

Singapore Green Building Masterplan

Transition to a Low-Carbon Economy

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Build **SG**



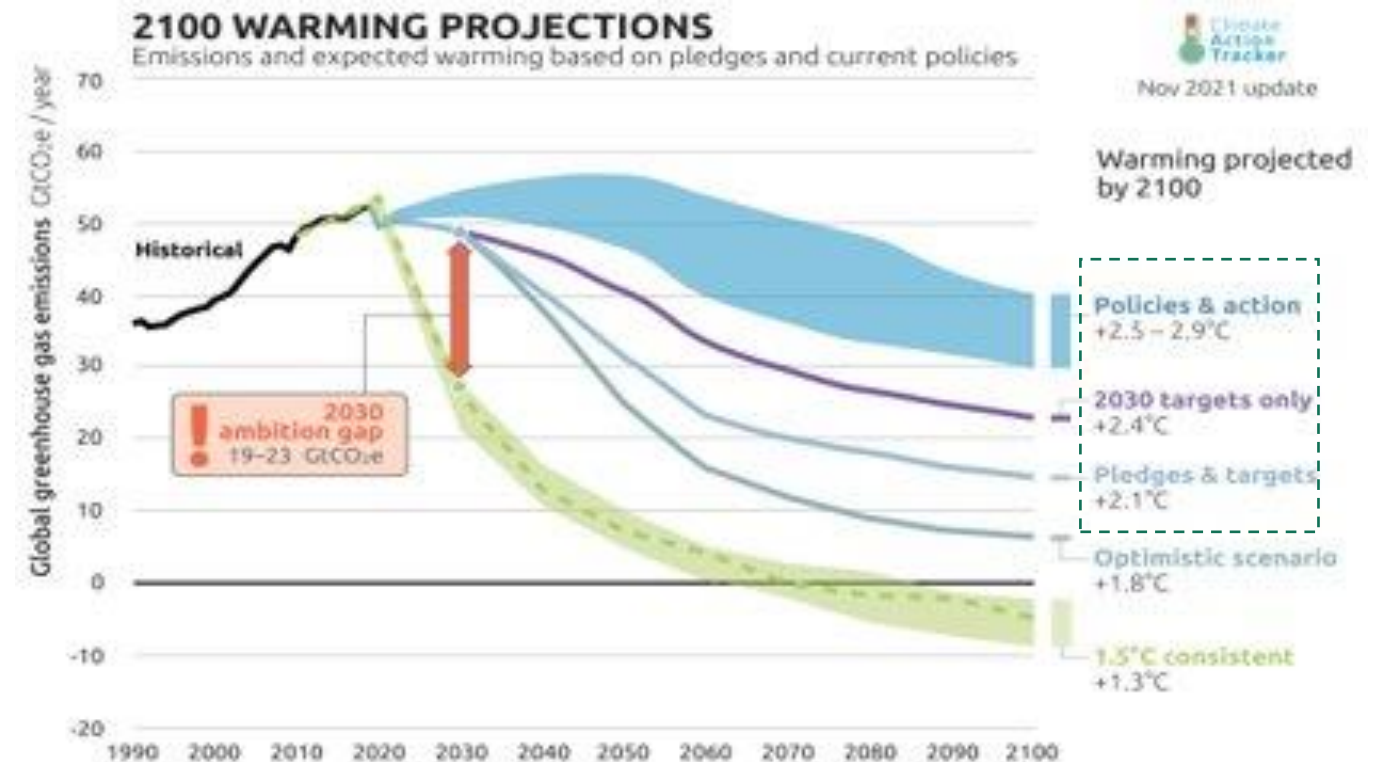
Current global efforts are insufficient to avoid intensifying climate impacts

Paris Agreement – to limit rise to “well below 2°C”, “pursue efforts towards 1.5°C”

Latest findings from IPCC AR6 assessed that **climate change will affect us more severely than previously thought** – intensity, frequency and duration of climate-change-induced weather events will be exacerbated

COP-26 commitments – Keeping 1.5°C within reach!

- **Mainstreaming of 1.5°C global temperature goal (instead of 2°C)** - world collectively to reach net zero by 2050
- **2°C increase** above pre-industrial (1900) levels by end of century may no longer be safe due to intensifying climate impacts



Source: Climate Action Tracker

Climate Change poses an asymmetrical challenge to Singapore (1/2)

Our impact on emissions is small but still important for us to play an active role

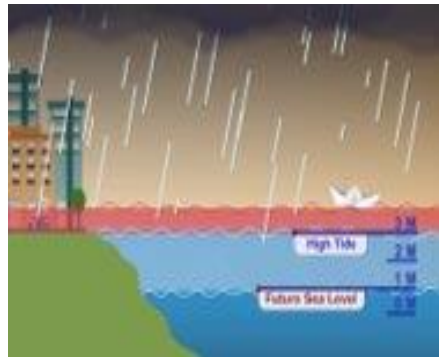
- Contribute around 0.1% of global emissions
- Immutable national circumstances

Because the impact of climate change on Singapore is disproportionately large

- Already feeling the effects
- Threat to existence and livability



By end of this century...



