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### **A commentary on E-liability**

Does it bring something new to GHG accounting?

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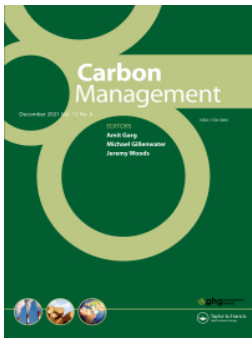
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## A commentary on E-liability: does it bring something new to GHG accounting?

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### ABSTRACT

E-liability is a proposed new approach for corporate-level greenhouse gas accounting, winning the 2022 Harvard Business Review-McKinsey Award for “groundbreaking management thinking”. It is actively promoted by the E-liability Institute and piloted by major international companies, such as Hitachi and Tata Steel. The intention is that E-liability should replace the widely adopted GHG Protocol *Corporate Accounting & Reporting Standard*, which underpins recent regulatory standards including the IFRS *Climate-related Disclosures Standard*, and the European Sustainability Reporting Standards. It is therefore important to ask what is new and what are the merits of E-liability? One positive feature of E-liability that could be adopted or enhanced in the established GHG Protocol approach is the direct requirement for suppliers to disclose cradle-to-gate data to downstream customers. However, one of the major limitations with E-liability is the limited provision of information on downstream emissions, which reduces the usefulness of disclosures for managing the abatement of these emissions, and for assessing company exposure to climate-related risk. Our analysis concludes that much of what is proposed in the E-liability method is not new, and that the key aspects that are new result in a detrimental loss of information.

### HIGHLIGHTS

- E-liability is mostly not new and the aspects that are new are generally not good
- Limited reporting of downstream emissions is a significant loss of information
- Passing on liability for emissions to customers omits information and limits responsibility
- The GHG Protocol should emphasize the importance of disclosing cradle-to-gate information

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and 3

## Introduction

The E-liability accounting system is a proposed new approach for corporate-level greenhouse gas (GHG) accounting [1], winning the 2022 Harvard Business Review-McKinsey Award for “groundbreaking management thinking”. The approach is being piloted by major companies such as Hitachi and Tata Steel, and is actively promoted by the E-liability Institute. The intention is that E-liability should replace the widely adopted GHG Protocol *Corporate Accounting & Reporting Standard* [2], which underpins recent regulatory standards including the IFRS *Climate-related Disclosures Standard* [3] and the European Sustainability Reporting Standards [4], and to a significant extent the ISO standard for corporate-level GHG accounting [5]. It is therefore important to ask

“What is new in the E-liability approach?” and “Is what’s new actually good?”.

To provide a brief introduction to both approaches, the GHG Protocol *Corporate Accounting and Reporting Standard* aims to provide an inventory of GHG emissions for the whole value chain of the reporting company. Value chain emissions are divided into three “scopes”: “scope 1” emissions are from sources owned and controlled by the reporting company; “scope 2” emissions are from the generation of electricity, heat, or cooling, purchased and consumed by the reporting company; “scope 3” emissions are for all other sources in the value chain, including “upstream” sources such as the production of purchased goods and services, and “downstream” sources such as the

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use of sold products. A key feature of this approach is that there is double counting of emissions, i.e. one company's scope 1 emissions can also be reported as another company's scope 2 or scope 3 emissions.

In contrast, the E-liability approach requires companies to calculate their upstream value chain and direct emissions, and allocate those emissions to their sold products. Liability or responsibility for emissions (called "E-liabilities") is passed on to the next company in the value chain, until the cumulative carbon footprint of a final product is passed on to the end consumer. This approach aims to avoid double-counting (with further discussion on this provided later). A related feature is that if a company is able to allocate all its upstream and direct emissions to its products and has no unsold products at the end of the reporting period then it will report zero emissions/E-liabilities in its closing balance.

