

CHAPTER 2: Last Mile Distribution logistics operation and impacts

UNIT 5: Environmental and Social Impact of LMD Logistics

Capsule 2.5.2

Measurement and Indicators linked to Environmental Sustainability and Performance



To be done prior to this capsule:

Unit 4 about Societal Demands and Trends, introducing the topic of sustainability, should be done prior to this capsule

Capsule linked with:

Link to the topics of capsules 1.3.5, 2.4.1, 2.4.2, 2.4.4, 2.4.5, 2.5.1, 3.3.3

Authors:

Cisita Parma scarl & SUSMILE Consortium



Objectives of the Capsule

This capsule relies on external documental sources that were carefully selected to offer learners an overview about the key performance indicators (KPI) for environmental sustainability and performance from selected scientific papers or from acknowledged International Bodies regulating & certifying sustainability reporting.

Category	Document, source	EQF		
		4	5	6
		X	X	X

Exercises included	YES
--------------------	-----

Effort for the capsule	Content	Exercises	Extra Materials
	20 Minutes	5 Minutes	60 Minutes

Contents

1. Indicators determined by LCA process and SDGs
2. Indicators of Environmental Impact
3. Indicators determined by GRI

Instructions for the document, source revision



By reviewing the resources offered by this capsules, the user will be able to gain information about:

- a) Indicators determined by Planetary Boundaries, Life Cycle Assessment (LCA) process and Sustainable Development Goals. About SDGs, please also refer to Capsule 2.4.2.
- b) Indicators of environmental impact related in particular to Climate Change, Air Pollution, Waste & natural resources management. About Pollution and Climate Change, please refer also to Capsule 2.5.1. On the other hand, about waste management please refer also to Capsule 1.3.5.

Such indicators are deemed useful against Last Mile Distribution issues as they help understand in which way Logistics and LMD especially impact the natural environment and cause potential harm to living beings and human health.

Instructions for the document, source revision



c) The Global Reporting Initiative Standard, known as GRI, with periodically updated specific indicators related to Materials, Energy, Waste, Emissions, Supplier Environmental Assessment, Employment & Occupational Health & Safety. GRI is one of the worldwide recognized organisms providing frameworks and guidelines to design and implement sustainability reporting. For GRI standard, please also refer to Capsule 3.3.3.

Document, Source 1

Here you will find a source explaining what **Planetary Boundaries** are. It's a set of 9 indicators defining the environmental limits within which humanity can safely operate. This approach has proved influential in global sustainability policy development.



The most updated contribution about Planetary Boundaries is found in Wickman, J (2022, January 18). Euronews: Another planetary boundary exceeded. *SEI* – *Stockholm Environment Institute*.
<https://www.sei.org/about-sei/press-room/euronews-another-planetary-boundary-exceeded/>

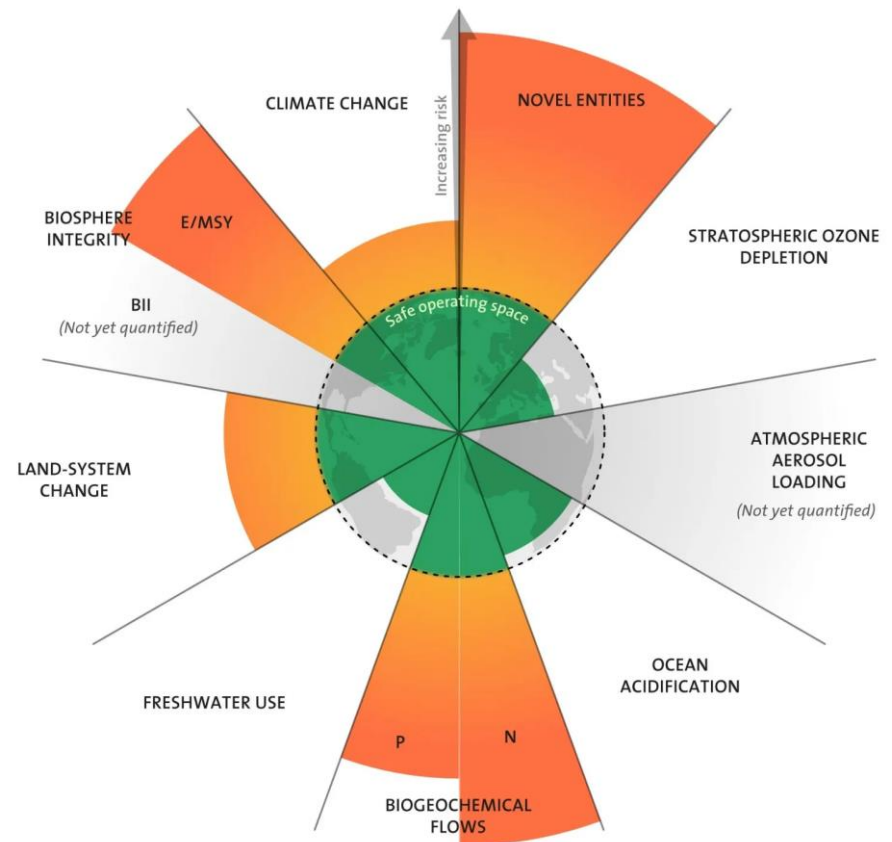


Image source from [Scitech Daily](#)

