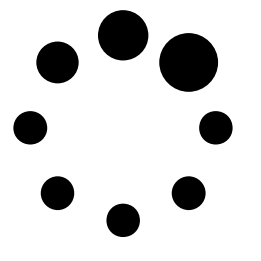


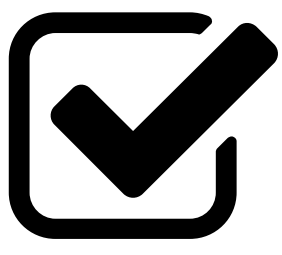
Improving consumer scope 2 emission accounting practices and decision-making



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 *risks* 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

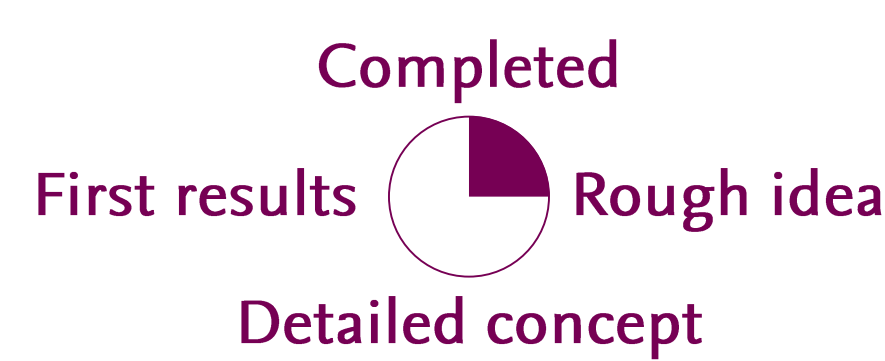
Problem:

- 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:

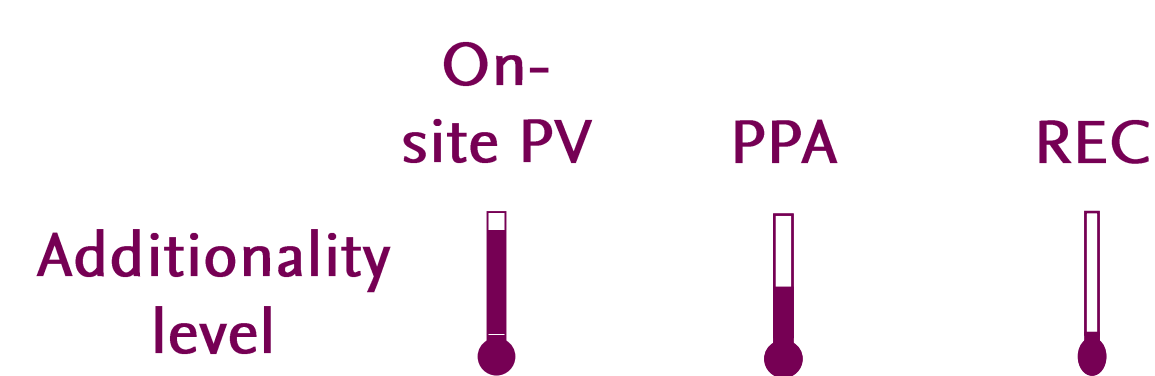
- Method to evaluate additionality
- Applied to supply sources
- (Semi-)quantitative

Progress:



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

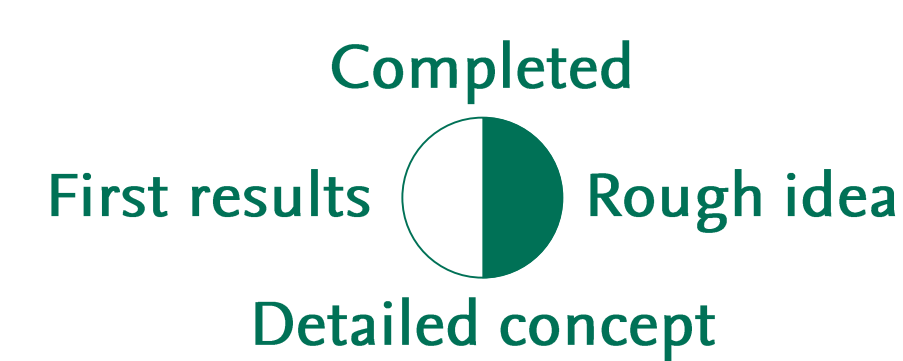
Problem:

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

Proposed solution:

