

Eskom Power Station and the Environment

Corporate social responsibility (CSR) is a tool used by companies to demonstrate their concern for the local communities and the universe at large. While there are unlimited activities that may be included in CSR programs, most of them focus on sustainability and philanthropy. As an organization in the energy sector, Eskom should focus on sustainable generation of power and environmental conservation as its main concern. This business ethics essay explores the failures of Eskom in conserving the environment.

Company Background

Eskom was founded in 1923 as a power utility company, and it remains the largest African electricity producer. The organization is now owned and managed by the state and has a nuclear power plant in Koeberg, South Africa. Its other notable power stations are Kendal, Kusile, Matimba, and Medupi Coal Plants in South Africa. As of 2021, Eskom reported revenues worth \$204.3 billion with a net income of \$18.9 billion and \$52.84 in assets (Zondi & Robinson, 2021). In the same year, Eskom employed over 42,000 workers, which was lower than in preceding years. Currently, Eskom generates approximately 45% of the electricity in the African continent, accounting for 95% of South Africa's power (Reynolds-Clausen & Singh, 2019). Regardless of these achievements, Eskom is a major greenhouse emitter in Africa, which is responsible for its bad records in CSR worldwide.

Business Challenges

Eskom has struggled with challenges in its operations, ranging from mismanagement of resources to growing debts. The company was established on coal power production and was forced to expand its operations to a large scale by rapidly enlarging economic growth (Worch et al., 2019). The huge expansion plans required capital, forcing Eskom to increase tariffs and take

loans. In the early 1990s, President Mbeki denied Eskom a request to build new power stations (Ting & Byrne, 2020). An energy crisis in 2007 forced Eskom to introduce load shedding, which scheduled rolling outages on a rotational basis. President Zuma responded by investing in large-scale coal-fired plants in 2007. In 2016, Eskom initiated a nuclear power plan by training 100 technicians, artisans, and engineers for the program (Ting & Byrne, 2020). Load shedding at level two was introduced in 2020 due to generating units' breakdown. The company was involved in political scandals and almost triggered a recession when its woes caused a 3.2% GDP decline in 2019 (Masondo, 2022). Until today, the company has been laying off its workers to survive.

Eskom's CSR Problems

The leading cause of Eskom's bad CSR record is its contribution to climate change through greenhouse gas emissions. The Centre for Research on Energy and Clean Air (CREA) named Eskom as the world's leading Sulphur dioxide (SO₂) emitter in 2019 (Zondi & Robinson, 2021). As a result, South Africa has been designated the world's air pollution hotspot. CREA's findings indicated that Eskom emits more Sulphur dioxide than China and US or US and EU combined (Myllyvirta, 2021). It was only second to India's emissions because other countries have made significant progress in adopting renewable energy sources. Figure 1 shows how Eskom, as a company, compares to emissions by countries such as China, the US, and the EU.

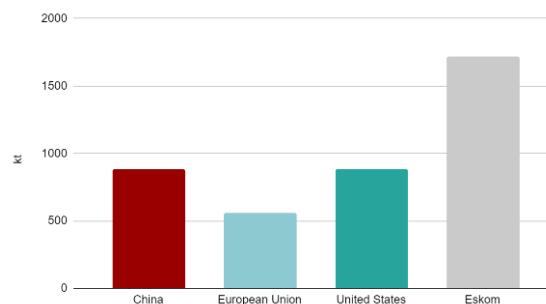


Figure 1. SO₂ Emissions 2019 (Myllyvirta, 2021).

The Volume of Emitted Gases

Coal plants are the cause of Eskom's emissions, producing several greenhouse gases, which are released into the atmosphere. The major coal byproducts are called flue gases, including nitrogen, accounting for around 75% of the flue gases, water vapor at 6%, and oxygen at around 7%, which are not harmful (Garland & Langerman, 2021). The pollutants in flue gases account for a smaller percentage, such as carbon dioxide at 14%, nitrogen oxides at 0.05%, and Sulphur dioxide at 0.1% (Gasparotto & Martinello, 2021). In addition, there are micro traces of fly ash and mercury in the gases.

Eskom produces tons of these gases due to its numerous power stations that burn coal daily. In recent reports, it was reported to have produced 1.6 million tons of SO₂, 206 million tons of CO₂, 804,000 tons of nitrogen oxides, and 71 tons of fly ash (Garland & Langerman, 2021). Once these gases are released into the air, they form ambient concentrations that people inhale. For example, coal plants owned by Eskom release the gases into the higher atmosphere, and they are diluted as they come to the lower levels. Although the ambient concentrations become low, the gases are distributed over large areas of land, affecting more people.

Emissions and Climate Change

While Eskom's emissions have low ambient concentrations, the gases remain in the atmosphere for hundreds of years. After the first 300 years and above, the height at which gases are released does not matter because they will have spread across wide geographical areas. However, Eskom accounts for 43% of all South African greenhouse gases and 25% of the Sub-Saharan region. These greenhouse gases have accumulated from coal emissions over the years.

Increased carbon dioxide causes climate change by altering rainfall patterns, warming the atmosphere, intensifying heatwaves' severity and frequency, and average temperatures. These

changes affect animals and plants habiting the earth, leading to deaths, mutations, and extinction of some species. Most importantly, climate change has caused escalated droughts, wildfires, hurricanes, and floods after short rains. Nitrogen oxides and SO_2 dissolve in moisture and fall on surfaces such as roofs. They corrode these surfaces and can dissolve in rainwater, leading to acid rain, which is also corrosive. Therefore, the impact of Eskom's bad CSR is far-reaching and may last for years.

