

# *Singapore Green Building Masterplan*

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# Singapore's Enhanced Nationally Determined Contribution And Long-Term Low-Emissions Development Strategy

## Charting Singapore's Low-Carbon Future



**Enhanced 2030 Nationally Determined Contribution (NDC)**

Peak emissions at **65 MtCO<sub>2e</sub> around 2030**

Based on current projections, this will allow us to achieve a 36% reduction in emissions intensity from 2005 levels by 2030.

### MITIGATION

#### Transformations in Industry, Economy, Society

POWER GENERATION	INDUSTRY	TRANSPORT	BUILDINGS	HOUSEHOLDS	WASTE & WATER
<ul style="list-style-type: none"> <li>Energy efficiency</li> <li>At least 2 GWp of solar energy by 2030</li> <li>Low-carbon technologies</li> </ul>	<ul style="list-style-type: none"> <li>Energy efficiency</li> <li>System-level solutions</li> <li>Low-carbon technologies</li> </ul>	<ul style="list-style-type: none"> <li>Zero private vehicle growth</li> <li>9 in 10 peak period journeys on "Walk-Cycle-Ride" by 2040</li> <li>Cleaner vehicles by 2040</li> </ul>	<ul style="list-style-type: none"> <li>80% green buildings by 2030</li> <li>Super Low Energy Programme</li> </ul>	<ul style="list-style-type: none"> <li>Mandatory Energy Labelling Scheme</li> <li>Minimum Energy Performance Standards</li> <li>Green Towns Programme</li> </ul>	<ul style="list-style-type: none"> <li>Circular economy approach</li> <li>Waste</li> <li>Recycling</li> <li>Energy efficiency of desalination and used water treatment</li> </ul>

**CARBON TAX** Initial rate of **S\$5/tCO<sub>2e</sub>** ▶ **S\$10-S\$15/tCO<sub>2e</sub>** by 2030

**Long-Term Low-Emissions Development Strategy (LEDS)**

Halve emissions from its peak to **33 MtCO<sub>2e</sub> by 2050 & net zero** emissions **as soon as viable** in the second half of the century

### ADAPTATION

**Coastal Protection, Water Resources & Drainage**

Protecting our coastline from sea level rise  
Ensuring water resilience, holistic stormwater management, and flood protection

**Buildings & Infrastructure**

Keeping our buildings and infrastructure safe

**Network Infrastructure**

Keeping our essential services, including transport and network infrastructure, running well

**Biodiversity & Greenery**

Strengthening resilience of our biodiversity and ecosystems

**Public Health & Food Security**

Strengthening resilience in public health and our food supply

**Urban Heat Island (UHI) Effect**

Mitigating the UHI effect to strengthen our resilience in the face of rising temperatures

Source: NCCS

# Singapore Green Plan 2030, a national sustainability movement to tackle climate change



## CITY IN NATURE

*Create a green, liveable, and sustainable home for Singaporeans, and build up our carbon sinks by extending nature throughout our island*



## SUSTAINABLE LIVING

*Make reducing carbon emissions, keeping our environment clean, and saving resources and energy a way of life in Singapore*



## ENERGY RESET

*Use cleaner energy and increase our energy efficiency to lower our carbon footprint*



## GREEN ECONOMY

*Seek green growth to create new jobs, transform our industries and harness sustainability as a competitive advantage*