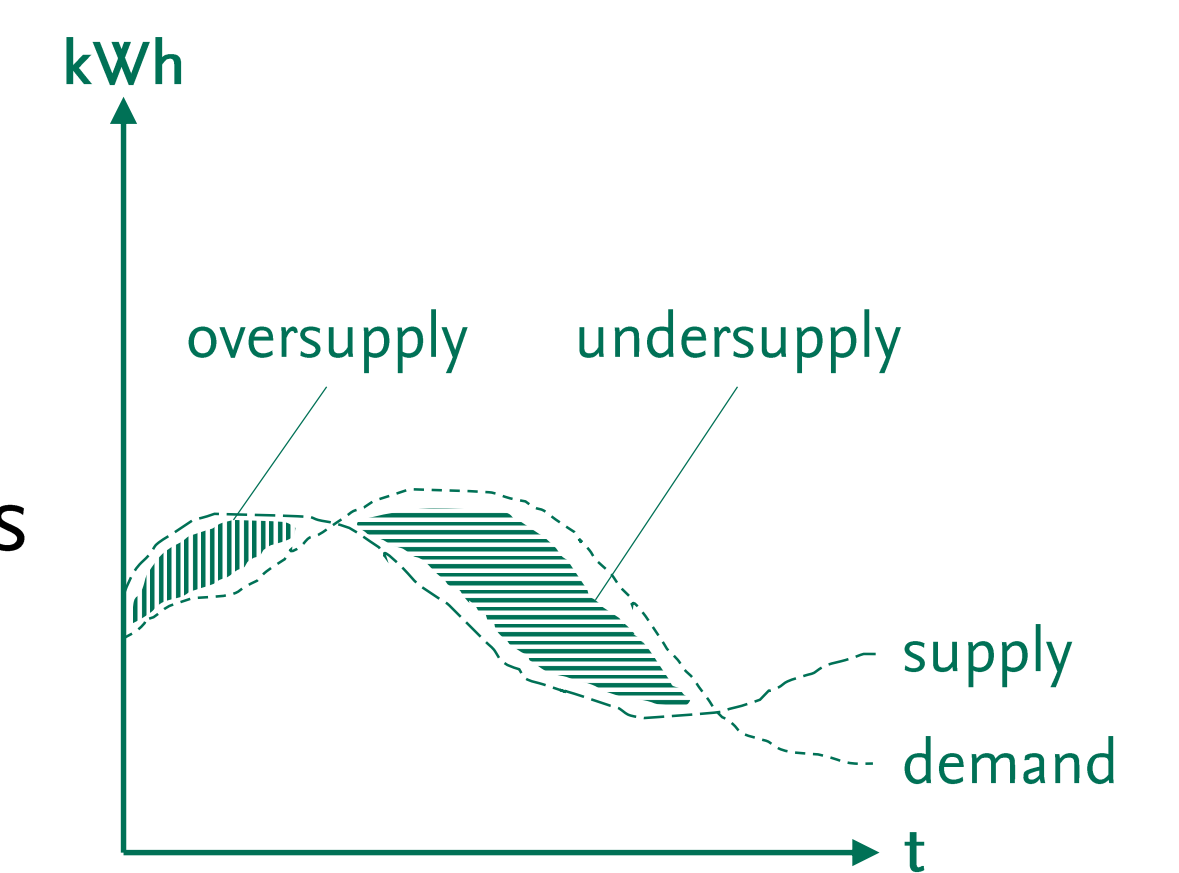
- Method for hourly accounting
- Includes avoided emissions (oversupply) & additional emissions (undersupply)
- Considers grid losses

Progress:



Open questions:

- How do I properly account for avoided emissions?



Incomplete grid emissions

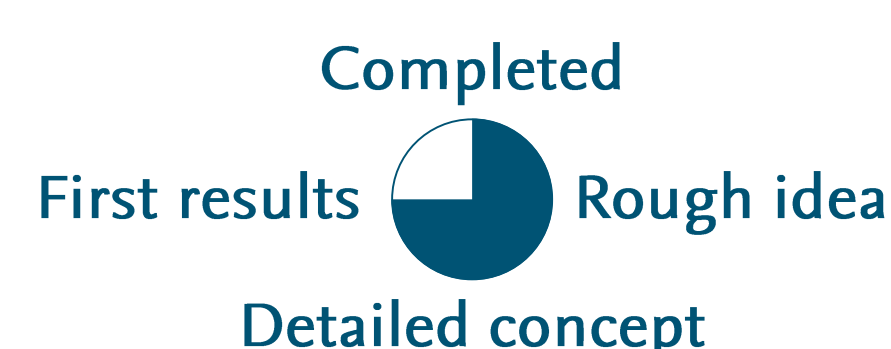
Problem:

- 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:



Open questions:

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

Impact metric	Recommended	
	CO ₂ e	CO ₂
System boundaries	LC	Op
Temporal resolution	Hourly	Annual
Grid connection	MAP	MAP+AP
Consider heat co-gen	yes	no
Include all losses (e.g. TD)	yes	no
Include imports/exports	yes	no

How to calculate grid EF?

