



Levelling up on carbon accounting and reporting

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Carbon accounting versus carbon disclosure

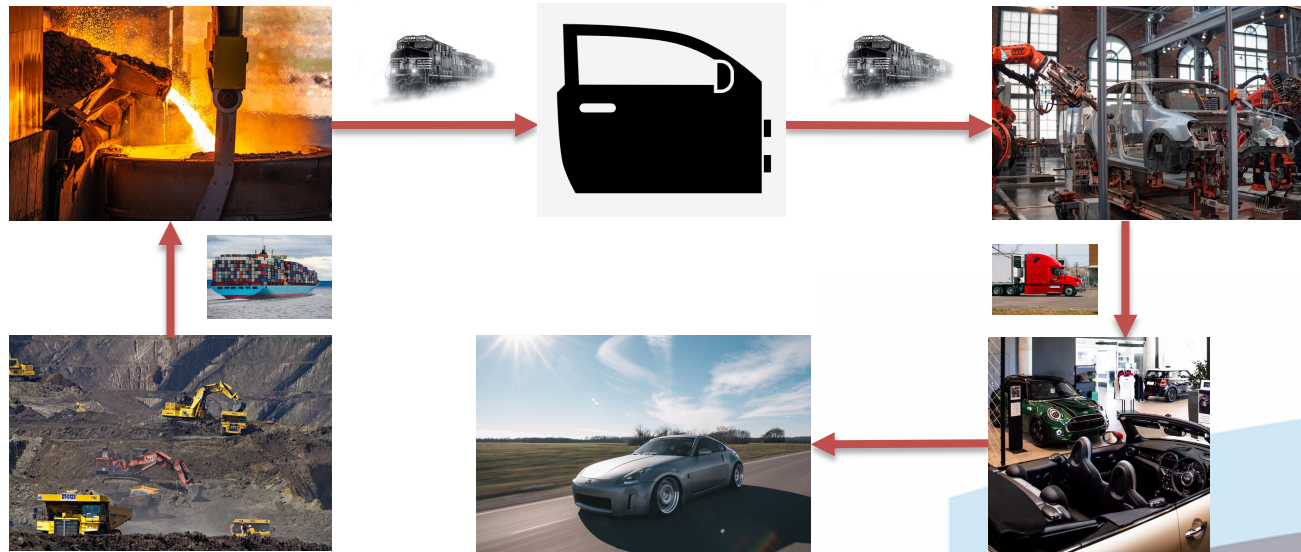
1. All current standards in the GHG reporting space are “disclosure” standards (akin to the US SEC’s Reg S-K standards).
 1. Confusingly, disclosure standards such as GHGP sometimes mislabel themselves as “accounting” standards.
2. Some basic properties of accounting:
 1. Accurate, representationally faithful, and verifiable
 2. Measures *realised* performance (versus *prospective* performance)
 3. Comparable and consistent
 4. Net figures are mutually exclusive across arm’s-length entities
 5. Net figures are collectively exhaustive in a system

Approaches to carbon disclosure

1. **Entity-level carbon-emissions measurement: eg GHGP Scopes 1-3**
2. **Product-level carbon-emissions measurement: eg ISO 14044/14067 (LCA)**
3. **Project-level carbon-offsets measurement: eg ICVCM**
4. **Entity-level carbon budget-setting: eg SBTi**
5. **Entity-level carbon disclosure platform: eg CDP**
6. **Transaction-level carbon data-sharing: eg PACT**



How Scope 3/ LCA methodologies work

E.g., how to calculate the specific carbon emissions in a car door?



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Concerns with the Scope 3/ LCA methodologies

Concerns:	 GREENHOUSE GAS PROTOCOL	 THE INTERNATIONAL EPD® SYSTEM
Conflates delivered and prospective performance	Yes	Yes
Multiple counting	Yes	No
Redundant counting	Yes	Yes
Inaccurate	Yes	Yes
Not comparable	Limited	Limited
Untimely	No	Yes

How offset markets currently work

- A. There are currently two basic types of offsets:
 - i. Removal offsets characterised by the quantity and duration of carbon removed from the atmosphere;
 - ii. Avoidance offsets based on prospective emissions ostensibly not incurred.
- B. Prices of offsets can vary from \$2 to \$800 per ton, signifying non-fungibility and variance in offset quality.

Concerns:

- 1 An offset provider shops for a “registry” that will generate and sell a “certificate” that points to the offset product.
- 2 The offset provider attests to the registry’s standards; but the penalties for misrepresentation are unclear.
- 3 The registry sells the certificate to a buyer, who usually immediately “retires” it to offset its current emissions.
- 4 The registry promises the buyer not to resell the certificate, but it cannot control what the offset provider now does with the underlying offset asset.



