Responsible Products and the Pathways to Sustainability

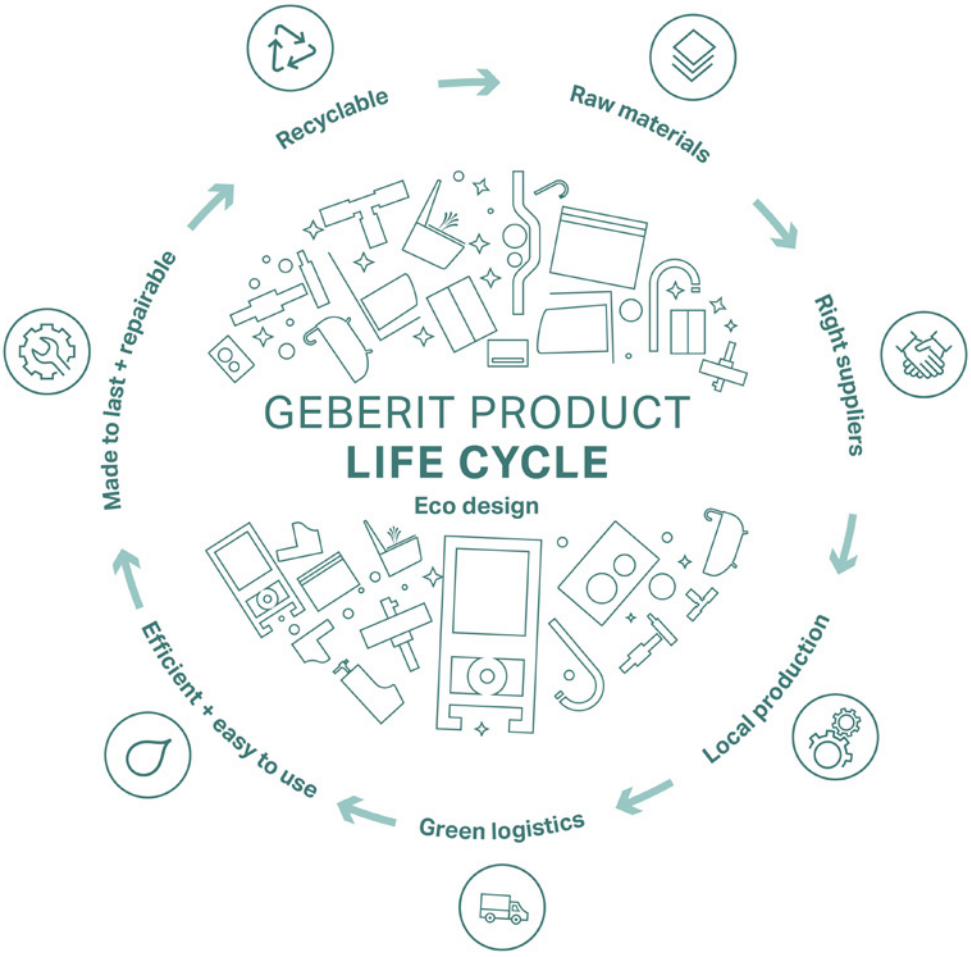
GEBERIT

Introduction

Climate science has shown that the Earth is currently 1.1°C warmer than it was in the pre-industrial age[i]. As the urgency to combat climate change intensifies, sustainability has become a critical focus across all sectors, including construction. The built environment is “accounted for 34% of energy and process related CO2 emissions”, highlighting a significant opportunity for impactful change.

Currently, there is a strong push towards reducing greenhouse gas emissions to achieve targets set by the Paris Agreement: a 45% reduction by 2030 and net zero global emissions by 2050. This push is transforming how developers, property owners, builders and specifiers approach their projects. Architects and designers can not only design buildings that are efficient in an operational sense but also seek out materials that are designed and manufactured to minimise environmental impacts.

