

## INDICATORS FOR ENVIRONMENTAL ASSESSMENT OF PRODUCTS, SERVICES AND BUSINESSES\*

TYPE OF INDICATOR	MULTIPLE INDICATORS Full scope	SINGLE INDICATORS Limited scope			SINGLE INDICATORS - Full scope			
					Damage based indicators (human and ecology)	Mix of Prevention and Damage based indicator	Prevention indicator based on earth carrying capacity	
Indicator name	ENVIRONMENTAL PROFILE USING A VARIETY OF INDICATORS	CUMULATIVE ENERGY DEMAND (CED)	GREENHOUSE GASES (GHG)	CARBON FOOTPRINT	RECIPE POINTS	DAMAGE COSTS	SHADOW COSTS	ECO-COSTS
Assessment result expressed in	Various units per kg material or emission	Mega Joule (MJ)	kg CO2 eq.	kg CO2 eq.	Pt	€	€	€
Methodology used	Life Cycle Assessment (LCA) ISO 14044	LCA ISO 14044	LCA ISO 14044	GHG protocol - ISO 14064 -PAS 2050	LCA ISO 14044			
Environmental aspects included	Toxic emissions, GHG emissions, land use , material scarcity, use of water	Embedded Energy only	CO2 , CH4, etc.	CO2 , CH4, etc.	Toxic emissions, GHG emissions, land use , material scarcity, waste, recycling			
Typical features	Methodology globally accepted as the standard for assessment of products and services. Practised by experts.	Close to understanding by people, however not very straightforward: how to combine different forms of energy (electricity, heat, mechanical)	Proper standard to quantify green house gases being a significant part of the environmental burden	Detailed standards developed to support carbon footprinting and GHG calculations in the European Trading Scheme.Methodologies for carbon footprinting gradually develop towards ISO 14044.	In depth researched and structured approach. Complex calculation schemes, with extremely high confidence intervals.	Traditionally the indicator to adress the urgency for action	The costs of compliance to national environmental policy	Calculates (virtual) non compliance costs to sustainability. Well understood by businesses. Very transparent and practical approach
Application	Globally practised for product assessment and R&D	Assessment of energy intensive materials and products in cradle-to-gate analyses	Product and Services Assessment. Widely practised in business community	Carbon footprint, CO2 Performance Ladder. Determination of scope 1, 2 and 3 emissions. Used for Emission Trading System. Widely practised in business community	Practised for product R&D in the community of environmental specialists	Drafting governmental environment policy. Some companies have adopted the indicator for public reporting	Used in Dutch Construction Decree to provide environmental profile of construction materials and create national database	Product, service and business environmental burden calculation. Used for calculation of sustainability. Used as part of other practical calculation tools
Key significance	Key methodology researched over the past 20+ years and the solid bases for every reputable product assessment tool.	Valuable indicator for energy systems	Using CO2 as an indicator created a low threshold for companies and citizens to understand the urgency and opportunities for action.	Using CO2 as an indicator created a low threshold for companies and citizens to understand the climate change threat and urgency for action.	An enormous improvement for the users of the LCA to deal with 1 single indicator instead of multiple. This makes life of the user easier and enlarges the user group.	Quantifies the damage to the environment in a monetary unit which everyone instinctly understands. It extends to a larger user community in the business environment	The expression of environmental burden in shadow costs is for governmental environmental policy advisors	Costs are calculated on the basis of technical measures. The calculations do not contain subjective weighing, are transparent, not related to government policies and of key significance for the business user.
Concerns	Is only suitable for the analysis of a specific process with a specific problem; for a general assessment of products, however, the disadvantage of this approach is that the importance of an emission category is not given, which often leads to wrong conclusions	Adresses part of the environmental domain. Can not be used in recycling, nor in end-of-life cases of combustion with heat recovery	CO2 is generally a significant environmental aspect. The method however does not account for the significance of other relevant environmental issues like material scarcity and toxic emissions.	CO2 is a significant environmental aspect. The method however does not account for the significance of other relevant environmental issues like material scarcity and toxic emissions.	Uses subjective weighing (forbidden in ISO 14044!) to calculate damage Points . Results suffering from inaccuracy typical for damage oriented calculations	Monetization of environmental damage is hardly possible. It suffers from inaccuracy typical for damage oriented calculations. Damage costs are not a suitable indicator for businesses.	Shadow Costs are not practised outside The Netherlands	Increasingly adopted within business community

\*The statements made in this table are the sole responsibility of Sustainable Endeavour BV