2023 December 11

ROCKWOOL on circularity

As the world's population continues to grow, pressure on natural resources will only increase. Creating greater circularity across all economic sectors will contribute to relieving this pressure.

For its part, the construction industry consumes roughly half of virgin resources globally, and the built environment is responsible for 30-40 percent of the global waste generation[1][2]. This makes it a key sector when it comes to waste reduction and keeping materials in use for as long as possible and at their highest value. In addition, the built environment is responsible for 25 percent of land system change and is increasingly intertwined with biodiversity, as resource extraction is responsible for 90 percent of biodiversity loss[3].

According to the Ellen McArthur Foundation, the circular economy is defined by three principles[4]. These include designing out waste and pollution; keeping materials at their highest value; and restoring natural systems. These principles are essential elements across ROCKWOOL's business operations in the following ways.

1. **Design out waste and pollution**

   Designing out construction and demolition waste: Construction is one of the most wasteful sectors in the global economy. In the EU alone, construction and demolition is responsible for more than 30 percent of the materials going to landfill. ROCKWOOL contributes to greater circularity in the construction sector by offering products made of endlessly recyclable stone wool. We also have a goal to implement Rockcycle®, our recycling programme, in minimum 30 countries by 2030, which we are well on our way to reaching. Please see the current scope of countries here.

   Design for disassembly: Reusing or recycling products requires that they can be disassembled. This needs to be considered already in the design phase. Most of ROCKWOOL's products are well-aligned with this principle. Our insulation, cladding, and acoustic tiles, for example, are easily separated from other materials during a building's renovation or demolition in that they are typically fitted without the use of glue or other means that hinder easy separation.

   Recycling material from other industries: Our technology allows us to recycle secondary material from other industries, providing an alternative to these materials being landfilled or incinerated. For example, we recycle material from the steel and metallurgical industry. As a result, in certain geographies and product lines, our stone wool products can contain up to 75 percent recycled material.

   Eliminating stone wool waste at our factories going to landfill: In three-quarters of our manufacturing facilities, we have eliminated all stone wool waste going to landfill. We have done this by re-directing the stone wool production waste back into our production in a closed-loop system. Globally, we have committed to reducing production waste going to landfill by 85 percent by 2030. We have already reached a reduction of more than 50 percent compared to the 2015 baseline. Please see the latest Sustainability Report for the updated number.

[1] The business case for circular buildings: Exploring the economic, environmental and social value - World Business Council for Sustainable Development (WBCSD)

[2] https://www.sciencedirect.com/topics/earth-and-planetary-sciences/construction-waste

[3] WEF 2023; Circularity Lighthouse Demonstration

[4] https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview

Material health: ROCKWOOL stone wool contains no flame retardants and is one of the most tested and studied building materials in the world. Our stone wool is registered under the EU's stringent legislative framework for chemicals, REACH, and does not have any classifications for adverse impacts on human health or the environment.

2. Keeping materials at their highest value

Closed-loop recycling: When taking back material from the market via the Rockcycle® programme, we typically recycle insulation material in a closed-loop, which means that we recycle the material back to its former, pre-recycled purpose. This is made possible by our proprietary technology.

Open-loop recycling: When we take back Grodan material after its use-phase, it is typically recycled externally to bricks and tiles. We actively support our customers in taking back the material via a global network of waste management partners in our key markets.

Endlessly recyclable: Stone wool has the inherent feature that it can be endlessly recycled without losing its properties.

Durability: Durability is a key aspect of circularity. ROCKWOOL insulation products can last up to 65 years with no loss of thermal or mechanical performance[5]. This promotes the long-term sustainability of buildings, enhances their performance, and ensures they remain in use for extended periods, thereby reducing waste.

Product life-extension: In product categories such as flat-roof, façade, and general building insulation, ROCKWOOL's products are especially well-suited for life-extension applications in connection with renovation. Sometimes referred to as re-insulation, this entails repairing and upgrading a building's existing insulation to meet higher energy performance standards, without demolishing and building anew. This contributes to extending the life span of buildings and the materials used to make them.

Reuse and repurposing: ROCKWOOL fully supports reusing (using a product again for the same application) and/or repurposing (using a product for a new application) stone wool products when it is possible and feasible. By doing so, the product is kept in circulation and thus more fully capitalises on its long lifetime potential.

3. Restoring natural systems

Using an abundant and natural material: We use stone to make our products, primarily volcanic types like basalt and gabbro. Stone is by far the most abundant natural resource on Earth[6]. On average, the Earth produces 38 000 times more stone through volcanic activity than ROCKWOOL uses annually to produce stone wool[7]. Using an abundant material helps to decouple the growing demand for construction materials from the use of finite resources.

Food production of the future: Grodan growing solutions, including growing media, sensors and expertise, are an essential part of high-end Controlled Environment Agriculture (CEA), including greenhouses. Grodan solutions allow for crops and produce to be grown anywhere, without soil, with increased yields and significantly reduced use of (natural) resources such as water, land and fertilizers. In addition, more than 90 percent of the CEA producers use biological pest control instead of chemical plant production products. CEA can be pursued anywhere, anytime, which also makes it possible to give land back to nature for rewilding.

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5 Testing done at Danish Technical Institute (DTI) in 2023

6 TW Dahl, et al. (2011), International Geology Review (Volume 53 Numbers 7–8, June–July 2011), 'The human impact on natural rock reserves using basalt, anorthosite, and carbonates as raw materials in insulation products', p. 901.

7 Own calculation, based on TW Dahl, et al. (2011), International Geology Review (Volume 53 Numbers 7–8, June–July 2011) 'The human impact on natural rock reserves using basalt, anorthosite, and carbonates as raw materials in insulation products'.

Minimising the use of virgin materials: We are committed to using secondary raw materials where feasible to limit the virgin stone in our production. Nevertheless, we will continue to source virgin stone, and through our responsible sourcing programme will strive together with our suppliers to minimise any negative environmental impacts associated with stone quarrying.

Water use: optimising water use and ensuring safe discharge back into the environment is key. At ROCKWOOL, we are working to reduce our water use intensity and aim to reach a 20 percent reduction in 2030 for our production facilities. Additionally, we carry out water scarcity assessments at our global manufacturing sites every five years to determine which sites are located in areas of high or extreme high water stress. These sites are disclosed in the annual Group Sustainability Report. None of the factories' water usage is estimated to be material. We continue to prioritise implementing water efficiency improvements across all factories.