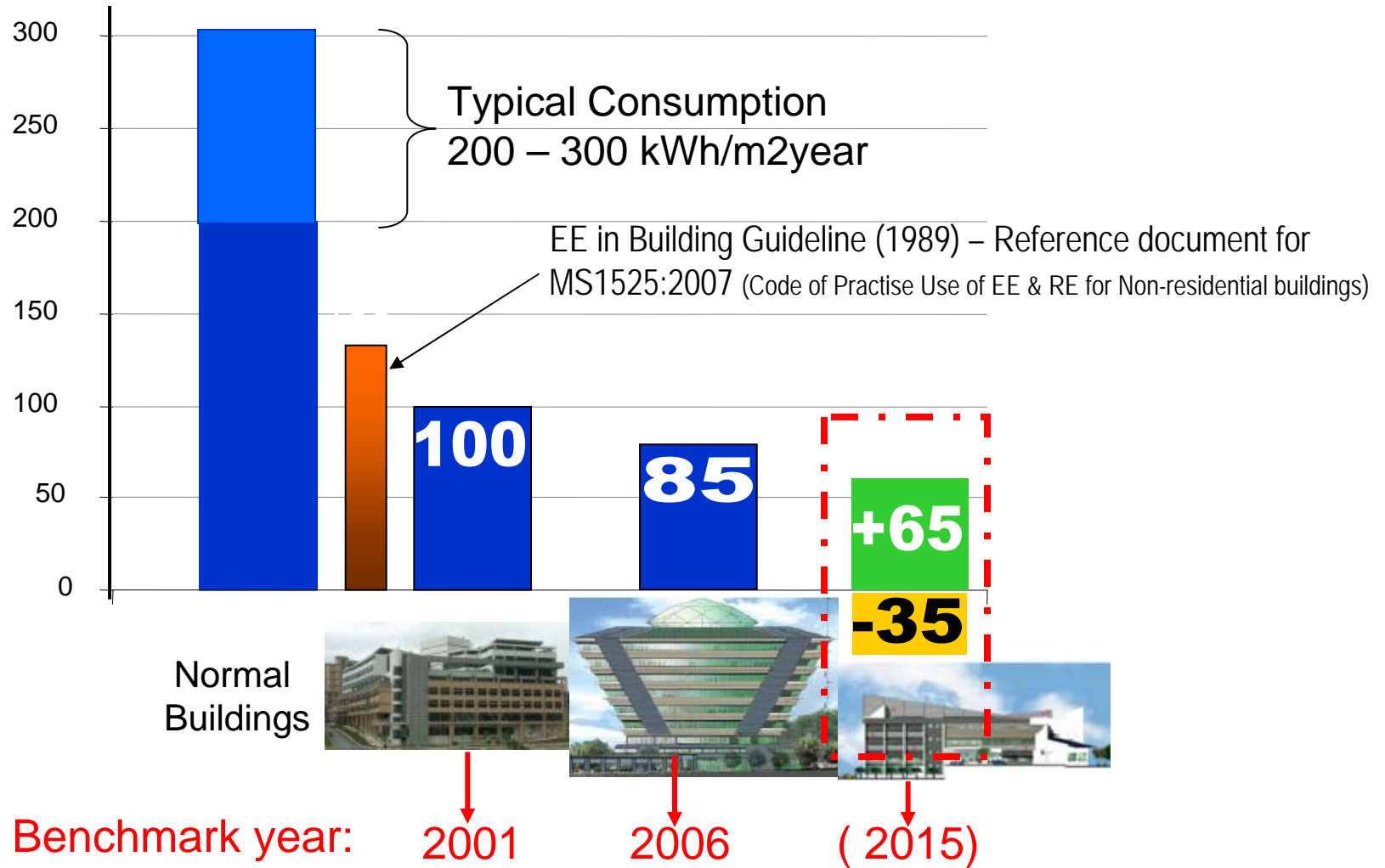




Green Buildings Initiatives in Malaysia

