

# LCA OR LIFE CYCLE ASSESSMENT

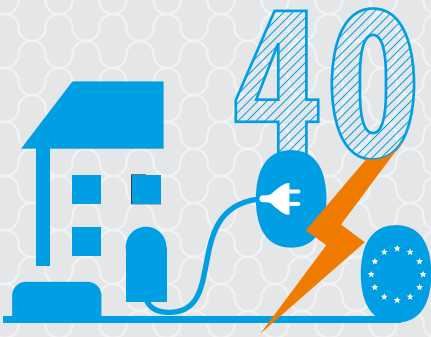
## Understanding the environmental impact of products and buildings

### THE DRIVER GREEN BUILDING PROJECTS



The building and construction industry has seen an increased demand – an impressive **50%** over the last three years – in “green” or sustainable construction projects despite a general sector-wide stagnation. (Source: McGraw-Hill Construction, 2012)

### THE CATALYST BUILDINGS AND THEIR ENERGY USE



European buildings account for **40%** of all energy used

### THE CHALLENGE GREEN CREDENTIALS

The construction sector is faced with an increasing demand to proof the **green credentials** of new and renovated buildings.



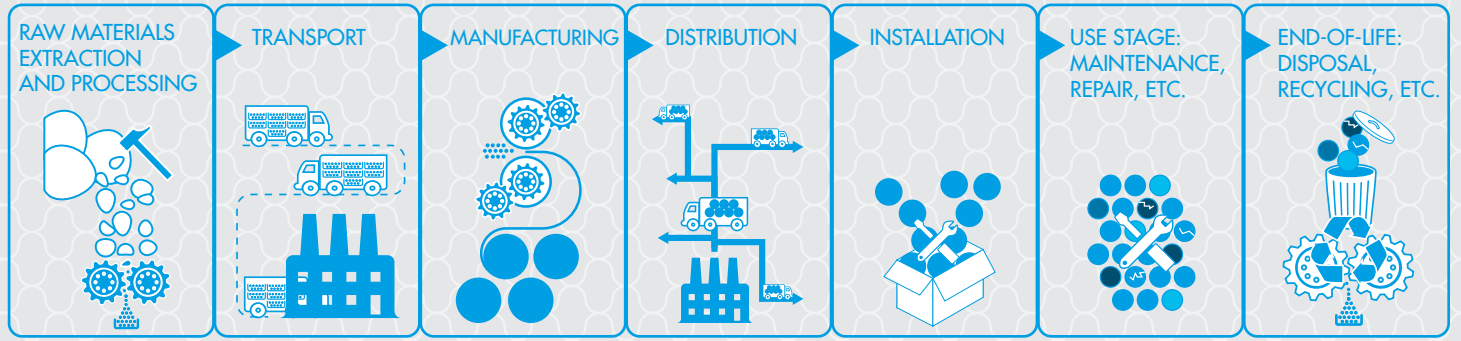
### THE TOOL LCA OF PRODUCTS

**Life Cycle Assessment (LCA)** is a method or tool used to understand the real environmental impact of a product. It encompasses the total life cycle from raw material extraction and materials processing including transport, to manufacturing, distribution, use, repair and maintenance, and finally disposal or recycling. During each life cycle stage, LCA uses a selection of indicators to quantify the environmental impact of a specific product.

During the use stage, the environmental impact calculation cannot take into account the benefits from the energy savings (insulation products). However, LCA does provide the right insights in order to contribute towards greening our buildings. The results of the LCA are often communicated through an Environment Product Declaration (EPD).

As such, the sector needs to consider the environmental, social and economic impact of buildings. Today, the lion's share of the environmental impact is generated during the use stage (i.e. heating and cooling energy). But with the development of Near Zero Energy Building (NZE), the relative impact of the product stage is becoming increasingly important.

In this context, Life Cycle Assessment (LCA) is the right solution to assess the green credentials or environmental impact of a building. Although LCA looks at the product, construction, use and end-of-life stages, our focus here is on the product stage.



### HOW IT WORKS CHOOSE YOUR INDICATORS

An LCA uses 24 indicators (based on the recently published EN 15804) to measure and quantify the environmental impact of a product during each stage of its life cycle. These indicators are summarised in an Environmental Product Declaration (EPD), which is third party verified. EPDs of products with **a similar functionality in the building** can be compared on an indicator-by-indicator basis.

I see that you use a specific product in this building. What can you tell me about its impact on Global Warming?

5. Photochemical ozone creation (POCP): summer smog (kg Ethene equiv)	4. Eutrophication (EP): ecosystem of water (kg PO <sub>4</sub> <sup>3-</sup> equiv)	3. Acidification of soil and water (AP): acid rains (kg SO <sub>2</sub> equiv)	2. Ozone Depletion (ODP): hole in ozone layer (kg CFC 11 equiv)	1. Global Warming (GWP): climate change (kg CO <sub>2</sub> equiv)
6. Abiotic depletion (ADP-elements): natural resources use (kg Sb equiv)				<p>If you compare the Global Warming Potential indicator in the EPD of this product to the impact generated by or (to these of) alternative products, of identical functionalities, you can see what is the best option.</p>
7. Abiotic depletion (ADP-fossil): fossil energy use (MJ)				
		11. Total use of non-renewable primary energy resources (MJ)	12. Primary energy	13. Raw materials
14. Use of secondary material, i.e. recycled glass (kg)	19. Non hazardous waste (kg)	18. Hazardous waste (kg)	17. Use of net fresh water (m <sup>3</sup> )	16. Use of non renewable secondary fuels, i.e. used tyres (MJ)
15. Use of renewable secondary fuels, i.e. used wood (MJ)	20. Radioactive waste (kg)			
21. Components for re-use, material used again (kg)	22. Materials for recycling, material used as raw material (kg)			
23. Materials for energy recovery, incineration in specific high efficiency power plants (kg)	24. Exported energy, from waste incineration and landfill (MJ)	<p> <input type="checkbox"/> Environmental IMPACTS  <input type="checkbox"/> Resources INPUT  <input type="checkbox"/> WASTE Categories  <input type="checkbox"/> OUTPUT Flows  <small>All results expressed per functional or declared unit</small> </p>		

### THE RESULT

Based on a Life Cycle Assessment, Environmental Product Declarations allow you to better understand the impact of a specific product.

Assuming that the buildings' essential performances are met, **LCAs will help select the right products, reducing the environmental impact of the building.**

