



Future State of Sustainability

Tai Lee Siang

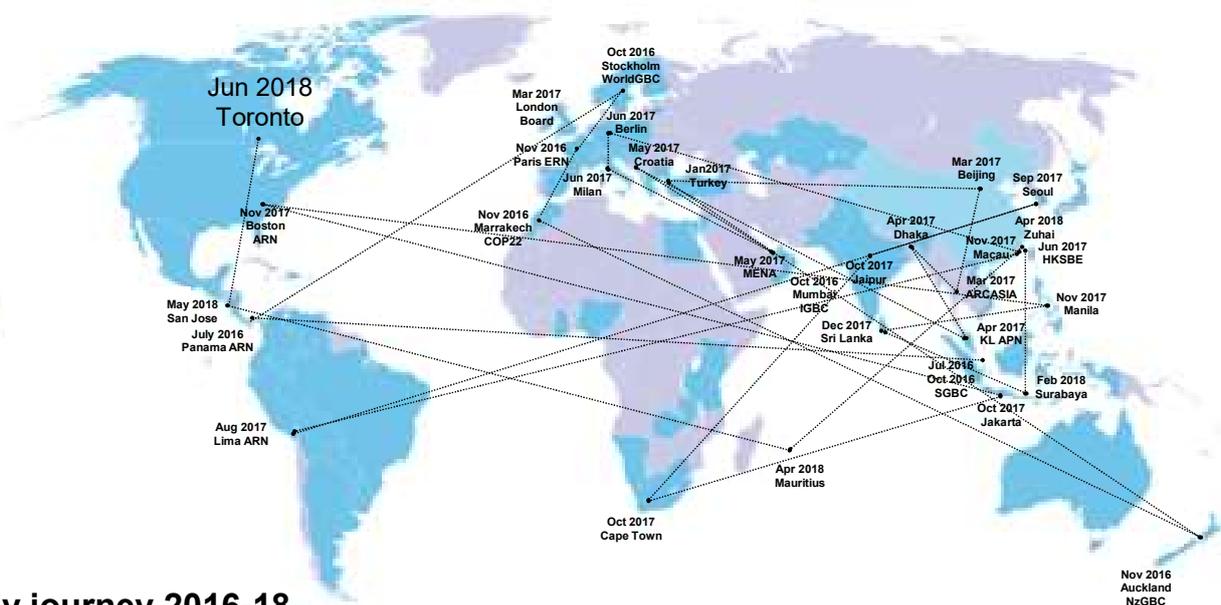
Past Chair, World Green Building Council



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1. 2018 Trends
2. Greener buildings
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WorldGBC