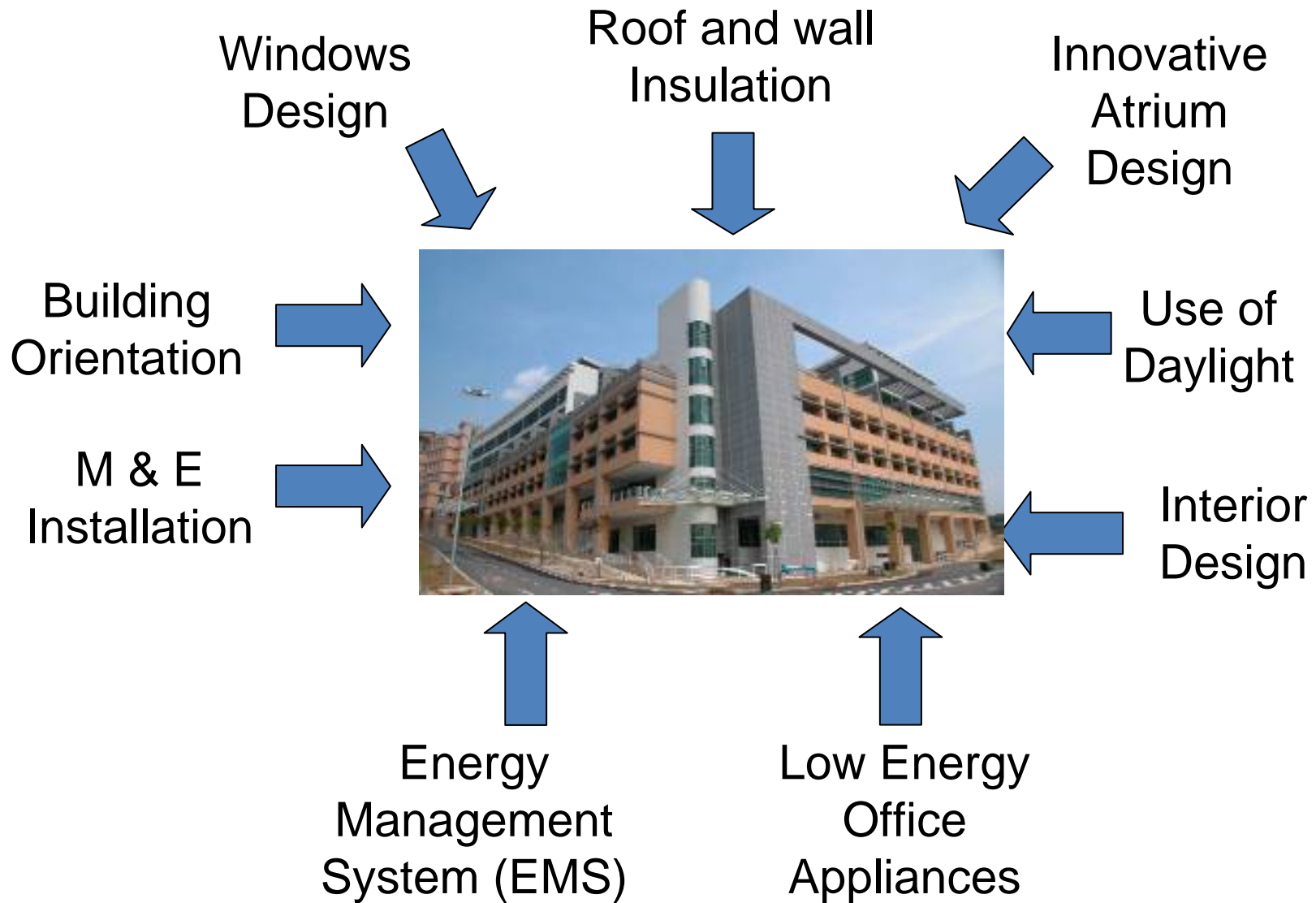


Energy Indices (kWh/m²year)



