

This live webinar will begin shortly...

SHIFTING TO NEUTRAL TO DRIVE
REAL ESTATE SUSTAINABILITY IN CHINA

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CARBON NEUTRALITY

June 2021



AGENDA

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1. OVERVIEW



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2. REPORT INTRODUCTION



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3. Q & A



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CARBON NEUTRALITY



SHIFTING TO
NEUTRAL TO DRIVE
REAL ESTATE
SUSTAINABILITY
IN CHINA

June 2021

The agenda



Climate change and the
Importance of going green



What China has done and is
expected to do



How real estate can help



Taking the next step - Going
carbon neutral



A whole lifecycle carbon
reduction plan - A road map
for real estate investors/
developers/landlords in
China

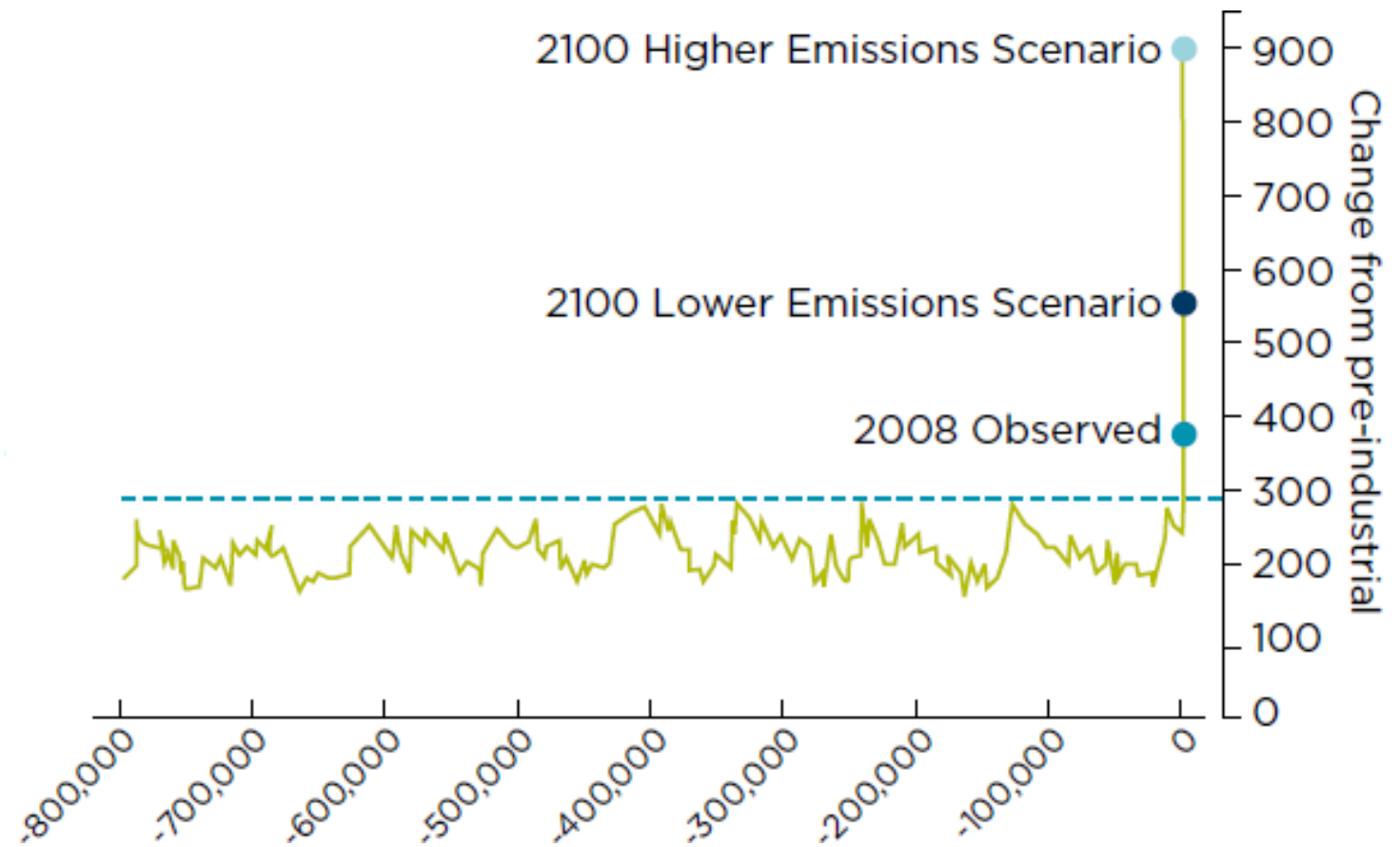


Other considerations and
what's in it for real estate
investors, developers and
landlords



