

Calculating Scope 2 Emissions

What are scope 2 emissions?

Scope 2 emissions are indirect greenhouse gas emissions generated from the consumption of purchased electricity, steam, heat, or cooling. They differ from Scope 1 emissions, which arise directly from assets owned or controlled by an institution, and Scope 3 emissions, which cover indirect emissions across the value chain, including financed emissions.

For financial institutions, Scope 2 emissions are generally much simpler to estimate than Scope 3, particularly financed emissions. Scope 3 calculations often require granular client-level data, complex attribution methodologies, and assumptions around portfolio coverage. By contrast, Scope 2 calculations primarily rely on electricity consumption and country-specific grid emission factors, which are generally easier to source.

Our solution

Our emissions calculation tool combines country-level grid carbon intensity data, measured in gCO₂ per kWh, with electricity tariffs, measured in USD/kWh, to derive an emissions factor expressed as **gCO₂ emitted per USD spent on electricity**.

The tool provides a simple dashboard where users select the country and enter their electricity expenditure. It then automatically estimates Scope 2 emissions and provides a three-year historical trend.

Demo

Consider an institution in Algeria that spent USD 10K on electricity in 2025. By applying the country-specific gCO₂/USD emissions factor, the estimated Scope 2 emissions would be:



By comparison, an institution in Algeria with the same USD 10K electricity expenditure would have a significantly different emissions profile:



Key observations

An institution in Algeria would generate nearly four times as much CO₂ as a comparable institution in Ethiopia for the same electricity expenditure. This is largely driven by the significant difference in the carbon intensity of the two countries' electricity grids. Algeria's electricity generation is heavily reliant on natural gas, while Ethiopia's grid is predominantly powered by hydropower.

Electricity tariffs also play an important role. Ethiopia has among the lowest electricity costs in Africa. As a result, for the same USD 10K expenditure, an institution in Ethiopia would consume substantially more electricity than an institution in Algeria, while still generating considerably lower Scope 2 emissions due to the much cleaner electricity mix.

Takeaway

Scope 2 reporting may seem relatively straightforward, but accurately estimating emissions requires an understanding of significant geographic differences in electricity prices and grid carbon intensity. Our approach provides a practical and scalable pathway for financial institutions to estimate Scope 2 emissions, identify trends, and strengthen sustainability reporting, even where detailed operational data is incomplete.