Sasol Limited

Briefing ahead of AGM on 2 December 2022: air quality-related issues

This briefing accompanies and should be read with the briefing on Sasol Limited (Sasol)'s climate-related disclosures and commitments.

1. Introduction

In addition to its significant greenhouse gas (GHG) emissions, Sasol (with Eskom) is one of the two biggest emitters in the country[1] (and on the continent) of toxic air pollutants which are not GHGs. Air pollution is the world's largest environmental health risk. It has profound effects on health, especially for vulnerable individuals, including children, the elderly, pregnant women, and those suffering from asthma, heart, and lung disease.[2]

The health impacts of exposure to ambient air pollution in South Africa are significant.[3] Sasol's Secunda facility, together with 12 Eskom coal-fired plants, and the Natref refinery (a joint venture between Sasol and TotalEnergies) together account for the vast majority of air pollution in the heavily-polluted Mpumalanga Highveld.[4] The area is one of the worst air pollution hotspots in the world,[5] and was designated a priority area – known as the Highveld Priority Area (HPA) - in terms of the National Environmental Management: Air Quality Act 39 of 2004 (AQA) in 2007, as a result of its dangerous levels of air pollution.

The then Department of Environmental Affairs' 2011 Air Quality Management Plan (AQMP) for the HPA stated that Sasol's Secunda facility was responsible for 17% of hospital admissions.[6] Expert evidence estimates that emissions from the Sasol, Eskom and Natref facilities in the HPA resulted in between 305 and 650 early deaths in and around the area in 2016.[7]

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[1] See, for example: https://lifeaftercoal.org.za/about/deadly-air; Euripidou, R, and others. 2022. The Minimum Emission Standards (MES) and the sabotage of public health Clean Air Journal. 32(1). Available: https://doi.org/10.17159/caj/2022/32/1.14026; Highveld Priority Area Air Quality Management Plan, 2012; Vaal Triangle Air-Shed Priority Area Air Quality Management Plan, 2009; https://www.news24.com/citypress/news/secunda-living-in-the-shadow-of-the-worlds-biggest-carbon-polluter-20200317; https://www.news24.com/fin24/economy/eskom/minister-cracks-down-on-eskom-sasol-over-pollution-20210310; https://mg.co.za/environment/2021-02-18-sasol-plant-to-be-investigated-for-the-air-pollution-blanketing-gauteng/; https://newafricanmagazine.com/28147/; https://www.dailymaverick.co.za/article/2021-08-25-the-cost-of-pollution-eskom-sasol-and-the-vagaries-of-environmental-law-compliance-in-south-africa/.

[2] See, for example: https://www.oecd.org/environment/air-pollution/; https://www.unep.org/explore-topics/air.

[3] See, for example: Roomaney, R. A. and others. 2022. Estimating the burden of disease attributable to ambient air pollution (ambient PM2.5 and ambient ozone) in South Africa for 2000, 2006 and 2012. South African Medical Journal. 112(8b):705-717. Available: https://doi.org/10.7196/SAMJ.2022.v112i8b.16483; https://cer.org.za/wp-content/uploads/2018/09/LAC-letter-to-Min-DoH-WHO-First-Global-Conference.pdf.

[4] https://cer.org.za/wp-content/uploads/2019/06/Andy-Gray-Report.pdf; https://cer.org.za/wp-content/uploads/2019/06/Peter-Orris-Report.pdf; https://cer.org.za/news/environmental-groups-take-government-to-high-court-over-violation-of-constitutional-right-to-clean-air.

[5] https://www.greenpeace.org/africa/en/press/6600/latest-satellite-data-reveals-mpumalanga-is-the-worlds-largest-power-plant-emission-hotspot-ranked-fourth-overall/; https://www.iol.co.za/saturday-star/eskoms-deadly-toll-in-gauteng-20092241.

[6] https://www.gov.za/sites/default/files/gcis_document/201409/35072144.pdf.

[7] https://cer.org.za/wp-content/uploads/2019/06/Andy-Gray-Report.pdf; https://cer.org.za/wp-content/uploads/2019/06/Peter-Orris-Report.pdf.