My journey 2016-18
ARN 5 AFN 2 MENA 2 ERN 7 APN 16

Cities of Love



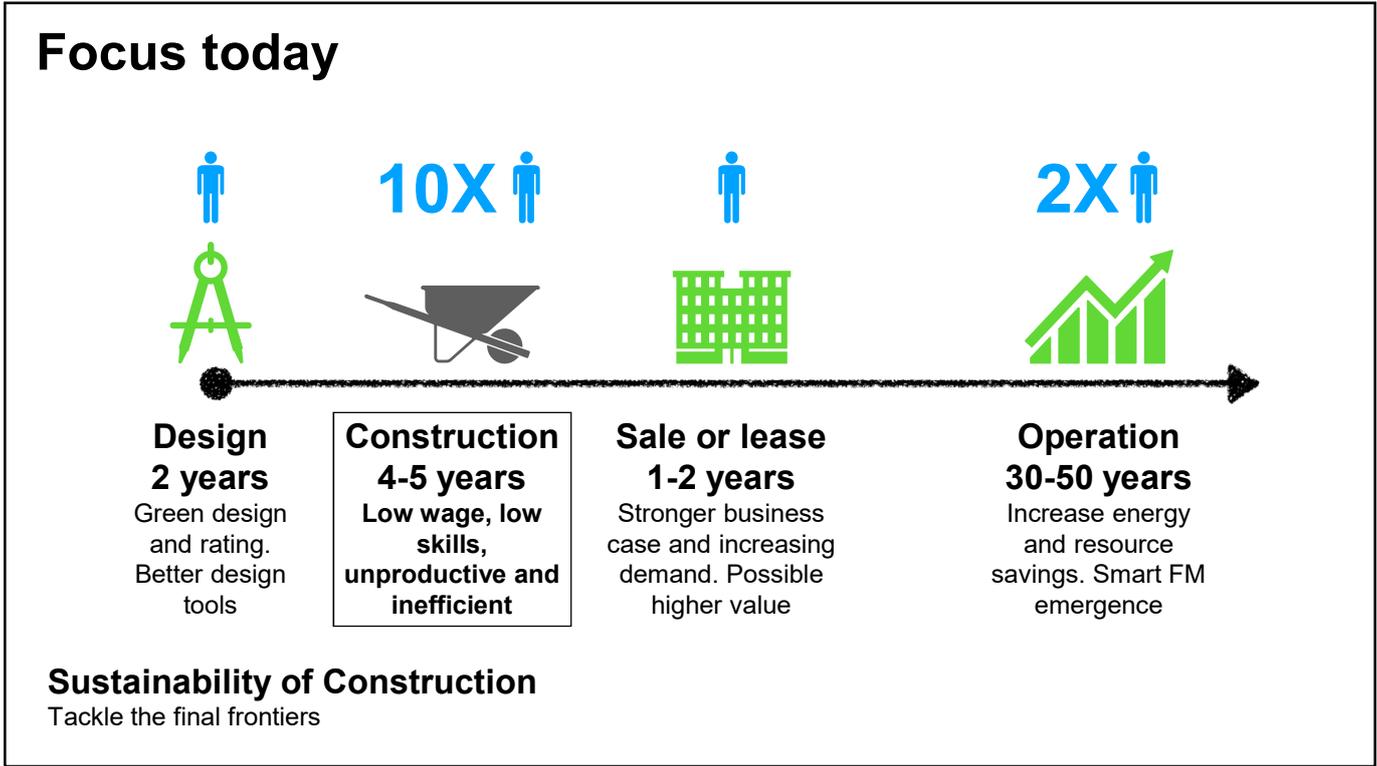
Tackle Cities' Problems
Encourage ground up initiatives

CITIES OF love
Roadmap for Sustaining Future Cities

What you love, you will sustain. Cities of Love aims to urge, persuade and provoke fellow residents of our earth to collectively shape the cities we live in. To achieve this, her residents must again, uncover the reasons to love and therefore sustain their cities. To this end, Cities of Love tries to identify the ingredients that could possibly be the reasons for such active love. When a city is filled by the people who love their cities, then we can have a greater chance of advancing towards a better tomorrow. Love is a mighty force to be reckoned with.

CITIES OF LOVE
Tai Lee Siang Valerie ANG

CITIES OF love
Roadmap for Sustaining Future Cities
TAI Lee Siang Valerie ANG



1. 2018 Trends

 <p>Set Net zero carbon building targets</p>	 <p>Increased demand for health and wellbeing</p>	 <p>Digital disruption in building industry</p>
		

Advancing Net Zero

A World Green Building Council global project

WorldGBC definition:
A net zero carbon building is highly energy efficient with all remaining energy from on-site and/or off-site renewable sources

100% of buildings must operate at net zero carbon **2050**

2030 **All new buildings** must operate at net zero carbon

GOVERNMENT ENGAGEMENT

TRAINING & EDUCATION

CORPORATE ENGAGEMENT

CERTIFICATION

Key Principles

- 1. Measure and disclose carbon**
Carbon is the ultimate metric to track, and buildings must achieve an annual operational net zero carbon emissions balance based on metered data
- 2. Reduce energy demand**
Prioritise energy efficiency to ensure that buildings are performing as efficiently as possible, and not wasting energy
- 3. Generate balance from renewables**
Supply remaining demand from renewable energy sources, preferably on-site followed by off-site, or from offsets
- 4. Improve verification and rigour**
Over time, progress to include embodied carbon and other impact areas such as zero water and zero waste

