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Growing trend in Environmental Profit & Loss Accounting: how to reap the benefits

**In-depth perspective on available EP&L methodologies,
international developments and business added value**

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Environmental Profit & Loss (EP&L) accounting is gaining momentum in the business arena. Although, the methodology is still evolving, the existing EP&L publications trigger a broader awareness of the hidden environmental costs and benefits in production and consumption.

Money talks! As such, EP&Ls provide a common language that is well understood in business and by society at large. The question is, “will and how, will it drive corporate sustainability programs to the next level?”

The background of EP&L Accounting

The IT company called BSO, founded in 1990 by the unconventional ‘green’ management guru – Eckart Wintzen, was the first to publish a truly integrated annual report. In this report, the hidden environmental costs of the company’s atmospheric emissions and waste were reported.

A sports brand followed twenty years later with a more extended EP&L account, inspired by the European project “The Economics of Ecosystems and Biodiversity”, known as TEEB. TEEB was succeeded by the [Natural Capital Coalition](#), which aimed to increase awareness on the economic benefits of biodiversity and ecosystem services. Ecosystem services like clean air or water supply are externalities, for which no markets exist, hence why no pricing exists either, leaving these externalities unaccounted for in profit and loss accounting of companies.

An EP&L aims at internalizing both ‘hidden’ environmental and social costs and benefits in the financial profit & loss account. As aptly stated by the sports brand; “The monetary value of the EP&L is the amount to be paid, if the environment billed us for providing clean water and air, restoring soils and the atmosphere and decompose waste”.

Monetization of environmental impacts as such is not a new phenomenon. It has been a common practice in Cost Benefit Analysis (CBA) of public and private projects with economic, environmental and social impacts. In fact, since 1989, an automotive company initiated the development of a life-cycle assessment (LCA) tool, called [Environmental Priority Strategies](#) (EPS), which expresses environmental impacts in euros, and is used to support ecodesign activities.

EP&L methodology

Over the last ten years, several EP&L methods and approaches have been introduced into the market, e.g. [Trucost](#), [True Price](#) and [True Value](#). See table 1 for an overview of the existing EP&L methodologies:

Overview of EP&L methods

EP&L methods	Environmental	Social		Economic	Method for assessment	Economic valuation method
		Health	Other (e.g. basic rights & needs, skills, employment, etc.)			
Environmental Priority Strategies (EPS)¹					LCA (valuation of inventory data)	WTP stated preference and abatement cost
Trucost²					EIO ³ /LCA	Various depending on data availability and suitability
TruePrice⁴					?	? (diverse probably)
PwC- EP&L⁵			+ effects on visibility & agriculture		EIO	Various depending on data availability and suitability
PwC-TIMM⁴					EIO?	Various depending on data availability and suitability
Stepwise2006					LCA (end point valuation)	Budget constraint: potential annual economic production per capita at full well-being
ReCiPe⁶ + Environmental Prices⁷					LCA (midpoint valuation)	Damage costs: WTP to reduce one unit of pollution, prevention costs for climate change
Emissions/ waste and water consumption + Shadow prices⁸					Valuation of inventory data	Prevention costs (distance-to-target) & damage costs
KPMG-True Value					Valuation of inventory data	Diverse (including using Environmental prices CE Delft)

Table 1. Overview of EP&L methods

¹ <https://www.ivl.se/english/startpage/pages/focus-areas/environmental-engineering-and-sustainable-production/lca/eps.html>

² <https://www.trucost.com>

³ Extended Input-Output tables

⁴ <http://trueprice.org>

⁵ <https://www.pwc.co.uk/services/sustainability-climate-change/total-impact/natural-capital-exploring-the-risks.html>

⁶ https://rivm.nl/Documenten_en_publicaties/Wetenschappelijk/Rapporten/2016/december/ReCiPe_2016_A_harmonized_life_cycle_impact_assessment_method_at_midpoint_and_endpoint_level_Report_I_Characterization

⁷ <https://www.ce.nl/publicaties/1963/handboek-milieuprijzen-2016>

⁸ https://www.ce.nl/index.php?publicatie/handboek_schaduwprizen_-_waardering_en_weging_van_emissies_en_milieueffecten/1027

Many of these methods do not fully describe the methodology and data sets used.

The methods available also differ on several key characteristics:

- The scope of environmental interventions or impacts (e.g. taking into account a limited set of well-known impacts or a large range of impacts)
- The monetary valuation at the level of environmental inventory (e.g. emission of CO₂ or NO_x, kg water or waste) or environmental impacts (e.g. global warming, acidification, human toxicity).
- Method used to determine the environmental inventory and impacts (e.g. life-cycle assessment, environmental extended input-output tables or combined).
- Methodology used to determine the monetary value of environmental inventory or impacts (e.g. willingness to pay, prevention costs based on distance-to-target or budget constraint).
- Focus on the environmental dimension or both environmental and social dimension.

