

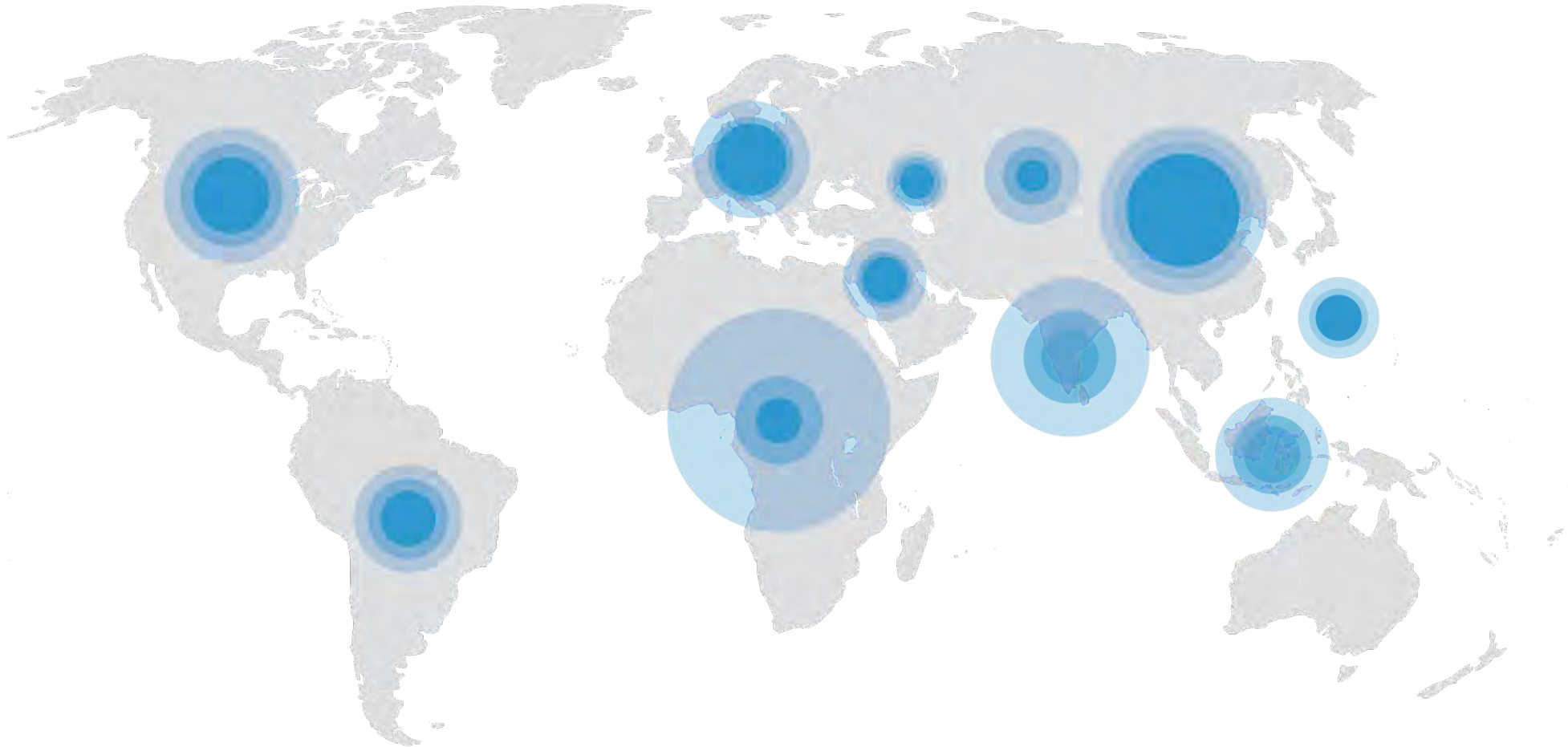
Annual World Congress of Smart  
Materials 12-14 June 2024

Session: WCSM 03: Application  
of Smart Materials

Sequestering Carbon in  
Concrete: Enhancing  
Sustainability in Construction

Manoj Dalaya, FAIA, Co-President  
KGD Architecture  
Date: 14 June 2024  
Location: Budapest, Hungary

Global building floor area  
is expected to **double** by 2060.



© Architecture 2030. All Rights Reserved.  
Data Sources: Global ABC, Global Status Report 2017

# Why Now?



Buildings generate 40% of the world's annual GHG emissions.



The world's building stock will double by 2060: like building a new NYC every month.