Focusing on sanitaryware, this whitepaper is intended to help do exactly this. Beginning by identifying the potential environmental effects of pipes, tapware, toilets, and so on, it goes on to explain the methods employed to measure these impacts and to outline the best ways for specifiers to identify products that, having been assessed in this way, transparently disclose their environmental footprint, reduce negative impacts, and enhance positive ones.



ENVIRONMENTAL IMPACTS & LIFE CYCLE STAGES

As a starting point, any attempt to quantify environmental impacts requires an understanding of the life cycle stages of building products. These can be divided as follows:

- 'The Product Stage', which includes A1 (raw material extraction), A2 (transport of those raw materials), and A3 (manufacturing of the product)
- 'The Construction Stage', which includes A4 (transport of the finished product) and A5 (installation of the product)
- 'The Use Stage', which includes B1 (Use of the product), B2 (Maintenance or the product), B3 (Repair of the product), B4 (Replacement), B5 (Refurbishment), B6 (Operational Energy Use), and B7 (Operational water use)
- 'The End-of-Life Stage', which includes C1 (Deconstruction and demolition), C2 (Transport of this deconstructed material), C3 (Waste processing), and C4 (Disposal)
- 'Beyond system Boundaries' includes D (Re-use, recovery, recycling)

Operational Carbon & Embodied Carbon

At this point, it is important to distinguish between two key concepts, namely Operational Carbon and Embodied Carbon.

Operational Carbon refers to "the emissions associated with energy used to operate the building or in the operation of infrastructure, including heating, hot water, cooling, ventilation, lighting systems, equipment and lifts."[ii] Emissions of this type correlate with stage B6 above.

Embodied Carbon, on the other hand, refers to "the remaining 'emissions associated with materials and construction processes throughout the whole lifecycle of a building or infrastructure." Or to refer again to the lifecycle stages, embodied carbon correlates with stages A1-A5 (which is also sometimes referred to as 'upfront' embodied carbon), as well as stages B3-B5 ('in-use' embodied carbon), and stages C1-C4 ('end-of-life' embodied carbon).

Water Efficiency & WELS

In addition, in the case of plumbing products, sustainability extends beyond resource depletion, carbon emissions, manufacturing by-products, and so on to the issue of water efficiency. Considering the capacity of these products to minimise wastage of this precious resource, specifiers should always factor this variable into their calculations.

In Australia, the most effective (and simplest) way to identify how well a particular product performs in this sense is by reference to its Water Efficiency Rating Scheme (WELS) rating. An initiative of the Federal Government, WELS is a mandatory labelling scheme which rates showers, washing machines, dishwashers, toilets, kitchen sinks, and more, according to water efficiency.[iii]

Focused on urban water consumption, it is intended to reduce overall water consumption, promote the adoption of efficient and effective water-using and water-saving technologies, and inform consumers in regard to the various water-using and water-saving products available.[iv]

Life Cycle Assessments

Considering all of this – the various life cycle stages of plumbing products and added the importance of water efficiency in this context – the assessment of the environmental impacts of plumbing products should include all environmental impacts at every stage.

Though complicated, this can be achieved via a Life Cycle Assessment (LCA), which is defined as an "environmental assessment of products and services, covering their life cycle from raw material extraction to waste treatment."[v]

The purpose of LCAs is to measure everything from carbon emissions and contribution to climate change to resource depletion, impacts on habitats, acidification, air pollution, pollution to waterways, and more. They follow strict procedural rules and are undertaken according to standards like ISO14040 and ISO14044.

ECO-DESIGN: DRAINAGE SYSTEM

Roof drainage system Pluvia

- High drainage performance thanks to negative pressure system
- Saving of downpipes, thus of material – up to 75%

HDPE Drainage Pipes

- Recyclable material
- EPD available

SuperTube Drainage System

- Optimised flow
- Drainage without a vent pipe possible; saving up to 60% of space and material

IDENTIFYING BEST PRACTICE PRODUCTS

To summarise, as outlined above, comprehensive environmental assessment is no simple task. While it is complex, however, it can be achieved.

