Commentary
The Minimum Emission Standards (MES) and the sabotage of public health

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Introduction

Air Emission standards for pollutants were introduced into policy through the Consultative National Environmental Policy Process in 1996. The National Environmental Management Act of 1998 (NEMA) followed in short order so as to give effect to the environmental right in section 24 of the Constitution. However, it took another seven years for the subsidiary legislation, the National Environmental Management: Air Quality Act of 2004 (AQA) to specifically mandate the development of minimum emission standards (MES). And it took another five years of stakeholder consultations and negotiations before the MES were promulgated in 2010.

Like emission reduction regimes elsewhere in the world, the purpose of emission standards is to protect human health. They also provide the means of holding polluting industries to account, which is why the major industries first resisted their introduction and have since lobbied to weaken them. Nevertheless, big industry and Eskom in particular were well aware of the health impacts of pollution. The very weak Air Pollution Prevention Act (APPA) was introduced in 1965 and was first administered by the Department of Health. In the 1970s, when Eskom was planning a new round of power station construction, the Chief Air Pollution Officer cautioned against putting them all on the Highveld (Ballim 2017). In 2006, when the AQA finally replaced the moribund APPA regime, Eskom itself commissioned studies which confirmed the direct health risks of its emissions (Scorgie and Thomas 2006a; Scorgie and Thomas 2006b). The legal implication was that, as an organ of state with constitutional obligations, Eskom was bound to act to limit its pollution well before the MES were published in 2010.

This commentary looks first at the health impacts of Eskom's coal-fired fleet and hence the 'co-benefits' of addressing climate change, and second at the legal context and contests.

The MES, air pollution and climate change: two sides of the same coin

Air pollution and climate change are inter-linked. Air pollution is a "silent public health emergency" causing 7 million premature deaths each year, and accounting for about a quarter of all heart attack deaths, and about a third of all deaths from stroke, lung cancer, and chronic obstructive pulmonary disease. Health impacts are largest among women, children, older people, and the poor (Perera 2017; WHO 2021a).

Climate change is the other side of the coin of environmental impacts on global public health. The rapidly changing climate has far-reaching and catastrophic health impacts, with the largest burden falling on the poor, who have contributed least to greenhouse gas emissions (GHGs). The 2022 floods in KwaZulu-Natal provide a brutal illustration of the point.

Therefore, urgent global action over the next decade to cut air pollution and GHGs can protect health in the short and longer terms. For example, minimising industrial and energy sector emissions can reduce the health burden of ambient air pollution, while clean and affordable household heating and cooking technologies can minimise household air pollution; and these actions have the additional co-benefits of mitigating further climate change.

Since the WHO Air Quality Guidelines of 2005, many large global population-based studies have supported the Guideline's conclusions of a significant relationship between air pollution and adverse health outcomes. Research into global mortality associated with long-term exposure to ambient $PM_{2.5}$ particulate matter in 2018 revealed it to be a more important health risk factor than previously thought (Burnett et al., 2018). Additional health outcomes associated with air pollution, and with $PM_{2.5}$ in integrated studies (EPA 2009), are cardiovascular (Malig and Ostro 2009; Atkinson et al., 2010; Chen et al., 2011; Mallone at al., 2011), respiratory (Chen et al., 2011), and total mortality (Tobias et al., 2011; Meister at al., 2012). For particulate matter there is no evidence of a safe level of exposure without adverse health effects.

Since 2015 in South Africa, various industry applications for suspension, alternative limits and/or postponement of compliance with the minimum emission standards are notable, as they are located in priority air-sheds that are generally non-compliant with national ambient air quality standards. This legal regime is outlined further below. Various modelled studies have shown severe health impacts from granting MES postponements.

A 2014 health assessment was undertaken by Lauri Myllyvirta and the Greenpeace Global Air Pollution Unit in response to Eskom's "Health impact focused cost benefit analyses" (Myllyvirta 2014). It projected that with Medupi and Kusile in full operation, emissions from Eskom's coal-fired power plants (CFPs) would be responsible for 2,400 premature deaths per year, and that excess emissions if Eskom's various applications were fully granted would result

in approximately 23,000 premature deaths. Yet requiring full compliance with the MES would result in a 40% reduction in the cumulative health impact of air pollution from Eskom's CFPs.