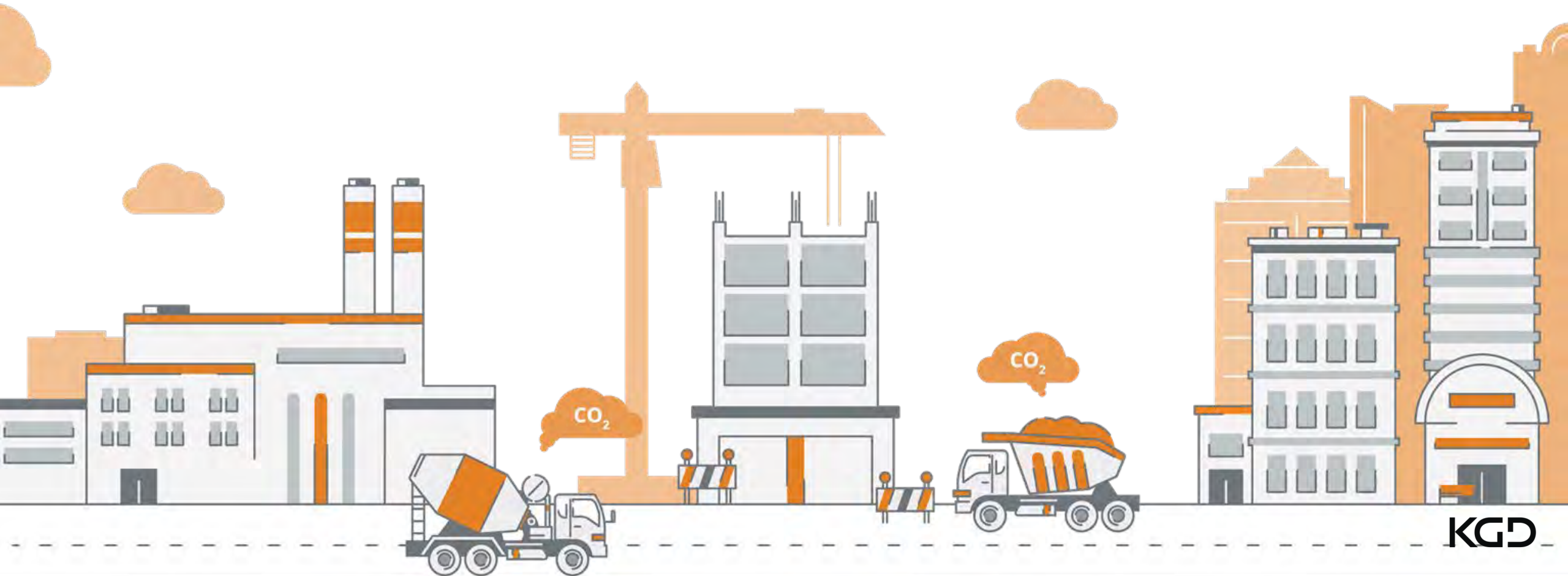


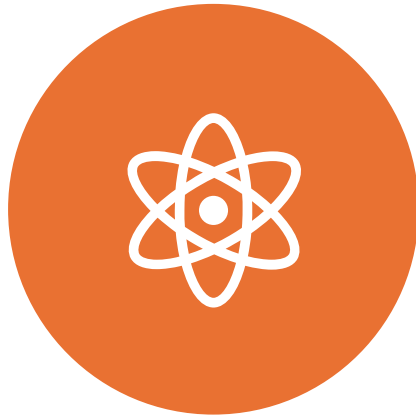
Will be responsible for HALF of new construction emissions between now and 2050.



AEC Embodied Challenge: Achieving net zero embodied carbon by 2050.

