

Where Do Emissions Factors Come From?

The Surprising Story of How Few Datapoints Exist

2 INSIGHTS

1. Governments around the world produce emissions factors. These are widely shared and referenced.
2. Consulting firms calculate emissions factors in Lifecycle Assessment (LCA) consulting projects. These are proprietary datapoints with limited documentation and restrictions on disclosure.

FACTS

- Emissions Factors are the ratio of kg of CO₂e per unit shipped or kg per CO₂e per \$ spent.
- There are just two sources of data: Governments and consultants.
- These data can be quite dated and are not comparable. They can be [quite wrong](#).
- Data quality is poor. EPA estimates that 62% of the Emissions Factors it produces are [below average in data quality](#). The market is missing an Emissions Factor data product that is accurate, always improving, always updated and fine-grained.
- Despite these issues, Emissions Factors are widely used as they easily integrate into business systems. There is huge demand for high-quality Emissions Factors.

“Achieving net zero emissions requires closing a data gap. High-quality, reliable and comparable gauges are lacking.”

[IMF](#)

THREE WAYS TO CALCULATE EMISSIONS FACTORS

1. Who Buys What - Input Output Tables Issued by Governments

In 1973 Wassily Leontief won the Nobel Prize in Economics for his work on input-output tables, a method that tracks how goods and services flow throughout the economy. For example, using the tables, it is easy to track the purchase of petroleum by industry, and also the products made with petroleum. The GHG emissions created when transforming a barrel of oil into to useful product can be tracked in the same system. This is still the framework used by governments around the world to estimate emissions. The US tracks 405 industries, France tracks 19 and Egypt tracks 5. (Source: [Climatiq.io](https://climatiq.io))

2. Sensors – Direct Measurement by Companies

When carbon-based products are transformed into a useful product emissions are released into the atmosphere. IoT sensors can be added to the equipment to measure this release, such as [sensors to measure methane](#) releases. Companies do not share this detailed data, they use it for operations and summary reporting.

3. LCA Projects by Companies

LCA studies are commissioned by companies who want to make informed decisions. For example, P&G commissioned a consulting firm to examine the environmental impact of the [Magic Eraser](#). Consultants have access to standard government emissions factors and sensor data and their work brings what is available together for a single product.

In short, everyone faces the same challenge: there are very few actual emissions data points. This leads a note of caution: It sounds great to have your carbon impact reported on a credit card receipt. But the credit card companies don't have more data than what we have noted above. To make informed purchase decisions, we'll need better data.

GLYNT is focused on producing on high-quality, continuously improving emissions factor data because it is critically important to get these inputs right. [#betterdatafortheplanet](#)

Sample Database of Emissions Factors (US EPA)

Commodity Code	Commodity Name	Substance	Unit	Supply Chain Emission Factors
111CA	Farms	Carbon Dioxide	kg/2018 USD, Purchaser Price	0.513
111CA	Farms	Methane	kg/2018 USD, Purchaser Price	0.026
111CA	Farms	Nitrous Oxide	kg/2018 USD, Purchaser Price	0.002
111CA	Farms	Other GHGs	kg CO2e/2018 USD, Purchaser Price	0.004
113FF	Forestry, Fishing, and Related Activities	Carbon Dioxide	kg/2018 USD, Purchaser Price	0.223
113FF	Forestry, Fishing, and Related Activities	Methane	kg/2018 USD, Purchaser Price	0.003
113FF	Forestry, Fishing, and Related Activities	Nitrous Oxide	kg/2018 USD, Purchaser Price	0
113FF	Forestry, Fishing, and Related Activities	Other GHGs	kg CO2e/2018 USD, Purchaser Price	0.002
211	Oil and Gas Extraction	Carbon Dioxide	kg/2018 USD, Purchaser Price	0.569
211	Oil and Gas Extraction	Methane	kg/2018 USD, Purchaser Price	0.028
211	Oil and Gas Extraction	Nitrous Oxide	kg/2018 USD, Purchaser Price	0
211	Oil and Gas Extraction	Other GHGs	kg CO2e/2018 USD, Purchaser Price	0.004
212	Mining, Except Oil and Gas	Carbon Dioxide	kg/2018 USD, Purchaser Price	0.749
212	Mining, Except Oil and Gas	Methane	kg/2018 USD, Purchaser Price	0.023
212	Mining, Except Oil and Gas	Nitrous Oxide	kg/2018 USD, Purchaser Price	0
212	Mining, Except Oil and Gas	Other GHGs	kg CO2e/2018 USD, Purchaser Price	0.005
213	Support Activities for Mining	Carbon Dioxide	kg/2018 USD, Purchaser Price	0.445
213	Support Activities for Mining	Methane	kg/2018 USD, Purchaser Price	0.013
213	Support Activities for Mining	Nitrous Oxide	kg/2018 USD, Purchaser Price	0
213	Support Activities for Mining	Other GHGs	kg CO2e/2018 USD, Purchaser Price	0.004
213	Utilities	Carbon Dioxide	kg/2018 USD, Purchaser Price	2.884

Source: [US EPA](#)

READ THE RESEARCH

- [What are Emissions Factors](#), EPA
- [How Are Emissions Factors Calculated From Economic Activity](#), EPA
- [The Challenges of LCA Studies](#), PubMed

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