That said, where does this assurance leave specifiers hoping to sort fact from fiction, and identify products that have undergone this type of assessment and can therefore be regarded as responsible? Broadly speaking, the answer to this question is – by seeking out products that have been verified as such by an independent third party.

This verification can take one of two forms. Firstly, it may involve an Environmental Product Declaration (EPD). Based on an LCA, an EPD is an "… independently verified and registered document that communicates transparent and comparable data and other relevant environmental information about the life-cycle environmental impact of a product."[vi]

Comprehensive and carried out according to the requirements of ISO 14025, EPDs reference multiple datasets, including "consumption of energy, water and renewable resources, and emissions to air, water and soil" and report on the full range of environmental impacts.[vii] There are more EPD providers in Australia. A lot of consultants e.g. ThinkStep can write EPD's. GBCA recognises any EPD that is verified to ISO 14025 or EN 15804. It is important to note that an EPD does not necessarily mean the product is sustainable, but it provides more transparency about the product's environmental impact.

Alternatively, specifiers can identify responsible plumbing products by reference to the Green Building Council of Australia's (GBCA) Responsible Product Guidelines, which set out criteria for all product certification initiative, to be assessed against.[viii]

By cross checking the findings of these certifications against its own criteria (which include Responsible, Positive, Healthy, and Circular), GBCA can deliver a Responsible Product Value (RPV) for the standard. Any product recognised by that standard will also receive that RPV.

An additional key factor in identifying best practice products is considering product durability and longevity. Durable products that have a longer lifespan reduce the need for frequent replacements, thereby minimising resource consumption and waste generation over time. Ensuring the selection of long-lasting products not only supports environmental sustainability but also aligns with economic efficiency by lowering long-term maintenance and replacement costs.

By taking one of these two pathways, focusing always on transparency, demonstrated results, and considering product durability and longevity, specifiers can place themselves in the best position to meet their environmental responsibilities.

GEBERIT

An organisation with 150 years of experience, Geberit is a European leader in the manufacture and supply of high-quality plumbing and sanitaryware products. Headquartered in Switzerland, the company has a presence in more than fifty countries, including Australia.

Beyond the standard of its products, which are manufactured with quality, reliability and durability at the front of mind, Geberit has a long-standing commitment to environmental sustainability.

Having introduced its CO_2 strategy in 2015 – and followed up with both an updated CO_2 strategy and Group Energy Masterplan in 2022 – the company also has a demonstrated commitment to water efficiency. According to a model calculation, water consumption for toilet flushing has decreased since 1952 by around 80% from 70 litres to 14 litres per person per day thanks to several innovations such as flush-stop cisterns and Geberit dual flush. Moreover, for the period 2015-2023, the company reduced its own water consumption by 27 per cent.

Add to this its being awarded the EcoVadis Gold medal in 2024 and further initiatives like its ongoing support of ‘Operation Clean Sweep’ (which aims to achieve zero plastic pellet loss into the environment), and it becomes clear that Geberit is focused on actionable and measurable changes not simply purchasing carbon credits.

REFERENCES

i United Nations, ‘Climate Action’, www.un.org/en/climatechange/net-zero-coalition

ii UK Green Building Council, ‘Operational & Embodied Carbon – Explainer Guide’, ukgbc.org/wp-content/uploads/2023/02/operational-and-embodied-carbon-1.pdf

iii Commonwealth of Australia, ‘About the Water Efficiency Labelling and Standards scheme’, www.waterrating.gov.au/about

iv Commonwealth of Australia, ‘Water Rating’, www.waterrating.gov.au

v ScienceDirect, ‘Life Cycle Assessment’, www.sciencedirect.com/topics/earth-and-planetary-sciences/life-cycle-assessment

vi EPD Australasia, ‘

vii Ibid.

viii Green Building Council of Australia, ‘The Responsible Products Program’, new.gbca.org.au/green-star/the-responsible-products-program/

All information provided correct as of August 2024

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