



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 813596

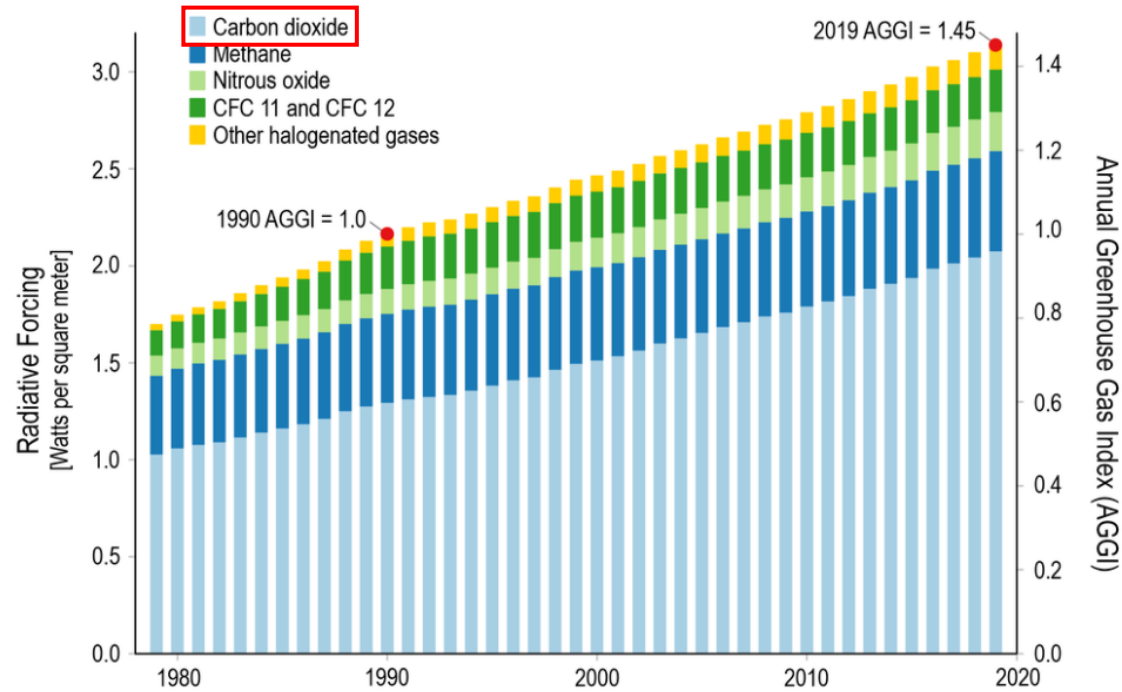
PhD Training Network on **D**urable, **R**eliable and **S**ustainable Structures with **A**lkali-**A**ctivated **M**aterials

What is concrete and why we are making it GREEN?