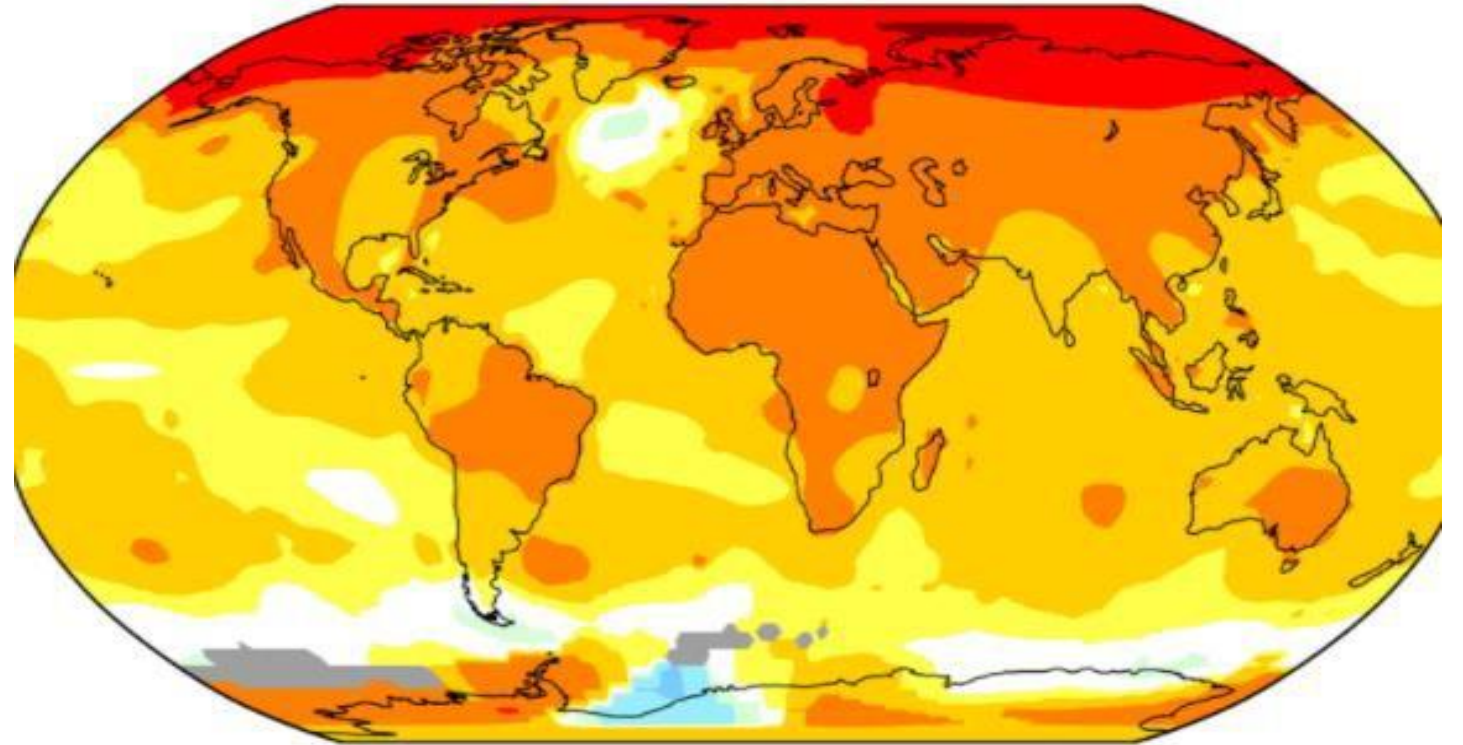
Climate change and going green

CO₂ concentration – Last 800,000 years

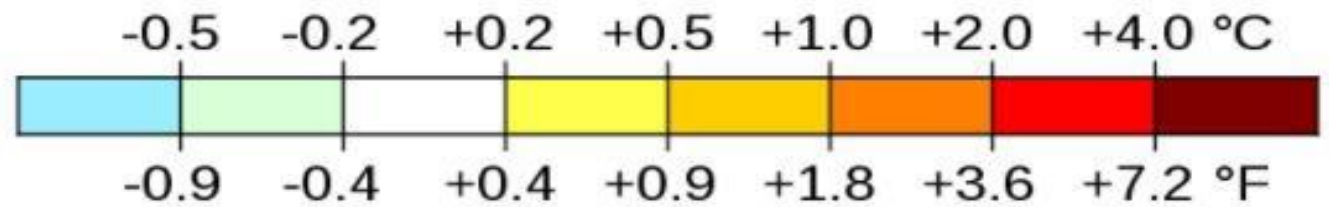




Global temperature change – Last 50 years



2011-2020 average vs 1951-1980 baseline

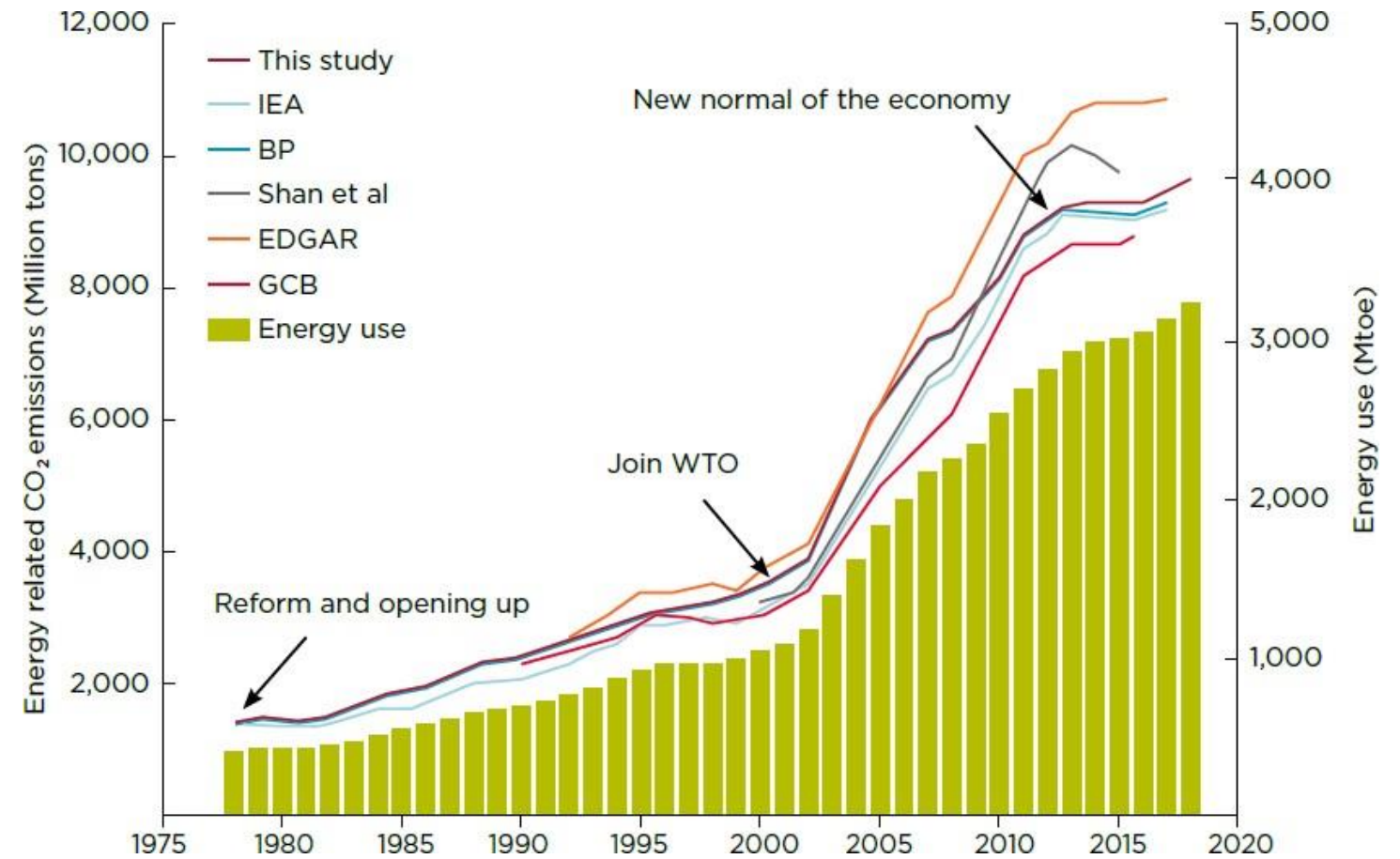




Climate change and **China**

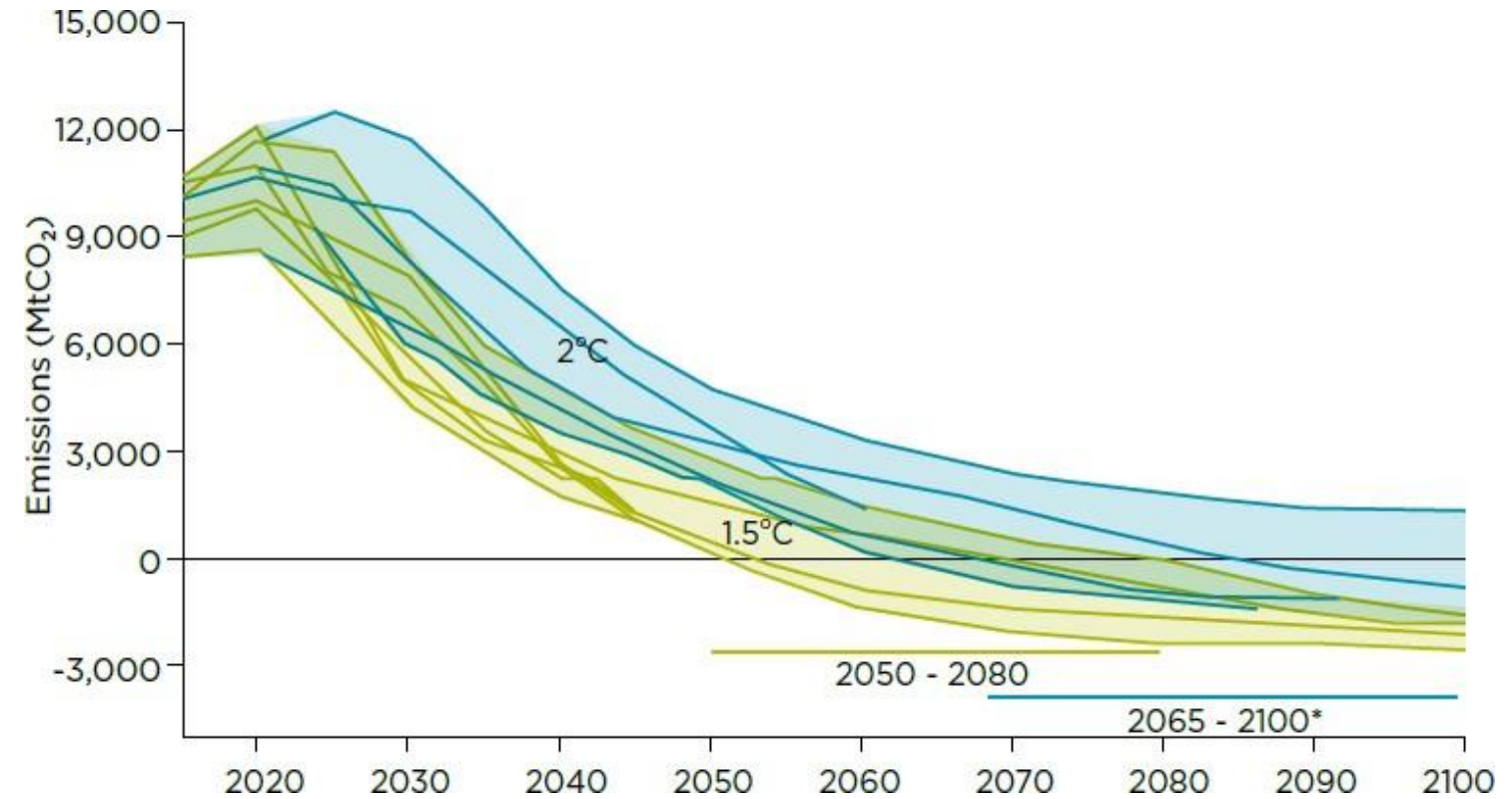


Annual energy-related CO₂ emissions and energy use in China (1975-2020)





