



Climate Change - IRP 2010 Input Parameter Data Sheet (Externality constraint)

This sheet is to be used as the primary stakeholder engagement tool. This document provides the information that will allow the stakeholders to make a meaningful contribution to the IRP Input parameters

Parameter	Climate Change
Purpose	<p>In order to comply with the “Required by Science” scenario developed within the Long Term Mitigation Strategy commissioned by the Department of Environmental Affairs, South Africa’s carbon dioxide emissions are set to peak in 2025, plateau for a decade and then reduce in absolute terms.</p> <p>The purpose of introducing a Climate Change target in the initial draft of the IRP 2010 was to cater for this scenario.</p> <p>In December 2009, at the 15th meeting of the Conference of Parties to the United Nations Framework Convention on Climate Change, South Africa announced that it would undertake voluntary mitigation actions to reduce its emissions (subject to certain conditions such as securing international funding). These actions will enable the country’s emissions to deviate below the projected business as usual emissions by 34% by 2020 and by 42% by 2025. This level of effort would enable an emissions trajectory consistent with the LTMS scenario described above. IRP 2010 Rev 2 will have to take this in account.</p>
Impact on the IRP	<p>2010 IRP Rev 1: The introduction of restrictions on carbon dioxide emissions in the 2020-2030 timeframe impacted on the choice of technology. The amount of nuclear and renewable (specifically concentrated solar thermal) capacity to be installed had to increase significantly to ensure that the cap on emissions was achieved.</p>



	<p>2010 IRP Rev 2: The 34% and 42% deviation described above applies to South Africa's total carbon dioxide emissions. A share of the burden for deviation from business-as-usual must be assumed for the electricity sector and this needs to be factored into the IRP. Much of the deviation in emissions is expected to come from energy efficiency initiatives and this will also impact on the projected demand. A combination of reducing demand and increasing the share of lower-emitting supply options (renewables, nuclear, clean coal and hydro imports) will be a direct impact on Rev 2.</p>
<p>The assumptions included in establishing the parameter values in this sheet</p>	<p>While the actual parameter values have been derived from national agreements on emission reductions, there is an assumption that a realistic emission target would allow for a peak before 2025 (possibly after 2020) before a plateau of 5-10 years, and reductions only thereafter in line with the original LTMS trajectory.</p>
<p>Parameter Value</p>	<p>IRP 2010 Rev 1: The LTMS figures showed the country's CO₂ emissions peaking at 550 MtCO₂ by 2025. Given that the electricity sector is approximately 50% of South Africa's emissions, a future limit of 275 Mt was assumed for the electricity sector by 2025. The modelling approach was to place an emission constraint of 275 Mt per year. In the policy adjusted plan for IRP Rev 1 an emissions limit of 310 Mt was achieved.</p> <p>IRP 2010 Rev2: To achieve the 34% and 42% deviations that have been announced, initial indications are that the contribution to this deviation by the electricity sector is between 5%-10% in the 2020 - 2025 period. At the same time, energy efficiency is expected to contribute by 8%-9% to the deviation. However, these contributions are assumed from initial presentations made by DEA and the exact figures would have to be verified by them. The trajectory of the total emission production from electricity would still need to allow for a peak prior to 2025 (possibly after 2020) before the plateau and potential reduction. The 34% reduction target in 2020 does not</p>



	seem to allow for this which may not be feasible.
Range of Parameter Value	Rev 1: 275 Mt to 330 Mt in 2025 Rev 2 assumed: 5% to 10% reductions in emissions against business-as-usual from electricity generation in the 2020-2025 period but also ensuring lower carbon emitting technologies are included in planning beyond 2025 to start preparing for absolute emissions reductions after 2035.
Preconditions necessary to make possible for this parameter to be included in the IRP	Acceptance by the DoE of the prescribed parameter values and hence the outcome with regard to generation mix and cost.
Parameter Owner	Department of Environmental Affairs