

Environmental Law

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SOUTH AFRICA

Understanding the 2023
Grid Emission Factors Report



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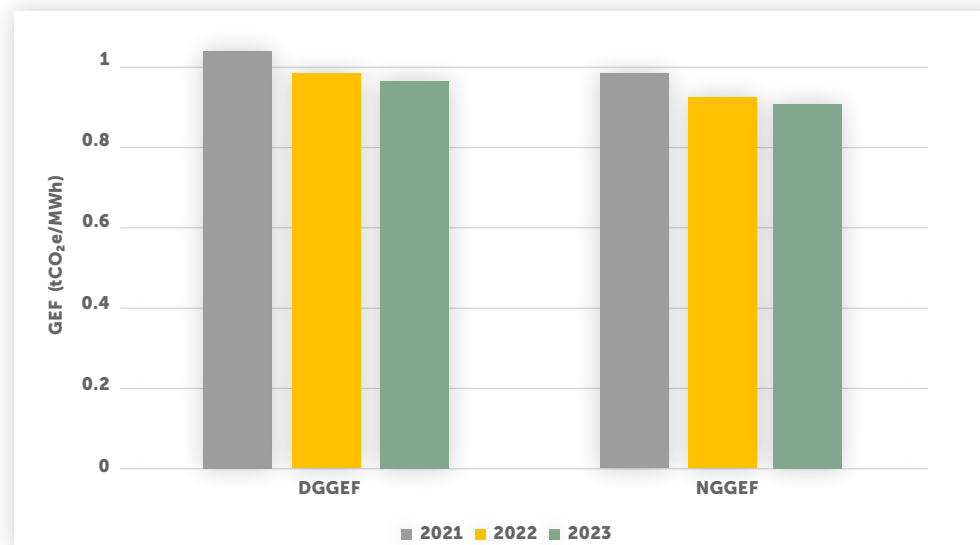
Understanding the 2023 Grid Emission Factors Report

On 25 July 2025, the Department of Forestry, Fisheries and Environment (DFFE) published South Africa's third annual Grid Emission Factors (GEF) Report (Report) for the 2023 calendar year. CDH previously reported on the 2022 GEF Report, which provided an overview of the four location-based GEFs and their importance to emissions reporting and carbon accounting, and can be accessed [here](#).

Key updates for 2023

The 2023 Report shows a modest decline in the carbon intensity of grid-supplied electricity. In numeric terms, the Domestic Generation GEF (DGGEF) fell from 0.960 tCO₂e/MWh in 2022 to 0.942 tCO₂e/MWh in 2023, reflecting a 4% reduction in electricity generated from high-carbon sources (mainly coal) compared to 2022. The National Generation GEF (NGGEF) fell from 0.931 tCO₂e/MWh to 0.906 tCO₂e/MWh, benefiting from over 99% of South Africa's total electricity imports being from renewable sources (mainly hydropower), feeding cleaner power into the overall mix and reducing emissions intensity. The Transmission Losses GEF (TLGEF) registered at 0.020 tCO₂e/MWh and the Distribution Losses GEF (DLGEF) at 0.062 tCO₂e/MWh, both slight improvements from 2022, showing modest gains in reducing transmission and distribution inefficiencies across the grid.

The below figure extracted from the 2023 Report reflects the downward trend in the DGGEF and NGGEF between 2021 and 2023:



Despite these improvements, roughly 80% of South Africa's electricity remains coal-generated. While carbon intensity is at its lowest recorded level across the three GEF reporting years (2021–2023), it remains high by global standards. These marginal improvements nonetheless signal progress aligned with South Africa's Just Energy Transition and long-term carbon neutrality goals.

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Why the GEFs changed

The gradual decline in the carbon intensity of grid-supplied electricity in 2023 indicates a progressive shift in South Africa's electricity mix. The 2023 GEF Report attributes the overall decline primarily to a slight shift in the generation mix consisting of less energy from high-carbon sources and increased generation from hydro and wind, together with cleaner imports that lowered the emissions intensity of electricity consumed nationally.