This commentary paper aims to provide a concise appraisal of E-liability, focusing on a. the extent to which it is new, and b. whether what is new offers a "good" accounting approach. For the former we compare a number of the claimed novel features of E-liability with the existing GHG Protocol approach. For the latter we assess whether E-liability provides information that is useful for two broad purposes of corporate GHG accounting: (i) "Abatement management" purposes, i.e. quantifying the magnitude of emissions from sources the reporting company can influence, establishing responsibility/accountability for those emissions, setting targets for emission reductions; (ii) "Climate-related risk assessment" purposes, i.e. identifying potential risks to the reporting company caused by climate regulation, changes in consumer demand, etc. We acknowledge that there may be other purposes for corporate GHG accounting, but these two broad purposes provide a basis for an initial assessment of E-liability.

### What is new in E-liability?

Kaplan and Ramanna [1] suggest that E-liability offers an improvement over the GHG Protocol as it only requires a reporting company to collect data from its immediate suppliers and its own activities, and avoids the need to collect data from every company in the value chain [1]. However, this is largely the approach in the GHG Protocol's *Corporate Value Chain (Scope 3) Accounting and Reporting Standard*, which states that reporting

companies should use product-level "cradle-to-gate GHG data from suppliers" [6]. Such cradle-to-gate data from immediate suppliers includes emissions from activities further upstream, i.e. from earlier stages in the value chain, and so the GHG Protocol approach does not entail directly contacting all companies in the value chain. Each company can also calculate its own product's cradle-to-gate data to pass on to its customers by adding its direct emissions to the upstream information it receives from its immediate suppliers. Detailed guidance on how to do this is provided in the GHG Protocol's *Product Life Cycle Accounting and Reporting Standard* [7]. Similar proposals for a recursive approach to company-level environmental supply chain data pre-date both E-liability and the GHG Protocol's *Corporate Value Chain (Scope 3) Accounting and Reporting Standard* [8].

A remaining difference between the two approaches is that under E-liability the disclosure of cradle-to-gate information to downstream customers is directly required, whereas under the *Corporate Standard* it is downstream customers who are required to disclose their upstream cradle-to-gate emissions. This means that downstream customers must demand this information from their suppliers, but the *Corporate Standard* itself does not directly require suppliers to disclose this information. Requiring the provision of this information is a positive feature of E-liability which should be considered for adoption by the GHG Protocol. This could be done by requiring the use of the GHG Protocol's *Product Life Cycle Accounting and Reporting Standard*, which sets out requirements for disclosing cradle-to-gate life cycle emissions, alongside the *Corporate Standard*.

A different claim to a new contribution is that the E-liability approach introduces lessons to GHG accounting from established accounting methods like activity-based costing [1]. When allocating upstream value chain and direct emissions to products, cost drivers such as weight, volume, and distance can be used to make these allocations. Kaplan and Ramanna [1] give the example of allocating the emissions from shipping between the iron and coal cargo that is carried. If weight is the main cost-driver then the allocation can be done on that basis, or alternatively, if volume is the main cost-driver the relative volume of the two cargos can be used for allocating emissions. However, this is essentially identical to the approach in the GHG Protocol *Corporate Value Chain (Scope 3) Accounting and Reporting Standard*, which requires that

allocation should be based on physical factors that “best reflect the causal relationship between the production of the outputs and the resulting emissions” [6], and is itself based on long-established guidance on allocation within attributional life cycle assessment [9]. It is worth noting that as both E-liability and the GHG Protocol rely on choices between different allocation approaches both suffer the same potential variation in results, depending on the allocation method used [10].

There are several other claimed benefits from E-liability that apply equally to the GHG Protocol method. E-liability allows the use of a materiality threshold that is specific to greenhouse gas reporting, regardless of whether the emissions are financially material [1], but this is also true of the GHG Protocol, which defines materiality in terms of influence on the end user’s decisions (rather than specifically in terms of financial materiality). Similarly, it is claimed that E-liability is amenable to audit, e.g. by comparing a company’s E-liabilities to those of its peers. Yet, such standard auditing techniques are applicable to any GHG accounting method. Finally, the claim that blockchain can be used to track emissions along a value chain is not new [11,12], and is not unique to E-liability.

