associated with their activities.
- A formal biodiversity management plan, which incorporates the published mining biodiversity guidelines from the South African National Biodiversity Institute, was implemented at the Rustenburg operation.

Developments 2015

- In 2015 there was a strong focus on maintaining an active rehabilitation monitoring programme at the Rustenburg operation.
- Implats continued to maintain previously rehabilitated side slopes and grass new risings at tailings facilities.
- All opencast sites have successfully been rehabilitated and are currently monitored using a defined monitoring methodology called ecosystem function analysis.
- An agricultural land use potential assessment was completed with the aim of defining achievable post-closure land uses for both the landowner and surrounding communities of all rehabilitated opencast areas.
- Following the cessation of all opencast mining at Zimplats in 2008, an opencast rehabilitation programme has been in progress since 2011.
- Zimplats aims to backfill all the voids with waste rock and re-establish indigenous grass and tree species by 2017 at an estimated cost of US\$5.8 million. To date, 1 703 328 m³ of waste rock material has been backfilled. The project reached 69% completion by the end of 2015.

Focus for waste, land and biodiversity for 2016 and beyond:

In South Africa Implats aims to:

- Conduct an external legal compliance audit as specified by all waste licences.
- Ensure that biodiversity and heritage standards are aligned with all legislative changes.
- Conduct annual closure liability assessments for all South African mining rights for submission to the Department of Mineral Resources.
- Ensure all listed waste streams are reclassified as per South African National Standard 10234 at all South African operations in 2016.
- Compile and report applicable waste figures onto the South African Waste Information System.

In Zimbabwe Implats aims to:

- Continue with the Ngezi open-pit rehabilitation programme.
- Plant 500 indigenous trees at the open-pit rehabilitated areas.
- Set up waste segregation systems at the Zimplats landfill sites to enable recycling.
- Renew all environmental licences and permits for Zimplats.

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Climate change and energy management



2015 carbon and energy management performance:

- During 2015 total CO₂ emissions amounted to 3.4 million tonnes, up from 3 million tonnes in 2014. This increase is largely as a result of increased production levels following the end of strike action at Impala Rustenburg in 2014. This operation typically accounts for about 75% of the Group's total CO₂ emissions.
- Most of the GHG emissions (3.0 million tonnes) are associated with Eskom electricity usage, with the balance (0.3 million tonnes) associated with the direct use of coal, diesel, petrol and industrial burning oil.
- In 2015, emissions intensity (tonnes of CO₂ per tonne of ore milled) was 0.209, down from 0.218 in 2014. This improvement reflects positively on energy efficiency initiatives.

- Implats' primary focus is on energy-efficiency projects.
- In 2015, electricity consumption accounted for around 70% of total energy consumption, and almost 10% of the Group's overall cash cost base.
- Implats' projected expansion into deeper operations that are more energy intensive, coupled with the anticipated introduction of a carbon tax in South Africa, highlights the business imperative of focusing on reducing and optimising energy use.
- In Rustenburg energy efficiency initiatives are targeted mainly at mining operations, as there is seen to be limited scope for further energy efficiency at its concentrators and smelter.
- At Impala Springs, a steam-system assessment was completed by the National Cleaner Production Centre and an operational control score was achieved that indicates efficient use of steam.
- An energy management plan is planned for the 2016 financial year.
- A 1.8 MW fuel cell installed in two tranches of 900 kW is expected to reach completion in February/March 2016.
- In South Africa Implats are working closely with Eskom, and continue to participate in various demand-side management programmes.
- At a Group level Implats have an absolute greenhouse gas (GHG) emissions reduction target of 5% by 2020 from the 2008 base year when our first carbon footprint assessment was undertaken.

Energy initiatives implemented across the Group include:

- The conversion of all underground lighting at Impala Rustenburg to a more energy efficient lighting source. This is estimated to reduce annual consumption by 15 GWh.
- The optimised use of compressed air systems at Impala Rustenburg, which has achieved an estimated reduction of 7.8 GWh per annum.
- The underground compressed air optimisation project, with an estimated future annual saving of 61.3 GWh.
- The installation of power-factor-correction equipment at Rustenburg and Mimosa, which has resulted in an average 4% reduction in annual energy consumption.
- Projects aimed at continuing to investigate opportunities for alternative lower-carbon and carbon-neutral fuel sources.