Using data from Myllyvirta's study, air quality and health expert Dr Mike Holland assessed the health impacts and associated economic costs of emissions from Eskom's CFPs in 2016 (Holland 2017). His assessment, which focused on the role of $PM_{2.5}$ in the atmosphere following release of pollutants, such as SO_2 and NOx, estimated that the following impacts are attributable to Eskom's emissions:

Table 1: *Annual health impacts linked to coal fired generation in South Africa (Myllyvirta 2014)*

	Cases, etc	Value, $int, millions
Equivalent attributable deaths		
Lung cancer	*157*	
Ischaemic heart disease	*1,110*	
Chronic obstructive pulmonary disease	*73*	
Stroke	*719*	
Lower respiratory infection	*180*	
Total equivalent attributable deaths	**2,239**	**2,121.94**
Chronic Bronchitis (adults, cases)	2,781	64.64
Bronchitis in children aged 6 to 12	9,533	2.19
Equivalent hospital admissions	2,379	2.79
Restricted Activity Days (all ages)	3,972,902	132.72
Asthma symptom days (children 5-19yr)	94,680	1.44
Lost working days	996,628	47.05
Total costs		**2,372.78**

Finally, modelled scenarios of the health co-benefits of implementing national climate commitments consistent with the 2015 Paris Agreement temperature targets by nine representative countries, including South Africa, found that, compared with business as usual, sustainable pathways resulted in an annual reduction of 1.18 million air pollution-related deaths by 2040 (Hamilton et al., 2021).

Minimum emission standards (MES) – a legitimate government purpose to protect public health, social conditions, and the environment in air-shed priority areas

The object of the AQA, read with NEMA, is to provide measures to prevent air pollution and enhance air quality and so give effect to several constitutional rights. In its preamble, the AQA recognises that: "*the quality of ambient air in many areas … is not conducive to a healthy environment …"; "the burden of health impacts associated with polluted ambient air falls most heavily on the poor"; "air pollution carries a high social, economic and environmental cost that is seldom borne by the polluter"; and "minimisation of pollution through vigorous control, cleaner technologies and cleaner production practices is key to ensuring that air quality is improved"*.

Three of the key regulatory instruments mandated by the AQA are the national ambient air quality standards (NAAQS), the declaration of priority air-shed areas, and the MES.

National ambient air quality standards

NAAQS have been set for eight pollutants, including nitrogen dioxide (NO_2), sulphur dioxide (SO_2), PM_{10} and $PM_{2.5}$ (DEA 2009; DEA 2012). The NAAQS are intended to be health-based, and "*broadly accepted as a proxy for air that it not harmful to health and well-being*" (DEA 2017). Nevertheless, South Africa's NAAQS are much weaker than those set out in the WHO's 2005 Air Quality Guidelines, and very much weaker than the revised WHO Guidelines published in September 2021 (WHO 2021b).

Declaration and management of air-shed priority areas

The environment minister may declare a priority area where ambient air quality standards are exceeded. The objective is to reduce air pollution, comply with NAAQS and so protect public health. South Africa has declared three priority areas: the Vaal Triangle Airshed Priority Area ("VTAPA") was declared in 2006, the Highveld Priority Area (HPA) in 2007, and the Waterberg-Bojanala National Priority Area ("WBPA") in 2012. The AQA requires that an air quality management plan is developed and implemented for each priority area and provides for regulations to enforce the plans.

List of point-source emissions activities

The minister must also publish a 'list of activities' which result in atmospheric emissions that are harmful to the environment and to people's health and which prescribe MES for each. The first list of activities was published in 2010 and allowed five years for existing plants to comply with very lenient standards by 2015, and a further five years to comply with stricter standards by April 2020. It also allowed for compliance with the MES to be postponed – for a maximum of five years – if certain criteria were satisfied, notably that the ambient air quality in the area is in compliance with the NAAQS.

Eskom's compliance with the MES – an obligation deferred

The 2010 MES were published following lengthy consultations, engaging all affected stakeholders, to set the MES. This ended with standards that are notably weaker than those in other developing countries, including India and China.

In late 2013, just ahead of the compliance deadline, Eskom applied for exemption from compliance with the 2015 MES and, when it was pointed out that this was not legally possible, for wide-ranging postponements. Sasol and other big polluters followed suit. The majority of these applications were granted despite the explicit legal criteria that the ambient air quality in the area of the operation must be in compliance with the NAAQS. The HPA, where 12 of Eskom's coal-fired power stations and Sasol's coal-to-liquid plant are situated, was not and is not in compliance.

