Improving consumer scope 2 emission accounting practices and decision-making

Problem: Companies can easily reduce their reported electricity-related (scope 2) emissions without contributing to actual, real-world emission mitigation. They can do so while following current standards and guidelines. This act of greenwashing (intended or not) leads to these companies missing out on opportunities for effective emission reduction. Also, the companies risk increase: consumer and investor pressure mounts, costs of capital rises and exposure to more stringent future legislation increases.

Need: Comprehensive guidance on which measures effectively reduce scope 2 emissions, and which ones don’t, would help companies avoid greenwashing and actually contribute to emission mitigation.

Proposed solution: I suggest an approach that addresses four major shortcomings in current scope 2 emission accounting and reporting standards and guidelines: 1) Lack of additionality, 2) Insufficient temporal resolution, 3) Misaligned incentives and 4) Incomplete grid emissions. Below, I describe each shortcoming in more detail, how the shortcomings relate to one another, and how I think they can be addressed.

Lack of additionality

Problem:
- Market-based approach – easy to reach zero scope 2 emissions
- Even when electricity supply lacks additionality
- Additionality = switch causes real world emission reductions

Proposed solution:
- Method to evaluate additionality
- Applied to supply sources
- (Semi-)quantitative

Progress:
- First results
- Rough idea
detailed concept

Open questions:
- What are best practices in other fields for evaluating additionality (e.g., carbon offsetting)?
- What are the most promising existing approaches to evaluate additionality of RES?

Insufficient temporal resolution

Problem:
- Generation and consumption are currently matched annually
- Hourly fluctuations are not captured
- Grid emissions during times of undersupply are neglected

Proposed solution:
- Method for hourly accounting
- Includes avoided emissions (oversupply) & additional emissions (undersupply)
- Considers grid losses

Progress:
- First results
- Rough idea
detailed concept

Open questions:
- How do I properly account for avoided emissions?

Incomplete grid emissions

Problem:
- Grid EF is used to calculate location-based emissions
- Institutions that publish grid EF use differing methods
- Companies can pick the grid EF that suits them

Proposed solution:
- Methodological recommendations for grid EF calculation

Progress:
- First results
- Rough idea
detailed concept

Open questions:
- Which spatial resolution is the best choice for EF calculation (e.g., country, bidding zone)?

Misaligned incentives

Problem:
- Market-based approach – easy to reach zero scope 2 emissions
- Zero emissions = zero incentive to reduce/shift load
- Even though reducing/ shifting load would have real effect

Proposed solution:
- Novel target-setting practice
- Aligns consumption & emission targets

Progress:
- First results
- Rough idea
detailed concept

Open questions:
- Am I missing any misaligned incentives in emission accounting and target-setting?

AP: Auto-producer
AR5: Fifth Assessment Report by the IPCC
CO2: Carbon dioxide equivalents
EEA: European Environmental Agency
EF: Emission Factor
IEA: International Energy Agency
IPCC: Intergovernmental Panel on Climate Change
LC: Lifecycle
MAP: Main-activity producer
Opt: Operational
PPE: Power purchase agreement
REC: Renewable energy certificate
RES: Renewable energy source
TD: Transformation &distribution
UBA: Umweltbundesamt

Malte Schäfer | malte.schaefer@tu-braunschweig.de | +49 173 7581195 | Contact info →