2. Deadly Air judgement

On 18 March 2022, the High Court recognised that the poor air quality in the HPA was a breach of residents' constitutional right to an environment that is not harmful to their health and well-being. The court also held that the Minister of Forestry, Fisheries and the Environment ("the Minister") had a legal duty to prescribe regulations in terms of the AQA to implement and enforce the HPA AQMP. The court confirmed that, in preparing these regulations, the Minister is required to have regard to various considerations, including: "the need to address the postponement and/or suspension of compliance with [minimum emission standards (MES)] in the priority area; including to ensure that the atmospheric emission licences of all facilities that have not obtained once-off suspension of compliance and that cannot meet new plant MES by April 2025 are withdrawn, and decommissioning and rehabilitation of those facilities is enforced".[8]

Although industry was not a party to this litigation, the judgement has important implications for Sasol (and Eskom). Importantly, the Minister has not challenged the finding that air pollution violates constitutional rights, but she has applied for leave (permission) to appeal the portions of the judgement disputing that she has a duty to make regulations. Public input has been invited on a draft of those regulations.[9] The outcome of the leave to appeal decision is still awaited.

In its Form-20F filed with the United States Securities and Exchange Commission (Form-20F 2022), Sasol recognises that "[e]nabling regulations regarding stricter governance of the Highveld Priority Area, in particular to address the implementation and non-adherence to the priority area management plan, is [sic] pending… The Highveld Priority Area Air Quality Management Plan is currently under review. Accordingly, further emission reduction commitments may be required from Sasol and are likely to trigger additional costs for air quality improvements in these priority areas".[10]

3. Minimum emission standards

Sasol was intimately involved in the multi-year, collaborative process to set pollution standards for different types of polluting activities (called the minimum emission standards (MES)). Prior to this, South Africa had no statutory limits for toxic emissions.

In terms of the AQA, the Minister is required to publish a list of activities which "result in atmospheric emissions and which the Minister or MEC reasonably believes have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage". The list must be accompanied by prescribed MES in respect of a substance or mixture of substances resulting from the listed activities identified in the notice, including: the permissible amount, volume, emission rate or concentration of that substance or mixture of substances that may be emitted; and the manner

[8] https://cer.org.za/wp-content/uploads/2022/03/TRUSTEES-JUDGMENT-DATED-18-MARCH-2022-1.pdf.
[9] https://cer.org.za/news/deadly-air-case-complainants-call-for-real-change-in-air-quality.
[10] Form-20F 2022 page 24. Sasol's Sasolburg operations also fall within an air quality priority area – the Vaal Triangle Airshed.

in which measurements of such emissions must be carried out.[11] Listed activities require an atmospheric emission licence.[12]

The list of activities – with accompanying MES ("the list of activities")[13] - became law from April 2010, but MES compliance was only required from 2015 (with stricter MES, for existing facilities, from 2020). In addition, the legislation makes provision to postpone compliance with the MES, and, as is set out below, South Africa's MES are weak, compared even to other developing countries.

Nevertheless, and despite its outsized impact on air pollution and human health and its vocal participation in the process of setting the MES, Sasol has fought tooth-and-nail to avoid having to comply with these laws. Both it and Eskom initially applied to be completely exempt from the MES – despite being well-aware that this was legally impermissible. After the then Minister rejected these attempts to evade the law, both companies submitted a set of wide-ranging applications to postpone compliance with the MES.[14]

In May 2014, whilst such applications were pending, Sasol and Natref launched review proceedings in the High Court, seeking to set aside various MES.[15] In this application, Sasol cited the then Minister and the then National Air Quality Officer (NAQO), who was also the decision-maker on its pending MES postponement applications. The NAQO very vigorously opposed this application, referring to Sasol's review grounds as "misleading" and "groundless". She accused Sasol of using "tactics" and "misdirection" "to hide its delay in bringing this review application and the associated delay in having to invest in emission abatement technology towards compliance with the [MES] to combat pollution". The NAQO also said that "what [Sasol] is in fact seeking is a judicial licence to continue with air pollution from their existing plants… unabated over the next few years". The NAQO's affidavit stated that that there was "no doubt" that Sasol's activities were "already infringing upon the environmental right recognised in section 24(a) of the Constitution".[16]