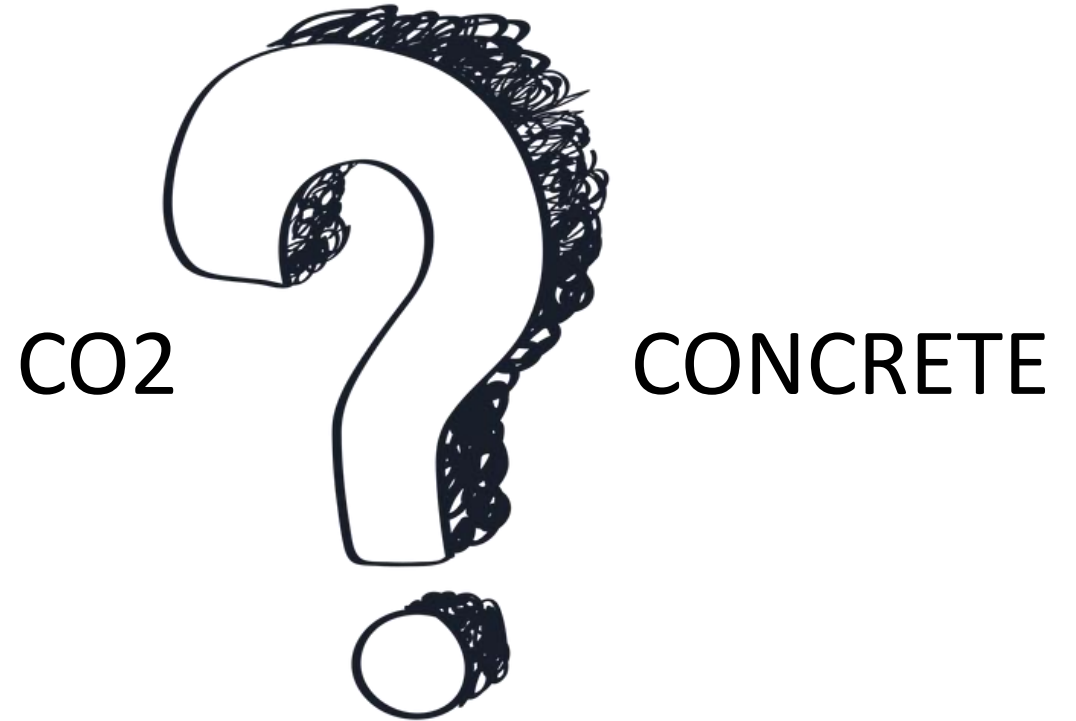


Global Climate Change

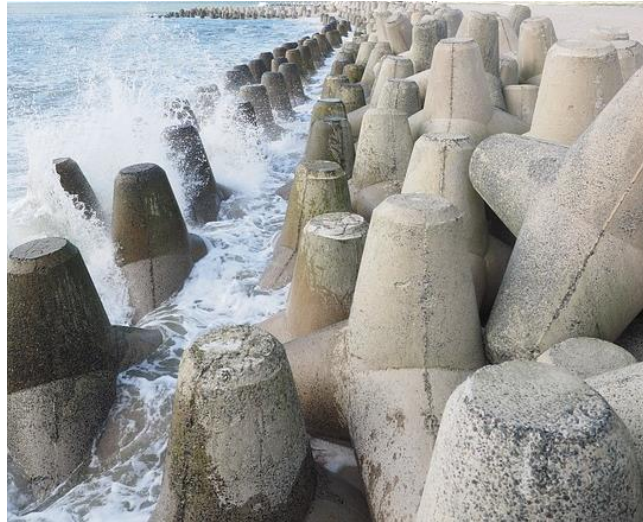
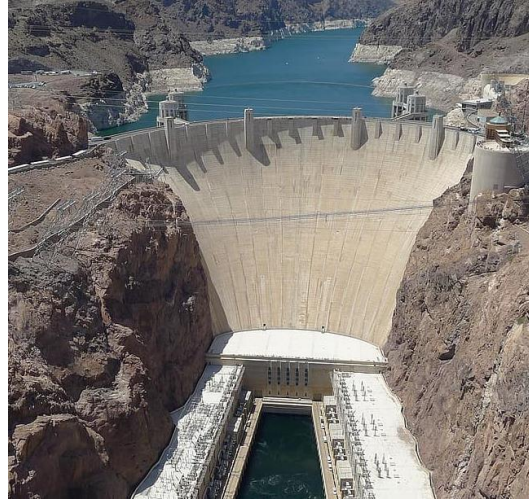
Annual Greenhouse Gas Index



U.S. Global Change Research Program. (2020)