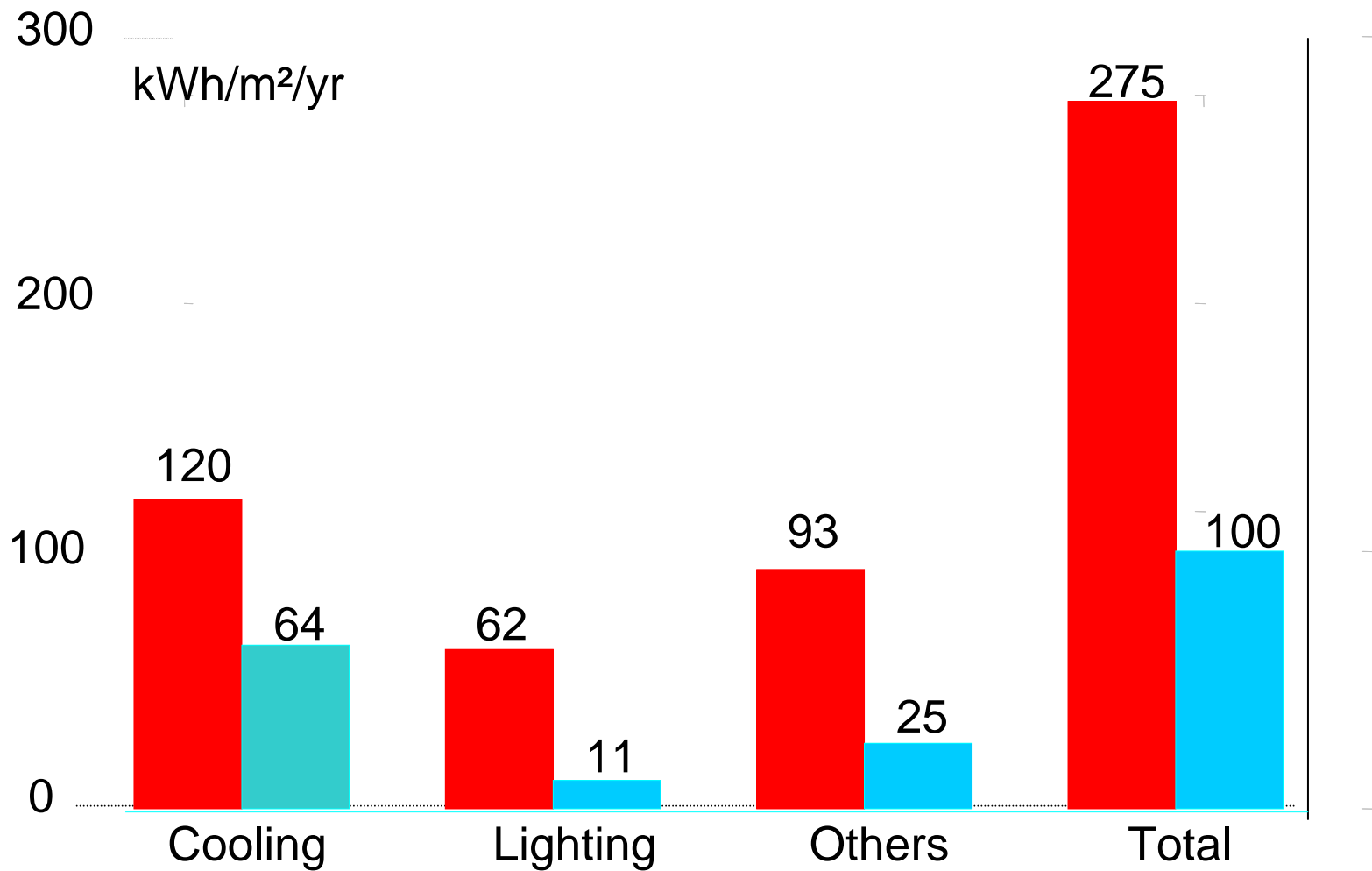


MEGTW-LEO





Conventional ↔ MEGTW-LEO





MEGTW-LEO





PTM-GEO



- Passive design
- Daylighting (almost 100%)
- Double glazing
- Insulation
- EE lighting, task lights, office equipment, EE air conditioning & ventilation
- Floor slab cooling
- Thermal energy storage
- Controls & Sensors
- Solar PV and load shifting





PTM-GEO



A Combination of 2 projects

Super Energy Efficient
Building Design
(Super Low Energy with BEI
65 kWh/m²/year)



