MALAYSIA GREEN TECHNOLOGY MASTER PLAN: BUILDING SECTOR, WHAT'S IN IT?

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GREEN TECHNOLOGY MASTER PLAN
MALAYSIA 2017-2030

• Approved by National Green Technology and Climate Change Council (2.3.2017)
• Cabinet Approval (11.10.2017)
• Official Launch (12.10.2017) during IGEM2017 Opening Ceremony
Presentation Outline

1. Malaysia’s commitment on GHG emission
2. GTMP Framework & Objectives
3. Building Sectors – GTMP Targets & Initiatives
4. Way Forward
5. Conclusion
Advanced economies demonstrated decoupling of environmental impact from economic growth

What lies ahead for Malaysia as it becomes a high income nation?

Real GDP and CO2e emissions
Index, 1990 = 100

GDP growth

CO2 emission

Sweden (2013): 4.6 metric tons per capita

Denmark (2013): 6.8 metric tons per capita

Malaysia (2013): 8.0 metric tons per capita

Source: The World Bank, Nordic Energy Research
Malaysia’s commitment to Paris Agreement 2015

- Up to 45% reduction* in GHG emission intensity of GDP by 2030 relative to 2005 levels

GTMP is in line with Sustainable Development Goals (SDG)

- No Poverty
- Zero Hunger
- Good Health and Well-being
- Quality Education
- Gender Equality
- Clean Water and Sanitation
- Affordable and Clean Energy
- Decent Work and Economic Growth
- Industry, Innovation and Infrastructure
- Reduced Inequalities
- Sustainable Cities and Communities
- Responsible Consumption and Production
- Climate Action
- Life Below Water
- Life on Land
- Peace, Justice and Strong Institutions
- Partnerships for the Goals

Note:

- 35% unconditional basis and
- + 10% is conditional upon receipt of climate finance, technology transfer & capacity building from developed countries.

Source: Malaysia’s Biennial Update Report (BUR) to the UNFCCC, 2016
GTMP framework & objectives

OBJECTIVES

- Potential economic contributions
- Outline ways to shift from technology adoption to technology production
- Outline ways to reduce 45% GHG emission intensity of by GDP by 2030

KEY PRINCIPLES

- Aligns strategic goals to RMK11 targets
- Does not overrule the existing plans & policies
- Provide guidance to leverage on green tech
5 Strategic Thrusts of GTMP:
Positioning Malaysia as a GT hub by 2030

- Tailored communication strategy
- Industry & business promotion e.g. IGEM etc
- Collaboration with primary & secondary educational institutions
- Government Green Procurement (GGP)
- Green incentives
- Innovative financing
- Green cities
- International collaborations

- Governance (policy leadership)
- Policy planning
- Policy implementation
- R&D&C funding
- Public-private partnership
- Capability building in the public sector
- Capability building in the private sector
- Collaboration with higher education institutions

Promotion and awareness

Institutional framework

Market enablers

Green Culture

Human capital development

Research, Development & Commercialisation

Collaboration with higher education institutions

Governance (policy leadership)

Policy planning

Policy implementation

R&D&C funding

Public-private partnership

Capability building in the public sector

Capability building in the private sector

Collaboration with higher education institutions
Key areas with high potential to facilitate green growth in Malaysia - 16 sub-sectors identified

- Electricity generation
- Energy efficiency (residential & commercial)
- Integrated river basin management
- Water treatment & distribution technology
- Water utilisation technology
- Water harvesting technology
- Wastewater treatment technology
- Waste treatment & disposal
- Resource recovery
- Industrial process efficiency
- Public transportation
- Private transportation
- Cleaner fuel
- Green building
- Sustainable construction practices
- Green building materials
1. Green building design & operation

A. Voluntary building energy codes

- MS1525: Code of Practice for Energy Efficiency in non-Residential Buildings:
  - covering the design specifications of commercial buildings with conditioned floor space of more than 4,000 m²;
Voluntary Green Building Rating Tools

- Malaysian Carbon Reduction and Environmental Sustainability Tool (MyCREST);
- Green Building Index (GBI);
- Penarafan Hijau (PH);
- Green Real Estate (GreenRE).
C Government Lead by Example (GLBE)

- 54 Government building in 25 Ministries in Putrajaya and Kuala Lumpur embarked on preliminary retrofitting exercise:
  - a reduction of 14,758 MWh in electricity consumption;
  - emission reduction of 10.94 ktCO2 eq.

