

# Air quality and waste management

Our ability to respond to changing environmental legislation and policy represents one of our most material risks

In South Africa, the regulatory framework relating to air quality, water and waste management is evolving. We are committed to working with government to find solutions that contribute to the desired environmental outcomes, while advancing the country's socio-economic development priorities.

## Our approach to air quality and waste management

We follow a risk-based approach to identifying and managing our priority safety, health and environment (SHE) risks. This approach informs the development of our environmental policies, targets, standards and guidelines. The principal governance bodies that set policy and direction for air quality and waste management are the Sasol Risk and SHE Committee and the Group Executive SHE Committee, a mandated sub-committee of the Group Executive Committee. To ensure consistent and co-ordinated engagement with stakeholders, we have also established a cross-functional project team to address the relevant regulatory developments in South Africa.

### Responding to changes in air quality legislation

In 2004, the South African National Environmental Management: Air Quality Act was promulgated, introducing a fundamentally new approach to air quality management. In December 2009, national ambient (ground-level) air quality standards were published. These were followed, in April 2010, by the publication of minimum emission standards (MES), which include provision for strict industrial point source emission standards. The 2010 standards were repealed and replaced with new minimum emission standards published in November 2013.

Our current operations must meet the standards set for existing operations by April 2015, and new plants by April 2020. These standards and compliance time frames present challenges, particularly in terms of the technical implications for some of our existing operations. In these instances, Sasol continues to undertake investigations for future solutions that may enable compliance over the longer term.

While the majority of our processes will be able to comply with the future MES, there are certain activities where we will be unable to comply, either within the stipulated compliance timeframes or within the specified emissions limits. For these specific cases, Sasol has submitted the requisite applications to extend compliance time frames. Where sustainable compliance solutions have been identified, these are being implemented. To ensure that we do not operate outside of future regulatory requirements, we have taken the additional step of seeking to review certain MES, within the time frames provided by the Promotion of Administrative Justice Act.

We will continue to engage, and believe that by collaborating constructively with the Department of Environmental Affairs and other stakeholders, the longer-term challenges can be more sustainably resolved. In this regard, Sasol is working with key stakeholders to explore alternative compliance mechanisms. This includes assessing the feasibility of offset projects that could potentially deliver more sustainable improvements in ambient air quality, while at the same time providing socio-economic benefits such as job creation and poverty eradication. Legal recourse is not the preferred option for Sasol.

As part of the process of making the requisite applications, we followed an extensive stakeholder engagement and public participation process. This was undertaken in an effort to address stakeholder concerns and, at the same time, to provide an assessment of the potential impacts of our applications on ambient air quality.

 See focus story on our website [www.sasolsdr.com](http://www.sasolsdr.com).



**Our atmospheric emissions and waste performance in 2014**

**Atmospheric emissions**

This year we emitted 158,6 kilotons (kt) of nitrogen oxides (NO<sub>x</sub>), compared to 158,4 kt in 2013. Total sulphur oxides (SO<sub>x</sub>) emissions amounted to 223,0 kt, up from 214,6 kt in 2013, while total particulate (fly ash) emissions were 19,3 kt, as compared to 17,58 kt (restated) in 2013. Further details on group emissions over the past five years are provided on page 74.

Five-year trends indicate that NO<sub>x</sub> emissions have remained relatively stable, whereas SO<sub>x</sub> emissions have increased over the past year, but not to the levels measured three to four years ago. The significant increase in particulate emissions is primarily a result of changes in the monitoring protocol. Following recent independent sampling, we have identified inaccuracies in some of the previous reporting from Sasol Synfuels arising from certain assumptions informing our calculations, as well as data integrity issues from some of our instrumentation. Following changes to the instrumentation and the assumptions that inform our calculations, the updated data is more accurate.

At our Secunda operation, we invested R2 billion over the past six years to reduce volatile organic compounds (VOC) emissions. Our target is to achieve at least an 80% reduction in emissions of six defined VOCs (benzene, toluene, xylene, ethyl benzene, 1,3-butadiene and acetaldehyde) on our 2009 baseline by the end of June 2020. We expect to start achieving significant VOC emissions reductions well before that time, following completion of the first phase of our Regenerative Thermal Oxidisers project, and the closing of gas liquor separation drains at our tar plant. The remaining projects are on schedule for us to meet our VOC target by 2020. We continue to advance projects that will facilitate compliance with the minimum emission standards for various emission sources.

