Mitigating environmental impacts

In the transition to a low-carbon economy, PGMs are critical to enable associated technologies. In delivering these products, we are committed to mitigating our environmental impacts.

UNDERSTANDING THE SUSTAINABILITY PERFORMANCE OF PGMS

Our stakeholders are increasingly interested in the impacts and contribution of our materials and the products manufactured from them. Linked to the circular economy aimed at reducing global resource use, there is an increasing role for PGM recycling to materially impact markets. The benefits of PGM mining for the environment and society were illustrated in the lifecycle assessment (LCA) on the impacts and benefits of PGMs completed in 2014 by the International Platinum Group Metals Association (IPA), to which Implats is affiliated.

This study was important in highlighting that the high recyclability of PGMs and their role in society significantly mitigate the environmental impacts of PGM primary production.

The PGMs are highly resistant to wear, tarnish, chemical attack and high temperature, and have outstanding catalytic and electrical properties. All these unique characteristics have made them indispensable in many industrial applications. By far the largest use of PGMs today is for automobile catalytic converters (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.

The extraction and refining of PGMs is a capital-, energy- and labour-intensive process. PGMs are produced in low volumes and are used in small quantities. The high and repeatable recyclability of PGMs means that the environmental burden of PGM production decreases with each recycling round. Power consumption during mining and ore beneficiation has been identified as the major impact (72%) of the production of PGMs on the environment; a further 27% of the impact comes from smelting and refining. Only 1% of impacts are attributed to recycling. The low footprint of recycling compensates for the higher footprint of primary production.

The LCA illustrated that even though the impacts of PGM production appear to be high from a lifecycle perspective, these impacts are significantly mitigated by the in-use benefits, as indicated in the following findings:

• Over 1.3 tonnes of toxic and harmful polluting gases, including CO, HC, NOx and PM, are reduced by the catalytic converter systems in one EURO 5 gasoline and one EURO 5 diesel vehicle in use over 160 000 km; these emissions are reduced by up to 97%.
• Emissions of CO2 are slightly increased through the use of autocatalysts. This is due to the conversion of CO and HCs into CO2 during vehicle use; however, this increase is small (2% to 6%) when compared to CO emissions from the combustion of the fuel used to drive the vehicle.
• The emissions reductions as a result of the use of an autocatalytic converter outweigh the emissions generated during the production of the catalyst, including the PGMs and other related materials used in the wash-coating process. (The wash coat is the carrier of catalytic materials on the catalyst’s surface.)

The findings of the LCA study have been valuable in assisting companies to make informed business decisions about process improvements, as well as new projects and design of new facilities. An update to the 2014 LCA study was initiated in 2019. The results of the study will be published in 2020.
Mitigating environmental impacts

Our approach

Our environmental mitigation activities focus on:
- Maintaining a world-class environmental management system and ensuring compliance with environmental authorisation and legislation
- Promoting responsible water stewardship by minimising water use and water pollution
- Responding to climate change risks and opportunities and promoting responsible energy management
- Minimising our negative impacts on air quality
- Managing and minimising our waste streams
- Promoting responsible land management and biodiversity practices

Our environmental policy commits the Group to running our exploration, mining, processing and refining operations in an environmentally responsible manner and to ensuring the wellbeing of our stakeholders. We integrate environmental management into all aspects of the business with the aim of achieving world-class environmental performance in a sustainable manner.

At board level, the HSER sub-committee oversees strategy implementation, assesses the adequacy and appropriateness of environmental policies, with executive management delivering on standards and procedures, and reviews Group-wide performance and risk management practices quarterly. The committee also has oversight of investigations into all major environmental incidents. We have a Group Executive: Safety, Health and Environment and have recently appointed a Group Executive: Sustainability to develop and implement environmental strategy.