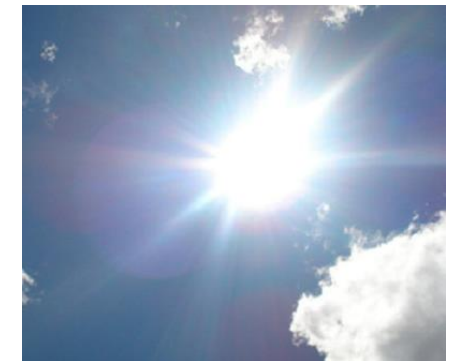
↑ Sea level of up to 1m



~ 300 days of hot and humid weather



↑ intensity and frequency of heavy rainfall



↑ daily mean temperature by 1.4-4.6 °C

Climate Change poses an asymmetrical challenge to Singapore (2/2)



Global problem

- No single country can solve it on its own
- Requires global solidarity



National circumstances

- Natural limitations i.e. access to clean energy
- Reliant on maturing of key low-carbon technologies and international collaboration



Inherent vulnerability

- Adapt to the physical effects of climate change
- Manage economic restructuring to seize green opportunities and decouple growth from carbon

Moved early on climate mitigation targets in 2020

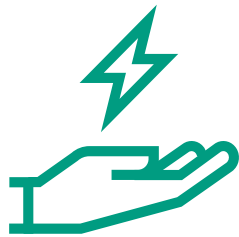
Amongst the first few countries to enhance 2030 Nationally Determined Contribution (NDC) and submit a Long-Term Low-Emissions Development Strategy (LEDS) in March 2020, against the backdrop of “2°C safe limit”:



GREEN PLAN



City in Nature



Energy Reset



Sustainable
Living



Green Economy



Resilient
Future

- Launched in 2021 as a national sustainability movement

“Living plan” which will continue to evolve

In last couple of years, growing calls for climate action in Singapore

Calls for more ambitious climate action are increasing



2019 SG Climate Rally at Hong Lim Park



2021 Private Member Motion & 2022 Parliamentary Motion; Acknowledged that **climate change is a global emergency** with proposals on how to address it

Climate issues no longer viewed in silo, but are **connected with other socio-economic issues**



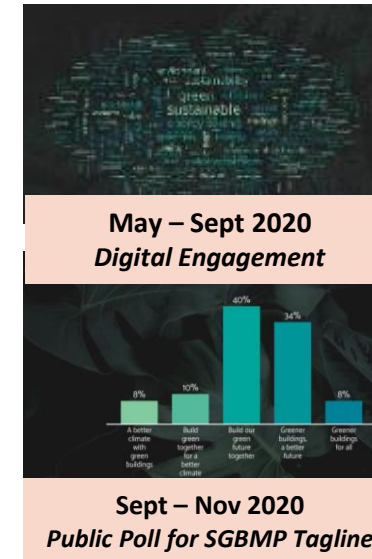
Increasing calls for “**climate justice**” and recognition of the **intersectionality of issues**



Climate change policies increasingly affect **bread-and-butter** areas e.g. jobs, carbon tax

In 2020, 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.



More details can be found in the **SGBMP Public Engagement Report** at <https://go.gov.sg/sgbmp>.

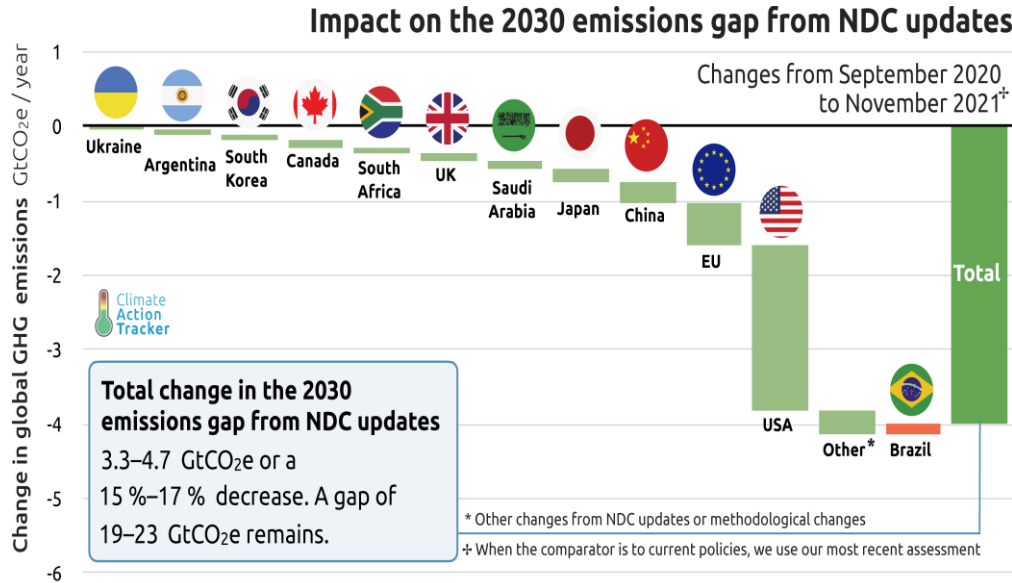


Internationally, momentum is even stronger – Climate “Zeitgeist”

