



Centre for Environmental Rights

Advancing Environmental Rights in South Africa

The Honourable Minister Gwede Mantashe

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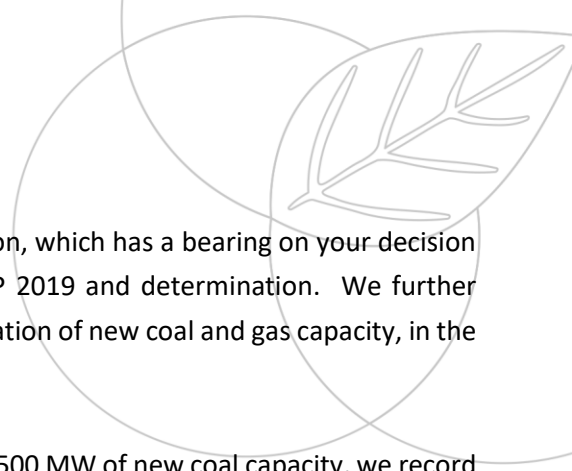
Our ref: CER61/NL/MS
17 September 2021

Dear Sirs/Mesdames

LETTER OF DEMAND - INTEGRATED RESOURCE PLAN FOR ELECTRICITY 2019 AND THE MINISTERIAL DETERMINATION ON THE PROCUREMENT OF 1 500 MW OF NEW GENERATION CAPACITY FROM COAL

1. We act on behalf of groundWork, Vukani Environmental Justice Movement in Action, and the African Climate Alliance (“our clients”).
2. We refer to our previous correspondence, the Integrated Resource Plan for Electricity 2019-2030 (“IRP 2019”) and to the determination under section 34 of the Electricity Regulation Act, 2006 (ERA) promulgated by the Minister of Mineral Resources and Energy on 25 September 2020, with the concurrence of the National Energy Regulator of South Africa (NERSA) (“the determination”). The determination provides, *inter alia*, for 1 500 MW of new coal-generation capacity, in accordance with Table 5 of the IRP 2019.
3. We refer further to our previous letter of 9 July 2021 wherein we, on behalf of our clients, requested clarity as to whether the Minister intends to update the IRP 2019. We further requested clarity whether the Minister would revoke or amend the 2020 determination, to remove the allocation to 1 500 MW of new coal capacity, in light of recent developments. Those developments included President Ramaphosa’s announcement that Schedule 2 under the ERA will be amended to allow projects up to 100 MW to generate electricity without a NERSA generation licence. This amendment took effect on 20 August 2021. We have not yet received your response to this letter.

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4. We write this letter to bring to your attention further relevant information, which has a bearing on your decision to develop 1 500 MW of new coal-fired power capacity, as per the IRP 2019 and determination. We further reiterate our clients' demand that the IRP 2019 be revisited and the allocation of new coal and gas capacity, in the IRP and determination, be abandoned.
 5. While the scope of this letter and demand are focused narrowly on the 1 500 MW of new coal capacity, we record our clients' objections to the 3 000 MW gas in the IRP 2019 and determination as well – it being a fossil fuel, which also gives rise to extensive climate impacts, environmental and health harms. We therefore place on record, that for similar reasons to our objections to the inclusion of new coal in South Africa's IRP 2019 and electricity determinations, any revision of the IRP should not include new gas capacity. We record that the absence of more detailed legal opposition to the proposed gas capacity in the determination and IRP 2019, cannot be construed as acceptance of government's plans to develop 3 000 MW of gas power capacity in the IRP 2019 and determination.

