

CONCRETE

The first man-made geological layer

We invite you to make a few calculations and comparisons. We want to try to come to terms with something rigid in a lively way. To bring it into flow - to make us more aware of its presence.

For this we have researched internationally and for long periods of time (see below: Sources). And we thought about things that could not be found anywhere else.

Our figures show that a silent but powerful and extremely dynamic concrete process is moving into the sphere of life of the earth and humans. This process is reminiscent of glaciation during the Ice Age, but in comparison it is taking place at lightning speed. And there is no end in sight.

Concrete on the planet

When we speak of concrete in the following, we are always referring to industrial concrete, the production of which first began gently in the mid-1840s. Our figures are up to 2022.

With around 14 billion m³, concrete is the second most used commodity in the world today. Only water is used more than concrete. In 1968, 55 years ago, the volume of concrete used was 1.85 billion m³, 6.5 times less than today.

From 1968 to 2022, almost 352 billion m³ of concrete have been poured on earth worldwide. That makes an annual average of 6.4 billion m³. All this concrete is still lying or standing somewhere, and the production of recycled concrete is only hesitantly starting today.

How can we even imagine such quantities? 352 billion m³ of concrete (since 1968), the equivalent of paving over the entire mainland area of the earth of 149 million km² with a thickness of 2.4 mm.





Concrete is the first geological layer created by mankind. In the distant future, any recreational scientist will be able to effortlessly identify it by its lattice-like, rusty-brown iron inclusions.

Concrete per person

In 2022, 8 billion people lived on earth. This means that 1.7 m³ of concrete (= 4.2 t) was newly spread per capita in 2022. In 1968, the earth was just under half as densely populated as it is today, with 3.5 billion people, and the average consumption was only 0.5 m³ (= 1.3 t). That is only 29 % of today - per capita.

So the growth of the concrete geological layer is much faster than the growth of humanity. A concrete wave is catching up with us.

In the last 55 years, a total of 44 m³ (= 108 t) of concrete has been spread on the earth for every person alive today.

Let us now imagine that this concrete is actually distributed equally among all living people. Next to each and every one of us would then be a concrete tower of 2 by 2 m area and 11 m height.

But it was already concreted before 1968. The statistics for this period are more difficult. Let's cautiously assume that a total of 50 billion cubic meters of concrete were poured in the 100 years before 1968.

This means that today there is a total of around 403 billion m³ of concrete on earth (= 987 billion t). With this, one could place every human being on his or her own concrete tower with a surface area of 2 x 2 m and a height of 12.5 m (= 50 m³, 123 t). Or cover the entire land mass of the earth with just under 2.7 mm of concrete.

And the forecasts?

They are always uncertain. Concrete consumption increases and decreases depending on the economic cycle: in the last 20 years between +10.4 % and -1.9 %, with an annual average of +4.2 % (since 1968 by +3.7 %). Let us assume that the average of the last 20 years also applies to the near future:

With an annual growth of 4.2 %, the total amount of concrete spread since the 1840s until 2022 would have already doubled to around 800 billion m³ by 2040. That would be enough to seal all land areas on earth with concrete already 5.2 mm thick.

Sources:

- <https://minerals.usgs.gov/minerals/pubs/usbmmyb.html>: under "Metals and Minerals" search term "hydraulic cement: world production, by country". Before 1968, calculations were still made in barrels, not metric tons.
- https://en.wikipedia.org/wiki/List_of_countries_by_cement_production, section "References".
- https://www.indexmundi.com/en/commodities/minerals/cement/cement_t22.html
- <https://www.statista.com/statistics/219343/cement-production-worldwide/>
- <https://minerals.usgs.gov/minerals/pubs/commodity/cement/mcs-2011-cemen.pdf>