It should be noted, that none of the existing methods fully encompass all environmental and social impacts. Furthermore, the determination of monetary values is subject to quite some assumptions and debate:

- How much worth is an extra year of living in full health (not being exposed to toxic emission of particulate matter)?
- How do we, or should we, value the depletion of fossil fuels and other natural resources?
- How do we value loss of biodiversity if we do not have a good biodiversity measure yet?

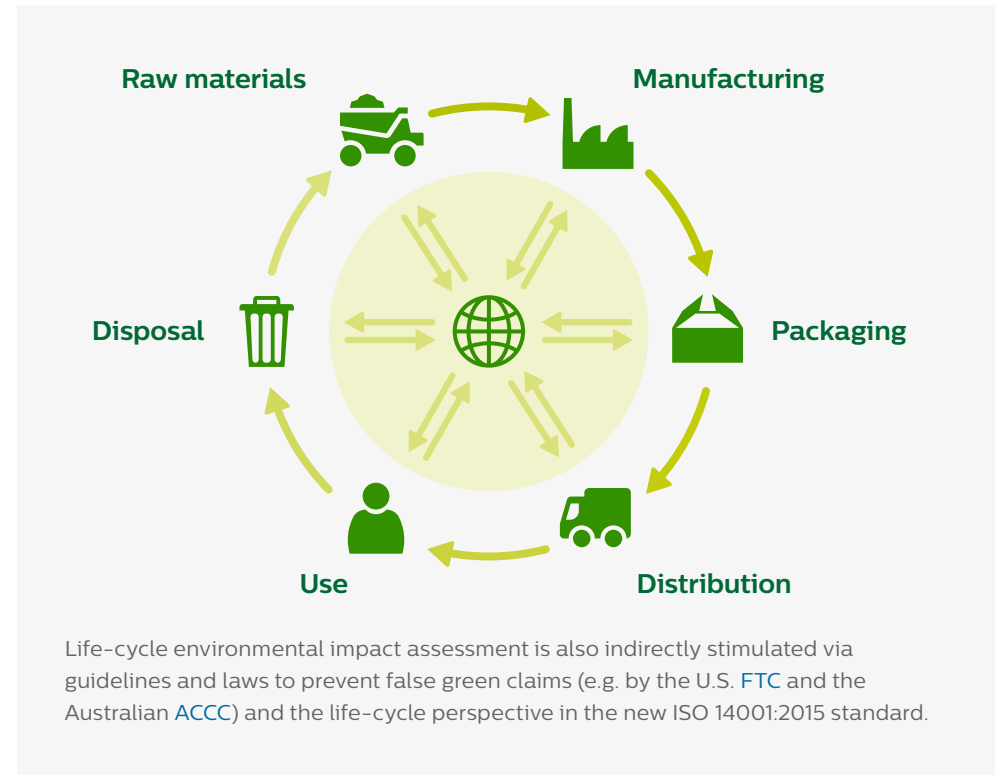
Moreover, the values will not only differ per region, but will also be subject to the spirit of the time, state and public opinion.

International standardization

That being said, it is a positive development that the EP&L is transcending the academic arena, and is slowly being adopted by businesses. It will definitely boost the further development of the methodology, and hopefully steer an international standardization.

Upcoming publications of the [ISO 14007](#) and [ISO 14008](#) standards to determine environmental costs and benefits and monetary valuation of environmental impact, are a promising sign. As product life-cycle assessments are often an important part of EP&L, the development of an EU-harmonized standard for LCA, called Product Environmental Footprint ([PEF](#)), is also worth mentioning.

Recently, in parallel with the natural capital coalition, an initiative has started to reach a consensus on how to measure and value human and social capital.



Business value added

To understand the wider business value add of EP&L, we need to distinguish between environmental footprint assessments and monetary valuation of environmental footprints.

Environmental footprint assessment serves the following business purposes:

1. Sustainability priority setting: identifying the environmental hotspots of product value chains and business operations, to be able to choose the right focus for sustainability programs and product innovation.
2. Customer communication: communicating on the environmental performance of products at the request of customers (e.g. in the case of tenders).
3. Green marketing: demonstrating certain environmental benefits of products that might boost sales.
4. Green branding: substantiating green communications that strengthen the brand and positively influence ratings and key stakeholder (e.g. investor) decisions!