The decline in the carbon intensity of the grid can also be attributed to various operational and policy developments in the energy sector: Eskom's Energy Availability Factor, which reflects the percentage of total generation capacity that is available to produce electricity to meet demand, dropped from 62% in 2022 to 60% in 2023. Approximately 332 days of load-shedding were recorded for 2023, compared to 205 days in 2022. The 2023 Report confirms that there was a 61% increase in reliance on diesel, which has a lower carbon emission factor than coal. When Eskom's coal-fired generation units are offline more frequently (due to load-shedding, breakdowns, or maintenance), the electricity generated from coal decreases and the uptake in diesel increases. While this translates into lower GEFs across the board, it is not necessarily indicative of the uptake of long-term sustainable generation solutions.

Implications for reporting

For all electricity consumers, the updated 2023 GEFs mean a slightly smaller carbon footprint for the same amount of electricity usage. By applying the 2023 GEF values in carbon accounting, companies and individuals alike ensure that their carbon sustainability disclosures reflect the actual performance of the grid and ultimately helps keep South African emission reporting aligned with reality and with national decarbonisation goals.

Alistair Young, Alecia Pienaar and Alysa Bunting



OUR TEAM

For more information about our Environmental Law practice and services in South Africa, Kenya and Namibia, please contact:



Allan Reid

Executive Consultant:
Corporate & Commercial
T +27 (0)11 562 1222
E allan.reid@cdhlegal.com



Alistair Young

Director:
Corporate & Commercial
T +27 (0)11 562 1258
E alistair.young@cdhlegal.com



Clarice Wambua

Consultant | Kenya
T +254 731 086 649
+254 204 409 918
+254 710 560 114
E clarice.wambua@cdhlegal.com



Alecia Pienaar

Counsel:
Environmental Law
M +27 (0)82 863 6279
E alecia.pienaar@cdhlegal.com



James Ross

Director:
Corporate & Commercial
T +27 (0)21 481 6424
E james.ross@cdhlegal.com



Anton Ackermann

Senior Associate:
Corporate & Commercial
T +27 (0)11 562 1895
E anton.ackermann@cdhlegal.com



Lauriene Maingi

Associate | Kenya
T +254 731 086 649
+254 204 409 918
+254 710 560 114
E lauriene.maingi@cdhlegal.com

BBBEE STATUS: LEVEL ONE CONTRIBUTOR

Our BBBEE verification is one of several components of our transformation strategy and we continue to seek ways of improving it in a meaningful manner.

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JOHANNESBURG

1 Protea Place, Sandton, Johannesburg, 2196. Private Bag X40, Benmore, 2010, South Africa.
Dx 154 Randburg and Dx 42 Johannesburg.
T +27 (0)11 562 1000 F +27 (0)11 562 1111 E jhb@cdhlegal.com

CAPE TOWN

11 Buitengracht Street, Cape Town, 8001. PO Box 695, Cape Town, 8000, South Africa. Dx 5 Cape Town.
T +27 (0)21 481 6300 F +27 (0)21 481 6388 E ctn@cdhlegal.com

NAIROBI

Merchant Square, 3rd floor, Block D, Riverside Drive, Nairobi, Kenya. P.O. Box 22602-00505, Nairobi, Kenya.
T +254 731 086 649 | +254 204 409 918 | +254 710 560 114
E cdhkenya@cdhlegal.com

NAMIBIA

1st Floor Maerua Office Tower, Cnr Robert Mugabe Avenue and Jan Jonker Street, Windhoek 10005, Namibia
PO Box 97115, Maerua Mall, Windhoek, Namibia, 10020
T +264 833 730 100 E cdhnamibia@cdhlegal.com

STELLENBOSCH

14 Louw Street, Stellenbosch Central, Stellenbosch, 7600.
T +27 (0)21 481 6400 E cdh Stellenbosch@cdhlegal.com

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