Relevant Information, which has a bearing on the 1 500 MW coal capacity allocation in the IRP 2019 and determination

6. The further relevant information referred to in paragraph 4 above is as follows:
 - 6.1 An August 2021 report by the Energy Systems Research Group ("ESRG report") titled *"Assessment of new coal generation capacity targets in South Africa's 2019 Integrated Resource Plan for Electricity"*. The report, attached marked "A", makes various findings, many of which demonstrate the unreasonableness of the decision to procure new coal-power generation capacity, and which refute the reasons proffered by both the Minister and NERSA in their responses to our requests for reasons of 2020;
 - 6.2 A July 2021 report by Dr Ranajit Sahu titled *"Comments on Potential Impacts of Proposed New Coal Generation Under the South Africa 2019 Integrated Resource Plan"*, that considers the possible air pollutant and greenhouse gas emission impacts of the proposed 1 500 MW coal technology, even if using the most efficient coal plant technology that could be feasible for the envisaged new coal capacity ("the Sahu report"). The report is attached marked "B"; and
 - 6.3 The Intergovernmental Panel on Climate Change (IPCC) Working Group 1 Sixth Annual Report on Climate Change ("IPCC AR6"), which confirms the need for radical emission reductions in the next 9 years, in order to avoid exceeding the Paris Agreement's 'safe limit' of 1.5°C and to ensure against the worst effects of the climate crisis. This is one of many reports and pieces of evidence that demonstrate the risks of harm of the climate crisis and show the need for urgent emission reductions in order to avoid these harms.
7. The above reports are just some of the many pieces of evidence that demonstrate why plans to develop new coal generation capacity should be abandoned. They are directly relevant for the Minister and NERSA's decision to develop 1 500 MW of new coal capacity. They confirm and further bolster the assertions made by our clients that the decision to develop new coal-fired power in light of the harms that will be caused, and in the face of feasible and affordable less harmful alternatives, is not consistent with the State's constitutional obligations and is neither reasonable, rational nor lawful, and should be abandoned by the Minister and NERSA. The evidence of the harms

of developing new coal capacity has been placed before the Minister and NERSA in various submissions, including the May 2020 submissions made on the draft determination prior to its promulgation in September 2020.¹

8. We address each of the reports in more detail below.

The ESRG report

9. The report explores two scenarios, in which it assesses the consequences of building the new coal capacity provided for in the IRP 2019 - a reference scenario and a climate policy scenario:

9.1 The reference scenario takes into account recent trends in the decline of economic growth rates, the economic impact of Covid-19, lower electricity demand, recent renewable energy costs and an up to date assessment of Eskom's fleet performance – in other words, it seeks to represent a scenario as close to current reality as possible.

9.2 The climate policy scenario explores a situation where South Africa revises its Nationally Determined Contribution to be compatible with the global goals contained within the Paris Agreement to limit warming to well below 2°C and pursue efforts towards 1.5°C.

10. In each scenario, the model is run with and without the new coal capacity, enabling one to make an assessment of the differences in various indicators when new coal plants are included in the system, relative to runs where coal plants are not included (this is because new coal power does not feature in an optimal build plan). This is relevant as it demonstrates the effects of proceeding with the plans to build new coal capacity in circumstances more akin to today's reality than the circumstances envisaged by the now outdated IRP of 2019. As it is, by the IRP 2019's own admission, the coal capacity was forced in to the IRP 2019, in circumstances where it did not feature in a least-cost IRP.

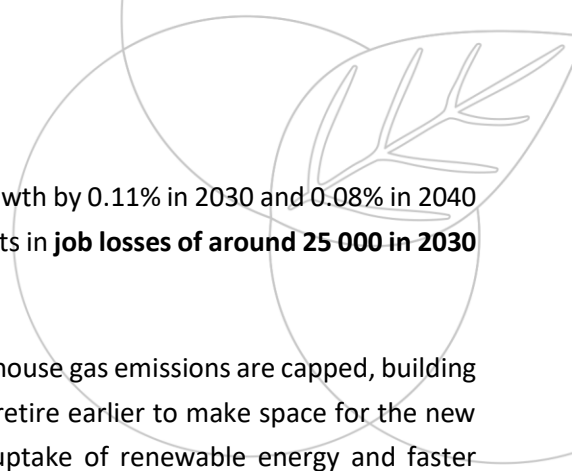
11. Some of the report findings include the following:

11.1 If a least-cost, optimal electricity plan were to be adopted, it would **not** contain **any** new coal power investments.

11.2 Forcing new coal into a build plan that meets electricity demand consistently to 2030 and beyond would incur **additional costs of at least R23 billion in the reference case**, or a 0.5 percent increase in the electricity price.