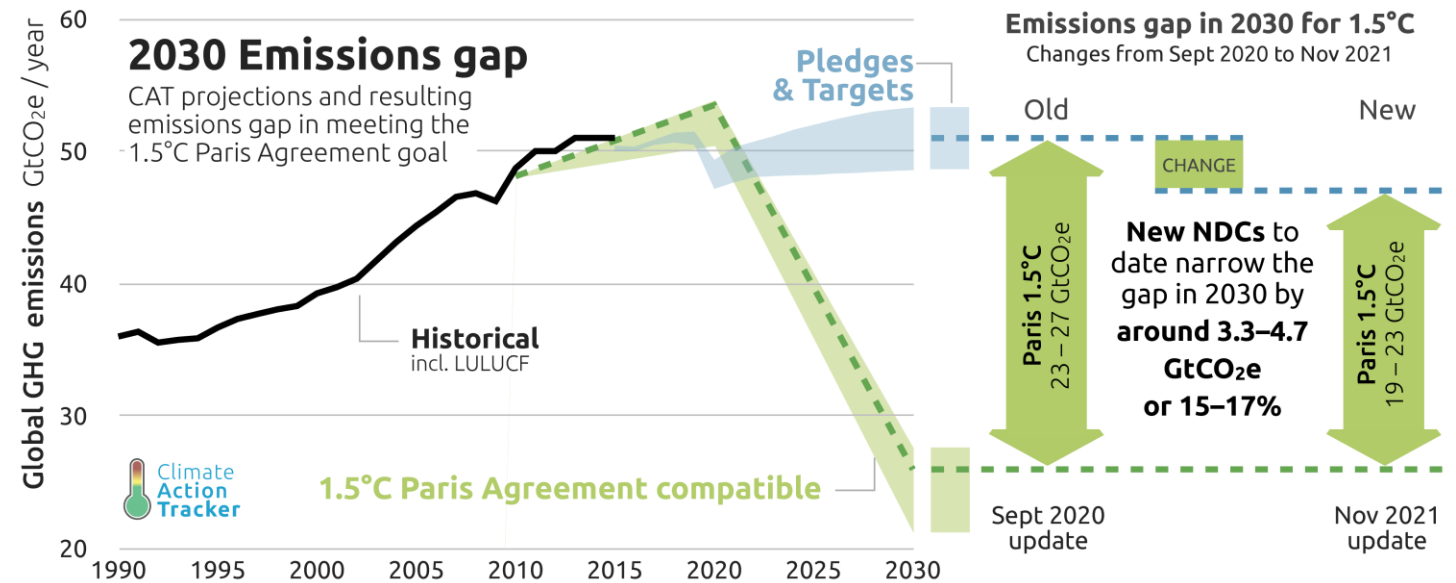
Greater global recognition of the urgency to tackle climate issues

Source:
Climate Action Tracker

1. Countries are updating their 2030 NDCs



2. Expect narrowing of 2030 emissions gap with combined global efforts



2021 Glasgow Climate Pact agreed to revisit 2030 NDC and communicate LEDS towards net zero emissions to align with the Paris Agreement temperature goal

Surge of net-zero pledges aligning to Paris Agreement

Number of countries with net-zero targets

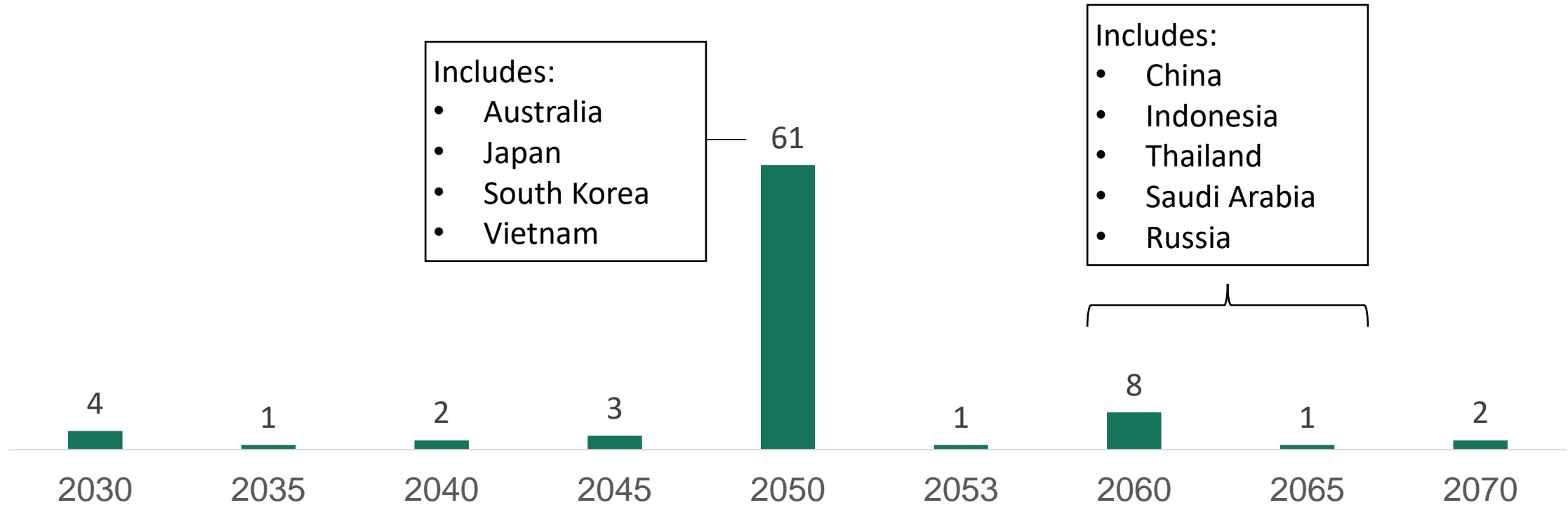
Mar 2020

18



End-2021

84



Note: Numbers do not add up to 84 as chart excludes Singapore

International developments also give us confidence to raise our climate ambition

1. Finalisation of rulebook for international carbon credits

- Allow for operation of credible global carbon markets
- Allow Singapore to access mitigation potential of the world, and overcome alternative energy disadvantage



