Rockflow: Sustainable water management for urban areas

In urban areas, Rockflow captures rainwater and then allows the water to infiltrate into the natural environment. Rockflow is made of natural and durable basaltic rock from the German Eifel region. This is processed into stone wool in our modern production facilities in Roermond, the Netherlands. To turn the basalt into stone wool, it must be heated to more than 1,500 degrees Celsius. Below, you will find an explanation on why stone wool is a sustainable solution for urban stormwater management despite this energy-intensive manufacturing process.

Rockflow consists of about 95% open space. This means that a cubic meter of stone wool requires relatively little raw material. Moreover, Rockflow consists of almost 50% recycled stone wool. In addition, ROCKWOOL makes clever use of used stone wool scraps from the construction industry. In fact, stone wool can be infinitely recycled without loss of quality. With Rockcycle® we offer a service designed to take back materials at the end of their lifecycle and use them as raw material for new stone wool products.

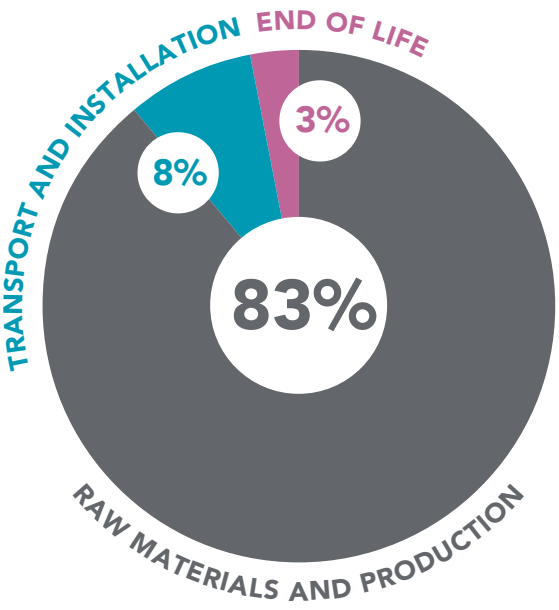
Rockflow Lifecycle Analysis

We assess the performance of our Rockflow products using Life Cycle Analysis (LCA). An LCA assesses the effects of Rockflow on the environment at every stage of the product cycle: From raw material extraction, manufacturing, installation, use and maintenance, to waste processing or recycling. This is expressed as Global Warming Potential (GWP), and is measured in kg CO_2-eq. This enables us to be transparent to our customers regarding the sustainability of our products.

Rockflow's GWP for an infiltration project in Deurne was calculated by an independent company. This study determined the GWP of a Rockflow infiltration buffer with a capacity of 183m^3 and a life span of 50 years.

The total GWP value of 20,170 kg $C0_2$-eq. originates mainly during the production phase of the stone wool.