### The merits of what is new

Although many aspects of E-liability are not new, there are some potentially significant differences between E-liability and the GHG Protocol approach that require appraisal. Before providing this appraisal it is worth flagging a slight complexity to the exercise, in that the E-liability approach has been adjusted in response to recognised shortcomings, often reverting to an approach with greater similarities to the GHG Protocol (which brings the analysis back to what is new in E-liability).

One initial difference between E-liability and the GHG Protocol is that under the E-liability approach a company passes on liability for emissions to its downstream customers, whereas under the GHG Protocol’s *Corporate Standard* liability is not transferred, and companies report all their upstream and direct (and also downstream) emissions. Kaplan and Ramanna [1] suggest that transferring liability is an important improvement over the GHG Protocol approach as it avoids double-counting, i.e. the same emission being reported multiple times by different companies in the value chain.

However, with the use case of climate-related risk assessment, omitting emissions that have been

transferred to downstream customers results in a significant loss of information. A company may be able to report very low or even zero E-liabilities in its closing balance if it has transferred all its emissions to its downstream customers, but this does not entail that it is less exposed to climate-related risk than a competitor that retains a greater proportion of unsold stock (and has greater E-liabilities). The first company may be in a jurisdiction that is subject to forthcoming carbon pricing, while the second company is not. Although the GHG Protocol on its own does not provide an assessment of climate-related risk, it does provide information on value chain emissions which can be used as an input to a risk assessment, whereas E-liability closing balances may provide no information at all.

Similarly, from an abatement management perspective removing double-counting may represent a detrimental loss of information, as allowing multiple entities to report the same emissions reflects the fact that multiple entities can influence and take responsibility for the same emission source [13]. In response, an advocate for E-liability might argue that upstream companies will still be incentivised to reduce their direct emissions (even if they pass on the liability for them) as they will gain a competitive advantage by passing on lower liabilities to their customers. However, this “consumption-based” form of carbon accounting faces the criticism of “consumer-blaming” and shifting responsibility from directly-emitting companies to consumers who are least able to implement abatement action [14]. In contrast, if companies report their direct and value chain emissions in full (as per the GHG Protocol) this reflects their responsibility for those emissions and provides useful information for target-setting and abatement planning.

To resolve such problems Kaplan and Ramanna [1] suggest that environmental analysts could dig into the details of an E-liability statement to see the amount of emissions transferred to downstream customers. But this essentially backtracks on the claim that E-liability avoids double-counting emissions. The same emissions may be reported as “E-liabilities” (closing balance) by one company and as “E-liabilities transferred” by as many other companies in the value chain that pass on the same E-liabilities, just as the same emissions are reported as scope 1 by one company, and can be reported multiple times as scope 3 by other companies.

Table 1 provides a simplified illustration of double-counting under E-liability and the GHG Protocol. For the purposes of the example there are

**Table 1. Illustration of double-counting in GHG Protocol and E-liability methods.**

		Value chain				
		Materials extraction	Manufacturer	Retailer	Consumer	Totals
E-liability Method	E-liabilities acquired (tCO <sub>2</sub> e)	0	20	50	[30] <sup>a</sup>	70
	E-liabilities from direct emissions (tCO <sub>2</sub> e)	20	30	10		60
	E-liabilities transferred (tCO <sub>2</sub> e)	-20	-50	-30		-100
	E-liability (closing balance: acquired and direct minus transferred) (tCO <sub>2</sub> e)	0	0	30		30
GHG Protocol	Scope 1 (tCO <sub>2</sub> e)	20	30	10		60
	Scope 3 (category 1, purchased goods and services) (tCO <sub>2</sub> e)	0	20	50		70
	Totals (scopes 1 and 3) (tCO <sub>2</sub> e)	20	50	60		130