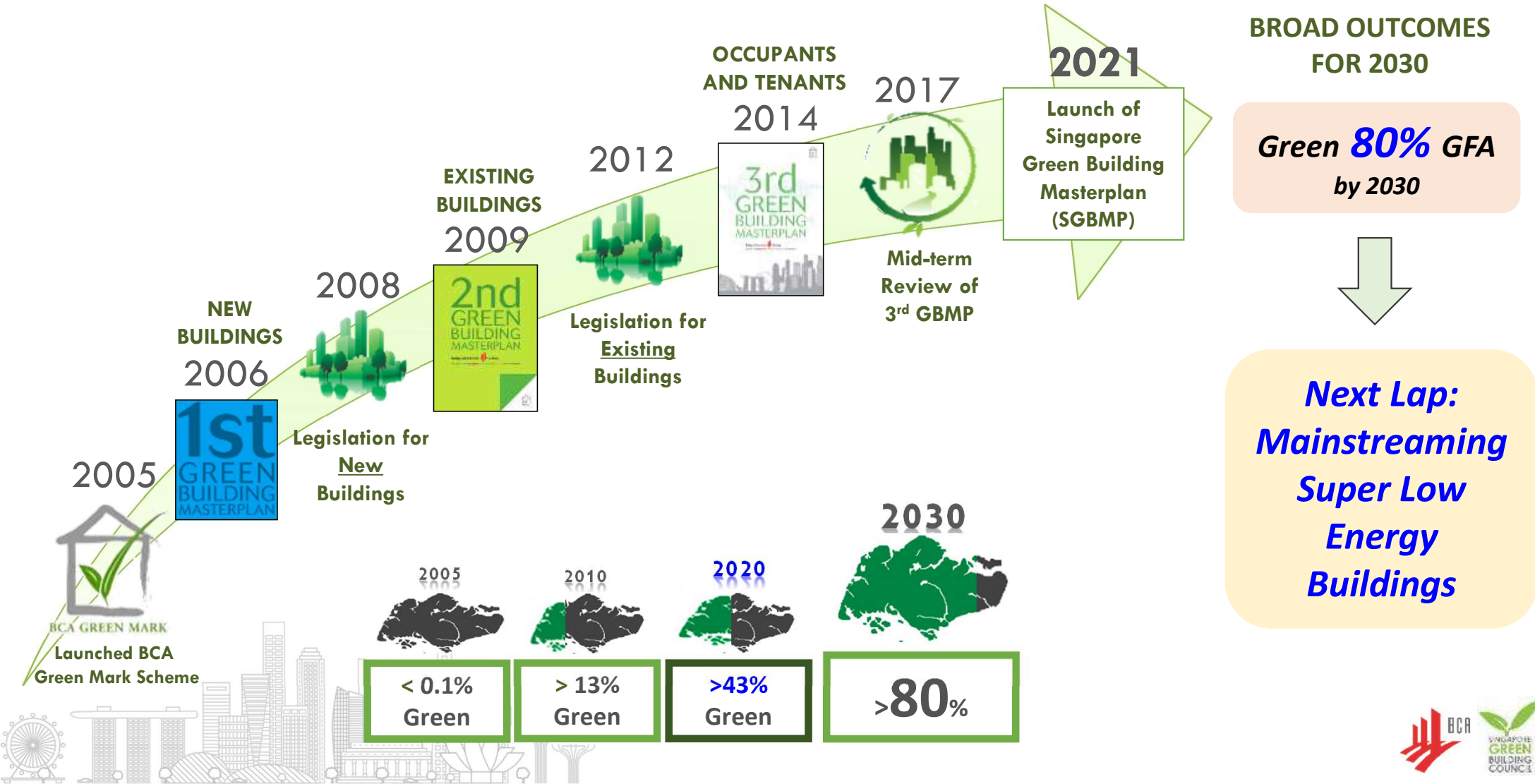


## RESILIENT FUTURE

*Build up Singapore's climate defences and resilience, and enhance our food security*

**Green Government and Green Citizenry as Key Enablers**

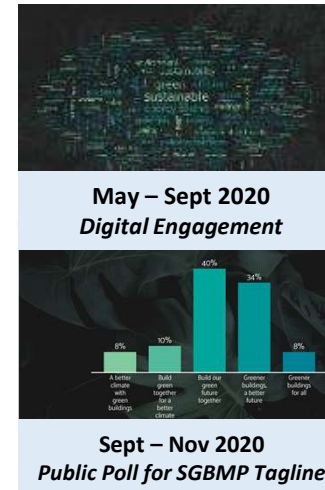
# Our green building journey started in 2005, with several iterations of the Green Building Masterplan to bring us to where we are today





# BCA and SGBC engaged over 5,000 stakeholders to co-create the shared vision and aspirations for the next lap of our green building journey

## SGBMP Pre-Launch Engagement Efforts



**> 80**  
BE stakeholders involved in working committee to formulate and refine SGBMP initiatives  
*\*adopted Alliance for Action approach*