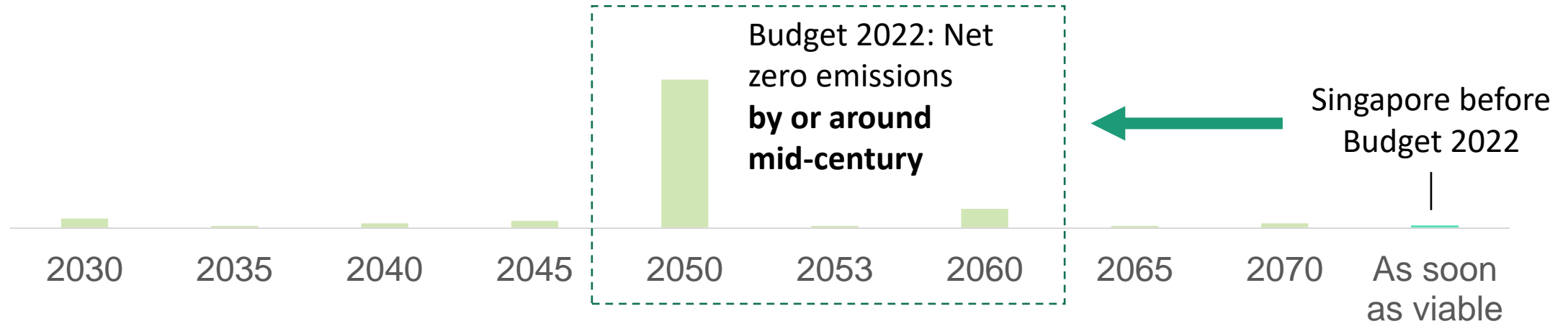
2. Greater investment in low-carbon technology by major countries and corporates

- Substantial investments in decarbonisation technologies bring forward feasible deployment and lower costs
- E.g. 2030 projected cost of hydrogen production revised downwards by 13% in 2 years

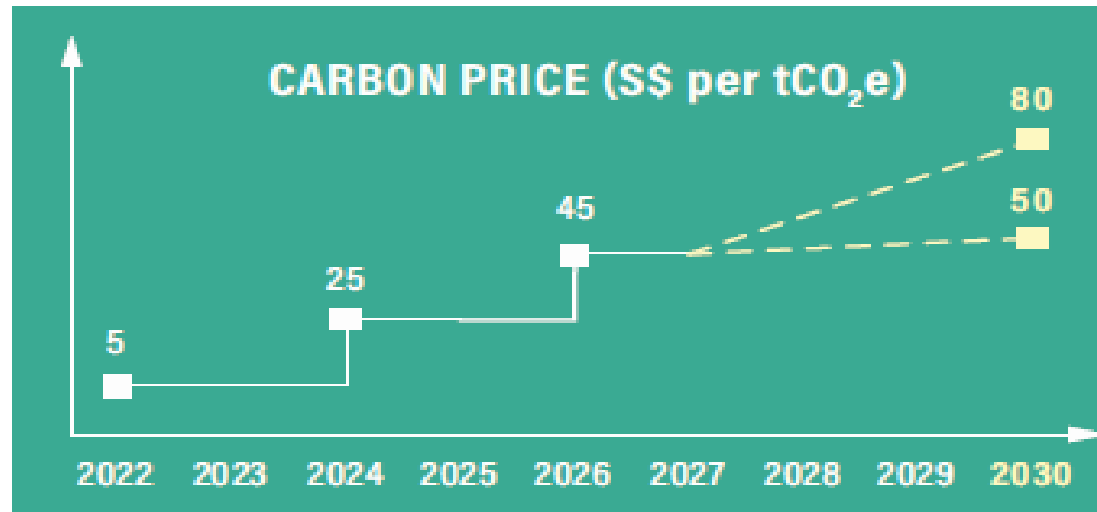


Budget/COS 2022: A decisive shift to a decarbonised economy

Ratcheting of net zero ambition...



... supported by a revision in carbon tax levels



Updates to Singapore's "living plan" to rally bold and collective action

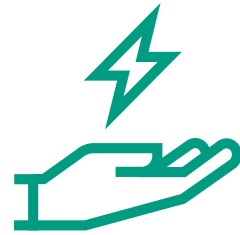


City in Nature

1 million more trees

All households 10-min walk from a park

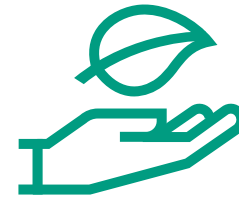
500km of park connectors



Energy Reset

Singapore Energy Transition

Reduce peak land transport emissions by 80% by or around mid-century



Sustainable Living

Reduce waste & resource consumption – 5c charge for disposable bags

Eco Stewardship Programme Toolkit for all schools



Green Economy

Jurong Island – sustainable E&C park

Carbon Services Hub & leading centre for Green Finance

Green Jobs



Resilient Future

Building Singapore's coastal defences

Keeping Singapore cool

Safeguarding food security

Supported by...