11.3 The coal capacity would **increase cumulative greenhouse gas emissions to 2050 by 289 Mt CO₂-eq** compared to the optimal build plan that excludes new coal plants.

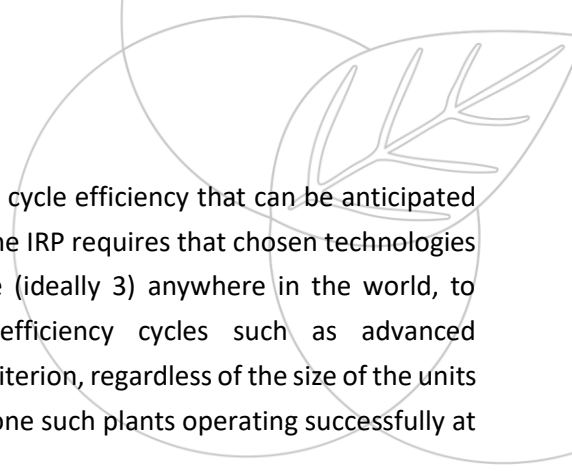
¹ See paragraphs 54 to 96 of the 7 May 2020 COMMENTS ON CONSULTATION PAPER 2: CONCURRENCE WITH THE MINISTERIAL DETERMINATION ON THE PROCUREMENT OF NEW GENERATION CAPACITY FROM RENEWABLES, STORAGE, GAS AND COAL 2020 available at https://cer.org.za/wp-content/uploads/2020/05/Life-After-Coal-Comments_Determination-NERSA-Consultation-Paper-2_7.5.20.docx.pdf.

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- 11.4 The additional coal results in a GDP impact, reducing economic growth by 0.11% in 2030 and 0.08% in 2040 compared to the reference scenario without forced coal, and results in **job losses of around 25 000 in 2030 across the economy**.
- 11.5 In respect of the climate policy scenario in particular, where greenhouse gas emissions are capped, building new coal would force Eskom's existing and cheaper coal fleet to retire earlier to make space for the new coal capacity's emissions. The new coal plants lead to faster uptake of renewable energy and faster electrification of demand sectors to offset the cumulative emission impacts of the committed coal. This incurs **additional costs of R109 billion** in the power sector compared to achieving the climate policy goal without new coal capacity forced in.
12. In short the report makes it clear that building 1 500 MW of new coal-based power generation capacity would increase greenhouse gas emissions and power costs, driving up the average electricity costs by 0.4 - 8.0 c/kWh or 0.5 – 3.5 percent in both reference and climate policy futures. Forcing new coal will raise costs when climate goals are not considered but it will also make the achievement of the country's fair share contribution to climate change considerably more expensive to achieve. In short, it will require consumers to pay more for electricity, and incur the impacts of increased greenhouse gas emissions compared to a scenario where the Minister abandons the planned 1 500 MW of new coal. The report confirms that not only is the envisaged new coal capacity not needed, it comes with detrimental impacts for jobs and the economy.

The Sahu report

13. The report assesses the various rollout scenarios of new coal generation capacity, including the most likely technologies to be used and the potential significant environmental impacts of such coal generation in South Africa. The report further addresses the information gaps in the IRP 2019 which relate to its "preference" for the new coal capacity to be based on some form of high-efficiency, low emission (HELE) technologies as well as "other similar technologies",² by assessing the most feasible HELE technologies and the potential air emissions of such new coal generation.
14. The report *inter alia*, found the following:
- 14.1 There is no such thing as "clean coal", regardless of whether HELE technologies are used to minimise air emissions from coal (or gas derived from coal). Even if HELE technologies are applied consistently and perfectly (a practical impossibility, since the technologies do not work under all modes of operation, such as during startup or malfunction), air emissions are considerable even just at a plant itself. In addition, there are non-air impacts such as waste water and cooling water and waste generation that result from all coal plants. Of course, in addition to impacts from coal power plants directly, a coal plant will need to rely on an extensive supply chain, starting at the coal mine and through to disposal of the coal ash, with transportation in between – all of which not only have significant harmful air impacts but also negative water and waste impacts.

