



The Climate Toolkit

GLOBAL DESIGN PRINCIPLES FOR PEOPLE AND PLANT

Vincent Martinez Hon. AIA
Architecture 2030

by 2050

Global population is projected to increase by

1.7 billion people

Photo by Marcelo Campi



by 2060

global building floor area is projected to increase by

223 billion square meters

(2.4 trillion square feet)

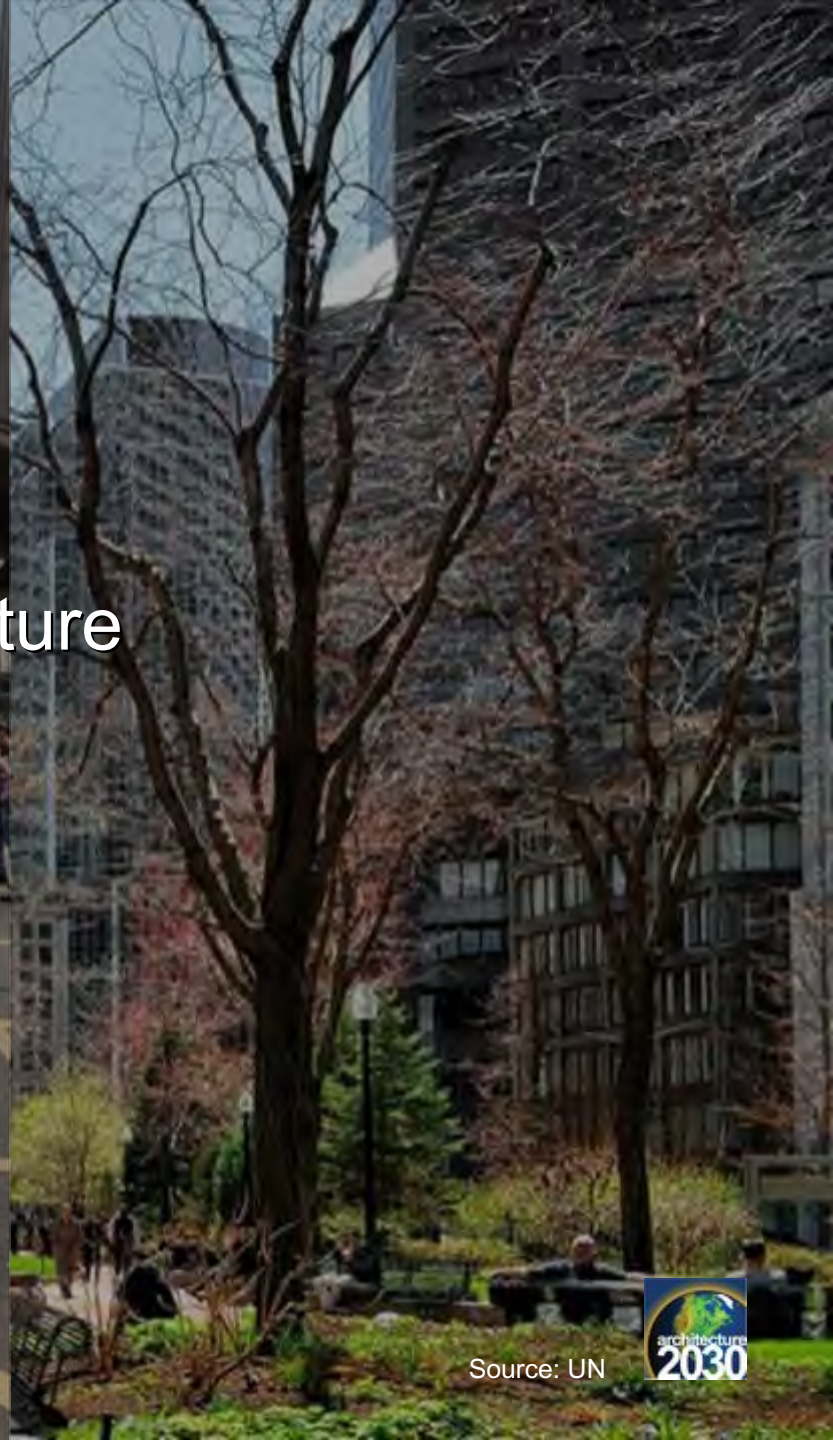
or the equivalent of adding a city the size of New York City
to the planet **every month!**