D Government Incentives and Funding

- Energy Audit Conditional Grant (EACG) scheme open for:
  - existing commercial and industrial building electrical energy consumption of more than or equal to 100,000 kWh per month.
Building Sector GTMP Targets & Initiatives

1. Number of green buildings

**Federal Government Buildings**
- Emission reduction: 10.9 ktCO$_2$eq (2014)
- Targeted Emission reduction: 98.2 ktCO$_2$eq

**Private buildings**
- Emission reduction: 60.4 ktCO$_2$eq
- Targeted Emission reduction: 858.4 ktCO$_2$eq

**Number of green buildings by 2020 and 2030**
- 550*
- 1,750*

* buildings certified by various agencies & organisations e.g. MyCREST, Green Building Index, Green RE etc

Source: Malaysia’s Biennial Update Report (BUR) to the UNFCCC, 2016
Building Sector GTMP Targets & Initiatives

**IBS Score**

**Sustainable construction practices & green building materials**

- A life-cycle approach to green the building sector

<table>
<thead>
<tr>
<th>Year</th>
<th>Public Projects</th>
<th>Private Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>24%</td>
<td>14%</td>
</tr>
<tr>
<td>2020</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Percentage of **public projects** valued RM10 million & above to achieve 70 IBS score

Percentage of **private projects** valued RM50 million & above to achieve 50 IBS score

*Source: Construction Industry Transformation Programme, Construction Industry Development Board*
Green building materials

- Increase number of green building materials in market
- Policy amendments to allow the use of recycled materials in construction

Source: Construction Industry Transformation Programme, Construction Industry Development Board
Green building design & operation

A Near Zero Energy Buildings (NZEB) Target & Regulatory Requirements

- Energy Efficiency and Conservation Act (EECA) regulates requirements for:
  - comprehensive building energy codes;
  - building energy labelling;
  - electrical appliance energy performance standards;
  - targeted to come into force in 2019/2020;
  - intermediate BEI targets for 2030 & 2035 to established;
  - various building typologies in Malaysia.

- The EECA will ensure:
  - residential and commercial buildings energy use are regulated;
  - the MS1525 & MS2680 undergo mandatory revisions to keep pace with the BEI targets.
Have a National Rating Tool & Voluntary Tools;
- 2020 – 550 building
- 2030 – 1,750 building.

Incentives to continue:
- Investment Tax Allowance;
- Income Tax Exemption;
- Expand EACG.

Promote EPC business model:
- EPC Fund;
- Green Sukuk;
- Other schemes.

National Recognition for Excellence
  - National Energy Awards – Debut
    - RE & EE;
    - Government Ministries;
    - New award added in the future.
Government Lead by Example

- Continue close monitoring all Energy use in Government building;

- Enhance database of Government Building – i.e. Database BCIS & MYSPATA;

- Government building to be labeled ✔ 3000 in 2025

- Intensive Energy User (EMEER 2008) must have REEM; and

- Retrofit using EPC models.
Building Sector: Way Forward (continue)

2 Sustainable Construction Practice - IBS

A Improved Procurement Practices

- separating IBS procurement from the main contract.

B Improving the Financial Viability via Tax Incentives

- Tax/levers to improve economics for local IBS manufacturers;
- Tax holiday on IBS component plants;
- Higher plot ratio for IBS compliance; and
- Revolving fund for IBS working capital.
Building Sector: Way Forward (continue)

C Additional Support Measures

- publish IBS catalogues which are harmonised with IBS suppliers.

D Reducing & Recycling Construction Waste

- circular economy approach to construction waste:
  - reductions in the utilisation of raw materials;
  - reductions in disposal costs;
  - cost gains from recycling;
  - cost gains from incorporating waste materials into new construction materials.

E Malaysian Standard for Construction Specifications

- Introduce of Malaysian Standards construction specifications encompassing:
  - quality;
  - material standards;
  - Safety;
  - Environment;
  - Energy; and
  - Methodology.

Building Sector: Way Forward (continue)

3 Green Building Materials

A Policy on Recycling of C&D Materials

- Facilitation equipment procurement construction & demolition (C&D);
- Waste recycling in priority areas;
- Allow usage of recycled materials in construction.

