



ENGINEERING THE FUTURE

BEHIND EVERY GREEN BUILDING IS A GREEN ARCHITECT, AND THEY ARE NOW NEEDED MORE THAN EVER IN THE WAKE OF RAMPANT NATURAL RESOURCE DEPLETION AND ENVIRONMENTAL CATASTROPHES. *THE PEAK* SITS DOWN WITH SOME OF THE LEADING EXPERTS IN THIS FIELD AND TAKES A LOOK AT DEVELOPMENTS IN MALAYSIA THAT ARE SETTING THE STANDARD ON WHAT IT MEANS TO GO GREEN.

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PHOTOGRAPHY: LAM SOO PHAY, FOSTER + PARTNERS, ARCHITECTURE S. CIBRIS IMAGES



02

S11 HOUSE

The home of Dr Tan Loke Mun is Malaysia's first GRI Platinum-rated building. One of the first steps taken to achieve this was to set up a distinctive north-south orientation of the home to avoid solar gain from the morning and evening sun. The roof also incorporates a SiW photovoltaic installation that generates enough electricity to sell excess power back to the national electric grid. Surrounding the main structure is a green oasis of hand-picked tropical flora, fruit and vegetable gardens that make use of organic household compost fertiliser, and a swimming pool and Au fish pond that reflect sunlight and reduce ambient temperatures via evaporative cooling. The house is further ventilated by a wind turbine that is driven by both the wind and natural convection currents within the site.

ADVICE
The family room incorporates 7m high but sliding glass walls to facilitate natural air ventilation. The lighting systems also make use of energy-saving LED, LCD, and compact fluorescent.

TIP
The garden courtyard features an open-air roof to allow the hand-picked tropical flora to exist primarily from rainwater with minimal human intervention.



THE GREEN BUILDING INDEX IN A NUTSHELL

Created in 2009, the Green Building Index is Malaysia's industry recognised green rating tool for buildings to promote sustainability in built environments. It was developed to take into account Malaysia's tropical climate, cultural, social and developmental nuances, and is regulated by an independent body of industry experts known as the GBI Accreditation Panel. Building projects that apply for GBI accreditation are ranked on a 100-point system based on the following six criteria:

<p>01 ENERGY EFFICIENCY: Buildings can reduce energy usage by optimising building orientation, using natural lighting, minimising solar heat gain via Low-E Glass, and harnessing renewable energy sources.</p>	<p>02 INDOOR ENVIRONMENT QUALITY: Points are awarded based on the indoor air quality, acoustics, visual and thermal comfort.</p>	<p>03 SUSTAINABLE SITE PLANNING & MANAGEMENT: Sites with greater access to public transport, community services and open spaces while also conserving environmentally sensitive areas are awarded a higher score. The strain placed on existing infrastructure, such as storm water management and sewage, is also taken into account.</p>	<p>04 MATERIALS & RESOURCES: The use of environment-friendly materials obtained from sustainable sources or through recycling, as well as waste management and collection is taken into account.</p>	<p>05 WATER EFFICIENCY: Projects are awarded points for rainwater harvesting, water recycling and water-saving features.</p>	<p>06 INNOVATION: Innovative designs and initiatives that meet the objectives of the GBI are awarded points.</p>
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TABLE: GREEN BUILDING INDEX CLASSIFICATION

POINTS	GBI RATING
+86	Platinum
76-85	Gold
66-75	Silver
50-65	Certified

"THE GBI IS ESSENTIALLY A STEP-BY-STEP RECIPE THAT PROVIDES THE GUIDELINES ON HOW TO DESIGN A BUILDING THAT USES LESS ENERGY, SPITS OUT LESS POISON AND WASTE, AND CAN REGENERATE ITSELF BY RECYCLING INPUTS. AS BUILDINGS LAST A LONG TIME AND ARE COSTLY TO RENOVATE AND TEAR DOWN, IT'S WORTH DOING IT RIGHT THE FIRST TIME ROUND."

- Dr Tan Loke Mun -

03

SP SETIA'S CORPORATE HEADQUARTERS

Located in Shah Alam, this four-acre development's most noticeable green feature is the large rainwater catchment pond on the east side of the building. Harvested rainwater is used to water plants and for use in toilets. In addition to integrating the boundaries of the development with the natural environment, the building also uses full height Low-E Glass, double glazed curtain walls to allow for optimal daylight penetration with minimal heat gain. Heat from the evening sun is also minimised by the absence of windows in the building's west-facing facade. Over 25 per cent of the rooftops have been designated as 'roof gardens' to improve the site's aesthetics and provide ambient cooling. Other sections of the roof have been fitted with 55kWPV photovoltaic panels that provide up to two per cent of the building's total energy consumption.

BELOW
The interior is illuminated by natural lighting wherever possible and also integrates numerous indoor gardens into work and meeting spaces.

BOTTOM
The facade of SP Setia's Corporate Headquarters is comprised of a double-glazing curtain wall with full-height Low-E Glass to allow for optimal daylight penetration with minimal solar heat gain.



IDEAS FOR THE FUTURE?

Sometimes, it may take a stroke of genius — or madness — to resolve a crisis. While these projects may be more 'poetic' than practical, they offer out-of-the-box conceptual solutions to current and future environmental problems.



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02



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01 BARGE SURVIVOR HOUSE BY DR LIM TENG NGIOM

"This Barge Survivor House is presented as a poetic solution in the event of uncontrolled climatic events that see water bodies take over the majority of the earth's surfaces. In this situation, humans would repurpose existing barges into self-sufficient habitat and sustenance modules; one for your home and others for farming or livestock."

02 3D PRINTED NEIGHBOURHOOD BY SARLY ADRE SARKUM, QHAWARIZMI NORHISHAM, YASMIN ABDUL RAHMAN AND ERDAYU OS'HARA OMAR.

"The advent of 3D printing technologies, whereby a home can be pre-customised by the user, will allow buildings to be printed in a simple circular manner that enables customisation and localisation (usage of local materials) to resolve rapid population growth. Coupled with the use of other technologies such

as renewable energy and urban farming, these clusters of the 3D Printed Neighbourhoods would be economically interconnected and self-sustaining."

03 T COLONY BY DR TAN LOKE MUN

"I wanted to minimise the use of land as much as possible, as the cost of laying the foundation of a building actually amounts to over a quarter of the total costs. Land has also been a major cause of wars throughout history, so by

removing this parameter as much as possible, we reduce the chance of conflict as well as its environmental impact. The inspiration for the T Colony came from mushrooms, which are able to stand on just one leg and have a very large body but must exist in colonies of at least three entities to support each other. From the main platform, you could hang the building blocks for accommodation, commerce, etc., with minimal use of land."