Malaysian Building Integrated
Photo-Voltaic
(With Solar PV 92kW_{peak} installation)
(Green Energy Source)

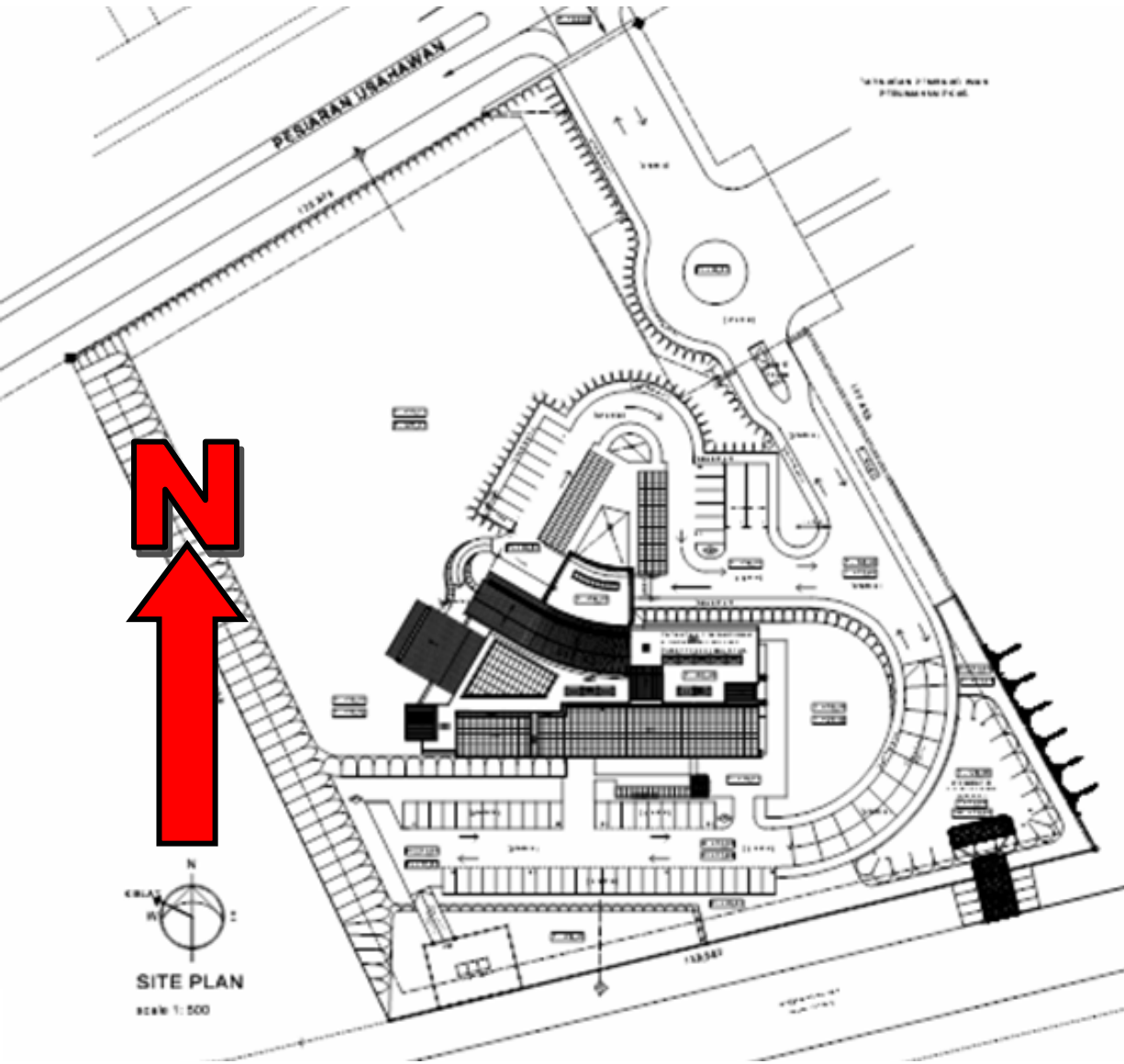


PTM Green Energy Office Building (GEO)
(Demonstrates 10 – 15 years EE & RE building technologies)
Net BEI = 30- 35 kWh/m²/year



Building Orientation

The GEO building applied good orientation for daylighting by having majority of its windows and doors faced towards North and South.