China's CO₂ emissions – 1.5 degrees °C and 2.0 degrees °C (2020-2100)





China's carbon intensity goal (2020)



ORIGINAL GOAL

Reduction of between **40%** and **45%**

ACTUAL RECORDED REDUCTION

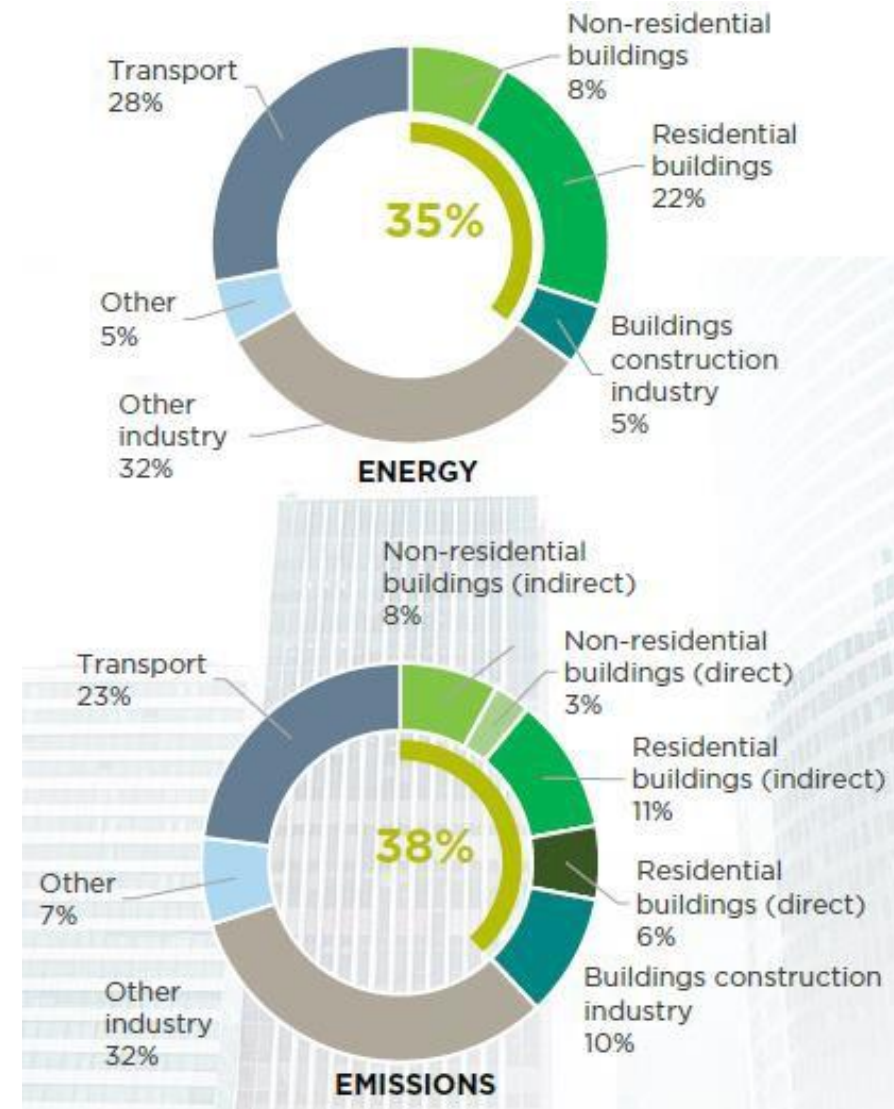
48.1% (2019)





How real estate can help

Global energy consumption and energy-related CO₂ emissions (2019)