Environmental footprint assessments, for reasons as mentioned above, are not a novel phenomenon for businesses, although they are not widespread yet. The construction sector is a frontrunner in this respect. Life-cycle assessments (LCA) have been commonly used for many years to compare the environmental impacts of building materials. The built-up knowledge over the years in this sector, supported by customized LCA tools like GreenCalc or Eco Quantum, enabled the inclusion of LCA in public tenders to support green procurement.

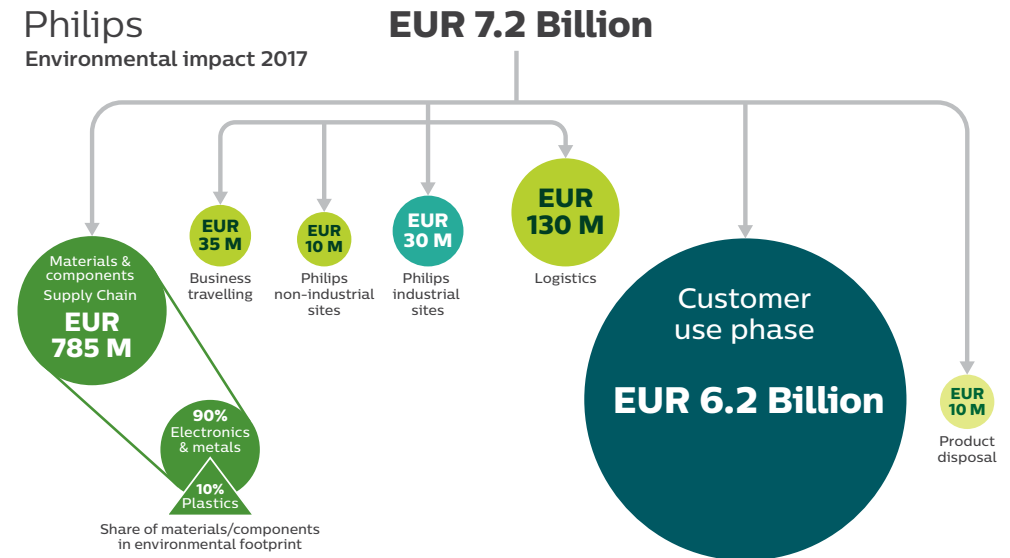
It is to be expected that external drivers will further enhance the use of environmental footprint assessments. To be able to inform businesses and consumers on the environmental performance in a consistent and clear way, with the aim of boosting sustainable production and consumption, the European Commission is developing a harmonized standard for [organizational and product footprinting](#).

Why monetization?

It is likely that environmental footprint assessment is here to stay, but why then put a price tag on environmental footprints? The simple explanation is that money talks. It is a powerful language understood in boardrooms. A graph that expresses the environmental footprint in 'technical language', such as "eco-score" points – doesn't always ring a bell.

However, when the sustainability manager highlights that the environmental damage caused by the business operations exceeds the profits of the company, as is the case in the EP&L of Royal Philips (figure 1), it will likely garner greater attention.

Some companies, especially in the construction sector, communicate on the environmental life-cycle impacts of their products, via environmental product declarations (EPD), which are derived from life-cycle assessments. As can be seen from table 2, this type of information is barely understandable for non-expert readers.



Conceptual drawing, areas do not reflect actual proportions

Figure 1. Environmental profit & loss account of Royal Philips

Example of an Environmental Product Declaration

Product Stage			Construction Process Stage		Use Stage							End Of Life Stage				Benefits And Loads Beyond The System Boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement ¹	Refurbishment ¹	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
•	•	•	•	•	•	•	MND	MND	MND	MND	MND	MND	•	•	•	•