The MES were subsequently amended in 2018. The revisions included: confirmation that no further compliance postponements of the 2015 MES are permitted; an application for a once-off postponement of compliance with the 2020 MES is permitted to 31 March 2025; facilities to be decommissioned by 31 March 2030 may apply for a once-off suspension of compliance with the 2020 MES. The amendments also introduced the application for an alternative emission limit or emission load subject to explicit criteria, including the overriding precondition that there is compliance with NAAQS in the area in which the emitting facility is based.

Nevertheless, between 2018 and 2020, Eskom applied for a combination of 5-year postponements of compliance, suspensions of compliance, and alternative (weaker) limits in relation to the MES compliance timeframes to cover 14 of its 15 coal-fired power stations. It also submitted a formal application for exemption from compliance with the MES which was dismissed.

On 30 October 2021, the National Air Quality Officer (NAQO) issued decisions on Eskom's pending applications. In short, suspension of compliance was granted to 6 stations, along with a 5-year postponement of compliance for particular pollutants for 3 stations. Eskom's applications for alternative limits were all declined, in part because NAAQS are not in compliance. The NAQO also noted that "*Eskom has made minimal effort to fully comply with the standards", and "[t]he NAQO does not have the prerogative to issue decisions that are outside the current legal provisions or are in non-compliance with the law*".

Unsurprisingly, these decisions have been appealed by Eskom, other industrial emitters, and a range of nongovernmental organisations. What was unexpected, however, was the minister's unprecedented response, proposing a public consultation process that will hear inputs from all interested & affected parties on air quality and compliance with the MES. The department's media statement explains that "*[d]ue to the complex and conflicting nature of the issues raised in the appeals received, the Minister is of the view that a consultative process will assist in ensuring that all issues arising from the appeals can be addressed in a meaningful and resolute manner", and, ". . . the consultative process would not in any way condone non-compliance with the Minimum Emissions Standards and will not impact on any present or future criminal action against non-compliance. The current appeal process will be held in abeyance pending the outcome of the consultative process*" (DFFE 2022).

The integrity of the MES regime at a crossroads

The minister, as the competent authority, has clearly arrived at an impasse that has been a decade and more in the making. On the one hand, the rule of law must be upheld and polluters, especially Eskom as the largest polluter in the country, must be compelled to comply with the MES in the interest of public health. On the other, Eskom says that 16000 MW of nominal capacity must be decommissioned if the NAQO decisions are enforced and that it cannot afford the necessary abatement technology, while the earlier neglect of maintenance coupled with misguided government action, and inaction, has left its aging fleet in tatters (BizNews 2021). The dismal management of the minerals and energy portfolio is glaringly apparent with 'emergency' procurement of new capacity stalled and all other procurement running late while it rides shotgun for fossil fuels. It will be further exposed as the scope of this public consultation process will inevitably extend beyond air quality to climate change on the other side of the coin.

The process, however, seems beset by uncertainty. In March, the minister attempted to hand responsibility for it to the Presidential Climate Commission. The commission declined, leaving it with the minister who has now initiated a process to set up an expert panel to advise her on the appeals to the NAQO's decisions. Meanwhile, the implementation of those decisions is suspended and a resolution of the matter hangs in the polluted air.

After a century of unconstrained environmental vandalism and two decades obstructing accountability, Eskom is effectively looking for exemption from MES, so to restore a right to impunity. The Terms of Reference for appointing the panel, however, says that non-compliance with the MES will not be condoned. The panel must consult widely and "provide the minister with practical options" taking account of the "constitutional right of the people to an environment that is not harmful to their health and well-being, the energy crisis and the local economic climate". They are thus asked to find a way for the minister to square the circle.

They will have six months to do so. The minister must then act with urgency. But she is right that the decision needs wider support – starting with her cabinet colleagues. It cannot finally be separated from the crisis at Eskom along with the multiple contradictions in government's management of electricity and the provision of services to all people. For a government with an aversion to responsibility, this may be a tough call. But it cannot be deferred forever except at the cost of the rule of law and of the people, the environment and, finally, the earth.

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