Soon after the NAQO, in February 2015, granted almost all of Sasol's postponement applications, it withdrew the review proceedings.[17]

Although those initial applications were largely successful, both companies have sought various additional postponements of compliance. In its Sustainability Report (SR 2022), Sasol reports that its 2020 postponement applications for compliance with volatile organic compounds MES at its Secunda operations remain pending.[18]

[11] Section 21 of the AQA.
[12] Section 22 of the AQQ.
[13] List of activities which have or may have a significant detrimental effect on the environment; including health, social conditions, economic conditions, ecological conditions or cultural heritage, 2013.
[14] https://www.dffe.gov.za/mediarelease/molewa_sasolwithdraw_litigation.
[15] https://cer.org.za/programmes/pollution-climate-change/litigation/legal-challenges-in-relation-to-the-air-pollution-and-the-minimum-emission-standards/sasol-synfuels-pty-ltd-and-others-v-minister-of-environmental-affairs-and-another.
[16] https://cer.org.za/wp-content/uploads/2014/12/Respondents-Answering-Affidavit.pdf.
[17] https://www.dffe.gov.za/mediarelease/molewa_sasolwithdraw_litigation.
[18] SR 2022 page 52; Sustainability Report 2021 page 44.

Sasol also currently has a pending application to postpone its compliance with sulphur dioxide (SO_2) MES.

3.1 Sulphur dioxide

SO_2 is a notorious pollutant that causes significant harm to human health and the environment. It can affect the respiratory system and the functions of the lungs, and causes irritation of the eyes. Inflammation of the respiratory tract causes coughing, mucus secretion, aggravation of asthma and chronic bronchitis, and makes people more prone to infections of the respiratory tract. Studies have linked SO_2 to low birth weight in infants and an increased risk for gestational diabetes mellitus, stillbirths, and pre-term births. Hospital admissions for cardiac disease and mortality increase on days with higher SO_2 levels. When SO_2 combines with water, it forms sulphuric acid, which is the main component of acid rain.[19]

South Africa's SO_2 MES are weak, compared even to other developing countries. South Africa's 2020 SO_2 standard – which exists to protect people's health and human rights – is about 28 times more lax than in China, and 10 times weaker than India's. The means of reducing SO_2 emissions are well-known and not controversial. The costs and benefits of compliance are also well-known and very well-documented.[20]

Sasol's pending MES application relating to SO_2

Notwithstanding these factors: that it has already received several other postponements of compliance, and that it has had an inordinately long time to prepare for compliance, Sasol now seeks "to be regulated by a load-based emission limit (the mass and the rate of the pollutant emissions) instead of a concentration limit (the mass of pollutant per cubic meter of air emitted) as it is currently".[21] In other words, instead of meeting the concentration **limit** of 1000 mg/Nm^3, Sasol has applied for an alternative emission **load** from 1 April 2025 until 31 March 2030 of 503 tonnes per day (t/d) and from 1 April 2030 and apparently indefinitely, of 365 t/d.[22]

Sasol describes this in its Climate Change Report (CCR 2022) as "boiler turndown", stating that it plans to reduce some of its GHG and SO_2 emissions by "turning down" some of its boilers at its Secunda operations. Sasol states in its CCR 2022 that it anticipates that this will reduce SO_2 emissions by 30%, and improve "water intensity, ambient air quality and waste volumes".[23]

This application for an "alternative load-based emission limit" amounts to non-compliance with the SO_2 MES beyond April 2025. It is tantamount to an exemption from the MES and is