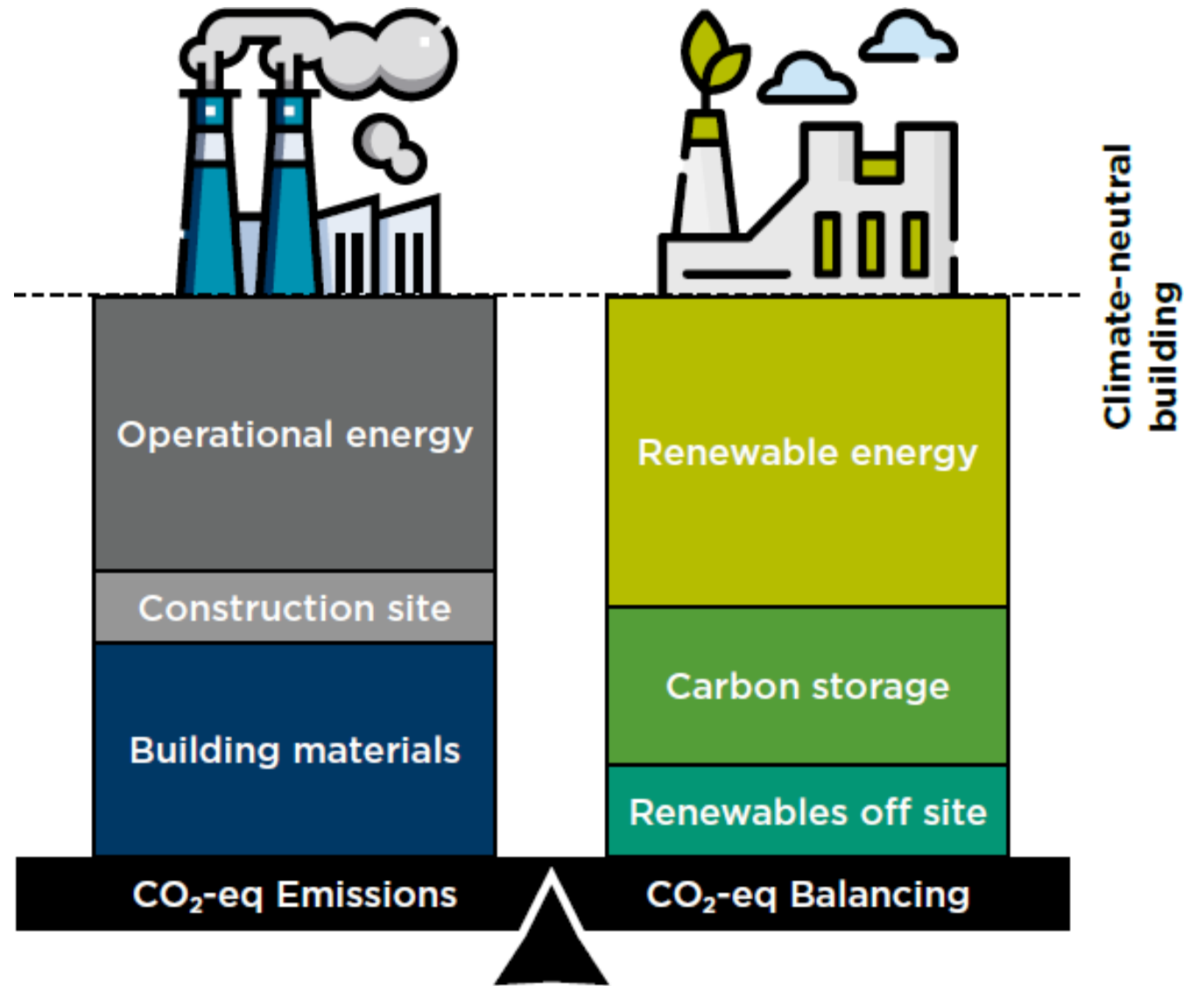




Going carbon neutral

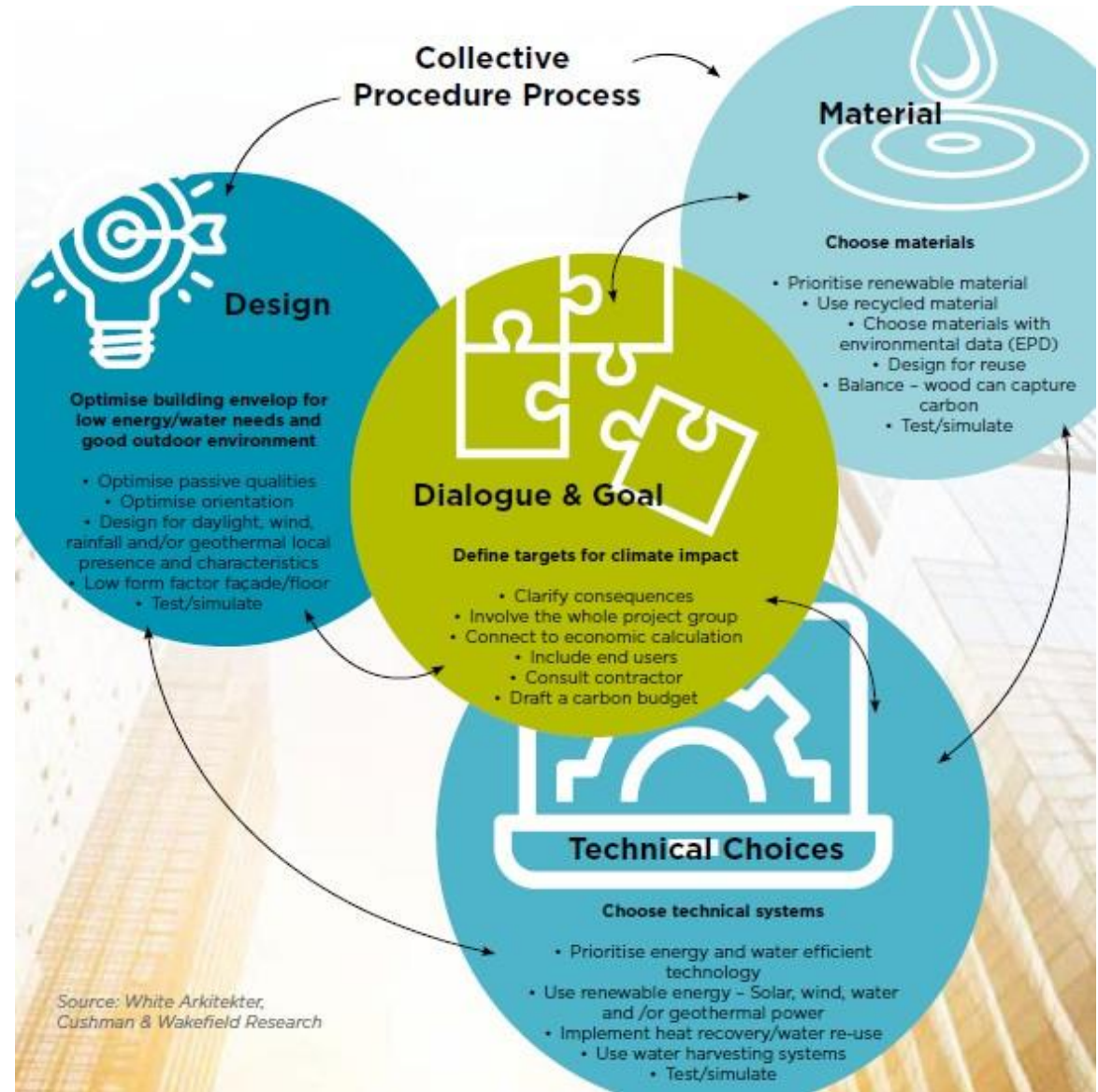


A balance for a carbon neutral building





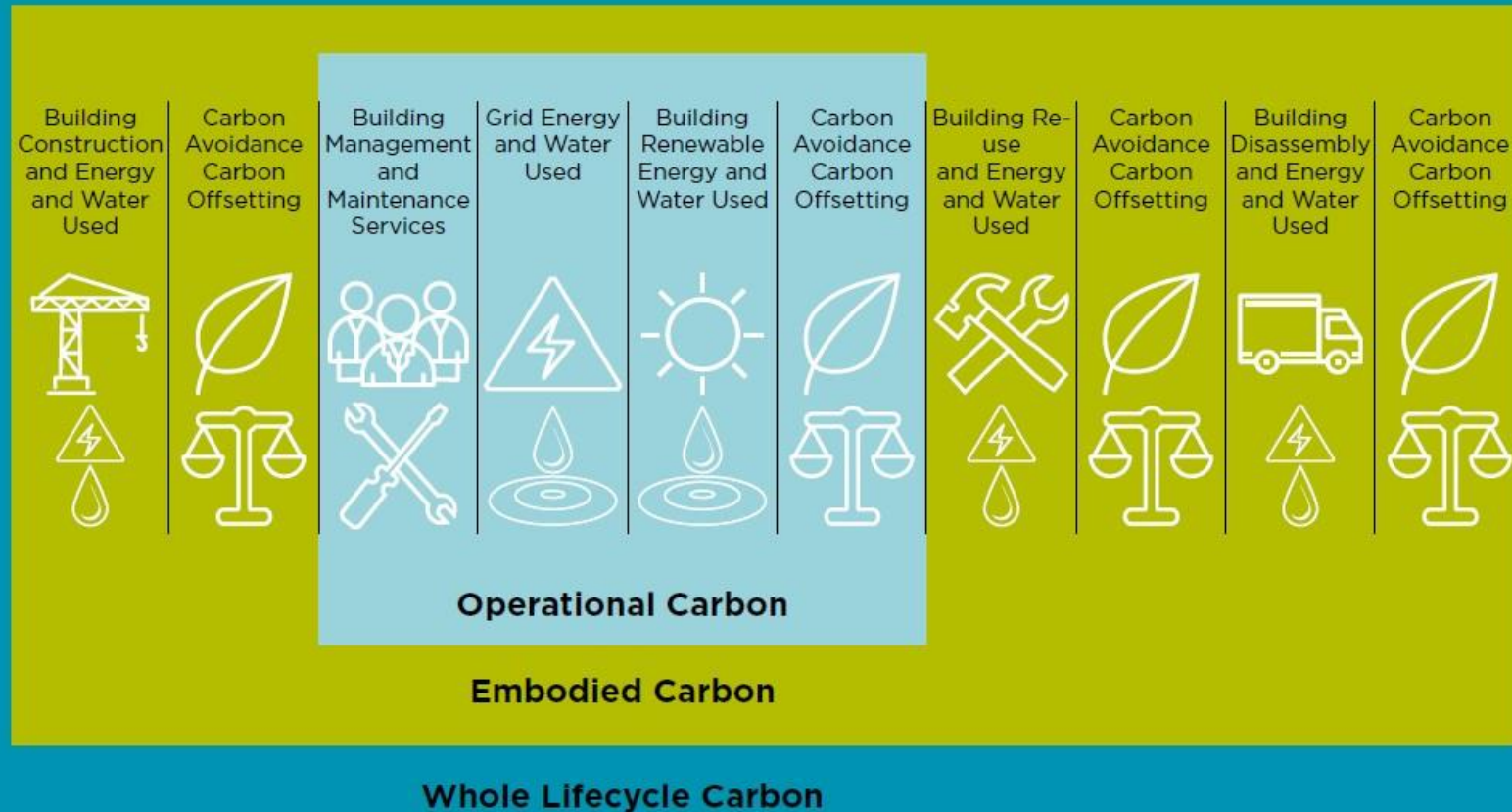
A collective process for a carbon neutral building



The background features a faded city skyline with various skyscrapers and buildings. Overlaid on this is a large, semi-transparent silhouette of a group of people holding hands in a circle, symbolizing community or global unity. The overall color palette is light and airy, with a focus on the text.

