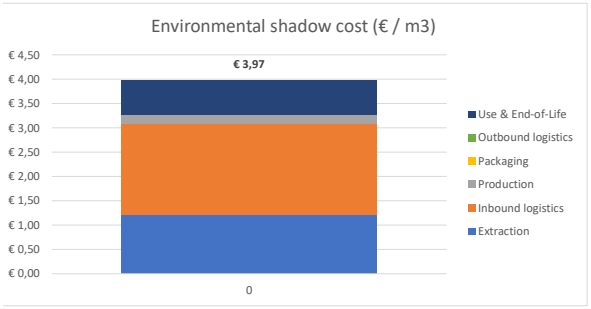
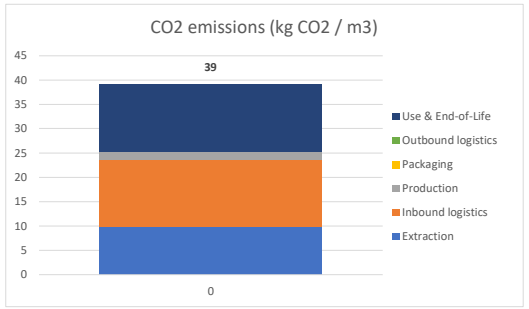
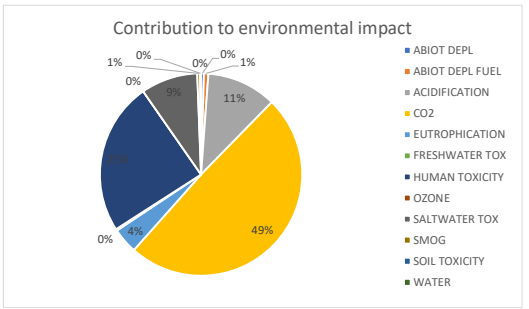
MKI Life Cycle Analysis

Product name	BVB Urbangranulaat 70-45 RENEW
Production location	Nijmegen
Customer	BVB Landscaping B.V.
Customer location	Nijmegen
Packaging	Bulk

	Environmental cost indicator	ABIOT DEPL	ABIOT DEPL FUEL	ACIDIFICATION	CO2	EUTROPHICATION	FRESHWATER TOX	HUMAN TOXICITY	OZONE	SALTWATER TOX	SMOG	SOIL TOXICITY	WATER
Lifecycle stage	Total cost (€)	kg Sb	kg Sb	kg SO2	kg CO2	kg PO4 3–	kg 1,4 DB	kg 1,4 DB	kg CFC11	kg 1,4 DB	kg C2H4	kg 1,4 DB	m3
Extraction	1,2369	0,0043	0,0582	0,0433	10,1349	0,0097	0,1018	3,9548	0,0000	864,1704	0,0052	0,0562	0,1823
Inbound logistics	1,8646	0,1042	0,1104	0,0616	13,6938	0,0070	0,1896	6,2467	0,0000	2607,4271	0,0029	0,0306	0,0129
Production	0,1890	0,008	2	0,235	0,001	0,003	0,032	0,000	0,000000	0,112	31,540	0,000	0,000
Outbound logistics	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
Use & End-of-Life	0,6837	0,0000	0,0000	0,0000	13,6744	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
Total (Cradle to Customer)	3,9742	0,1085	0,1853	0,1107	39,1543	0,0180	0,3047	10,7920	0,0000	3601,9246	0,0088	0,1040	0,2015
Packaging	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
Total incl. packaging	3,9742	0,1085	0	0,11	39,154	0,018	0,305	10,792	0,000004	3602	0,01	0,10	0,20







ABOUT THIS MKI LCA

What is an LCA?

•LCA stands for Life Cycle Assessment

•It is science-based, clear, and quantifies key environmental impacts over the entire life cycle of products, processes or materials

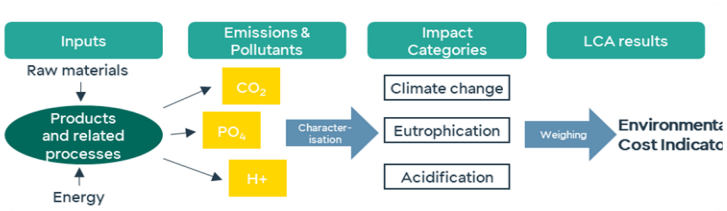
•It can show the impact in different stages, like extraction, logistics, production, use and end-of-life.

•And insight in more than just one topic, e.g impact on resource scarcity, climate change, biodiversity, etc

What is the MKI methodology?

•MKI stands for 'Milieukosten Indicator', which translates to Environmental Cost Indicator. It was developed by the Dutch government to be able to compare environmental impact in one single value. The financial value equals the expected societal cost to reverse the environmental impact.

•The MKI is based on the scientific method for measuring environmental footprints called Life Cycle Assessments (LCA).



Impact category	Unit	Explanation
Climate change	kg CO2-eq	Main GHG produced is CO2. Others incude: methane (CH4) (21 times stronger), nitrous oxide (N2O) and halogenated hydrocarbons. All emissions are converted into CO2 equivalent emissions.
Energy	MJ	Energy consumption in itself does not have any positive or negative effects on the environment. Increasing energy efficiency can still yield large (environmental) gains.
Human toxicity	kg 1,4 DB-eq	Refers to toxic substances affecting human health. The emissions of each substance are multiplied by the corresponding toxicity factor. Result is an equivalent amount of 1,4-dichlorobenzene emissions.
Smog	kg C2H4	Most cities suffer from photochemical smog during the summer. During the winter they suffer from industrial smog, due to heating. Harmful substances are released during this process.
Impact ozonlayer	kg CFK11	CFCs (substances that have been used in refrigerators and styrofoam, for example) break down this ozone layer.
Fresh and salt water ecotoxicity	kg 1,4 DB-eq	Refers to toxic substances found in rivers, lakes and seas. Toxic substances can be both organic and inorganic (usually metals) in nature and often cause damage to ecosystems.
Terrestrial toxicity	kg 1,4 DB-eq	Refers to all toxicities to soil or landscape. Old industrial regions often have heavily polluted soil. Toxicities are difficult to separate from soil.
Acidification	kg SO2-eq	Acid rain was an important theme in the 1980s. The cause was mainly air pollution caused by industry, traffic (NOx) and excessive fertilization by factory farming.
Eutrophication	kg PO4 3-eq	Supply of an excess of nutrients (mainly in water) causes a strong growth and multiplication of certain species, usually with a significant decrease in species richness or biodiversity.
Abiotic depletion without fuels	kg Sb-eq	The depletion of raw materials (i.e. fertilizers, etc.) Recycling, reusing and alternatives can solve this problem.
Abiotic depletion (fuels)	kg Sb-eq	Fossil fuels is another social problem. Rising oil prices have strong negative effects. Oil products can often be recycled, but most oil is burned as an energy source.
Waste (hazardous	kg	Waste problems are strongly related to resource shortages. Recycling prevents both waste and raw material shortages.
Waste (non-hazardous)	kg	Wastes that are not covered by the 'Decree on the designation of hazardous waste' are considered to be non-hazardous waste. Recycling prevents both waste and raw material shortages.
Water consumption	m3	In several regions, water is very scarce due to climate, infrastructure problems or deforestation. Currently, 1.3 billion people have no access to clean
Environmental Cost Indicator	Euro	The Environmental Cost Indicator (short ECI) is a single-score indicator expressed in Euro. It unites all relevant environmental impacts into a single score of environmental costs, representing the environmental shadow price of a product or project.