Misaligned incentives

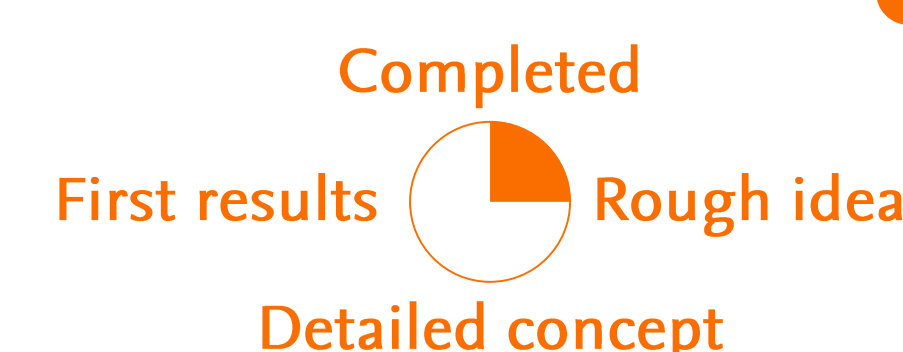
Problem:

- 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:

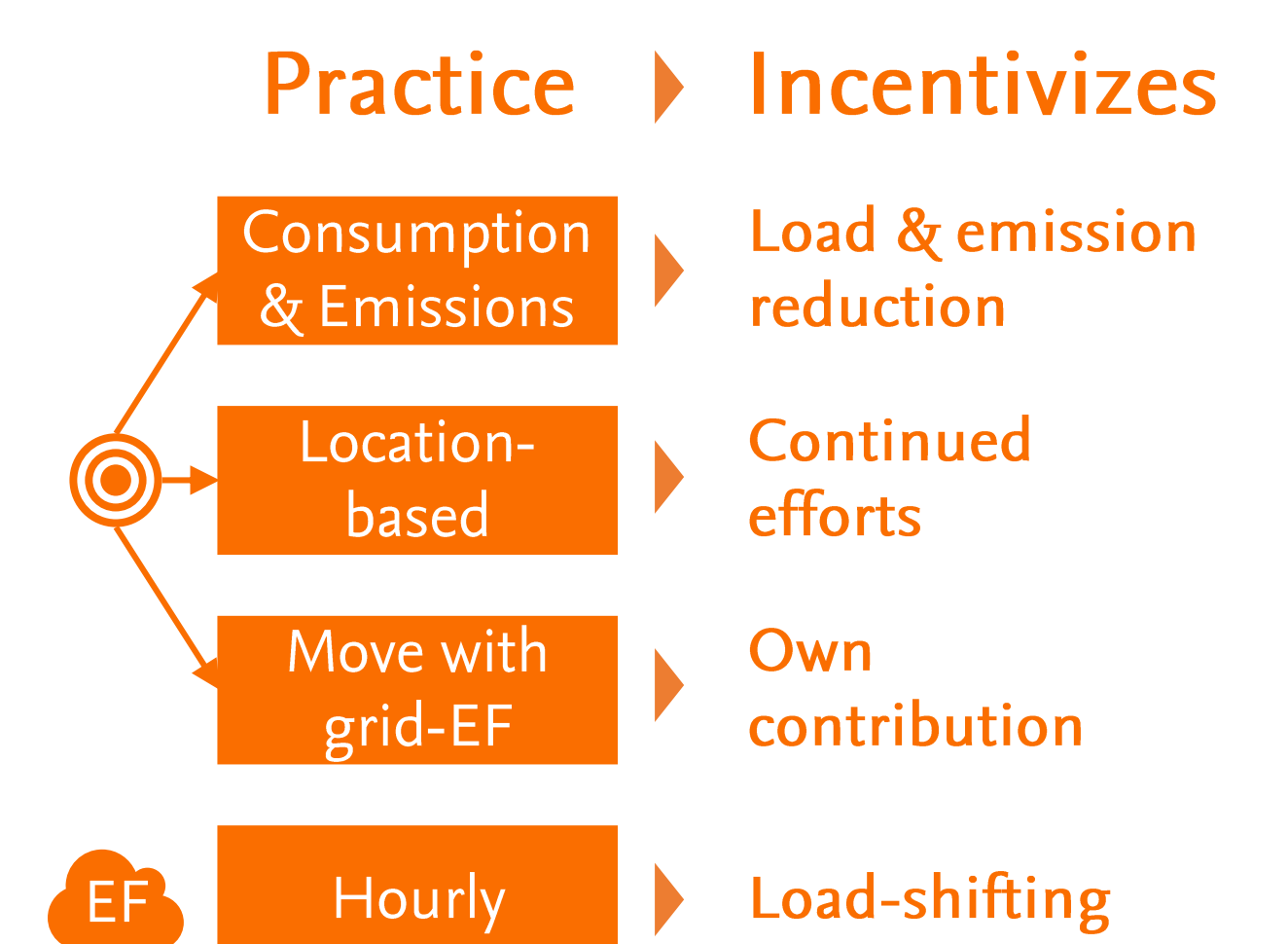
- Novel target-setting practice
- Aligns consumption & emission targets

Progress:



Open questions:

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



AP: Auto-producer
AR5: Fifth Assessment Report (by the IPCC)
CO₂e: Carbon dioxide equivalents
EEA: European Environmental Agency

EF: Emission Factor
IEA: International Energy Agency
IPCC: Intergovernmental Panel on Climate Change
LC: Life cycle

MAP: Main-activity producer
Op: Operational
PPA: Power purchase agreement
REC: Renewable energy certificate

RES: Renewable energy source
TD: Transformation & distribution
UBA: Umweltbundesamt



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SCAN ME