**> 5,000**  
stakeholders engaged across various initiatives

**92%**  
agree that we need to do more to green our buildings to tackle the impacts of climate change.

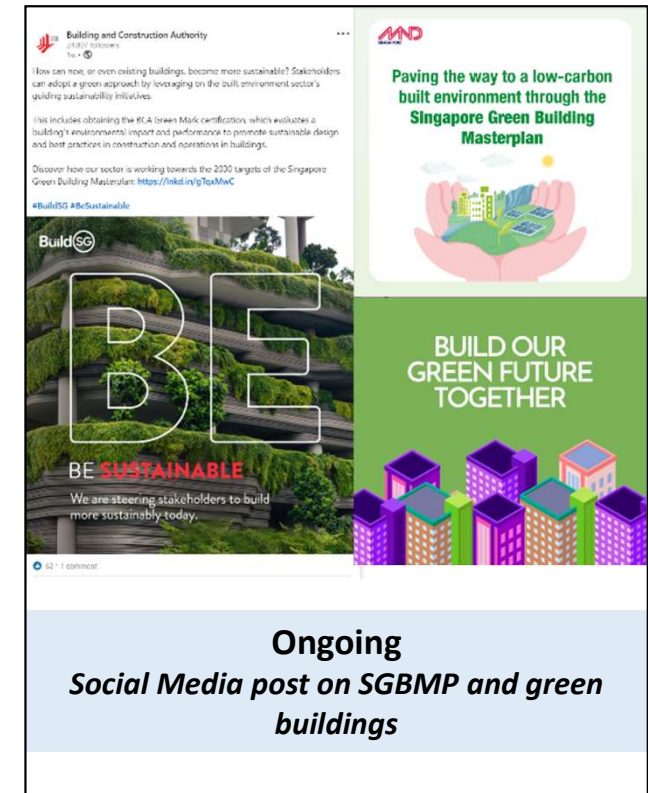
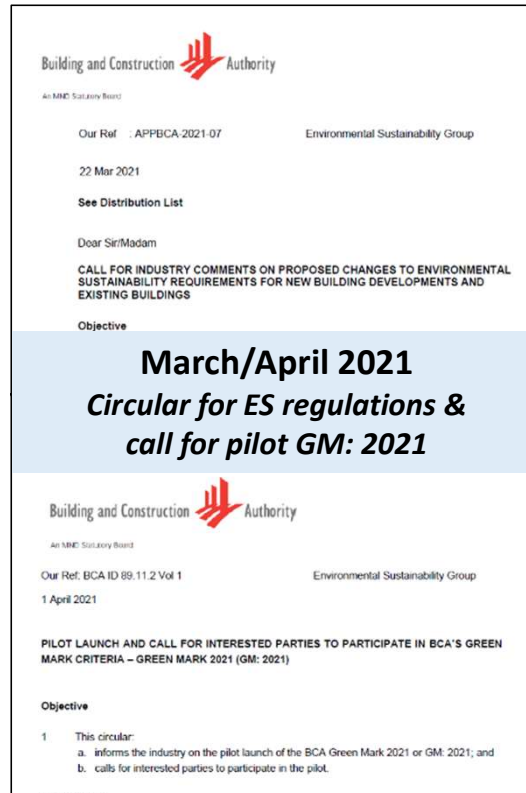
**94%**  
view that more urgent measures should be put in place in the **next 5-10 years** for all new buildings to be super low energy buildings.

**66%**  
agree that individual actions such as making choices to live/work in green buildings and advocating the benefits of green buildings are ways to take climate action.