B Research on Green Building Materials with Improved Thermal Properties

- R&D on EE Building Materials;
- Included in National standards of MS 1525 & MS 2680.
Greening the Building Ecosystem

- The national targets for building sector from 2020 to 2030

<table>
<thead>
<tr>
<th>SECTORS / AREAS</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>INITIATIVES</th>
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<tbody>
<tr>
<td>GREEN BUILDING DESIGN</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Active Design - MEPS</td>
<td>• MEPS Law</td>
<td>• 16 appliances</td>
<td>• All appliances</td>
<td>• Energy Audit</td>
</tr>
<tr>
<td></td>
<td>• 11 appliances</td>
<td>• Harmonise MEPS rating to ASEAN SHINE</td>
<td>• Universal MEPS rating</td>
<td>Conditional Grant</td>
</tr>
<tr>
<td></td>
<td>• Upgrade current MEPS ratings</td>
<td></td>
<td></td>
<td>• Near Zero Energy Buildings targets</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Standardisation of green rating tools</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Malaysia Standard for construction specifications</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Centre of Excellence (CoE) by CIDB</td>
</tr>
<tr>
<td>No. of Certified Buildings</td>
<td>• 550</td>
<td>-</td>
<td>• 1750</td>
<td></td>
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<tr>
<td>Passive Design - BEI</td>
<td>• Building Energy Regulation</td>
<td>• Sectoral BEI 90</td>
<td>• Sectoral BEI&lt;60</td>
<td></td>
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<td><strong>SUSTAINABLE CONSTRUCTION PRACTICE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Construction Method - IBS</td>
<td>- Public projects score 70 - 100%</td>
<td>- New Technologies Automated brick laying, etc</td>
<td>- Continuous implementation of the CITP</td>
<td>- Improving the financial viability of IBS through tax incentives</td>
</tr>
<tr>
<td></td>
<td>- Private projects score 50 –100%</td>
<td></td>
<td>- Developing competencies via CoE</td>
<td></td>
</tr>
<tr>
<td>Construction Waste</td>
<td>- To be determined</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GREEN BUILDING MATERIALS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Raw Materials - Recycle Content</td>
<td>- To be determined.</td>
<td>- % of recycled content in concrete and other materials</td>
<td>- Policy framework to be agile to enable recycling of C&amp;D materials</td>
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# Greening the Building Ecosystem

**nZEB and ZEB targets in 2020-2030**

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• BEI 120                                                                   | Sectoral BEI 90                                                      | Sectoral BEI <60                                                     |
| Active Design MEPS              | • MEPS Law  
• 11 Appliances  
• Upgrade current MEPS rating                                       | • 16 appliances  
• Harmonise MEPS rating to ASEAN SHINE                                | • All appliances  
• Universal MEPS rating                                                |
| Certified Green                 | 550                                                                   |                                                                      | 1750                                                                |
| Construction Waste Recycle Rate | To be determined                                                      |                                                                      |                                                                      |
Building Sector: Way Forward (continue)

4. Timeline for building sector until 2030

- **Construction Industry Transformation Programmes**
  - Policy framework to enable recycling of C&D materials

- **Malaysian Standard for construction specifications**

- **Energy Audit Conditional Grant**

- **Standardisation of green rating tools**

- **Centre of Excellence (CoE) by Construction Industry Development Board (CIDB)**
  - Developing competencies via Center of Excellence

- **Improving the financial viability of IBS through tax incentives**

- **Continuous promotion and awareness to foster green culture improvements in inter-ministerial collaboration and knowledge sharing**

**As-is**
- High energy consumption
- High carbon emission
- High waste production
- High C&D costs
- Low sustainability standards

**Expected end game**
- EE buildings as a norm
- Exceed sustainability requirements and all new buildings to comply to minimum green building standards
- Efficient construction practices
- Regulated local C&D waste and improved recycling rate of C&D waste
- Removal of barriers for the use of recycled materials encourages the use of green building materials, including recycled materials
Conclusion

- **Building sector is dynamic:**
  - Use much energy;
  - New trends appearing in landscape.

- **Pre-requisite to future proof building sector:**
  - Compliance to EE standards & legislation;
  - Incentives;
  - Attractive financial packages;
  - EPC Model of retrofit;
  - Construction standards & practices.

- New buildings are green labelled NeoZEB/ZEB.
THANK YOU