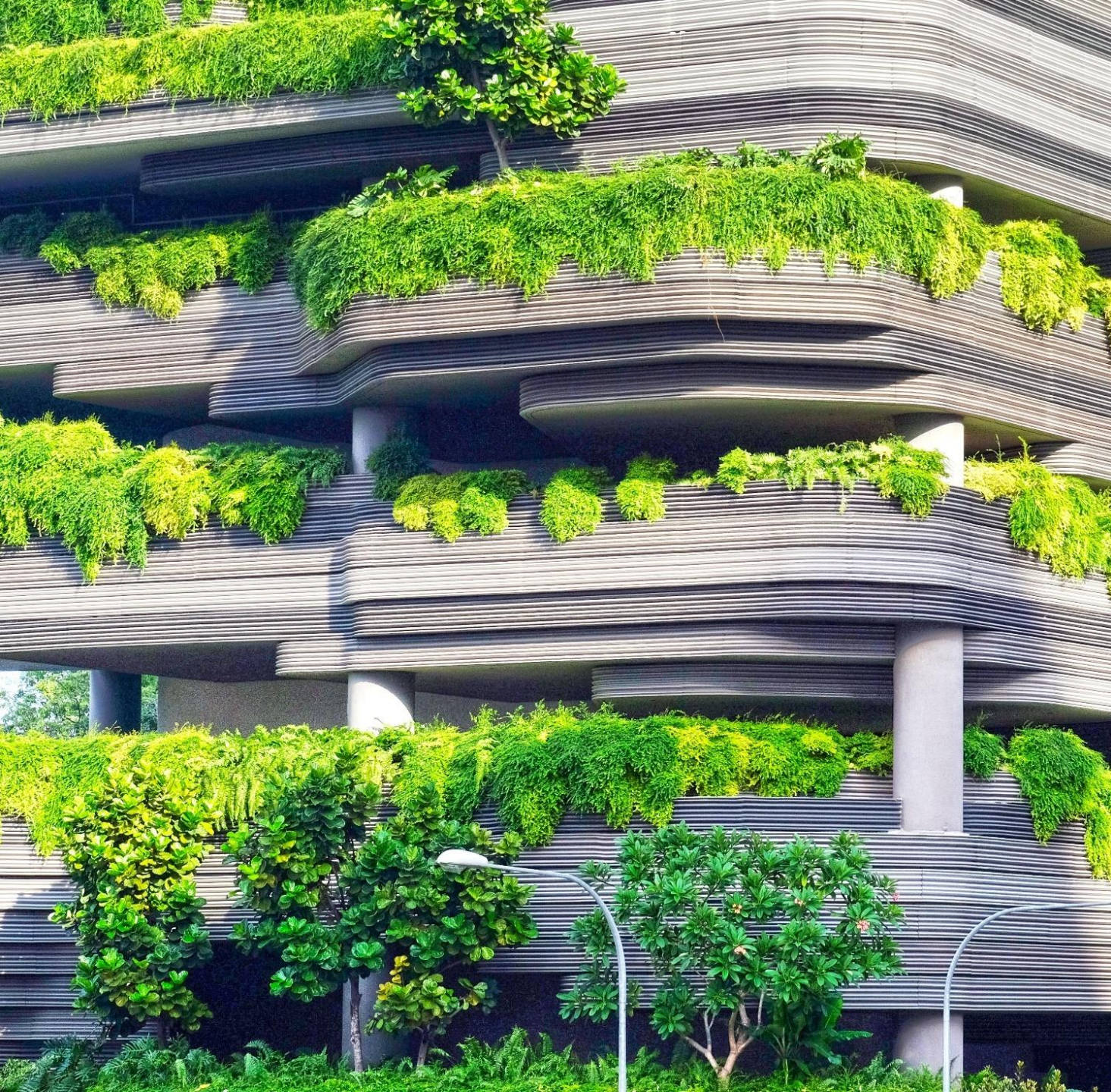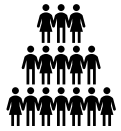# The Next Generation of Cement and Concrete
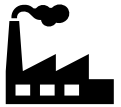
SOLIDIA®

Our Mission

The leading provider of viable decarbonization technologies and sustainable solutions for the global concrete construction and building materials industries