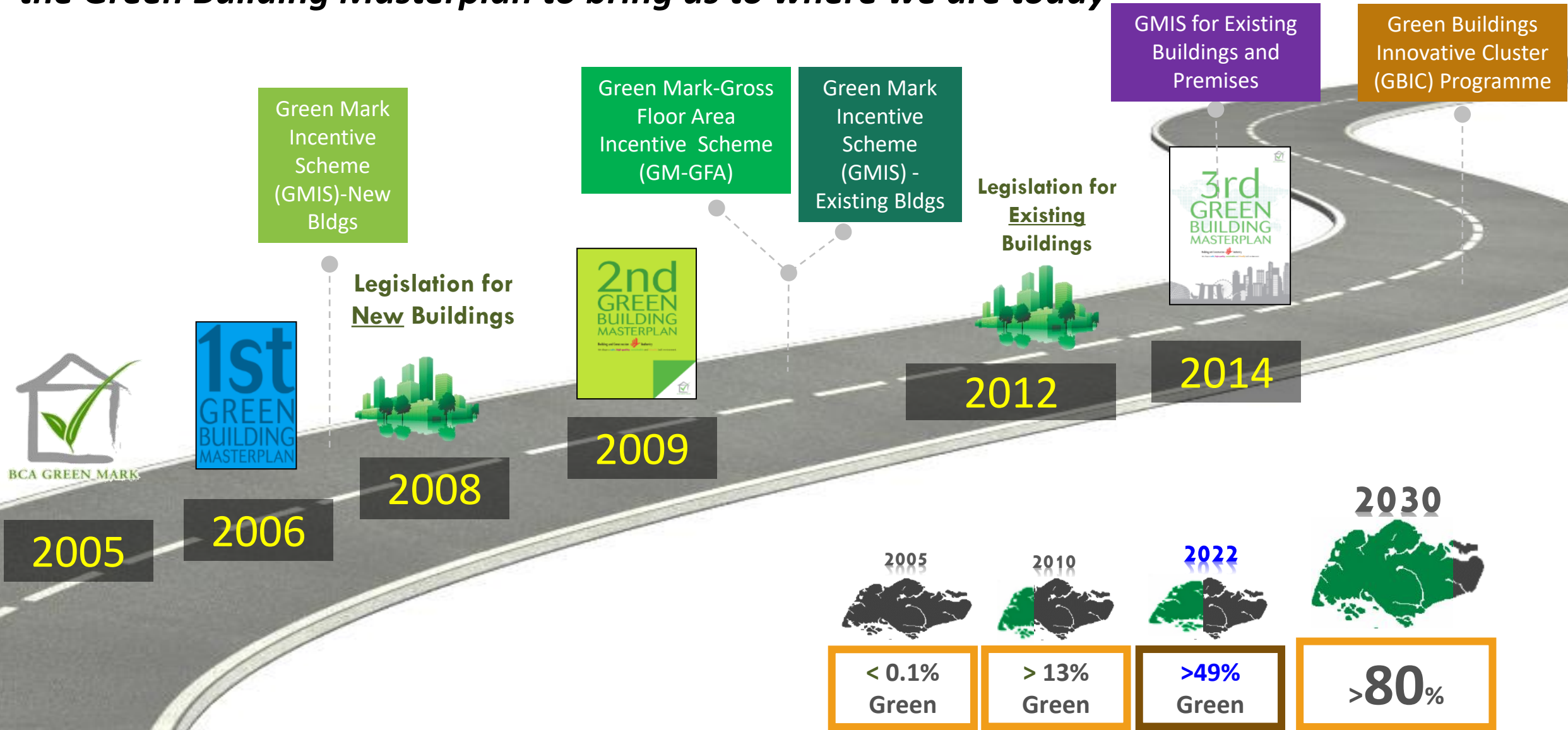


Green Citizenry



Green Government

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



Target : 80% of buildings to be green (by GFA) by 2030

The realisation of the Singapore Green Building Masterplan (SGBMP) will be important to meet Singapore's sustainability ambitions and international commitments

SINGAPORE'S AMBITIONS AND COMMITMENTS

Singapore Green Plan 2030

- Greener Infrastructure and Buildings under 'Energy Reset' pillar

Budget 2022 : Singapore will raise its climate ambitions by pledging to achieve net zero emissions by or around mid-century

Buildings contribute about 20% of Singapore's carbon emissions.

Green buildings can contribute a big part in our transition to a low-carbon and climate resilient future.