PTM-GEO



100% daylight during normal days





PTM-GEO: Solar BIPV

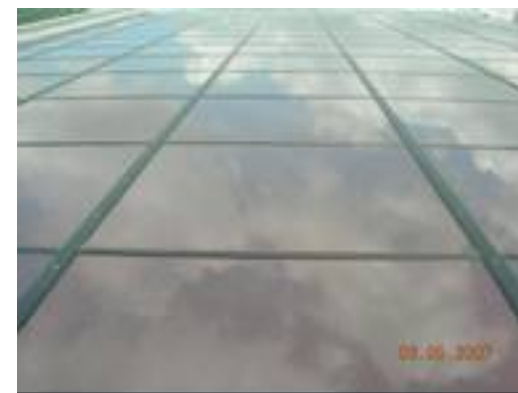


PTM Building

System **A**: 47.28kWp (polycrystalline)



System **B**: 6.08kWp (amorphous)



System **C**: 11.6kWp (glass-glass, mono)

System **D**: 27kWp (monocrystalline)

GBI Malaysia is a rating system that provides a comprehensive framework to evaluate the environmental impact and performance of buildings. Buildings are awarded the GBI Malaysia rating based on 6 key criteria:

**Energy Efficiency
Indoor Environmental Quality
Sustainable Site Planning
and Management**

**Material and Resources
Water Efficiency
Innovation**

GBI Malaysia seeks to reward buildings that set out to achieve targets in any of these six areas. Achieving points in the targeted areas will mean that the building will likely be more environment-friendly than those that do not address the issues.

Under the GBI Malaysia assessment framework, points will also be awarded for achieving and incorporating environment-friendly features which are above current industry practice.

GBI Malaysia Criteria

GBI Malaysia Certification Awards

The assessment process involves an assessment at design stage leading to the award of the provisional GBI Malaysia rating. Final award is given one year after the building is first occupied. Buildings will also have to be re-assessed every three years in order to maintain their GBI Malaysia rating to ensure that buildings are well-maintained.

Buildings are awarded **GBI Malaysia Platinum, Gold, Silver or Certified** ratings depending on the scores achieved.



GBI Malaysia by PAM/ACEM will provide an assessable differentiation to promote environment-friendly buildings for the future of Malaysia. It is a benchmarking rating system that incorporates internationally recognised best practices in environmental design and performance.

www.greenbuildingindex.org

Green

MALAYSIA
BUILDING INDEX

GBI Malaysia will be launched in April 2009 by Pertubuhan Akitek Malaysia (PAM) and the Association of Consulting Engineers Malaysia (ACEM). It is a profession driven initiative to lead the Malaysian property industry towards becoming more environment-friendly.

It is intended to promote sustainability in the built environment and raise awareness among Developers, Architects, Engineers, Planners, Designers, Contractors and the Public about environmental issues.

The rating system will provide opportunity for developers to design and construct green, sustainable buildings that can provide energy savings, water savings, a healthier indoor environment, better connectivity to public transport and the adoption of recycling and greenery for their projects.



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World Green Buildings Initiatives



No.	TOOL & COUNTRY
1	BREEAM – Building Research Establishment Environmental Assessment Method (UK)
2	LEED – Leadership in Energy and Environmental Design (USA)
3	CASBEE – Comprehensive Assessment System for Building Environmental Efficiency (Japan)
4	LCA/LCC TOOL – Life Cycle Assessment/Life Cycle Cost (Hong Kong)
5	EEWH – Green Building Evaluation System (Taiwan)
6	GREEN STAR (Australia / New Zealand)
7	GREEN MARK (Singapore, 2005)