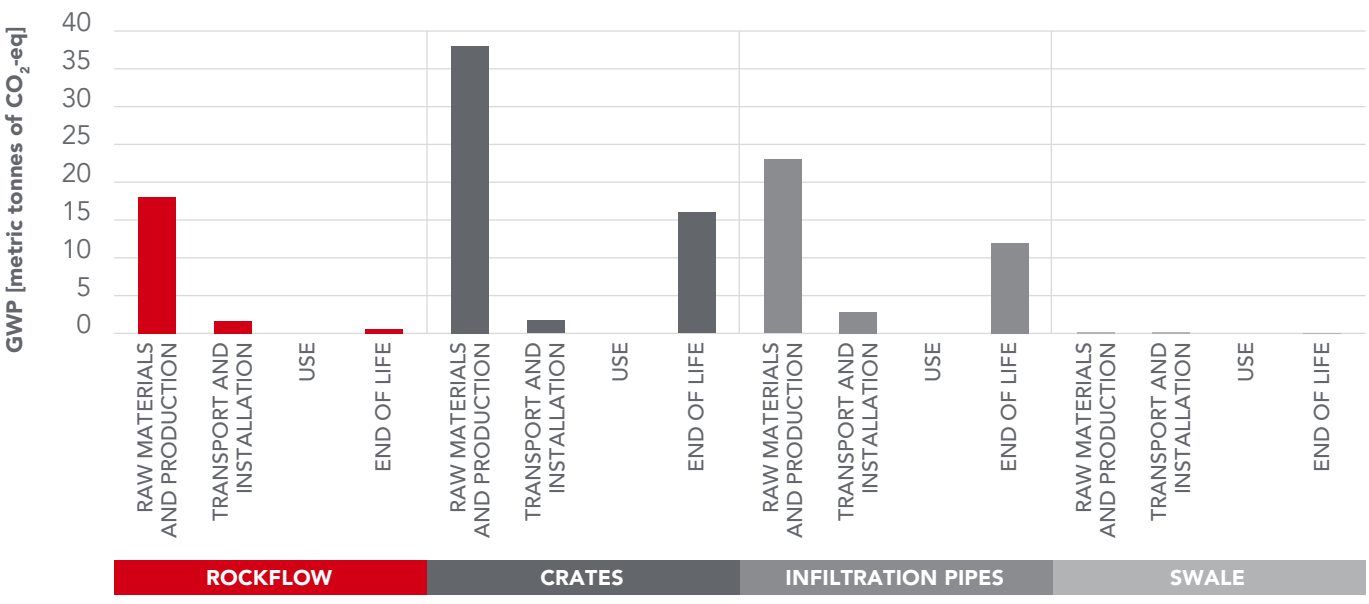
GWP Rockflow, case Deurne



Rockflow compared to plastic crates, infiltration pipes and bioswales

The GWP of Rockflow in the Deurne project was then compared to three alternative systems: plastic crates, infiltration pipes and a swale.

GWP (absolute), Deurne case

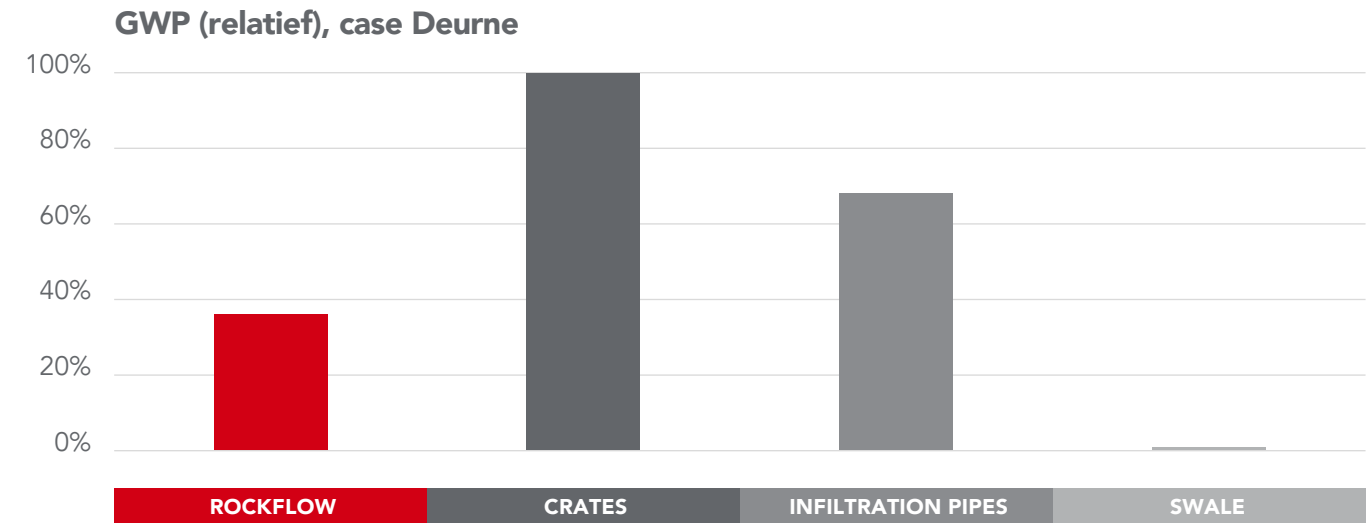


A swale has the lowest impact in all categories. If conditions such as space availability and safety regulations permit, above-ground, natural solutions such as a bioswale are always preferred from the point of view of the environmental impact. Material use, transportation and waste disposal are minimised, resulting in minimal environmental impact. In urban areas, however, above-ground solutions are often impractical. In these circumstances, underground buffers must be created.

In this study, Rockflow demonstrated a lower carbon footprint compared to crates and infiltration pipes. This is mainly due to the different production processes of the three systems: Plastic production requires more energy than Rockflow production, resulting in higher carbon emissions. Because the crates require more plastic (9.6 metric tonnes) than the infiltration pipes (6.4 metric tonnes), the carbon footprint is larger. In addition, part of the infiltration volume of infiltration pipes is realised using gravel, which has a small carbon footprint (1 metric tonne CO_2-eq) compared to the pipes and geotextile in a crate system (20 metric tonne CO_2-eq).

Added together, the GWP of Rockflow in this project is roughly only a third of the carbon footprint of crates, and about half that of infiltration pipes.

GWP (relatief), case Deurne



Rockflow supports sustainable cities and communities

The Sustainable Development Goals (SDGs) are a universal call to action to overcome poverty, protect the planet, and ensure peace and prosperity for everyone. The ROCKWOOL Group actively contributes to realising 10 of the 17 SDGs. Rockflow specifically focuses on SDG 11: Supporting cities and communities in becoming more sustainable.

For more information, visit: **www.rockwool.com/group/about-us/sustainability**