SOLIDIA®

The Global Cement & Concrete Challenge

By 2050…

9.8 billion world population (68% in cities)

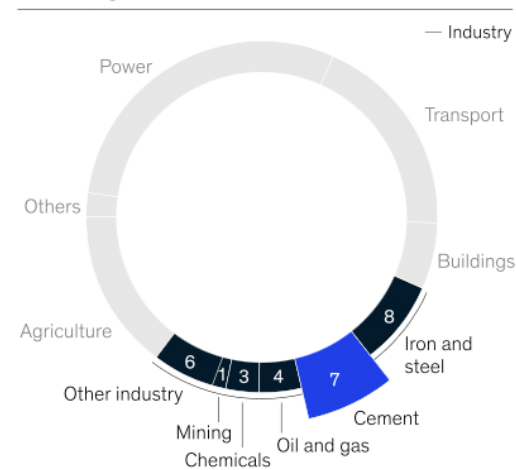5 gigaton annual global cement production (up 20% from today)
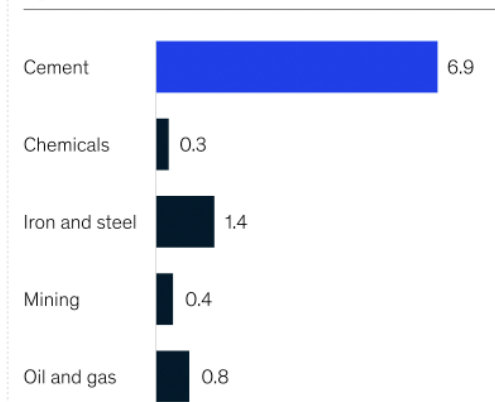
$1 trillion global concrete market

Sources: McKinsey, CleanTechnica, ClimateWatch, Global Cement and Concrete Association