<sup>a</sup>The value in square brackets denotes the E-liabilities transferred to the end consumer, though E-liability does not appear to envisage that the end consumer should report this value. Companies are ultimately able to pass their E-liabilities to end consumers, who may not have the awareness, interest, or resources to act on the implicit responsibility assigned to them

no carried-over E-liabilities from the previous reporting period, the materials company and the manufacturer sell all their inventory within the reporting period, and the retailer sells half of its inventory. Double-counting occurs within the E-liability statements in a number of ways. Firstly, the retailer's E-liabilities (closing balance) includes emissions that have also been reported as E-liabilities (transferred) by the materials extractor and manufacturer (in a similar way to how scope 1 emissions will also be reported as scope 3 emissions by other companies). Secondly, the same emissions are counted multiple times as E-liabilities (transferred) as goods are passed down the value chain (in the same way that scope 3 "purchased goods and services" emissions can be reported multiple times).

It might be argued that E-liability does not involve double-counting if only closing balances are counted. But the same claim can be made for the GHG Protocol if only scope 1 emissions are counted. It might also be claimed that there is not double-counting as E-liabilities (transferred) for one company are not intended to be summed with E-liabilities (closing balance) for another company. But the same is true of scope 3 for one company and scope 1 for another. An E-liability proponent might also argue that although the same emissions are reported in multiple accounts the liability (based on closing balances) for emissions is mutually exclusive. However, if analysts are digging into E-liability statements and assessing company risk and accountability based on E-liabilities (transferred) as well as E-liabilities (closing balances) then there is de facto non-exclusive liability.

The crux of the issue is that multiple companies can influence and take responsibility/be held accountable for the same emissions, and the same emissions can entail climate-related risk for multiple entities in the same value chain. In turn, this entails that GHG accounts need to reflect the non-exclusive nature of accountability and risk in order

to provide useful information, by allowing multiple companies to report the same emissions. E-liability appears to have set itself the goal of avoiding double-counting, but because responsibility and risk are non-exclusive E-liability inevitably finds itself drawn into accommodating the double-counting it seeks to reject.

A further problem with E-liability is that it only provides very limited information on *downstream* value chain emissions. The original version of E-liability did not allow any disclosure of information on downstream emissions [1], but, in response to demand for this information by investors and other stakeholders, a more recent paper proposes an amendment to allow some limited disclosure, subject to a number of constraints [15]. The first constraint is that only emissions from the use of sold products by end consumers can be disclosed, as emissions from the use of products by other companies will be captured within their emissions reporting. However, this constraint is problematic as it is useful for companies and investors to have information on the emissions from sold products used by downstream *companies* (as well as by end consumers) as it allows upstream companies to set targets and report progress on managing their downstream emissions, and it also provides an indicator for exposure to climate-related risk. For example, a company manufacturing refrigeration units for use in the catering sector (i.e. a business-to-business (B2B) rather than a business-to-consumer (B2C) company) may be exposed to climate-related product or technology risk if its products have higher use phase emissions (e.g. from refrigerant gas loss) than its competitors<sup>1</sup>. E-liability does not provide any information on such emissions or the associated climate-related risks.

A second proposed constraint on the disclosure of downstream emissions limits it to cases where there is a causal link between the emissions and the company's design decisions. From an abatement

**Table 2. Illustration of information provided on downstream emissions.**

			Use phase		End-of-life disposal	
			Business customer	End consumer	Business customer	End consumer
E-liability Method		Emissions intensity (tCO <sub>2</sub> e/unit)	0	0.5	0	0.3
GHG Protocol	Scope 3 (category 11, use of sold products)	Absolute emissions (tCO <sub>2</sub> e)	6000	500		
		Emissions intensity (tCO <sub>2</sub> e/unit of use)	0.6	0.5		
	Scope 3 (category 12, end-of-life disposal) (tCO <sub>2</sub> e)	Absolute emissions (tCO <sub>2</sub> e)			4000	1800
		Emissions intensity (tCO <sub>2</sub> e/unit of product)			0.2	0.3