# What is Embodied Carbon?





PRODUCTION OF CEMENT  
RELEASES CO<sub>2</sub>



REINSERTING CO<sub>2</sub> BACK  
INTO THE CONCRETE



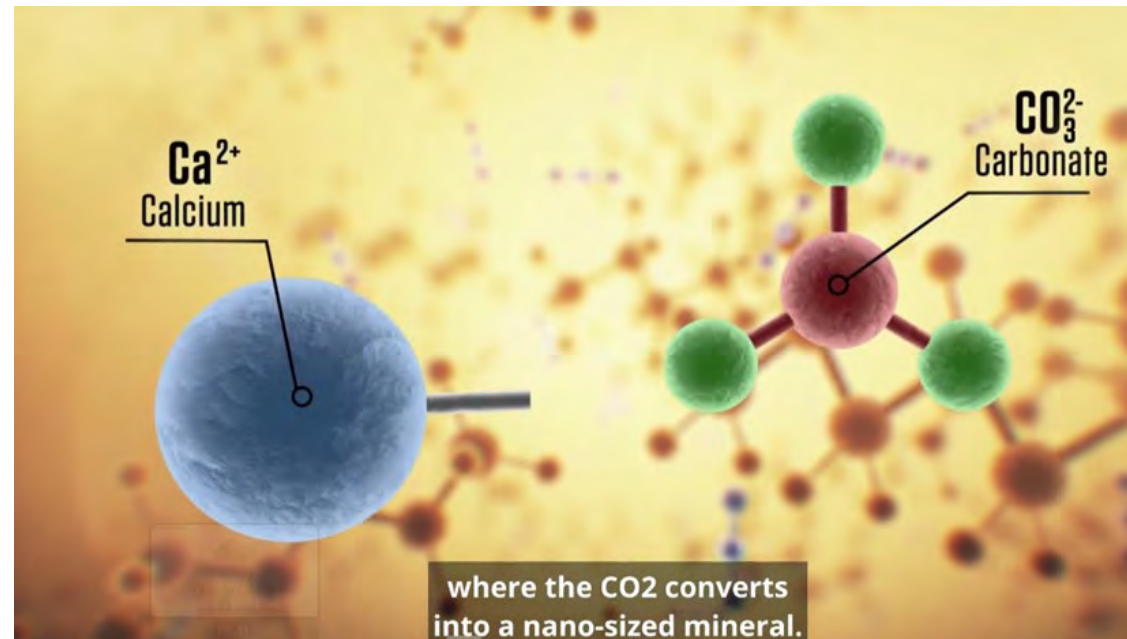
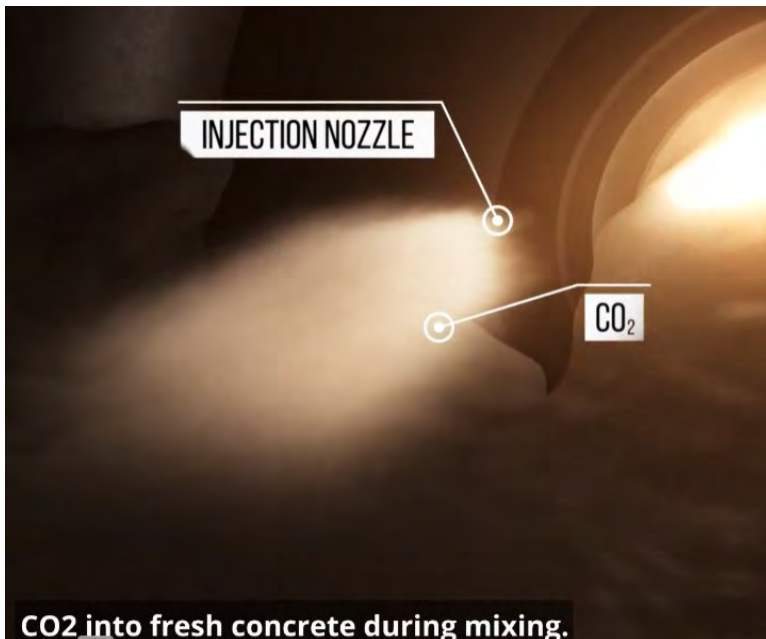
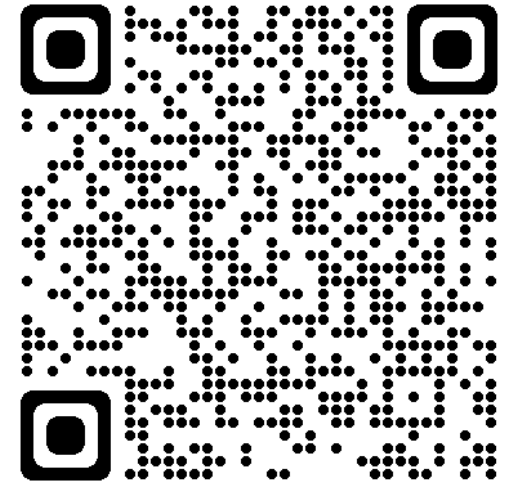
SEQUESTERING CARBON ENHANCES  
SUSTAINABILITY IN CONSTRUCTION





QR CODE

CarbonCure Website



CarbonCure **injects CO<sub>2</sub> into concrete** during mixing, where the CO<sub>2</sub> **mineralizes** to create the **same reliable concrete** with a reduced carbon footprint.





# CO<sub>2</sub> Supply



CO<sub>2</sub> is collected from large emitters.



The gas is purified by industrial suppliers.



The CO<sub>2</sub> is delivered to concrete plants by industrial gas suppliers.



The CO<sub>2</sub> is stored at concrete plants in pressurized tanks.



15 to 25 pounds of CO2 emissions

Increased Compressive Strength

Reduced Permeability

Improved Durability









WALTER  
PHILLIPS

Engineers of record since 1945



KG D

architecture



KG D



































37,618 Concrete Yards Poured  
4,063 Truck Loads Delivered  
16,789 Pounds CO2 Emissions Saved

# Questions & Answers



## Contact Information

Manoj Dalaya, FAIA

Co-President

Kishimoto.Gordon.Dalaya PC  
(KGD Architecture)

[mdalaya@kgdarchitecture.com](mailto:mdalaya@kgdarchitecture.com)

### QR CODE

KGD Website – Presentation PDF