# BCA and SGBC will continue to engage stakeholders to raise awareness on aspirations for the next lap and work with wider industry to co-deliver the key outcomes and initiatives for SGBMP

## SGBMP Post-Launch Engagement Efforts



# Singapore Green Building Masterplan: Build our green future together

## The SGBMP aims to deliver 3 key outcomes: '80-80-80 in 2030'

### VISION

"A leading green Built Environment sector mitigating climate change and providing a healthy, liveable and sustainable Built-Environment for all"



### 80% of buildings to be green by 2030:

- *Step up the pace* of greening our buildings
- *Raise the sustainability standards* of our buildings



### 80% of new developments to be SLE from 2030:

- *Mainstream Super Low Energy (SLE) performance of new buildings* so that from 2030, large majority of new development would be achieving today's SLE energy performance standards



### 80% EE improvement (from 2005 levels) by 2030:

- *Push boundaries in energy efficiency for best in class green buildings* through research, innovation and implementation



# Proposed measures to achieve the 3 key outcomes of SGBMP

## Regulations

- *Raise the minimum energy efficiency requirements* for buildings in 2021

## Green Mark 2021

- *Raise sustainability standards* with Green Mark 2021
- *New Green Mark SLE standards for residential buildings*

## GreenGov.SG

- *Public sector take the lead* to mainstream Super Low Energy (SLE) performance of buildings

## Data Transparency

- Publish *publish building energy performance data*, starting with commercial buildings in 2H 2021

## Support Measures

- Explore measures to encourage SLE adoption in private sector
- Explore *enhancing funding support for GBIC programme*
- *Enhance green financing and develop capabilities for BE sector*

## VISION

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80% of new developments to be SLE from 2030