Photo by Marcelo Campi



infrastructure

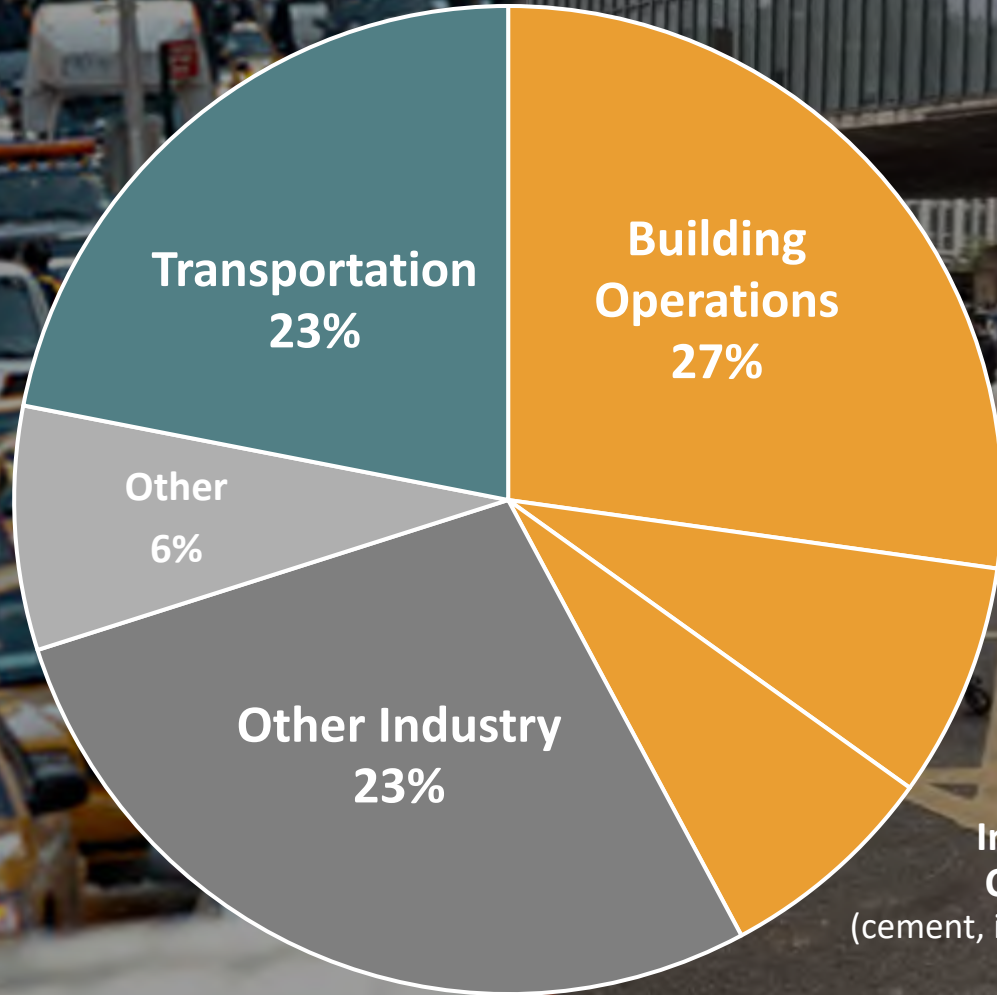
In fact, three-quarters of the world's infrastructure that will exist in 2050 has yet to be built.