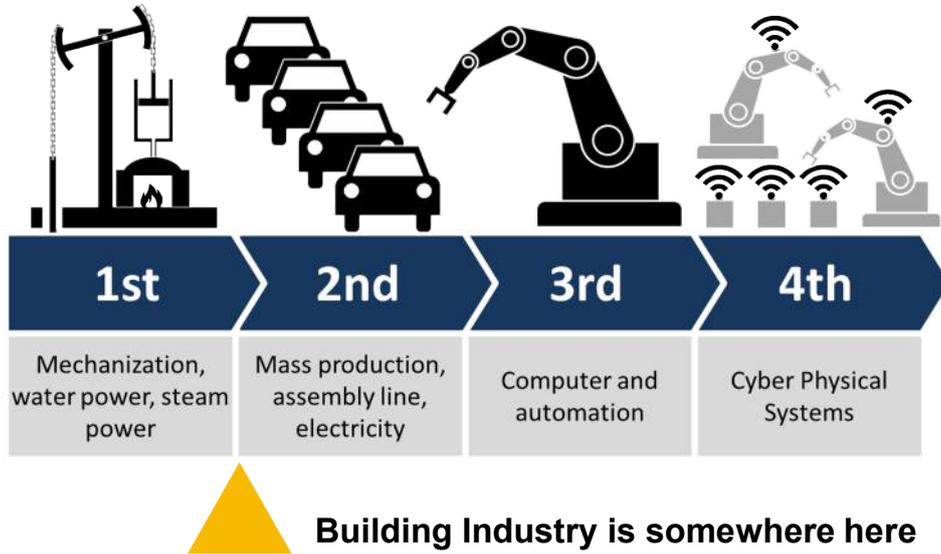
Version 1 | March 2018

Health & Wellbeing

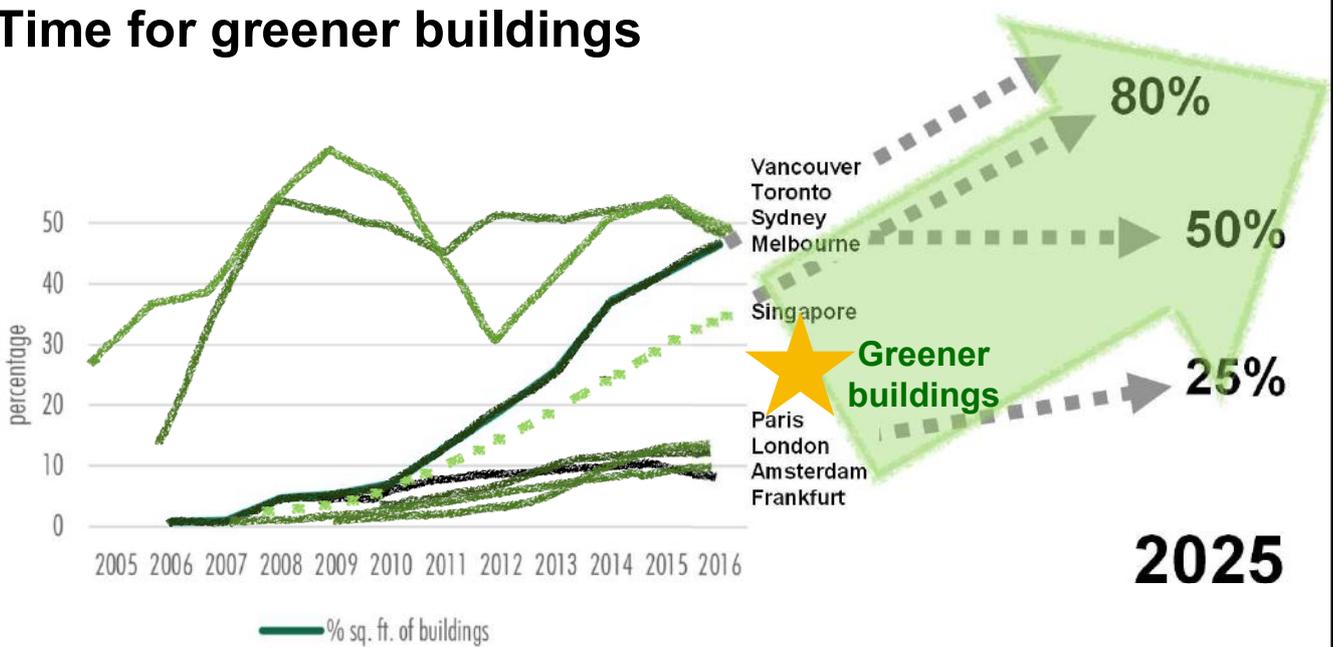
Better places for people

- Increase productivity by 23%
- Faster recovery in Hospitals by 8.5%
- Increase sales by 20%