Green Buildings Initiative in Malaysia



GREEN BUILDING INDEX vs OTHERS

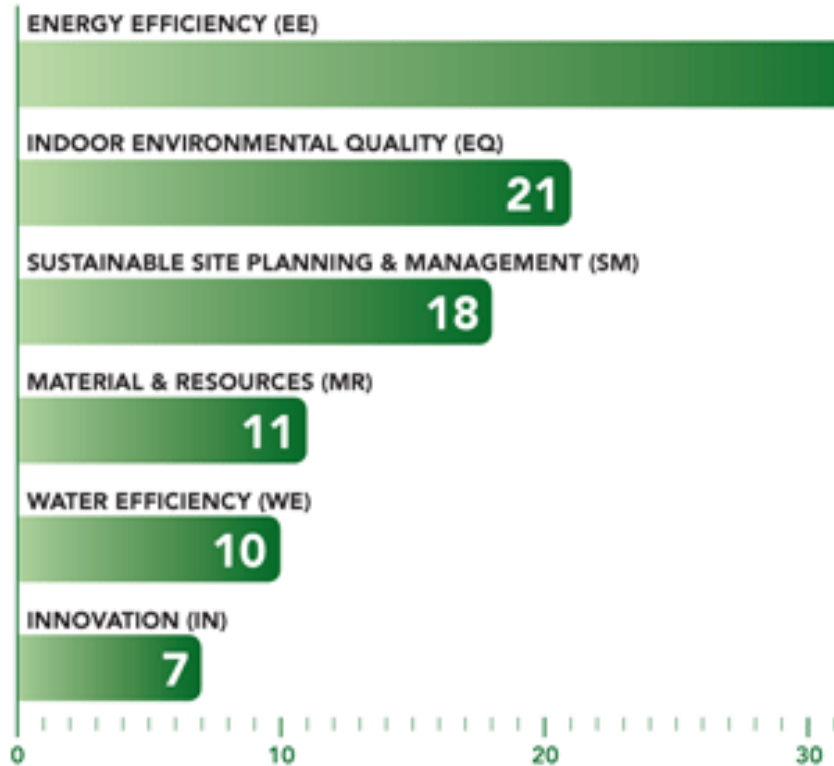
NAME COUNTRY	LEED USA	GREEN STAR AUSTRALIA	GREEN MARK SINGAPORE	GREEN BUILDING INDEX MALAYSIA
ASSESSMENT CRITERIA	<ol style="list-style-type: none"> 1. Sustainable site 2. Water Efficiency 3. Energy & Atmosphere 4. Materials & Resources 5. Indoor Environmental Quality 6. Innovation & Design / Construction Process 	<ol style="list-style-type: none"> 1. Management 2. Transport 3. Ecology 4. Emissions 5. Water 6. Energy 7. Materials 8. Indoor Environmental Quality 9. Innovation 	<ol style="list-style-type: none"> 1. Energy Efficiency 2. Water Efficiency 3. Environmental Protection 4. Indoor Environmental Quality 5. Other Green Features 	<ol style="list-style-type: none"> 1. Energy Efficiency 2. Indoor Environmental Quality 3. Sustainable Site & Management 4. Materials & Resources 5. Water Efficiency 6. Innovation



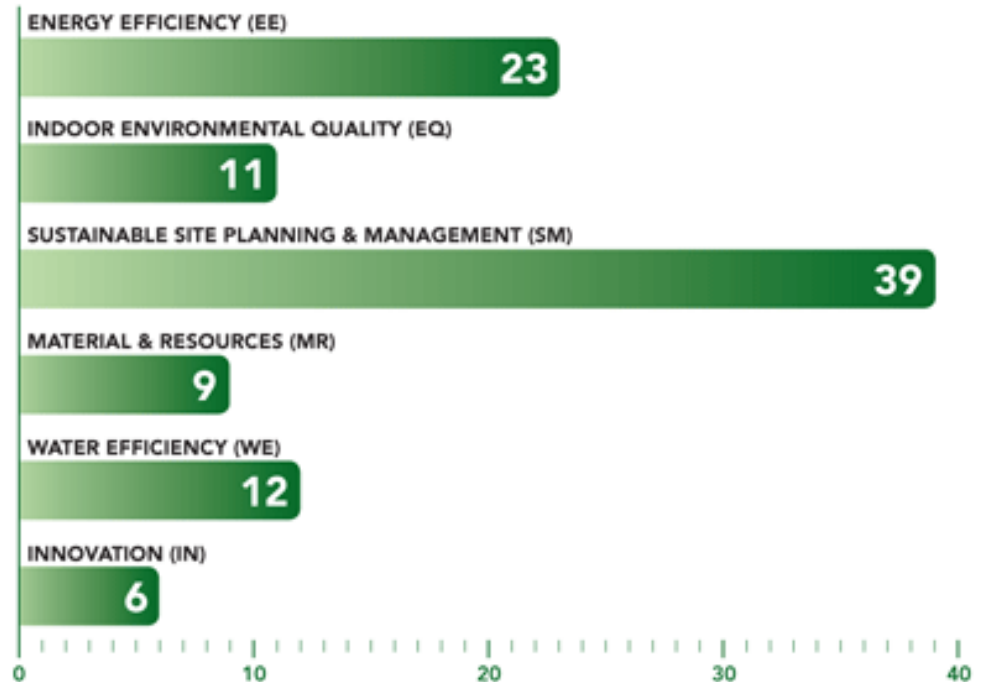
Malaysia Green Building Index (GBI)