[19] https://cer.org.za/programmes/pollution-climate-change/litigation/legal-challenges-in-relation-to-the-air-pollution-and-the-minimum-emission-standards/groundworks-challenge-to-the-ministers-unlawful-amendments-to-the-new-so2-emission-standards.
[20] https://cer.org.za/wp-content/uploads/2019/07/CER-submissions-opposing-proposed-doubling-of-2020-SO2-MES_5-July-2019-1.pdf; https://cer.org.za/wp-content/uploads/2019/07/Annexure-1_CER_submissions_of_25_June_2018.pdf; https://cer.org.za/wp-content/uploads/2019/07/Annexure-4_-Ron-Sahu_Report_on_MES_Increase_July-2019.pdf.
[21] https://www.sasol.com/media-centre/media-releases/clarification-regarding-secunda-operations-application-load-based-emission-limit-sulphur-dioxide.
[22] https://arm-air.co.za/documents/.
[23] CCR 2022 page 23.

unlawful. That much is clear from the List of Activities and the Framework for Air Quality Management ("the Framework"). 1 April 2025 is the latest date for compliance with new plant MES.

When the List of Activities and the Framework were amended in 2018, these made clear that, at the latest (and assuming the maximum five year postponement had been granted), full compliance with the new plant MES is required by 1 April 2025; unless facilities had applied - by 31 March 2019 (with a detailed decommissioning plan) - and been granted a once-off suspension of compliance (in which event they are required to be decommissioned by 31 March 2030). The legislation makes clear that "No once-off postponement with the compliance time frames will be valid beyond March 2025". Sasol has not sought a once-off suspension of compliance, meaning that it would not be eligible to be considered for an exemption from compliance with new plant MES, on the basis that its facilities will be decommissioned by 31 March 2030.

Now, under the guise of seeking an "alternative emission load", Sasol seeks to evade legal compliance with the MES in circumstances where: it does not intend to comply with new plant SO_2 MES by 1 April 2025, and will not be decommissioned by 31 March 2030. This is unlawful.

In its Form-20F, Sasol states that it continues to "engage with the Department of Forestry, Fisheries and the Environment (DFFE) and the local licensing authorities as necessary". The company acknowledges that the "outcome of these processes and applications cannot be guaranteed and may be successfully challenged by third parties and hence the risk of non-compliance could still materialise. Non-compliance may result in the violation of licence conditions with the associated consequence of administrative and criminal enforcement action, which may include directions to cease operations, fines and penalties as well as criminal prosecution and sanctions. This may have a material adverse impact on our business".[24]

The engagements referred to in this statement constitute the type of closed-door, unaccountable lobbying that Sasol carries out with public officials, without any public scrutiny.[25]

The NAQO's decision on this MES application is awaited.

4. Hydrogen sulphide

In June 2022, a foul smell attributed to hydrogen sulphide (H_2S) was reported in Gauteng. Apart from its unpleasant odour, H_2S is toxic. Exposure to low concentrations may cause irritation to the eyes, nose, or throat, as well as difficulty in breathing for some asthmatics. At low concentrations, exposure can cause headaches, poor memory, tiredness, and balance problems. At high concentrations, respiratory distress or arrest could result. Brief exposures to high concentrations of H_2S can cause loss of consciousness. In most cases, the person appears to regain consciousness without any other effects. However, in some people, there

[24] Form-20F 2022 page 24.
[25] https://justshare.org.za/media/news/climate-change/new-just-share-report-introduction-to-corporate-climate-lobbying-in-south-africa/.

may be permanent or long-term effects such as headaches, poor attention span, poor memory, and poor motor function.[26] As with other toxic pollutants, South Africa's regulation of H_2S is poor, particularly in respect of the gasification process (which applies to Sasol's facilities).[27]

Coal gasification is the only major industrial source of H_2S in the area. Despite being the only industry in the area which carries out coal gasification, Sasol does not take responsibility for these emissions. It states that its operations "have been stable during the period in question (8 to 10 June 2022) with no operational incidents that could have resulted in increased ambient concentrations of H_2S and SO_2."