Document, Source 2

From this section you will access the [European Commission Platform on Life Cycle Assessment](#) (EPLCA), a strategic tool complementing the European Green Deal in helping industries find their way to sustainability.

WELCOME TO THE EUROPEAN PLATFORM ON LIFE CYCLE ASSESSMENT

The EPLCA is the EU's knowledge base that responds to business and policy needs towards sustainable production and consumption.

The EPLCA supports the methodological development of Life Cycle Assessment (LCA) for the analysis of supply chains and end-of-life waste management.

The EPLCA fosters LCA as an essential integrated environmental assessment in support to the EU policy making process and the ambition of Green Deal, and many other policy initiatives, with specific reference to the Circular Economy Action Plan, the Farm2Fork, the Biodiversity Strategy, the Chemical strategy, and [many more](#).



Environmental Footprint



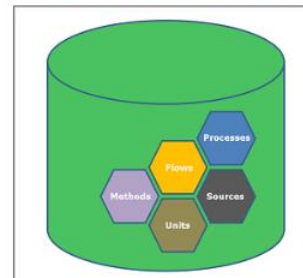
ILCD



Life Cycle Projects



Common Tools & Data



Document, Source 2

The [European Commission Platform on Life Cycle Assessment](#) (EPLCA) also hosts a number of number of LCA projects focusing on specific key sectors and applications, such as:

Plastics LCA



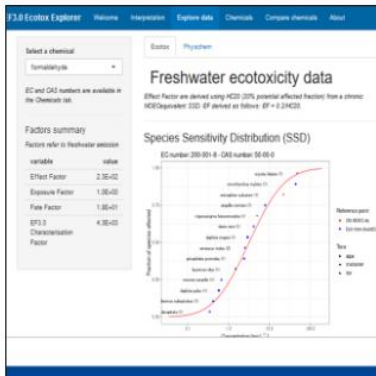
Consumption Footprint



Food system analysis



Zero Pollution-Ecotox Explorer



GLAD



GLAM



Document, Source 3



In this section you will find a scientific paper on the relationships among Planetary Boundaries (PBs), Life Cycle Assessment (LCA), and Sustainable Development Goals (SDGs) indicators.

By clicking on the title hyperlink you will access the publication page and download the full paper in PDF:

Dong, Y., Hauschild, M. Z. (2017), [Indicators for environmental sustainability](#), *Procedia CIRP (Conference on Life Cycle Engineering)*, 61, 697 – 702.

Document, Source 4



In this section you will find authoritative opinions from scholars defining scientific criteria for measuring the environmental sustainability of circular economy, waste and water management in a LCA perspective. You will also find updated discussion about economic growth causing environmental distress, on Indicators Systems for Assessing Urban Water Infrastructure Resilience and Sustainability.

By clicking on the title hyperlink you will access the Open Journal “[Environmental and Sustainability Indicators](#)” published by Science Direct Portal.

Volumes from 2019 to 2022 are searchable and downloadable for free.

Document, Source 5



In this section you will find an official publication from [OECD](#) (Organization for Economic Co-operation and Development) about the [Key Environmental Indicators](#) on the topic of Climate Change, Ozone Layer, Waste Management, Air Quality & Energy Consumption (OECD, (2008), Key Environmental Indicators, OECD Environment Directorate, Paris, France).

By clicking on the link, you will have direct access to the publication in PDF.

Document, Source 6



In this section you will be provided access to the official website of the [Global Reporting Initiative \(GRI\)](#) standards.

By clicking on the link, you will have direct access to reporting criteria and models according to relevant sectors, as well as to classified standards available in different major languages.

Exercises: Open questions

Please reflect and try to answer with your own words to the following open questions, designed to help you master this capsule's topics:

How can environmental KPIs help economic operators understand their impact on human health and on the natural resources?

How can Logistics and LMD make the most out of LCA approach to reduce its carbon footprint while taking care of profit and performance?

How can the LMD sector benefit from the international standards offered by the Global Reporting Initiative framework for the management and communication of corporate non-financial information about the sustainability?