GBI POINTS ALLOCATION CHART (NON-RESIDENTIAL)



GBI POINTS ALLOCATION CHART (RESIDENTIAL)



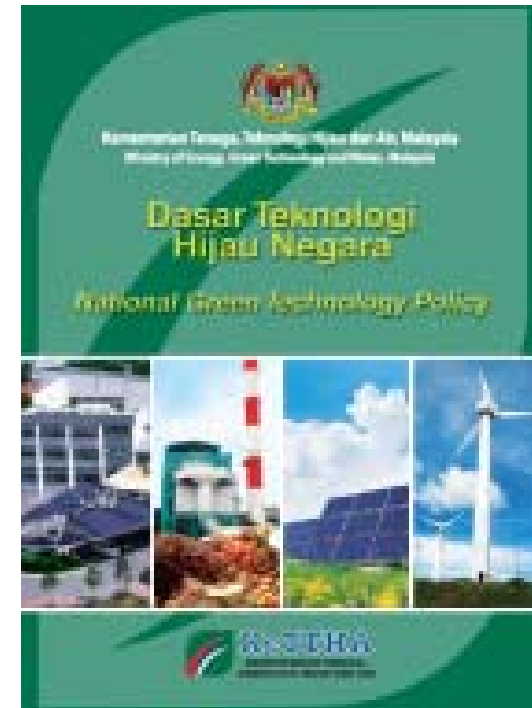


Malaysia Green Building Index (GBI)





Malaysia Green Technology Policy



Announced by Prime Minister on 24th July 2009

Policy Statement

Green Technology shall be a driver to accelerate the national economy and promote sustainable development.



Green Technology Policy (2009)



Four Pillars of National Green Technology Policy

- **Energy:** Seek to attain energy independence and promote efficient utilisation;
- **Environment:** Conserve and minimize the impact on the environment;
- **Economy:** Enhance the national economic development through the use of technology; and
- **Social:** Improve the quality of life for all.

■ Objectives:

- Minimise growth of energy consumption while enhancing economic development;
- Facilitate the growth of the GT industry;
- Increase national capability and capacity for innovation in GT development;
- Ensure sustainable development and conserve the environment;
- Enhance public education and awareness on GT.



Welcome to our 2nd National PV Conference (2009)

Putrajaya, Malaysia on 17 November 2009





List of Confirmed Speakers:

Dr Hermann Scheer, German Parliamentarian

Dr Murray Cameron, EPIA

Prof Dr Martin Green, UNSW

Mr Tetsuzo Kobayashi, JPEA

Dr Joeng-Shein Chen, TPVIA

Ms Christy Herig, SEPA

Ir Ahmad Hadri Haris, PTM

Mr Antonio Berni, Masdar

Mr Jos van der Hyden, First Solar

Mr Uwe Bauer, Q-Cells

Mr Rob Vinje, SunPower

Mr Max Göldi, Huber-Suhner

Dr Shawn Qu, Canadian Solar Inc



Thank You