The built environment is responsible for **over**

42%

of global
CO₂ emissions



Building Construction
(cement, iron/steel & aluminum)
7.7%

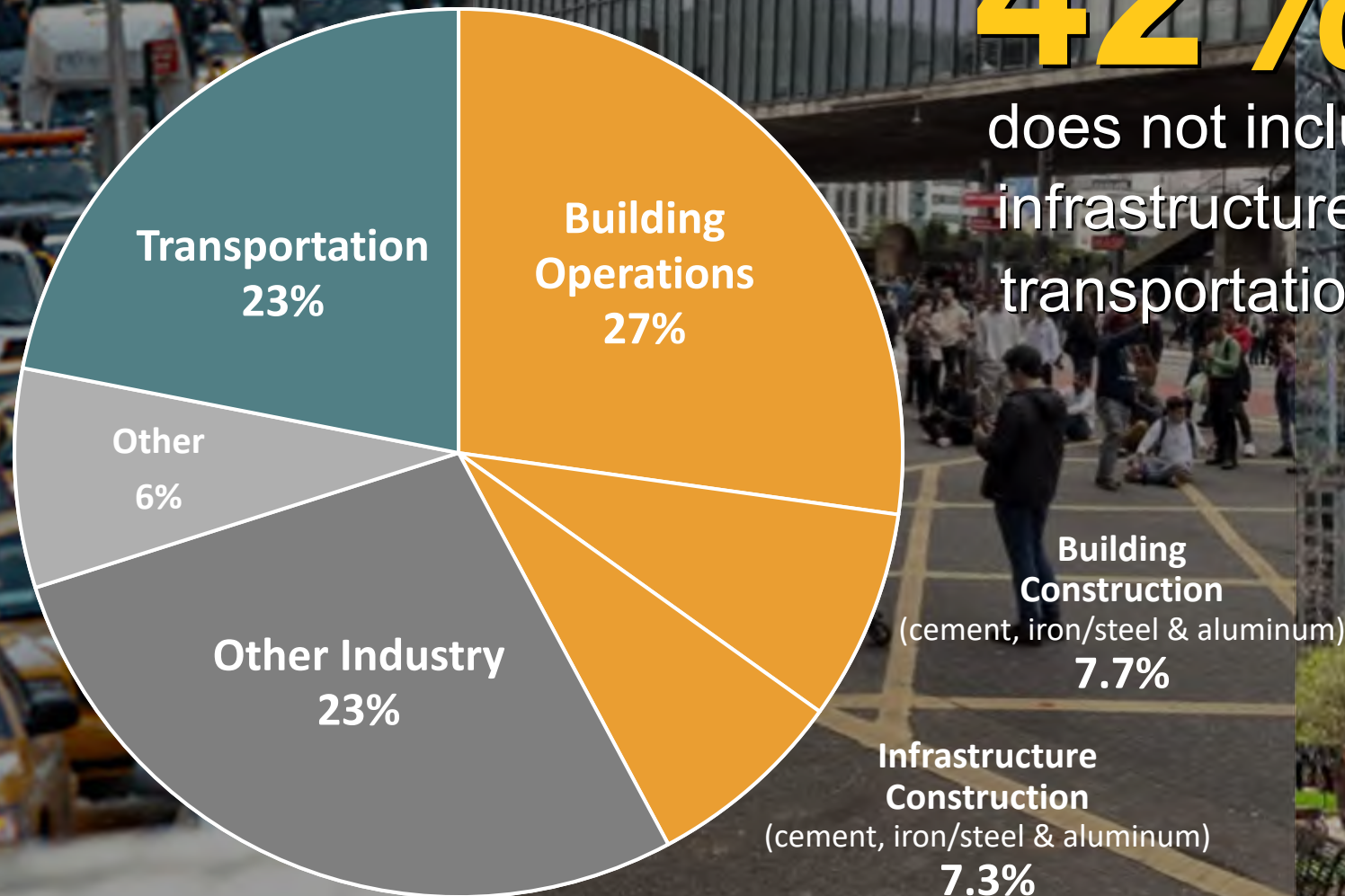
Infrastructure Construction
(cement, iron/steel & aluminum)
7.3%