² Page 46, IRP 2019.

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- 14.2 Ultra-supercritical (USC) efficiency is the highest possible thermal cycle efficiency that can be anticipated for procurement of 1 500 MW of new coal under the 2019 IRP. The IRP requires that chosen technologies “must be based on at least one operational project experience (ideally 3) anywhere in the world, to substantiate claims by manufacturers”.³ Higher thermal efficiency cycles such as advanced ultra-supercritical (AUSC) efficiency coal plants do not meet that criterion, regardless of the size of the units that comprise the 1 500 MW – based on the fact that there are none such plants operating successfully at scale.
- 14.3 Circulating fluidised bed (CFB) technology is considered preferable by the IRP 2019 due to its ability to handle low quality and waste coals in South Africa. However, to retain ultra-supercritical efficiency, the size of such units is important, and these have not been specified in the IRP 2019. In any event CFB units are known to have very high nitrous oxide (N₂O) emissions – this is a potent greenhouse gas.
- 14.4 Integrated gasification combined cycle (IGCC) and underground gasification combined cycle (UGCC) power plants, and carbon capture (CC) technologies are unproven and cost-prohibitive at scale. They are extremely unlikely to be implemented for the 1 500 MW of new coal proposed under the 2019 IRP.
- 14.5 Minimum pollution control technologies are not specified in the IRP 2019 for the new coal capacity. Given that no South African coal-fired power stations have been willing to pay for the full suite of the most effective pollution control technologies, it appears unlikely that the 1 500 MW of new coal would be required to use these technologies at suitable levels of pollutant reduction, given the capital and operating costs of adding such technologies and operating them effectively. Even if these technologies were installed, it is impossible to eliminate all emissions of toxic organic compounds, trace metals, acid gases and particulate matter from a coal plant and from mining and ash transport and disposal associated with the coal power capacity. Thus, the new coal plants will inevitably result in significant air pollution and harms to human and environmental health regardless of pollution controls. A proper assessment of these adverse impacts can only be made if the size, location, source coal and technology selection for the proposed 1 500 MW new coal plants is determined.
- 14.6 Large quantities of greenhouse gas emissions are unavoidable even from power plants that use HELE technologies. Pulverized coal units, even ultra-supercritical, will not be able to capture their emitted carbon dioxide due to extremely high costs. Circulating fluidized bed technology emits from two to ten times more nitrous oxide than pulverized coal technologies. As mentioned above, nitrous oxide is a potent, long-lasting greenhouse gas with a global warming potential 300 times that of carbon dioxide.
15. The report concludes that given the type, cost and feasibility of existing HELE and carbon capture technologies available in South Africa, it is unrealistic to assume that HELE and carbon capture technologies can adequately mitigate the potential environmental and climate impacts of the proposed new coal capacity.

³ Page 63, IRPP 2019.

The IPCC AR6

16. On 9 August 2021, the United Nations IPCC released the first of three reports which, along with a Synthesis Report (to be released in the latter half of 2022) and three special reports, will collectively comprise the Sixth Assessment Report⁴ which assesses the science related to climate change in approximately five-year cycles.
17. The recently released report is the Working Group 1 report: The Physical Science Basis,⁵ which rigorously and transparently reviews the most credible and up to date scientific evidence from around the world related to the science of climate change and its effects.
18. Key findings from this report include:
 - 18.1 It is unequivocal that human influence has warmed the atmosphere, ocean and land, causing widespread and rapid changes.⁶
 - 18.2 Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Evidence of observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened since AR5 (the Fifth Assessment Report released in 2013/4).⁷
 - 18.3 Global surface temperature will continue to increase until at least mid-century under all greenhouse gas emissions scenarios considered. Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in carbon dioxide (CO₂) and other greenhouse gas emissions occur in the coming decades.⁸
 - 18.4 Many changes in the climate system become larger in direct relation to increasing global warming. They include increases in the frequency and intensity of hot extremes, marine heatwaves, heavy precipitation, agricultural and ecological droughts in some regions, and a proportion of intense tropical cyclones, as well as reductions in Arctic sea ice, snow cover and permafrost.⁹
 - 18.5 With further global warming, every region is projected to increasingly experience concurrent and multiple changes in climatic impact-drivers. Changes in several climatic impact-drivers would be more widespread at 2°C compared to 1.5°C global warming and even more widespread and/or pronounced for higher warming levels.¹⁰ For the Southern Africa region, the IPCC projects hot extremes (causing heatwaves), heavy precipitation (correlated with flooding risk); agricultural and ecological drought, an increase in fire weather conditions; an increase of average tropical cyclones; and an increase in sea levels.
 - 18.6 From a physical science perspective, limiting human-induced global warming to a specific level requires limiting cumulative CO₂ emissions, reaching at least net zero CO₂ emissions,¹¹ along with strong reductions in other greenhouse gas emissions.

