



Life Cycle Assessments: A Practical Foundation for Sustainable Water Infrastructure

LCAs help utilities evaluate environmental impact, meet tender requirements and support long-term sustainability goals

Globally, product life cycle assessments (LCAs) are becoming essential to successful and sustainable utility initiatives. LCAs provide a structured, measurable way to evaluate a product's full environmental footprint from cradle to grave. This white paper explores the advantages of life cycle documentation in building more sustainable utility infrastructure.

- 3 Installation:** Product installation, including the energy used during installation and auxiliary materials.
- 4 Operational Life:** Period of the product's operation, maintenance, repair and related energy or water use.
- 5 End-of-Life:** Deconstruction, transport and final treatment or disposal processes.

DEFINING LIFE CYCLE ASSESSMENTS

Life cycle assessment (LCA) is a methodology used to evaluate the environmental impacts of a product throughout its entire life cycle. For example:

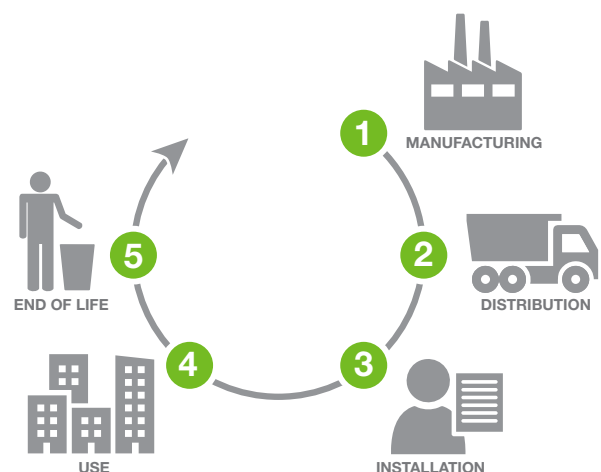
- » Consumption of water, energy and raw materials.
- » Waste generation and emissions released into air, water and soil.

LCAs identify where improvements matter most, making them an essential tool for sustainable product development.

STAGES OF THE LIFE CYCLE

The Product Category Rules (PCR) are methodological components of an LCA. They divide the product life cycle into five primary stages, including 16 sub-stages:

- 1 Manufacturing:** Raw material extraction, material transportation, and product manufacturing.
- 2 Distribution:** Transportation to the point of use.





LCA: A STRATEGIC LEVER FOR UTILITIES

LCA requirements are quickly becoming a core component of both public and private utility tenders. LCAs present an opportunity to align infrastructure investments with long-term environmental and financial goals.

For example, France now mandates LCA reporting for all new construction projects. As similar policies in Europe influence procurement decisions, tenders demand standardized environmental documentation, typically communicated in one of two formats:

- **Product Environmental Profile (PEP):**

Product Environmental Profiles (PEPs) are specialized documents for electrical, electronic, and HVAC metering devices, all of which are published and maintained in the [PEP Ecopassport](#) database.

- **Environmental Product Declarations (EPDs):**

Third-party-verified LCA-based documentation widely used in manufacturing and construction.

Credible LCA data enables utilities to make informed decisions when evaluating smart water solutions.

Integrating CO₂ impact and life cycle performance into procurement decisions strengthens long-term resilience by guiding the selection of lower emission products and positioning utilities as leaders in the shift toward a low carbon, climate conscious industry.

DECLARATION	FDES	PEP	EPD
TYPES OF PRODUCTS CONCERNED	Building products	Electrical, electronic and HVAC products	All products
DATABASE		 	



How to find Itron in the PEP database

1. Select "Consult the database".
2. Go to "Search" and enter the Itron product you want to view.
 - Or choose "PEPs by reporting organism" and scroll to locate Itron.
3. Open the published reporting documents for Itron's water metering devices.

SMART METERING: A LOW-IMPACT PATH TO DIGITALIZATION

Both solid-state and smart mechanical meters combine accurate measurements with modular communications. Creating a sustainable pathway to digitalization, their two-piece designs align with LCA principles and reduce environmental impact across the asset life cycle.

The key sustainability advantages of smart meters include:

- » **Extended asset life:** By replacing the communication module rather than the entire meter, material consumption and end-of-life waste is reduced.
- » **Fewer life cycle CO₂ emissions:** Preventing premature meter scrapping reduces transport, installation and disposal impacts compared to a full meter replacement.
- » **Reduced operational footprint:** Remote reading and automated alerts lead to fewer site visits and less fuel consumption.
- » **Pragmatic modernization:** Without replacing existing infrastructure, remote communication modules offer a low-impact path to digitalizing large installed bases.



Intelis wSource Family



Aquadis+ with Cyble™ 5

Sustainability Begins at the Meter

Alongside verified LCA documentation, Itron proves the sustainable value of leading smart water solutions.

» Intelis wSource

- Designed with recyclable components to support circularity.
- Developed following eco-design principles for less environmental impact.
- Engineered for easy disassembly, enabling responsible end-of-life disposal.

» Aquadis+

- Accurately measures water consumption even at low flows.
- Composite meter body is lighter than brass, reducing its material footprint.
- Built with corrosion-resistant components that extend product life and reliability.

» Cyble™ 5

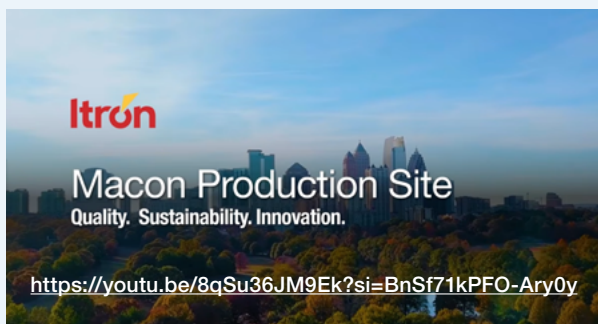
- Reliably transmits remote meter readings leading to fewer on-site visits.
- Interoperable with existing metering infrastructure to avoid full unit replacement.
- Up to 15-year battery life in harsh field conditions.

ITRON'S COMMITMENT TO SUSTAINABLE PRODUCT DEVELOPMENT

[Itron's Environmental, Social, and Governance strategy](#) focuses on carbon reduction and measurable environmental benefits for customers. These initiatives include:

- » Over 50% reduction in Scope 1 and 2 emissions since 2019.
- » Targeting carbon neutrality by 2035 and net-zero by 2050.
- » Solutions that have helped customers avoid an estimated 7.5M metric tons of GHG emissions before 2024.
- » Ongoing efficiency upgrades, renewable energy adoption, fleet and facility optimization, supplier engagement and expanded Scope 3 tracking.

Additionally, Itron leverages localized manufacturing facilities—including sites in Mâcon, France; Cikarang, Indonesia; Asti, Italy; and Oldenburg, Germany—to accelerate product delivery. This strategy shortens transport routes while reducing CO₂ emissions and lowering fuel consumption.



To learn more about the Macon site, please view the video below.

Itron's 45,011 m² Mâcon facility produces smart water technology at scale and reflects the company's global sustainability commitments through:

- » **Energy-efficient operations.**
- » **Flexible workflows and logistics.**
- » **COFRAC-accredited laboratory and testing.**
- » **ISO 14001 environmental management certification.**



CONCLUSION

Life cycle assessment is becoming a strategic requirement for water utilities. As CO₂ impact increasingly shapes regulation, funding and procurement decisions, utilities must move beyond upfront cost and performance. They are now expected to demonstrate measurable environmental responsibility across the full asset life cycle.

To learn more visit [itron.com](https://www.itron.com)

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