Whole lifecycle carbon reduction

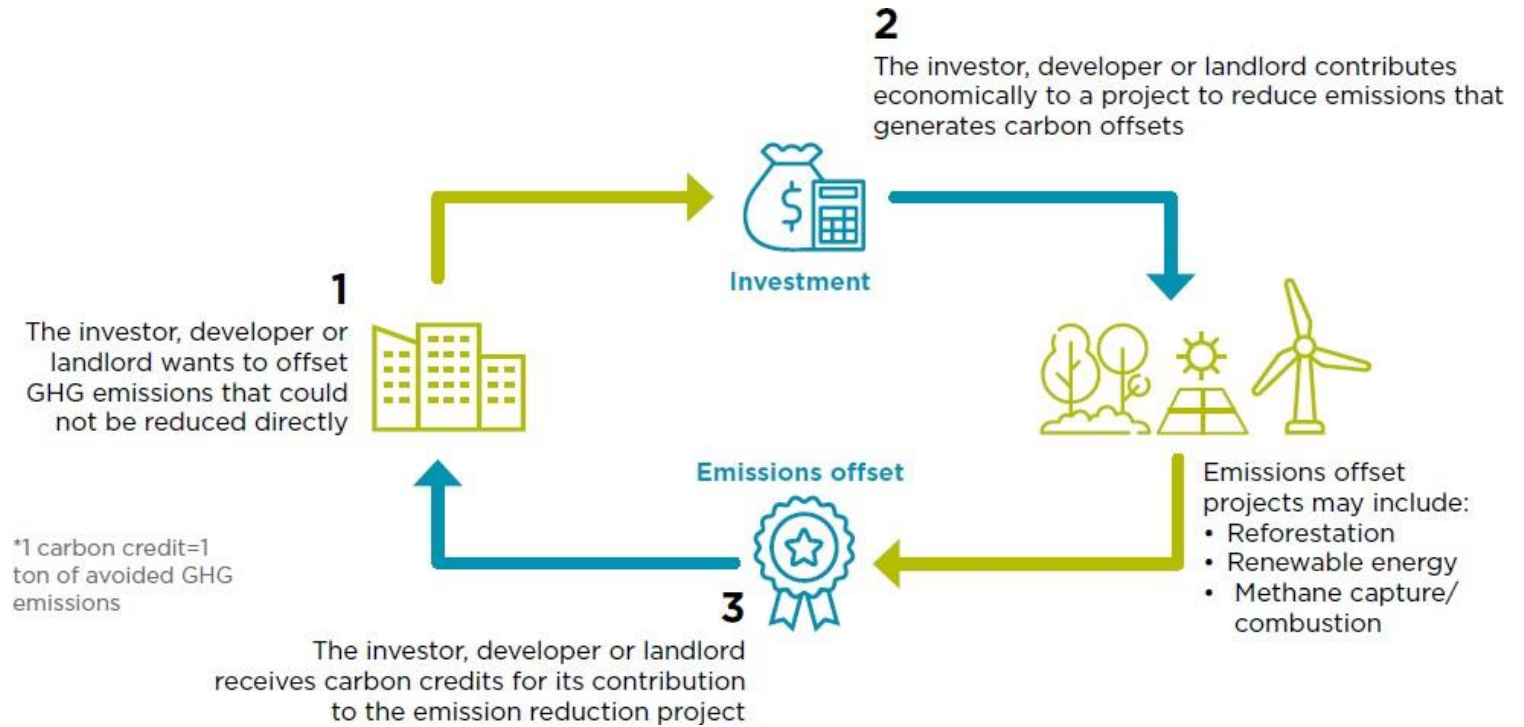
Whole building lifecycle carbon



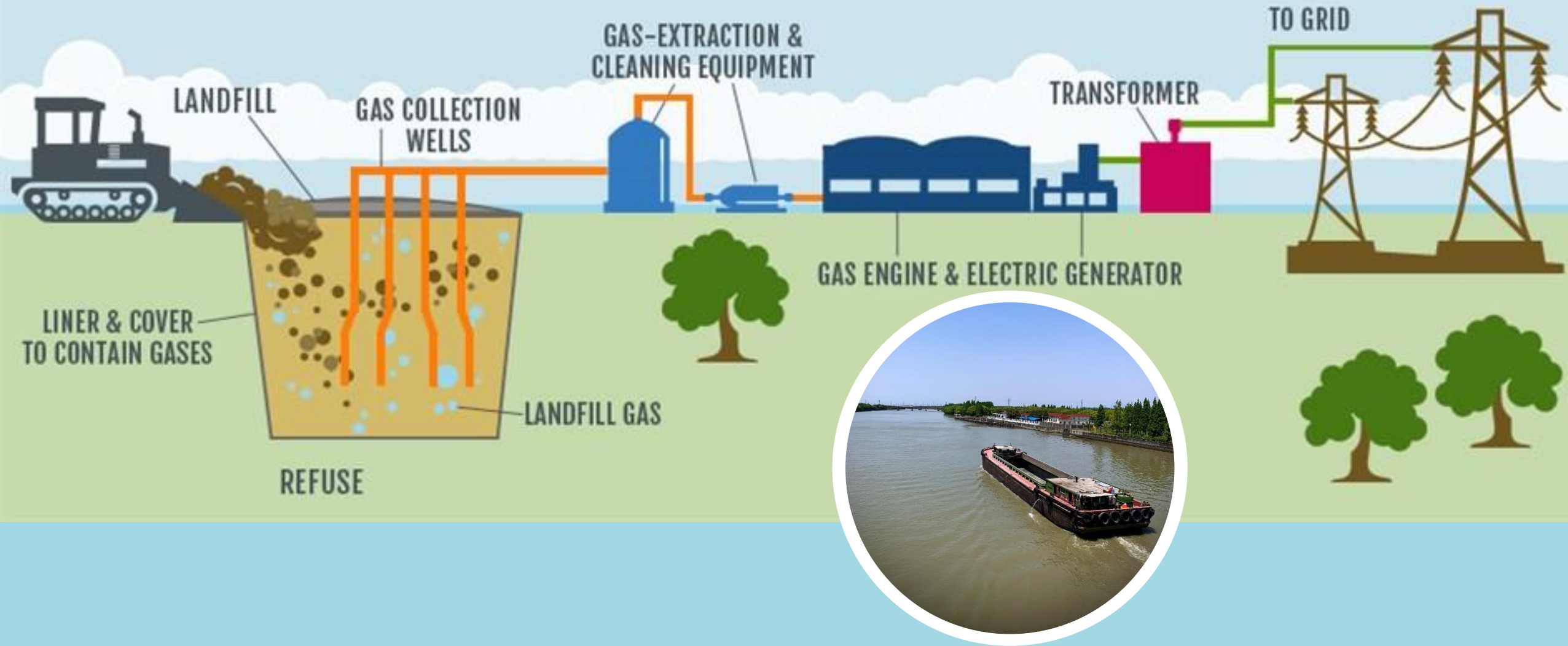
The background is a composite image. At the top, a group of people is shown running, with their legs and feet in motion. Below this, a hand is seen holding a globe of the Earth. The bottom half of the image shows a city skyline with various buildings and a road in the foreground. The overall image is semi-transparent, allowing the text to be clearly visible.

Carbon offsetting

The carbon offsetting process



A carbon offset project

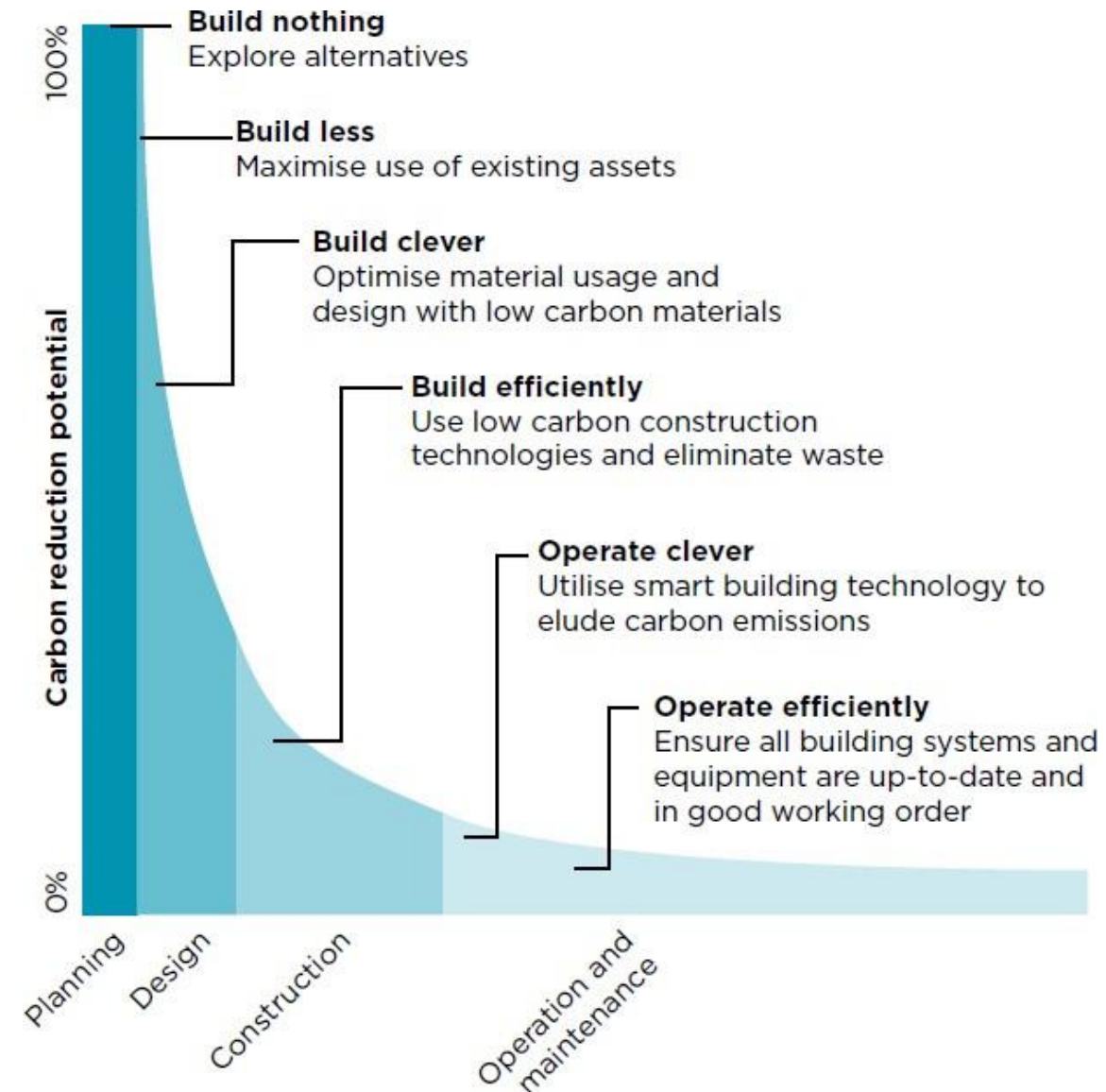


The background is a composite image. At the top, a group of people is shown running, symbolizing speed and progress. Below this, a hand is seen holding a globe, representing global impact and responsibility. The bottom portion of the image shows a city skyline with various buildings and a road, indicating an urban environment. The text 'Carbon avoidance' is overlaid on this background.