EMISSIONS PROFILE (2019)

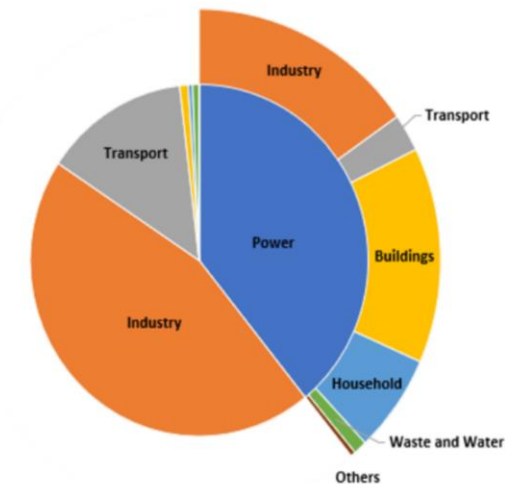
Total emissions: 51.6 MtCO₂e

PRIMARY EMISSIONS

Power	39.2%
Industry	45.1%
Transport	13.8%
Buildings	0.8%
Household	0.4%
Waste and Water	0.6%

SECONDARY EMISSIONS

Industry	15.3%
Transport	2.4%
Buildings	13.9%
Household	6.3%
Waste and Water	0.9%
Others	0.3%



Source: NCCS



We have taken decisive steps and put in place collective measures to meet “80-80-80 in 2030” targets since the launch of SGBMP last year

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 GFA) by 2030:

> 49% Green Building GFA

1. Raised the **mandatory minimum energy performance standards (Dec 2021 and Jun 2022)**
2. Revised the **Green Mark scheme** to set higher energy efficiency standards and place emphasis on key sustainability outcomes (**Nov 2021**)
3. Publish **building energy performance data (Oct 2021)**
4. Introduce **Green Mark Incentive Scheme for Existing Buildings (GMIS-EB) 2.0 (2Q 2022)**



80% of new developments (by GFA) to be Super Low Energy (SLE) buildings from 2030:

Over the past year, **close to 7%** of new developments certified as SLE buildings

5. Raised requirements for public sector buildings under **GreenGov.SG**
6. Encourage SLE adoption in private sector through **the Built Environment Transformation GFA Incentive Scheme (Nov 2021)**
7. Enhance requirements for developments on **Government Land Sales (GLS) sites (2Q 2022)**



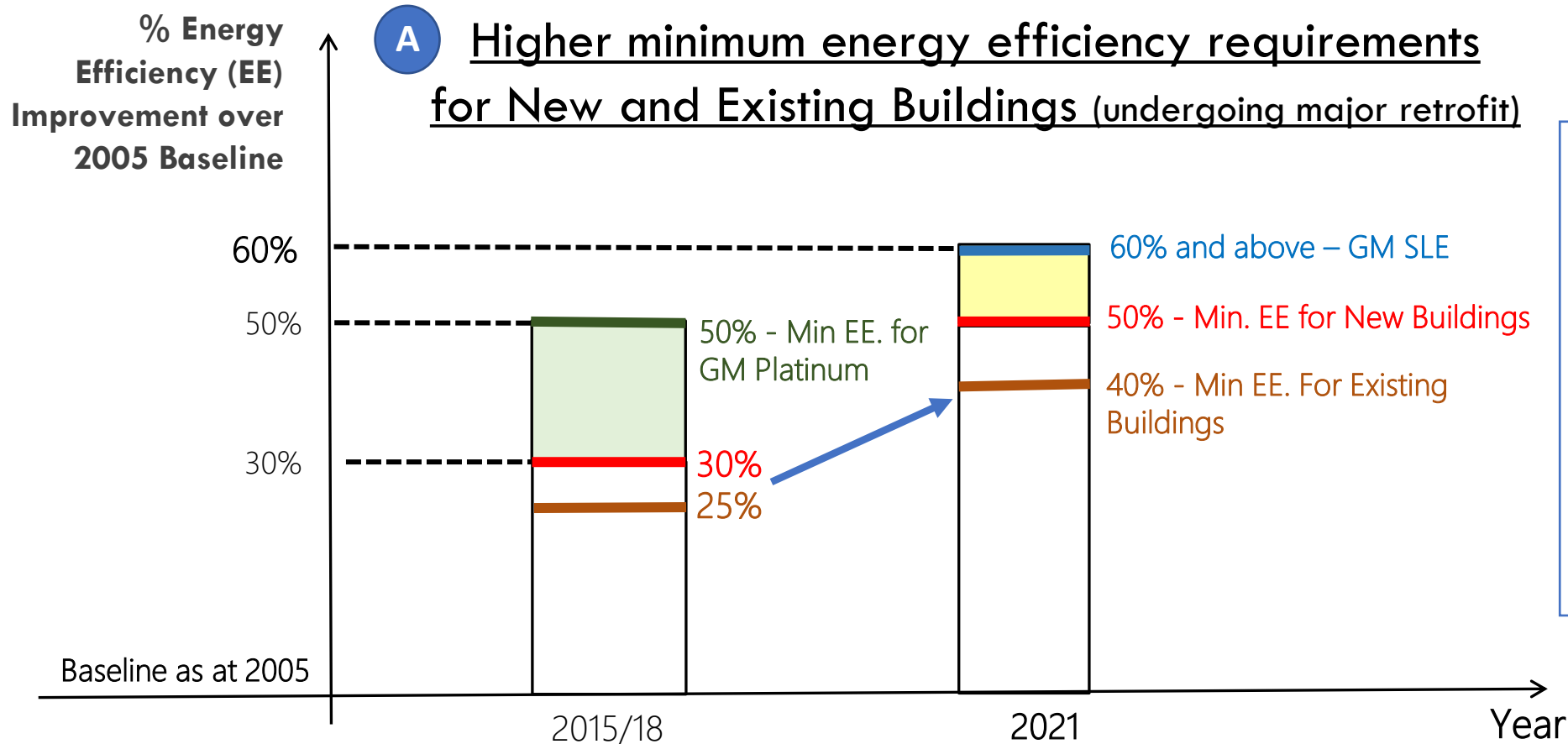
80%-improvement in energy efficiency (from 2005 levels) for best-in-class buildings by 2030:

Best-in-class green buildings have achieved **65 -70%** EE improvement

8. Push the boundaries of energy efficiency through technology development and demonstration under the **Green Buildings Innovation Cluster (GBIC) 2.0** programme (**2Q 2022**)



80% buildings (by GFA) to be green: To future-proof and improve the quality of our building stock, we have raised the mandatory environmental sustainability standards for buildings in 2021.



These requirements will apply for building projects with GFA of 5,000 sq m or more, new developments starting from 1 December 2021, and existing buildings starting from 1 June 2022.

Find out more at <https://go.gov.sg/circular-esreq-2021>

Current EE standards

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

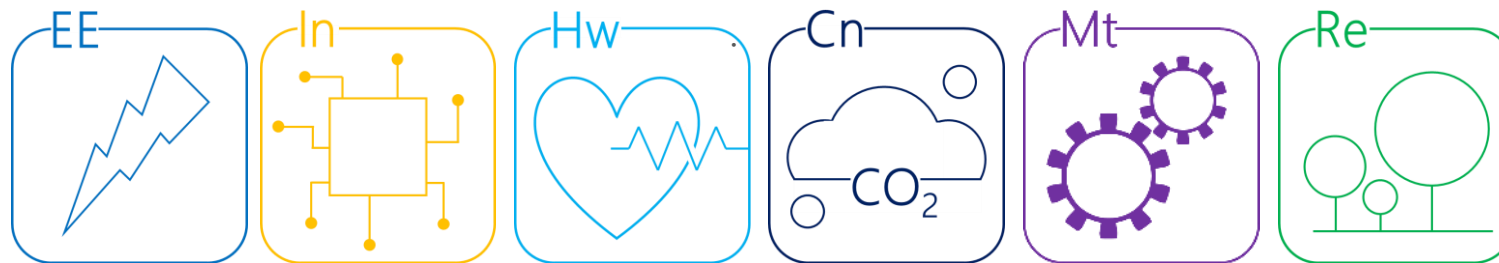


80% buildings (by GFA) to be green: We have also raised sustainability standards with the revised Green Mark scheme

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



The GM: 2021 is launched!

For more info, please visit <https://go.gov.sg/qm2021>

Note: The effective date for GM: 2021 is from 1 November 2021 for all new GM applications. Projects with GM applications submitted before the effective date must complete the assessment and receive Green Mark Letter of Award by end of 2022.

Green 80% of our buildings (by GFA) by 2030

\$63 million
Green Mark Incentive
For Existing Buildings
(GMIS - EB) 2.0 *From 2Q 2022*

For private sector to retrofit their buildings to achieve higher energy performance by lowering the upfront capital cost of energy efficiency retrofits and improve the return of investment.



80% of new developments to be SLE: Government to take the lead to bring SLE buildings into the mainstream and introduce 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

- Up to 3% bonus GFA incentive to accelerate the adoption of Construction ITM outcomes under the **Built Environment Transformation Incentive Scheme**
 - For buildings that achieve Green Mark Platinum SLE with exemplary performance in Maintainability, alongside other productivity, digitalisation and quality outcomes
 - *For more info, please visit <https://www1.bca.gov.sg/buildsg/sustainability/green-mark-incentive-schemes/built-environment-transformation-gross-floor-area-incentive-scheme>*
- Enhanced requirements for sites sold under **Government Land Sales (GLS) programme** from 2Q2022 to drive higher ITM outcomes, including sustainability outcomes and carbon reduction



Built Environment Transformation Gross Floor Areas Incentive Scheme

(in short, BE Transformation GFA Incentive Scheme)



Straits Times 25 November 2021

Bonus gross floor area for developers meeting enhanced standards

Jolene Ang

A new incentive scheme to spur developers to digitalise and meet enhanced standards under the construction industry transformation map was launched yesterday.

For a period of five years from yesterday, private developments outside of the Government Land Sales programme can enjoy up to 3 per cent bonus gross floor area (GFA), if they achieve enhanced standards in productivity, digitali-

sation and sustainability.

Developers will also have greater flexibility to utilise this bonus area within the development, compared with other bonus GFA schemes.

National Development Minister Desmond Lee announced this during the Real Estate Developers' Association of Singapore's 62nd anniversary dinner at the Sands Expo & Convention Centre.

"This (scheme) will support our progressive developers, who proactively push the boundaries," Mr Lee said.



National Development Minister Desmond Lee believes the new scheme will support progressive developers who proactively push the boundaries. ST PHOTO: LIM YAOHUI

The minister added that the incentive scheme will be extended to Government Land Sales sites for a limited period. Up till the second quarter of 2022, such developments can get up to 2 per cent bonus GFA.

