



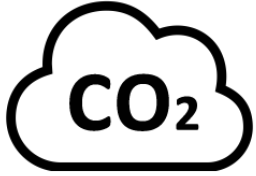
reCO₂ver - FROM URBAN MINING TO CO₂-SEQUESTRATION

reCO₂ver
CONCRETE RECYCLING



BUILDING TRUST

CHALLENGE



Climate change ↔ CO₂
emissions



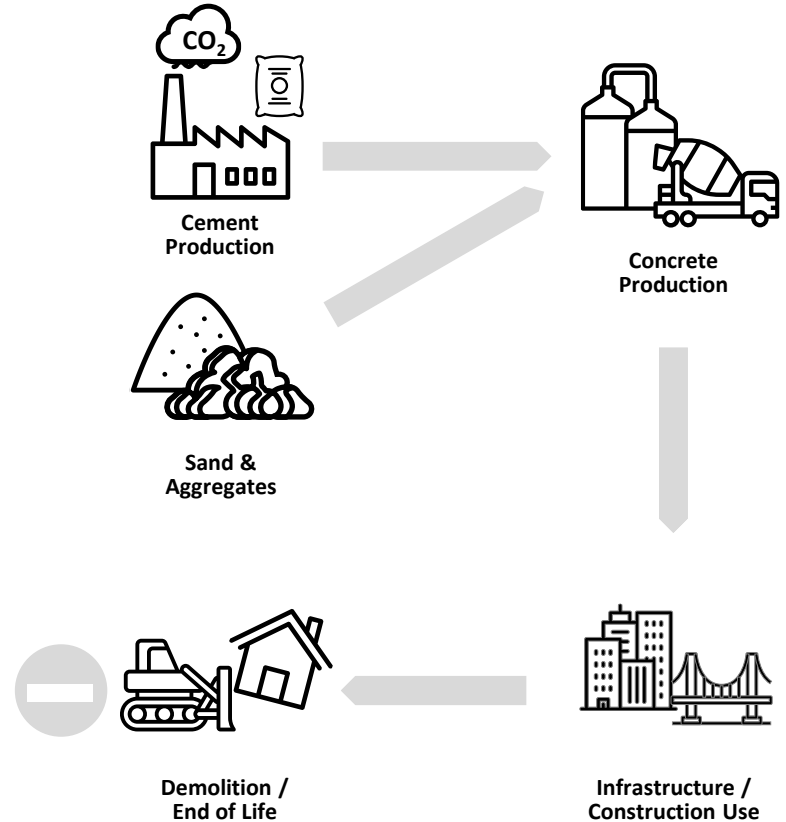
Shortage and, at the same
time, excessive consumption
of resources



Downcycling instead of
circular economy

CURRENT SITUATION

- For cement and concrete production large amounts of resources are required
- This leads to a shortage of high-quality sands and aggregates
- The production of concrete leads worldwide to 8% of the CO₂ emissions
- After demolition of concrete structures, the concrete demolition waste is mainly used for landfill
- Only a small part is crushed and used for recycled concrete