Expert information, however, concludes that the source of H_2S during the June incident was Sasol's operation in Secunda:

> *The routine, reported H_2S emissions from Sasol's operations are huge. The facility relies on very high stacks and high temperature gas (thermal buoyancy) to disperse the emissions so as not to cause high local spikes in concentrations. So most of the time the discharges are dispersed wide enough that people don't know to complain, even if the chronic exposure is affecting their health. However, during unfavorable conditions, it is possible for the plume to reach the ground level in high enough concentration to cause the smell. Furthermore, most of the time, the H_2S is oxidized into SO_2 and further into sulfate aerosols (a part of $PM_{2.5}$). While these pollutants don't smell as bad, they are even more harmful to health, elevating the risk of heart attacks, strokes, lung cancer and many other deadly diseases. So the lack of effective regulation and controls for pollution from coal is a severe, ongoing health problem for the city and for the country — the smell is an occasional reminder*.[28]

A task team, comprising environmental and air quality officials from the DFFE and the provincial departments in Mpumalanga, Gauteng, North West and the Free State was established to investigate the complaints. It was reported that this team would also "devise a proactive long-term program to improve the management of sulphur dioxide and hydrogen sulphide emission sources beyond the responses triggered by public complaints".[29]

The task team's interim internal report handed to the Minister was reported to reflect that the smell "may have emanated from industry operations in the Secunda and Mpumalanga regions and as a result of unusual air circulation patterns that saw the smell being blown over Gauteng and parts of the North West during the week of 5 to 12 June 2022". In early July 2022, DFFE stated that:

[26] https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=388&toxid=67; https://apps.who.int/iris/bitstream/handle/10665/42638/9241530537.pdf.
[27] See for example: https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/REF_BREF_2015.pdf; https://www.mee.gov.cn/xxgk2018/xxgk/xxgk06/201909/W020190912613572844123.pdf; https://www.mee.gov.cn/xxgk2018/xxgk/xxgk06/201812/W020181207572096786740.pdf; https://dnr.wi.gov/cias/am/amexternal/pollutantsnr438.aspx.
[28] https://energyandcleanair.org/the-return-of-the-smell-in-johannesburg/.
[29] https://www.dffe.gov.za/mediarelease/sulphurdioxidehydrogensulphidesmell_gautengnorthwest.

The Task Team is to investigate and recommend possible policy interventions to further reduce hydrogen sulphide pollution and address concerns around public safety and the possible long-term health effects of exposure in order to improve the management of sulphur dioxide and hydrogen sulphide emission sources beyond the responses triggered by public complaints.

The ongoing investigation will include engaging with industries from identified areas where hydrogen sulphide is of concern, to discuss short-term and long-term management of sulphurous odorants.[30]

On 4 October 2022, at the 16th Annual Air Quality Governance Lekgotla, DFFE presented on "Odour and Noise Management".[31] This presentation states that, after the submission of the interim report, "further work of the Task Team entailed engagement with industry operations in the Secunda and the Vaal regions in order to understand their compliance with [atmospheric emission licence] emission limits and ambient air quality standards, including their incidents management reporting".

There is currently no ambient air quality standard (AAQS) for H_2S.[32]

DFFE's presentation indicated that additional work of the task team "would involve an analysis of short term, medium term and long term emission reduction commitments from industry in these regions in order to address H_2S challenges" and that there "is a need for a long term coordinated approach to address these challenges". As in early July 2022, DFFE noted the "need for policy intervention to further reduce hydrogen sulphide and address increasing concerns on the public safety, and long term effects of exposure to human health, especially in the local environments where large H_2S sources are located".

As set out above, Sasol's Secunda facility is the major source of H_2S.

It appears from the October 2022 presentation that it was resolved at the Lekgotla that: stricter H_2S MES would be established, and that H_2S AAQS would be set.

End

[30] https://www.gov.za/speeches/forestry-fisheries-and-environment-gives-progress-report-sulphur-dioxide-and-hydrogen.
[31] https://www.dffe.gov.za/sites/default/files/docs/2022airqualitylekgotla_odournoisemanagement.pdf.
[32] In terms of section 9 of the AQA, the Minister must identify substances (or mixtures of substances) in ambient air which present a threat to health, well-being or the environment (or which the Minister reasonably believes present such a threat); and, for those substances or mixtures, establish national standards for ambient air quality, including the permissible amount or concentration of each such substance or mixture of substances in ambient air.