Results Of The LCA – Environmental Impact: 1m² Floorcovering

Parameter	Unit	A1 - A3	A4	A5	B1	B2	C2	C3/1	C3/2	C3/3	C4/1	C4/2	C4/3	D1	D2	D3
GWP	[kg CO ₂ -Eq.]	2.96	0.16	0.27	0.00	0.35	0.01	0.00	0.00	0.02	8.38	5.08	0.00	-0.21	-2.73	-0.36
0.02	[kg CFC11-Eq.]	1.78E-8	7.80E-13	8.10E-10	0.00E+0	9.57E-9	4.20E-14	0.00E+0	0.00E+0	1.70E-11	7.20E-12	6.10E-9	0.00E+0	-1.40E-10	-7.70E-10	-6.20E-12
AP	[kg SO ₂ -Eq.]	1.22E-2	7.46E-4	4.40E-4	0.00E+0	1.67E-3	4.04E-5	0.00E+0	0.00E+0	1.17E-4	1.04E-3	6.56E-4	0.00E+0	-9.84E-4	-6.53E-3	-2.04E-3
EP	[kg (PO ₄) ³⁻ -Eq.]	1.30E-3	1.71E-4	4.58E-5	0.00E+0	2.78E-4	9.25E-6	0.00E+0	0.00E+0	6.58E-6	4.82E-3	1.40E-4	0.00E+0	-5.55E-5	-4.58E-4	-1.48E-4
POCP	[kg Ethen Eq.]	1.59E-3	-2.65E-4	4.54E-5	1.11E-4	2.43E-4	-1.44E-5	0.00E+0	0.00E+0	6.94E-6	1.22E-3	6.47E-5	0.00E+0	-5.85E-5	-5.53E-4	-2.57E-4
ADPE	[kg Sb Eq.]	6.35E-6	6.11E-9	1.69E-7	0.00E+0	8.03E-7	3.30E-10	0.00E+0	0.00E+0	3.43E-9	3.98E-8	-6.00E-7	0.00E+0	-2.89E-8	-2.10E-7	-2.24E-8
ADPF	[MJ]	104.00	2.24	3.35	0.00	7.05	0.12	0.00	0.00	0.28	2.68	1.57	0.00	+2.37	-38.90	-63.90

Description of the system boundary:
 • = Included In Lca
 MND = Module Not Declared

Table 2. Example of an Environmental Product Declaration

The EU has been assessing, as part of the [PEF](#) pilots, what type of format should be used to inform consumers on the environmental performance of products. Monetization is not in scope (yet), but for example, food company [Eosta](#) is already pioneering the communication of the 'true cost' of fruit. In their calculation, one kilogram of organic apples is €0.20 cheaper than one kilogram of non-organic apples.

Although, the methodology is certainly not robust yet, this example does illustrate the power of using metrics that are familiar to consumers.

Of course, as mentioned earlier, there are also concerns with regards to putting price tags on environmental impacts that determine the environmental footprint, such as damage to nature and health. Some people argue that health and nature are such fundamental 'assets' in our society that it cannot, and should not, be 'priced'. The risk of pricing human and social capital is that it could provide a basis to 'buy off' negative impacts. The reason is that the non-instrumental value of health and nature can often only be measured by asking people, how much it is worth to them. How realistic and trustworthy, or ethical is an ongoing conversation.

Integrated reporting

Environmental profit & loss accounting is very much linked to fully-integrated reporting, which is also gaining momentum. The international financial bodies are looking into integrating environmental and social risks in the financial standards (see box).

It is also known, that investors increasingly take environmental and social criteria into account when investing. Especially large scale investors who don't, are being publicly criticized, such as pension funds that invest in the weapons industry or in unsustainable palm oil.

The Dow Jones Sustainability Index (DJSI), a stock exchanges index, is an important index used by investors to define their investment. [This index has recently included EP&L](#) as one of the scoring questions in their assessment.

The Financial Stability Board (FSB) has launched a *taskforce* on climate related financial disclosures.

The chairman of the **International Accounting Standards Board (IASB)** stated that there is "increasing awareness that environmental and societal restrictions have an impact on long-term value creation"

"These are all reasons why the IASB is currently looking at the question of whether we should take on a project [...] to reflect these new developments."

Concluding remarks

It is clear that both internal drivers such as sustainable product innovation, green branding and external drivers such as international standards, customer concerns and investor demands trigger companies to demonstrate greater transparency on their environmental (and social) footprint.

The challenge is how to communicate this footprint information, which is rather technical and complex in nature, in a comprehensible way to top management and customers. Putting a price tag on environmental impacts, as done in environmental profit and loss accounting – could be a powerful approach to get the message across.

However, a transparent methodology and international harmonization is very much needed to allow for trustworthy application of environmental profit and loss accounting. The many 'true costing' initiatives that are emerging and the developments in the area of integrated reporting are promising. It will hopefully boost scientific developments and entice public debate, which might very well set the scene for the future corporate social responsibility and sustainability.

Interested in how your EP&L may look?

Please contact [Michela van Kampen](#) to explore feasible approaches for your company.



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About the author

Michela van Kampen is senior consultant sustainability at Philips Innovation Services. She is an expert in life-cycle assessment and ecodesign. Michela frequently gives workshops for companies that want to 'green' their product portfolio. She actively contributed to the EP&L generation of Royal Philips by advising on methodology, providing support in data collection and processing and guidance to the assurance process.

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