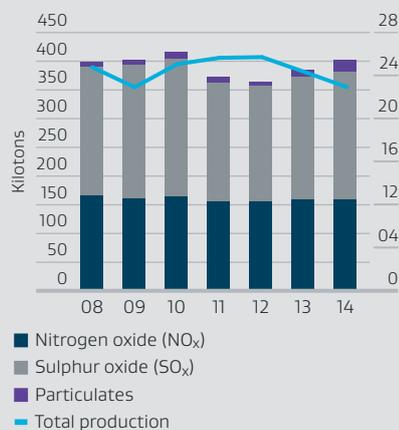
**Responding to changes in waste management legislation**

A new waste management regime came into effect in South Africa in 1999, with the commencement of the National Environmental Management: Waste Act. Over the past three years, we have continued to engage with the Department of Environmental Affairs (DEA) on the amendments to the Act and the development of guidance notes to address implementation challenges. Under government's leadership, we have engaged through an industry waste forum established between business and the DEA to address identified challenges. Over the past year, in response to the National Waste Information Regulations, we registered all our hazardous waste generating activities and have commenced quarterly reporting into the South African Waste Information System.

Sasol is participating in the development and testing of various technology options for the treatment of waste streams. One such technology is composting. Whereas composting of domestic sludges is widely practiced worldwide, the composting of industrial waste sludges from a petrochemical facility is a novel, environmentally sustainable and cost-effective solution for managing waste. This meets the requirements of both the Waste Act and the Air Quality Act. Since April 2012, Sasol has undertaken test work for the composting of biosludge as well as various other hydrocarbon sludges from the Secunda Synfuels process. The trial phase from 2012 to August 2014 has created 16 jobs and yielded very promising results.

The composting project has received funding for its implementation phase and will now undergo an Environmental Impact Assessment and application for a Waste Management Licence for a full-scale composting operation. Apart from the environmental benefit of the composting project, over 100 jobs will be created if the project reaches beneficial operation, which we plan to achieve in August 2016.

**Atmospheric pollutants**



**Non-hazardous waste**



**Hazardous waste**



### Our waste management performance

Our operations generated 382 kt of hazardous waste compared to 303 kt in 2013. The main reason for this increase was the greater quantity of biosludge incinerated due to the scheduled desludging of the Secunda wastewater treatment bioworks. The quantity of non-hazardous waste generated decreased to 189 kt compared to 262 kt in 2013, which can mostly be ascribed to a decrease in the amount of soil from site excavations that required disposal.

The reporting on total waste generated by Sasol operations has been revised to exclude the reuse of legacy coal ash. This explains the significant decrease in total waste recycled from 546 kt in 2013 to 89 kt in 2014.

The table below sets out major capital expenditure projects over the last ten years resulting in significant improvements in environmental performance:

Year	Rand million	Project with environment-related benefit	Environmental improvement in subsequent year
2004	130	Rehabilitation of Secunda waste disposal site	Improved air and water quality
2005	12 000	Mozambique natural gas conversion project	Significant reductions in Sasolburg of H <sub>2</sub> S (100%), GHG (39%), SO <sub>x</sub> (42%) and NO <sub>x</sub> (37%)
	400	Hydrogen sulphide reduction in Secunda	Reduction in H <sub>2</sub> S emission (odour)
2008	1 000	Wet sulphuric acid plant in Secunda	Reduction in H <sub>2</sub> S emission (odour)
2009	300	Carbon capture and storage in Mongstad Norway	Piloting technology for carbon capture and storage
	100	Energy efficiency projects in Secunda	Reduction in GHG emissions
2010	2 300	280 MW combined cycle gas turbines in Secunda	Reduction in GHG emissions and improved air quality
2011	500	Upgrade boiler 9 in Secunda	Reduction in particulate matter emission
	1 900	175 MW Gas engines in Sasolburg	Reduction in GHG emissions and improved air quality
2012	2 000	Regenerative thermal oxidisers in Secunda	Reduction in VOC emissions such as benzene
2013	2 000	Gas-fired power plant in Mozambique, beneficial operations are planned for the fourth quarter of calendar year 2014	Reduction in GHG emissions and air quality pollutants
2014	375	Energy and steam optimisation in Sasolburg	Reduction in GHG emissions

Note: These are rounded figures relating to projects of over R100 million each. Actual expenditure may have occurred over more than one year. Numerous smaller projects, including but not limited to, rehabilitation, water treatment and conversion of our elevated flares, were excluded as they were below the R100 million per annum threshold.



Our online report at [www.sasolsdr.com](http://www.sasolsdr.com), includes additional details on our work in exploring the potential for environmental offsets projects.