Platinum Group Metals ensure cleaner air

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Many of the unique physical and chemical characteristics of PGMs make them indispensable in the drive to ensure cleaner air. Their catalytic properties – particularly that of platinum, palladium and rhodium – make them ideally suited to many applications aimed at countering the effects of air pollution and limiting the production of greenhouse gases.



Autocatalysts

By far the largest single use of PGMs today is in autocatalysts, a pollution control device fitted to cars, trucks, motorcycles, and non-road engines. In this application, PGMs are coated onto a substrate housed in the exhaust system where they act as catalysts to reduce levels of harmful emissions to legislated levels.

PGMs enable car manufacturers to comply with emissions standards and help regulators to implement tightening emissions regulations.

Catalytic converters are honeycomb-like structures made of either metal or ceramic material consisting of hundreds of minuscule channels coated with platinum and/or palladium as well as rhodium.

The honeycomb-like structure enables the maximum volume of exhaust gas produced by the engine to be exposed to the catalyst, which in turn acts to remove noxious pollutants from the exhaust gas.

Platinum Group Metals ensure cleaner air and improve our quality of life

Arguably the most important pollution abatement device ever invented, the autocatalyst or catalytic converter, is a key component in vehicle powertrains. Without autocatalysts, air quality in and around most cities would be far worse than it is today.





**Emissions from 1 car
sold in 1960**



Emissions of 100 cars sold in 2014



PGMs support emission regulations

Despite the great success in reducing the amount of pollutants produced from each vehicle, the continuing growth of global populations and vehicles has required tightening emissions legislation and improvements in automotive emissions control technologies.

Currently more and more countries around the globe are legislating controls aimed at achieving safe concentrations of these pollutants by regulating their level of emissions from combustion sources, notably those discharged from the exhausts of automobiles. The maximum allowable levels of emissions from automobiles are already regulated by many governments using measures in grams per kilometre or grams per mile.



fast facts . . .

- Over 95% of toxic and harmful polluting gases (including hydrocarbons, carbon monoxide and nitrous oxides) are converted by the catalytic converter system in a motor vehicle engine into less harmful carbon dioxide, nitrogen and water vapour
- In the European Union, the use of catalytic converters has helped, together with cleaner fuels, to contribute to a 98% reduction in vehicle emissions
- More than half of all the cars on the road globally and more than 90% of new vehicles are fitted with autocatalytic converters
- Emissions regulations have been progressively tightened to the extent that just one car sold in the 1960s would have produced as many harmful exhaust emissions as one hundred modern vehicles equipped with catalytic converters.

Source: International Platinum Association

Carbon and energy management focus for 2016 and beyond:

- Further improving atmospheric emissions data management systems, to ensure that the Group is aligned with the requirements of the National Atmospheric Emissions Inventory System in South Africa, an online national reporting platform that will hold both air pollutants and greenhouse emissions inventories.
- Updating the Group's carbon footprint and setting realistic reduction targets for each operation in line with our carbon management strategy.
- Further understanding the impact of climate change on Implats' operations and surrounding communities.
- Continuing to work with government and academic institutions on the development of fuel-cell technologies that will utilise PGMs as alternative energy sources. A total of R6 million has been spent on this project over the last three years.
- Zimplats is targeting a 1% reduction in carbon emissions through the implementation of energy efficiency initiatives and carbon offset projects.



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Managing waste

Targets for 2016 and beyond

- One of the key legislative requirements published in the South African Waste Act is the reclassification of listed waste streams by October 2016.
- All the South African operations have already commenced with this reclassification and are confident it will be completed before the set due date.
- Implats is investigating the export of jarosite to Europe as an option to divert waste from landfill. All legal requirements in terms of the Basel Convention are being assessed. All operations continue to investigate reuse and recycling opportunities.
- The hazardous waste situation remains challenging in Zimbabwe, where no formal hazardous waste disposal facility is available.
- In FY2015, the Group's combined average rate for recycling, re-use and recovery was 67%.
- Implats continuously strives to manage its waste in an effective and sustainable manner. Although increasing recycling rates remains a priority, the target for 2016 and beyond will be to minimize overall waste generation.