"Thereafter, we plan to raise the minimum requirements for Government Land Sales sites in terms of the levels of productivity, digitalisation, sustainability and quality."

The new bonus scheme will thus

encourage the industry to meet those enhanced standards before the requirements take effect, he noted.

Residential developments eligible for the scheme are condominium and flat developments.

Eligible non-residential developments include commercial, industrial and institutional developments such as offices, business parks and community buildings.

Mixed-use developments could consist of any combination of the above-mentioned developments.

Any other developments would be assessed based on the merits of proposals.

There are different industry transformation map outcome requirements on digitalisation, productivity and sustainability, depending on building type.

Developers or building owners can enjoy up to 3 per cent additional GFA allowed beyond the Master Plan Gross Plot Ratio for

meeting these requirements in their building development on private sites of at least 5,000 sq m.

Sites launched under the Government Land Sales programme on or before March 31 next year may also be eligible for up to 2 per cent bonus GFA above the Master Plan Gross Plot Ratio if super-structural works have not commenced.

Applicants who have obtained planning permission for their development proposals will need to submit an amendment or new application if they wish to apply for the incentive scheme. Their eligibility will be determined on a case-by-case basis.

If a project fails to meet the stipulated requirements, the scheme applicant will be liable to pay a termination sum, or the sum equal to 100 per cent of the equivalent market value of the bonus GFA granted for the project.

jolenezl@sph.com.sg

Public Sector: Taking the Lead through GreenGov.SG



GreenGov.SG is a sustainability movement launched by the public sector to support the Singapore Green Plan 2030.

It sets ambitious targets and measures to enable the public sector to peak its emissions around 2025, ahead of the national target.



Achieving Singapore's sustainability goals is a whole-of-nation endeavour. We all have a part to play.

EXCEL

with new and more ambitious targets for the public sector

Aim to reduce energy and water use by 10% (from the average of 2018-2020 levels) by 2030



Aim to reduce amount of waste disposed by 30% (from 2022 levels) by 2030



To set targets for buildings, information technology, transport, and solar deployment, which are more ambitious than national goals



Targets will also apply to public sector infrastructure and operations



ENABLE

a sustainable economy and green citizenry by embedding sustainability in our core business

To purchase products that meet high resource efficiency or sustainability standards



To take into account companies' sustainability-related policies and practices, when evaluating government tenders



To continue raising public awareness by showcasing sustainability at community spaces, e.g. hawker centres



EXCITE

public officers to contribute actively to sustainability in Singapore



To promote the exchange of best practices and latest solutions to inspire and empower public officers



Support public officers who wish to champion ground-up initiatives



To support buildings to operate and maintain optimal building performance, BCA will introduce the IFM/AFM grant for Facilities Management Companies (FMCs) and service buyers

\$30 million

**Integrated Facilities Management
(IFM)/Aggregated Facilities
Management (AFM) Grant**

Build industry capabilities in IFM/AFM to harness greater efficiencies from managing different FM services on an integrated platform, and aggregating FM services across a portfolio of buildings. Optimising building performance will help foster better sustainability outcomes.



The scheme will be available from **3Q 2022**



80% EE improvement: Enhancing GBIC programme to develop innovative and cost effective technological solutions for SLE buildings

- **Develop innovative solutions by providing know-how and sharing knowledge with industry through SLEB Smart Hub**

GREEN-TECH DIRECTORY



BUILDING ENERGY-EFFICIENT DATA



- ✓ **Share your technologies** to an on-line library

Green-Tech Companies to register at:

<https://www.sleb.sg/Account/Register>

- ✓ **Get ideas and costs** for energy efficiency retrofits

Introductory YouTube Video at:

<https://www.youtube.com/watch?v=W7Bn5TMBnJA>

- ✓ **Benchmark your building** against similar buildings

Building Owners to register at:

<https://www.sleb.sg/Account/InviteReg>

<https://sleb.sg>

With concrete sectoral plan for BE sector, we will further decarbonise to cultivate an ecosystem for low-carbon economy and to pave the way for our common net-zero goal in the near future

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 GFA) by 2030

- Raising mandatory Environmental Sustainability Standards
- Publication of building energy performance data
- Green Mark 2021

Supporting Scheme:

Green Mark Incentive Scheme for Existing Buildings 2.0 (GMIS-EB 2.0)

80% of new developments (by GFA) to be Super Low Energy (SLE) buildings from 2030

- GreenGov.SG
- Raise Environmental Sustainability Standard (including EE requirements) for projects under GLS Programme
- Develop SLE standards for residential buildings

Supporting Scheme:

BE Transformation GFA Incentive Scheme

80% improvement in energy efficiency (from 2005 levels) for best-in-class buildings by 2030

- GBIC Research and Development (GBIC R&D)
- GBIC Prototyping
- GBIC Demonstration (GBIC Demo)
- SLE Buildings (SLEB) Smart Hub

Supporting Scheme:

Enhanced GBIC funding (GBIC 2.0)

Supported by Integrated FM/Aggregated FM (IFM/AFM) grant for buildings to operate and maintain optimal building performance, to improve buildings' energy efficiency and cultivate a sustainable Built Environment

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

Thank you



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