But a major contributor to CO_2 emissions

Share of global CO_2 emissions, % in 2017

— Industry

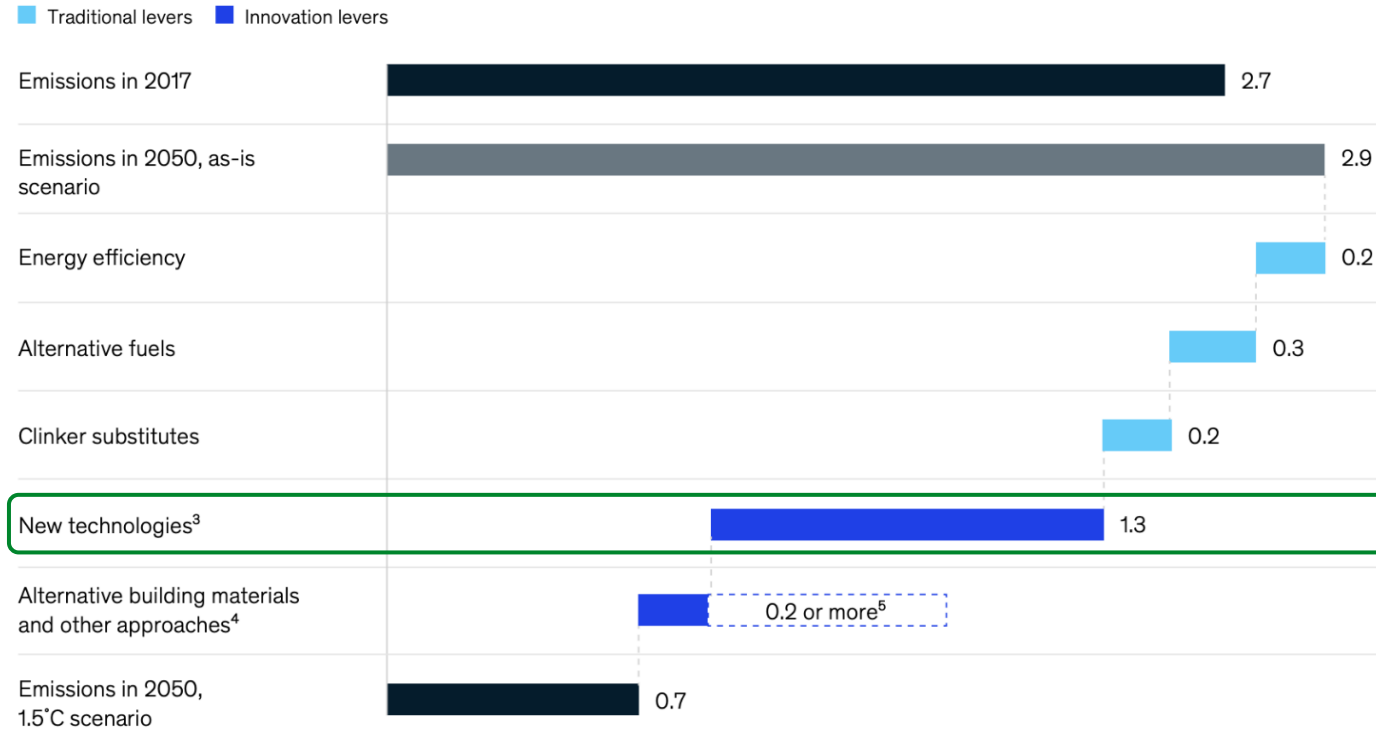Power

Transport

Others

Buildings

Agriculture

8 Iron and steel

6 / 1 / 3 / 4 / 7

Other industry

Mining   Cement

Chemicals   Oil and gas

kg of CO_2 per $

Cement — 6.9

Chemicals — 0.3

Iron and steel — 1.4

Mining — 0.4

Oil and gas — 0.8

McKinsey & Company

840 kg of CO_2 emitted per ton of clinker

SOLIDIA®

Industry Response to the Global Challenge

■ Traditional levers ■ Innovation levers

Category	Value
Emissions in 2017	2.7
Emissions in 2050, as-is scenario	2.9
Energy efficiency	0.2
Alternative fuels	0.3
Clinker substitutes	0.2
New technologies[3]	1.3
Alternative building materials and other approaches[4]	0.2 or more[5]
Emissions in 2050, 1.5°C scenario	0.7

Source: McKinsey

Solidia's Focus

New technologies, formulas, and products to address this challenge

TURNING CARBON INTO A SOLUTION FOR THE CEMENT AND CONCRETE INDUSTRY

Solidia Solutions

CO_2 abatement through emissions reduction and CCUS in cement and concrete manufacturing

Solidia Cement™	Solidia Concrete™	Solidia SCM™

Reduce CO_2 emissions

- ↓ thermal energy
- ↓ calcination

Capture CO_2 gas

- mineralize CO_2

Avoid high embodied CO_2

- replace Portland cement

SOLIDIA®

Solidia Advantage

Measurable improvements to plant operations, product performance and sustainability

Solidia Cement™

- Produced in traditional kilns
- Yields 12% more cement per ton of raw materials
- Lighter color
- ↓ energy consumption / fuel cost
- ↓ CO_2 gas emissions by up to 30%

Solidia Concrete™

- Rapid curing (<24hrs to full strength)
- Fast cleanup
- No efflorescence, better colors
- Reduced ASR
- CO_2 mineralization = permanent storage
- 80%+ water recovery
- Waste reduction / reuse

Solidia SCM™

- Manufactured locally anywhere
- Engineered = eliminates quality issues
- Performance benefits of OPC and fly ash at 35%+ replacement
- Increased later age strengths
- Reduced permeability
- Enhanced durability
- Waste CO_2 utilization

Operational Benefits   *Product Performance Benefits*   *Sustainability Benefits*

SOLIDIA®

Path Forward: Collaboration is Key

Ecosystem partners are key to Solidia's success and help pave the way to our commercial success

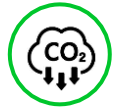- R&D, innovation, technology & process development

- Market acceptance and adoption

- Standardization of materials and building life cycle assessment

- Progressive policies, regulations, and codes & standards

- Recognized carbon value and industrial carbon delivery infrastructure

- Financial incentives and investment

Industry

HOLCIM AIR LIQUIDE

EP HENRY icpi | NCMA

Government

EPA U.S. DEPARTMENT OF ENERGY life

NETL NATIONAL ENERGY TECHNOLOGY LABORATORY DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA CCEMC Climate Change & Emissions Management Corporation

Academia

GT Georgia Tech RUTGERS

UNIVERSITY of SOUTH FLORIDA 1956 PURDUE UNIVERSITY OHIO UNIVERSITY

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