Just 4 construction materials
15%

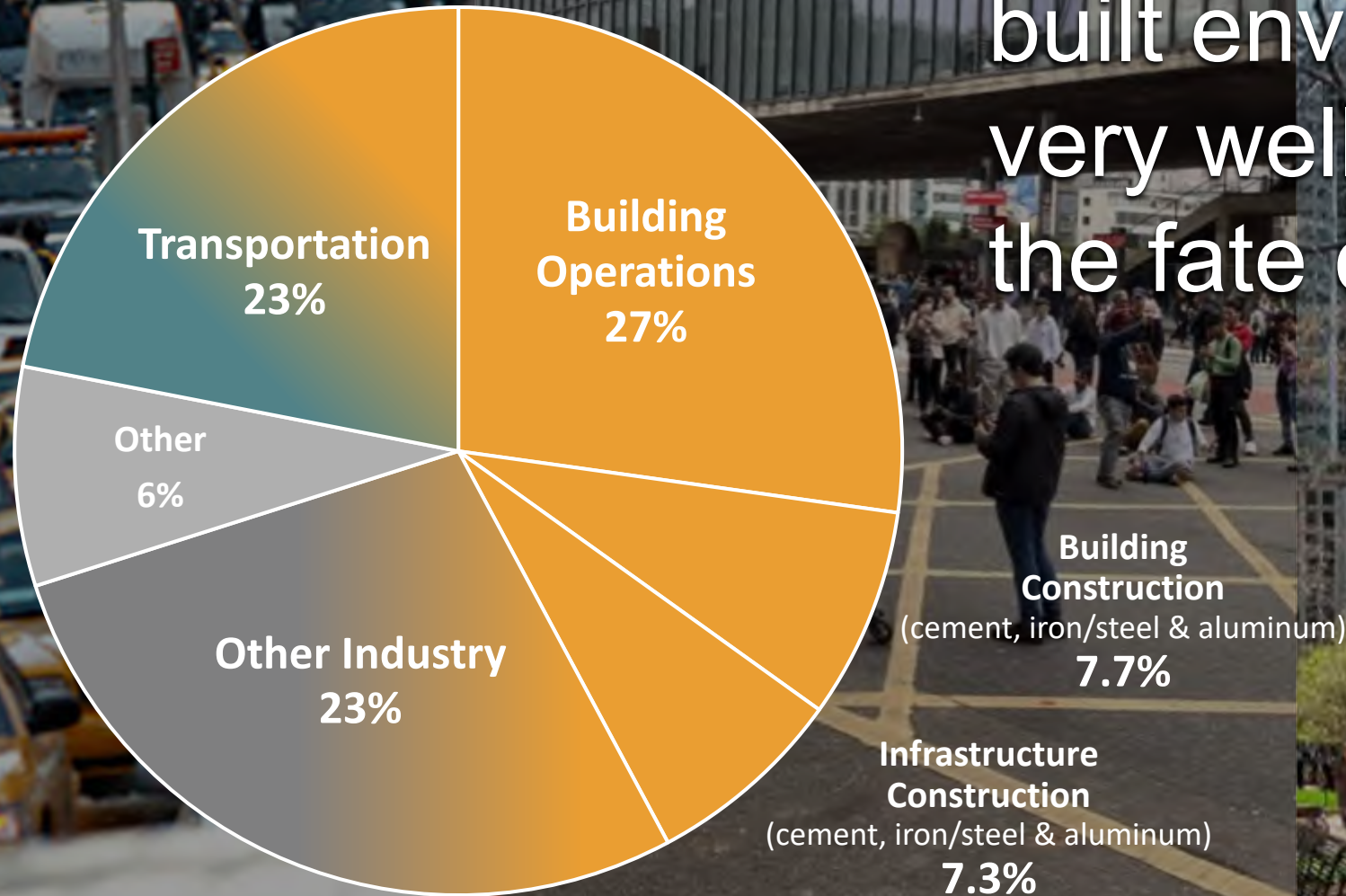
The built environment is responsible for **over**

42%

does not include other building and infrastructure materials, and transportation emissions.