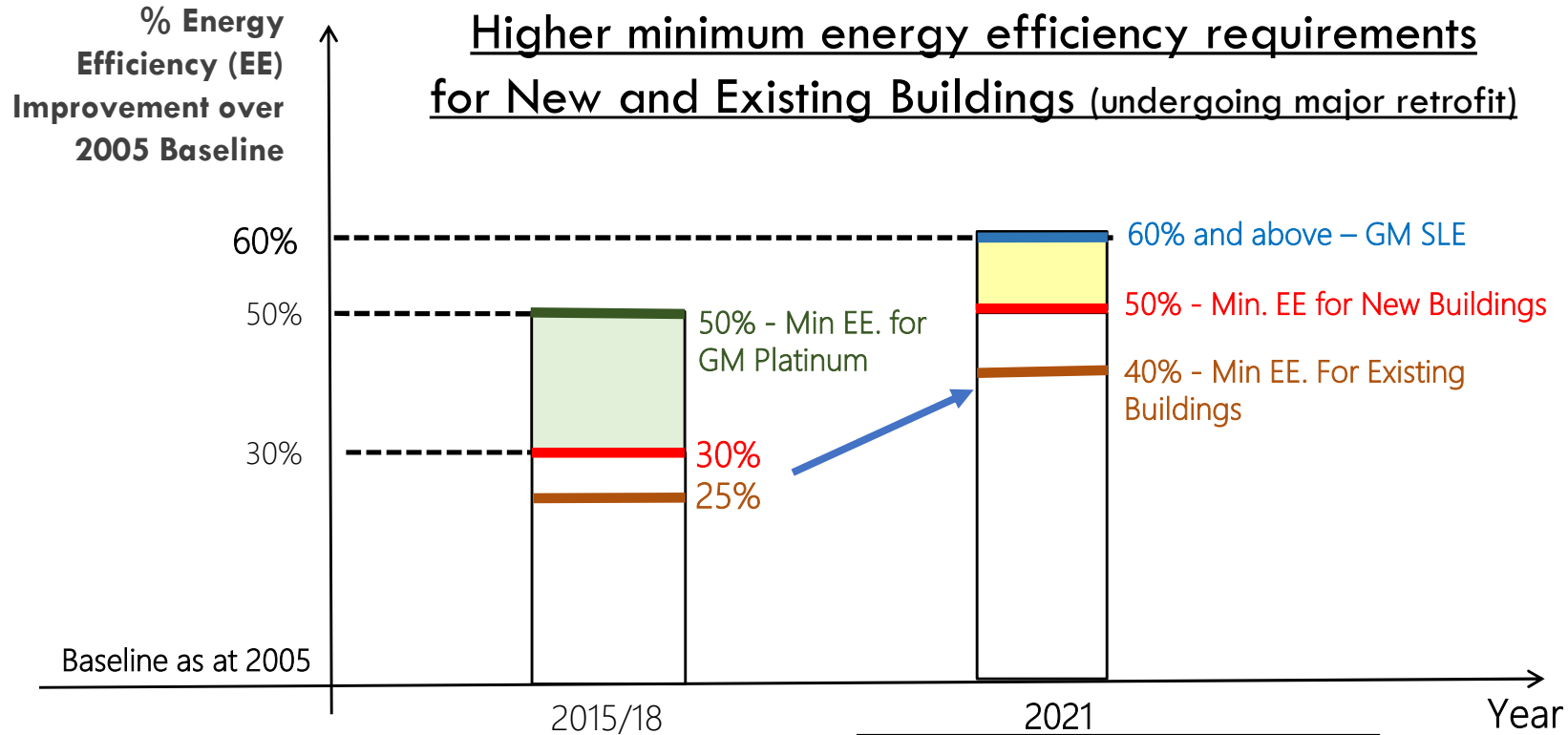


80% EE improvement (from 2005 levels) by 2030





**80% buildings (by GFA) to be green: To future-proof and improve the quality of our building stock, we will raise minimum energy efficiency requirements for buildings in 2021.**



Raise Min. EE standards to 50% & 40% respectively

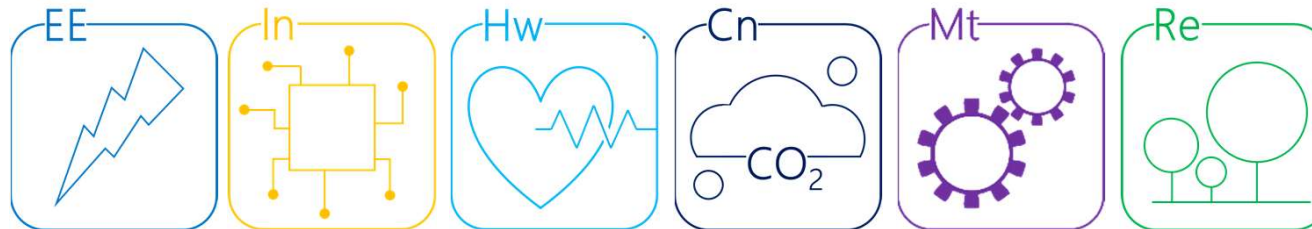


## **80% buildings (by GFA) to be green: We will also raise sustainability standards with the revised Green Mark scheme**

### Green Mark 2021 is a key lever that facilitates high performance and climate action in buildings

- Higher energy performance requirements and longer term sustainability outcomes
- It is aligned to the wider Green Plan, SGBMP's '80-80-80 in 2030' and a driver of the Construction ITM (Smart, Productive and Green)
- It supports and prepares the value chain for the future green economy - towards climate resilience, carbon neutrality and transition plans, whilst championing SLE, DfM, Smart FM, IDD, DfMA & SC, Healthy buildings.

## GREEN MARK 2021



***GM: 2021 criteria is ready for piloting!***

For more info, please visit <https://go.gov.sg/gm2021>



**Business case for SLE buildings: With net positive savings over the lifecycle, widespread adoption of SLE in Singapore will help reduce energy use and carbon emissions in the built environment sector.**

➤ Green Mark buildings reap net positive savings over their lifecycle\*, with energy savings outweighing the upfront investment cost.

Green Mark Rating	Green Cost Premium	Simple Pay Back (yrs)	NPV Savings per GFA (median \$/GFA)
<b>SLE#</b> (>60% EE improvement over 2005 levels)	<b>1.00% - 4.60%</b>	<b>2.11–5.77</b>	<b>250</b>
<b>Platinum</b> (>50% EE improvement over 2005 levels)	1.00% - 4.40%	2.30-5.80	225
<b>Gold<sup>Plus</sup></b>	0.70% - 1.87%	1.89-3.56	117
<b>Gold</b>	0.12% - 1.80%	0.81-2.45	48

\* LCC analysis is based on an independent consultancy study on BCA Green Mark Schemes. Building lifecycle is assumed as 30 years, with CAPEX, OPEX, maintenance and replacement cost factored in the assumption. For more info, please visit <https://go.gov.sg/gmcoststudy>

#BCA has separately conducted an LCC analysis on 6 new non-residential SLE building projects for comparison.