Negative Impact on Human Health

In addition to catastrophic events caused by climate change, greenhouse gases pollute the air people breathe, leading to various diseases. Individuals exposed to high ambient concentrations of SO_2 and other greenhouse gases are at risk of premature deaths from diabetes, as well as cardiovascular, respiratory, cardiopulmonary, and lung diseases (Oyewo, 2020). Although every government protects its citizens from these unwanted gases, Eskom has not adhered to all the established frameworks, putting thousands of people under threat. In Figure 2, the indication of how pollutants travel from the coal plant to the human body, leading to hospitalization and, in worst cases, deaths, is offered.

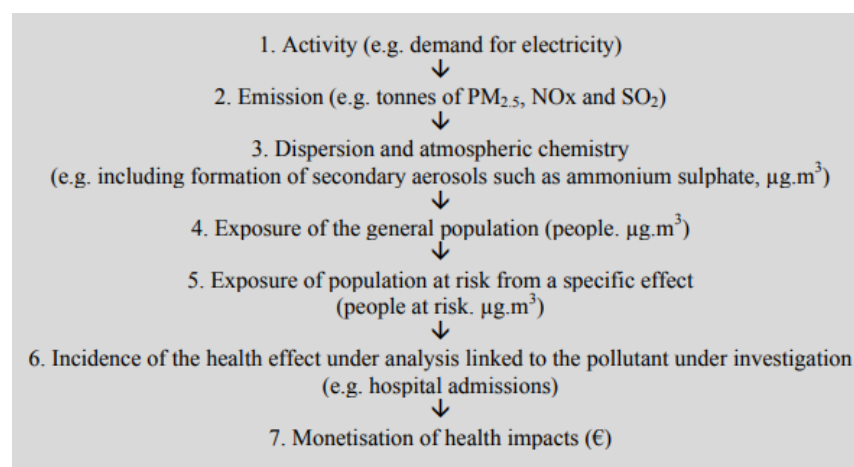


Figure 2. Impact Pathway of Emitted Pollutants (Holland, 2017).

Eskom's air pollution is causing diseases that impact residents of South Africa directly. Hospitalizations due to lung cancer, stroke, ischemic heart disease, lower respiratory infections, and chronic obstructive pulmonary diseases have been recorded in the most affected provinces of the country where coal power plants are located (Belelie et al., 2019). Holland (2017) presents the related annual death numbers, reflected in Table 1 below. From the table, over 2,000 residents lose their lives every year to air pollution. In addition, there are high annual cases of bronchitis and asthma, which have led to hospitalizations, activity restrictions for several days in the year, and loss of working days for adults.

| | Cases, etc | Value, \$int, millions |
|--|--------------|------------------------|
| Equivalent attributable deaths | | |
| <i>Lung cancer</i> | 157 | |
| <i>Ischaemic heart disease</i> | 1,110 | |
| <i>Chronic obstructive pulmonary disease</i> | 73 | |
| <i>Stroke</i> | 719 | |
| <i>Lower respiratory infection</i> | 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 |

Table 1. Yearly Impact of Emitted Pollutants (Holland, 2017).

Why Eskom's Emission Is a Bad CSR Record

Today's consumers are educated on the importance of sustainability and the need to reverse the effects of climate change. South Africa was grouped in the same rank as China, the US, and the EU in 2015, but these countries have made significant improvements to lower their carbon footprint. Eskom continues to drag the country behind by delaying its renewable energy alternatives. One air quality officer in the country claimed that Eskom refused to comply with established air quality standards, indicating the company's reluctance to conserve the

environment and protect the lives of people around its power plants (Smith, 2021). The organization defended its high emissions of 1.9 million tons of SO₂ in 2020 by blaming it on coal with high Sulphur content levels. Other reasons for noncompliance with standards include lack of capital, too much debt, and the need to close down some of its plants. Regardless of the excuses presented by Eskom, it has been in the spotlight as the world's most polluting company for years and has to change the situation.

Possible Solutions for Eskom

Eskom has the option of closing down the coal plants gradually while replacing them with renewable sources and installing antipollution systems. Both recommendations are costly but other countries such as the US, the EU, and China, are moving toward them. The 2021 Sustainability Report highlights two measures Eskom is implementing to mitigate climate change, but none of them is an effort to reduce emissions in the near future ("Eskom sustainability report," 2021). For example, the battery storage project is yet to be rolled out (Moyo, 2018). The company must focus on implementing technologies that reduce emissions, such as nuclear energy and other renewable sources. Eskom has built one nuclear energy plant, but it cannot serve the entire country. There is a need to invest in more such plants to gradually eliminate dependence on coal power. The company also seeks to initiate adaptation strategies for climate change.

Eskom is targeting solar and wind alternatives in the future. The plan is to close coal-fired plants as they reach their end of operational lives. Therefore, the process will take time, and the emissions generated in these years will live in the atmosphere for hundreds of years (De Saxe et al., 2021). When it comes to greenhouse gases, the earlier emission is stopped, the better to allow the atmosphere to cleanse itself of the previous years' pollution.

Apart from the real focus on the CSR issue, Eskom must improve its handling of the news released from its offices. CSR activities require consistent and transparent communication to eliminate any doubts among consumers and communities. For example, the company must openly declare its carbon footprint every year and show the improvements they have made in lowering it. Secondly, press releases should be made several times a year to update the stakeholders about ongoing activities and efforts to reduce emissions. By considering these recommendations, the company will be able to reduce the emission levels and keep its reputation.

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