How we **plan, design and construct** the built environment may very well determine the fate of the planet.



Source: IEA, Global ABC 2021



ACHIEVING A ZERO CARBON BUILT ENVIRONMENT

Step 1.

Planning
Design &
Construction
(No onsite fossil fuels)

70%-80%

(no cost / low cost)



Step 2.

Renewables

Zero Carbon

ACHIEVING A ZERO CARBON BUILT ENVIRONMENT

Step 1.

Planning
Design &
Construction
(No onsite fossil fuels)

70%-80%

(no cost / low cost)



Step 2.

Renewables
20%-30%



Zero Carbon



HEAT ISLAND MITIGATION



NEW GROWTH AREAS



PARKS



URBAN BIKEWAYS



URBAN INFILL



URBAN RETROFIT

DISTRICT

DISTRICT



COMPLETE STREETS



DISTRICT CENTERS



RESIDENTIAL DENSITIES



SHARED STREETS



STREET NETWORKS



STREET WIDTH AND ORIENTATION



TRANSIT-ORIENTED DEVELOPMENT

SITE

SITE



CONSTRUCTED WETLAND



ELEVATED STRUCTURES



SOLAR ACCESS



SUSTAINABLE SITES



VEGETATIVE COOLING



WATER CATCHMENT AND STORAGE

BUILDING

BUILDINGS & MATERIALS

2030palette.org



So, what can we do?

The 10 Principles

for a new era in design and planning

URBAN PLANNING

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1. Growth Boundaries & Compact, Resilient Developments



URBAN PLANNING

2. Natural Environments, Open Lands & Parks



URBAN PLANNING

3. Transit-Oriented Development & Transit Mobility



Credit: Patrick Dirden Photography.



URBAN PLANNING

4. Inclusive Mixed-Use Neighborhoods



Photo by Julius Reque/Flickr, Mexico City



URBAN PLANNING

5. Human-Scale Streets, Small Blocks, Walking & Biking



Source: New York Times



URBAN PLANNING

Growth Boundaries & Compact, Resilient Developments

Natural Environments, Open Lands & Parks

Transit-Oriented Development & Transit Mobility

Inclusive Mixed-Use Neighborhoods

Human-Scale Streets, Small Blocks, Walking & Biking

ARCHITECTURE AND DESIGN

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1. Electrification, Passive Systems & Renewable Energy

Source: ZGF Architects



ARCHITECTURE AND DESIGN

2. Reuse, Adapt, Renovate & Restore Buildings



Source: <https://commons.wikimedia.org>



ARCHITECTURE AND DESIGN

3. Carbon-Sequestering Landscapes & Infrastructure



ARCHITECTURE AND DESIGN

4. Building Disassembly, Optimized Structure & Nature-Based Materials



Source: Naturallywood.com



ARCHITECTURE AND DESIGN

5. Mapping & Designing for Climate Impacts



Source: Flooding Peru, Wikipedia



ARCHITECTURE AND DESIGN

Electrification, Passive Systems & Renewable Energy

Reuse, Adapt, Renovate & Restore Buildings

Carbon-Sequestering Landscapes & Infrastructure

Building Disassembly, Optimized Structure & Nature-Based Materials

Mapping & Designing for Climate Impacts

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GLOBAL DESIGN PRINCIPLES FOR PEOPLE AND PLANET

REVISED CLIMATE TOOLKIT ACTIONS FOR BUILDINGS AND ENERGY

Meet your nation's Paris Agreement targets for CO2 reduction.

Derive power solely from 100% clean renewable energy – generated onsite or procured through market mechanisms.

Eliminate all onsite fossil-fuel combustion to heat buildings (except backup generators).

Build all new buildings to meet latest international energy efficiency standards (e.g. IECC, ASHRAE, ILFI).

Ensure existing buildings achieve an Energy Use Intensity (EUI) 35% below median.