➤ *Strong business case to strive for higher standards and go beyond GM Platinum rating.*



**80% of new developments to be SLE: Government to take the lead to bring SLE buildings into the mainstream and explore measures to drive adoption in private sector**

## Creating Lead Demand

### **Government taking the lead**

- Under **GreenGov.SG**, public sector will take the lead on SLE adoption, to bring SLE buildings to mainstream

*For more info, please visit <https://www.mse.gov.sg/cos/greengov>*

### **Driving SLE adoption in private sector**

- Exploring measures to encourage SLE adoption





**80% EE improvement: Ramping up Research & Innovation (R&I) to push the boundaries in EE for best-in-class green buildings and pave the way for a low-carbon built environment**

R&I Target-setting for SLE Technology Roadmap by 2030

Year	2018	2020	2030
Energy savings % improvement target over 2005 base	60	65	80

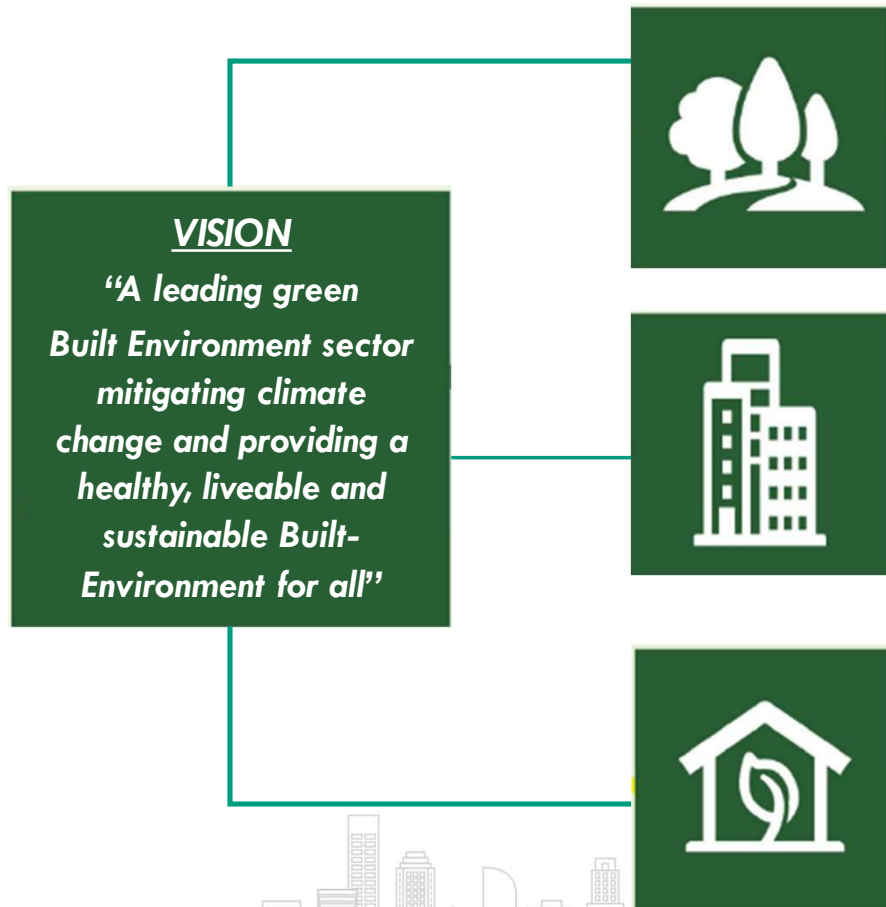
**Develop technological solutions through R&I**

- Green Building Innovation Cluster (GBIC) - one-stop Research, Development, and Demonstration programme to coordinate R&I efforts to improve EE of buildings
- Currently, best-in-class buildings are able to achieve Energy Efficiency >65% better than 2005 levels (as of June 2020)
- **Looking into enhancing funding support to *the GBIC programme*** to innovate, develop and deploy key technologies for SLE buildings.



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**For more information on SGBMP, please visit <https://go.gov.sg/sgbmp>.**

# Thank you



@BuildSingapore @SGBC