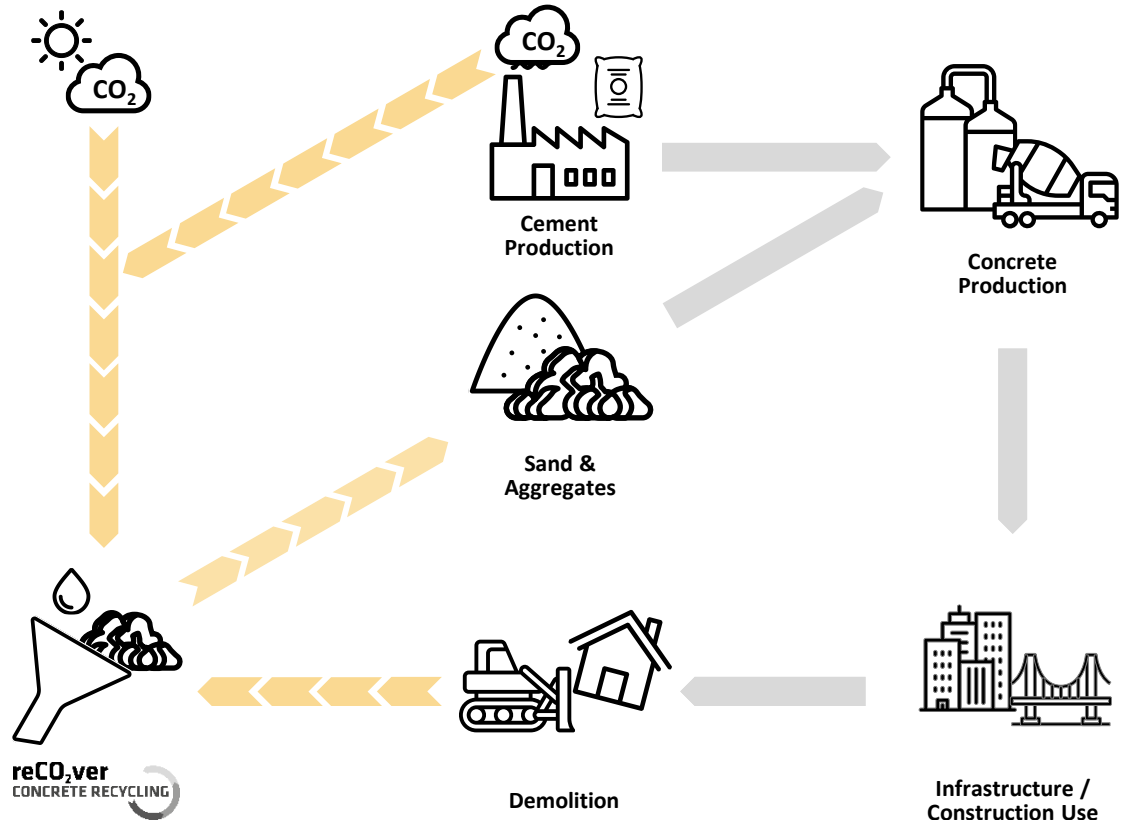
PROCESS

- Concrete Demolition Waste (CDW) gets pre-crushed and conveyed into the plant
- The CDW gets in contact with CO_2 and leads to carbonation of cement stone
- Due to mechanical impact the aggregates separate from the carbonated cement stone
- The outcome of the process are cleaned aggregates in separated fractions and the carbonated cement stone as powder
- Sika Admixtures improve the quality of the output materials



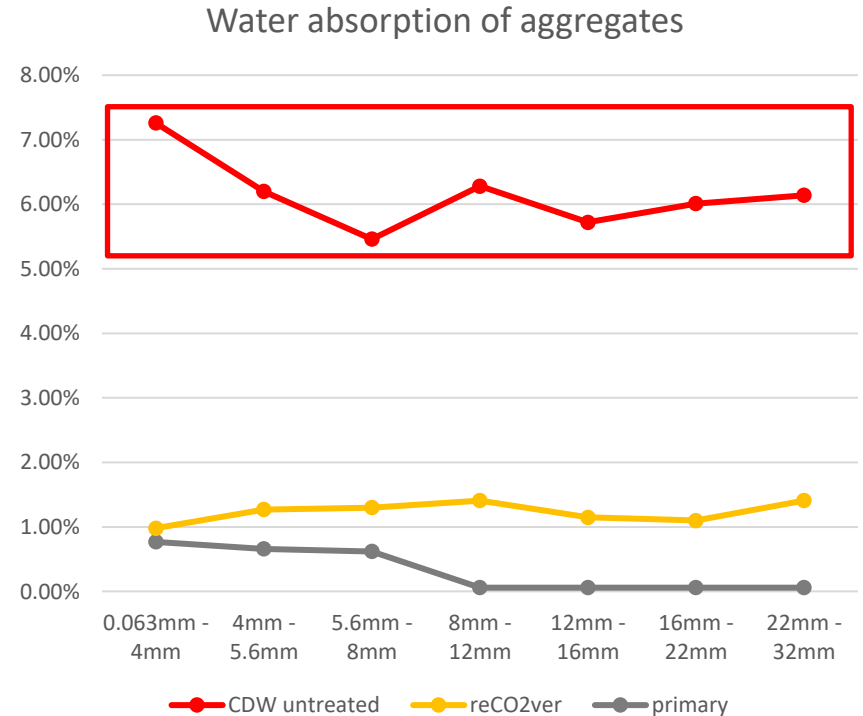
FUTURE SITUATION

- The **reCO₂ver** process enables concrete recycler and concrete producer to create a circular economy by re-using the concrete components in primary quality
- The concrete demolition waste gets de-composed and by CO₂ sequestration the components are separated and can be re-used for high quality concrete

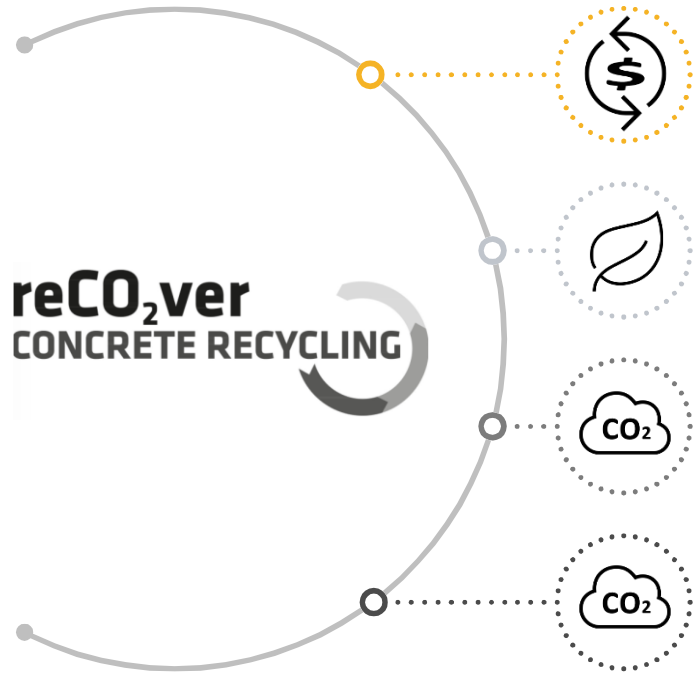


PROCESS / LAB RESULTS

- The additional cement stone on the recycled aggregates leads to a larger water absorption
- This required a higher cement content for concrete made with recycled aggregates
- With the **reCO₂ver** process the sand and aggregates are cleaned from cement stone
- The cleaned aggregates show comparable water absorption as primary aggregates
- No additional cement required for concrete with **reCO₂ver** treated recycled aggregates



VALUES OF reCO₂ver



Circular economy of concrete

Saving **natural resources**

Use of concrete waste for **CO₂ sequestration**

Additional **reduction of CO₂ emissions:**

- By **reduction** of cement requirement in recycled concrete
- By partial **replacement** of clinker with generated fine powder

PILOT PLANT



Sika invested in a reCO2ver pilot plant to demonstrate the process in large scale.



THANK YOU