Digital Disruption



Time for greener buildings



2018 International Green Building Adoption Index
By CBRE & Maastricht University

2. Greener Buildings



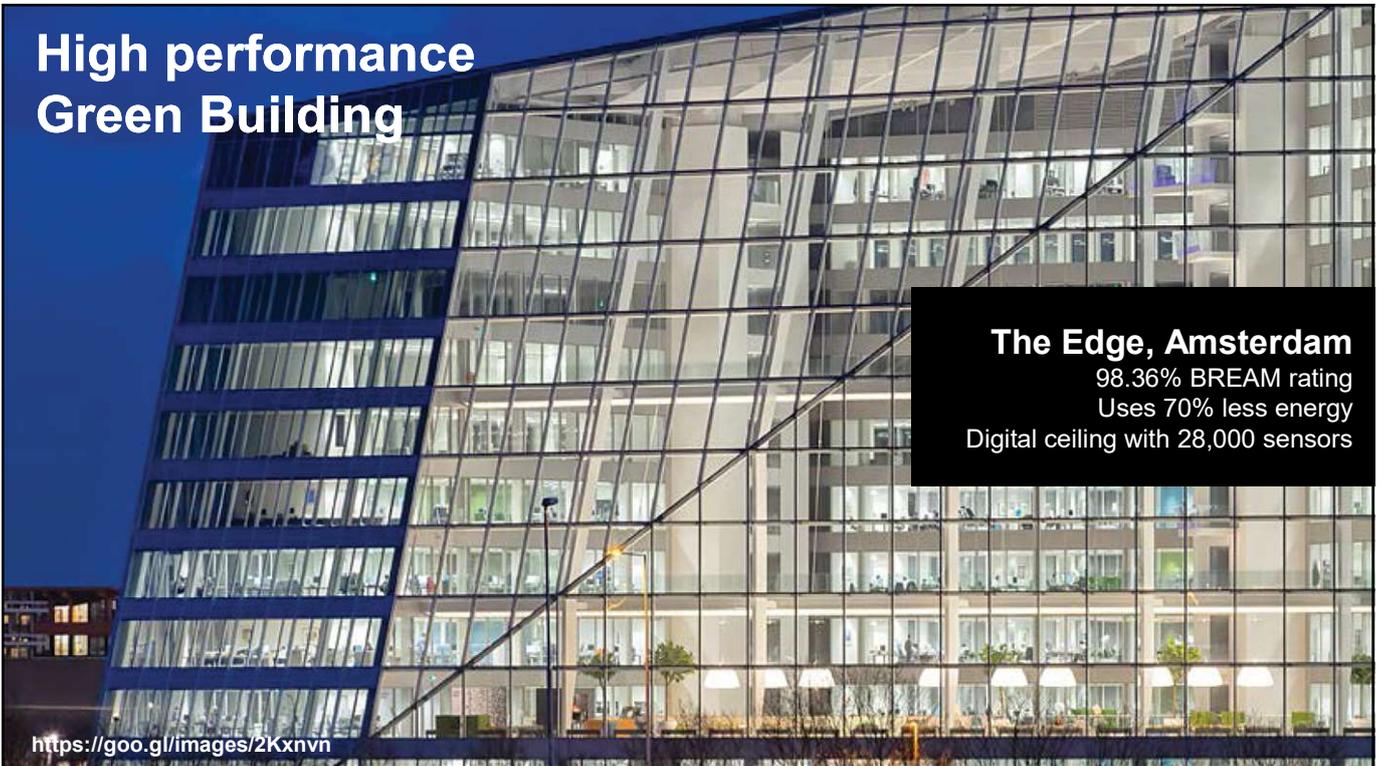
High performance green building

Net Zero Energy Building

Super Low Energy Building



High performance Green Building



The Edge, Amsterdam
98.36% BREEM rating
Uses 70% less energy
Digital ceiling with 28,000 sensors