management perspective this may be a sensible constraint as information on emissions that cannot be influenced has little use, but this is also what is already required in the existing GHG Protocol *Scope 3 Standard*, which states that companies may exclude scope 3 activities if the ability to “influence GHG reductions is limited” [6]. The E-liability paper on downstream emissions also argues that it is absurd to require companies that produce raw materials to report downstream emissions as it is impossible for them to measure or influence those emissions [15]. This is also recognised in the *Scope 3 Standard* which states that “the eventual end use of sold intermediate products may be unknown” and in “such a case, companies may disclose and justify the exclusion of downstream emissions” [6].

The third proposed constraint on reporting downstream emissions is to only report emissions intensity (emissions per unit of usage) and not total emissions, based on the argument that companies can only influence the emissions per unit of use but not how much consumers use a product [15]. However, having information on total emissions can be useful for understanding the relative magnitude of use phase emissions, e.g. whether they are insignificant compared to other value chain emissions or whether relatively small improvements in emissions intensity can cause large reductions in absolute emissions. Being able to compare the absolute emissions from different sources is also useful for identifying possible “burden shifting” effects [16], where the abatement of upstream or direct emissions may cause a greater increase in use phase emissions. It is only by knowing the absolute magnitude of the different emissions sources that they can be compared. Finally, knowing absolute emissions may be useful as an indicator of exposure to climate-related risk, e.g. if a regulator introduces a carbon tax on use phase emissions and absolute use phase emissions are large, this signals a likely significant impact on demand for the company’s product. This is not to say that

information on emissions per unit of usage is not also highly useful information, but, as with much of what is good with E-liability, the GHG Protocol *Scope 3 Standard* already recommends that emissions intensity should be reported as additional information [6].

Table 2 provides an illustration of the information on downstream emissions provided by the E-liability and GHG Protocol approaches. The E-liability approach does not provide any information on downstream emissions associated with products sold to businesses, and does not provide any information on the absolute magnitude of downstream emission sources.

Overall, omitting useful information on downstream emissions appears to be a significant shortcoming of E-liability, with no obvious benefits from excluding this information.

## Conclusions

Bringing in new expertise from different disciplines holds the promise of generating new interdisciplinary insights in the field of environmental accounting [17]. However, in the case of E-liability accounting, it appears that what is good is not new, and the value of what is new should be questioned. One exception to this is E-liability’s requirement for the disclosure of cradle-to-gate data to downstream customers, which could be adopted within the GHG Protocol framework. This also leads us to emphasize that although the critique above is focused on E-liability, this is not to imply that the GHG Protocol approach is perfect and cannot be improved, for instance there is an on-going debate on the revision of the GHG Protocol’s current guidance for scope 2 market-based accounting [18–20].

As a general principle for developing any accounting method it is essential to start by identifying the use case for the accounting information that is created. For example, is the information for establishing a scope of responsibility, for target-setting, for abatement management, for impact

measurement, for implementing a carbon tax, for assessing exposure to climate-related risk etc? In places it appears that end consumers could be the ultimate intended users of E-liability information as it is only they who receive the final tally of upstream emissions, though in other places Kaplan and Ramanna mention “companies, their investors, and other stakeholders” [15] as well. The root cause of this opacity of purpose/end user appears to be that E-liability’s founding motivation is to make greenhouse gas accounting structurally similar to cost accounting, without clearly considering what actual purpose or use case this serves.

### Data availability statement

There are no datasets associated with this article.

### Disclosure statement

No potential conflict of interest was reported by the author(s).

### Note

1. On a separate point, the refrigerant gas loss example also serves to counter the claim that emissions from the use of sold products only arise when ‘consumers need energy to use the company’s product’ [12, p5.] and ‘this applies only to products that involve energy use’ [12, p7]. Emissions are not only from energy use, and also arise from other activities such as industrial processes, land use and land use change, and the release of fugitive emissions.

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