Carbon avoidance



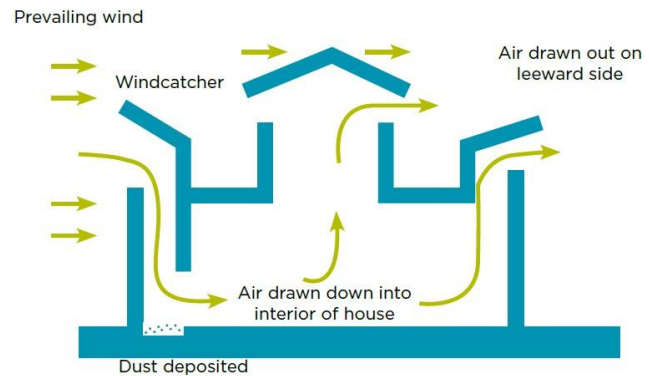
Carbon avoidance potential for real estate





Build clever/Build efficiently

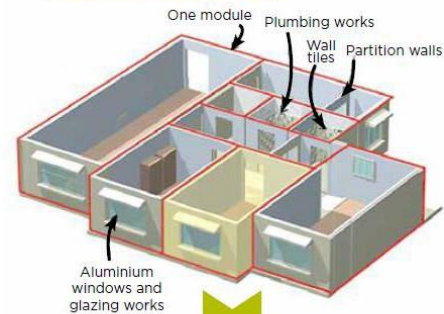
An example of a traditional Malqaf natural air conditioning system



Source: Tunza Eco-generation, Cushman & Wakefield Research

PPVC construction process

1. Modules made at the factory



2. Modules transported to the site

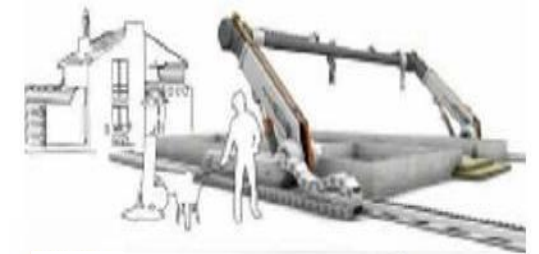
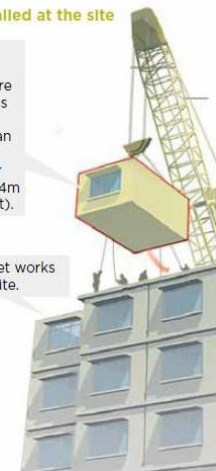


Source: The Straits Times, Cushman & Wakefield Research

3. Modules installed at the site

What happens at the construction site?
The finished modules are stacked like Lego pieces and fastened together on site. Each module can weigh as much as 80 tonnes and is no bigger than 12m (length) by 3.4m (width) by 4.5m (height).

Very little wet works is done on-site.



3D Printing and the construction industry: Time and cost reductions

Source: Deloitte, Cushman & Wakefield Research

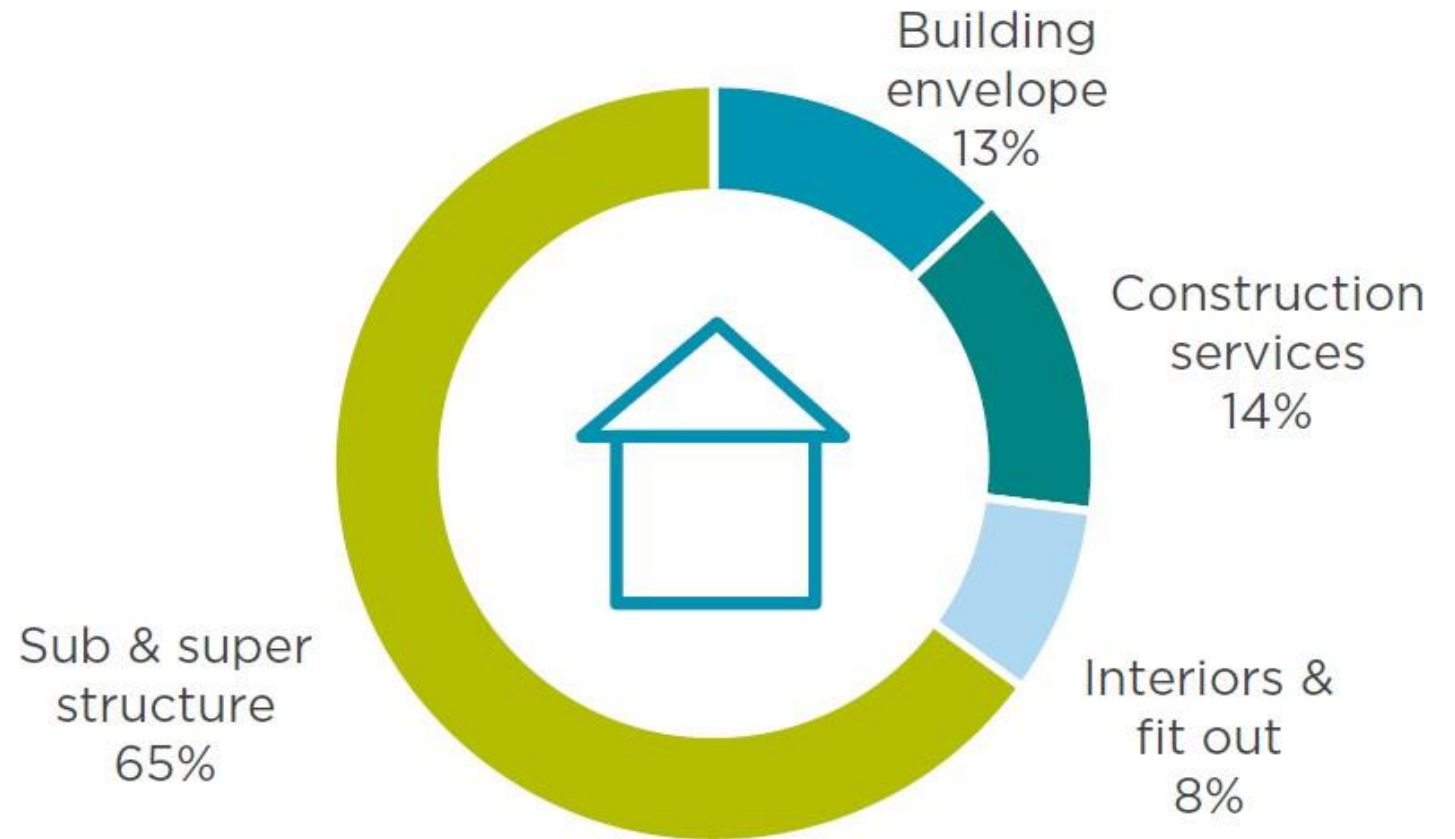




Embodied carbon



Building and its construction – Related embodied carbon amounts

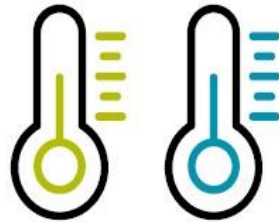




Lightweight materials

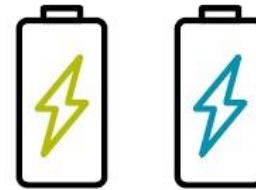
1m²

For 1 m² of partitions walls, using drywall systems instead of traditional systems **would save:**