Concrete – the most used human-made material



Concrete – An artificial stone made of

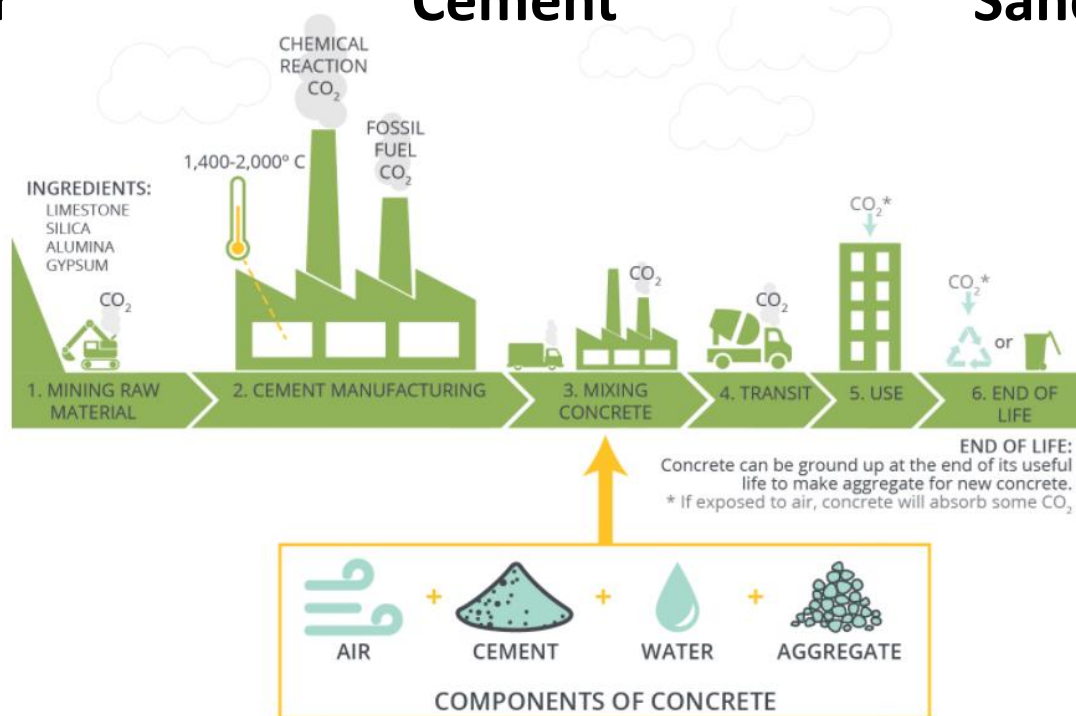


Water

Cement

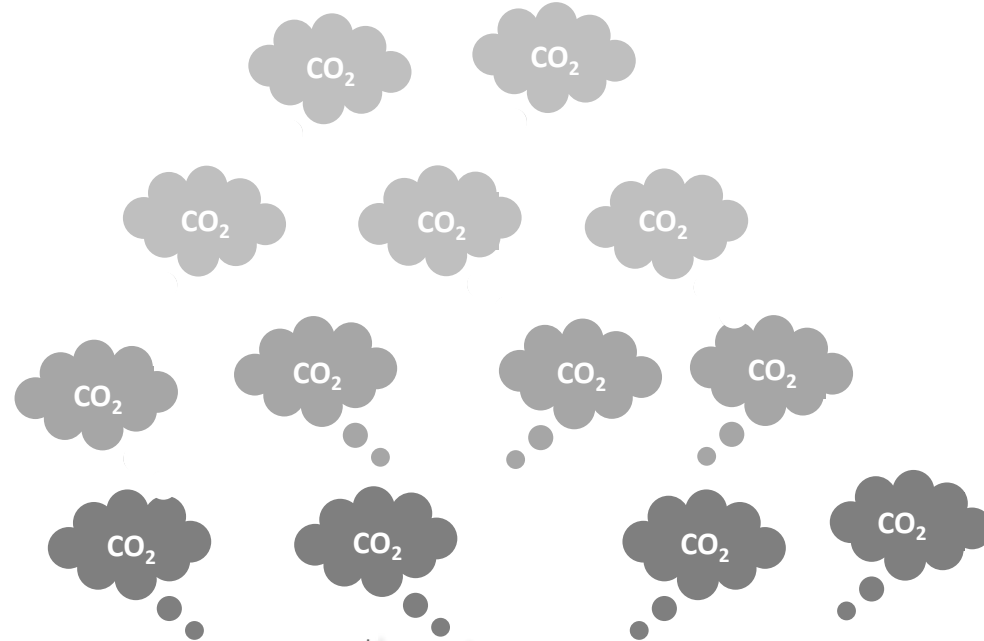
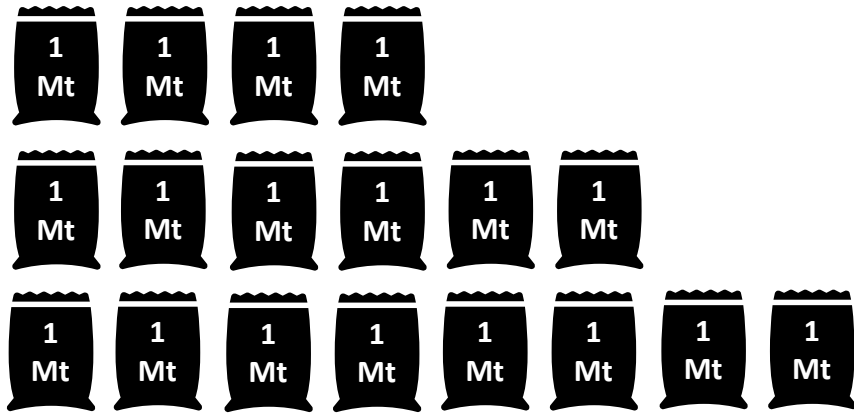
Sand and gravel

Concrete



Cement is the source of about **8%** of the world's **carbon dioxide (CO₂)** emissions!

In EU we produce ~180 Million tons of cement every year which leads to about 140 Million tons of CO₂



Sustainable Construction material



COP24·KATOWICE 2018
UNITED NATIONS CLIMATE CHANGE CONFERENCE

**Signed Paris Agreement on climate change
for annual emissions from cement to fall by