<https://goo.gl/images/2Kxvnv>

Net Zero Energy Building

National University of Singapore

Cool air at 26 deg C and higher humidity levels augmented with ceiling fans

<https://goo.gl/images/drgf8P>

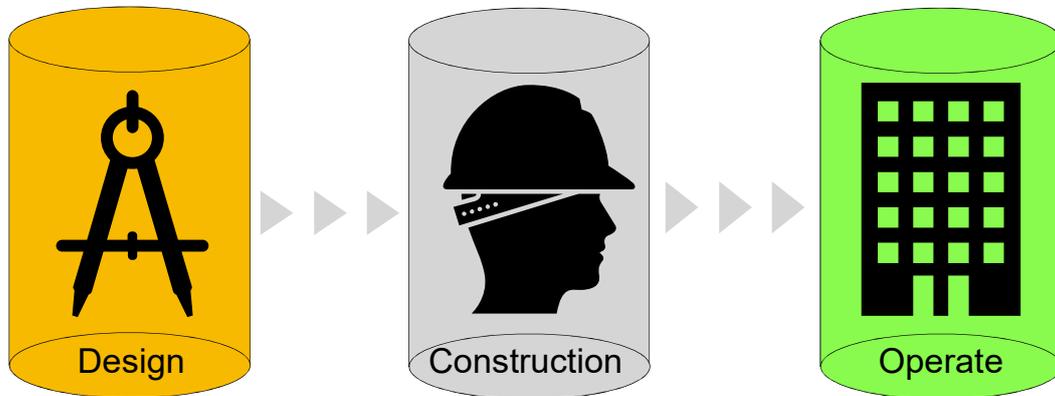
Super Low Energy Building

Keppel Bay Tower

Reduce annual energy consumption from 145 to 115 kWh/m²/yr
Annual water savings of 7,000m³ = 3 Olympic-size swimming pools

<https://goo.gl/images/yDWSWr>

The fundamental issue

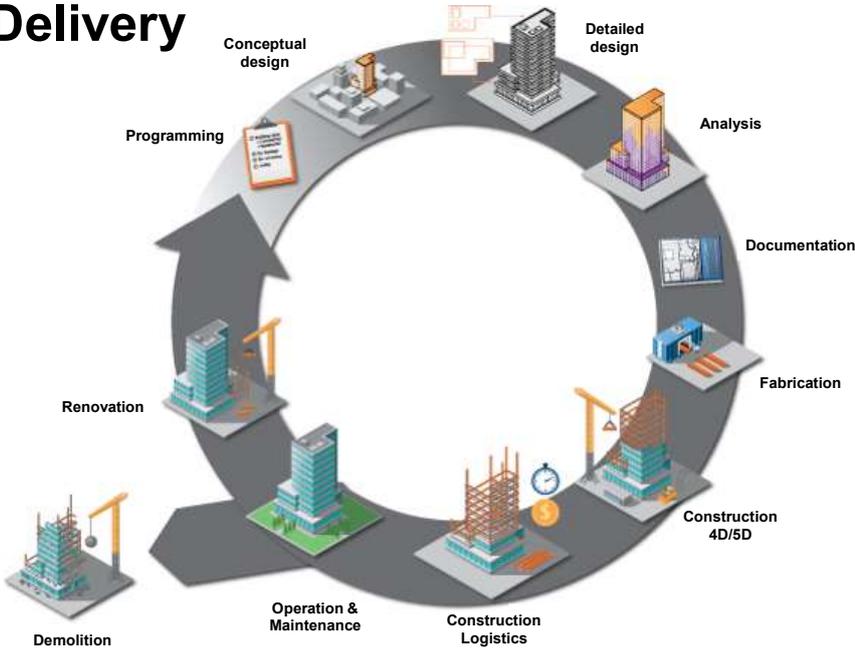


Building industry has operated in silos for centuries. Insufficient attempts have been made to bridge the gaps resulting in loss of productivity and sustainability

3. Productising building

Integrated Digital Delivery	Design for Manufacture & Assembly	Precast Pre-finished Volumetric Construction

Integrated Digital Delivery



IDD reduces
Errors and omissions by 61%
Construction cost by 30%
Project duration by 22%

Design for Manufacturing & Assembly



DfMA
Works offsite reduces manpower and time, while ensuring work sites are safe, conducive and have minimal impact on the environment.



Precast Pre-finished Volumetric Construction

PPVC

Speeds up construction. It can potentially achieve a productivity improvement of up to 50% of manpower and time savings.

Conclusion

There is an urgent need to transform the built environment industry. BCA established a front office named, "BuildSG" to spearhead the transformation process. It focuses on 3 areas:

1. Capacity building and talent attraction
2. Industry engagement and transformation
3. Internationalisation