63%

reduction in global warming potentials (kg CO₂ equiv/FU)



49%

reduction in primary energy use (MJ/ FU)



80%

reduction in wall system weight (kg/ FU)



36%

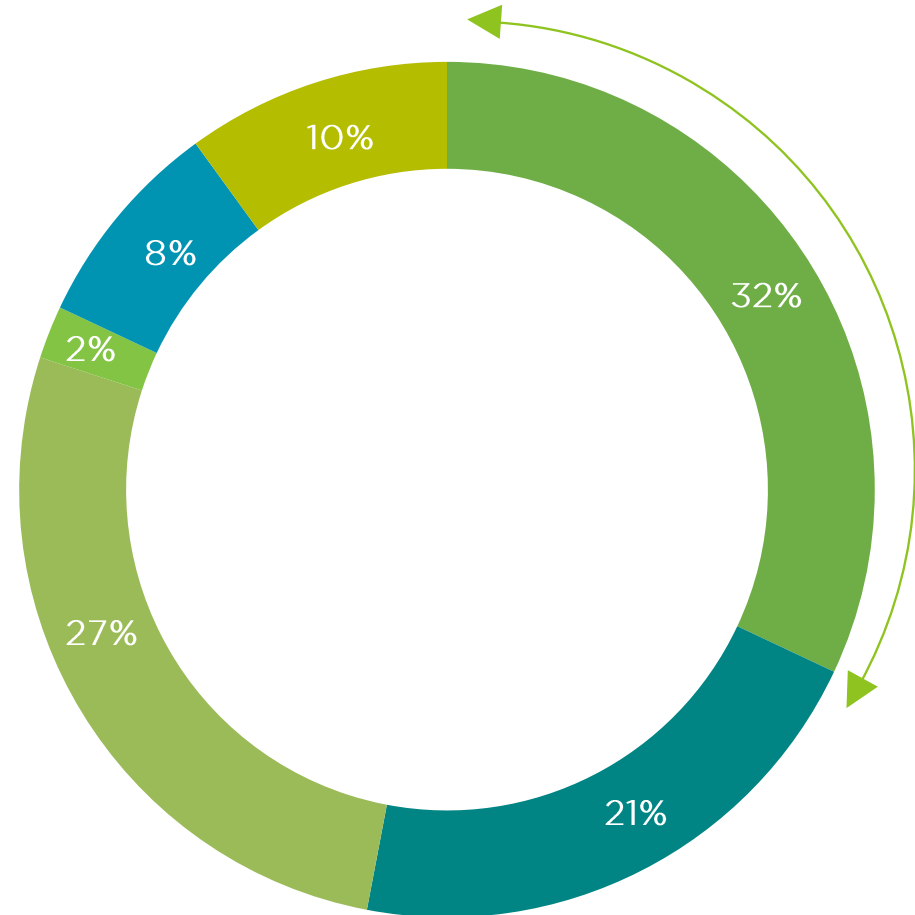
reduction in fresh water usage (L/ FU)



Operational **carbon**



Operational carbon emissions (by energy use) – City centre office



■ Small Power ■ Fans & Pumps ■ Lighting ■ Hot water ■ cooling ■ Heating

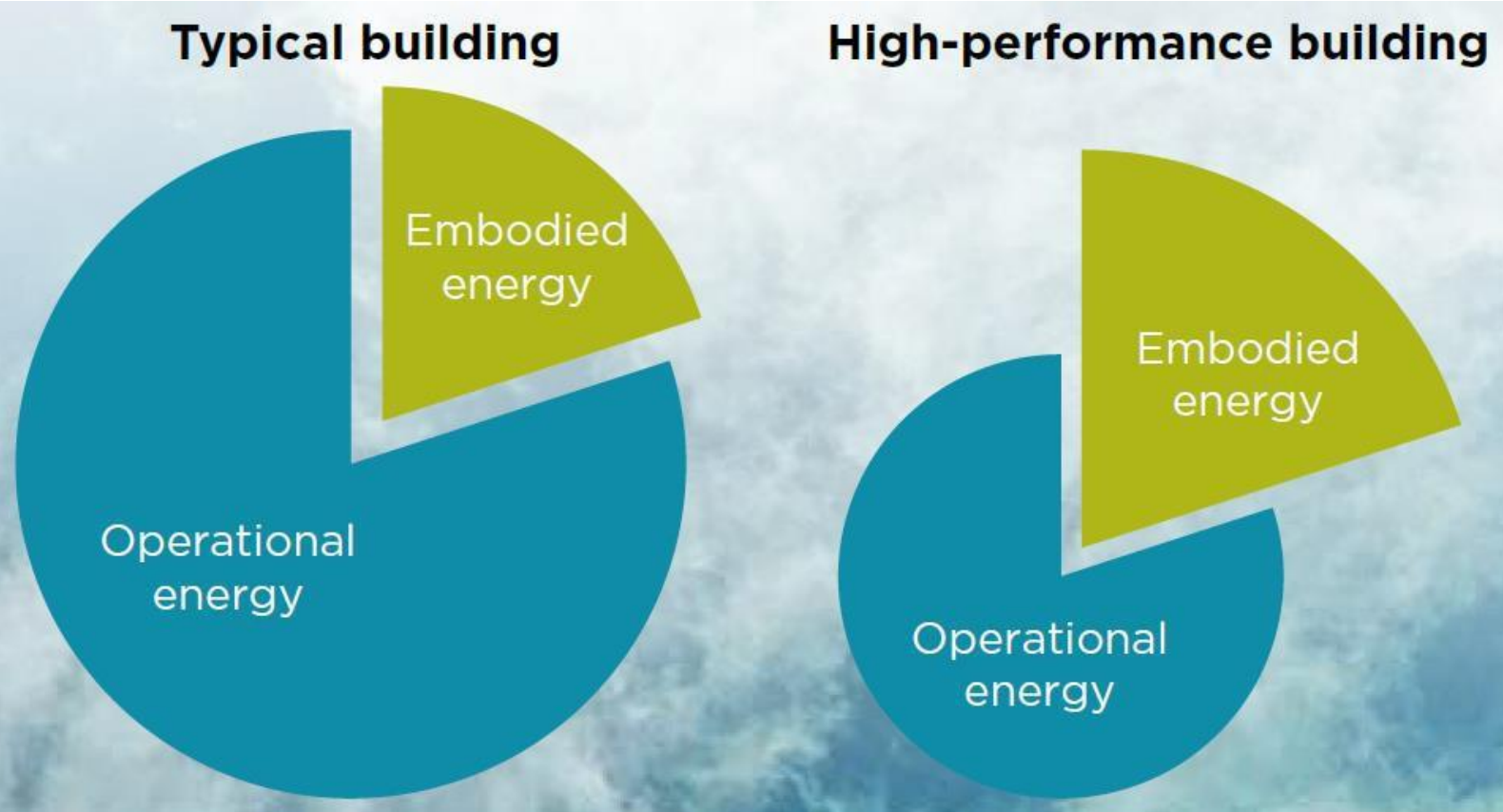


Energy efficiency concepts, measures and systems

Category	Description of measure
Air tightness	Improved air tightness
Thermal bridging	Enhanced thermal bridging
Improved envelope thermal insulation	Roof
	Ground floor
	External walls
Glazing	Optimised glazed area (windows and/or rooflights)
	Improved thermal performance of glazing
	Optimised building orientation
	Solar shading, e.g. Louvers, brise soleil
Heating cooling & ventilation efficiencies	Solar control glass
	Improved boiler seasonal efficiency
	Improve cooling efficiency (SEER)
	Improved Specific Fan Power
Lighting	Heat recovery
	Improved lighting efficiency
	Occupancy sensing lighting controls
Miscellaneous	Daylight dimming lighting controls
	Green roof
	Passive/active chilled beams
	Radiant heated/chilled ceiling slabs
	Mixed mode ventilation
	Water cooled/heated slabs