at least 16% by 2030**



European Green Deal : Carbon neutrality



Alkali-activated Concrete



Water

+



Cement

+



Sand and gravel



Concrete



Water

+



Industrial waste/by-products + Chemical activators

+



Sand and gravel



Green Concrete

DuR SAAM



Alkali-activated concrete

Existing AAM concrete structures

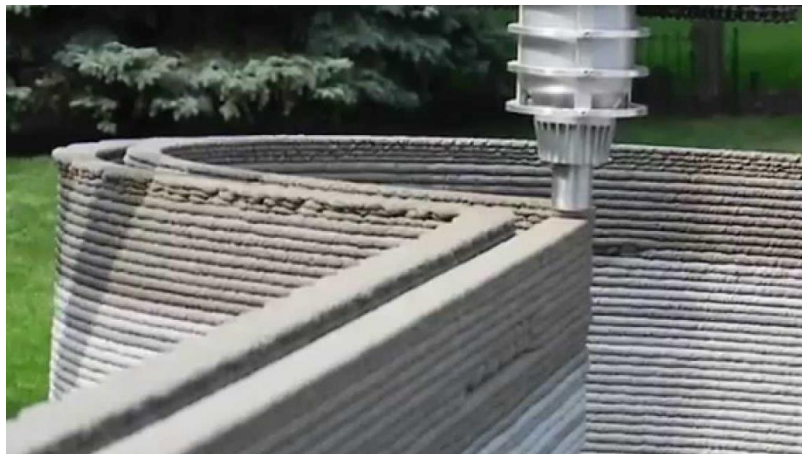


9-storey building in the city of Mariupol, Ukraine (1960s)



The University of Queensland's Global Change Institute (2014)

AAM with modern concrete techniques



3D printing AAM



Pre-cast AAM elements

QUESTIONS TIME