Ownership of the offset asset never changes hands.



The registry is a thinly capitalized exchange, usually a not-for-profit in competition with others, and with limited enforcement resources.



There is little certainty that the offset is real, will be actually delivered, and is not double-counted.



None of the three parties are incentivized to maintain the offset asset for the long run.

The political economy of carbon disclosure

1. **Lack of clarity and consistency in the “mission” across various carbon rule-makers.**
 1. **Should the mission be *geological net-zero* or something else?**
2. **A small group of funders have controlled the space.**
3. **A small group of climate advocates (with little formal background in accounting) have written most standards.**
4. **The standard-setting practices sometimes lack basic due-process around agenda setting, stakeholder commenting, and grievance management.**
5. **Most for-profit companies do not see carbon management as central to their business proposition.**

Getting to carbon accounting

1. Why carbon *accounting*?

1. Accounting provides the verifiable foundation for information in markets: it is the basis on which all “disclosure” can be interpreted. Without accounting, information provision can degenerate into puffery or worse, and we can end up with the lemons problem.

2. Early steps toward carbon accounting:

1. Primary-data exchange platforms: eg PACT

2. Primary data chain for automotive sector: eg Catena-X

Getting to carbon accounting: What is needed?

- 1. An environmental ledger for the earth, for each jurisdiction, for entities therein.**
- 2. The ledger needs principles for determining when transactions, events, and conditions generate carbon assets and carbon liabilities.**
 - 1. All primary emissions are recognised as liabilities, once and only once.**
 - 2. All (indefinite) removals are recognised as assets, once and only once.**
- 3. An entity is “net zero” iff. certain E-assets = E-liabilities.**
- 4. Environmental ledgers are created from the bottom-up: from activities to products to transactions to entities to jurisdictions to a geological balance sheet.**

How E-liabilities work: Just like VATs

Steps involved for an entity

- ① Measure (and tokenize) all direct emissions ⚠️
- ② Transfer in E-liabilities from immediate suppliers ✓
- ③ Purchase removal offsets, if needed ✓

- ④ Allocate E-liabilities to products (akin to cost accounting) ⚠️
- ⑤ Transfer out products' embedded E-liabilities to immediate customers

⚠️ Requires third-party assurance

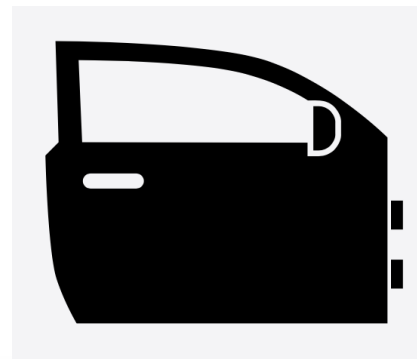
✓ Pre-verified by seller's auditor

- ✓ Each entity needs only to know its direct emissions and the emissions embedded in inputs purchased from immediate suppliers.
- ✓ Emissions are calculated and audited *only once*, at the place where they occur, improving accuracy and lowering compliance costs.
- ✓ Technology (eg distributed ledgers) enables E-liability deployment at scale and low cost.

How E-liabilities work

E-liability “enterprise reporting”

E-liability flows	Tons of CO ₂
Opening E-liabilities	3,600
Add E-liabilities directly produced through operations	2,600
Add E-liabilities acquired from suppliers	39,800
<i>Electricity</i>	5,600
<i>Sheet steel</i>	10,600
<i>Glass</i>	5,400
<i>Fabric and Plastic</i>	1,200
<i>Other supplies/components</i>	4,800
<i>Capital equipment</i>	12,200
Subtract E-liabilities transferred to customers	(32,600)
Closing E-liabilities	13,400
<i>Change in E-liabilities during period</i>	<i>9,800</i>



Companies can report on the stocks and flows of their E-liabilities just as they report on their stocks and flows of inventory. E-liabilities acquired or produced, but not transferred to customers in each period, are held for future transfer. This feature allows companies to **hold and depreciate GHG emissions from fixed assets** such as plant and equipment.

How E-assets work

- 1. Only removal offsets can be E-assets; avoidance offsets lower future E-liabilities.**
- 2. Removal offsets are tradeable; E-liabilities are not tradeable.**
- 3. Removal offsets are recognisable as E-assets when they are probable, estimable, and alienable.**
- 4. E-assets can be used to “net” an E-liability when the underlying offset is indefinitely sequestered.**
- 5. E-assets are subject to regular testing for write-downs (and write-ups), with netted E-liabilities subject to reversal if the corresponding asset is impaired.**

Want to learn more? Email us at info@E-liability.Institute

Further reading:

Robert Kaplan and Karthik Ramanna, “Accounting for Climate Change,” *Harvard Business Review* 99, no. 6, 2021.

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