Buildings: Total lifetime energy use



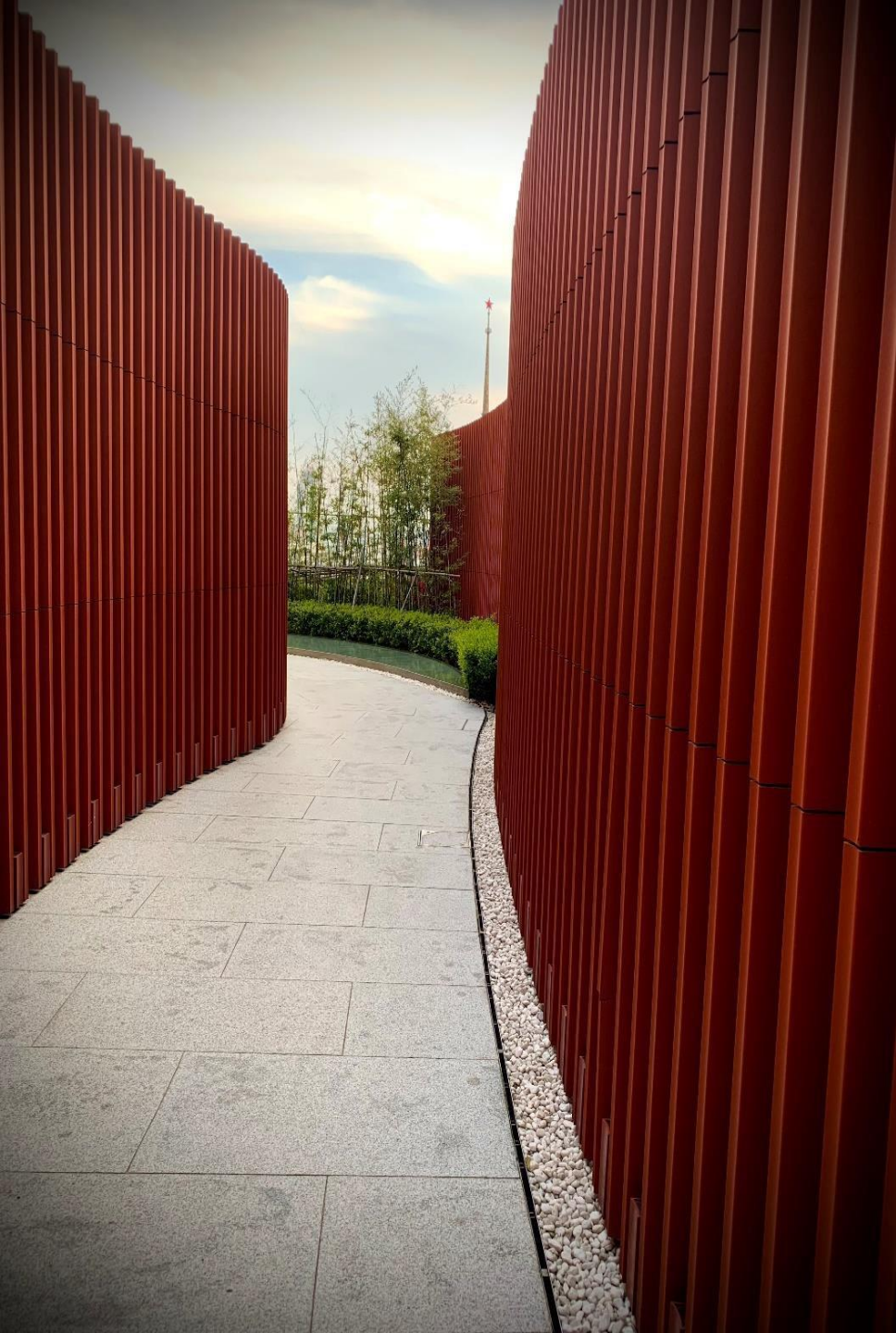
The background of the slide features a grayscale city skyline with various skyscrapers and buildings. Overlaid on this is a large, semi-transparent white circle containing the silhouettes of several people holding hands, suggesting a community or a group of stakeholders. The overall aesthetic is clean and professional.

Other **considerations**



Investment...





...and returns

Shanghai green Grade A office vs Shanghai non-green Grade A office (Q1 2021)

Shanghai green Grade A office and non-green Grade A office rental (Q4 2015-Q1 2021)



Shanghai green Grade A office vs Shanghai non-green Grade A office (Q1 2021)

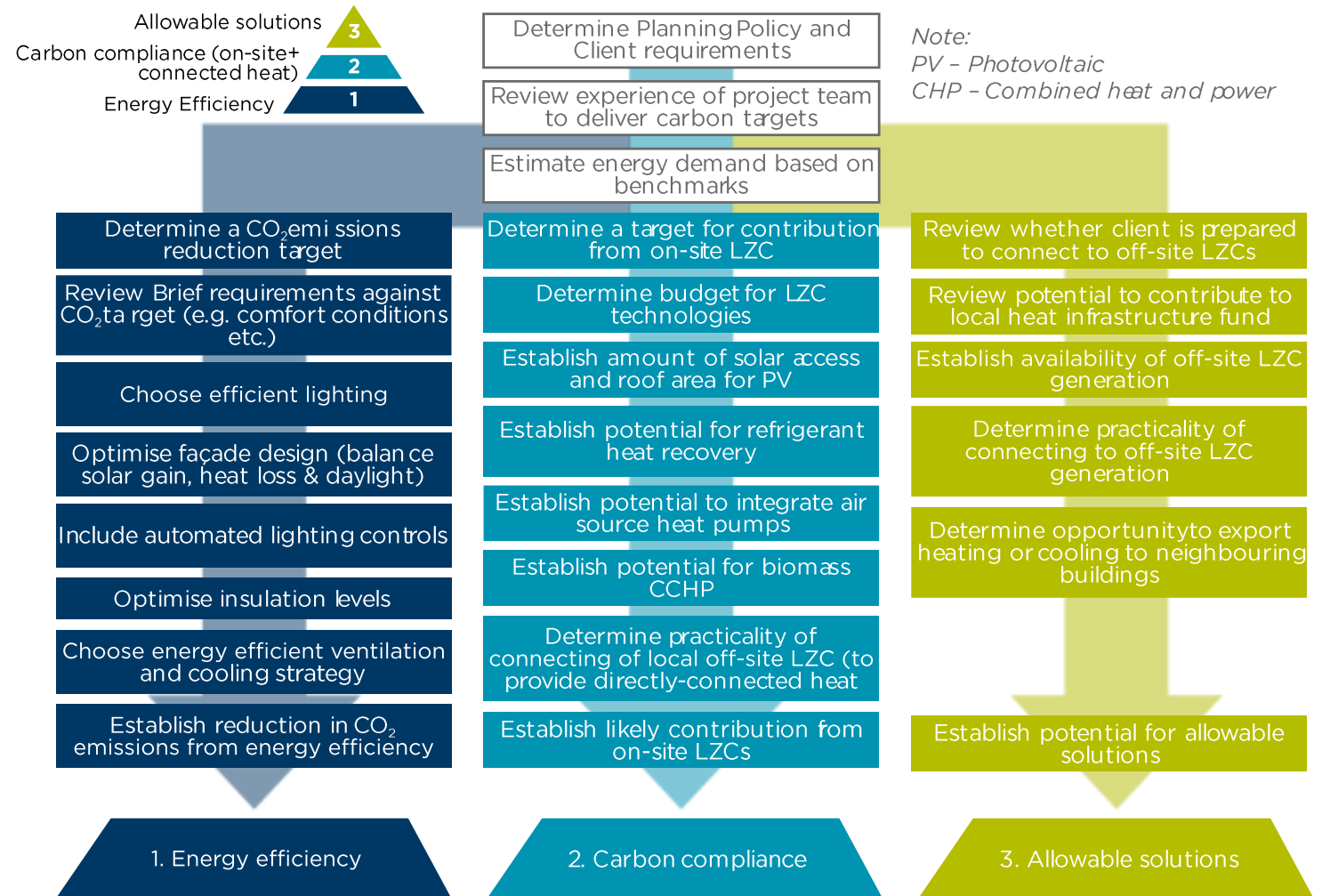
Case: Green	Case: Non-Green
RMB10.5/sq m/day	RMB8.5/sq m/day
x	x
365 days	365 days
x	x
30,000 sq m	30,000 sq m
x	x
5 years	5 years
= RMB574,875,000	= RMB465,375,000

= RMB574,875,000 - RMB465,375,000 = RMB109,500,000



...and finally

Delivering carbon neutral operational carbon office buildings



The background is a light-colored collage. It features a city skyline with various buildings and a road in the lower-left corner. Overlaid on this are several silhouettes of people in motion, including a person running in the upper right and a person jumping in the lower right. The overall aesthetic is clean and modern.

To sum up

Finally, for real estate to play its part in reducing carbon emissions and natural resource usage,

- carbon offsetting;
- carbon avoidance;
- embodied carbon, and;
- operational carbon...

...must be considered to approach decarbonisation holistically and create a world that is more sustainable.



Thank You!



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Q&A

*Please click on the Q&A icon on the top right hand corner
of your window to submit your questions.*



THANK YOU

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