⁴https://www.ipcc.ch/site/assets/uploads/2020/05/2020-AC6_en.pdf

⁵ <https://www.ipcc.ch/report/ar6/wg1/>

⁶ Finding A1 *ibid.*

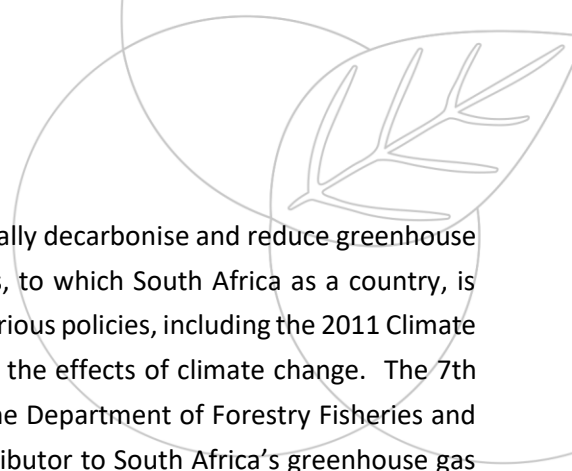
⁷ Finding A3 *ibid.*

⁸ Finding B1 *ibid.*

⁹ Finding B2 *ibid.*

¹⁰ Finding C2 *ibid.*

¹¹ 'Net zero emissions' refers to achieving an overall balance between greenhouse gas emissions produced and greenhouse gas emissions taken out of the atmosphere.



19. The IPCC AR6 report provides yet further evidence of the need to drastically decarbonise and reduce greenhouse gas emissions, in order to avoid the worst impacts of the climate crisis, to which South Africa as a country, is extremely vulnerable. Government has on numerous occasions and in various policies, including the 2011 Climate Change Response White Paper, conceded the country's vulnerability to the effects of climate change. The 7th National Greenhouse Gas Inventory, published in August this year by the Department of Forestry Fisheries and Environment, confirms that the energy sector is by far the largest contributor to South Africa's greenhouse gas emissions, with an 80.1% contribution (an increase of 17.6% between 2000 and 2017).¹² Electricity and heat production take up the biggest share of the energy sector emissions – “the largest source of energy sector emissions in South Africa is the combustion of fossil fuels.”¹³

The way forward – our clients' demands

20. In light of the compelling findings of the ESRG and other reports, we maintain that the decision that 1 500 MW should be generated from coal is an unjustified violation of constitutional rights and cannot be reasonable, rational and/or lawful.
21. Our clients have instructed us, as we hereby do, to demand that you abandon the 1 500 MW of new coal-fired power capacity as provided for in the IRP 2019 and the determination, and that this be confirmed in writing.
22. In the event that you intend to proceed with the development of the new coal capacity, our instructions are to institute legal proceedings to challenge the decision as encompassed in the determination of September 2020 and the underlying IRP 2019.
23. We request that you respond to this letter, as well as our July 2021 letter, informing us how you wish to proceed, by no later than **8 October 2021**.

Yours faithfully

CENTRE FOR ENVIRONMENTAL RIGHTS



per:

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¹² https://www.environment.gov.za/mediarelease/creecy_greenhouse-gas-inventory_report.

¹³ Chapter 3, page 124.